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# Scientific Technical and Economic Committee for Fisheries (STECF) – The 2023 Annual Economic Report on the EU Fishing Fleet (STECF 23-07)

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**Abstract**

Commission Decision of 25 February 2016 setting up a Scientific, Technical and Economic Committee for Fisheries, C(2016) 1084, OJ C 74, 26.2.2016, p. 4–10. The Commission may consult the group on any matter relating to marine and fisheries biology, fishing gear technology, fisheries economics, fisheries governance, ecosystem effects of fisheries, aquaculture or similar disciplines. This report shows that in 2021, the EU fishing fleet numbered 71 628 vessels with a combined gross tonnage of 1.31 million and engine power of 5.2 million kW. Based on data submitted by Member States under the EU MAP, there were 54 213 active vessels in 2021 offering direct employment to 121 917 fishers, corresponding to 81 747 FTEs; on average earning EUR 26 042 in wages, annually. The EU fleet spent 5.5 million days-at-sea and consumed 1.81 billion litres of fuel to land 3.56 million tonnes of seafood with a reported value of EUR 6 billion. The Gross Value Added (GVA) and gross profit (all excl. subsidies and fishing rights) were estimated at EUR 3.3 billion and EUR 1.19 billion, respectively. GVA as a proportion of revenue was estimated at 53.8% and gross profit margin at almost 19.2%. With a total net profit of almost EUR 0.51 billion in 2021, 8.2% of the revenue was retained as profit. These results should be read in a context of an increase of fuel cost in 2021 compared to 2020. Overall indicators display an improvement compared to 2020 (although not reaching the values observed for 2019) while nowcast estimates suggest that the performance of the EU fishing fleet will be severely deteriorated in 2022, specially driven by the increase in fuel prices, although this deterioration will not be as severe as that one predicted in the AER 2022. This is because the fuel cost in the second half of 2022 showed a reducing trend compared to the first half of 2022. In 2023, it is expected an improvement of this situation, driven by the lower fuel cost than those in 2022. This publication includes: 1) a structural and economic overview of the EU fishing fleet in 2021 and trend analyses for the years 2013-2021 where possible (nowcasts for 2022 and 2023); a regional analysis of the EU fishing fleet by major sea basin, as well as, fleets operating in the EU Outermost Regions and in Other Fishing Regions; 3) a detailed structural and economic overview of each Member State fishing fleet, including qualitative economic performance assessments for 2021 and nowcasts for 2022 and 2023.

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### EWG-23-03 and EWG-23-07 reports:

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## SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF) THE 2023 ANNUAL ECONOMIC REPORT ON THE EU FISHING FLEET (STECF 23-03 & STECF 23-07)

### Request to STECF

STECF is requested to evaluate the findings of the STECF Expert Working Group in particular 1) on the specific section for the fuel prices and energy consumption indicators of the EU fishing fleets. 2) on the methodology for opportunity cost of capital used on the AER.

STECF is requested to evaluate the findings of the STECF Expert Working Group meeting and make any appropriate comments and recommendations.

### STECF comments

EWG 23-03 took place virtually from 24-28 April (AER I) and EWG 23-07 took place physically in Ispra from 12-16 June (AER II) in 2023. The EWGs addressed all the TORs.

STECF observes that as in previous years, the AER report includes information on the EU fleet's fishing capacity, effort, employment, landings, income and costs. The reference year for the AER 2023 report is 2021 (year t) with nowcast performance estimates provided for 2022 (t+1) and 2023 (t+2). All monetary values were adjusted for inflation to 2020 constant prices.

STECF observes that the analysis provides a structural and economic overview of the EU fishing fleet, a regional analysis of the EU fishing fleet by major sea basin, outermost regions and by different Regional Fisheries Management Organisations (RFMOs) and a detailed structural and economic overview of each EU Member State fishing fleet.

STECF observes that the comparisons made between the reference year (2021) and the historical time series are now limited to the period 2013 to 2021. This represents a change in comparison with previous years' reports where trend analysis covered the years back to 2008. The reason for shortening of the period is to align the starting point of the annual economic analysis to the implementation of the reformed CFP in 2013. Furthermore, computational constraints, such as incomplete time series data due to either the non-submission or submission of questionable data, make a trend analysis over the entire period 2008-2021 at the EU and regional levels impossible without excluding the Member States fleets that are incomplete. STECF agrees with this approach and notes that the full time series from 2008-2021 will still be available as a digital annex to the AER report at the JRC and STECF web pages (https://stecf.jrc.ec.europa.eu/reports/economic).

STECF notes that the EWG used 2020 as the base year for the calculations when adjusting nominal monetary values for inflation, same base year as in the AER 2022, but updated compared to AER 2021 when 2015 was used as base. STECF agrees with the EWG that the "reference year" (i.e., the last year for which data are provided by Member States) of the report and the "base year" should be the same.

STECF notes that presenting the last year in the report in nominal values makes it easier to communicate the results to stakeholders, because these numbers are more recognisable to stakeholders than numbers that have been adjusted for inflation, especially when inflation rates are high.

STECF agrees with the EWG that it is challenging for Member States to provide a more recent data reference for the AER analysis (e.g., 2021 is the latest full year for the report in 2023). STECF notes the recommendation of the Market Advisory Council (MAC) to use more recent data. Even if the process of collecting data is automatised further, this is currently still not possible, given that Member States do not have enough time to provide the more recent data in time for the data call.

STECF notes that an alternative solution for a more up-to-date reporting of the year t+1 (2022 in the AER 2023) was suggested by the EWG. This would require developing a common method for nowcasting the year t+1, which could be used by the Member States. Using a common reporting tool/method in all Member States would allow for a data call that includes a nowcast of the year t+1. Models already used by Member States and the one used in the AER meeting could serve as a starting point for such an analysis. STECF notes that it would still be necessary to perform the nowcasting of year t+2 under the AER EWGs. STECF also notes that nowcasting in such a manner, may require that confidence intervals of the estimations performed are presented in the main report to be able to evaluate the reliability of the mean values obtained. This solution still needs further analysis, and this could be achieved through a workshop facilitated by RCGECON.

STECF observes that for the first time, EWG 23-03/07 used the Data Transmission Monitoring Tool (DTMT) Guidance, version March 2023 updated by the STECF PLEN 23-01 as a means for tracking data issues. The guidance specifies the complete process for the management of the data failures. EWG 23-03/07 focused on the first step of the process that is the filling in issues in the DTMT. The guidance specifies how the data issues should be reported and the fields to be compiled (data requested, issue, issue type, severity and recurring). Furthermore, for the identification of the data issues, the EWG applied the dashboard implemented by the JRC that allow to: visualize the data; inform on the timeliness; identify coverage issues (at Member State and fleet segment level); and report cross checks between data for different variables. In addition, experts were asked to report any additional data issues (in particular, regarding quality aspects) that would have been detected during the analysis and drafting of the text. STECF notes that this process was perceived by the EWG as a major step forward compared to last year's report, which facilitated the data quality checking and saved time, thus allowing more discussions on the results obtained in the AER report rather than on data issues.

STECF notes that the nowcast for 2023 should be interpreted with caution due to the fact that the development in the second half of the year (energy and fish prices, inflation, interest rates etc.) is unknown and highly uncertain. Furthermore, STECF observes that the results of the nowcast were delivered very late and several updates were produced. This delay affected the smooth running of the EWG and the timely delivery of the report. STECF notes that additional efforts should be devoted in the future to ensure that the results of the nowcast is made available before the second EWG meeting. Furthermore, the process to generate the nowcast should be fully integrated into the JRC database.

STECF notes that in order to analyse the economic performance of the EU fleet at the regional level, the economic data provided by fleet segment at the supra-region level should be disaggregated based on effort and landings data. These are provided at the sub-region level (FAO level 3 or 4). However, due to the characteristics of Other Fishing Regions (OFR) and, in particular, the RFMOs, some adaptations from the standard regional disaggregation methodology are required. Over the years, the definitions and criteria used to select fleets for the OFR analysis have changed. However, these criteria are not exhaustively documented. STECF observes that a re-assessment of those criteria, and their description would be necessary to increase the transparency of the whole process and to streamline the content of the report.

STECF observes that the revised EU-MAP (Commission Delegated Decision (EU) 2021/1167, table 8) changed the fleet segmentation for vessels operating in the Baltic Sea. The new segmentation for vessels less than 12 meter are 0-< 8 metres and 8-< 12 metres (previous it was 0-< 10 meter and 10-< 12 meter). STECF observes that only 2 Member States provided economic data according to the revised fleet segmentation. However, this had no impact on the AER, as the Small-Scale Coastal Fishing (SSCF) segment is defined as all vessels using passive gears with a length less than 12 metres.

**STECF comments on the specific section for the fuel prices and energy consumption indicators of the EU fishing fleets**

STECF observes that the special requests included in the TORs related to fuel prices and energy consumption indicators of the EU fishing fleets in a special section and in the national chapters were addressed by the EWG. This section is centred around the energy transition and the effects of fuel costs on the performance of the EU fishing fleet.

STECF notes in addressing this issue, the fuel use indicators requested in the TOR have been calculated (fuel intensity (FUI), fuel efficiency (FUE)), as well as the short-term and long-term break-even prices of fuel (i.e., the fuel prices that result in gross and net profit being zero, respectively). It should be noted that for the long-term break-even prices, the capital cost has not been considered in the calculation of the net profit. This is because the calculation of this indicator is based on a variable interest rate, which currently are experiencing high fluctuations. This affects the results for this indicator and its interpretation.

The EWG performed fuel intensity data quality checks by comparing the results obtained using the AER data with the available literature on fuel use. STECF notes that they have been performed only for Demersal trawlers and/or demersal seiners (DTS), Beam trawlers (TBB) and Pelagic Trawlers (TM) fishing technologies (e.g., technologies can cover multiple gear types). However, these technologies account approximately for the 75% of the energy consumption of the EU fishing fleet. STECF notes that FUI, FUE and break-even fuel prices were calculated at segment level and as mean national averages. From these quality checks it was also obtained that further aggregation beyond the fleet segments used in the AER was not recommendable. AER uses fleet segments which combine different fishing gears. Aggregating

them further will make very difficult to interpret the results obtained and to contrast them with the available literature of fuel use.

STECF observes that based on the quality checks carried out, the EWG observed that vessels are assigned to a segment based on its predominant fishing gear. Even though vessel segments are defined in the data call by a specific fishing gear, different fishing gears can be used by fishing vessels over the course of a year and segments can be merged due to confidentiality. Therefore, the estimations of fuel use in each segment can be difficult to interpret. These effects are more prominent in small-scale fisheries, implying that the calculation of the fuel indicators is less reliable for small-scale fisheries segments.

STECF notes that it might be necessary to validate the quality of the data provided on fuel consumption in the data call through a follow-up analysis by the EWG, because it has been necessary to analyse a combination of AER and FDI data in order to identify the fishing gear used, which is key to be able to compare the results with the available literature on fuel intensity.

STECF observes that AER provides statistical ranges of fuel use intensity (FUI) based on a literature review of the main fishing gears by target species. Literature review of energy use in fisheries demonstrated the reliability of the fuel use intensities estimated with the AER-FDI combined approach. Information provided with this complementary analysis not only provides valuable information about the reliability of the AER data but also a tool for data quality checks a priori that Member States may use to check fuel use before submission using the statistical ranges.

**STECF comments on the methodology for opportunity cost of capital used in the AER**

STECF observes that issues related to the methodology for calculating opportunity cost of capital were also discussed by the EWGs. When calculating the net profits, the opportunity cost of capital is still computed using a variable interest rate, (i.e., the nominal interest rates of the national 10 years bonds, as a proxy of a low-risk investment). This approach creates some difficulties in interpreting and explaining the results of the analysis to stakeholders. The real interest rates can be negative (and actually have been in the past), meaning net profits can be higher than the gross profit.

STECF notes that to avoid such an anomaly, the EWG suggested a new approach built on a fixed nominal interest rate for all Member States. A suggestion for this fixed interest rate is between 3-4%. This range corresponds to the recommendation made by the EU Commission for the choice of discount rate used for Cost-Benefit analysis (Guide to Cost-Benefit Analysis of Investment Projects for Cohesion Policy 2014-2020, December 2014). It also aligns with scientific literature evaluating the choice of discounting rate (Hepburn et al 2009) and scientific articles in the field of fisheries economics (Kempf et al. 2016). With this change nominal interest rates would remain positive, which makes sense from the overall long-term sustainability perspective for the fishing fleet.

STECF observes that the level for the fixed interest rate can change over time, and this should be documented by the EWG. Similarly, the consequences of moving to fixed interest rates for the balance/capacity report should be investigated by STECF.

**STECF conclusions**

STECF concludes that the EWGs have addressed all TORs and STECF endorses the AER report.

STECF concludes that it is currently not possible to provide data for the report that is more up to date than is collected currently (i.e., t=2021 in the 2023 AER). However, a workshop could be facilitated by RGECON to develop a common method for nowcasting for the year t+1. Such a methodology could be applied by Member States to provide the nowcast for the year t+1 in the yearly data call.

STECF concludes that to increase transparency and to streamline the content of the report, criteria for splitting effort and landings data regionally, and automatically performed by the database, should be further documented.

STECF concludes that an ad-hoc contract is provided for the two chairs of the AER to investigate and document the procedure of allocating fleet segments to the different RFMOs.

STECF concludes that the reference year of the report and the base year used for the calculations should always be the same.

STECF concludes that the revised segmentation for the less than 12 meters in the Baltic Sea should be applied by all concerned Member States as per the revised EUMAP. This will allow a homogeneous and consistent presentation of data.

STECF concludes that due to gear aggregation at the fleet level, the results on fuel intensity (FUI), fuel efficiency (FUE) and break-even prices presented in the AER report should be interpreted with caution especially for small-scale fleet segments. Due to the lack of detailed information on gears in the AER fleet segments, there may be a need for analysing the data used for calculating fuel consumption in more detail to be able to provide more reliable results in the future.

STECF concludes that that a methodological change for calculating opportunity cost of capital using a fixed interest rate would improve the interpretability of results and make the results less dependent on interest rate fluctuation and therefore easier to compare over time.

STECF concludes that the effects of using a fixed interest rate instead of the variable one used currently should be documented in AER 2024. A section covering the choice of interest rate based on economic literature and documentation of the effects of going from a flexible to a fixed long-term interest rate should be included in the 2024 AER report. Furthermore, the consequences for the balance/capacity report should similarly be investigated.

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[1] - Information on STECF members' affiliations is displayed for information only. In any case, Members of the STECF shall act independently. In the context of the STECF work, the committee members do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members also declare at each meeting of the STECF and of its Expert Working Groups any specific interest which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting's website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: http://stecf.jrc.ec.europa.eu/adm-declarations

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# EXECUTIVE SUMMARY

The 2023 Annual Economic Report (AER) on the European Union (EU) fishing fleet provides a comprehensive overview of the latest information available on the structure and economic performance of the EU Member States fishing fleets. Should be noted that his year and in comparison with previous releases of the report, the base year is 2020 (including the forecast and nowcasting procedures).

Results indicate that the net profitability of the EU fleet increased in 2021, registering a net profit of almost EUR 0.56 billion, up 23% from 2020 although not recovering the values observed for 2019. Opportunity cost of capital is the main driver of this result as it can be seen when analyzing gross profits. This last indicator remained at the same level as in 2020. Although the value of landings increased by 5.1% compared to the previous year, energy cost increased sharply by 26.3%. It should be mentioned that for 2020 the lowest value of the time series was observed, and that in 2021 overall energy cost was similar to this observed for 2019. It should be further mentioned that the 2021 does not consider the sharp increase in fuel prices brought on by Ukraine-Russia conflict. Nowcast estimates indicate that the performance of the fleet will deteriorate in 2022, due, chiefly, to the effects of this conflict, in particular with high fuel costs and inflation rates. In 2023, it has been forecasted a recovery of the profitability to values similar to those observed in 2021.

In 2021, the EU fishing fleet numbered 71 628 vessels with a combined gross tonnage (GT) of 1.3 million and engine power of 5.3 million kilowatts (kW). There were 17 415 inactive vessels (24% of the total number of vessels), bringing the number of active vessels to 54 213. Of the active vessels, 76.1% were SSCF vessels, 23.4% LSF and less than 0.5% DWF.

EU fleet[1] capacity has decreased gradually over the period analysed, overall declining 7.4% in number of active vessels, remained stable in kW and −1.7% in GT compared to 2013.

Direct employment generated by the sector, amounted to 121 917 fishers, corresponding to 81 747 FTEs. These values follow a similar trend as the capacity indicators. Almost 29% of the employed persons were estimated as being unpaid labour (similar to 2020). Average annual wage per FTE was estimated at EUR 26 387, a decrease compared to 2020. Remarkable, is the big dispersion along the different Member States, ranging from an average wage of EUR 2 289 for Cypriot fishers to EUR 122 104 for Belgian fishers. In both cases, higher figures than in 2020.

To perform, the EU fishing fleet consumed 1.81 billion litres of fuel and spent 5.5 million days-at-sea (DaS) in 2021. This combination produced 3.6 million tonnes of seafood landings with a value of EUR 6 billion.

In 2021, the EU fishing fleet had an estimated depreciated replacement value (tangible asset value) of EUR 5.4 billion and in-year investments amounted to EUR 662 million. These figures indicate that the capital value of the EU fishing fleet decreased in 2021 compared to 2020. However, investments presented the highest value of the time series (2013-2021).

The amount of GVA and gross profit (all excl. subsidies) generated by the EU fishing fleet in 2021 was EUR 3.3 billion and EUR 1.18 billion, respectively. GVA as a proportion of revenue was estimated at 54%, lower than in 2020 and gross profit margin at 19.1%, lower to the one obtained in 2020. After accounting for capital costs, 9.1% of the revenue generated by the fleet was retained as net profit, in this case an increase from that obtained in 2020.

While overall the EU fishing fleet was profitable, performance was similar to 2020, when gross profits are considered, although increased after accounting for capital cost (net profit). Four out of the 22 coastal Member States fleets suffered net losses in 2021, namely: Cyprus, Germany, France and Greece. Results also varied by scale of operation and fishing region.

The EU **small-scale coastal fleet (SSCF)** totalled 41 267 vessels in 2021, employing 59 948 fishers. This implies that the SSCF comprised 76% of the active fleet and 49% of the engaged crew. FTEs were 33 052, revealing the part time nature of this activity. Collectively, the SSCF was profitable in 2021 and revenue, GVA and profits improved compared to 2020. The only exception is the average wage, which decreased to EUR 13 902 (-4.9% compared to 2020). Results by Member State reveal that six SSCF suffered gross and net losses (Germany, Denmark, Greece, Malta, Poland and Sweden). This negative situation was particularly marked in the Baltic region were collectively the SSCF was already performing

[1] Variations exclude Croatia for time-series consistency unless otherwise stated.

at negative gross losses in 2018-19, deteriorating further in 2020. In 2021, although an improvement of the performance was observed, the fleet is still operating at gross losses. The Mediterranean SSCF (the major EU contributor to this segment in vessels and employment) also suffered a contraction in its economic performance in 2020 compared to 2019, impacted by the COVID-19 outbreak, however, in 2021 its performance recovered to similar values as in 2019

The EU **large-scale fleet (LSF)** encompassed 12 704 vessels in 2021 and employed 55 217 fishers, representing 23% and 45% of the total active EU fleet, respectively. This fleet contributed 74% in landings and 67% to the value of these landings of the total EU fleet. The LSF was profitable in 2021 but while GVA remained similar to 2020, gross and net profit reduced by 10% and 12.5% compared to the previous year, respectively. All the Member States' LSF made gross profits in 2021 and four, Cyprus, Germany, Finland and Slovenia, made net losses.

The EU **distant-water fleet (DWF)** numbered 242 vessels in 2021 and employed 6 752 fishers, less than 0.5% and 5.5% of the EU total, respectively. This fleet contributed 19% in landings in weight and 17% in value of the total EU fleet. The reported GVA was of EUR 398 million. Gross profit was estimated at EUR 168 million and net profit at EUR 95 million, values observed in 2018 and a much improved economic performance compared to 2020. French DWF suffered gross losses and Spanish fleet net losses.

The 10 Member States fleets operating in the **North Sea & Eastern Arctic** (NSEA) region in 2021 numbered 2 005 vessels, 15 vessels less than in 2020, with an estimated 3 567 FTE. The revenue generated was EUR 0.85 billion, 76% of which was provided by three Member States: Denmark, the Netherlands and Germany. Revenue presented a mixed evolution in 2020 compared to 2019: the Netherlands (EUR 287 million; -3%), Germany (EUR 105million; +18%), Denmark (EUR 333 million; -13%), Ireland (EUR 21 million; +52%), and Belgium (EUR 24 million; -32). GVA produced by the fleets was estimated at EUR 487 million in 2021; representing an overall decrease of 8% compared to 2020. The fleets made EUR 208 million in gross profit, an 18% decrease compared to 2020. By fishing activity, the SSCF operating in the NSEA generated EUR 27 million in revenue and 260 FTE. The DWF generated EUR 18 million in revenue and 92 FTE.

Eight Member States were actively involved in **Baltic Sea** (BS) fisheries in 2021: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, and Sweden, while the Estonian, Finnish, Latvian and Polish fisheries were fully dependent on this region. In 2021 the total number of vessels operating in the BS decreased by 12%. The fleet with 4 597 active vessels generated EUR 173 million in revenue, a decrease of 12% compared to 2020. GVA decreased by 19%. However, overall, the EU Baltic Sea fleet was still profitable in 2021, generating a EUR 6 million net profit (-42%), which was unequally distributed amongst MS. Two Member States' fleets (Germany and Denmark) suffered gross losses in 2021 in the region. While the SSCF had 92% of the vessels (4 228 vessels) in 2021, total employment in the sector amounted only to 2 043 FTE or 62% of the total, indicating the predominantly part-time nature of employment in this fleet segment mostly reflected in the Estonian and Finnish fleets with 0.23 and 0.17 FTE per person employed, respectively. Overall, FTE decreased by 10% in 2021 and reached the lowest level since 2008 (3 301 FTE). In 2021, the SSCF generated a gross value added of EUR 20.8 million (EUR 17.6 million in 2020) and had 2 040 FTE. The profitability of the SSCF improved slightly, though remainig negative, from net losses of EUR 18.9 million in 2020 to net losses of EUR 9.9 million in 2021. SSCF in the Baltic accounted for 8% of the landed weight and 26% of the value and the profitability is presenting a continuous deteriorating scheme. The contribution of Atlantic cod in total revenues of SSCF has decreased from 37% in 2008 to 2% only in 2021. The Member States' SSCF with a relatively low cod dependency, like Finland and Latvia, made gross profits while the Polish, Danish, German and Swedish SSCF suffered losses. The revenue generated by the LSF fleet in 2021 was EUR 131.4 million, 14% less compared to 2020. As consequence, gross profit and net profit generated by the LSF decreased substantially by 37% and 46%, respectively. The number of people employed by the LSF decreased by 6% (FTE and total jobs).

The main Member State fleets in the **North Western Waters** (NWW) are the French and Irish. Ireland had the highest total percentage of national landed value from the region at 90% indicating their high dependency on this area. Belgium, Denmark, Spain and the Netherlands also had quite a substantial amount of production from the area while Germany, Lithuania and Portugal showed low activity. Overall, the fleets account for 2 443 active vessels with 5 920 FTE, an increase of 2% compared to 2020. In 2021, the two main species landed in terms of weight were small pelagic species including blue whiting and Atlantic mackerel, although in terms of value, hake was also important. While total revenue in the region increased by 7% between 2020 and 2021, there were some differences between Member States. Spain had a noticeable decrease in revenue (EUR 92.8 million; -15%) while Germany (EUR 37 million; 63%) and Denmark (EUR 24.1 million; 33%) had sharp increases in revenue. France (EUR 530.3 million;

18%) and Ireland (EUR 269.1 million; 3%) aso had increases and their combined revenue constitutes 80% of the total revenue in the region.

The main fishing Member States in the **Southern Western Waters** (SWW) are Spain, France and Portugal (combined, generated 99% of the revenue in 2021). The main species landed were European pilchard, European anchovy, Atlantic horse mackerel and Atlantic mackerel. In terms of value, the main species were European hake, albacore, octopus and anchovy. Overall, the fleets of this region were profitable in 2021, posting a net profit of over EUR 84 million. SWW fleets generated over EUR 1.3 billion in revenue, EUR 751 million in GVA and EUR 168 million in gross profits. In 2021, revenue and profits have recovered after the downing trend from 2016. The SSCF was profitable in 2021, totalling EUR 227 million in GVA. Total employment for the SSCF was higher Portugal and Spain than in France, totalling 6 946 and 6 135 jobs, respectively, reflecting the high number of active vessels in these Member States. The three main Member States in the SWW have demonstrated a much lower FTE figures than total employed (about 40%-50% of the total jobs) indicating that a large majority of those employed in the SSCF are part-time employees. The most important species caught by these fleets are the common octopus (19% of the landed value) followed by the European seabass (9%). The LSF was profitable in 2021, totalling EUR 521 million in GVA and EUR 89 million in gross profit. The Portuguese LSF is responsible for 48% of the gross profit of the LSF in the SWW region, followed by Spain that contributed with 28% and the French fleet with 25%.

The **Mediterranean Sea** (MED) fleet accounted for 58% of all EU vessels and 46% of the EU employment (FTE) in 2021. The Mediterranean fleet also contributed to 9% of the EU landings in weight and 24% in value. Almost all landings by the Cypriot, Croatian, Greek, Italian, Maltese, and Slovenian fleets were originated from the region. The Greek fleet is the first contributor in terms of the number of vessels (32%) and days-at-sea (44%) while the Italian one is the dominant fleet in terms of landings (42% in weight and 51% in value), revenue (48%), gross value added (49%) and gross profit (63%). The economic performance was mostly driven by the LSF, which contributed to 72% of the landings value from the Mediterranean and to 84% of landings weight in 2021. In contrast, 81% of the vessels operating in the region belong to SSCF. Employment in the Mediterranean fishing fleet in 2021 was estimated at 56 727 jobs, corresponding to 38 585 FTEs. Employment (measured as FTE) decreased by about 5% relative to 2020. More than half of the employment is created by the SSCF; 33 385 jobs corresponding to more than 59% of total jobs, and 21 424 FTEs corresponding to almost 56% of total FTEs. In 2021, the regional fishing fleet's economic performance did not change significantly with respect to the previous year; the COVID-19 pandemic continued to have an impact on the economic performance. A different trend has been observed for LSF and SSCF. SSCF continued to improve on all the economic performance indicators, while LSF registered a decreased trend in GVA and gross profit.

Bulgaria and Romania are the only two EU Member States involved in the **Black Sea** (BKS) fisheries. Revenue in 2021 was estimated at EUR 10.7 million, increasing by 32% compared to 2020 but decreasing by 4% compared to the average 2013-2020 period. GVA produced was EUR 7.4 million, representing an overall increase of 45% compared to 2020 and 2% decrease to the average for the period from 2013 to 2020. Gross profit was estimated to be EUR 5.4 million, a 68% increase compared to 2020. Net profit also increased in 2021 reaching EUR 5.4 million which was double then 2020. The BKS fishery is dominated by SSCF vessels. The number of SSCF vessels in 2021 (1 191) decreased by 4% compared to 2020, GT and kW decreased by 3% and 5%, respectively. They make up 91% of the total fleet by number and 80% of the total employment (66% of FTE). In 2021, 1 570 fishers were directly employed, corresponding to 400 FTEs. In the majority of cases, vessels are operated by the owner or a family member.

Although the main fishing grounds for the EU fishing fleet are located in FAO areas 27 and 37, part of the EU fleet operates in fishing areas much further afield. For the sake of this report, these areas are collectively termed **Other Fishing Regions** (OFR) and are divided into two main groups: (1) **EU Outermost Region** (OMR) fleet operating in the EEZs of the Canary Islands (Spain); the Azores and Madeira (Portugal); and the French territories, namely, Saint-Martin, Guadeloupe, Martinique, French Guiana, Mayotte and La Reunion and, (2) the **EU long distant fisheries** (LDF) in fishing areas outside EU waters and in Areas Beyond National Jurisdiction (ABNJ), covered by Regional Fisheries Bodies (RFBs), such as the, Northwest Atlantic Fisheries Organization (NAFO), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC), the North-East Atlantic Fisheries Commission (NEAFC) and the Fishery Committee for the Eastern Central Atlantic (CECAF); and fishing areas within the EEZ of third countries regulated under the framework of EU Sustainable Fisheries Partnership Agreements (SFPAs). Due to data limitations and time constraints, it was not possible to provide a complete analysis of the EU fleets operating in all the OFRs

Combined, the EU OMR (local) fleet numbered 2 581 active vessels in 2021 with 93% of the fleet under 12 meters LOA. With 1 431 vessels, the French fleet was the most numerous, accounting for 55.4% of all active EU OMR vessels. The Portuguese fleet comprised 579 vessels (22.4%) and the Spanish fleet 571 vessels (22.1%). Canaries Islands and Martinique, with 571 active vessels each, were the largest OMR fleet (by number), followed by Guadeloupe (515), Azores (493), Reunion (158), French Guiana (96), Mayotte (91) and Madeira (86). In 2021, the OMR fleets operated 189 279 DaS for a total energy consumption of 25.3 million litres. In terms of energy efficiency, average figures were 124 litres per trip for the OMR as a whole, 1.5 kg and 5.9 euro of fish landed per litre of fuel consumed but with heterogeneous situations between OMRs and segments. Engaged crew was 6 666 for 3 512 FTEs. Landings from the OMR fleets combined amounted to 35 163 tonnes valued at EUR 138.4 million in 2021 (average price 3.9 euro/kg). The French OMR fleets accounted for 44% of the landings in value (28% in weight), followed by the Portuguese OMR fleets (37% in value, 49% in weight) and the Canaries Islands fleets (19% in value, 23% in weight). The average price was respectively 6.1 euro/kg, 3.0 euro/kg and 3.3 euro/kg for the French, Portuguese and Spanish fleets. Gross value added and net value added were EUR 87.0 million (61% of total revenue) and EUR 73.4 million, respectively. Gross profit and net profit were estimated to EUR 17.3 million and EUR 4.9 million, respectively.

According to data submitted, the EU **ICCAT** fleet numbered 223 commercial vessels and total reported EU catches for the main species regulated by ICCAT in the Atlantic Ocean and Mediterranean Sea amounted to 164 543 tonnes in 2021. Nearly 59% of these catches correspond to tropical tunas (yellowfin, bigeye and skipjack), 11% to sharks, and 11% to albacore. To analyse the EU ICCAT LDF fleet, all fleet segments over 18 metres LOA and with 20% or more of their landings in value obtained in 2021 from one or more of the major species or stocks in the ICCAT RA were selected. Based on these criteria 14 DCF fleet segments were identified for the ICCAT LDF analysis in 2021. The Atlantic stocks comprise over 94% of the total landings, the top species in landings in 2021 were: skipjack (54 593 tonnes, 32% of the total landings), blue shark (40 743 tonnes), yellowfin tuna (30 947 tonnes), albacore (15 088 tonnes) and bigeye tuna (11 428 tonnes). Given the method of aligning LDF segments to the area, the number of vessels can vary from year to year. The Atlantic ICCAT LDF showed an improvement that should be confirmed by the results of the performance of the fleet in the following years.

Four Member States were active in the **IOTC** Convention region in 2021: France, Portugal, Italy and Spain. The EU fleet active in 2021 consisted on estimated 35 vessels: 20 from Spain, 12 from France, 2 from Portugal and 1 from Italy. The landings for the IOTC LDF amounted to 247 815 tonnes in 2021 valued at EUR 417 million, a significant increase from 2020 (reported on EUR 294 million). The top species were the tropical tuna species skipjack (143 536 tonnes), yellowfin (75 577 tonnes) and bigeye (21 817 tonnes). The two major fleet segments for both Spain and France are the purse seiners above 40 metres LOA. Spanish seiners show a better economic performance than French seiners, which reported net losses.

Much of the activity in the **CECAF** region is related to tuna fishing, within the framework of six tuna ASPAs in West Africa (Cape Verde, Côte d'Ivoire, Gabon, Liberia, Sao Tome and Principe and Senegal) and three multispecies ASPAs (Guinea-Bissau, Mauritania and Morocco). Some CECAF areas overlap with ICCAT areas. When excluding landings of ICCAT major species, four LDF segments were identified with high dependency in this area targeting demersal and/or small pelagic species (39 vessels). Total catches for these selected segments were approximately 55 million tonnes valued at EUR 100 million in 2021. Due to time constraints and data limitations, STECF EWG 23-07 was unable to provide a detailed account of the main fishing segments operating in CECAF. Combined, the CECAF LDF with high dependency in the area was profitable in 2021, improving on its loss-making position in 2018 but showing a certain stagnation in respect of 2020. The number of vessels and FTE has decreased as did landings in weight and value.

In 2021, eight fleet segments from four Member States (Portugal, Spain, Germany and France) showed some activity in the **NAFO** convention Area (excluding ICCAT major species). The fleet was composed of an estimated number of 24 vessels (one more than in 2020) which produced 43 269 tonnes valued at EUR 87.2 million (both, lower than in 2020). None of the national fleet segments are heavily dependent on the region, although specifically, Portuguese demersal trawler fleets above 40 metres obtained around 80% of its total landings in value from activity in NAFO, and half of the Spanish trawlers above 40m are almost fully dependant on this area. The other Member States' fleets have less than 5% dependency on this area, although individually vessels could have a higher dependency tan this average. Economic performance results for 2021 shows a decrease in revenue, GVA and gross profit for the fleet operating in this area with respect to that of the previous year. In 2020, the COVID-19 pandemic changed the fishing strategies, to reduce operational costs which resulted in an increase on all economic indicators,

breaking the downward trend observed in these parameters since 2016. However, in 2021, this downward trend in the main economic indicators has been observed again.

The main fisheries in the **NEAFC** convention area were: redfish, mackerel, haddock, herring, blue whiting and deep-sea species. The total catch of the selected segment dependent on this area was approximately 166 million tonnes. These catches are centered on the four main species in the region, which are Atlantic herring, blue whiting, European hake, and cod. In terms of value, the main landings were European hake EUR 90.1 million, cod EUR 44.0 million, Norway lobster EUR 28.6 million and Atlantic herring EUR 27.7 million. Due to time constraints, STECF EWG 23-07 was unable to provide a detailed account of the main fishing fleets operating in NEAFC. Furthermore, the EWG requests more guidance on what fleet activity should in essence be assessed in the NEAFC chapter, i.e., activity in the NEAFC convention area or activity in the regulatory area. For the latter, more detailed and digitalised data from NEAFC, such as catches by species and Member State fleet in the RA, would be required. Fort he year 2021, the selected number of vessels were 151 a number similar to the one obtained in 2020 (152). Total FTE has been reduced from 1 929 in 2019 to 1 793 in 2021.

**Nowcast results for 2022 and 2023** are driven by the sharp increase in fuel prices, especially for 2022. However, they should be taken with caution because they do not consider tactical adaptations of the fishing fleet but also due to the methodological limitations of the procedure to produce these results.

**Preliminary results for 2022**[2] are driven by the sharp increase in energy costs, due to the Russia-Ukraine conflict, especially in the first half of the year 2022. In mean, the increase in fuel cost is estimated to be a 77% higher in 2022 than in 2021. Overall, the nowcasting methodology indicates a similar landed value in 2022 compared to 2021, although with a 9% increase in weight. This implies that prices, in real terms (after accounting for inflation) are lower than in 2021. This situation drives the performance of the EU fleet to a reduction of 61% and 96% in the overall gross and net profits. However, the projection for 2022, and in comparison with the AER 2022 does not move the net profits to negative values. The reason is that in the last year's projection, the downward trend of the fuel cost in the second half of the year was not considered.

**Preliminary results for 2023**[3] are driven by the inflation rate and fuel price increases in 2022. Overall, an increase in landed weight of 9% is predicted although it is outweigthed by the the sharp decrease (in real tems) of mean prices. Howewer, the decrease in fuel costs will make that the net and gross profits recover from the bad 2022, and reach values similar to the year 2021.

This publication includes:

1) A structural and economic overview of the EU fishing fleet in 2021, with nowcasts for 2022 and 2023, and trend analyses for the years 2013-2021.

2) A regional analysis of the EU fishing fleet by major sea basin: Baltic Sea, North Sea & Eastern Arctic, North Atlantic (NWW and SWW), Mediterranean Sea, Black Sea, as well as Other Fishing Regions, including the EU Outermost Regions and the EU long distant fisheries in Other Regions;

3) A detailed structural and economic overview of each Member State fishing fleet, including qualitative economic performance assessments for 2021 and nowcasts for 2022 and 2023.

The 2023 AER Annex report further contains supplementary data tables providing the main results at the EU, regional and national levels, an outline of the methodology and nowcast model used to estimate economic indicators for 2022 and 2023.

The data used to compile all the various analyses contained within the reports were collected under the data collection framework, cf. Council Regulation (EC) No 199/2008 of 25 February 2008 for the years 2008 -2016 (DCF) and cf. Council Regulation (EC) No 2017/1004 of 17 May 2017, for the years 2017-2021 (EU-MAP)

**The 2023 AER supersedes all previous AERs. Comparisons across AER reports should not be made.** This is mainly due to the inclusion of more Member State fleets, the exclusion of the United Kingdom). Member States may have provided revised data submitted in previous calls, which is expected to have increased the coverage and quality of the data reported under the 2023 Data Collection Framework (DCF and EU-MAP).

[2] Variations exclude Croatia for time-series consistency unless otherwise stated.
[3] Includes Greece. Excludes the United Kingdom.

**EU 2021 MEMBER STATE FLEET SUMMARY REPORTS**

The following paragraphs present the concise summary of each the national chapter containing results for the main economic performance indicators in **2021** and developments in relation to the previous year (2020):

BELGIUM: In 2021 a **deteriorated** performance was noted, operating at a net profit of EUR 2.1 million (-71%). Only the small PMP fleet segment was very profitable. Revenue remained stable, increasing by 0.5%, amounting to EUR 77.8 million; GVA estimated at EUR 48.2 million (-8%) and gross profit EUR 9.9 million (-36%). The 2021 year was better than initially expected with a more or less stable performance although economically less strong compared to 2020.

BULGARIA: **Improved** economic performance compared with 2020 and the period 2013-2020. Revenue increased 13%, amounting to EUR 8.3 million; GVA estimated at EUR 5.99 million (21%) and gross profit EUR 4.61 million (51%) and comparing with 2020 the percentages are: 60%, 79% and 108%, respectively.

CROATIA: **Deteriorated** economic performance in 2021. Revenue decreased by 2%, amounting to EUR 97.9 million; GVA EUR 61.9 million (9%) and gross profit EUR 30.4 million (15%) decreased while net profit increased to EUR 18 million (26%). One of the reasons for deteriorated performance is decrease in landings in 2021 (13%), landings are lowest in the period since 2013 (-14% compared to 2013-2020 average).

CYPRUS: Overall economic performance improved compared to 2020. Revenue increased by 15%, amounted to EUR 7.3 million; GVA EUR 3.16 million (14%), gross profit EUR 1.36 million (11%) and a net loss of -EUR 37 115. One of the reasons for the improved performance is the increase in value of landings in 2021.

DENMARK: **Deteriorated** performance from 2020 to 2021. Revenue in 2021 was EUR 391 million, a decrease of 14% compared to 2020. GVA decreased 21% to EUR 243 million, gross profit decreased 31% to EUR 132 million and net profit decreased 45% to EUR 53 million compared to 2020.

ESTONIA: Overall **improved** performance. Revenue increased by 7%, amounting to EUR 14.7 million; GVA was estimated at EUR 9.4 million (+11%), gross profit EUR 4.5 million (+80%) and net profit EUR 2.3 million (+1434%). No further improvement in economic performance is expected in 2022. Although average first-sale prices of the key species (e.g. herring and sprat) continue to rise, the operating costs are also increasing at the same time.

FINLAND: Overall **improved** performance. The Finnish fleet landed a total weight of 97 000 tonnes of seafood in 2021 with a value of EUR 27.5 million. The amount of income generated by the Finnish fleet in 2021 was EUR 37.5 million, with a slight increase of 7%. Income consisted of EUR 31.3 million in landings income and EUR 6.3 million in other income. Profitability of the national fleet has been steadily improving from 2015 and in 2021 the GVA was EUR 21 million. Gross profit of EUR 15 million resulted in positive net profit for the national fleet with EUR 2.8 million. When excluding the doubtful high value of other income, the fleet national fleet would actualise with around EUR 500 000 net profit.

FRANCE: Mixed economic performance. Revenue increased by 9%, amounting to EUR 1.27 billion; GVA estimated at EUR 641.5 million (+6%). But gross profit EUR 131 million (-2%) and negative net profit -EUR 13 million (compared to -EUR 32 million in 2020). For 2022 and 2023 economic performance is expected to remain mixed or deteriorate.

GERMANY**: Highly deteriorated;** economic performance operating at a net loss (-EUR 25.0 million). Revenues decreased to EUR 160 million (-14%), GVA was estimated at EUR 67.0 million +1%), gross profit EUR 11.7 million (-45%). Profitability sharply decreased in 2021, highly negative due to increased costs especially for energy, other variable cost and depreciation.

GREECE: Economic performance has **significantly deteriorated**. Revenue is estimated at EUR 283 million (-18%), GVA EUR 150 million (-27%), and gross profit EUR 42 million (-42%). The outcome for 2021 revealed a significant decline in all the economic indicators due to the COVID-19 pandemic, phytoplankton problems, and high inactivity. In 2022 and 2023, the economic indicators will further deteriorate the economic performance due to the increased fuel prices.

IRELAND: Economic performance has **deteriorated.** Revenue decreased by -3%, amounting to EUR 312.5 million; GVA EUR 177 million (-15%), gross profit EUR 86.5 million (-36%) and net profit decreased to EUR 62.5 million (-39%). In 2022, due to quota reductions as a result of the EU-UK Trade and Cooperation Agreement and high fuels prices, a deterioration of all economic indicators is expected.

ITALY: **Slight improvement performance**. Revenue increased by 9%, amounting to EUR 721 million; GVA EUR 444 million (+5%) and gross profit EUR 242 million (+15%). In 2022 and 2023, due to increase of energy costs, a deterioration of the economic performance is expected.

LATVIA**:** Overall deteriorated economic performance. Despite the deterioration, the fleet operated at a profit in 2021. Revenue decreased by 17%, amounting to EUR 18.1 million; GVA estimated at EUR 10.3 million (-22%), gross profit EUR 5.6 million (-32%) and net profit EUR 5.3 million (-32%).

LITHUANIA: In 2021 value of landings **decreased** by 2% to EUR 79.6 million. GVA was estimated EUR 30.2 million, gross profit at EUR 21.9 million and net profit EUR 17.2 million. Fishing industry employed 465 fishers corresponding to 383 FTE. In 2022 days at sea decreased by 12%, whereas weight of landings increased by 10%. Value of landings in 2022 improved by 10% to EUR 87.4 million.

MALTA: Overall fleet performance **recovered strongly** in 2021 against the decline recorded in 2020, with the majority of the segment showing positive signs in terms of both profitability and economic development trend. Gross profit increased by 73% (EUR 4.6 million), Revenue was estimated at EUR 15.2 million (+36%), GVA EUR 9.9 million (+63%), and net profit EUR 2.1 million (+262%).

NETHERLANDS**:** An overall **deteriorated** economic performance but still operating at a net profit of EUR 24 million in 2021 (-8% compared to 2020). The number of employees (as FTE) was 1 586 (+5% to 2020) but labour productivity decreased (-3%). The total revenue of the total Dutch fleet increased (+8%) but GVA increased by only 2% (to EUR 162 million). Higher costs for fuel and labour did increase total costs. For 2022 and 2023 all performance indicators are expected to be worse. Higher fuel costs because of high fuel prices will, amongst other things, further deteriorate economic results.

POLAND: **Insignificantly improved** economic performance operating at a gross profit of EUR 1.6 million (EUR 0.8 million in 2020). Revenues decreased to EUR 34.0 million (-2%), GVA was estimated at EUR 19.2 million (+1%), fishing effort increased (for SSCF mainly) by 49% days at sea. Profitability is expected to deteriorate in 2022 (lower revenues).

PORTUGAL**: Improved** economic performance. Revenue increased by 17%, amounting to EUR 416.9 million; GVA estimated at EUR 255.9 million (+19%), gross profit EUR 98 million (+35%) and net profit EUR 41 million (+208%).

ROMANIA: Overall **deteriorated** economic performance compared to 2020. The total income in 2021 was EUR 2.39 million, a decrease of 17% compared to 2020. Labour productivity (GVA/FTE) recorded an increase in 2021 (+18%) compared to 2020, but a decrease (-26%) compared to the period 2013-2020. In 2021, the total revenue, generated was EUR 1.25 million a decrease of 20% compared to 2020, and a decrease of 43% compared to the average for the period 2013-2020. GVA estimated at EUR 1.45 million (-18%), gross profit EUR 0.8 million (-20%) and net profit EUR 0.67 million (+11%).

SLOVENIA: Positive and with **improved** performance. Compared to 2020, revenues increased 20%, amounting to EUR 3.84 million; GVA estimated at EUR 3.2 million (+14%), gross profit EUR 2.8 million (+14%) and net profit EUR 2.8 million (+18%). The major driver for improved performance is higher value of other income in 2021.

SPAIN: **Improved** economic performance in 2021. GVA, gross profit and net profit were estimated at EUR 917 million (+7%), EUR 256 million (+28%) and EUR 170 million (+73%), respectively. Compared to 2020, revenue increased by 8% (the amount was EUR 1.746 billion) but the total of expenditures increased too by 5%.

SWEDEN: **Improved** economic performance in 2021. Compared to 2020 revenue increased by 1% amounting to EUR 122.3 million. GVA, gross profit and net profit all increased, amounting to EUR 65.2 million (+1%), EUR 39.9 million (+4%) and EUR 21.5 million (+22%). The most important driver for the economic performance in 2021 were lower costs across the board.

# EXPERT WORKING GROUP REPORT

# REPORT TO THE STECF

## EXPER WORKING GROUP OF THE 2023 ANNUAL ECONOMIC REPORT ON THE EU FISHING FLEET

## EWG-23-03 & 23-07

**Virtual meeting, 24-28 April &**
**Ispra (Italy) 12-16 June 2023**

# 1 INTRODUCTION

The 2023 Annual Economic Report (AER) on the European Union (EU) fishing fleet provides a comprehensive overview of the latest information available on the structure and economic performance of EU Member State fishing fleets.

This report covers the period 2008 to 2022 and includes information on the EU fleet's fishing capacity, effort, employment, landings, income and costs. The reference year is 2021 with nowcast performance estimates provided for 2022 and 2023, where possible. All monetary values have been adjusted for **inflation to 2020 constant prices**. The profitability and performance of the EU fishing fleet is also reported in terms of Gross Value Added (GVA), profits (gross and net), profit margins, resource productivity (labour and capital) and efficiency (fuel use, LPUE, etc.).

This publication includes:

1) A structural and economic overview of the EU fishing fleet for the reference year 2021, with trend analyses for the period 2013 to 2021, including estimates for 2022 and 2023;
2) A regional analysis of the EU fishing fleet by major sea basin: North Sea & Eastern Arctic, Baltic Sea, North Western Waters, Southern Western Waters, Mediterranean Sea, Black Sea, as well as for the EU Outermost Regions and long-distant fisheries (LDF) in Other Fishing Regions, i.e., RFMOs (e.g., NAFO, ICCAT, IOTC, CECAF);
3) A detailed structural and economic overview of each EU Member State fishing fleet, including qualitative economic performance assessments for the years 2008-2021 and nowcasts for 2022 and 2023.

**The 2023 AER supersedes all previous AERs. Comparisons across AER reports cannot not be made.**

- *Terms of Reference for STECF EWG-23-03 & 23-07*
- *Background and general objectives provided by the Commission*

The AER is the main source of economic and social data for scientific advice on the performance of the EU fishing fleet. It is also increasingly used by scientific bodies, national administrations and international institutions.

Given the increasing number of scientific uses of the AER and its growing complexity, there is a greater need to guarantee robust, precise data and analyses as well as streamline the content of the report.

The trimming down of the AER is intended to achieve a more balanced effort/product exercise, concentrating on the core, routine tasks of the AER on the one hand, while freeing up time and resources on the other so that EWG experts can focus on more applied economic analyses.

The 2023 AER will continue efforts made in previous years to streamline the contents while providing more in-depth look at the different factors driving the economic performance of the EU fleets. This will mainly be achieved through:

- dedicated data checking exercises, covering national and regional data sets: https://datacollection.jrc.ec.europa.eu/data-analysis;
- more concise and less descriptive chapters, supplemented by the JRC online data dissemination tool https://datacollection.jrc.ec.europa.eu/da/fleet/;
- a continued effort to provide more analytical outcomes, notably on drivers of profitability and trends.

The report should provide an in-depth look at the different factors affecting the economic performance of the EU fishing fleet with a special focus on the major drivers and issues affecting the sector (in particular, the impacts of the high prices for fuel, energy transition of the fleet and conservation measures). In addition to interpreting and explaining the quantitative results from the data collected and nowcasts, the report should contain qualitative information and analysis on the drivers and trends in performance and other aspects of policy relevance based largely on the scientists' expert knowledge. The main objectives of the report is to obtain high quality interpretation of all data outputs to ensure the usefulness of the report for DG MARE's policy development, Member States and the industry. The analysis will be done at the EU, regional, national and fleet segment levels.

The relevance and role of the following factors should be taken into account: changes in first sale prices, operational costs, in particular fuel prices and fuel efficiency; structural and marketing measures, market and trade determinants.

Special focus should be given to the energy transition of the EU fleets (recent trends in ratios of energy efficiency for the different fleet segments), economic benefits of MSY (such as analysis of causality between stocks exploited sustainably and the improvement in the performance of the fleets; status and recovery of important stocks and the implementation of other management measures and the role of the EMFAF support in terms of innovation and sustainability.

Given the social importance of this activity in many coastal communities, particular emphasis should be paid to the social aspects, including trends on employment, salaries and labour productivity and interconnections with other sectors of the blue economy, such as aquaculture, fish processing, ocean energy, coastal tourism, etc.

The main socio-economic indicators, where relevant, should also be put into context with homologous figures at the EU and national levels (e.g., national average salaries, employment, GVA, GDP, etc.).

All relevant documentation and data will be made available on the DCF_JRC or STECF websites or will be made available on a dedicated EWG FTP.

The final draft of the EWG report will be reviewed by the STECF during its summer plenary meeting in 2023.

- *Special requests / topics*

In light of the energy transition and the situation regarding fuel prices, experts are requested to provide an indication of the main socio-economic impacts of fuel prices on the national fishing fleets, such as, fishing activity (fishing effort and production), employment and income loss, etc. These indications should help to fine-tune the routine nowcasting exercise to estimate the performance of fishing fleets in 2023. The nowcasting will be done by region and fishing fleet category.

The experts are requested to produce a break-even revenue analysis in relation to fuel prices for all fleet segments, with enough data, of the EU fishing fleet with 2021 data for the . Short-term and long-term break-even revenue.

Fuel usage will be measured in two ways for all EU fishing fleets: 1) Fuel intensity, i.e. the quantity of fuel consumed per quantity of fish landed (litre per tonne), and, 2) Fuel efficiency, the ratio between fuel costs and revenue, expressed as a percentage (%).

- *Data transmission issues*

All data issues that may impact the quality and robustness of the analyses in the AER, and associated STECF reports (e.g. Balance between fleet capacity and fishing opportunities) will be reported in the Data Transmission Monitoring Tool (DTMT).

- *Outline of the 2023 AER*

STECF is requested to provide the Annual Economic Report on EU fishing fleets for 2023 including, the following sections:

**STECF Observations**

**Executive Summary**

**Expert Working Group Report**

1. **EU Fleet Overview**

This chapter will contain a section on each of the following topics:

- Fleet structure
- Fishing activity and production
- Employment and average salaries
- Economic performance
- Resource productivity and efficiency
- Main drivers and trends
- EU small-scale coastal fleet (key socio-economic indicators)
- EU distant-water and outermost region fleets (key socio-economic indicators)
- Assessment of the economic performance for 2019 and 2020 (nowcasts).

2. **Regional Analysis**

A specific chapter for each of the main fishing regions in which EU fleets operate, namely:

- North Sea & Eastern Arctic
- Baltic Sea
- North Western Waters
- South Western Waters
- Mediterranean Sea
- Black Sea
- EU Outermost Regions
- Other Fishing Regions (distinguishing where possible by RFMO, such as NAFO, ICCAT, IOTC, CECAF, etc.).

3. **National Chapters**

This section of the report will contain a specific chapter for each of the EU Member State fleets and shall include a brief section on the small-scale coastal and distant-water fleets (key socioeconomic indicators) where relevant, as well as the main drivers affecting profitability of the fishing fleets.

4. **Annexes**

To include sections on: Methodologies, data transmission issues, definitions, glossary, etc.

**Structure, workflow and outputs of the EWGs**

Following the 2023 EU-MAP call for economic data on the EU Fishing Fleet, the EWGs are requested to analyse and comment on the economic performance of the EU and national fishing fleets between 2008 and 2021, and where possible, 2022 and beyond.

Economic data series will be available up to 2021, with some provisional data up to 2022. As these data will be outdated by the time the report is published in July-August 2023, experts should provide indication

on the main factors affecting the indicators used for the "nowcast" estimations (i.e. for 2022 and 2023). This becomes paramount in the current economic situation with high fuel prices.

The first EWG will focus primarily on data quality and coverage. EWG 23-03 will produce final draft national chapters, the formulation of which constitutes an integral part of the data checking process.

The second meeting (EWG 23-07) will focus on developing applied economic analysis based on the final data submitted. In particular, experts will produce a synthesis on the trends and economic results of the EU fishing fleet by main fishing region and aggregate it at EU level and identify the main factors behind these trends.

The specific objectives and priorities for the two working groups are described below.

## EWG 23-03 (AER 1)

The first AER STECF EWG meeting should lead to a data quality check by the attending experts, a detailed account of any data transmission (DT) issues and the drafting of concise national chapters.

As a matter of priority, the EWG is requested to ensure that all unresolved data transmission (DT) issues and failures encountered prior to and during the EWG meeting are recorded on line via the Data Transmission Monitoring Tool (DTMT) available at: https://datacollection.jrc.ec.europa.eu/web/dcf/dtmt

Any outstanding data issues not covered by EWG 23-03 will be followed up by EWG 23-07. This may occur if MS submit revised data after EWG 23-03. That is, according to the data handling procedure, data submission may occur up to two weeks after the first meeting upon request of STECF or the JRC.

Guidance on how DT issues should be inserted in the DTMT, log-on credentials and access rights will be provided separately by the STECF Secretariat focal point for the EWG.

**Routine tasks AER 1**

- Experts should check national data (national totals and fleet segment) and preliminary disaggregated regional data prepared by the JRC while producing their national chapters.
- National chapters should include a section on the impacts of high fuel prices and energy transition aspects.
- Detected data issues should be corrected and resubmitted during the meeting as far as possible.
- All unresolved data issues should be flagged and where possible, revised, corrected and resubmitted before the final deadline, i.e., two weeks after the first meeting.
- Time and data permitting, estimates of economic performance for 2022 and 2023 should be carried out.

**National Chapters**

Each national chapter should include a short description of the national fleet, performance results by fishing activity and an in-depth look at the different factors driving economic performance.

National chapters should follow the following structure:

- Short description of the national fleet
  - Fleet structure
  - Fishing activity and production
  - Employment and average salaries
- Economic performance results for 2020 and recent trends
  - National fleet performance
  - Resource productivity and efficiency
- Drivers affecting the economic performance
  - Market and trade (including first sale prices)
  - Operating costs (external factors)

  - Status of key stocks, changes in TACs and quotas
  - Management instruments
  - Innovation and development (role of the EMFF/ EMFAF)
- Assessment of the economic performance for 2022 and 2023 (nowcasts)
  - Impact of the fuel prices/indicators on energy efficiency by fleet segments
- Economic performance by fishing activity
  - Small-scale coastal fleet
  - Distant-water and outermost region fleets (if applicable)
- Economic performance of selected fleet segments
- Data issues

**Outputs AER 1**

Specifically, the EWG should provide:

- Data endorsement by the attending experts
- All pending data transmission (DT) issues and failures recorded in the Data Transmission Monitoring Tool (DTMT)
- Final drafts of national chapters
- A concise summary of the national chapter (2-3 lines) containing results for the main economic performance indicators for 2021; how they compare to previous year's results (improvement/deterioration, etc.) and expected outcomes for 2022/2023.

**EWG 23-07 (AER 2)**

EWG 23-07 will continue from EWG 23-03 and produce final EU overview and regional chapters. The data checks performed for the regional analyses during the first meeting should free up time for deeper analyses.

Nowcasts for 2022 and 2023, where possible, will be completed and incorporated into the EU overview and national chapters.

**Routine tasks AER 2**

- Nowcasts for 2022 and 2023 should be updated and completed with the latest available information.
- National chapters should be finalised with nowcasts for 2022 and 2023.
- Regional analyses
- EU overview completed with main drivers and trends and nowcasts for 2022 and 2023 incorporated
- Any unresolved data transmission (DT) issues and failures should be reported in the DTMT.

**EU Overview**

This chapter will again have specific sections on the following fleet categories:

- EU small-scale coastal fleets: This section will investigate the drivers/factors behind the trends of the small-scale coastal fleets, whether there are regional differences and the possible reasons for these differences.

- EU distant water fleets: This section will include an overview of the employment, profitability and salaries for the EU distant water fleets distinguishing by main RFMO (e.g. NAFO, ICCAT, IOTC). It will also investigate the factors behind the trends and identified any data gaps.

- EU outermost region fleets: This section will include an overview of the employment, profitability and salaries across different outermost regions. It will also investigate the factors behind the trends and identified any data gaps.

- Links between economic growth and resource use: This section will examine key drivers behind trends in resource efficiency, in particular, landings per unit of effort (fish landed per fishing day or day at sea), fuel use and improvements in energy efficiency, labour and capital productivity.

**Outputs AER 2**

Specifically, by the end of the second meeting, the EWG should provide:

- Revised DTMT, containing only the unresolved/outstanding data issue;
- Final national chapters and summaries with nowcasts for 2022 and 2023;
- Final EU overview chapter with nowcasts for 2022 and 2023;
- Final Regional chapters;
- Outline of the current socio-economic impacts of fuel prices and trends in energy efficiency of the EU fleets;
- Draft Executive summary

- *Data sources and coverage*

The data used to compile all the various analyses contained within the report were collected under the data collection framework, cf. Council Regulation (EC) No 199/2008 of 25 February 2008 for the years 2008 -2016 (DCF) and cf. Council Regulation (EC) No 2017/1004 of 17 May 2017, for the years 2017-2023 (EU-MAP).

The 2023 call requested data for the years 2021 and 2022. Fleet capacity data were requested up to and including 2022, while fishing activity (effort and landings), employment and economic parameters were requested up to and including 2021. Additionally, income from landings and several effort and landings variables were requested for 2022 (non-mandatory) to allow for economic performance nowcasts to be estimated at fleet segment and national level for 2022 and 2023.

This report includes data reported by national totals and by fleet segments (a combination of the main fishing technology used and vessel length group operating predominately in one supra-region). The data analysed covers transversal (capacity, effort and landings) and economic data (income, costs, employment, enterprises, capital value and investment).

For a full list of variables and reference years requested under the 2023 call for economic data on the EU fishing fleet see Annex 1 - AER Report Methodology in the 2023 AER Annex report.

In terms of the completeness of the Member States data submissions, most countries submitted the majority of parameters requested under the call. In many cases missing data relates to fleet segments with low vessel numbers for which data may be sensitive or hard to obtain (logbooks are compulsory for vessels over 10 metres only). In terms of data quality, inevitably some 'abnormal' estimates for various parameters were detected by the JRC or experts and in many cases rectified by the Member State. However, some coverage and quality issues remain outstanding:

- Greece provided only partial data for the years 2014-2017. Due to the incomplete coverage of the fishing activity and socio-economic data, Greece can only be included in the analyses for 2018, 2019, 2020 and 2021 years and has been excluded from all aggregated time series analyses over the period 2013-2021. The analysis of European Small Scale Coastal Fleet includes Greek data and therefore, the time series analysis has been restricted to the period 2018-2021.
- Due to the reduced number of vessels and/or enterprises, several Member States, including Italy, Germany and some of the Baltic States, do not deliver sensitive data on their distant water fleets, making coverage at the EU and regional levels incomplete.
- United Kingdom fleet segments have not been included in the analysis.
- As a Member State that entered the EU in 2013, Croatia is only required to provide data from 2012 onwards.
- Incomplete time series data due to either the non-submission or submission of questionable data, make trend analysis over the entire period 2008-2021 at the EU and regional levels impossible without excluding the Member States fleets that are incomplete.

See Section 5 – Data Coverage and Quality for more information on data transmission issues.

# 2 EU FLEET OVERVIEW

- *Background*

The EU overview chapter provides a summary of the structure and economic performance of the EU fishing fleet in 2021 and highlights some key trends over the period 2013-2021, based on data submitted by Member States under the 2023 fleet economic data call. **All monetary values have been adjusted for inflation to 2020 constant prices and therefore, data prior and subsequent to 2021 may not necessarily equate to the data submitted by Member States**.

Due to incomplete data submissions from several Member States, it is not possible to do a trend analyses on the economic performance for the EU fleet over the period analysed. Croatia officially joined the EU in 2013 and, hence, only required to provide DCF data from the year 2012 onwards. As Greece provided only partial landings, effort and economic data for the years 2014 to 2017, it is excluded from the EU overview in those years, but included for 2018 and forward. The United Kingdom officially left the EU at the end of 2020, the British data has been excluded from the analyses. More details on data availability are provided in the chapter on quality and checking procedures (Section 5).

For analyses at Member State level, national level datasets are used, whereas fleet segment level data are used to compile results by main type of fishing activity (i.e. small-scale coastal fleet -SSCF-, large-scale fleets -LSF- and distant-water fleets -DWF-). Results for 2021 at the EU level include all Member States fleets in 2021, while results by fishing activity may exclude some fleet segments with insufficient data.

While in theory, both the national and fleet segment datasets submitted by each Member State should be internally consistent, this is not always the case. Discrepancies can arise due to missing or incomplete datasets for fleet segments. In some cases, such discrepancies occur due to statistical confidentiality issues. To avoid this, Member States may combine such fleet segments into "clusters" and provide data at a more aggregated level. In other cases, statistically confidential data are not provided at the fleet segment level, but are included at the national total level, resulting in inconsistencies between the two datasets.

Normalised trends in indicator values at the EU level are presented relative to 2013 (based on 2013=100) and unless otherwise stated, exclude Greece and should not be considered as a complete EU overview.

To provide the most reliable, complete and up-to-date information as possible, this chapter includes:

A snapshot of the EU fishing fleet in 2021, by Member State and main type of fishing activity, i.e. SSCF, LSF and DWF (including data summary tables);

A section with nowcasts for 2022 and 2023 on the economic performance of EU fleets where possible (based on fleet segment data);

A description of the main drivers and trends that may have contributed to the economic performance of the EU fleet over recent years;

The three main types of fishing activity used in the AER are defined as:

**Small-scale coastal fleet (SSCF)** - includes all vessels under 12 metres using static gears. According to the DCF gear definitions these include: 'drift and/or fixed netters', 'pots and/or traps', 'hooks', 'passive gears only', 'other passive gears', 'polyvalent passive gears only', 'active and passive gears'.

**Large-scale fleet (LSF)** - segment includes all vessels over 12 metres using static gears and all vessels using towed gears operating predominately in EU waters. According to the DCF gear definitions these include: 'dredgers', 'demersal trawlers and/or demersal seiners', 'other active gears', 'polyvalent active gears only', 'purse seiners', 'beam trawlers', 'pelagic trawlers'.

**Distant-water fleet (DWF)** - includes EU registered vessels over 24 metres operating in 'other fishing regions' including EU outermost regions.

As a special request for this AER 2023, specific analysis has been carried out, to estimate the fuel intensity, fuel efficiency, and the break even prices for fuel, at fleet segment level.

- *At a glance*

Due to incomplete data from Member States, the EU Fleet Overview (Section 2) and Regional Analysis (Section 3) omit Greece when comparing trends in a number of indicators. This omission is always stated in the text and figures. In addition, to ensure confidentiality, data on some fleet segments have not been provided by some Member States and these too have been omitted. The reference year is 2021 and all monetary values are adjusted for inflation; constant prices (2020).

- *Fleet Capacity*

In 2021, the EU fishing fleet numbered **71 628 vessels** with a combined gross tonnage of 1.31 million and engine power of 5.24 million kW.

There were 17 415 inactive vessels (24% of the total number of vessels), bringing the number of **active vessels to 54 213**.

Of the active vessels, 76% were SSCF vessels, 23% LSF and less than 0.5% DWF.

While the total number of vessels in the EU fishing fleet continues to decline with the total fleet declining by 2.9 % in 2021, other indicators of fleet capacity such as engine power and gross tonnage remain stable compared to 2020.

- *Employment and wages*

The EU fleet directly employed circa **121 917 fishers**, corresponding to 81 747 FTE. Of the total employed, at least 35 199 were estimated as being unpaid labour[4].

Average annual wage (including crew wages and unpaid labour) per FTE was estimated at EUR 26 387, ranging from EUR 122 104 for Belgian fishers to EUR 2 289 for fishers in Cyprus.

- *Effort and landings*

The EU fleet spent over 5.5 million days-at-sea (DaS) and consumed almost 1.8 billion litres of fuel.

Landings reported amounted to 3.57 million tonnes of seafood (a decrease of 9.5% compared to 2020), amounting to a value of EUR 6 billion (an **increase** of 4.0% compared to 2020).

Landings per day at sea (LPUE), for the EU fleet as a whole, was estimated at around 0.64 tonnes per day (a **decrease** compared to 2020).

- *Economic performance*

Revenue (gross value of landings plus other income) amounted to almost EUR 6.2 billion representing a 5% increase on 2020 figures. Other income represented 3.4% of this revenue.

GVA, gross profit and net profit (all excl. subsidies and fishing rights) generated by the fleet was EUR 3.3 billion, EUR 1.2 billion and EUR 0.5 billion, respectively. GVA and gros profits remained stable in 2021 compared to 2020. However, net profit increased by 23%.

GVA to revenue was estimated at 53.7% (55.9% in 2020); gross profit margin at 19.1% (down marginally from 20.2% in 2020), and 9.1% of the revenue was retained as net profit (an increase from 7.8% in 2020). These figures indicate that the economic performance of the total EU fleet is in a marginally improved position compared to 2020, for gross values.

Overall, the **EU fishing fleet is profitable and net performance is improving** when compared to 2020. Evaluating economic performance at the member state level, four out of the 22 Member States evaluated, generated net losses, namely: Cyprus, Greece, Germany and France (five in 2020 – Cyprus, Estonia, France, Finland and Germany).

At Member state level, none suffered gross losses in 2021.

[4] Unpaid labour figures exclude Romania and France.

Estonia and Finland moved from a net profit loss position in 2020 to a profit-making position in 2021. In contrast, Greece reported positive net profit in 2020 but a profit loss in 2021.

The physical value of capital of the EU fishing fleet was estimated to be EUR 5.4 billion (-3.4% compared to 2020) and in-year investments amounted to over EUR 662 million (+10%).

- *EU Small-scale coastal fleet (SSCF)*

The EU SSCF comprised 41 267 vessels covering up to 76% of the number of active vessels, but only 7% of the gross tonnage and 27% of the engine power.

Engaged crew amounted to 59 948 fishers or 33 052 FTE, 49% and 40% of the EU total, respectively.

Contributed 7.1% of the weight landed (254 957 tonnes) and 16% of the landed value (EUR 949 million).

Generated EUR 687 million in GVA (an **increase** of 13% compared to 2020), EUR 227 million in gross profit (+47%) and EUR 123 million in net profit (+198%).

In relative terms, this amounted to a GVA to revenue of 65.2% (**up** from 64.7% in 2020), a gross profit margin of 21.6% (**up** from 16.4% in 2020) and a net profit margin of 11.8% (**up** from 4.4% in 2020).

- *EU Large-scale fleet (LSF)*

Comprised 12 704 vessels (76.1% of the EU active fleet) and covered 65% of the gross tonnage and 51% of the engine power of the EU total fishing fleet, respectively.

Engaged crew amounted to 55 217 fishers or 41 903 FTE, 45% and 51% of the EU total fishing fleet, respectively.

Contributed 74% to landed weight (2.6 million tonnes) and 67% to landed value (EUR 4.0 billion).

Generated EUR 2.2 billion in GVA (**up** by 0.4% compared to 2020), EUR 789 million (-10%) in gross profit and EUR 343 million in net profit (-12.5%)

In relative terms, this amounted to a 54% GVA to revenue (**down** from 58% in 2020), 19% gross profit margin (**down** from 22.8%) and 8.3% net profit margin (**down** from 10.2%).

- *EU Distant-water fleet (DWF)*

Comprised 0.45% of the EU active fleet (242 vessels) and covered 19.1% of the total gross tonnage and 6.5% of the engine power of the EU total fishing fleet, respectively.

Employed 6 752 fishers or 6 792 FTEs. 5.5% and 8.3% of the EU fishing fleet total, respectively.

Contributed 19% to landings in weight and 17% in value of the EU fishing fleet total.

Generated EUR 398 million in GVA (an increase of by 27%, compared to 2020), EUR 168 million in gross profit (an **increase** of 85%) and EUR 95 million in net profit (an **increase** from negative values in 2020).

In relative terms, this amounted to a 39% GVA to revenue (**up** from 37% in 2020), 16.6% gross profit margin (**up** from 10.6% in 2020) and a 9.4% net profit margin (**up** from -1%).

Table 2.1 below provides a summary of the main results for the EU-27 fleet (all figures exclude Greece) for the period 2008-2021 and nowcast results for 2022 and 2023.

Table 2.2 below provides a summary of the main results for the EU-27 fleet, including Greece in 2018 and forward.

Table 2.3 to Table 2.5 provide a summary of the main results for the EU-27 fleet by main fishing activity (SSCF, LSF and DWF) (all figures exclude Greece) for the period 2008-2021 and nowcast results for 2022 and 2023.

**Table 2.1** Main results for the EU-27 fleet (excl. Greece) for 2013-2021 and nowcasts for 2022 and 2023.

| EU27 | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | %Δ 2021-2020 | %Δ 2021-avg 2013-2020 | %Δ 2021-2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of vessels | thousand | 61.2 | 60.6 | 62.9 | 62.2 | 62.2 | 60.9 | 60.4 | 59.8 | 59.5 | 58.8 | 59.0 | -0.5% | -2.9% | -2.7% |
| Total vessel tonnage | thousand GT | 1 369 | 1 377 | 1341 | 1311 | 1294 | 1 285 | 1 269 | 1 238 | 1 251 | 1130 | | 1.0% | -4.6% | -8.6% |
| Total vessel power | thousand kW | 5 241 | 5 225 | 5216 | 5117 | 5072 | 4 973 | 4 983 | 4 869 | 4 900 | 4359 | | 0.6% | -3.7% | -6.5% |
| Engaged crew | thousand | 118 | 118 | 115 | 116 | 118 | 114 | 111 | 106 | 106 | 104 | 103 | 0.0% | -7.8% | -10.9% |
| FTE national | thousand | 84 | 84 | 85 | 85 | 83 | 80 | 77 | 67 | 69 | 68 | 67 | 3.2% | -14.4% | -18.2% |
| Days at sea | thousand | 4 749 | 4 645 | 4577 | 4603 | 4478 | 4 319 | 4 183 | 3 685 | 3 933 | | | 6.8% | -10.7% | -17.2% |
| Fishing days | thousand | 4 667 | 4 607 | 4513 | 4616 | 4347 | 4 297 | 4 120 | 3 638 | 3 862 | | | 6.2% | -11.2% | -17.2% |
| Energy consumption | million litre | 1 992 | 1 931 | 2044 | 1991 | 1967 | 1 937 | 1 938 | 1 779 | 1 744 | 1652 | 1 639 | -2.0% | -10.5% | -12.5% |
| Live weight of landings | thousand tonn | 4 099 | 4 315 | 4358 | 4214 | 4545 | 4 413 | 3 974 | 3 883 | 3 515 | 3413 | 3 384 | -9.5% | -16.8% | -14.3% |
| Value of landings | million EUR | 6 120 | 6 232 | 6330 | 6933 | 6822 | 6 609 | 6 143 | 5 418 | 5 731 | 5482 | 5 287 | 5.8% | -9.4% | -6.4% |
| Gross value of landings | million EUR | 5 914 | 6 054 | 6351 | 6773 | 6686 | 6 520 | 6 062 | 5 369 | 5 708 | 5374 | 5 166 | 6.3% | -8.2% | -3.5% |
| Other income | million EUR | 100 | 113 | 105 | 103 | 147 | 140 | 169 | 197 | 199 | 181 | 170 | 0.9% | 48.2% | 98.0% |
| Operating subsidies | million EUR | 59 | 69 | 58 | 42 | 55 | 50 | 47 | 114 | 66 | | | -41.7% | 7.7% | 12.0% |
| Income from leasing out quota | million EUR | 36 | 35 | 35 | 29 | 36 | 34 | 20 | 33 | 23 | - | | -30.7% | -29.0% | -36.8% |
| Personnel costs | million EUR | 1 598 | 1 668 | 1852 | 1973 | 2022 | 1 958 | 1 870 | 1 764 | 1 820 | 1732 | 1 594 | 3.2% | -1.0% | 13.9% |
| Value of unpaid labour | million EUR | 244 | 244 | 231 | 252 | 256 | 245 | 213 | 197 | 215 | 206 | 192 | 8.9% | -8.8% | -12.1% |
| Energy costs | million EUR | 1 312 | 1 183 | 1014 | 842 | 906 | 1 015 | 985 | 689 | 883 | 1481 | 980 | 28.1% | -11.1% | -32.7% |
| Repair & maintenance costs | million EUR | 469 | 487 | 544 | 590 | 570 | 595 | 568 | 498 | 527 | 482 | 452 | 5.9% | -2.4% | 12.4% |
| Other variable costs | million EUR | 804 | 809 | 897 | 924 | 868 | 836 | 863 | 744 | 777 | 704 | 678 | 4.5% | -7.8% | -3.3% |
| Other non-variable costs | million EUR | 453 | 468 | 496 | 509 | 517 | 538 | 531 | 515 | 544 | 499 | 468 | 5.5% | 8.0% | 20.1% |
| Consumption of fixed capital | million EUR | 682 | 669 | 745 | 704 | 766 | 769 | 727 | 748 | 745 | 689 | 645 | -0.3% | 2.6% | 9.2% |
| Lease/rental payments for quota | million EUR | 35 | 50 | 64 | 58 | 45 | 41 | 40 | 42 | 46 | | | 10.6% | -0.5% | 33.3% |
| Opportunity cost of capital | million EUR | 120 | 107 | 77 | 60 | 6 | - 7 | - 27 | - 4 | - 109 | - 284 | - 212 | -2489.3% | -362.8% | -190.7% |
| Value of physical capital | million EUR | 4 857 | 4 973 | 5249 | 5130 | 5052 | 4 999 | 5 172 | 5 404 | 5 226 | 4806 | 4 467 | -3.3% | 2.4% | 7.6% |
| Value of quota and other fishing rights | million EUR | 1 207 | 1 539 | 1711 | 2306 | 2934 | 2 613 | 2 252 | 2 441 | 1 790 | | | -26.7% | -15.8% | 48.3% |
| Investments | million EUR | 376 | 330 | 444 | 418 | 445 | 350 | 412 | 566 | 635 | | | 12.0% | 51.9% | 68.9% |
| Gross Value Added | million EUR | 2 977 | 3 219 | 3504 | 4011 | 3973 | 3 675 | 3 284 | 3 120 | 3 176 | 2389 | 2 758 | 1.8% | -8.5% | 6.7% |
| Net Value Added | million EUR | 2 175 | 2 443 | 2682 | 3247 | 3201 | 2 913 | 2 584 | 2 376 | 2 540 | 1984 | 2 324 | 6.9% | -6.0% | 16.8% |
| Gross profit | million EUR | 1 135 | 1 307 | 1421 | 1786 | 1694 | 1 473 | 1 202 | 1 159 | 1 142 | 451 | 972 | -1.4% | -18.3% | 0.6% |
| Net profit | million EUR | 332 | 531 | 599 | 1022 | 922 | 711 | 501 | 415 | 506 | 46 | 539 | 21.8% | -19.6% | 52.3% |
| GVA to revenue | % | 49.5 | 52.2 | 54.3 | 58.3 | 58.1 | 55.2 | 52.7 | 56.1 | 53.8 | 43.0 | 51.7 | -4.1% | -1.4% | 8.6% |
| Gross profit margin | % | 18.9 | 21.2 | 22.0 | 26.0 | 24.8 | 22.1 | 19.3 | 20.8 | 19.3 | 8.1 | 18.2 | -7.1% | -11.6% | 2.5% |
| Net profit margin | % | 5.5 | 8.6 | 9.3 | 14.9 | 13.5 | 10.7 | 8.0 | 7.5 | 8.6 | 0.8 | 10.1 | 14.8% | -12.1% | 55.1% |
| Average wage per FTE | thousand EUR | 21.8 | 22.7 | 24.5 | 26.3 | 27.4 | 27.6 | 27.1 | 29.3 | 29.4 | 28.6 | 26.7 | 0.5% | 14.0% | 34.9% |
| GVA per FTE (labour productivity) | thousand EUR | 35.3 | 38.1 | 41.2 | 47.3 | 47.8 | 46.0 | 42.7 | 46.6 | 46.0 | 35.3 | 41.3 | -1.3% | 6.6% | 30.4% |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values adjusted for inflation; constant prices (2020). Nowcast for 2022 and 2023.

**Table 2.2** Main results for the EU-27 fleet, including Greece in 2018 and forward, and nowcasts for 2022 and 2023.

| EU27 | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | %Δ 2021-2020 | %Δ 2021-avg 2013-2020 | %Δ 2021-2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of vessels | thousand | 61.2 | 60.6 | 62.9 | 62.2 | 62.2 | 75.2 | 74.5 | 73.8 | 71.8 | 70.6 | 68.2 | -2.7% | 7.8% | 17.3% |
| Total vessel tonnage | thousand GT | 1 369 | 1 377 | 1 341 | 1 311 | 1 294 | 1 352 | 1 336 | 1 304 | 1 313 | 1 191 | | 0.7% | -1.7% | -4.1% |
| Total vessel power | thousand kW | 5 241 | 5 225 | 5 216 | 5 117 | 5 072 | 5 372 | 5 379 | 5 260 | 5 261 | 4 713 | | 0.0% | 0.5% | 0.4% |
| Engaged crew | thousand | 118 | 118 | 115 | 116 | 118 | 135 | 130 | 124 | 122 | 123 | 118 | -1.9% | 0.1% | 3.0% |
| FTE national | thousand | 84 | 84 | 85 | 85 | 83 | 98 | 93 | 81 | 82 | 80 | 77 | 0.3% | -5.8% | -3.2% |
| Days at sea | thousand | 4 749 | 4 645 | 4 577 | 4 603 | 4 478 | 6 151 | 6 046 | 5 310 | 5 509 | | | 3.7% | 8.7% | 16.0% |
| Fishing days | thousand | 4 667 | 4 607 | 4 513 | 4 616 | 4 347 | 6 129 | 5 983 | 5 263 | 5 438 | | | 3.3% | 8.4% | 16.5% |
| Energy consumption | million litre | 1 992 | 1 931 | 2 044 | 1 991 | 1 967 | 2 027 | 2 022 | 1 858 | 1 813 | 1 721 | 1 698 | -2.4% | -8.4% | -9.0% |
| Live weight of landings | thousand tonn | 4 099 | 4 315 | 4 358 | 4 214 | 4 545 | 4 481 | 4 045 | 3 943 | 3 567 | 3 463 | 3 427 | -9.5% | -16.1% | -13.0% |
| Value of landings | million EUR | 6 120 | 6 232 | 6 330 | 6 933 | 6 822 | 7 040 | 6 572 | 5 766 | 5 998 | 5 755 | 5 507 | 4.0% | -7.4% | -2.0% |
| Gross value of landings | million EUR | 5 914 | 6 054 | 6 351 | 6 773 | 6 686 | 6 965 | 6 492 | 5 716 | 5 986 | 5 627 | 5 369 | 4.7% | -6.0% | 1.2% |
| Other income | million EUR | 100 | 113 | 105 | 103 | 147 | 140 | 170 | 197 | 204 | 186 | 174 | 3.7% | 52.2% | 103.4% |
| Operating subsidies | million EUR | 59 | 69 | 58 | 42 | 55 | 51 | 48 | 148 | 88 | | | -40.4% | 33.5% | 49.3% |
| Income from leasing out quota | million EUR | 36 | 35 | 35 | 29 | 36 | 34 | 20 | 33 | 23 | - | | -30.7% | -29.0% | -36.8% |
| Personnel costs | million EUR | 1 598 | 1 668 | 1 852 | 1 973 | 2 022 | 2 027 | 1 928 | 1 822 | 1 865 | 1 775 | 1 627 | 2.4% | 0.2% | 16.7% |
| Value of unpaid labour | million EUR | 244 | 244 | 231 | 252 | 256 | 339 | 302 | 274 | 277 | 264 | 235 | 1.1% | 3.3% | 13.3% |
| Energy costs | million EUR | 1 312 | 1 183 | 1 014 | 842 | 906 | 1 085 | 1 049 | 740 | 935 | 1 587 | 1 040 | 26.3% | -8.0% | -28.7% |
| Repair & maintenance costs | million EUR | 469 | 487 | 544 | 590 | 570 | 620 | 593 | 520 | 548 | 501 | 468 | 5.3% | -0.2% | 16.9% |
| Other variable costs | million EUR | 804 | 809 | 897 | 924 | 868 | 899 | 926 | 804 | 829 | 752 | 719 | 3.2% | -4.3% | 3.2% |
| Other non-variable costs | million EUR | 453 | 468 | 496 | 509 | 517 | 545 | 539 | 525 | 552 | 506 | 475 | 5.2% | 9.0% | 21.9% |
| Consumption of fixed capital | million EUR | 682 | 669 | 745 | 704 | 766 | 809 | 768 | 794 | 787 | 731 | 676 | -0.8% | 6.1% | 15.4% |
| Lease/rental payments for quota | million EUR | 35 | 50 | 64 | 58 | 45 | 41 | 40 | 42 | 46 | | | 10.6% | -0.5% | 33.3% |
| Opportunity cost of capital | million EUR | 120 | 107 | 77 | 60 | 6 | - 2 | - 23 | 0 | - 109 | - 293 | - 214 | | -351.7% | -190.3% |
| Value of physical capital | million EUR | 4 857 | 4 973 | 5 249 | 5 130 | 5 052 | 5 152 | 5 330 | 5 583 | 5 392 | 4 972 | 4 590 | -3.4% | 4.4% | 11.0% |
| Value of quota and other fishing rights | million EUR | 1 207 | 1 539 | 1 711 | 2 306 | 2 934 | 2 613 | 2 252 | 2 441 | 1 790 | | | -26.7% | -15.8% | 48.3% |
| Investments | million EUR | 376 | 330 | 444 | 418 | 445 | 377 | 443 | 600 | 662 | | | 10.3% | 54.3% | 76.1% |
| Gross Value Added | million EUR | 2 977 | 3 219 | 3 504 | 4 011 | 3 973 | 3 955 | 3 554 | 3 325 | 3 327 | 2 467 | 2 841 | 0.0% | -6.7% | 11.7% |
| Net Value Added | million EUR | 2 175 | 2 443 | 2 682 | 3 247 | 3 201 | 3 149 | 2 809 | 2 531 | 2 648 | 2 029 | 2 379 | 4.6% | -4.7% | 21.8% |
| Gross profit | million EUR | 1 135 | 1 307 | 1 421 | 1 786 | 1 694 | 1 589 | 1 324 | 1 229 | 1 184 | 428 | 980 | -3.7% | -17.5% | 4.4% |
| Net profit | million EUR | 332 | 531 | 599 | 1 022 | 922 | 783 | 579 | 435 | 506 | - 10 | 517 | 16.3% | -22.2% | 52.2% |
| GVA to revenue | % | 49.5 | 52.2 | 54.3 | 58.3 | 58.1 | 55.7 | 53.4 | 56.2 | 53.7 | 42.4 | 51.3 | -4.4% | -1.8% | 8.6% |
| Gross profit margin | % | 18.9 | 21.2 | 22.0 | 26.0 | 24.8 | 22.4 | 19.9 | 20.8 | 19.1 | 7.4 | 17.7 | -8.0% | -13.0% | 1.4% |
| Net profit margin | % | 5.5 | 8.6 | 9.3 | 14.9 | 13.5 | 11.0 | 8.7 | 7.4 | 8.2 | - 0.2 | 9.3 | 11.1% | -17.1% | 47.9% |
| Average wage per FTE | thousand EUR | 21.8 | 22.7 | 24.5 | 26.3 | 27.4 | 24.1 | 24.0 | 25.7 | 26.2 | 25.4 | 24.2 | 1.9% | 6.7% | 20.1% |
| GVA per FTE (labour productivity) | thousand EUR | 35.3 | 38.1 | 41.2 | 47.3 | 47.8 | 40.3 | 38.2 | 40.8 | 40.7 | 30.7 | 36.9 | -0.3% | -1.0% | 15.4% |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values adjusted for inflation; constant prices (2020). Nowcast for 2022 and 2023.

**Table 2.3** Main results for the EU-27 Small-scale coastal fleets (excl. Greece) for 2013-2021 and nowcasts for 2022 and 2023.

| EU27 SSCF (excluding Greece) | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | %Δ 2021-2020 | %Δ 2021-avg 2013-2020 | %Δ 2021-2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of vessels | thousand | 31.5 | 31.1 | 30.9 | 33.1 | 33.4 | 32.7 | 32.1 | 31.8 | 31.9 | 32.3 | 31.5 | 1.0% | 0.3% | 1.5% |
| Total vessel tonnage | thousand GT | 82.6 | 82.0 | 81.0 | 82.7 | 82.6 | 79.8 | 78.7 | 77.4 | 77.8 | 69.5 | | -10.7% | -13.4% | -5.7% |
| Total vessel power | thousand kW | 1 336.9 | 1 321.4 | 1 310.7 | 1 313.5 | 1 313.2 | 1 285.6 | 1 268.0 | 1 250.7 | 1 273.3 | 1 201.8 | | -5.6% | -7.0% | -4.8% |
| Engaged crew | thousand | 54.5 | 52.0 | 51.0 | 53.4 | 54.2 | 51.7 | 48.4 | 47.6 | 47.4 | 47.2 | 46.2 | -0.4% | -6.9% | -13.0% |
| FTE national | thousand | 30.8 | 28.2 | 28.0 | 28.0 | 26.8 | 25.8 | 22.8 | 19.8 | 22.4 | 22.0 | 21.6 | -2.0% | -12.9% | -27.3% |
| Days at sea | thousand | 2 739 | 2 655 | 2 643 | 2 651 | 2 543 | 2 494 | 2 376 | 2 122 | 2 406 | | | -100.0% | -100.0% | -12.2% |
| Fishing days | thousand | 2 796 | 2 743 | 2 705 | 2 782 | 2 529 | 2 544 | 2 412 | 2 157 | 2 404 | | | -100.0% | -100.0% | -14.0% |
| Energy consumption | million litre | 165 | 119 | 128 | 130 | 123 | 121 | 120 | 108 | 119 | 118 | 116 | -0.7% | -2.2% | -27.8% |
| Live weight of landings | thousand tonn | 254 | 253 | 243 | 227 | 224 | 206 | 197 | 213 | 229 | 222 | 224 | -3.1% | -0.9% | -9.6% |
| Value of landings | million EUR | 716 | 803 | 772 | 875 | 853 | 849 | 782 | 733 | 827 | 794 | 760 | -4.0% | -2.2% | 15.5% |
| Gross value of landings | million EUR | 821 | 795 | 864 | 921 | 900 | 882 | 817 | 756 | 859 | 816 | 783 | -5.0% | -3.9% | 4.6% |
| Other income | million EUR | 25 | 27 | 19 | 19 | 40 | 38 | 45 | 51 | 52 | 51 | 46 | -3.4% | 39.2% | 109.8% |
| Operating subsidies | million EUR | 13.0 | 10.4 | 11.4 | 4.3 | 16.2 | 14.4 | 19.5 | 40.3 | 14.5 | | | | | 11.8% |
| Income from leasing out quota | million EUR | 1.3 | 1.2 | 2.3 | 1.2 | 5.2 | 1.2 | 1.1 | 1.6 | 1.3 | - | | -100.0% | -100.0% | -1.3% |
| Personnel costs | million EUR | 241 | 245 | 255 | 281 | 282 | 267 | 279 | 267 | 286 | 274 | 249 | -4.0% | 1.5% | 18.4% |
| Value of unpaid labour | million EUR | 140 | 135 | 135 | 143 | 146 | 130 | 95 | 89 | 98 | 100 | 90 | 1.9% | -17.3% | -29.9% |
| Energy costs | million EUR | 123 | 88 | 79 | 74 | 75 | 77 | 71 | 58 | 81 | 140 | 92 | 73.7% | 85.8% | -34.6% |
| Repair & maintenance costs | million EUR | 54 | 50 | 52 | 59 | 55 | 52 | 51 | 49 | 56 | 57 | 52 | 0.9% | 7.6% | 3.9% |
| Other variable costs | million EUR | 100 | 79 | 87 | 88 | 84 | 90 | 91 | 77 | 88 | 84 | 78 | -4.7% | -2.1% | -12.2% |
| Other non-variable costs | million EUR | 68 | 69 | 69 | 73 | 76 | 72 | 70 | 72 | 74 | 72 | 65 | -3.2% | -0.2% | 9.6% |
| Consumption of fixed capital | million EUR | 98 | 97 | 97 | 93 | 98 | 95 | 88 | 94 | 90 | 85 | 79 | -5.2% | -9.1% | -8.0% |
| Lease/rental payments for quota | million EUR | 1.4 | 1.2 | 1.6 | 1.4 | 1.4 | 1.1 | 0.8 | 0.9 | 1.0 | | | -100.0% | -100.0% | -32.6% |
| Opportunity cost of capital | million EUR | 17.6 | 15.3 | 11.7 | 9.7 | 3.9 | 1.6 | -1.1 | 0.3 | -10.6 | -30.6 | -26.7 | -189.7% | -896.3% | -160.2% |
| Value of physical capital | million EUR | 637 | 614 | 631 | 632 | 624 | 614 | 638 | 610 | 578 | 558 | 517 | -3.3% | -9.6% | -9.4% |
| Value of quota and other fishing rights | million EUR | 87 | 74 | 61 | 88 | 117 | 94 | 126 | 131 | 65 | | | -100.0% | -100.0% | -24.9% |
| Investments | million EUR | 71 | 51 | 53 | 34 | 20 | 36 | 9 | 53 | 46 | | | -100.0% | -100.0% | -34.3% |
| Gross Value Added | million EUR | 501 | 536 | 596 | 646 | 650 | 628 | 578 | 542 | 612 | 514 | 541 | -16.0% | -14.1% | 22.3% |
| Net Value Added | million EUR | 385 | 424 | 487 | 542 | 547 | 532 | 492 | 450 | 532 | 459 | 489 | -13.7% | -8.3% | 38.3% |
| Gross profit | million EUR | 115 | 153 | 206 | 222 | 222 | 231 | 205 | 188 | 228 | 140 | 202 | -38.7% | -32.5% | 97.8% |
| Net profit | million EUR | -3 | 37 | 96 | 111 | 109 | 115 | 106 | 85 | 143 | 81 | 145 | -43.4% | -19.4% | 4556.6% |
| GVA to revenue | % | 59.2 | 65.3 | 67.4 | 68.7 | 69.1 | 68.3 | 67.1 | 68.0 | 67.2 | 59.3 | 65.3 | -11.7% | -12.3% | 13.5% |
| Gross profit margin | % | 13.7 | 18.7 | 23.4 | 23.6 | 23.6 | 25.2 | 23.7 | 23.5 | 25.0 | 16.1 | 24.4 | -35.6% | -31.0% | 82.4% |
| Net profit margin | % | -0.4 | 4.6 | 11.1 | 12.9 | 12.0 | 13.2 | 12.8 | 10.8 | 15.9 | 9.5 | 17.7 | -40.6% | -18.8% | 4223.1% |
| Average wage per FTE | thousand EUR | 12.5 | 13.6 | 13.9 | 15.1 | 16.0 | 15.4 | 16.4 | 18.1 | 17.1 | 17.0 | 15.7 | -0.6% | 8.5% | 36.8% |
| GVA per FTE (labour productivity) | thousand EUR | 16.3 | 19.1 | 21.3 | 23.0 | 24.3 | 24.4 | 25.4 | 28.1 | 27.3 | 23.4 | 25.0 | -14.3% | -3.0% | 67.5% |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values adjusted for inflation; constant prices (2020). Nowcast for 2022 and 2023.

**Table 2.4** Main results for the EU-27 Large-scale fleets (excl. Greece) for 2013-2021 and nowcasts for 2022 and 2023.

| EU27 SSCF (excluding Greece) | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | %Δ2021-2020 | %Δ2021-avg 2013-2020 | %Δ2021-2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of vessels | thousand | 14.1 | 14.1 | 13.8 | 13.7 | 13.7 | 13.1 | 13.3 | 12.5 | 12.1 | 12.1 | 12.0 | -3.2% | -10.9% | -14.7% |
| Total vessel tonnage | thousand GT | 893.4 | 878.9 | 851.7 | 840.6 | 852.3 | 857.5 | 851.4 | 827.1 | 820.4 | 793.0 | | -0.8% | -4.2% | -8.2% |
| Total vessel power | thousand kW | 2 815.9 | 2 793.1 | 2 752.7 | 2 720.2 | 2 734.2 | 2 688.3 | 2 719.8 | 2 596.5 | 2 594.4 | 2 509.2 | | -0.1% | -4.9% | -7.9% |
| Engaged crew | thousand | 58.1 | 59.4 | 57.6 | 56.7 | 57.8 | 56.1 | 55.9 | 51.6 | 51.4 | 51.2 | 50.6 | -0.4% | -9.3% | -11.6% |
| FTE national | thousand | 47.2 | 49.0 | 49.3 | 49.8 | 48.9 | 46.6 | 45.5 | 39.8 | 39.9 | 39.9 | 39.6 | 0.2% | -15.2% | -15.5% |
| Days at sea | thousand | 1 932 | 1 911 | 1 859 | 1 882 | 1 863 | 1 756 | 1 733 | 1 494 | 1 484 | | | -0.6% | -17.7% | -23.2% |
| Fishing days | thousand | 1 802 | 1 794 | 1 741 | 1 774 | 1 754 | 1 696 | 1 648 | 1 424 | 1 430 | | | 0.4% | -16.1% | -20.7% |
| Energy consumption | million litre | 1 453 | 1 419 | 1 438 | 1 491 | 1 478 | 1 446 | 1 451 | 1 272 | 1 279 | 1 277 | 1 291 | 0.5% | -10.7% | -12.0% |
| Live weight of landings | thousand tonn | 3 152 | 3 283 | 3 367 | 3 251 | 3 596 | 3 486 | 3 078 | 3 072 | 2 598 | 2 929 | 3 053 | -15.4% | -20.9% | -17.6% |
| Value of landings | million EUR | 4 103 | 4 070 | 4 382 | 4 749 | 4 737 | 4 697 | 4 329 | 3 816 | 3 867 | 3 901 | 3 763 | 1.3% | -11.3% | -5.8% |
| Gross value of landings | million EUR | 4 018 | 4 065 | 4 399 | 4 758 | 4 654 | 4 568 | 4 252 | 3 744 | 3 846 | 3 847 | 3 702 | 2.7% | -10.7% | -4.3% |
| Other income | million EUR | 69 | 70 | 70 | 73 | 95 | 96 | 120 | 134 | 137 | 148 | 138 | 2.4% | 50.6% | 98.5% |
| Operating subsidies | million EUR | 39.9 | 52.7 | 42.5 | 36.2 | 36.9 | 33.4 | 24.6 | 69.6 | 50.7 | | | -27.2% | 20.7% | 27.0% |
| Income from leasing out quota | million EUR | 34.2 | 33.4 | 31.5 | 27.5 | 30.1 | 32.6 | 17.8 | 30.5 | 20.3 | - | | -33.4% | -31.7% | -40.7% |
| Personnel costs | million EUR | 1 172 | 1 243 | 1 392 | 1 490 | 1 498 | 1 458 | 1 367 | 1 275 | 1 305 | 1 290 | 1 200 | 2.4% | -4.2% | 11.4% |
| Value of unpaid labour | million EUR | 103 | 109 | 96 | 109 | 111 | 113 | 118 | 107 | 115 | 136 | 131 | 7.5% | 6.8% | 12.0% |
| Energy costs | million EUR | 954 | 872 | 725 | 628 | 684 | 768 | 741 | 507 | 644 | 1 119 | 751 | 27.2% | -12.3% | -32.5% |
| Repair & maintenance costs | million EUR | 325 | 344 | 396 | 429 | 419 | 423 | 416 | 377 | 379 | 379 | 351 | 0.4% | -3.2% | 16.5% |
| Other variable costs | million EUR | 468 | 456 | 474 | 508 | 492 | 478 | 474 | 428 | 443 | 418 | 400 | 3.5% | -6.1% | -5.3% |
| Other non-variable costs | million EUR | 301 | 302 | 308 | 334 | 350 | 353 | 349 | 336 | 350 | 334 | 310 | 4.3% | 6.3% | 16.1% |
| Consumption of fixed capital | million EUR | 506 | 500 | 536 | 484 | 509 | 497 | 468 | 488 | 507 | 541 | 500 | 3.8% | 1.6% | 0.2% |
| Lease/rental payments for quota | million EUR | 32.7 | 47.9 | 58.3 | 53.2 | 39.0 | 37.0 | 36.2 | 36.9 | 39.4 | | | 6.6% | -7.7% | 20.6% |
| Opportunity cost of capital | million EUR | 77.4 | 67.3 | 45.2 | 35.5 | 4.0 | -3.4 | -19.6 | -4.4 | -78.2 | -251.1 | -177.6 | -1687.7% | -409.7% | -201.1% |
| Value of physical capital | million EUR | 3 287 | 3 357 | 3 521 | 3 416 | 3 461 | 3 439 | 3 540 | 3 748 | 3 730 | 4 175 | 3 832 | -0.5% | 7.5% | 13.5% |
| Value of quota and other fishing rights | million EUR | 1 030 | 1 365 | 1 518 | 2 044 | 2 563 | 2 359 | 2 069 | 2 251 | 1 665 | | | -26.0% | -12.4% | 61.6% |
| Investments | million EUR | 292 | 258 | 276 | 356 | 395 | 271 | 342 | 485 | 503 | | | 3.8% | 50.5% | 72.4% |
| Gross Value Added | million EUR | 2 032 | 2 160 | 2 556 | 2 931 | 2 802 | 2 642 | 2 387 | 2 221 | 2 166 | 1 745 | 2 028 | -2.5% | -12.2% | 6.6% |
| Net Value Added | million EUR | 1 449 | 1 593 | 1 977 | 2 412 | 2 289 | 2 149 | 1 938 | 1 737 | 1 738 | 1 456 | 1 705 | 0.0% | -10.5% | 19.9% |
| Gross profit | million EUR | 758 | 808 | 1 069 | 1 332 | 1 193 | 1 072 | 904 | 839 | 746 | 319 | 697 | -11.1% | -25.1% | -1.5% |
| Net profit | million EUR | 165 | 226 | 478 | 810 | 670 | 573 | 447 | 353 | 318 | 29 | 374 | -9.9% | -31.7% | 92.6% |
| GVA to revenue | % | 49.8 | 52.2 | 57.3 | 60.7 | 59.0 | 56.7 | 54.7 | 57.4 | 54.4 | 43.7 | 52.8 | -5.2% | -2.8% | 9.2% |
| Gross profit margin | % | 18.6 | 19.5 | 24.0 | 27.6 | 25.1 | 23.0 | 20.7 | 21.7 | 18.7 | 8.0 | 18.1 | -13.6% | -16.8% | 0.9% |
| Net profit margin | % | 4.1 | 5.6 | 10.9 | 16.8 | 14.2 | 12.4 | 10.4 | 9.1 | 8.0 | 0.7 | 9.7 | -12.6% | -23.6% | 93.4% |
| Average wage per FTE | thousand EUR | 27.0 | 27.6 | 30.2 | 32.2 | 32.9 | 33.7 | 32.7 | 34.9 | 35.6 | 35.7 | 33.6 | 2.1% | 13.4% | 31.7% |
| GVA per FTE (labour productivity) | thousand EUR | 43.1 | 44.1 | 52.0 | 58.9 | 57.4 | 56.7 | 52.8 | 56.1 | 54.3 | 43.7 | 51.2 | -3.1% | 3.2% | 26.0% |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values adjusted for inflation; constant prices (2020). Nowcast for 2022 and 2023.

**Table 2.5** Main results for the EU-27 Distant-water fleets for 2013-2021 and nowcasts for 2022 and 2023.

| EU27 DWF | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | %Δ 2021-2020 | %Δ 2021-avg 2013-2020 | %Δ 2021-2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of vessels | number | 288 | 288 | 279 | 268 | 256 | 251 | 260 | 249 | 242 | 230 | 225 | -2.8% | -9.5% | -16.0% |
| Total vessel tonnage | thousand GT | 250.0 | 286.3 | 279.9 | 261.7 | 257.1 | 247.4 | 247.5 | 236.5 | 252.5 | 245.5 | | 6.8% | -2.2% | 1.0% |
| Total vessel power | thousand kW | 338.2 | 378.0 | 372.5 | 355.0 | 346.3 | 339.5 | 346.4 | 329.5 | 344.6 | 333.9 | | 4.6% | -1.7% | 1.9% |
| Engaged crew | thousand | 5.8 | 6.4 | 6.2 | 5.4 | 6.2 | 6.2 | 6.5 | 6.5 | 6.8 | 6.8 | 6.5 | 4.2% | 9.7% | 16.6% |
| FTE national | thousand | 6.4 | 7.2 | 7.8 | 6.9 | 7.3 | 7.4 | 8.1 | 7.3 | 6.8 | 6.8 | 6.4 | -7.6% | -7.1% | 6.1% |
| Days at sea | thousand | 78 | 78 | 77 | 72 | 75 | 69 | 74 | 69 | 68 | | | -1.1% | -8.0% | -12.7% |
| Fishing days | thousand | 69 | 70 | 67 | 61 | 66 | 57 | 60 | 54 | 54 | | | -0.2% | -14.6% | -22.4% |
| Energy consumption | million litre | 374 | 393 | 474 | 372 | 372 | 370 | 399 | 399 | 346 | 345 | 329 | -13.3% | -12.3% | -7.5% |
| Live weight of landings | thousand tonn | 694 | 777 | 695 | 728 | 725 | 721 | 697 | 596 | 687 | 701 | 642 | 15.3% | -2.4% | -1.0% |
| Value of landings | million EUR | 1 239 | 1 356 | 1 053 | 1 299 | 1 231 | 1 062 | 1030 | 867 | 1 036 | 1 044 | 1 073 | 19.6% | -9.3% | -16.4% |
| Gross value of landings | million EUR | 1 074 | 1 194 | 1 090 | 1 094 | 1 147 | 1 069 | 993 | 844 | 1 003 | 964 | 993 | 18.9% | -5.7% | -6.6% |
| Other income | million EUR | 7 | 16 | 15 | 12 | 11 | 5 | 4 | 12 | 10 | 9 | 9 | -20.6% | -6.0% | 47.3% |
| Operating subsidies | million EUR | 6.4 | 5.7 | 3.7 | 0.9 | 1.9 | 1.5 | 2.5 | 3.7 | 1.1 | | | -70.3% | -66.4% | -82.6% |
| Income from leasing out quota | million EUR | 0.9 | 0.7 | 0.8 | 0.4 | 0.7 | 0.7 | 1.0 | 0.9 | 1.0 | | | 15.7% | 37.1% | 9.1% |
| Personnel costs | million EUR | 185 | 180 | 206 | 201 | 238 | 233 | 223 | 222 | 229 | 232 | 208 | 3.3% | 8.7% | 23.8% |
| Value of unpaid labour | million EUR | 0.7 | 0.4 | 0.2 | 0.6 | 0.0 | 2.4 | 1.1 | 0.8 | 0.7 | 0.7 | 0.0 | -11.1% | -13.8% | -6.5% |
| Energy costs | million EUR | 234 | 224 | 210 | 140 | 150 | 170 | 173 | 124 | 158 | 295 | 189 | 27.2% | -11.5% | -32.7% |
| Repair & maintenance costs | million EUR | 89 | 93 | 97 | 102 | 95 | 120 | 101 | 72 | 92 | 87 | 84 | 27.4% | -4.8% | 2.4% |
| Other variable costs | million EUR | 236 | 274 | 336 | 328 | 290 | 268 | 298 | 238 | 246 | 232 | 229 | 3.1% | -13.3% | 4.2% |
| Other non-variable costs | million EUR | 84 | 97 | 119 | 102 | 108 | 113 | 111 | 108 | 120 | 112 | 108 | 10.7% | 13.6% | 42.6% |
| Consumption of fixed capital | million EUR | 54 | 47 | 79 | 100 | 112 | 119 | 114 | 100 | 87 | 82 | 77 | -12.8% | -3.7% | 61.8% |
| Lease/rental payments for quota | million EUR | 0.8 | 1.0 | 3.8 | 3.2 | 3.9 | 2.4 | 2.9 | 4.2 | 6.1 | | | 46.2% | 119.8% | 677.4% |
| Opportunity cost of capital | million EUR | 9.8 | 10.8 | 10.0 | 4.6 | -4.1 | -5.1 | -5.0 | -0.8 | -14.4 | -33.9 | -21.6 | -1686.4% | -670.8% | -246.7% |
| Value of physical capital | million EUR | 414 | 487 | 567 | 568 | 525 | 523 | 590 | 626 | 549 | 513 | 482 | -12.3% | 2.1% | 32.5% |
| Value of quota and other fishing rights | million EUR | 9 | 19 | 10 | 11 | 65 | 58 | 58 | 59 | 59 | | | -0.4% | 63.3% | 552.3% |
| Investments | million EUR | 13 | 21 | 38 | 28 | 31 | 44 | 60 | 28 | 85 | | | 199.3% | 158.5% | 533.7% |
| Gross Value Added | million EUR | 437 | 522 | 344 | 434 | 507 | 403 | 314 | 314 | 398 | 247 | 391 | 26.9% | -2.8% | -9.0% |
| Net Value Added | million EUR | 374 | 464 | 255 | 330 | 399 | 289 | 206 | 214 | 325 | 199 | 335 | 51.6% | 2.8% | -13.0% |
| Gross profit | million EUR | 251 | 341 | 138 | 232 | 269 | 168 | 90 | 91 | 168 | 14 | 182 | 85.0% | -15.0% | -33.2% |
| Net profit | million EUR | 165 | 278 | 56 | 128 | 161 | 54 | -19 | -9 | -95 | -34 | 127 | 1208.4% | -6.7% | -42.4% |
| GVA to revenue | % | 40.5 | 43.1 | 31.1 | 39.2 | 44.0 | 37.6 | 31.5 | 36.6 | 39.3 | 25.4 | 39.0 | 7.2% | 3.5% | -2.9% |
| Gross profit margin | % | 23.3 | 28.2 | 12.5 | 21.0 | 23.4 | 15.6 | 9.0 | 10.6 | 16.6 | 1.5 | 18.2 | 56.4% | -7.6% | -28.7% |
| Net profit margin | % | 17.5 | 26.0 | 5.7 | 11.5 | 14.0 | 5.0 | -1.9 | -1.0 | -9.4 | -3.5 | 12.7 | 1036.8% | -2.3% | -46.5% |
| Average wage per FTE | thousand EUR | 29.7 | 25.4 | 26.8 | 30.0 | 33.3 | 32.1 | 27.8 | 30.3 | 33.9 | 34.4 | 32.3 | 11.7% | 15.1% | 14.0% |
| GVA per FTE (labour productivity) | thousand EUR | 69.9 | 73.6 | 44.8 | 64.4 | 70.9 | 54.9 | 38.9 | 42.7 | 58.6 | 36.5 | 60.7 | 37.3% | 1.9% | -16.1% |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values adjusted for inflation; constant prices (2020). Nowcast for 2022 and 2023.

## 2.1 Overview of the EU Fishing Fleet in 2021

- **Fleet Capacity and structure**

The EU fleet numbered 71 628 vessels in 2021 (-2.9% compared to 2020), of which 54 213 (75.7%) were active (Figure 2.1).

EU fleet[5] capacity has decreased gradually over the period 2013-2021, overall declining 0.7% in number of vessels, remained stable in kW and -1.7% in GT compared to 2013.

Greece maintained the largest fleet within the EU (by vessel number) with 16.6% of the total number of vessels, followed by Italy (16.3%) and Spain (12.1%). Belgium, with 70 vessels, 63 of which were active in 2021, has the lowest number of vessels of all Member States. The Spanish fleet held the largest GT (25.3% of the total) while the French fleet was superior in engine power (18.1% of the total) (see data tables in Annex 2).

**Figure 2.1** Trends and variations on capacity in number of vessels, gross tonnage and engine power.


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)). Trends exclude Greece for time-series consistency

- **Employment and average wage**

In 2021, 121 917 fishers were directly employed in the EU fishing fleet, corresponding to 81 747 FTEs. Total employed decreased by 2.2% but FTE increased by 0.2% compared to 2020 (Figure 2.2).

Personnel costs increased by 2.3% and average wage per FTE increased by 2% in comparison with 2020 (EUR 26 206) (Figure 2.2).

Employment decreased by 9.7% in total employed over the period 2018-2021; and –16.7% in FTE compared to 2018, while average wage per FTE increased by 8.7% (Figure 2.2).

At EUR 122 104, Belgian fishers earned the highest annual wages on average in 2021, followed by Danish (EUR 117 640) and fishers from Germany (EUR 73 763) fishers (Figure 2.3). However, since Belgium, in particular, calculate their annual earnings differently than the other Member States, these numbers might not show the whole picture. These figures must be treated with great caution, as they do not necessarily reflect reality. Cypriot fishers received the lowest average wage (EUR 2 389), followed by Bulgaria

[5] Variations exclude Greece for time-series consistency unless otherwise stated.

(EUR 2 419) fishers (Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

Figure 2.3).

The Spanish fleet employed 24.6% of the total, followed by the Greek (16.7%) and Italian (14.7%) fleets. In terms of FTEs, the Spanish fleet has the highest followed by the Italian and then the Greek fleet (see data tables in Annex 2).

**Figure 2.2** Trends on employment (in persons employed and FTE) and average wage per FTE.


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

**Figure 2.3** Variation in employment and average wage (based on 2020=100); average wage per FTE by MS.


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

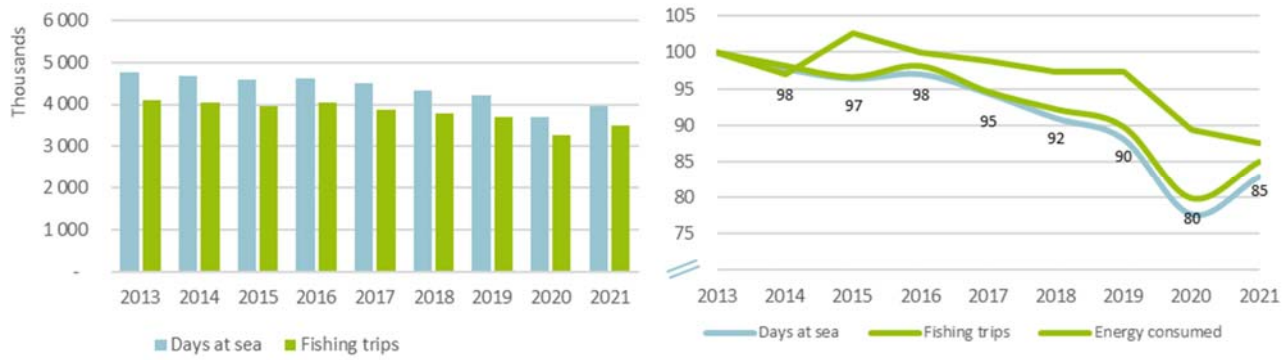
- **Fishing effort and fuel consumption**

In 2021, the EU fishing fleet spent 5.5 million Days at Sea (DaS), indicating a 4.1% increase, and consumed 1.8 billion litres of fuel (Figure 2.4), that means that on average, each active vessel spent around 100 DaS and consumed 32 820 litres of fuel in 2021. The Belgian fleet consumed on average the most fuel (563 398 litres per vessel) followed by the Lithuanian (400 656 litres) and then the Dutch (344 801 litres) fleets. Belgian vessels also spent the most average DaS (203), followed by Greek vessels (158) and then Italian vessels (118). On average, Romanian vessels spent only on average 28 DaS, followed by Maltese vessels (38) and Bulgarian (39), in 2021.

Effort, in DaS, deployed by EU fleets increased by 4.1% compared to 2020. Energy consumption decreased by 2.4%.

Greece reported the highest number of sea days (1.6 million or 28.5% of the total), followed by Italy (1.2 million days or 22.0% of the total) and then Spain (around 820 000 days or 14.8% of the total). The Spanish fleet consumed the most fuel (476 million litres or 26.2% of total), followed by the French (338 million litres or 18.6% of total) and Italian (246 million litres or 13.6% of total).

**Figure 2.4** Trends and variations on fishing effort and fuel consumption (based on 2013=100)




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)). Trends exclude Greece for time-series consistency

- ***Landings***

The EU fleet landed 3.57 million tonnes of seafood in 2021, decreasing by 9.5% compared to 2020. The value of landings reported was EUR 6 billion (including Greece), a 3.9% increase compared to 2020 (Figure 2.5).

The landed weight and the landed value provide different fluctuations during the same period. Changes in the landed weight and value between 2013 and 2019 have reflected the average fish price over the period, with some periods of increased landings associated with lower average price and vice-versa. However, the average price per kilo has remained relatively stable over the entire time period analysed, oscillating between 1.39 euro/kg and 1.64 euro/kg (Figure 2.5).

The Spanish fleet accounted for 28.7% of the total value landed during the year 2021 (22.3% in weight), followed by France (20.5% in value, 14.1% in weight), Italy (12.5% in value and 4.1% in weight) and Portugal (6.9% in value and 5.1% in weight).

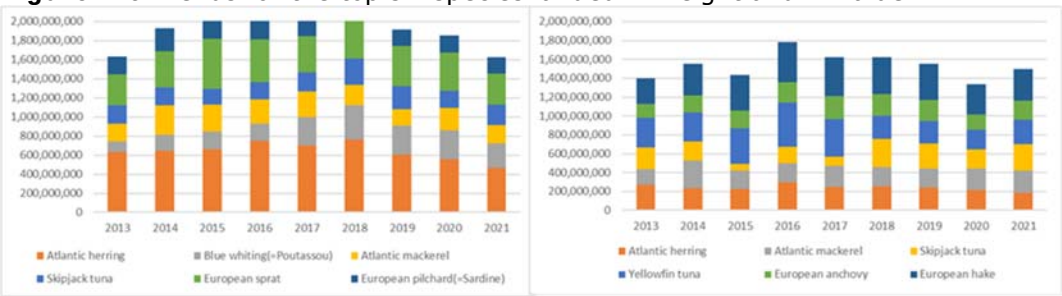
**Figure 2.5** Trends and variations on landings in weight and value and average landed price (based on 2013=100)


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

### *Top species and average landed prices*

Atlantic herring, at 463 325 tonnes, continued to be the most landed species (in weight) by the EU fleet in 2021, followed by European sprat (326 896 tonnes) blue whiting (260 184 tonnes), skipjack, Atlantic mackerel and sandeels.

**Figure 2.6** Trends for the top six species landed in weight and in value



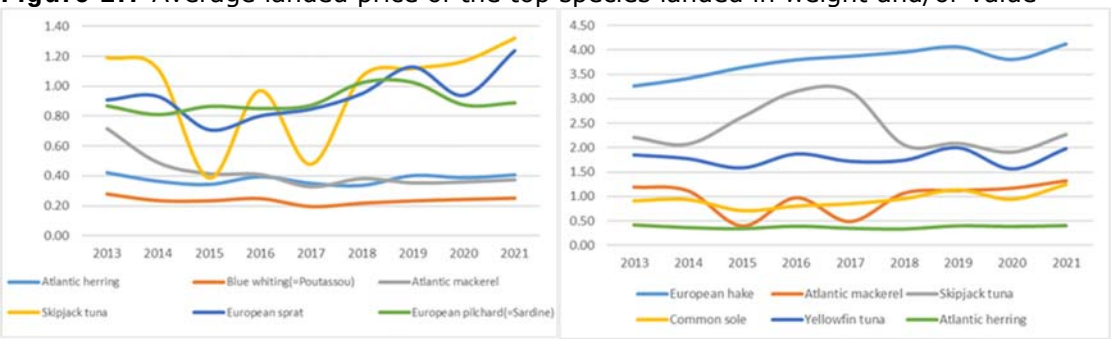

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

European hake at EUR 331 million, was the top species landed in value, followed by skipjack, yellowfin tuna and Atlantic mackerel, (Figure 2.6).

Of the top landed species, only landings of skipjack, yellowfin and European anchovy increased in wgth while the other three reduced. Overall of the top six landed species in weight the total landigs reduced compared to 2020.

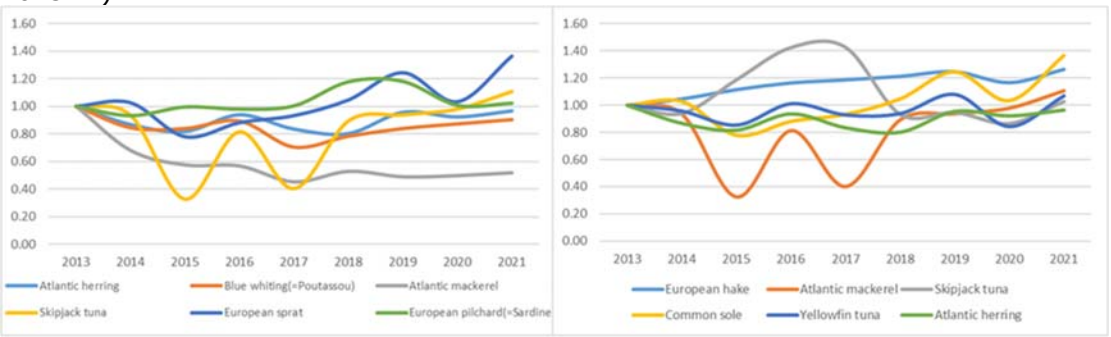
The average price of yellowfin tuna has been stable in real terms, but experienced a significant drop in prices in 2020. However, in 2021 improved, almost reaching the values observed for 2019. The average price of Atlantic mackerel has an increasing trend, recovering from the drop observed in 2020. Common sole that suffered a significant decrease in average price in 2017 was slowly recovering in 2018-2019, but in 2020 a significant increase of almost 30% was observed. In 2021, a recovery of the price was observed. Skipjack average price had a sharp increase in 2017 and in and it presents an increasing term, also reaffirmed in 2021 (Figure 2.7 and Figure 2.8).

**Figure 2.7** Average landed price of the top species landed in weight and/or value




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 2.8** Variations in average price of the top species landed in weight and/or value (based on 2013=1)




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

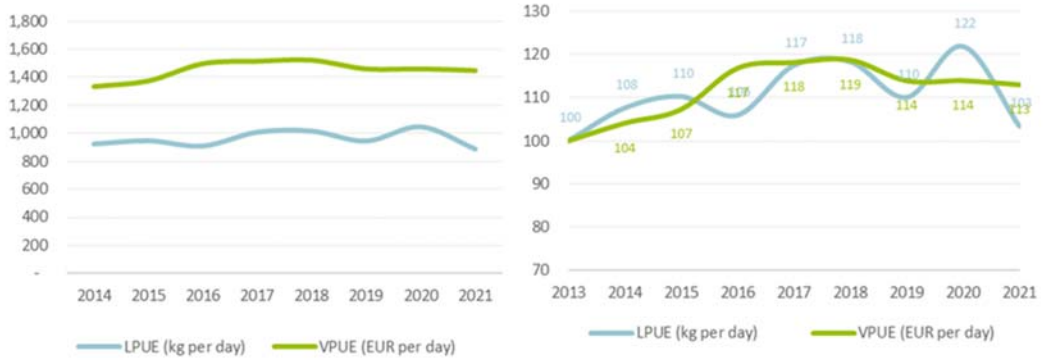
### *Landings per unit of effort*

Landings weight per DaS and landings value per DaS are used as proxies of LPUE and VPUE. However, the values and trends of these two proxies should be considered with caution and only as indicative, as no effort standardisation has been performed. Variations may result from many factors such as seasonal and locational characteristics, fishers' skills, fishing methods, technological advances, or shifting management regimes (e.g., area closures, trip limits, effort limits, choke species, etc.).

LPUE and VPUE were estimated at 891 kg and EUR 1 451 per DaS in 2021, respectively. A decrese of 15% and 1% compared to 2020, respectively (Figure 2.9).

The average LPUE was 7% lower and VPUE 1% higher in 2021 than in the mean of the period 2013-2021. After a continuously increasing trend from 20131 to 2020, the average LPUE has started a slightly decreasing trend the recent years (Figure 2.9).

**Figure 2.9** Trends and variations on landings per unit of effort (days-at-sea) by weight (LPUE) and value (VPUE) (based on 2013=100)




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- ***Income and costs***

In 2021 the total revenue[6] generated by the EU fishing fleet was EUR 6.2 billion. Total costs amounted to EUR 5.7 billion, 93% of the revenue generated (Figure 2.10).

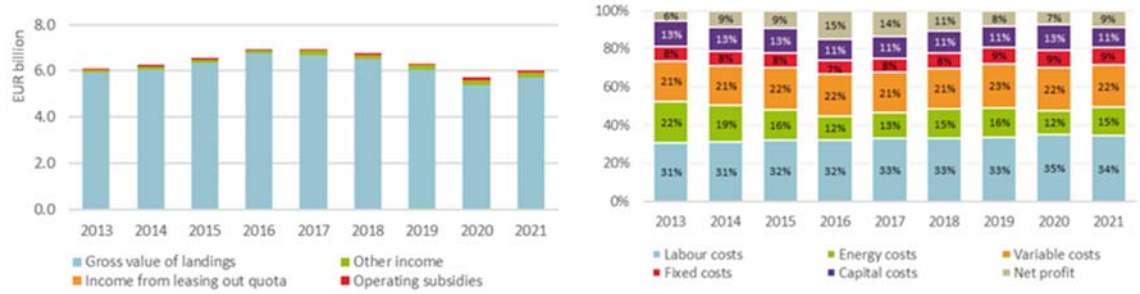
Of the revenue generated, 97% was obtained from the sale of fish (EUR 5.99 billion) and EUR 205 million from non-fishing income. Additionally, the fleet received EUR 88 million in operating subsidies and EUR 23 million in income from leasing out quota and other fishing rights (Figure 2.10). Of the costs incurred by the fleet in 2021, 87% consisted of operating costs[7] (EUR 5.01 billion) and 12% of capital costs (EUR 678 million).

The main operating costs were labour costs (37.4% of total costs: EUR 1.86 billion in personnel costs and EUR 277 million in unpaid labour), other variable costs (14.5% of total costs: EUR 829 million), and fuel costs (EUR 935 million: 16.3% of total costs). In addition, other costs linked to production amounted to almost EUR 1.1 billion: EUR 548 million in repair and maintenance and EUR 552 million in other non-variable (fixed) costs. Figure 2.11 shows costs as a percentage of revenue.

[6] Direct income subsidies and income from leasing out fishing rights are excluded from the economic analyses.

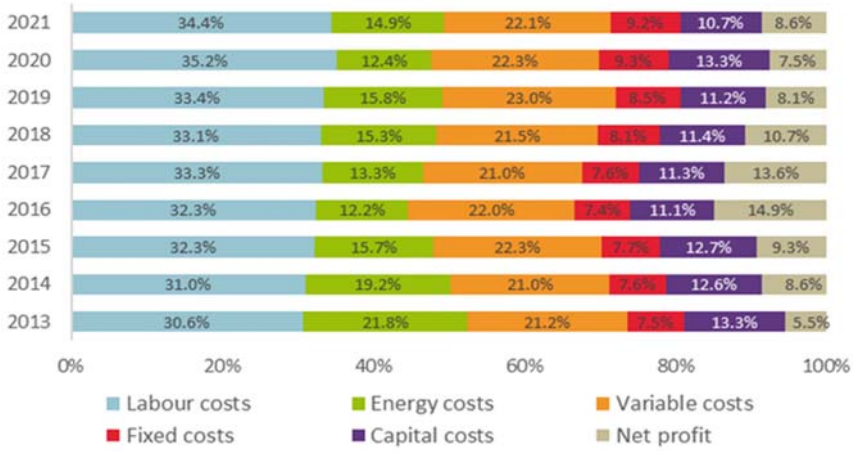
[7] Total operating costs include: crew wage costs, unpaid labour, energy costs, other variable costs, repair costs, other non-variable costs

**Figure 2.10** Trends on main income and costs items




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2022)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

**Figure 2.11** Trends on costs as a percentage of revenue




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

Revenue remained relatively stable between 2013 and 2018, oscillating around EUR 6.6 billion, yet demonstrates a gradual increase over the 5-year period. In contrast, revenue decreased in years 2019 and 2020, while in 2021 it increase by 6% although not reaching the values observed for 2019.

Total costs[8] mirror revenue trends, remaining relatively stable between 2013 and 2019 oscillating around EUR 6 billion. Total costs decreased sharply by 10% in 2020 compared to 2019 in response to the outbreak of the pandemic. Total costs recovered in 2021 to EUR 5.7 billion, increasing by 4% compared to 2020.

The distribution of costs remained stable over the period 2013 to 2021 with personnel costs attributing the most to total costs at 32% on average each year, followed by energy costs which contributed 17% to total costs on average and other variable costs contributing 15%.

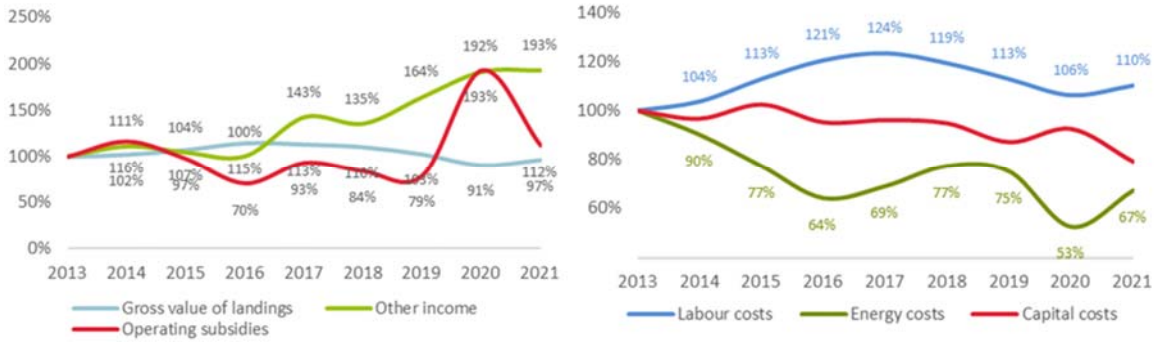
This effect is also affected by the increase of fishing activity compared to 2020 (COVID-19 year). Days at Sea and fishing days increased 4.1% and 3.7%, repsctively in 2021 compared to 2020.

The increase in costs in 2021 was driven mainly by an increase in energy costs (28%), repair and maintenance costs 6%) and other variable costs 5%). All other costs, excluding capital costs, also fell in 2020 (Figure 2.12).

At EUR 1.7 billion, Spain generated more than a quarter (28%) of the total EU fleet revenue, followed by France (EUR 1.3 billion, 20.5%) and Italy (EUR 721 million, 11.6%) (see data tables in Annex 2).

[8] Total costs include crew wage costs, unpaid labour, energy costs, repair costs, other variable costs, other non-variable costs, annual depreciation and opportunity cost of capital (capital costs).

**Figure 2.12** Variations on main income and costs items (based on 2013=100)




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

Over the period 2013 to 2021, average fuel prices changed considerably. In 2015, average fuel prices began to fall, hitting a low in 2016 and rising steadily again in 2017. Average fuel prices fell sharply in 2020 compared to 2019 and remained low until mid-2021 when they began to rise again. As expenditure on fuel represents a considerable proportion of operational costs for the EU fleet, profitability of the fleet is sensitive to changes in price of marine fuel and fluctuations in fuel prices have a significant impact on its performance. Energy costs as a percentage of revenue in 2020 (12.5% of revenue) are significantly lower than those recorded in 2013 (around 22%) but is marginally higher compared to 2016 (12.2%). Energy costs as a percentage of revenue in 2021 are 15%.

## 2.2 Economic Performance Indicators

Main performance indicators are provided by Member State and for the EU fleet as a whole in the Annex 2.

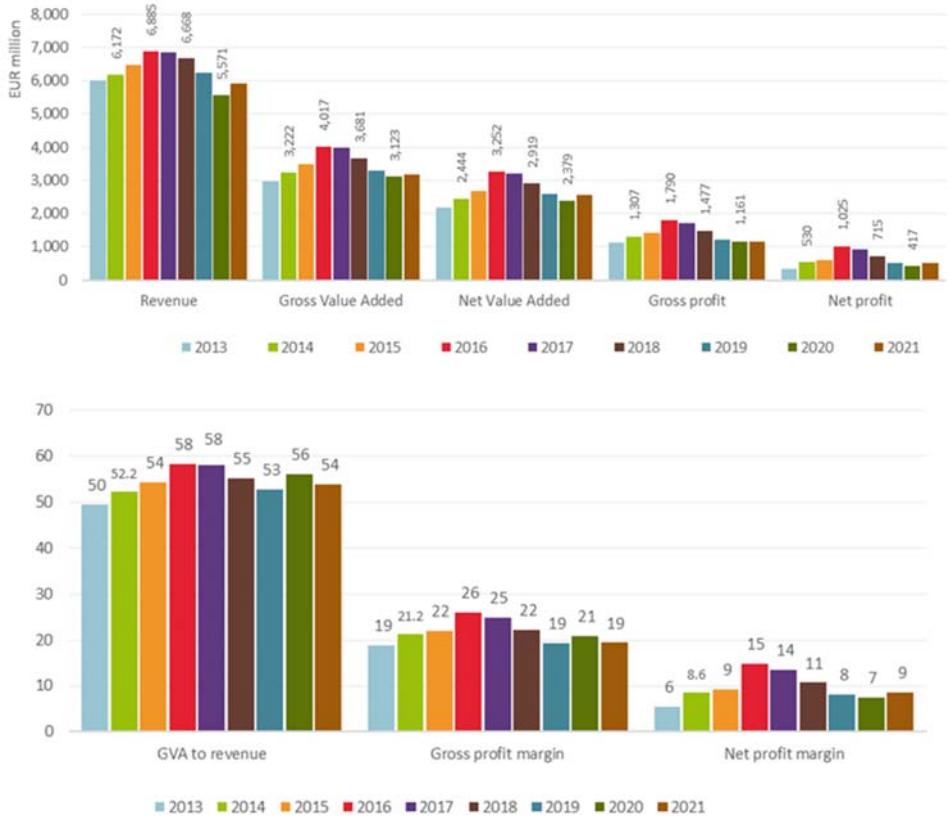
### *Situation in 2021*

The GVA, gross profit, and net profit (excluding subsidies) generated by the EU fishing fleet in 2021 were EUR 3.3 billion (1.3% increase compared to 2020), EUR 1.18 billion (-0.3%), and EUR 561 million (+23%), respectively. Trends excluding Greece are shown in Figure 2.13.

In relative terms, GVA to revenue was 53.8%. 19.2% of revenue was retained as gross profit; after deducting capital costs, 8.2% of revenue was retained as net profit. As depictured in Figure 2.13 and Figure 2.14, results follow a continuously decreasing trend from 2016 to 2020 with a marginal increase in 2021.

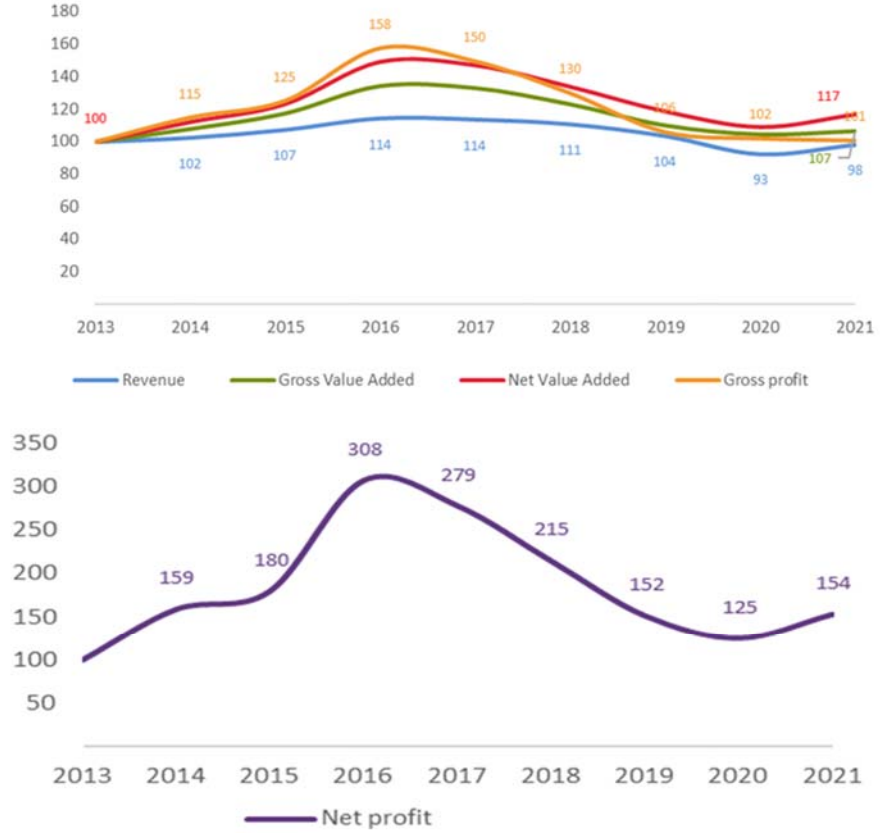
In 2021, operating subsidies of the EU fleet decreased significantly (-41%) to EUR 88.5 million compared to 2020. This can be explained, in part, by the winding down of supports initially provided to the industry during the COVID-19 pandemic. Greece report operating subsidies of EUR 22.1 million in 2021 a decrease of 36% while operating subsidies in Poland fell 96% from EUR 34 million to EUR 1.1 million over this time. However, some countries report an increase in operating subsidies for 2021 for example France (+45%) which represent 30% of total EU fleet operating subsidies in 2021.

**Figure 2.13** Trends on revenue and profit for the EU fleet




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 2.14** Variations on revenue and profits for the EU fleet (based on 2013=100)




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Trends exclude Greece for time-series consistency

An analysis of the 2021 economic performance by Member State revealed a mixed picture.

No Member State suffered gross losses, while four generated net losses (France, Germany, Greece, and Cyprus).

The Spanish fleet generated by far the highest revenue of the total EU fleet (EUR 1.7 billion, +8% compared to 2020), GVA (EUR 918 million, +7%), gross profit (EUR 256.6 million, +28%), and net profit (EUR 170.5 million, 74%).

The French fleet generated almost EUR 1.3 billion (+9%) in revenue and EUR 642 million in GVA (+6%), followed by the Italian fleet, with EUR 721 million (+9%) in revenue and EUR 443.5 million in GVA (+5%).

In relative terms, the Slovenian fleet generated the highest level of GVA relative to revenue (83.8%), followed by Bulgaria (72%), Malta (65%), and Estonia (63.7%).

The Slovenia fleet generated the highest gross profit margin (75.3%), followed by Bulgaria (55.4%) and Romania (34.4%).

### *Capital value and investments*

In 2021, the EU fleet had an estimated consumption of the fixed capital value of EUR 796 million. In-year investments amounted to EUR 662 million, a 10% increase compared to 2020. The French fleet had the highest consumption of fixed capital value, amounting to some EUR 163 million, followed by Italy (EUR 141 million), Spain (EUR 101 million), and Denmark (EUR 97 million).

### 2.3 Labour and capital productivity and efficiency

Labour productivity of the EU fishing fleets has generally increased since 2013 up to 2018. Year 2021 saw a slight increase by 1.2% compared to 2020 (Figure 2.15).

However, in 2021, labour productivity was estimated at EUR 40 696. The Danish fleet is reporting the highest level (EUR 313 314), followed by the Belgian fleet (EUR 184 350) and the Irish fleet (EUR 109 669). Capital productivity, measured as the RoFTA, was estimated at 7.7% for the EU fishing fleets in 2021.

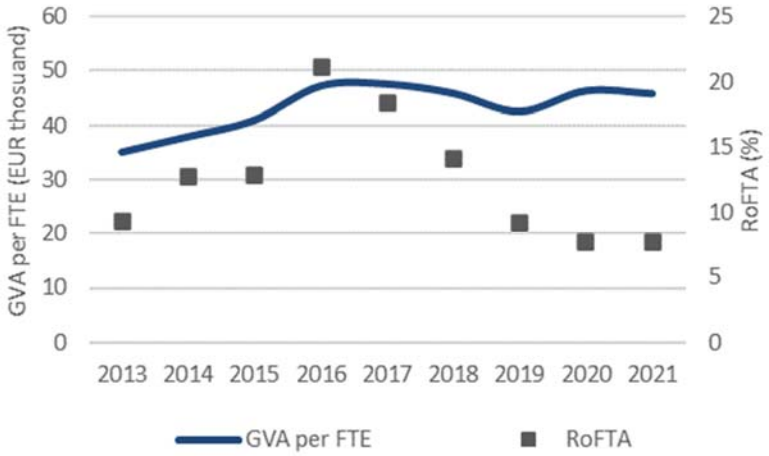
#### *Labour and capital productivity by scale of fishing activity*

Labour productivity in the SSCF is estimated at EUR 27 310 per FTE, similar to that of 2020. These two years for this indicator are the highest for the period 2013-2021.

Labour productivity in the LSF is estimated at EUR 54 328 per FTE, and remained stable compared with the previous year (-0.3%). Labour productivity in the DWF shows an upward trend since 2019, and has increased by 37% compared to 2020.

The capital productivity for the DWF also showed improvement in 2020 and the trend is set to continue in 2021, with an improvement of the ratio. On the other hand, for the LSF the decline continued (-36.5% compared to 2020).

**Figure 2.15** Trends on labour (GVA per FTE) and capital productivity (RoFTA) for the EU fleet



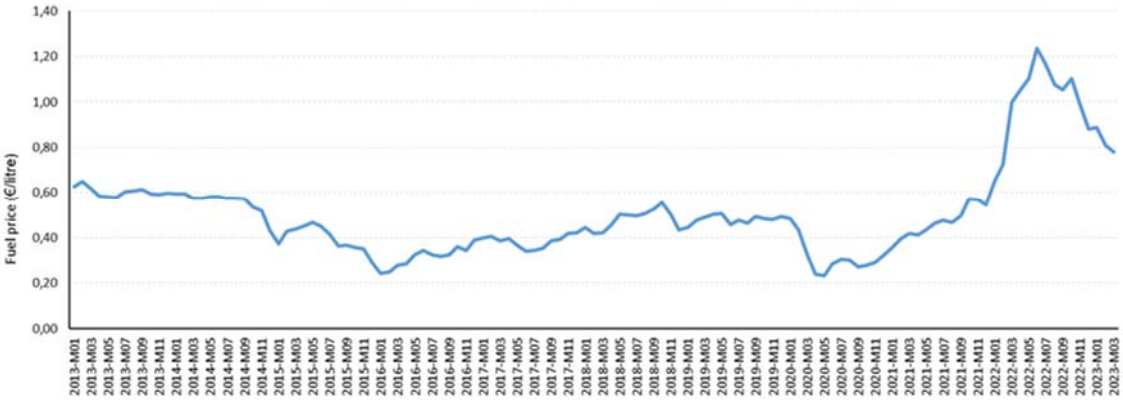

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 2.4 Energy use – fuel efficiency, intensity and break even calculations

Recent energy costs increase is imposing an economic burden in the financial profitability of the EU fishing fleet. Therefore, and as requested by the ToRs, the AER 2023 is providing calculations of the fuel intensity, efficiency and break-even price of fuel.

Marine fuel oil prices fluctuated through the years. Where in 2013 price levels were high with fluctuations between 0.60 euro/litre and 0.68 euro/litre, in the spring of 2020 it was at 10 year lowest levels (0.25 euro/litre). However, from October 2020 the fuel price steadily increased, until June 2022 to levels never observed in the time series. From this month the real price has steadily reduce, although in the last month for which this group has data (March 2023), the average value is still well above the average value of the series, and above of any observations (in real -2020- terms) prior to February 2022 (Figure 2.16).

**Figure 2.16** Fluctuations of the average marine fuel oil prices (in euro) for EU-27.




Data source: EUMOFA database. All monetary values have been adjusted for inflation; constant prices (2020).

For the total EU fleet, the average fuel costs per DaS was EUR 169 in 2021, an increase of 22% compared to 2020. The average fuel consumption was in total around 328 litre/DaS in 2021, a 6% decrease from 2020. The total average fuel consumption per landed tonne was 508 litre in 2021 (8% more than in 2020). Price of fuel was 0.52 euro/litre (29.5% higher than in 2020). An interactive dashboard has been created to visualize the marginal impact of fuel prices on the economic performance of the EU fishing fleet, both at fleet segment and country levels (https://blue-economy-observatory.ec.europa.eu/fishing-fleet-fuel-analysis_en).

#### *Fuel efficiency and intensity*

As requested by the ToRs fuel usage will be measured in two ways for all EU fishing fleets:

1) Fuel intensity, i.e. the quantity of fuel consumed per quantity of fish landed (litre per tonne), and,

2) Fuel efficiency, the ratio between fuel costs and revenue, expressed as a percentage (%).

All these indicators are made for the data provided for the year 2021, and as the whole report the base year is the year 2020. The values are provided by segment at national level and can be found in each national chapter for a selection of fleet segments and as an average at Member State level. Furthermore, based on the analysis made of fuel intensity, the EWG decided not to provide any further aggregation, neither by fishing operation nor by fishing technology.

#### *Fuel price break even calculations*

The break-even is the point at which total cost and total revenue are equal, meaning there is no loss or gain. Considering the fuel used by the EU fishing fleet in its activity, the fuel price break-even is the fuel price that makes total revenues and total costs, equal.

The revenues considered are the gross value of landings and other income as reported by the Member States in 2023 economic data call. For the costs, and as requested by the ToRs two different options are considered depending on if the short term or long-term break-even point is considered.

For the short term, the costs considered are the personal costs, value of unpaid labour, energy costs, repair & maintenance costs, other variable costs and other non-variable costs. The difference between the revenues considered and these costs, respond precisely to the Gross Profit indicator.

For the long term, to the Gross Profit the consumption of fixed capital (depreciation) is additionally considered. It should be noted that this does not correspond to the net profit, because this last should be account also for the capital cost. However, it has been excluded because it is based on variables such as the interest rates that are changing rapidly and because the Asset Value is not provided for all the fleet segments and/or not calculated using the same methodology. For the sake of this report, the Gross Profit minus the consumption of fixed capital will be named the Operating Profits.

All these calculations are made for the data provided for the year 2021, and as the whole report the base year is the year 2020. The measurement units are euro/litre. The values are provided by segment at national level and can be found in each national chapter for a selection of fleet segments and as an average at Member State level. Furthermore, based on the analysis made of fuel intensity, the EWG decided not to provide any further aggregation, neither by fishing operation nor by fishing technology.

### *Short term break even*

Based on the above definitions the short-term break-even fuel price (STBEFP) is calculated as:

STBEFP = (Gross Profit-Energy Cost)/Energy Consumption

### *Long term break even*

Based on the above definitions the long-term break-even fuel price (LTBEFP) is calculated as:

LTBEFP = (Operational Profit-Energy Cost)/Energy Consumption

**Table 2.6** Fuel price, energy efficiency, energy intensity, short- and long-term break-even revenue by supra region and fishing technique.

| supra_reg | Fishing_tech | Fuel Price | Short-term break-even fuel price | Long-term break-even fuel price | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|---|
| MBS | DFN | 0.84 | 1.31 | 0.58 | 17.2% | 1584.01 |
| | DRB | 0.62 | 3.88 | 3.05 | 7.1% | 365.42 |
| | DTS | 0.57 | 1.05 | 0.73 | 28.6% | 3368.93 |
| | FPO | 0.74 | 3.59 | 3.05 | 9.1% | 1039.61 |
| | HOK | 0.75 | 1.73 | 1.06 | 13.6% | 1670.18 |
| | MGO | 0.65 | 12.42 | 11.91 | 8.8% | 1016.22 |
| | PG | 0.73 | 1.96 | 1.52 | 21.5% | 790.09 |
| | PGO | 0.71 | 1.82 | 0.00 | 9.6% | 886.89 |
| | PGP | 0.73 | 2.99 | 1.93 | 13.2% | 1400.08 |
| | PMP | 0.54 | 1.69 | 1.38 | 8.4% | 824.22 |
| | PS | 0.58 | 2.33 | 1.61 | 8.5% | 240.65 |
| | TBB | 0.68 | 1.27 | 0.90 | 29.5% | 2807.66 |
| | TM | 0.66 | 2.94 | 2.64 | 13.5% | 426.95 |
| NAO | DFN | 0.56 | 1.68 | 1.09 | 7.7% | 534.50 |
| | DRB | 0.59 | 2.15 | 1.56 | 8.2% | 267.31 |
| | DTS | 0.49 | 0.93 | 0.55 | 18.6% | 651.33 |
| | FPO | 0.67 | 4.11 | 3.32 | 6.4% | 402.31 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | HOK | 0.56 | 1.07 | 0.64 | 10.7% | 633.44 |
| | MGO | 0.74 | 3.12 | 1.28 | 6.6% | 320.09 |
| | MGP | 0.17 | 0.43 | 0.32 | 10.9% | 1121.71 |
| | PG | 0.77 | 0.75 | -1.13 | 9.8% | 112.01 |
| | PGO | 0.58 | 4.68 | 2.94 | 3.1% | 41.20 |
| | PGP | 0.60 | 1.33 | 0.85 | 9.2% | 579.03 |
| | PMP | 0.56 | 1.34 | 0.89 | 9.2% | 352.52 |
| | PS | 0.56 | 1.76 | 1.31 | 7.4% | 151.55 |
| | TBB | 0.45 | 0.63 | 0.48 | 24.7% | 1876.77 |
| | TM | 0.48 | 1.56 | 0.73 | 13.4% | 122.24 |
| OFR | DFN | 0.79 | 3.30 | 2.52 | 8.0% | 322.38 |
| | DTS | 0.45 | 0.97 | 0.86 | 16.8% | 576.00 |
| | FPO | 0.76 | 1.10 | -0.17 | 10.7% | 1633.25 |
| | HOK | 0.58 | 0.68 | 0.46 | 18.9% | 785.51 |
| | PGP | 0.76 | 1.47 | 0.82 | 13.0% | 1535.12 |
| | PS | 0.44 | 0.99 | 0.66 | 14.4% | 508.63 |
| | TM | 0.43 | 1.20 | 0.91 | 15.7% | 347.20 |
| TOTAL | | 0.52 | 1.17 | 0.77 | 15.6% | 519.59 |

### *Energy use by scale of fishing activity*

For the total EU SSCF, the average fuel cost was 28 euro/DaS. An increase of 15% compared to 2020. The average fuel consumption was in total around 38 litre/DaS in 2021, a 1.6% decrease from 2020. The total average fuel consumption per landed tonne was 587 litre in 2021 (2% less than in 2020). Price of fuel was 0.74 euro/litre (17% lower than in 2020).

For the total EU LSF, the average fuel costs per DaS were EUR422. An increase of 28% compared to 2020. The average fuel consumption was, in total around 834 litre/DaS in 2021, a 1% increase from 2020. The total average fuel consumption per landed tonne was 502 litre in 2021 (18% more than in 2020). Price of fuel was 0.51 euro/litre (27% higher than in 2020).

For the total EU DWF, the average fuel costs per DaS were EUR 2 315. An increase of 29% compared to 2020. The average fuel consumption was in total around 5 079 litre/DaS in 2021, a 12% decrease from 2020. The total average fuel consumption per landed tonne was 503 litre in 2021 (25% less than in 2020). Price of fuel was 0.46 euro/litre (47% lower than in 2020).

### *Complementary fuel consumption assessment*

#### *Introduction*

Officially gathered data exists on a national or regional level to inform on trends. This data is collected for economic purposes and is affected by collection strategy and extrapolation. One example is the fuel use data collection through the Data Collection Framework (DCF) that underpin the STECF Annual Economic Reports (AER).

Based on DCF data, total fuel consumption of the combined EU fleet has today an average FUI of 0.5 l/kg (Table 2.7). However, this data collection is not complete, and coverage varies between Member States, which have defined different methods of sampling their fleet. Therefore, data are not suitable for analysis of FUI in different fisheries in the current data collection format and presentation and an appropriate level of data resolution is needed, such as to provide fuel use intensity by consistent fishing gear groups.

**Table 2.7** Estimation of fuel use intensity (FUI) based on energy consumption (totenercons) and landings (totwghtlandg) of each fishing technique and overall.

| year | ft | totenercons [l] | totwghtlandg [t] | FUI [l/t] |
|---|---|---|---|---|
| **2019** | DTS | 881,614,783 | 899,408,432 | 980 |
| | TBB | 162,361,777 | 97,330,864 | 1,668 |
| | TM | 194,851,480 | 1,424,244,304 | 137 |
| | **Total** | **1,238,828,039** | **2,420,983,599** | **512** |
| **2020** | DTS | 792,531,624 | 1,016,510,473 | 780 |
| | TBB | 173,619,545 | 95,180,857 | 1,824 |
| | TM | 158,821,960 | 1,381,486,656 | 115 |
| | **Total** | **1,124,973,129** | **2,493,177,986** | **451** |
| **2021** | DTS | 759,412,538 | 810,460,985 | 937 |
| | TBB | 189,721,766 | 99,237,020 | 1,912 |
| | TM | 141,259,202 | 1,096,490,430 | 129 |
| | **Total** | **1,090,393,506** | **2,006,188,435** | **544** |

The establishment of the European DCF has adopted the definition that we follow here: a métier is a group of fishing operations targeting a specific assemblage of species, using a specific gear, during a particular period of the year and within the specific area. Analysing catch and fuel consumption by métier allows for more accurate estimates of fuel use intensity by the various EU fleets. To make this approach operational, the first step is the definition of homogeneous groups of fishing vessels. Although time and space are implicitly part of the definition of a métier, the gear and target species represent the two main identifiers, with the variability due to time and space being more or less marked for the different gear types.

The present analysis aims to i) provide an overview of the fuel use and intensity (litres of fuel per kg of fish landed) in European capture fisheries from the Annual Economic Report (AER) data call; ii) estimate fuel use and intensity at fishing technique and gear level (e.g., AER combined with FDI data call); iii) assess the AER data quality based on available effort-based modelling (e.g., Italian case study), and iv) provide a list of available literature sources.

### *Exploratory analysis of the AER dataset*

The three fishing techniques DTS, TBB and TM account for 74-76% of the overall annual energy consumption in EU fleet. The present analysis focus on these three groups (Table 2.8 Annual energy consumption [l] reported in the AER dataset by fishing technique (ft). In bold are the techniques analysed.).

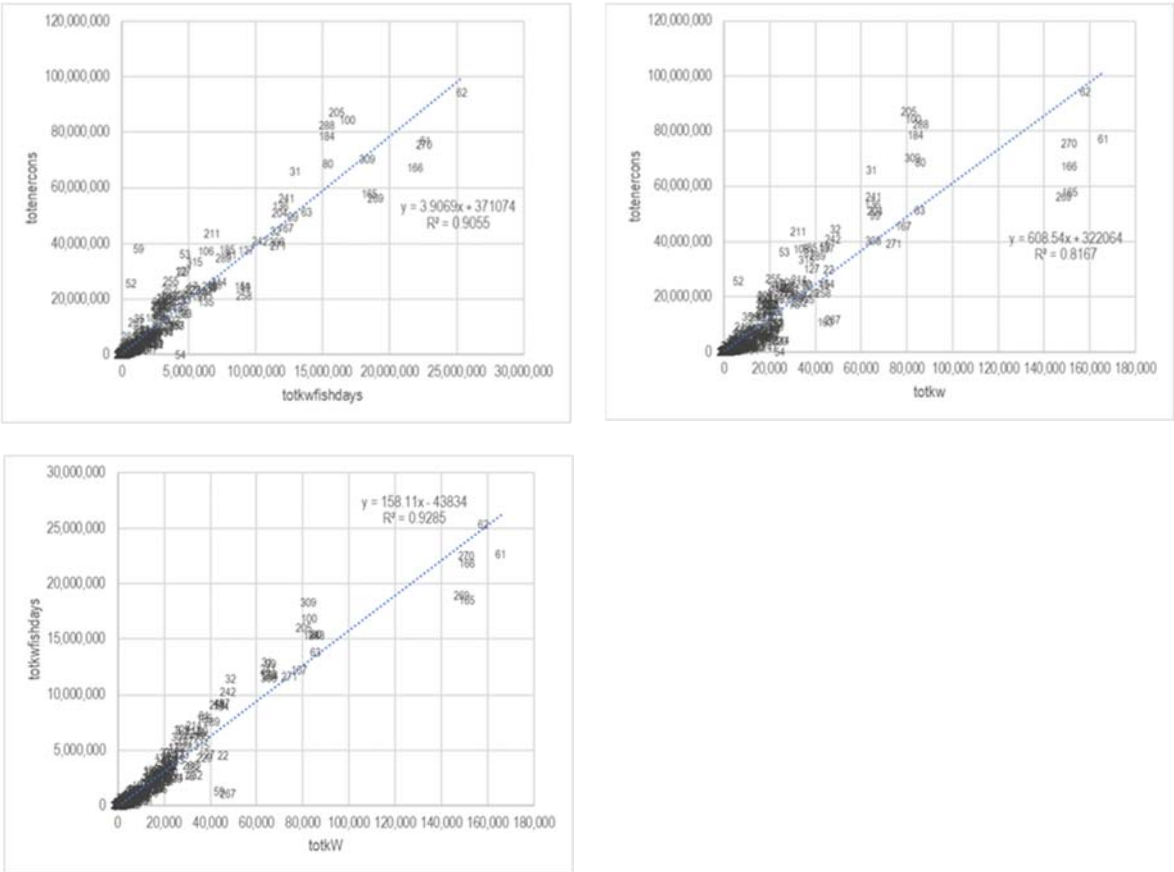
Some fisheries reported landing but not fuel consumption, therefore, to avoid an underestimation of the fuel use intensity, consumption was inferred from effort-based modelling (Figure 2.17 Models used to infer missing data in the AER dataset.).

**Table 2.8** Annual energy consumption [l] reported in the AER dataset by fishing technique (ft). In bold are the techniques analysed.

| ft | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|
| **DFN** | 75,084,681 | 69,079,831 | 64,978,680 | 5% | 5% | 4% |
| **DRB** | 57,898,678 | 26,587,068 | 29,064,764 | 4% | 2% | 2% |

| ft | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|
| **DTS** | **879,028,497** | **788,275,540** | **757,845,953** | **54%** | **54%** | **52%** |
| **FPO** | 27,453,953 | 14,930,636 | 17,463,590 | 2% | 1% | 1% |
| **HOK** | 73,620,974 | 66,205,162 | 60,210,513 | 5% | 5% | 4% |
| **INACTIVE** | - | - | - | 0% | 0% | 0% |
| **MGO** | 1,957,887 | 1,986,227 | 1,734,218 | 0% | 0% | 0% |
| **MGP** | 5,764,731 | 7,232,041 | 34,207,553 | 0% | 0% | 2% |
| **PG** | 5,593,659 | 5,669,194 | 5,366,630 | 0% | 0% | 0% |
| **PGO** | 549,637 | 552,869 | 634,916 | 0% | 0% | 0% |
| **PGP** | 60,020,959 | 62,518,067 | 63,160,824 | 4% | 4% | 4% |
| **PMP** | 34,892,967 | 29,449,552 | 30,326,955 | 2% | 2% | 2% |
| **PS** | 77,501,232 | 68,609,039 | 61,563,169 | 5% | 5% | 4% |
| **TBB** | **162,361,777** | **173,619,545** | **189,721,766** | **10%** | **12%** | **13%** |
| **TM** | **171,064,674** | **133,630,103** | **140,423,989** | **10%** | **9%** | **10%** |
| **Overall** | **1,632,794,306** | **1,448,344,875** | **1,456,703,519** | **74%** | **76%** | **75%** |

**Figure 2.17** Models used to infer missing data in the AER dataset.



### *Assessment of the fuel use intensity based on AER data*

On a fleet basis, the analysis shows the vessel size effects on fuel use intensity (Table 2.9). Overall, in 2019-2021 energy use in DTS fisheries was 780-979 l/ton of fish; 1,690-1,889 l/ton of fish in TBB (Table 2.10), and 115-137 l/ton of fish in TM fishing technique (Table 2.9 Mean and confidence interval (CI95%) of fuel use intensity (FUI) for DTS by vessel length and overall using the AER dataset.).

**Table 2.9** Mean and confidence interval (CI95%) of fuel use intensity (FUI) for DTS by vessel length and overall using the AER dataset.

| DTS | | | VL0612 | VL1218 | VL1824 | VL2440 | VL40XX | Overall |
|---|---|---|---|---|---|---|---|---|
| | 2019 | Mean | 939 | 1,775 | 1,775 | 827 | 364 | 979 |
| | | CI95% | *(570-1,308)* | *(786-2,763)* | *(1,015-2,535)* | *(302-1,351)* | *(47-680)* | *(489-1,469)* |
| | 2020 | Mean | 987 | 1,246 | 1,703 | 799 | 260 | 780 |
| | | CI95% | *(588-1,385)* | *(363-2,129)* | *(902-2,504)* | *(226-1,373)* | *(0-550)* | *(272-1,287)* |
| | 2021 | Mean | 935 | 1,551 | 1,846 | 855 | 351 | 934 |
| | | CI95% | *(321-1,550)* | *(450-2,653)* | *(950-2,741)* | *(271-1,440)* | *(8-694)* | *(417-1,451)* |

**Table 2.10** Mean and confidence interval (CI95%) of fuel use intensity (FUI) for TBB by vessel length and overall using the AER dataset.

| TBB | | | VL0612 | VL1218 | VL1824 | VL2440 | VL40XX | Overall |
|---|---|---|---|---|---|---|---|---|
| | 2019 | Mean | 393 | 572 | 1,285 | 1,969 | 2,461 | 1,690 |
| | | CI95% | *(0-1,318)* | *(0-1,392)* | *(566-2,004)* | *(1,057-2,881)* | *(---)* | *(1,287-2,093)* |
| | 2020 | Mean | 421 | 397 | 1,169 | 2,320 | 3,056 | 1,833 |
| | | CI95% | *(0-904)* | *(0-1,468)* | *(552-1,785)* | *(1,712-2,929)* | *(---)* | *(1,382-2,284)* |
| | 2021 | Mean | 743 | 462 | 1,486 | 2,401 | 3,494 | 1,889 |
| | | CI95% | *(0-1,865)* | *(0-966)* | *(795-2,178)* | *(1,537-3,265)* | *(---)* | *(1,592-2,186)* |

**Table 2.11** Mean and confidence interval (CI95%) of fuel use intensity (FUI) for TM by vessel length and overall using the AER dataset.

| TM | | | VL0612 | VL1218 | VL1824 | VL2440 | VL40XX | Overall |
|---|---|---|---|---|---|---|---|---|
| | 2019 | Mean | 3,928 | 125 | 266 | 80 | 151 | 137 |
| | | CI95% | *(---)* | *(0-311)* | *(0-630)* | *(9-151)* | *(51-251)* | *(74-200)* |
| | 2020 | Mean | - | 95 | 178 | 93 | 120 | 115 |
| | | CI95% | *(---)* | *(0-216)* | *(0-462)* | *(25-162)* | *(67-172)* | *(75-155)* |
| | 2021 | Mean | - | 137 | 170 | 98 | 139 | 128 |
| | | CI95% | *(---)* | *(0-311)* | *(0-467)* | *(15-181)* | *(89-188)* | *(77-179)* |

### *Assessment of the fuel use intensity based on AER-FDI data combination*

Combining the AER information with the FDI data it was possible to estimate the fuel use intensity at gear level. AER landing and fuel use provided at fishing technique level have been parted according to effort-based profile (kWfishingdays by gear used) and landing (catch by gear) available in the FDI data.

From Table 2.12 to Table 2.14, for each fishing technique (DTS, TBB, and TM) it was estimated the fuel use intensity of the main gear in each specific group, showing also the vessel size effects.

**Table 2.12** Mean and confidence interval (CI95%) of fuel use intensity (FUI) for trawlers (OT) in the DTS fishing technique by vessel length and overall using a combination of AER and FDI data.

| DTS | OT | | VL0612 | VL1218 | VL1824 | VL2440 | VL40XX | Overall |
|---|---|---|---|---|---|---|---|---|
| | 2019 | Mean | 2,358 | 2,491 | 2,263 | 1,566 | 407 | 1,952 |
| | | CI95% | *(1,647-3,069)* | *(1,919-3,064)* | *(1,437-3,089)* | *(983-2,149)* | *(145-669)* | *(1,416-2,489)* |
| | 2020 | Mean | 2,094 | 2,670 | 2,334 | 1,414 | 228 | 1,858 |
| | | CI95% | *(1,422-2,767)* | *(1,681-3,659)* | *(1,227-3,442)* | *(672-2,156)* | *(0-566)* | *(1,172-2,544)* |
| | 2021 | Mean | 2,255 | 2,472 | 2,212 | 1,453 | 461 | 1,833 |
| | | CI95% | *(1,499-3,012)* | *(1,721-3,224)* | *(1,426-2,998)* | *(861-2,045)* | *(106-816)* | *(1,267-2,399)* |

Note: OT includes the gears OTB, OTT, and PTB.

**Table 2.13** Mean and confidence interval (CI95%) of fuel use intensity (FUI) for beam trawlers (TB) in the TBB fishing technique by vessel length and overall using a combination of AER and FDI data.

| TBB | TB | | VL0612 | VL1218 | VL1824 | VL2440 | VL40XX | Overall |
|---|---|---|---|---|---|---|---|---|
| | 2019 | Mean | 493 | 1,474 | 1,628 | 2,048 | 2,584 | 1,775 |
| | | CI95% | *(0-1701)* | *(386-2562)* | *(1113-2144)* | *(1118-2978)* | *(---)* | *(1250-2299)* |
| | 2020 | Mean | 594 | 1,035 | 1,886 | 2,237 | 1,800 | 1,916 |
| | | CI95% | *(0-2725)* | *(245-1825)* | *(1094-2678)* | *(1634-2840)* | *(---)* | *(1313-2518)* |
| | 2021 | Mean | 496 | 1,521 | 1,077 | 2,123 | 2,593 | 1,925 |
| | | CI95% | *(0-1288)* | *(837-2206)* | *(541-1614)* | *(1883-2363)* | *(2457-2729)* | *(1703-2147)* |

Note: TB includes the gears TBB tickler chain and chain matrix beam trawls.

**Table 2.14** Mean and confidence interval (CI95%) of fuel use intensity (FUI) for pelagic and midwater trawlers (TM) in the TM fishing technique by vessel length and overall using a combination of AER and FDI data.

| TM | TM | | VL0612 | VL1218 | VL1824 | VL2440 | VL40XX | Overall |
|---|---|---|---|---|---|---|---|---|
| | 2019 | Mean | 758 | 313 | 217 | 109 | 178 | 151 |
| | | CI95% | *(414-1,102)* | *(5-621)* | *(0-440)* | *(38-180)* | *(0-462)* | *(67-235)* |
| | 2020 | Mean | 634 | 193 | 167 | 114 | 84 | 102 |
| | | CI95% | *(0-2,689)* | *(0-404)* | *(3-331)* | *(50-179)* | *(49-118)* | *(56-148)* |
| | 2021 | Mean | 742 | 164 | 125 | 95 | 143 | 131 |
| | | CI95% | *(0-1,622)* | *(0-397)* | *(0-300)* | *(0-189)* | *(90-196)* | *(80-182)* |

Note: TM includes the gears OTM and PTM.

### *Assessment of the energy use and comparison with the AER information*

**Table 2.15** Energy use estimation (totenrcons) based on FDI landing and FUI indicators. Total energy consumption reported in the AER dataset is compared yearly for each fishing technique (AER-FDI and difference in percentage).

| FDI Landing [kg] | | | | | | | Energy consumption estimation | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| year | FT | OT | TB | TM | Others | Grand Total | totenrcons (FDI) | totenrcons (AER) | AER-FDI | Diff. (%) |
| 2019 | DTS | 736,206,222 | 618,621 | 352,804,428 | 51,542,736 | 1,141,172,007 | 1,491,649,489 | 881,614,783 | -610,034,706 | -41% |
| | TBB | 1,017,939 | 101,726,807 | 16,153 | 2,582,349 | 105,343,248 | 182,518,380 | 162,361,777 | -20,156,604 | -11% |
| | TM | 33,348,681 | 304,681 | 1,320,784,725 | 9,223,291 | 1,363,661,377 | 264,872,798 | 194,851,480 | -70,021,318 | -26% |
| | Total | 770,572,842 | 102,650,109 | 1,673,605,306 | 63,348,375 | 2,610,176,632 | 1,939,040,667 | 1,238,828,039 | -700,212,628 | -36% |
| 2020 | DTS | 614,583,777 | 828,637 | 90,162,366 | 46,651,332 | 752,226,112 | 1,152,378,262 | 792,531,624 | -359,846,637 | -31% |
| | TBB | 576,982 | 96,998,967 | 1,491 | 1,894,272 | 99,471,711 | 186,886,722 | 173,619,545 | -13,267,177 | -7% |
| | TM | 103,123,993 | 233,774 | 1,518,625,878 | 8,155,698 | 1,630,139,342 | 346,809,450 | 158,821,960 | -187,987,490 | -54% |
| | Total | 718,284,751 | 98,061,379 | 1,608,789,734 | 56,701,302 | 2,481,837,166 | 1,686,074,434 | 1,124,973,129 | -561,101,305 | -33% |
| 2021 | DTS | 407,761,174 | 404,455 | 165,551,215 | 29,675,327 | 603,392,170 | 769,917,179 | 759,412,538 | -10,504,641 | -1% |
| | TBB | 468,395 | 73,438,075 | 13,531 | 1,228,745 | 75,148,746 | 142,216,134 | 189,721,766 | 47,505,631 | 33% |
| | TM | 42,602,631 | 515,304 | 958,334,167 | 1,163,510 | 1,002,615,613 | 204,560,003 | 141,259,202 | -63,300,801 | -31% |
| | Total | 450,832,200 | 74,357,834 | 1,123,898,913 | 32,067,582 | 1,681,156,529 | 1,116,693,317 | 1,090,393,506 | -26,299,810 | -2% |

Note: The contribution of other gears is not considered in the FDI energy use calculation, totenrcons (FDI).

### *Italian Case study*

During the EWG 23-03, an exercise was performed to complement the fuel use information on the AER dataset. In the AER dataset, fuel consumption is provided by fishing technique, while in the FDI dataset, the effort is collected by fishing technique and gear type. Using both datasets, fuel use and economic expenditures can be broken down by gear type.

However, this exercise can be performed only when a model relating fuel consumption to vessel characteristics (e.g., LOA) is available. Therefore, EWG 23-03 decided to use only the Italian datasets and the model developed by Sala *et al.* (2022).

Sala *et al.* (2022) developed regression models, summarised in Table 2.16 and Figure 2.18, to infer daily fuel consumption from vessel length in Italian trawl fisheries. It is important to mention that other approaches can be used for the data quality check and to complement the AER dataset. For example:

- use of landings information and available FUIs by gear found in the literature;
- use of effort information (kWdays); and
- fuel consumption-specific coefficients (e.g., 120-140 gr/kWh)

For the Italian AER dataset, it is possible to break down the information collected by fishing technique (e.g., fuel consumption, days at sea) in information by gear type using the FDI dataset. Beforehand, a comparison of the number of days at sea given by fishing technique between AER and FDI has been checked to verify consistency before the analysis (further details are reported in the annex).

Three fishing techniques have been analysed: DTS, TM, and TBB. For each fishing technique, the ratio between AER and FDI's overall effort (kWFishingDays) ranges from 98-100%. Another consideration can be highlighted by looking at the effort ratios OTB/DTS, PTM/TM, and TBB/ $\overline{\text{TBB}}$ (where $\overline{\text{TBB}}$ represents the effort at fishing technique level) in the FDI dataset. The ratios are generally higher than 80%, except for the class VL0612 of DTS, which h is 76%. This means that OTB, PTM, and TBB gears are the main gear in the DTS, TM, and TBB techniques. Therefore, a fuel estimation using the model by Sala *et al.* (2022) of these main gears is an acceptable estimation of the fuel use of the fishing technique.

Table 2.16 and Figure 2.18 Mean daily fuel consumption (dFC) against vessel length overall (LOA). The linear regression models provide fuel consumption estimates for OTB (+), TBB (○), and PTM (●). *Modified*

*and adapted from Sala et al. (2022).* show the regression models developed by Sala *et al.* (2022). Using the FDI database, these models have been used to estimate daily fuel consumption at the gear level (e.g., OTB, PTM, and TBB), which can be compared with values in the AER database collected at the fishing technique level. Table 2.17 compares fuel use estimation and FUI between AER and FDI.

**Table 2.16** Linear regression models to infer daily-fuel consumption, dFC[l/day], from the vessel length overall covariate, LOA[m]. The theoretical LOA-based fuel use models respond to the relationships between daily fuel consumption and vessel length overall (LOA). The model coefficient estimates and summary statistics are reported for single-boat bottom otter trawlers (OTB), midwater pair trawlers (PTM), and Rapido beam trawlers (TBB). General linear model: *FC[l/day] = q × LOA$^m$*. *Modified and adapted from Sala et al. (2022).*

| | Daily consumption (dFC) | | |
|---|---|---|---|
| **Parameters/vessel type** | **OTB** | **PTM** | **TBB** |
| slope, *m* | 1.470 | 1.196 | 1.838 |
| intercept, *q* | 12.811 | 22.104 | 5.973 |
| *F* | *158.1* | *475.7* | *666.6* |
| *d.o.f* | 19 | 23 | 7 |
| *R-square* | *0.893* | *0.954* | *0.990* |

**Figure 2.18** Mean daily fuel consumption (dFC) against vessel length overall (LOA). The linear regression models provide fuel consumption estimates for OTB (+), TBB (○), and PTM (●). *Modified and adapted from Sala et al. (2022).*

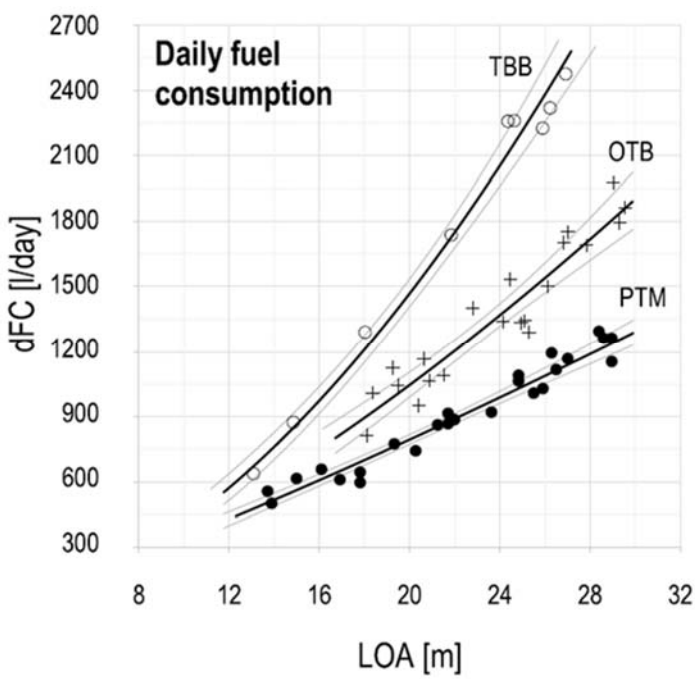


**Table 2.17** Comparison of fuel consumption (FC), landings and the resulting FUI between DTS(AER) and OTB(FDI), TM(AER) and PTM(FDI), TBB(AER) and TBB(FDI). *Continues on the following pages.*

| VL | Number of vessels | Days at Sea | | Daily fuel consumption [l/day] | | Annual fuel consumption [l/year] | | Annual landings [kg] | | FUI |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Single vessel | All vessels | Single vessel | All vessels | Single vessel | All vessels | Single vessel | All vessels | [l/kg] |
| AER (DTS) | | | | | | | | | | |
| VL0612 | 113 | 103 | 11,692 | 157 | 17,754 | 16,257 | 1,837,005 | 5,274 | 595,955 | 3.082 |
| VL1218 | 1,022 | 127 | 129,947 | 432 | 441,706 | 54,954 | 56,162,885 | 16,370 | 16,730,412 | 3.357 |
| VL1824 | 550 | 151 | 82,786 | 914 | 502,819 | 137,608 | 75,684,283 | 33,338 | 18,335,833 | 4.128 |
| VL2440 | 171 | 158 | 26,984 | 1,459 | 249,479 | 230,221 | 39,367,755 | 36,905 | 6,310,782 | 6.238 |
| Grand Total | 1,856 | 135 | 251,409 | 688 | 1,211,757 | 93,239 | 173,051,927 | 22,615 | 41,972,982 | 4.123 |
| FDI (OTB)+model | | | | | | | | | | |
| VL0612 | *86* | *103* | 8,851 | 425 | *36,448* | *43,763* | 3,757,417 | *5,499* | 472,176 | 7.958 |
| VL1218 | *1,010* | *127* | 128,033 | 650 | *656,005* | *82,336* | 83,159,274 | *16,067* | 16,228,066 | 5.124 |
| VL1824 | *540* | *150* | 81,005 | 1,097 | *592,653* | *164,484* | 88,862,414 | *31,557* | 17,048,628 | 5.212 |
| VL2440 | *170* | *155* | 26,227 | 1,653 | *280,228* | *255,732* | 43,353,370 | *35,422* | 6,004,978 | 7.220 |
| Grand Total | *1,806* | *135* | 244,116 | 898 | *1,565,335* | *121,361* | 219,132,475 | *22,017* | 39,753,848 | 5.512 |

| VL | Number of vessels | Days at Sea | | Daily fuel consumption [l/day] | | Annual fuel consumption [l/year] | | Annual landings [kg] | | FUI |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Single vessel | All vessels | Single vessel | All vessels | Single vessel | All vessels | Single vessel | All vessels | [l/kg] |
| AER (TM) | | | | | | | | | | |
| VL0612 | - | - | - | - | - | - | - | - | - | - |
| VL1218 | 30 | 132 | 3,947 | 750 | 22,493 | 98,646 | 2,959,377 | 234,486 | 7,034,594 | 0.421 |
| VL1824 | 20 | 156 | 3,116 | 959 | 19,181 | 149,420 | 2,988,393 | 374,831 | 7,496,616 | 0.399 |
| VL2440 | 37 | 133 | 4,936 | 1,366 | 50,549 | 182,264 | 6,743,765 | 350,950 | 12,985,150 | 0.519 |
| Grand Total | 87 | 138 | 11,999 | 1,058 | 92,223 | 145,880 | 12,691,535 | 316,280 | 27,516,360 | 0.461 |
| FDI (PTM)+model | | | | | | | | | | |
| VL0612 | - | - | - | - | - | - | - | - | - | - |
| VL1218 | *26* | *114* | 2,942 | 599 | *15,496* | *68,012* | 1,760,841 | *246,815* | 6,390,104 | 0.276 |
| VL1824 | *16* | *156* | 2,540 | 843 | *13,753* | *131,260* | 2,141,307 | *438,762* | 7,157,712 | 0.299 |
| VL2440 | *34* | *133* | 4,540 | 1,085 | *36,935* | *144,669* | 4,925,321 | *368,351* | 12,540,665 | 0.393 |
| Grand Total | *76* | *131* | 10,022 | 881 | *66,184* | *115,771* | 8,827,469 | *342,148* | 26,088,481 | 0.338 |

| VL | Number of vessels | Days at Sea | | Daily fuel consumption [l/day] | | Annual fuel consumption [l/year] | | Annual landings [kg] | | FUI |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Single vessel | All vessels | Single vessel | All vessels | Single vessel | All vessels | Single vessel | All vessels | [l/kg] |
| AER (TBB) | | | | | | | | | | |
| VL0612 | - | - | - | - | - | - | - | - | - | - |
| VL1218 | 10 | 108 | 1,082 | 576 | 5,764 | 62,371 | 623,711 | 14,702 | 147,016 | 4.242 |
| VL1824 | 28 | 136 | 3,808 | 1,095 | 30,668 | 148,958 | 4,170,816 | 41,962 | 1,174,931 | 3.550 |
| VL2440 | 25 | 146 | 3,643 | 1,540 | 38,492 | 224,360 | 5,609,000 | 85,582 | 2,139,561 | 2.622 |
| Grand Total | 63 | 135 | 8,533 | 1,219 | 74,924 | 165,135 | 10,403,527 | 54,945 | 3,461,508 | 3.005 |
| FDI (TBB)+model | | | | | | | | | | |
| VL0612 | - | - | 163 | - | - | - | - | - | 13,360 | - |
| VL1218 | *9* | *89* | 820 | 735 | *6,746* | *65,602* | 602,395 | *13,531* | 124,246 | 4.848 |
| VL1824 | *26* | *136* | 3,491 | 1,671 | *42,916* | *227,140* | 5,833,558 | *42,823* | 1,099,804 | 5.304 |
| VL2440 | *23* | *146* | 3,412 | 2,395 | *56,117* | *348,856* | 8,172,875 | *88,291* | 2,068,440 | 3.951 |
| Grand Total | *58* | *135* | 7,886 | 1,853 | *105,779* | *250,611* | 14,608,828 | *56,711* | 3,305,850 | 4.419 |

### *Literature review of fuel use intensity in other fisheries*

The FUI indicators estimated in the current analysis are consistent with other findings, but the demersal trawl fisheries examined here were substantially less fuel-intensive than most fisheries around the world. In detail, Table 2.18 summarises the figures from the available literature (References list provided below).

**Table 2.18** Fuel use intensity (FUI) based on a literature review of the main fishing gears by target species.

| Target species | Fishing gear | Mean FUI [l of fuel / t of fish] | No. | *CI95%* |
|---|---|---|---|---|
| Demersal species | Beam trawls | 1,795 | 2 | *(0-12,151)* |
| | Single boat bottom otter trawls | 2,635 | 134 | *(2,132-3,139)* |
| Small pelagics | Single-boat midwater otter trawls | 379 | 24 | *(254-503)* |

### *Main conclusions*

- In 2019-2021, the three main fishing techniques DTS, TBB, and TM, account for 74-76% of the total fuel use;
- Effort (kWFishingDays and totkW) is significantly correlated (Rsquared 0.817-0.929) with energy use and can infer missing data when needed and for a data quality check.
- Complementary information can be originated using a combination of AER and FDI datasets. Historically the AER dataset is structured with data classified by fishing techniques. A more

internationally acknowledged standard is to provide results of landings, energy use, costs and revenues by fishing gear used. The FDI dataset combined with the AER information demonstrates that this is possible when a reasonable effort consistency (e.g., kWFishingDays) by fishing technique between AER and FDI occurs.

- Using the AER data, we estimated energy use in fisheries in 2019-2021 of 780-979 litre/tonne of fish in DTS; 1 690-1 889 litre/tonne of fish in TBB, and 115-137 litre/tonne of fish in TM fishing technique. The pattern of demersal fisheries burning considerably greater amounts of fuel than fisheries targeting pelagic finfish and small pelagics, is validated. However, it is worth remarking that the fish caught with pelagic trawls are made up of sardine and anchovies, which are typically lower priced than the other catch the vessels obtain with bottom trawl gears.
- Using the FDI data in combination with AER data, it was possible to infer the FUI by gear and fishing technique in 2019-2021. In particular, for trawlers targeting demersal species (OT), we estimated a fuel use of 1 833-1 952 litre/tonne of fish, a mean FUI of 1 775-1 925 litre/tonne of fish for TBB, and 131-151 litre/tonne of fish for TM. This explicated a lack of homogeneity in the DTS technique with different gears classified in the same category. Fuel use intensity of the fishing techniques TBB and TM are not significantly different by the FUI found for the beam- and midwater trawlers.
- In general, in the Italian case study, the relationships found in Italian trawl fisheries between FUI, target species and gear type reflect those found previously in other regions and confirm that on average around 2.0–3.0 litre of fuel is burned per kg of landed fish. However, Italian fisheries tend to demand more energy inputs even when compared based on similar species and gears.
- Reported energy use in the AER dataset in 2019-2020 was between 33-36% smaller than energy use estimated with the AER-FDI combined approach, while 2% smaller in 2021. However, the energy use estimated with the AER-FDI approach does not account for other than trawl and beam trawl gears.
- Literature review of energy use in fisheries demonstrated the reliability of the fuel use intensities estimated with the AER-FDI combined approach. For demersal trawlers, we found that other fisheries use 2 132-3 139 litre to land a ton of fish comparable to our 1,833-1,952 litre/tonne. We found only two studies focused on beam trawlers; therefore, the statistical interval is relatively large, ranging from 0-12 151 litre/tonne of fish and not significantly different from the 1 775-1 925 litre/tonne of fish estimated in the EWG 23-07 analysis. The range found for trawlers targeting small pelagic was slightly higher, 254-503 litre/tonne, than the 131-151 litre/tonne we estimated.
- Information provided with this complementary analysis not only provides valuable information about the reliability of the AER data but also a tool for data quality check a priori. Member States are encouraged to check fuel use before submission using the statistical ranges. Furthermore, for some countries, the identified lack of consistency of effort data by fishing technique between AER and FDI is worth investigating.

## 2.5 EU Small-Scale Coastal Fleet (SSCF)

- *Introduction*

This section provides a summary of the main findings for the EU SSCF and by main fishing region. There are no EU small-scale vessels operating in the NAFO area, consequently, this region is not included in the analyses. Furthermore, the trend analyses refer just to the period 2018-2021 for which complete set of data (including Greek data) is available.

### *Main characteristics of Small-scale coastal vessels*

- Typical multi-gear and multi-species fleet. The most commonly used gears are trammel nets and set gillnets, followed by pots, set longline and hand lines;
- Area of operation closest to landing points, usually operating within 12 miles;
- The vessels are usually owned by small families or one physical person;
- Use of multiple fishing gears by the same vessel;
- Represents the most significant part of the EU fleet in terms of number of vessels;
- SSCF generally improves production price to a higher degree than the LSF, and the gap between prices at first sale can be very high. These gaps may be explained by both differences in quality linked to freshness, size grade and shorter fish supply chain.
- Importance to Coastal Communities: the small-scale coastal fleet plays a significant role in supporting coastal communities, providing employment opportunities and contributing to local economies. These fishermen often have strong cultural and social ties to their communities, passing down traditional fishing knowledge from generation to generation;
- Sustainable Practices: many small-scale coastal fishers adhere to sustainable fishing practices to preserve fish stocks and maintain the ecological balance of coastal areas. They often prioritize selective fishing techniques, avoiding overfished species, and minimizing bycatch (unintended catch of non-target species).

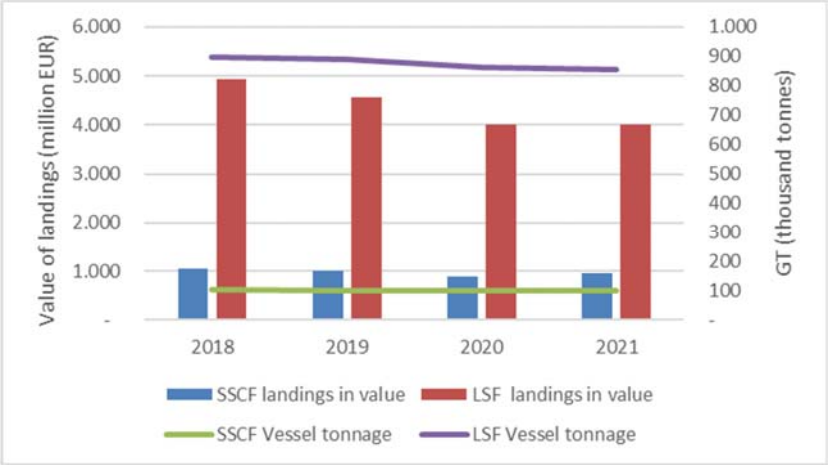
- *Key findings for 2021 and recent trends*

The EU small-scale coastal fleet (SSCF) totalled 41 267 active vessels in 2021, employing 59 948 fishers. This implies that the SSCF comprised 76% of the active fleet and 49% of the engaged crew.

### *Fleet capacity and landings*

The value of landings by the SSCF represented 16% of all EU landings in 2021. The number of vessels of the SSCF is 76% from the EU active fishing fleet, however, in terms of GTs, they represent the 7%. There was a general decline in landings in value for both SSCF and LSF categories from 2018 to 2020, with a slight recovery in 2021. Vessel tonnage remained relatively stable with minor fluctuations throughout the four-year period (Figure 2.19).

**Figure 2.19** Trends on the landings in value and vessel tonnage for the SSCF and LSF



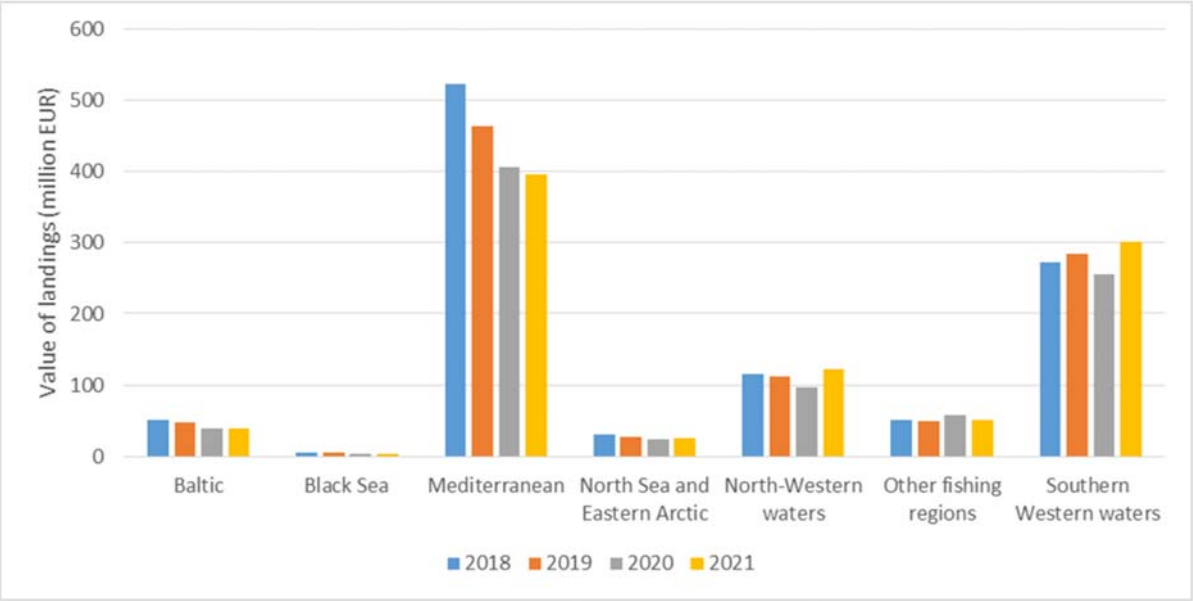

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2022)). All monetary values have been adjusted for inflation; constant prices (2020).

The differences between SSCF and LSF are driven by many factors such as gear selectivity, operating costs, selling price, indebtedness, level of dependency on overfished stocks, etc. but also on the opportunities and abilities of adapting to the global crisis that has significantly affected fisheries and the market for fishery products in recent years.

The European Union's Small-Scale Coastal Fisheries (SSCF) value of landings is heavily influenced by the Mediterranean region, which accounts for 42% of the total value. The second most significant region is the Southern Western waters, responsible for 32% of the SSCF landings' value.

The Baltic region has maintained a relatively stable landing value, with a slight increase observed from 2019 to 2021. Despite a decline in 2020, the landing value recovered to EUR 40 million in 2021, indicating consistent economic performance in this region. In contrast, the Black Sea region consistently has low landing values compared to other regions. The landing value remained unchanged at EUR 3 million from 2020 to 2021, suggesting a stagnant economic situation in the Black Sea fisheries sector. The Mediterranean region has experienced a gradual decline in landing value from 2018 to 2021. Although it still holds a significant share of the landing value, there was a notable drop from EUR 523 million in 2018 to EUR 395 million in 2021, indicating a downward trend in the economic value of fisheries activities. The North Sea and Eastern Arctic region has witnessed a slight decrease in landing value over the years. However, it remained relatively stable from 2020 to 2021, with a minor increase in 2021, suggesting a consistent economic performance in this region. The North-Western waters region has shown fluctuations in landing value but displayed an increase from 2020 to 2021. Notably, there was a rise from EUR 97 million in 2020 to EUR 122 million in 2021, indicating potential growth in the economic value of fisheries activities. Other fishing regions have maintained relatively stable landing values, with minor fluctuations over the years. The landing value reached EUR 52 million in 2021, indicating a consistent but moderate contribution to the overall landing value from these regions. The Southern Western waters region has demonstrated an increasing trend in landing value over the years. Despite a dip in 2020, there was significant growth from EUR 257 million in 2020 to EUR 301 million in 2021, indicating a notable expansion in the economic value of fisheries activities in this region (Figure 2.20).

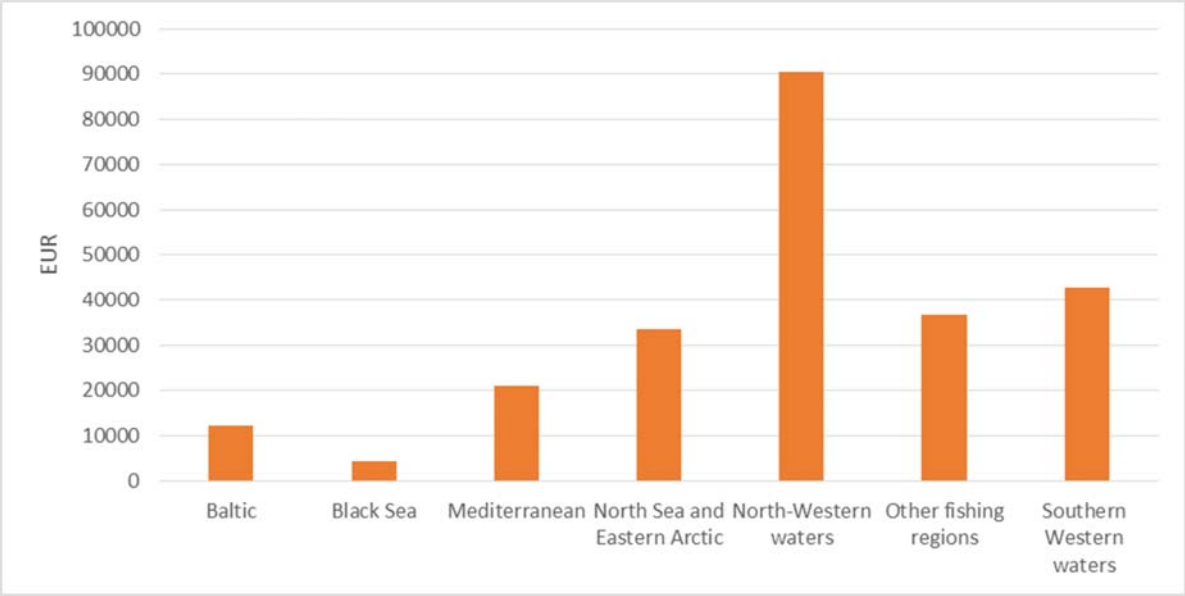
**Figure 2.20** Trends on landings in value for the SSCF by main fishing region




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

SSCF in North-Western waters achieved the highest value of landings per vessel (around EUR 90 000 per year), followed by SSCF vessels operating in SWW with EUR 42 000 (Figure 2.21).

**Figure 2.21** Landings in value per vessel in the SSCF by main fishing region



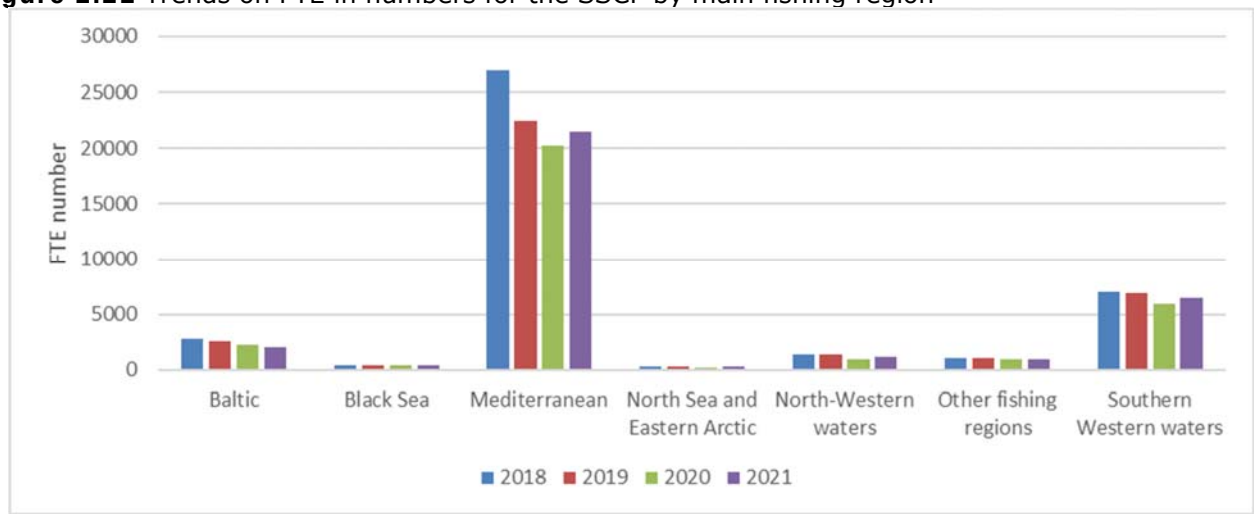

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

### *Employment and labour costs*

The number of employees in the SSCF (59 948) represents 49% of the total EU engaged crew and 40% (33 052) of all FTEs. Total employed decreased by 7% and FTE by 8% in 2021 compared to average 2018-2020.

The Mediterranean generates the highest number of FTEs, followed by the SWW and Baltic. On the other hand, the Baltic faced the more significant reduction (-20%) in FTEs among all the regions in the EU in the period 2018-2021 (Figure 2.22).

**Figure 2.22** Trends on FTE in numbers for the SSCF by main fishing region

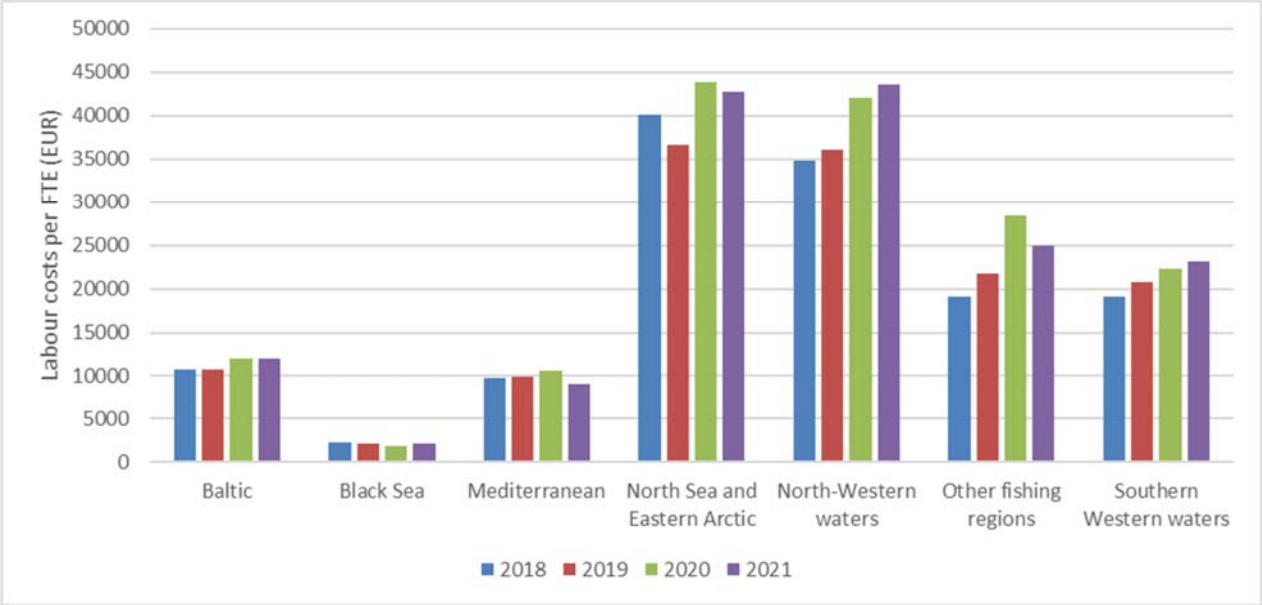



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

The crew wages and unpaid labour costs in SCCF were estimated at EUR 302 million and EUR 154 million, respectively, in 2021. The total labour costs (crew wages and unpaid labour) reduced by 6% relative to average 2018-2020 in line with the decrease in overall employment.

Annual average labour cost per FTE in 2021 in the SSCF was estimated at around EUR 22 500 and it increased by 2% relative to 2020. The highest labour cost per FTE was achieved in Northern Western waters (EUR 43 557) and in the North Sea and Eastern Arctic (EUR 42 747). This contrasts with the average value of regions with lowest value of labour cost: Black Sea (EUR 2 094), the Mediterranean (EUR 9 059) and the Baltic (EUR 12 030) (Figure 2.23).

**Figure 2.23** Trends on labour cost per FTE for the SSCF by main fishing region




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

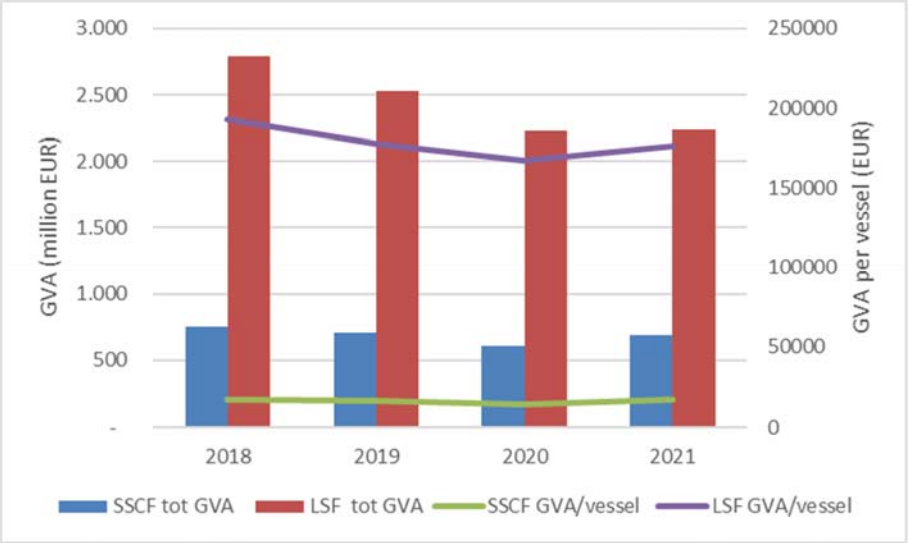
### *Economic performance*

Figure 2.24 displays a comparison between the SSCF and LSF in terms of GVA generated by the fleets. In terms of total Gross Value Added (GVA), SSCF experienced an average decrease of approximately 10.7% from 2018 to 2020, followed by a slight increase of about 13.7% in 2021 compared to the average trend. LSF also saw an average decrease in total GVA of approximately 12.2% from 2018 to 2020, with a minor increase of about 0.4% in 2021 compared to the average trend.

Looking at GVA per vessel, SSCF had an average decrease of approximately 13.9% from 2018 to 2020. However, there was a slight increase of about 16.0% in 2021 compared to the average trend. For LSF, there was an average decrease of approximately 13.6% in GVA per vessel from 2018 to 2020. In 2021, there was a slight increase of about 5.1% compared to the average trend.

Overall, both SSCF and LSF experienced decreases in total GVA and GVA per vessel from 2018 to 2020. However, there were slight recoveries and increases in 2021 for both categories, indicating a potential positive trend in GVA (Figure 2.24).

**Figure 2.24** Trends of GVA and GVA per vessel for the SSCF and LSF

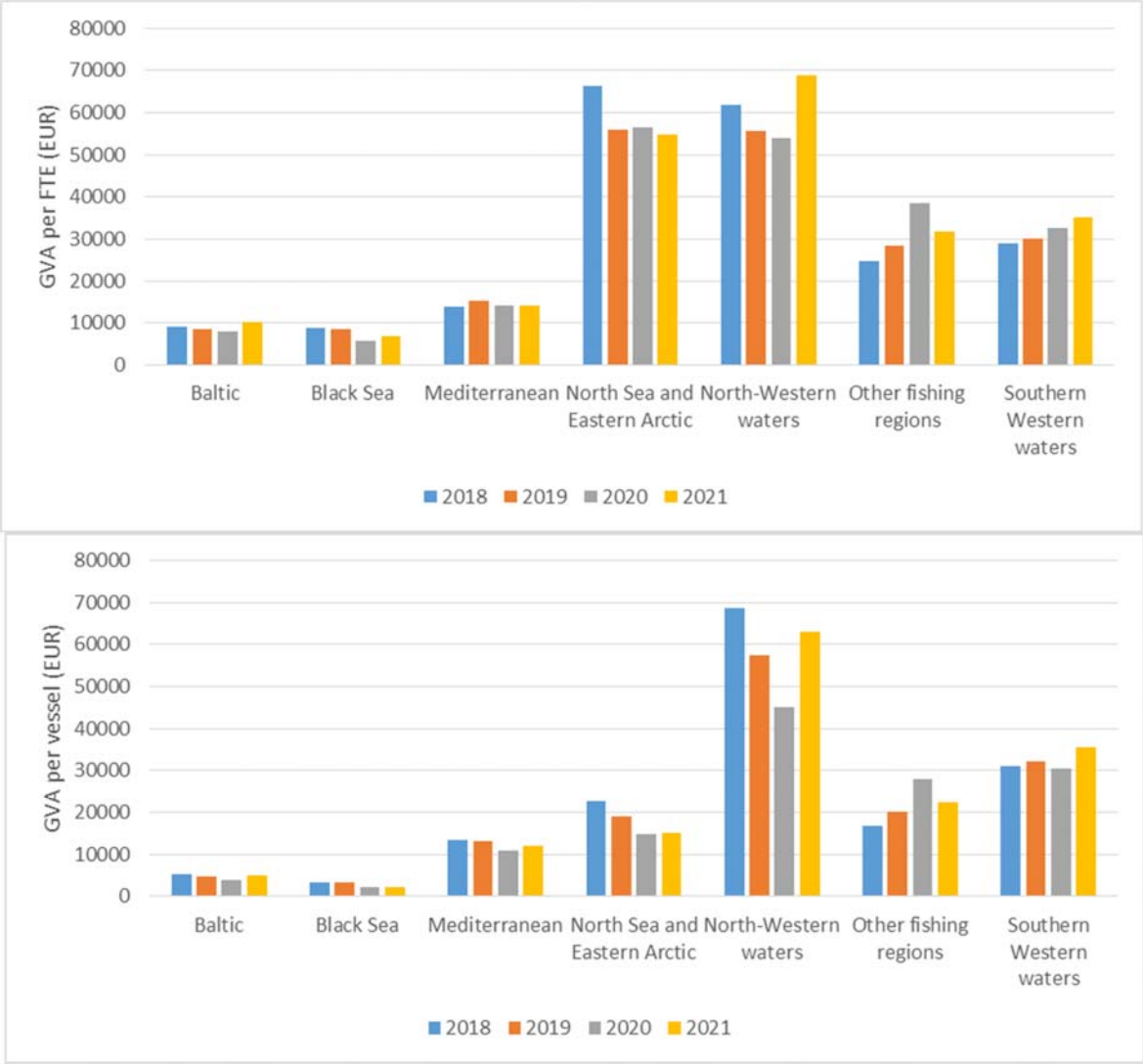



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

In SSCF, the labour productivity (GVA per FTE) increased by about 6% compared to 2018-2020 average, estimated at EUR 31 685. In 2021, an analysis GVA per FTE in different fishing regions revealed the following findings; The North-Western waters region demonstrated the highest GVA per FTE, reaching a value of EUR 68 928. It was followed by the North Sea and Eastern Arctic region, which had the second-highest GVA per FTE at EUR 54 922. The Southern Western waters region secured the third-highest GVA per FTE with a value of EUR 35 149. Conversely, the Black Sea region had the lowest GVA per FTE in 2021, with a value of EUR 6 855. The Baltic region ranked second-lowest with a GVA per FTE of EUR 10 206. Finally, the Mediterranean had the third-lowest GVA per FTE, measuring EUR 14 046 (Figure 2.25).

The North-Western waters is the region where the SSCF gets the highest average GVA per vessel, well above the average of the other regions. The Baltic region has shown a fluctuating pattern in GVA per vessel, with a decrease from 2018 to 2019, followed by a further decline in 2020. However, there was a slight recovery in 2021, indicating an unstable economic performance. The Black Sea region has experienced a relatively stable GVA per vessel over the years, with a slight decrease from 2018 to 2021. This suggests a consistent but comparatively lower economic value generated per vessel in the Black Sea fishing sector. The Mediterranean region has exhibited a downward trend in GVA per vessel from 2018 to 2020, with a slide increase in 2021. The North Sea and Eastern Arctic region witnessed a decrease in GVA per vessel from 2018 to 2021. The trend for GVA/Vessel in the North-Western waters region shows a fluctuating pattern. It started at a relatively high value, then experienced a decline in the subsequent years, followed by an increase in the most recent year. This indicates some variability in the economic performance and productivity of the region over time. Other fishing regions have shown fluctuations in GVA per vessel over the years, but with an overall increasing trend. This indicates moderate growth in economic value generated per vessel in these regions. The SWW region has demonstrated a relatively stable trend in GVA per vessel from 2018 to 2021, with minor fluctuations. This suggests a consistent but moderate economic performance in this region's fishing sector (Figure 2.25).

**Figure 2.25** Trends on average GVA per FTE (up) and GVA per vessel (down) for the SSCF by fishing region




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

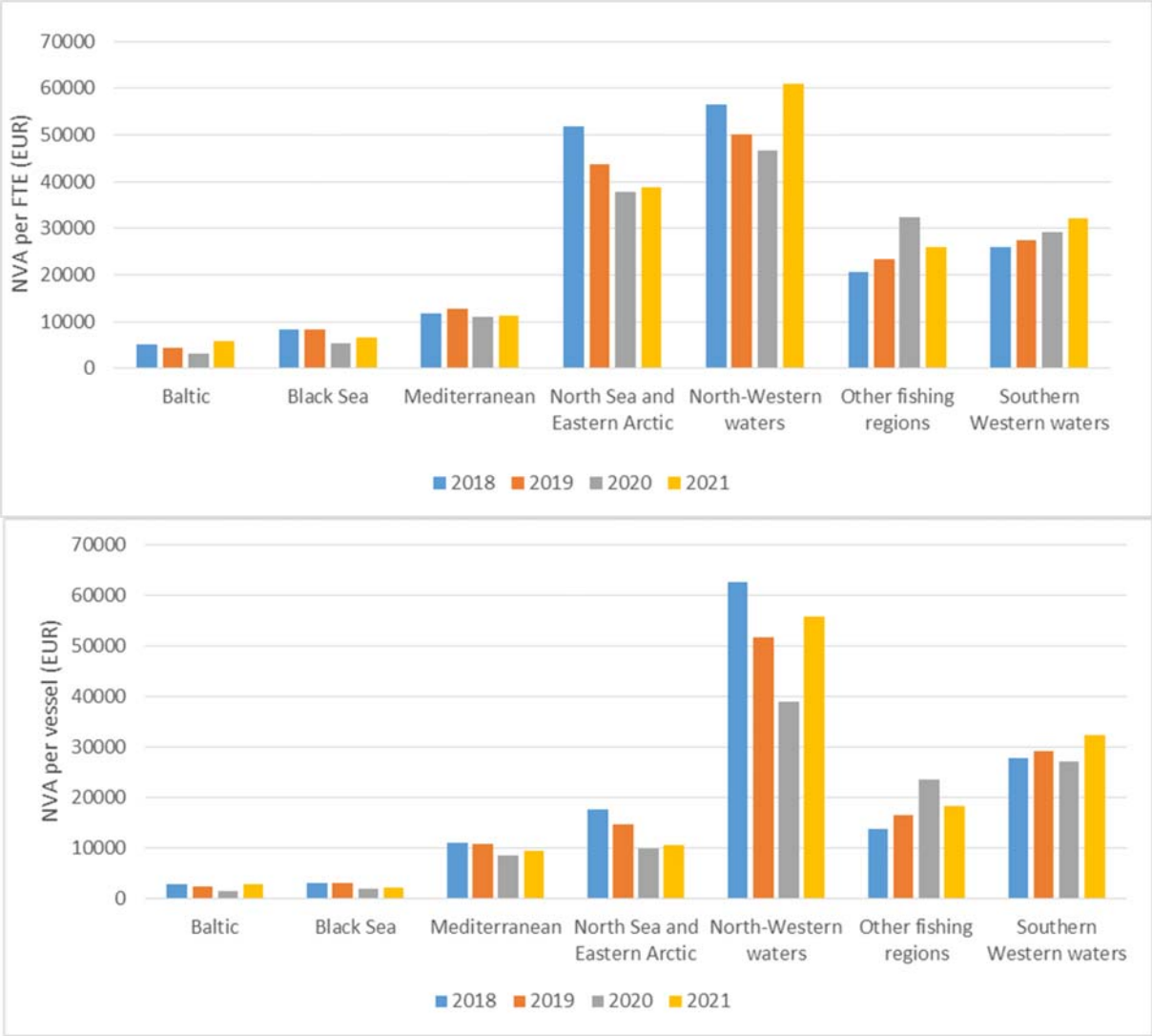
Fishers in SSCF are mostly self-employed. In this case, the owner-fisherman return includes the emolument for labour as well as that from the capital invested (in the form of the vessel and other physical capital) in the fishing activity. Net value added (NVA) thus shows how much money actually remains for the fisherman after paying all the expenses. The average NVA per vessel for the SSCF shows an increasing trend in most of the regions, with exemptions of Other fishing regions (decreased trend) in 2021 comparing to 2020. Similar situation can be observed when analysing NVA per FTE data (Figure 2.26).

The Baltic region experienced a downward trend in NVA/FTE from 2018 to 2020, followed by a significant increase in 2021. This indicates a recovery in economic productivity and value generated per full-time equivalent worker in the fishing industry. The Black Sea region demonstrated a relatively stable NVA/FTE over the years, with a gradual increase. Although the increase was modest, it suggests a consistent but comparatively lower economic productivity per worker in the Black Sea fishing sector. The Mediterranean region showcased fluctuations in NVA/FTE over the years, with a minor decline overall. This indicates some variations in economic productivity and value generated per worker in the Mediterranean fishing sector. The North Sea and Eastern Arctic region experienced fluctuations in NVA/FTE, with a decrease from 2018 to 2020, followed by a modest increase in 2021. This suggests a relatively stable but moderate

economic performance in this region's fishing industry. The trend for NVA/FTE in the North-Western waters region shows a fluctuating pattern. It started at a relatively high value, then experienced a decline in the subsequent years, followed by an increase in the most recent year. This indicates some variability in the economic performance and productivity of the region over time. Other fishing regions showcased fluctuations in NVA/FTE over the years, with an overall increasing trend. This suggests moderate growth in economic productivity and value generated per worker in the fishing sectors of these regions. The Southern Western waters region demonstrated a gradual increase in NVA/FTE from 2018 to 2021. This indicates a relatively stable economic performance, with moderate growth in productivity and value generated per worker in the fishing industry.

The NVA/Vessel (Net Value Added per Vessel) trends in different fishing regions varied over the years. The Baltic region experienced a significant decline in NVA/Vessel from 2018 to 2020, but there was a slight increase in 2021, indicating a potential recovery in economic productivity and value generated per vessel. In contrast, the Black Sea region demonstrated relatively stable NVA/Vessel with minor fluctuations and a slight increase in 2021, suggesting consistent but comparatively lower economic productivity per vessel. Fluctuations in NVA/Vessel were observed in the Mediterranean region, with a decline from 2018 to 2020 and a slight increase in 2021, indicating variations in economic productivity and value generated per vessel. The North Sea and Eastern Arctic region exhibited fluctuations as well, with a decrease from 2018 to 2020 and a modest increase in 2021, suggesting a relatively stable but moderate economic performance in the fishing industry at the vessel level. The trend for NVA/Vessel in the North-Western waters region shows a fluctuating pattern. It started at a relatively high value, then experienced a decline in the subsequent years, followed by an increase in the most recent year. This indicates some variability in the economic performance and productivity of the region over time. Other fishing regions demonstrated fluctuations with an overall increasing trend, but there was a decline in 2021, indicating variations in economic productivity and value generated per vessel. Fluctuations were observed in the NVA/Vessel of the Southern Western waters region as well, with a slight increase from 2018 to 2019 followed by a decline in 2020. However, there was a significant recovery in 2021, indicating a relatively stable economic performance and growth in productivity and value generated per vessel in this region's fishing industry (Figure 2.26).

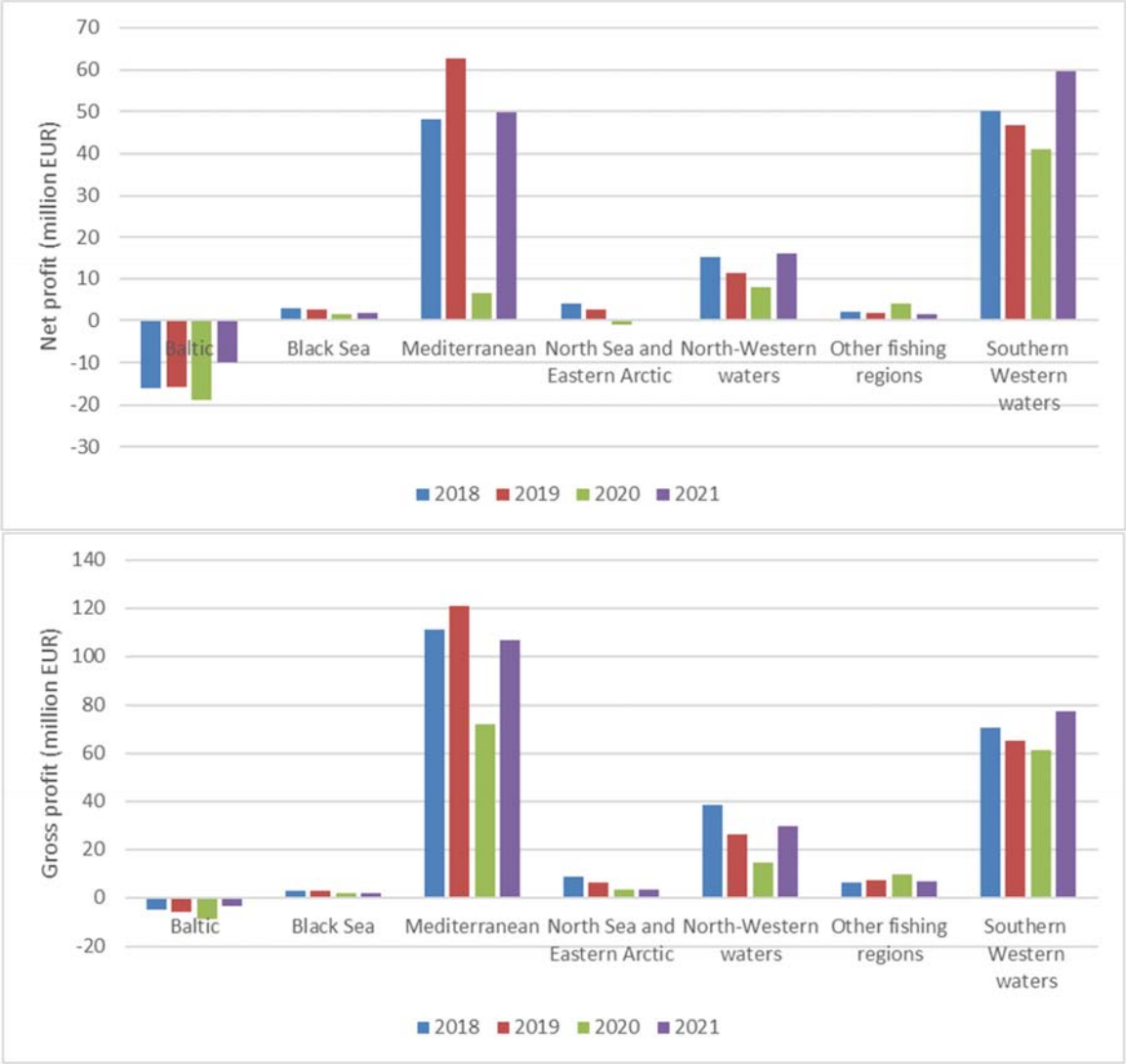
**Figure 2.26** Trends on average NVA per vessel and per FTE for the SSCF by main fishing region




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2022)). All monetary values have been adjusted for inflation; constant prices (2020).

Gross and net profits generated by SSCF in 2021 have reached pre-pandemic levels, recovering these variables from the abrupt decline that occurred in 2020. Net profit increase for 190%, while gross profit recorded a rise of more than 193% compared to the 2020 values. Figure 2.27 shows trends on the gross and net profit generated by the SSCF operating in the different EU fishing regions. The SSCF in the Mediterranean recorded the largest recovery along with, to a lesser extent, other regions as Southern Western waters and North-Western waters. Taking into account the evolution of gross and net profit, there are still regions that, despite the improvement in 2021, continue to show a negative trend compared to 2018, such as the Black Sea, North Sea and Eastern Arctic and Other fishing regions. Notably, the Baltic Sea region has negative records of gross and net profit for the whole period analysed.

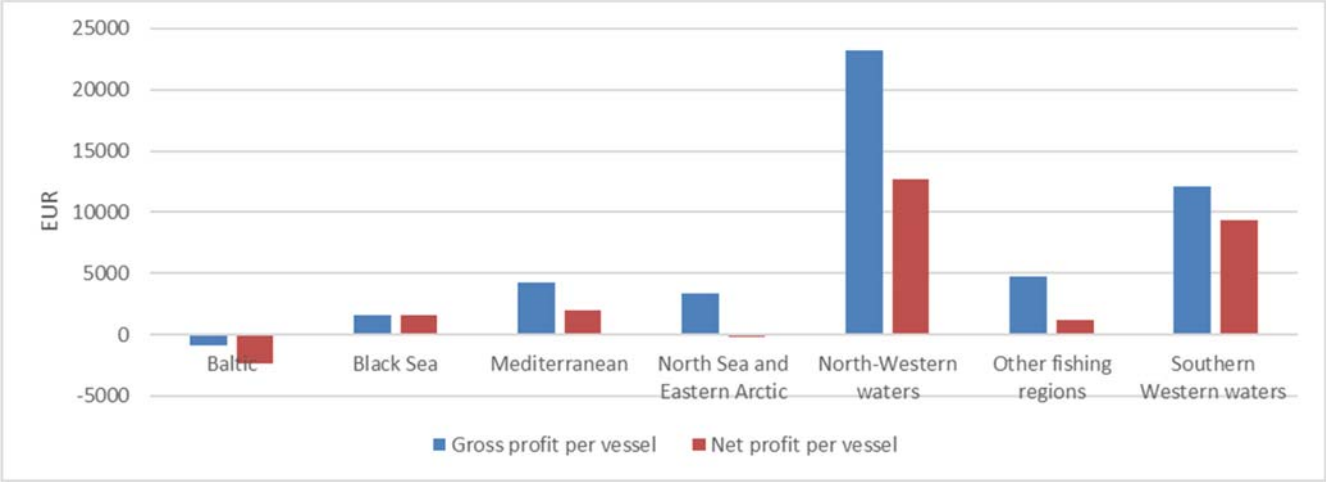
**Figure 2.27** Trends on gross and net profit for the SSCF by fishing region




Data source: MS data submissions under the 2022 Fleet Economic data call (MARE/A3/AC(2022)). All monetary values have been adjusted for inflation; constant prices (2020).

Figure 2.28 shows the average gross and net profit per vessel for SSCF. The highest values of both indicators are recorded in NWW and SWW. However, the biggest difference between the two indicators can be observed in the Mediterranean, North Sea and Eastern Artic, and the Baltic regions which may imply to higher Depreciation costs and Opportunity cost of capital compared to other regions.

**Figure 2.28** Average gross and net profit per vessel for the SSCF by fishing region in 2020




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

The gross and net profit margin in a small-scale fishing fleet can vary depending on several factors, such as the type of fishing activities, operational costs, market conditions, and the efficiency of the fleet management. There is a large heterogeneity among regions as far as the SSCF profit margins is concerned. However, most of the fishing regions have generated positive profit margins over the period analysed, except the Baltic Sea region's fleet (hitting a record low in 2020) and North Sea and Eastern Arctic, which has fluctuated between losses and profits (Figure 2.29).

The term "other income" in the context of small-scale EU fishing fleets refers to additional revenue sources beyond the primary fishing activities. These fleets engage in various non-fishing activities to supplement their earnings. Common examples include diversification activities such as ecotourism, recreational fishing charters, seafood processing, and direct sales of fish products. Small-scale fleets may also receive financial support through grants, subsidies, or assistance programs aimed at promoting sustainable fishing practices, fleet modernization, or capacity building. Additionally, these fleets may participate in scientific research projects or offer consultancy services related to fisheries management, marine conservation, or environmental impact assessments, thereby generating income. Providing training and educational programs for aspiring fishermen, fishery technicians, or marine conservationists is another avenue for earning income by leveraging the fleet's knowledge and expertise.

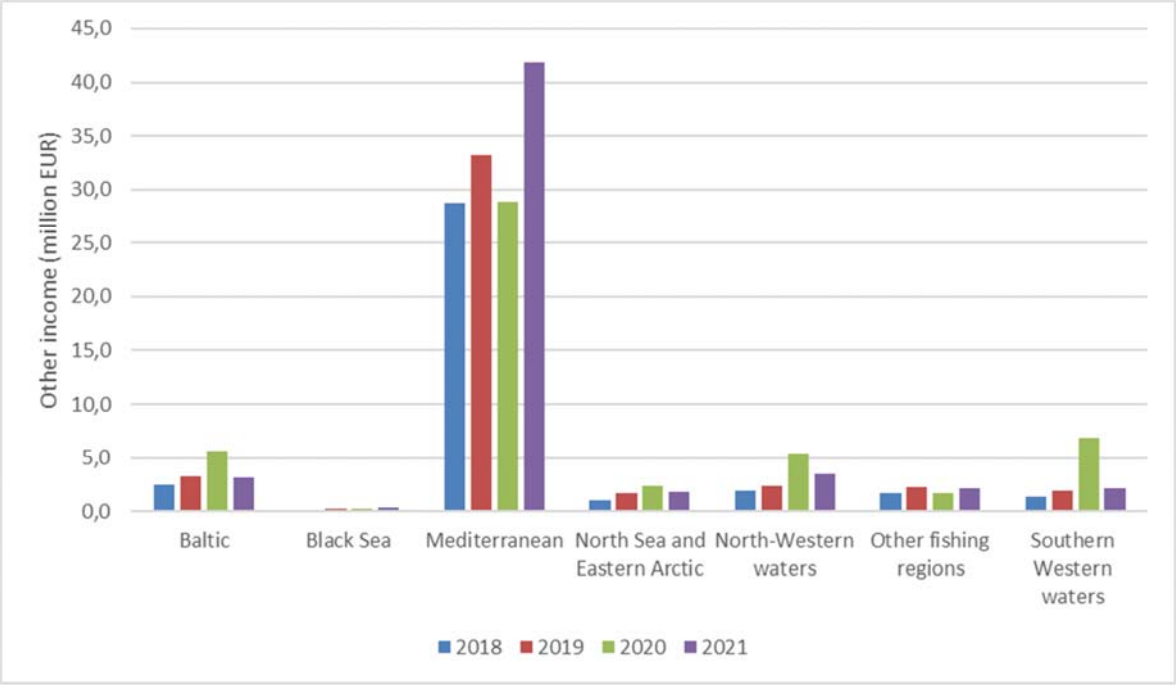
These various sources of other income highlight the adaptive and entrepreneurial nature of small-scale EU fishing fleets, enabling them to diversify their revenue streams beyond traditional fishing activities. This diversification can contribute to their economic resilience and sustainability in the face of changing market conditions and regulatory frameworks.

**Figure 2.29** Trends on gross and net profit margin for the SSCF by fishing region


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

The provided data highlights the other income received by small-scale coastal fleets in different fishing regions from 2018 to 2021. The Baltic region consistently had a significant amount of other income, ranging from EUR 2.5 million in 2018 to EUR 5.7 million in 2020, with a decrease to EUR 3.1 million in 2021. The Black Sea fleet had comparatively lower other income, starting at EUR 0.1 million in 2018 and gradually increasing to EUR 0.4 million in 2021.The Mediterranean fleet consistently had the highest other income, starting at EUR 28.7 million in 2018 and peaking at EUR 41.8 million in 2021, with a slight dip to EUR 28.8 million in 2020. COVID-19 crisis and consequently a decline in tourism revenues may be one of reasons for lower values of other incomes, especially in the Mediterranean. The North Sea and Eastern Arctic fleet had a relatively stable other income, ranging from EUR 1.1 million to EUR 2.4 million in 2020 whit a slide dip to EUR 1.8 million in 2021, while the North-Western waters fleet experienced an increase from EUR 1.9 million in 2018 to EUR 5.4 million in 2020, with a decrease to EUR 3.5 million in 2021. Other fishing regions and SWW fleets received varying amounts of other income over the years. Other fishing regions had a range of EUR 1.7 million to EUR 2.3 million, while Southern Western waters fleets had other income between EUR 1.4 million and EUR 6.9 million.

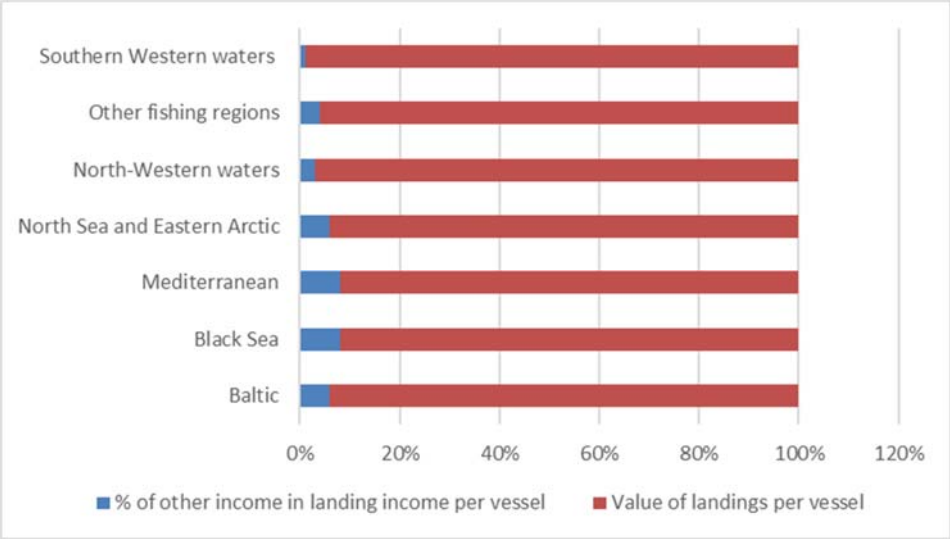
**Figure 2.30** Other income per vessel for the SSCF by fishing region in 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

Share of Other income in landing income is the highest in Black sea and Mediterranean, followed by Baltic. Other income, in most of the regions, consists mainly of income from tourism and, in 2020, also from compensation for income shortfalls caused by the COVID-19 outbreak (Figure 2.31).

**Figure 2.31** Share of Other income in landing income per vessel for the SSCF by fishing region in 2021



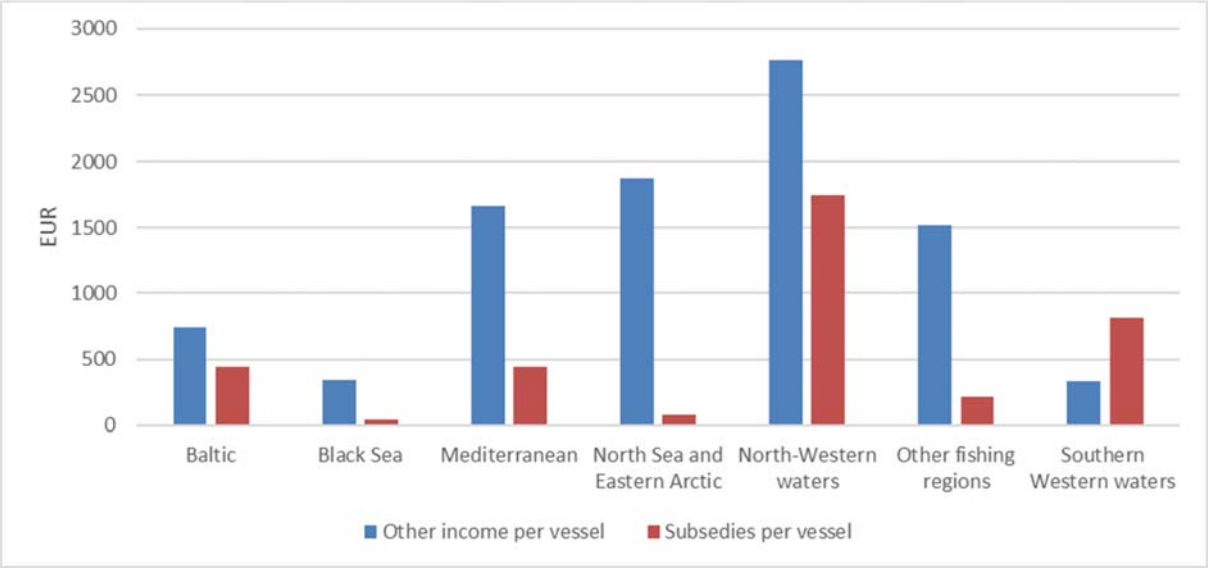

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

Operating subsidies are financial support provided to small-scale fishing fleets to promote sustainable practices, fleet modernization, and capacity building. Other income refers to revenue generated from non-fishing activities. There may be a correlation between operating subsidies and other income, as

subsidies can enable fleets to invest in income-generating activities such as diversification, research, or training.

The data highlights the regions with the highest value of operating subsidies per vessel in small-scale fishing fleets. North-Western waters, Southern Western waters, the Baltic region, and the Mediterranean region stand out as the regions receiving significant financial support. These subsidies indicate a recognition of the importance of supporting fishing activities, promoting sustainability, and ensuring economic viability (Figure 2.32).

**Figure 2.32** Other income and operating subsidies per vessel for the SSCF by fishing region in 2021



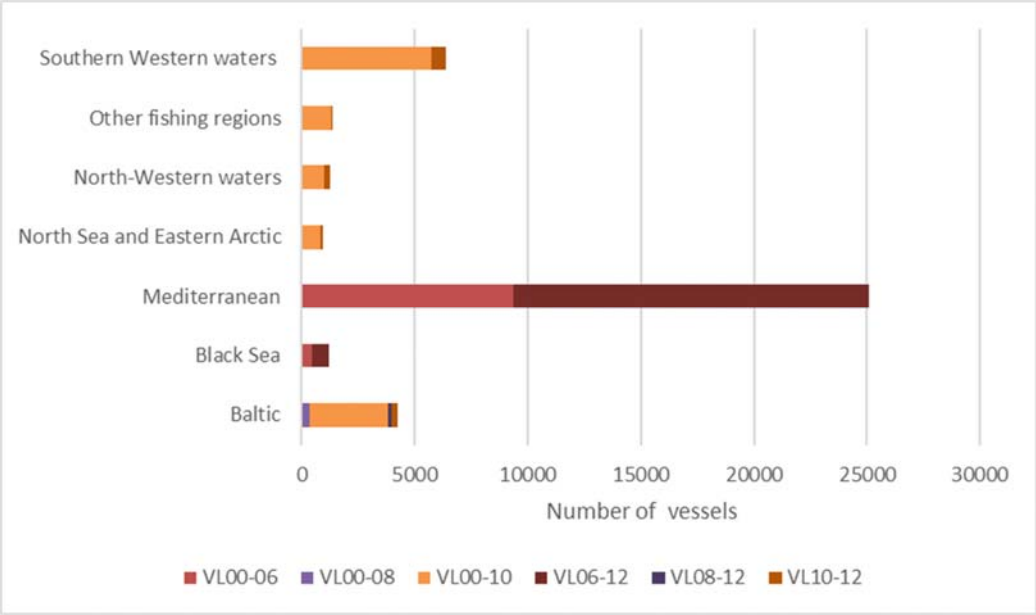

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

### *Economic performance by length class*

Vessel length class refers to the categorization of fishing vessels based on their size. In the EU small-scale coastal fishing sector, six vessel length classes have been identified: VL00-06 (Black Sea and Mediterranean), VL00-08 (Baltic), VL00-10 (Baltic, North Sea and Eastern Arctic, North-Western waters, Other fishing regions and Southern Western waters), VL06-12 (Black Sea, Mediterranean and Southern Western waters) , VL08-12 (Baltic and North Sea and Eastern Arctic) and VL10-12 (Baltic, North Sea and Eastern Arctic, North-Western waters, Other fishing regions and SWW). These length classes encompass a spectrum of vessel sizes commonly encountered in coastal waters, reflecting the diversity of fishing practices and species targeted by the small-scale fleet.

Data in Figure 2.31 provide an overview of the distribution of vessels across different length classes in each fishing region. In the Baltic region, the vessel distribution is characterized by 348 vessels in the VL00-08 length class, 3 490 vessels in the VL00-10 length class, 131 vessels in the VL08-12 length class, and 258 vessels in the VL10-12 length class. Moving to the Black Sea region, it is observed that there are 429 vessels in the VL00-06 length class and 762 vessels in the VL06-12 length class. In the Mediterranean, the vessel count includes 9 344 vessels in the VL00-06 length class and 15 759 vessels in the VL06-12 length class. Moving to the North Sea and Eastern Arctic, it is reported that there are 833 vessels in the VL00-10 length class, 2 vessels in the VL08-12 length class, and 108 vessels in the VL10-12 length class. In North-Western waters, there are 998 vessels in the VL00-10 length class and 275 vessels in the VL10-12 length class. Other fishing regions report 1 309 vessels in the VL00-10 length class and 73 vessels in the VL10-12 length class. Lastly, in SWW, there are 5 735 vessels in the VL00-10 length class, 4 vessels in the VL06-12 length class, and 660 vessels in the VL10-12 length class (Figure 2.33).

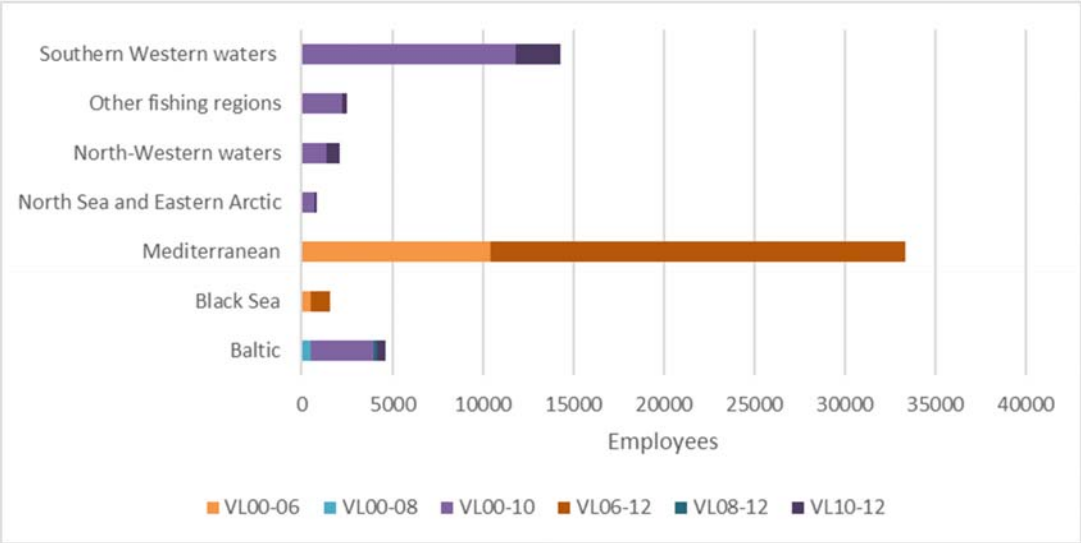
**Figure 2.33** Number of vessels by length class for the SSCF by fishing region in 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

Among the available data, the three length classes with the highest number of employees are identified. The Mediterranean region stands out with the VL06-12 length class, employing 22 975 persons. This indicates a substantial workforce within this length class, highlighting its importance in terms of employment within the SSCF sector. In the SWW, the VL00-10 length class has the second-highest employment rate, employing 11 persons 816 persons. Finally, the Mediterranean region shows a significant number of employees in the VL00-06 length class, totalling 10 410 persons (Figure 2.34).

**Figure 2.34** Employment by length class for the SSCF by fishing region in 2021



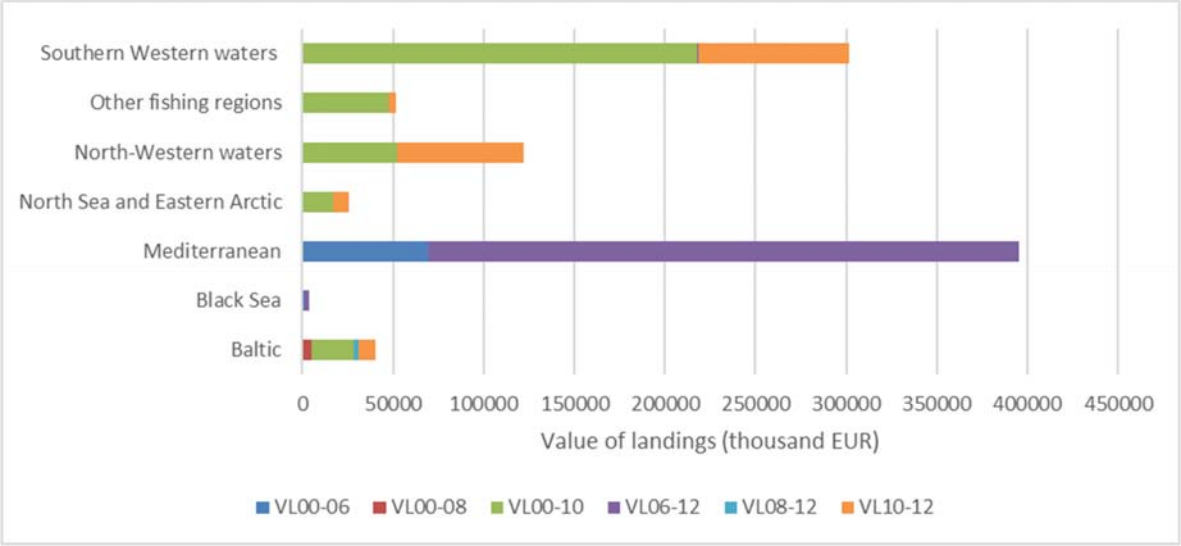

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

The value of landings in the EU SSCF sector varies across regions and length classes. The most important segments for each region are as follows:

- Baltic region: VL00-10 length class has the highest value of landings, followed by VL10-12 and VL00-08.
- Black Sea region: VL06-12 length class has the highest value of landings
- Mediterranean region: VL06-12 length class dominates the value of landings.
- North Sea and Eastern Arctic region: VL00-10 length class has the highest value of landings, followed by VL10-12.
- North-Western waters: VL10-12 length class has the highest value of landings, followed by VL00-10.
- Other fishing regions: VL00-10 length class has the highest value of landings, followed by VL10-12.
- Southern Western waters: VL00-10 length class has the highest value of landings, followed by VL10-12, with a smaller contribution also from VL06-12.

Overall, the Mediterranean region stands out with significant landings value in the VL06-12 length class, while the North-Western waters and Southern Western waters highlight the importance of the VL10-12 and VL00-10 length class in terms of value (Figure 2.35).

**Figure 2.35** Value of landings by length class for the SSCF by fishing region in 2021



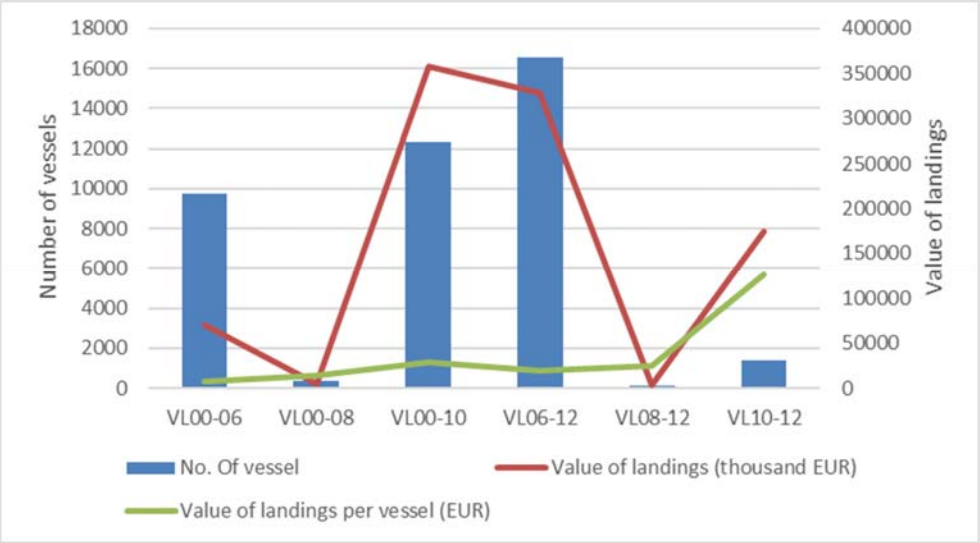

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

Among the analysed length classes, the VL00-10 segment stands out with the highest landing value, amounting to EUR 357 000. Despite having a lower value of landings per vessel, the large number of vessels in this class contributes significantly to the overall landing value.

The VL06-12 class follows closely behind, with 16 525 vessels generating a substantial landing value of EUR 328 000. Although the value of landings per vessel is not the highest, the sheer number of vessels compensates for it.

The VL10-12 segment exhibits the highest value of landings per vessel, reaching EUR 126 633. This finding indicates that larger vessels within this size range contribute the highest economic value in terms of landings. The value of landings per vessel in VL00-10 amounts to EUR 28 94. Although lower than the VL10-12 segment, it still represents a substantial economic value per vessel. Lastly, the third highest value value of landings per vessel reach VL08-12 segment with EUR 24 331 per vessel (Figure 2.36).

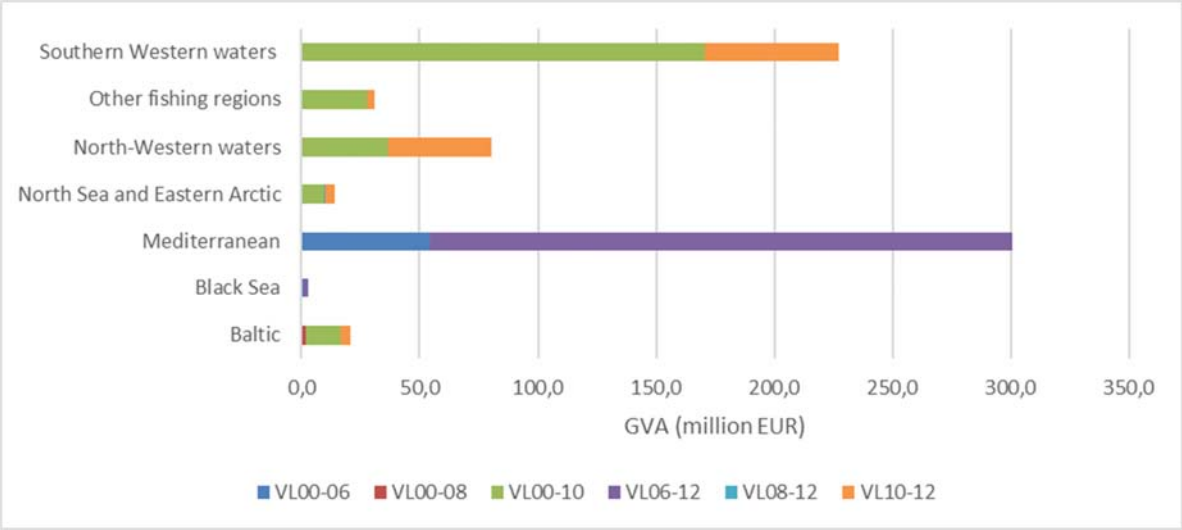
**Figure 2.36** Value of landings by length class for the EU SSCF in 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

The provided data presents the gross value added (GVA) for different fishing regions, indicating the economic value generated within each region and length class. Among the regions, the Mediterranean exhibits the highest overall GVA. Specifically, in the VL06-12 length class, it contributes approximately EUR 246.4 million, while in the VL00-06 length class, it has a GVA of around EUR 54.5 million. Following the Mediterranean, the SWW region displays the second-highest GVA. In the VL00-10 length class, it contributes approximately EUR 170.5 million, and in the VL10-12 length class, it adds approximately EUR 56.6 million to the overall GVA (Figure 2.37).

**Figure 2.37** GVA by length class for the SSCF by fishing region in 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

### 2.6 EU Outermost Region Fleet (OMR)

The EU Outermost Region (OMR) fleet refers to vessels based in the nine remote territories belonging to three EU Member States: six French territories - Saint-Martin, Guadeloupe, Martinique, French Guiana, Mayotte, La Reunion, and; one Spanish territory - Canary Islands; and two Portuguese autonomous regions - Azores and Madeira.

Combined, the EU OMR (local) fleet numbered 2 581 active vessels in 2021 with 93% of the fleet under 12 meters LOA. With 1 431 vessels, the French fleet was the most numerous, accounting for 55.4% of all active EU OMR vessels. The Portuguese fleet comprised 579 vessels (22.4%) and the Spanish fleet 571 vessels (22.1%). Canaries Islands and Martinique, with 571 active vessels each, were the largest OMR fleet (by number), followed by Guadeloupe (515), Azores (493), Reunion (158), French Guiana (96), Mayotte (91) and Madeira (86).

In 2021, the OMR fleets operated 189 279 DaS for a total energy consumption of 25.3 million litres. In terms of energy efficiency, average figures were 124 litres per trip for the OMR as a whole, 1.5 kg and 5.9 euro of fish landed per litre of fuel consumed but with heterogeneous situations between OMRs and segments. Engaged crew was 6 666 for 3 512 FTEs. Landings from the OMR fleets combined amounted to 35 163 tonnes valued at EUR 138.4 million in 2021 (average price 3.9 euro/kg). The French OMR fleets accounted for 44% of the landings in value (28% in weight), followed by the Portuguese OMR fleets (37% in value, 49% in weight) and the Canaries Islands fleets (19% in value, 23% in weight). The average price was respectively 6.1 euro/kg, 3.0 euro/kg and 3.3 euro/kg for the French, Portuguese and Spanish fleets. OMR fleets mostly supply local markets with fresh fish and relative high prices. The exceptions are some tunas and other large pelagic species which are often processed (canned, in loins or frozen) and exported to the EU mainland and also deep-sea species from Azores. It is noteworthy that the price obtained for these species is very dependent on the international markets. Gross value added and net value added were EUR 87.0 million (61% of total revenue) and EUR 73.4 million, respectively. Gross profit and net profit were estimated to EUR 17.3 million and EUR 4.9 million, respectively. In 2021, GVA per crew member was EUR 13 509 and GVA per FTE was EUR 25 976. These figures exclude operating subsidies which represented 3.6% of OMR total revenue in 2021 but with significant differences between member states and OMR. They represented 7.0% of revenue in Portuguese OMRs, 4.3% in Canaries islands and 0.5% for French OMR. These subsidies may have a significant impact on profitability of the segments.

OMR active vessels declined by -23% between 2013 and 2021 (Canaries Island and Mayotte excluded) and by -14% between 2017 and 2021 for the whole OMR fleet. Engaged crew and days at sea follows quite the same trend with however significant differences between OMRs (see below). After the year 2020 (with COVID-19 crisis) where there was a decrease in DaS and the weight of landings, there was an increase in 2021 in the weight of landings, with the value of landings very similar to the previous year. In terms of days at sea, there was a decrease compared to 2020, with contrasted impacts between OMRs. Between 2017 and 2021 there is a decrease in GVA and Revenue, with significant differences between the OMR. For example, in the case of Martinique and Réunion there was a significant increase in both GVA and Revenue. This evolution needs to be confirmed and analyzed at OMR and segments because several drivers may explain these trends (exit of non-active or less active vessels, decommissioning schemes, resource evolution, operating subsidies ...).

### 2.7 Large-Scale Fleet (LSF)

The EU large-scale fleet (LSF) comprises all fishing vessels over 12 metres using static gears and all fishing vessels using towed gears operating predominately in EU waters. It encompassed 12 704 vessels in 2021 and employed 55 217 fishers, representing 23% and 45% of the total active EU fleet, respectively.

This fleet contributed 74% in landings and 67% to the value of these landings of the total EU fleet. The LSF was profitable in 2021 but while GVA remained similar to 2020, gross and net profit reduced by 10% and 12.5% compared to the previous year, respectively. All the Member States' LSF made gross profits in 2021 and four, Cyprus, Germany, Finland and Slovenia, made net losses.

It accounts for 45% of the employment (55 217 jobs) and 51% of the FTE (41 903) of the EU fishing fleet.

GVA was estimated at around EUR 2 242 million (67% of the EU total) and gross profit at around EUR 789 million (67% of the EU total). Estimated net profit was EUR 343 million (68% of the EU total). Compared to 2020, gross profit and net profit in LSF decreased by 10% and 12.5%, respectively.

Labour productivity (GVA per FTE) was estimated at EUR 53 500 a similar value as in 2020. On average, the salary of FTE in the EU DWF in 2021 was EUR 34 700 per year. All productivity indicators have decreased significantly throughout 2015-2020.

### 2.8 EU Distant-Water Fleet (DWF)

The EU Distant-water fleet (DWF), comprises fishing vessels over 24 metres LOA flying the flag of a Member State and fishing predominately in non-EU waters. This fleet represents 0.4% of the EU active vessels and 1% of the effort (fishing days), but carries out 19% of all the landings (686 908 tonnes) of the EU in weight and 17% in value (EUR 1 036 million).

In 2021, there were 242 fishing vessels (Spain 81%, France 8%, Portugal 6%, Italy 2%, Lithuania 2% and Poland with one vessel) with a capacity of 252 511 GT (19.2% of total) or 344 591 kW (6.6% of total), active in distant waters. Over the years, the number of DWF vessels has decreased (from 288 in 2013 to 242 in 2021), however, this has not impacted at the same extent the level of catches and landings, which has decreased by 2.4% compared to the average of the period 2013-2020.

It accounts for 5.5% of the employment (6 752 jobs) and 8.3% of the FTE (6 792) of the EU fishing fleet.

GVA was estimated at around EUR 398 million (12% of the EU total) and gross profit at around EUR 168 million (14% of the EU total). Estimated net profit was EUR 95 million (19% of the EU total). Compared to 2020, gross profit and net profit in DWF increased. Gross profit almost doble while net profit moves from negative to positive positions.

Labour productivity (GVA per FTE) was estimated at EUR 58 600. On average, the salary of FTE in the EU DWF in 2021 was EUR 33 900 per year. All productivity indicators have decreased significantly throughout 2013 to 2021. GVA decreased by 3% and gross profit by 15%. A decrease in GVA to revenue and gross profit margin (2.9% and 29%, respectively) compared to 2013 was also observed.

## 2.9 Main drivers and trends affecting the economic performance of the EU fleet

### *Summary of main trends on economic performance*

After continuous growth of the economic performance of the EU fishing (excluding Greece and United Kingdom) fleet in 2009-2016, a declining trend of profitability from 2017 to 2020 has being observed. However, 2021 seems to be a break in this downward trend, at least if this year in isolation is considered and not the expected impact of the fuel cost increase observed in 2022.

In fact, different factors will have varying levels of impact on different fleets. However, a main factor stand out in 2021, the recovery from the COVID-19 outbreak. Other factors that may cause to deteriorated economic performance, include, but are not limited to the following (in no specific order) by main fishing region.

### *North Sea and Eastern Arctic*

- The uncertain situation concerning TACs because of Brexit in the beginning of 2021 and lacking agreements with the United Kingdom. Important demersal species were set on 25% of the quota for 2020 in the first quarter of the year. For pelagic species like North-East Atlantic mackerel, horse mackerel and blue whiting the quota were set on 45-60% for the first quarter of the year because of seasonality of catches.
- Later in 2021 the EU agreed with the UK about total TAC for important and shared species. The UK claimed a larger share of the TAC. 25% of the value of fishing quota of the EU landings in UK waters is considered to be transferred to the UK which gradually reduces fishing opportunities for EU fleets from 2021 to 2025. Most of the transfer has happened in 2021 (60%) and the remainder will be transferred in 2022 (70%), 2023 (92%) and in 2024 (100%). Brexit therefore has reshaped fisheries relations with consequences for some EU fleets operating in the North Sea but also in the English Channel, Irish Sea and the Atlantic Ocean. Fish stocks in the North Sea have become shared stocks with the UK, which must now also be jointly managed. Access for EU vessels to UK waters is now subject to licences delivered by UK authorities. The quota reduction in value for the EU will mainly affect France, Ireland and the Netherlands, but also Denmark, Germany, Spain and Belgium, and to a lesser extent Sweden, Poland, Portugal, Estonia, Lithuania and Latvia.
- Negotiations between the EU and Norway, Faroe Islands and Iceland about TAC shares (mainly for blue whiting and mackerel) have led to unfavourable development of EU TAC shares and landings.
- Effects of COVID-19 turned up also in 2021 but in a different way. The market recovered partly which resulted in higher prices for fish but also for fuel. Almost all fish prices increased. Shrimp by 17%, Common sole by 10% and other flatfish species between 4 and 8%. Pelagic species like herring, mackerel and blue whiting on average slightly higher. The fuel prices increased by more than 50% and have burdened the sector.
- A decrease in landings of (flat)fish. Landings of Common sole for instance decreased by 8% compared to 2020 (while quota increased by 14%).
- Vertical integration leading to shifts in ownership stopped in 2021.
- The implementation of the ban on the pulse fishing technique (mid 2021) resulting in increasing fuel costs and decreasing net profits in flatfish fisheries.
- Ongoing quota adjustment as a consequence of the Brexit since 2021 will have a substantial negative impact on pelagic (herring) as well as flatfish (common sole and plaice) fishing performance in the region.
- In the Netherlands, the BAR (Brexit Adjustment Regulation) will open doors to entrepreneurs in fisheries to stop fishing activities. As a result of less fishing opportunities, for flatfish, vessels will be decommissioned. This will cut capacity and it is expected that the remaining (flatfish)segment will not be able to produce enough fish in the coming years and quota will be underexploited.

- The catchability of flatfish is going down and it is not known what the cause is.
- Innovation and energy transition is hampering because of lack of R&D and solutions that can be implemented.

### *Baltic Sea*

- In 2021, TAC for herring decreased considerably overall: Central herring -36% (--55 833 tonnes), Western herring -50% (-1 575 tonnes), Bothnian unchanged, Riga +15% (+5 001 tonnes). As herring has been an important part of the catch of Baltic fishing fleet, this has a substantially negative effect on the economic performance.
- The cod stocks both in the Eastern and Western part of the Baltic Sea are in critical condition. The commercial cod fishing was significantly reduced in 2019 and direct fisheries on cod were not permitted in 2020-2023, except for small-scale fisheries on the Western cod stock. The cod catches are allowed only as an unavoidable by-catch. Eastern cod quota was reduced by another 70% in 2021 (after -92% in 2020) while Western cod quota remained almost unchanged (+5% after -60% in 2020). Altogether, this is an ongoing threat to a considerable part of the regional fleet. ICES expects that the cod stock most probably will remain in a dire condition in the middle-term.
- Fishing performance, especially in the SSCF, is very weather dependent. Even with favourable economic conditions, it can be a limiting factor for fleet performance, especially for seasonal fisheries.
- In some areas the increasing population of seals has been reported as substantial problem when performing fisheries using passive gears. Damage to both gear and fish has been experienced, thus resulting in the cessation of certain fisheries.
- The quota for Baltic sprat increased 6% in 2021. It is a commercially important species, but only for few specialised fleets. The only Baltic herring stock with a TAC increase was the Gulf of Riga herring (+15%). A TAC increase applied also to main basin salmon (+9%).
- Compensations from the EMFF funds have been provided to the owners of the fishing vessels for the temporary cessation of fishing activities due to the protection of cod stock. Such compensations could provide significant support to the fishing companies in the short-term.
- The EMFF has also provided measures to improve profitability including increased added value (for the SSCF) and utilisation of by-catch arising from the landing obligation (for the LSF). Measures are already applicable in some Member States fishing in the Baltic region.
- Policy management instruments, specifically quota allocation (introduced in some countries), may have helped to improve the economic performance of certain fleets.
- While aging vessels, obsolete equipment and insufficient investment all lead to increased maintenance costs and reduce the profitability of the fleet, the EMFF does provide the possibility of engine replacement if the fishing capacity is proven to be in balance with exploitation. Some Member States have already introduced such schemes. However, as the poor status of several important stocks has a negative impact on the balance indicators, several fleet segments in the Baltic are regarded not in balance and, hence, do not qualify for this kind of support.

### *North Western Waters*

- Recovery of some stocks, e.g., the biomass of most herring stocks has increased, and the Northern hake stock continues to follow a positive trend.
- Increased TACs for a several stocks and increasing fish prices.
- An overall increase in landed weight by 5% and value of landing by 6%.
- Fish prices for LSF increased compared to 2020.
- Energy costs have increased by 14% compared to 2020.
- With the EU-UK Trade and Cooperation Agreement (TCA), there will be large impacts on fleets operating in the region over the next decade due to the previous high dependency on the United

Kingdom waters for several Member States including Ireland, France, Spain, Belgium, the Netherlands, and Germany.

### South Western Waters

- The management plan for western waters was based on the possibility of using catch bands around MSY (Art. 4), in order to take account of the complexity of managing mixed fisheries, which are particularly present in south-western waters. In this sense, the setting of fishing opportunities could not exceed the value of the TAC associated with the median Fmsy for all stocks.
- Decreased TACs for a number of stocks, e.g., blue whiting.
- All the ICCAT recommendations formalising the exploitation rule for northern albacore provide for a dual objective of precautionary management of the stock (60% probability of green zone Kobe diagram, recovery) and maximising catches, over the long term and on average.
- The landing obligation creates an incentive to develop more selective fishing gear and reduce unwanted catches, while on the other hand, the lack of quota for some species caught in mixed fisheries forces the premature closure of some fisheries (the "choke effect").
- The variation of the prices for the main species such as blue whiting, Atlantic horse mackerel and chub mackerel, albacore or octopus.
- Increase in fuel prices resulting in higher energy costs, especially for pelagic fisheries.

### Mediterranean Sea

In 2021, the regional fishing fleet's economic performance did not change significantly concerning the previous year; the COVID-19 pandemic continued to have an impact on the economic performance. GVA and net profit produced by the Mediterranean fleet were over EUR 900 million and EUR 381 million, respectively, with a decrease of 8% and 3% compared to 2020. A different trend has been observed for LSF and SSCF. SSCF continued to improve on all the economic performance indicators. At the same time, LSF registered a decreased trend in GVA and gross profit, mainly due to a 4% reduction in the value of landings and a +20% increase in energy costs.

The fishing sector is losing social and economic importance at the local level: in 2021, the number of active vessels decreased by 4% compared to 2020, and this led to a job loss of about 3 000 fishers; factors such as the high average age of fishers, the difficulty in attracting the younger generations, the poor working conditions and low wages severely affected the fishery sector in the region. Annual wages and salaries decreased, mainly in LSF; the reduction can be linked to the negative trend in revenues as, in most countries, labour costs are directly related to revenues and variable costs as the traditional based income sharing system between the ship-owner and the crew is the most prevalent.

Among the factors that positively impacted the sectors were high average prices and the increase of the EU quota for bluefin tuna.

According to the STECF, only very few demersal stocks are currently being sustainable exploited, even if the recent trend shows some little improvements both in biomass and in the ratio F/FMSY for some stocks and in some GSAs. Since 2019, significant advances have been made in terms of managing fisheries resources, with the adoption of several multiannual management plans; one of the direct impacts of these MAPs has been the reduction of effort (expressed in sea days) in LSF (-12% in 2021 compared to 2013-2020 average). Regarding spatial management measures, to date, ten FRAs have been established by the GFCM, including one large deep-water FRA below 1 000 m (Bari Canyon); the socio-economic impact of this spatial based approach should be relevant to the coastal communities.

### Black Sea

- Additional increase in the turbot quota for both Bulgaria and Romania in in last three years together with management plan for third countries fishing in the Black Sea;
- The stable average prices for some important species with significant landings as sea snail and maintaining the average prices for the other species;
- The sea snails stock in GSA 29 is fished near FMSY, which means that fishing vessels and processing plants utilising this species could continue to provide employment in the region;

- Keeping the trend with almost stable fuel costs at the regional level is directly connected with the energy costs, which remain the major percentage of the expenses.
- The weather conditions in the Black Sea, including strong winds and large temperature differences between winter and summer, significantly affect fishing activities by the SSCF, which led to a reduction of the days at sea and value of landings, and of course a negative impact of the total employment;
- The LSF of both countries consists mainly of vessels with trawls and vessels with polyvalent active and passive gears. As trawling is fuel-intensive, the trend of a stable level of the days-at-sea is leading to the relevant stable energy costs.
- The Black Sea fishery is highly dependent on very few valuable species. In terms of landing weight and value, the sea snail is the most profitable species and according to the most recent available consideration from 2021, its stock in the Black Sea was considered to be outside safe biological limits. Sprat, which is the second most important fishery is evaluated as sustainably exploited;
- The GFCM has established a set of emergency measures for stocks in the Black Sea region to align the implementation of management measures by all countries operating in the region.

***OMR***

- Most OMRs are islands and geographically far from sources of supply. These constraints generate, for fishers' additional costs compared to mainland. Compensation scheme for the additional costs were established and funded by EMFAF but the returns and benefits for local fishers seems to be limited in scope in Guadeloupe, Martinique and French Guiana.
- The increase in the cost of capital is considered as a main issue for fleet renewal and access to fisheries for newcomers in most of the OMRs. Fuel price is also one of the main factors affecting the performance of the segments, especially the most dependent. Major increases in fuel price and more generally inputs (gears, engines) were reported for 2022 with potential effort reduction. Compensation measures for fuel price increases have been established Portuguese, Spanish and French OMRs for 2022 and 2023. In Portugal, the aids have been granted according to fleet segment and length categories when in Spain GT categories have been used. In France, the system changed over a time wit at first discount at pump and secondly a unique direct additional aid per litre of fuel consumed.
- The landing prices have increased over the last years for Canaries islands but this trend is not similar in other regions like Guadeloupe or Martinique where the importation and competition from seafood from international markets is high.
- In some OMRs, the lack of suitable infrastructures for vessels operations including landings create dis-incentives to enter or to continue to operate in the sector. In most OMRs, the fleets faced the lack of incentives to attract young fishers to the sector with contrasted situation between islands; unemployment or lack of labour. Additionally, this issue is reinforced by the lack training for the fishers at local level and administrative digitalization constraints.
- The variations in TACs and Quotas of key species are one of the main factors affecting the performance of the fleets mainly in Canaries Islands, Madeira and Azores. In Guadeloupe, the Conch fishery was closed for the season 2020-2021 with impact on dependent vessels. If fisheries are regulated through technical measures (gear regulation, species mesh size), the lack of access regulations to fisheries (licences …) is source of internal competition and increased cost of operation within the SSCF sector in most of the French OMRs. The funding of Moored Fishing Aggregating devices and their management is also a key driver of and fisheries and fleet evolution in the OMR where they are used (Mayotte, Reunion, Guadeloupe, Martinique).
- In most OMRs, competition with recreational fishing and illegal fishing (foreign or/and local) is particularly high for the small-scale segments. The situation is critical in French Guiana EEZ with IUU

neighboring fleets. Poaching fish activities also reduce the market availability affecting also the price in some regions. In the Atlantic Ocean and the Indian Ocean, OMRs fleets harvest the same stocks as large-scale fleets especially on large pelagic species. Projects of windfarms in Canaries may also impact the fishery sector.

- Marine ecosystems and fishing activity in the OMRs are subject to the occurrence of extreme events (hurricanes or storms) or change in the environment (vase amazon, algae) with impact on gears and harbour infrastructures. Since 2011, massive Sargassum algae inflows (stranded and floating blankets) in the Caribbean led to massive changes in the pelagic and coastal ecosystems with impacts on the fishing stocks. Fishing activity in Guadeloupe, Martinique and to a less extent French Guiana are regularly impacted by these events (difficulties to operate vessels and fishing gears).
- The sustainability of the fishing sector is also threatened by the quality of habitats environment dependent on coastal development and agriculture. Permanent pollution of coastal habitats by pesticide (Chlordecone) used by agriculture led to the ban of coastal fishing areas in Guadeloupe and Martinique.

***NAFO***

- All the EU fleets presented a good economic performance from 2013 to 2017 due to a high value in the key commercial species landed and energy efficiency (lower or stable fuel prices). However, in recent years they showed a decreasing trend in 2018 and 2019 on both weight and value of landings, reaching in 2019 one of the lowest value of landings of all the time series (EUR 82 million), close to the minimum recorded in 2013 (EUR 80.7 million). In 2020, there was a remarkable recovery and increase both in terms of live weight (46 551 tonnes) and value of landings (over EUR 100 million). In 2021, however, both variables have decreased again, although they remain above the values recorded in 2019 (43 270 tonnes valued at EUR 84.1 million).
- After the increase in landings in weight and value in 2020, and the subsequent higher profitability of the fleets compared to 2019, in 2021 gross and net profitability have fallen to the lowest levels of the entire period (gross profit margin of 13.4%). This can be attributed, on the one hand, to the high non-variable and variable costs (partly associated to COVID-19 related measures), and, on the other hand, to low average price of catches (1.94 euro/kg), the second lowest in the whole period after 2013 (1.89 euro/kg).
- Capacity, effort, and landings in weight have decreased in general since 2013. This seems to be consistent with the adaptive fishing strategies and business plans of the concerned fleets due to lower availability of fishing opportunities in the convention area, particularly for Cod, Redfish, and Prawns. In recent years, demersal fishing trawlers targeting cod and redfish have increased their annual level of catch in other fishing grounds such as the North-East Atlantic (FAO 27) or the South-West Atlantic (FAO 41), targeting other demersal species. This factor could partially explain the overall decrease in days at sea in the area.
- There is a slight but steady decline in employment (in FTE), although after a significant decline in 2020, attributable to measures taken during the pandemic, the levels of 2019 have been restored in 2021. The general downward trend in FTE might be partially linked to the modernisation of boats and mechanisation of processing activities at sea, together with a rotation system of the employed full-time staff on several fishing trips.
- The annual wages have experienced remarkable fluctuations depending on the year. This might be linked to the number of fishing trips where the crew is hired. Portugal seems to show high fluctuations on average wages depending on the year with a decreasing trend in the last five years, from a peak of EUR 73 140 in 2017 down to EUR 40 421 in 2021). Spain shows a more stable range of wages at a lower level (although on an upward trend since 2019, which has made it overtake Portugal in 2021, with EUR 51 809). These generally lower amounts could be also explained in the way the fixed salary

is reported without considering in kind contributions or bonus linked to catch. Germany has the highest wages although there are significant differences between years, being 2021 the lowest of the last decade, with EUR 106 748.

- The witch flounder 3NO stock was reopened in 2015, following many years with no directed fishery. This may positively affect the Baltic States which have historical rights to fish it but have a negative effect for Spanish and Portuguese vessels as they could keep on board by-catches for this fishery while it was on moratoria (up to 5% of total catch), and with the reopening they will be forced to discard any catch of this species.
- The HCR for Greenland halibut was adopted at the NAFO Annual Meeting in September 2017 stemming from the new Management Strategy Evaluation, implemented in 2018 with a TAC of 17 500 tonnes. It continues applying and it has contributed to provide a stable framework allowing to adapted fishing strategies and planning for concerned operators.
- On 1 January 2021, the United Kingdom abandoned the CFP, becoming an independent coastal state. This involved renegotiating the country's membership of regional fisheries management organisations in which it was integrated as an EU member. On 3 April 2020, the United Kingdom notified the European Commission of its intention to express its consent, in its own capacity, to be bound by five international agreements establishing five regional fisheries management organisations, intended to be applied during the transition period, in the area of the Union's exclusive external competence on fisheries. Those agreements are: the Convention on Future Multilateral Cooperation in the North-East Atlantic Fisheries establishing the North-East Atlantic Fisheries Commission (NEAFC); the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries establishing the Northwest Atlantic Fisheries Organization (NAFO); the International Convention for the Conservation of Atlantic Tunas establishing the International Commission for the Conservation of Atlantic Tunas (ICCAT); the Agreement for the establishment of the Indian Ocean Tuna Commission (IOTC); and the Convention for the Conservation of Salmon in the North Atlantic Ocean establishing the North Atlantic Salmon Conservation Organization (NASCO). The UK joined NAFO as a new independent member in September 2020, becoming NAFO's 13th contracting party. In 2021, the UK was allocated a total of 140 tonnes of cod quota in NAFO area 3M. In 2022, the quota of UK increased to 373 tonnes due to a large TAC increase, and the UK transferred out all this quota to Norway (187 tonnes) and to the Faroe Islands (186 tonnes) as part of bilateral quota transfer deals.

***ICCAT***

- The main commercial species and stocks regulated by ICCAT targeted by the EU vessels are:
- Tuna (major sp.) - Atlantic and Mediterranean bluefin tuna (BFT), Atlantic and Mediterranean albacore (ALB) and tropical tuna - skipjack (SKJ), yellowfin tuna (YFT) and bigeye tuna (BET);
- Billfish (major sp.) - Atlantic and Mediterranean swordfish (SWO), blue marlin (BUM), Atlantic white marlin (WHM), Atlantic sailfish (SAI)
- Sharks (major sp.) – blue shark (BSH), shortfin mako (SMA).
- In terms of volume and value of landings, the main fisheries in the area are tropical tuna stocks (yellowfin, bigeye and skipjack), albacore, swordfish and blue shark.
- After a year of low fuel costs, there was an increase of a 39% in the fuel price. The increase of the average price for key stocks was 22%.
- In terms of fleet segments, most of EU purse seiners fishing in the Atlantic have managed to achieve positive gross profit margins in 2021 (between 16-27%) except for French purse seiners over 40m, with a declared gross loss of –5.5%. Spanish surface longliners reached a weak profitability ranging between 3% and 6%. Most of the Spanish and Portuguese longliners declared reasonable levels of profit. However, the segment PRT NAOHOK2440 exhibited weak profitability. Lastly, pelagic trawlers demonstrated a good profitability, with Danish and Irish fleets being the most profitable.

- The overall reduction of landings reported in ICCAT from both French and Spanish purse seine vessels targeting tropical tuna stocks can be partially explained by the current regulatory framework with a combination of quotas and effort regime system consisting on implementation of a suite of technical measures including decrease of limit of operational buoys to be deployed, 3 months FAD closure, as well as the considerable reduction of catches (20% in relation to the average of the previous 3 years) because of the biological status of bigeye and, in lesser extent, skipjack tuna stocks.
- In addition, the increase of MCS measures in terms of control of tuna landings at ports, margin of tolerance and monitoring of transhipments has been an extra bureaucratic and operational burden for the activity of this segment.
- Measures such as the 3 months' time closure for FADs (Fish Aggregating Devices) might continue having a negative impact in terms of fleet presence of French and Spanish purse seine active vessels in ICCAT RA. In October 2021, the Chair's draft for a revised ICCAT multi-annual conservation and management programme for tropical tunas included a section related to the management of FADs, displaying the general objectives of minimizing the impact of FAD fishing on purse seine fishing efficiency, on the productivity of bigeye and yellowfin stocks, on non-target species and on pelagic and coastal ecosystems. In order to reduce the fishing mortality of juvenile bigeye and yellowfin tunas, purse seine, baitboat and support vessels, shall be prohibited from deploying, servicing or setting on FADs from 1 January to 31 March each year, throughout the Convention area.
- A reduction of the FAD closure is not foreseen in the short term, given that it is still difficult for SCRS to evaluate its impact in the last 3 years and disaggregate the effect of these closures from the global pandemic. A more detailed analysis is expected to take place in 2023.
- Regarding shortfin mako, the restrictions imposed by ICCAT for vessels to catch and retain on board, tranship or land North Atlantic shortfin mako. Stringent trade measures derived from the application of the inclusion of shortfin mako under CITES Appendix 2 with documentation requirements coupled with increases in observer coverage might likely have as well an impact in terms of catches of these species reported by Spanish and Portuguese surface longliners and a possible increase of pressure on other target species (such as blue shark or swordfish) and displacement of effort to other areas (Indian and Pacific Ocean) might occur.
- In 2021, scientific stock assessments were carried out for three species: Atlantic bigeye tuna, South Atlantic albacore and West Atlantic bluefin tuna. A full assessment of Atlantic bigeye tuna stock was conducted in 2021 using similar assessment models to those used in 2018, updating the data until 2019. The model used natural mortality assumptions with some significant changes derived from new information and new assumptions on maximum age, the relative abundance indices used and the fleet structure. The trends in relative biomass and fishing mortality estimated for the 2021 reference case were more optimistic than equivalent trends estimated in the 2018 assessment. However, the results of the assessment shows that in 2019 the Atlantic bigeye tuna stock was overfished. The situation of the South Atlantic albacore stock in the last completely reported year (2019) shows a sum of 15,640 t, which is below the TAC set for this stock of 24,000 t. The fishery status for West Atlantic bluefin tuna in 2020 was determined to be not overfishing with greater than 95% probability.

***IOTC***

- The main issue in the IOTC relates to lack of comprehensive and quality scientific data. The result is patchy and incomplete data which is used to underpin the scientific assessments. It is therefore crucial that the IOTC increases activities to assist developing states in improving data collection and reporting, and verification of their capacity to monitor compliance with quotas in near-real time.
- Increase in observer coverage (EMS included) would be needed as up to now only EU purse seiners have a 100% observer coverage. An increase in observer coverage, with a minimum of 20% of the activity covered in all industrial vessels, could help to have a more accurate picture of by-catches (e.g., dolphin fish, wahoo, barracuda, etc.) and discards by gears, to understand interactions with tuna purse seiners and long liners. A big step forward has been made in 2023 with a resolution on electronic monitoring systems (EMS) or remote electronic monitoring (REM) of catches for a better scientific data collection, becoming the first RFMO that adopts such standards. This will allow to raise the observer coverage in the future, something that was not possile with the sole use of human observers (half of the catches in IOTC are taken by artisanal vessels).

- Skipjack and yellowfin tuna are the two main species fished in this area, both in terms of volume and value of the total landings. After a 25% decrease in the catches of Skipjack in 2020, there is an increase of 21% in 2021. Yellowfin, contrary to skipjack, landings have been decreasing due to the catch limits adopted by IOTC since 2017, representing over 30% of the total landings.
- The Spanish and French purse seiners above 40 metres LOA show a high degree of dependency in this area. The Spanish purse seine fleet degree of dependency is around 70% in terms of value of landings looking at the last three years analysed (2019-2021); while the French purse seiners degree of dependency is above 60% in the same period. This confirms that the Indian Ocean is currently the main fishing ground for both fleet segments followed by the Atlantic Ocean, where they have over 20% of their value of landings. There is also one Italian purse seiner above 40 meters consistently showing a 100% dependency in this fishing ground for the last years.
- There is an overall increase in the purse seiners fleet growth and benefits, which can be partly explained due to a higher ratio of catches for the main tropical tuna species.
- During COVID-19 in 2020 and 2021, the EU purse seine companies supported increased operational costs to tackle the health crisis: crews had to be put in quarantine at hotels before going onboard, vessels were put in quarantine at port due to positive COVID-19 cases onboard, increases in expenses for the purchase of individual protection equipment and the chartering of planes to conduct crew changes when passenger flights were disrupted or temporally suspended.
- Yellowfin tuna's quota in the Indian Ocean, implemented since 2017, has had an impact on purse seine fishing activity. The EU adopted catch limits assigned to purse seine fleet from Italy, France and Spain. The implementation of the catch limits by each Member State imposed more stringent management to reduce in average 17% of the catch average from the period 2014-2016. If we consider the EU catch by the reference year (2014), the effective reduction by EU flag state differed markedly, with Spain assigned the highest reduction, at 21%, while such reduction was at 4% for the French fleet (Italy had no activity in 2014). In 2019 the Spanish government also implemented a limit on total tropical tuna catch that has reduced fishing opportunities for the Spanish fleet since that year, while such arrangement does not exist for other fleets. The IOTC also imposed enhanced reporting and control obligations coupled with a reduction in the ratio of one supply vessels for two purse seiners. This ratio was then revised to two supply vessels for five purse seiners.
- The measures adopted in 2018 to reduce 15% average catch of yellowfin tuna have been reflected in the DCF data with a proportional decrease in landings of 8 000 tonnes for the EU purse seiner fleet, with a corresponding sudden increase in skipjack which in 2018 and 2019 was caught in higher quantities than in the past while having a lower market value in overall terms.
- The reduction of purse seiner's catches is having serious socio-economic consequences not only for the European fleet, but also for the economies and livelihoods of some coastal countries in the Indian Ocean where these companies have investments and work with supply chains. Some of the detrimental effects are reduced access fees, lack of raw material at canning factories, and economic loss due to a drop of services and economic activity in several coastal countries.
- Regarding catch data reporting, divergencies have been noted between different sources, e.g., submission of catch data by EU Member States and CPCs to IOTC and via official statistics from EUROSTAT and EU-MAP. This could bring discrepancies on the data collected by the EU-MAP while cross-checked with IOTC to perform analysis.
- Regarding estimate of total catch, including target species and non-target species (by-catch and discards), there are data deficiencies and gaps that need to be addressed. Currently there is a non-existing level of reporting of by-catch data by most CPCs, with only EU purse seiners and long liners collecting this sort of information. This ends up in a rough estimation of nominal discards. There is a need to fill this gap to improve knowledge of sensitive species such as turtles or silky sharks.
- More information would be desirable in the way fishing effort is accounted for and reported for all gears in the IOTC area. Some CPCs such as Korea, Japan and Mauritius have made already a specific request on this in Annual Meetings.Overfishing and IUU fishing by non-EU fleets undermines conservation and management of tuna stocks and puts in risk the future economic viability of the fishery for the EU fleet, due to the deterioration of the stock and the vicious circle of decrease of quotas due to the lack of level playing field between all concerned CPCs.

### *CECAF*

- During the last few years there have been several CECAF actions aimed at assessing and implementing agreements, and to know the state of the fisheries. On June 2022, the CECAF Secretariat organized an Intersessional Meeting in Dakar, Senegal. The purpose of the Intersessional Meeting was to review an independent study on the CECAF Cost-Benefit Assessment (CBA) with the objective of identifying options to improve the functioning of CECAF. Fourteen delegates representing CECAF member countries and the CECAF Secretariat met at the Intersessional Meeting to (i) discuss the revised independent study report; (ii) examine the details and implications of different options presented to the delegates; and (iii) prepare the results of the Intersessional Meeting discussions and recommendations to be presented to CECAF.
- Also, the Working Group for the Assessment of Small Pelagic Fish off Northwest Africa has met annually to update stock assessments and advice on the management of key small pelagic species and stocks in the region. Three meetings have been held between 2019 and 2022 since the last meeting of the scientific subcommittee in 2018. This group did not meet in 2020 due to the COVID-19 pandemic. The following species were analyzed and evaluated by the group: sardine (*Sardina pilchardus*), sardinella (*sardinella aurita* and *Sardinella maderensis)*, horse mackerel (T*rachurus trecae, Trachurus trachurus* and *Caranx rhonchus, Trachurus spp.*), mackerel (*Scomber colias*), bonga (*Ethmalosa fimbriata*) and anchovy (*Engraulis encrasicolus*) in the region between the southern border of Senegal and the northern Atlantic border of Morocco, including the Canary Islands. The annual reports present the principal trends in catches of the main pelagic fishes, recent changes in the fisheries, data quality issues related to sampling, an update on the results of the assessment of small pelagic species and stocks, and the management recommendations of the 2022 Working Group. Among the 10 stocks assessed, five are overfished (round sardine Sardinella aurita, flat sardine S. maderensis, Sardinella spp, horse mackerel Trachurus trecae and bonga Ethmalosa fimbriata), three stocks are fully exploited (horse mackerel *Trachurus trachurus*, horse mackerel *Scomber colias* and anchovy) and the two sardine stocks (*Sardina pilchardus*) are not fully exploited.

### *NEAFC*

- NEAFC has adopted several restrictive measures regarding fishing in its waters. These limitations are of two types: those applied to areas and those applied to species. The objective of these measures is to protect vulnerable marine ecosystems, thus there are closures of Hatton Rockall and the closed area of Haddock, closure of Blue Ling (seasonal, South Iceland) and 13 areas defined as existing bottom fishing areas.
- Regarding the closures applied to species, the following list refers to the characteristics of the regulatory measures adopted by NEAFC that are still in force (2023):
    - Recommendation on Conservation and Management Measure for Deep Sea Chimaeras in the NEAFC Regulatory Area: This measure shall be in force from 1 January 2020 to 31 December 2023. At the time of the approval of this recommendation, the chimaera species affected by this recommendation were the *Chimaera monstrosa* (Rabbit fish) *Hydrolagus mirabilis* (Large-eyed rabbit fish or Ratfish), and *Rhinochimaera atlantica* (Straightnose rabbitfish). In February 2022, this regulation was extended to include more chimera species: *Chimaera opalescens* (Opal chimaera), *Hydrolagus affinis* (Small-eyed rabbitfish), *Hydrolagus lusitanicus* (Portuguese rabbitfish), *Hydrolagus pallidus* (Pale chimaera), *Harriotta haeckeli (*Smallspine spookfish), and *Harriotta raleighana* (Narrownose chimaera).
    - Recommendation on Conservation and Management Measures for Deep Sea Rays (Rajiformes) in the NEAFC Regulatory Area: This measure shall be in force from 1 January 2020 to 31 December 2023. For the purposes of this Recommendation, 'deep sea rays' means the species *Raja fyllae* (Round Skate) *Raja hyperborea* (Arctic Skate) *Raja nidarosiensis* (Norwegian Skate).
    - Recommendation on Conservation and Management Measures for Deep Sea Sharks in the NEAFC Regulatory Area: This measure shall be in force from 1 January 2020 to 31 December 2023.For the purposes of this Recommendation, 'deep sea sharks' means the species *Centrophorus granulosus (*Gulper shark*), Centrophorus squamosus (*Leafscale

gulper shark*), Centroscyllium fabricii (*Black dogfish*) Centroscymnus coelolepis (*Portuguese dogfish*), Centroscymnus crepidater (*Longnose velvet dogfish*), Dalatias licha (*Kitefin shark*), Etmopterus princeps (*Greater lanternshark*), Apristuris spp (*Iceland catshark*), Chlamydoselachus anguineus (*Frilled shark*), Deania calcea (*Birdbeak dogfish*), Galeus melastomus (*Blackmouth dogfish*), Galeus murinus (*Mouse catshark*), Hexanchus griseus (*Bluntnose six-gilled shark*), Etmopterus spinax (*Velvet belly*), Oxynotus paradoxus (*Sailfin roughshark*), Scymnodon ringens (*Knifetooth dogfish*), and Somniosus microcephalus* (Greenland shark).

- Recommendation on Conservation and Management Measures for Basking Shark (*Cetorhinus maximus*) in the NEAFC Regulatory Area: This measure shall remain in force from 1 January 2020 until 31 December 2023. Under this measure, each contracting party shall prohibit fishing of basking shark.
- Recommendation on Conservation and Management Measures for Porbeagle (*Lamna Nasus*) in the NEAFC Regulatory Area: This measure shall remain in force from 1 January 2020 until 31 December 2023. Under this measure, each contracting party shall prohibit fishing of porbeagle.
- Recommendation on Conservation and Management Measures for Orange Roughy in the NEAFC Regulatory Area: This measure shall be in force until 31 December 2024. Under this measure, each contracting party shall prohibit fishing of Orange roughy (*Hoplostethus atlanticus*).

## 2.10 Assessment for 2022 and outlook for 2023 and beyond

### *Forecast and Nowcast for 2022 and 2023*

The nowcast results for 2022 and 2023 for the main analyses are provided throughout each of the chapters (also in Tables 2.1-2.5 and the Annex 2 data tables). This section summarises the estimates on the performance of the EU-27 fleet in 2022 and 2023, based on preliminary data. The EWG notes that this is an estimation based only on the number of vessels, and fuel and landing prices of a subset of the species. For the case of the north east Atlantic, also the TACs and quota changes have been considered. Also, where no 2022 data was reported by Member States, and for all 2023 data, explanatory variables for the year 2021 are used to generate nowcasts and this would affect the final estimates as they are strongly related to the 2021 results. In addition, the methodology does not consider possible strategic changes in fleet behaviour, based on optimizing the trips. For example, by performing shorter trips due to the increase of fuel, or staying at port -not fishing- due to high fuel cost episodes. Furthermore, the methodology does not consider some biologicl effects such as phytoplacton episodes that have affected the activity of some fleets in the Mediterranean. Both effects reported to the EWG, although not possible to include in the nowcasting procedure. See Annex 1 for the full methodology used.

### *Forecast for 2022*

- Preliminary results forecast a 9% increase in landed weight in 2022 compared to 2021, accompanied by lower average (real) prices. This reflect an 0.3% decrease in the total value of the landing for the entire EU fleet.
- Nowcasts suggest that in 2022 there is a decrease in all costs compared to 2021, except for energy costs (+77.7%). Overall, it is expected a sharp deterioration in performance results in 2022 in terms of GVA (-22%), gross profit (-62%) and in net profit (-96%).
- In regards to the previous year's results, projections indicate that the EU fleet still continued to operate at gross positive profit margins in 2022, although the net profit it expected to be negligible.
- In relative terms, projected results show a GVA to revenue of 42% in 2021, gross profit margin at 4.4% and a net margin at 0.4%, in all cases the lowest value of the observed period (2013-2021).

### *Nowcast for 2023*

- Nowcast results for 2023 indicate an increase in landed weight in 2023 of 11% compared to 2021. However, it is accompanied by lower average real prices. This reflects a 2.7% decrease in the total value of the landings for the entire EU fleet.
- Nowcast results for 2023 indicate a lower FTE in 2023 compared to 2021 (-4.7%).
- In 2023, revenues are lower than in 2021, however, they are accompanied by an expected reduction in fuel costs compared to 2022, and simila to the one observed for 2021. The EU fleet as a whole is expected to increase the profitability compared to 2022 to similar values as in 2021.

### *Nowcast by Member State*

- Table 2.19 is providing the main results for 2022 and 2023 and a comparison with 2021.
- By Member State, results for 2022 indicate that Bulgary, Cyprus, France, Greece, Poland and Portugal are projected to move to a negative position in 2022 from their positive position in 2020, in gross terms. All the Member States except Lithuania and Romania will have a deterioration on their economic performance.
- By Member State, projected results for 2023 indicate that the Member States will perform at possitive gross profits. However, in net terms all those that performed negatively will remain negative. All of them will improve respect to 2022, although in general a deteriorate is projected if the reference year is 2021. The exceptions are Belgium, Germany, Croatia, Lithuania, Malta and Romania.

### *Nowcast by type of fishery*

- By type of fishery in 2022 and compared to 2021, the SSCF is expected to have a big deterioration on all performance indicators. With a similar capacity in number of vessels, value of ladings are expected to decrease by 5%, but with the high increase in fuel costs, GVA, gross and net profits are expected to reduce by 29%, 39% and 43%, respectively. For 2023, a recovery of the situation, compared to 2022 is expected. However, values will not reach thise observed in 2021.
- For the LSF the situation is similar, although in this case the ladings in weight and value are similar to those observed for 2021. However, the increase in fuel costs will reduce the economic performance. Considering the GVA, gross and net profits, they will be reduced by 19%, 57% and 91%, respectively. For 2023, a recovery of the situation, compared to 2022 is expected. Economic performance indicators will not reach thise observed in 2021.
- For the DWF and in 2022 the situation is expectd to be similar to the LSF. However, in this case a drop in terms of number of vessels and capacity in general is expected. This will reinforce the drop in the economic situation caused by the increase in fuel costs. Considering the GVA, gross and net profits, they will be reduced by 38%, 91% and 136%, respectively. For 2023 the situation is projected to be improved compared to 2022. Although capacity will be further reduced the economic performance is expected to be imrproved, and go above the values observed in 2021.

**Table 2.19** Main results for the EU-27 by Member State fleet for 2021 and nowcasts for 2022 and 2023

| | Gross Value Added (EUR million) | | | | | Gross profit (EUR million) | | | | | Net profit (EUR million) | | | | | GVA to revenue (%) | | | | | Gross profit margin (%) | | | | | Net profit margin (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2021 | 2022 | 2023 | % diff 2022-2021 | % diff 2023-2022 | 2021 | 2022 | 2023 | % diff 2022-2021 | % diff 2023-2022 | 2021 | 2022 | 2023 | % diff 2022-2021 | % diff 2023-2022 | 2021 | 2022 | 2023 | % diff 2022-2021 | % diff 2023-2022 | 2021 | 2022 | 2023 | % diff 2022-2021 | % diff 2023-2022 | 2021 | 2022 | 2023 | % diff 2022-2021 | % diff 2023-2022 |
| BEL | 38.2 | 38.2 | 40.6 | 0% | 6% | 9.9 | 6.1 | 12.2 | -38% | 100% | 2.1 | 1.9 | 5.3 | -12% | 179% | 49 | 44 | 52 | -10% | 19% | 13 | 7 | 16 | -45% | 124% | 3 | 2 | 7 | -21% | 212% |
| BGR | 6.0 | 0.9 | 1.7 | -85% | 91% | 4.6 | -0.6 | 0.7 | -114% | 212% | 4.7 | 0.6 | 1.6 | -87% | 149% | 72 | 21 | 49 | -71% | 137% | 55 | -15 | 21 | -127% | 240% | 57 | 14 | 44 | -75% | 209% |
| CYP | 3.2 | 1.2 | 2.4 | -62% | 99% | 1.4 | -0.6 | 0.7 | -144% | 216% | 0.0 | -1.5 | -0.7 | -3997% | 54% | 48 | 20 | 38 | -59% | 94% | 21 | -10 | 11 | -148% | 213% | -1 | -25 | -11 | -4294% | 56% |
| DEU | 67.0 | 78.8 | 87.1 | 18% | 10% | 11.8 | 16.7 | 29.9 | 42% | 79% | -26.0 | -7.4 | 6.6 | 71% | 189% | 39 | 43 | 51 | 10% | 17% | 7 | 9 | 17 | 33% | 90% | -15 | -4 | 4 | 73% | 194% |
| DNK | 243.9 | 225.3 | 207.7 | -8% | -8% | 132.1 | 129.9 | 108.3 | -2% | -17% | 53.4 | 97.7 | 64.9 | 83% | -34% | 62 | 58 | 60 | -7% | 4% | 34 | 34 | 31 | -1% | -6% | 14 | 25 | 19 | 84% | -25% |
| ESP | 917.9 | 654.7 | 788.1 | -29% | 20% | 256.6 | 20.8 | 198.1 | -92% | 854% | 170.5 | -42.2 | 113.7 | -125% | 369% | 53 | 40 | 48 | -24% | 20% | 15 | 1 | 12 | -91% | 852% | 10 | -3 | 7 | -126% | 369% |
| EST | 9.4 | 7.1 | 6.8 | -24% | -3% | 4.5 | 2.7 | 3.1 | -39% | 12% | 2.3 | 0.7 | 2.7 | -71% | 303% | 64 | 56 | 61 | -13% | 10% | 31 | 22 | 27 | -30% | 27% | 16 | 5 | 24 | -66% | 358% |
| FIN | 20.5 | 16.3 | 14.9 | -20% | -9% | 11.7 | 8.8 | 8.7 | -25% | -2% | 4.6 | -1.7 | -1.8 | -137% | -5% | 56 | 51 | 56 | -8% | 8% | 32 | 28 | 32 | -13% | 17% | 13 | -5 | -7 | -143% | -25% |
| FRA | 641.5 | 434.7 | 530.1 | -32% | 22% | 130.7 | -42.9 | 91.2 | -133% | 312% | -12.6 | -161.6 | -13.0 | -1182% | 92% | 51 | 37 | 48 | -26% | 27% | 10 | -4 | 8 | -136% | 321% | -1 | -14 | -1 | -1303% | 92% |
| GRC | 150.3 | 77.6 | 83.6 | -48% | 8% | 42.3 | -23.3 | 7.7 | -155% | 133% | -0.3 | -56.6 | -21.7 | | 62% | 53 | 30 | 40 | -43% | 35% | 15 | -9 | 4 | -161% | 141% | 0 | -22 | -10 | | 52% |
| HRV | 61.9 | 53.6 | 63.0 | -13% | 18% | 30.4 | 21.6 | 35.1 | -29% | 63% | 18.0 | 22.7 | 35.8 | 26% | 58% | 63 | 54 | 64 | -14% | 19% | 31 | 22 | 36 | -30% | 64% | 18 | 23 | 37 | 25% | 59% |
| IRL | 177.0 | 119.9 | 127.1 | -32% | 6% | 86.5 | 44.9 | 56.4 | -48% | 26% | 62.5 | 40.7 | 45.5 | -35% | 12% | 57 | 47 | 52 | -18% | 13% | 28 | 17 | 23 | -37% | 34% | 20 | 16 | 19 | -21% | 19% |
| ITA | 443.5 | 310.9 | 392.9 | -30% | 26% | 241.8 | 110.4 | 210.4 | -54% | 91% | 106.1 | 4.4 | 106.2 | -96% | 2334% | 62 | 46 | 57 | -25% | 25% | 34 | 16 | 31 | -51% | 89% | 15 | 1 | 16 | -96% | 2307% |
| LTU | 30.2 | 32.3 | 47.5 | 7% | 47% | 21.9 | 24.4 | 40.9 | 11% | 68% | 17.2 | 30.0 | 45.0 | 74% | 50% | 34 | 34 | 47 | 1% | 38% | 25 | 26 | 41 | 5% | 58% | 19 | 32 | 45 | 65% | 41% |
| LVA | 10.3 | 8.1 | 6.3 | -21% | -23% | 5.6 | 4.0 | 3.0 | -28% | -26% | 5.3 | 4.1 | 3.0 | -23% | -25% | 57 | 53 | 49 | -8% | -7% | 31 | 26 | 23 | -16% | -11% | 29 | 26 | 24 | -11% | -10% |
| MLT | 9.9 | 9.3 | 10.8 | -6% | 16% | 4.6 | 4.0 | 5.8 | -14% | 45% | 2.1 | 2.8 | 4.7 | 33% | 66% | 65 | 55 | 64 | -16% | 17% | 31 | 23 | 35 | -23% | 47% | 14 | 17 | 28 | 19% | 67% |
| NLD | 151.0 | 136.6 | 151.9 | -10% | 11% | 44.7 | 28.5 | 55.3 | -36% | 94% | 26.8 | 25.6 | 44.8 | -4% | 75% | 43 | 39 | 49 | -9% | 25% | 13 | 8 | 18 | -36% | 119% | 8 | 7 | 14 | -4% | 98% |
| POL | 19.3 | 11.8 | 12.0 | -39% | 2% | 1.6 | -0.7 | 1.1 | -146% | 252% | 2.9 | 3.5 | 8.1 | 20% | 133% | 56 | 42 | 52 | -25% | 23% | 5 | -3 | 5 | -157% | 283% | 8 | 13 | 35 | 48% | 180% |
| PRT | 255.9 | 193.9 | 204.1 | -24% | 5% | 98.1 | 41.1 | 70.3 | -58% | 71% | 41.0 | 6.3 | 36.4 | -85% | 482% | 61 | 49 | 59 | -21% | 22% | 24 | 10 | 20 | -56% | 98% | 10 | 2 | 11 | -84% | 573% |
| ROU | 1.5 | 1.8 | 2.5 | 26% | 37% | 0.8 | 1.3 | 2.0 | 58% | 56% | 0.7 | 1.5 | 2.4 | 122% | 63% | 61 | 58 | 73 | -4% | 24% | 35 | 42 | 59 | 20% | 42% | 28 | 47 | 70 | 68% | 48% |
| SVN | 3.2 | 2.7 | 2.9 | -15% | 9% | 2.8 | 2.4 | 2.6 | -16% | 11% | 2.8 | 2.6 | 2.8 | -10% | 10% | 84 | 77 | 81 | -9% | 6% | 75 | 68 | 73 | -10% | 8% | 75 | 73 | 78 | -3% | 7% |
| SWE | 65.2 | 50.8 | 57.0 | -22% | 12% | 39.9 | 28.4 | 35.9 | -29% | 26% | 21.5 | 15.8 | 24.7 | -26% | 57% | 53 | 48 | 57 | -10% | 18% | 33 | 27 | 36 | -17% | 32% | 18 | 15 | 25 | -15% | 64% |
| EU 27 | 3,327 | 2,467 | 2,841 | -26% | 15% | 1,184 | 428 | 980 | -64% | 129% | 506 | -10 | 517 | -10% | -10% | | | | | | | | | | | | | | | |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/ACS(2023)); All monetary values adjusted for inflation; constant prices (2020). Nowcast for 2022 and 2023.

### *Outlook for 2023 and beyond*

The EU Fisheries sector was hit strongly by the COVID-19 pandemic with the restrictive measures adopted in March and April 2020.In 2020, the COVID-19 affected the EU fleet in all fishing activities SSCF, LSF, and the DWF of almost all Member States, even if the economic impact on fisheries was heterogeneous by region.

Numerous measures across Europe were taken to mitigate the effects of the crisis on the fisheries sector (e.g. ensuring the continuity of food supply, expanding home delivery and direct sales, and supporting national and local production through consumer awareness campaigns), complemented with enhanced investment in the fisheries sector. In 2021 the measures designed to contain the spread of the virus, especially through measures aimed to reduce social interactions, including lockdowns, and travel restrictions were continued in order to fight the pandemic.

The effect of increase of interest rates are expected to have a big influence. Although the investments in 2021 hit a record in 2021 the evolution of the interest rates are clearly driven to reduce the inflation rates. This obviously has an impact on the cost of capital and on the investments in the years with high interest rates (i.e. 2023).

### *Fish prices*

According to OECD–FAO (2021), fish prices prices are expected to remain high relative to historic levels and continue to grow in nominal terms. In regards to the EU Fish Market 2021 report produced by EUMOFA from 2019 to 2020, household expenditure on fishery and aquaculture products grew by a remarkable 17%, which was much higher than the 2.1% inflation of prices for these products. This increasing trend was confirmed by Europanel, Kantar and Gfk data on household consumption of fresh fish in the EU's largest consuming countries. The data showed an increase of 7% in value and 4% in volume from 2019 to 2020. This increase was most likely due to the closings in the HoReCa sector due to the COVID-19 pandemic, and the consequent increase in at-home consumption.

In 2021, the prices of crude oil have trended upward toward the 2019 level while in 2022 these have recorded values never observed. Taking into consideration that energy costs are one of the main costs for the EU fishing fleet, and that general prices also increase, is expected fish prices to increase. The projection model results show that fish prices in 2021 were 1.51 euro/kg which represents an 8% increase compared to the same period of 2020 when the value was 1.4 euro/kg. Furthermore, in 2022, the model predicts prices for 2022, 19% and 10% higher than those in 2020 and 2021, respectively (1.66 euro/tonne).

However in 2023, fish prices in real terms are not expected to increase, furthermore, the other way around. The reason for that is the high levels of inflations at EU level, which is affecting not only the real value of what is sold, but the purchase power of EU citizens.

### *Fuel prices*

Marine fuel oil prices fluctuated through the years. Where in 2013 price levels were high with fluctuations between 0.60 euro/litre and 0.68 euro/litre, in the spring of 2020 it was at 10 year lowest levels (0.25

euro/litre) (Figure 2.16). However, in mid 2021 and especially in the last trimester of 2022 fuel prices started to rise until the start of the Ukraine-Russia conflict. After that (February 2022) this increase has speed up, reaching levels never observed in the time series. Oil price forecasts depend on the interaction between supply and demand for oil on international markets. Among the most important supply-side factors weighing on pricing, expectations are US shale oil production, US crude oil stocks, and OPEC (Organization of the Petroleum Exporting Countries) oil supply. However, in this context of energy prices fluctuations, to perform any prediction upwards or downwards, is complex.

### *Overall assessment for 2023*

The first half of the year 2023, from the macroeconomic perspective, is a combination of high inflation rates, high real increase in ex-vessel prices and stable or even reduced fuel costs (compared to 2022). Therefore, a recovery of the situation is expected, with overall values close to 2021, and much improved compared to 2022. However, the EWG 23-07 warms that any projection's robustness dependes on the stability of the markets. Since the year 2020, markets have been far from stable. In particular the COVID-19, the Brexit and the Ukranian work make any projection difficult to make. In the AER 2022 it was projected a overall gross and net profits for the EU fleet, while the update made in this AER 2023, projects, at least, no negative profits. The reason behind this is that at the time of producing the AER (July), the statistics on fuel prices are available until May that year, and by produre we extend this fuel cost to the rest of the remaining year. If the situation changes, as it did in the second half of the 2022, the nowcast can overestimate the costs as occurred when producing the nowcast in the AER 2022.

# 3 EU REGIONAL ANALYSIS

### *Introduction*

The main fishing grounds for the EU fishing fleet are located FAO fishing areas 27 (Northeast Atlantic, Baltic and North seas) and FAO 37 (Mediterranean and Black seas). Part of the EU fleet also operates in fishing areas much further afield. These areas, including EU outermost regions, are collectively termed "*Other Fishing Regions"* or OFR.

This section analyses the economic performance of the EU fishing fleet by main fishing region. For this economic data provided by fleet segment at the supra-region level are disaggregated based on effort and landings data provided by sub-region (FAO level 3 or 4) (see Annex 1 of this report for more details on the methodology used).

The EU fishing fleet was analysed by the following fishing regions:

North Atlantic (NAO):

- North Sea & Eastern Arctic (NSEA)
- Baltic Sea (BS)
- North Western Waters (extended) (NWW)
- Southern Western Waters (SWW)

Mediterranean & Black seas (MBS):

- Mediterranean Sea (MED)
- Black Sea (BKS)

Other Fishing Regions (OFR):

- EU Outermost regions (OMR) – six France, two Portugal and one Spain
- Long distant fisheries (LDF) – NAFO, ICCAT, IOTC, CECAF and NEAFC

Note: Due to explicit data and methodological limitations (see Annex 2), all results provided in this chapter should be considered exploratory rather than a source of factual statements that are considered robust enough to be a basis for policy decisions.

## 3.1 North Sea & Eastern Arctic

### *Regional Details*

The North Sea & Eastern Arctic region (NSEA), as defined for this report, comprises ICES areas 27.1, 27.2, 27.3a, 27.4, 27.5, and 27.7d. French data were incomplete and are only included in the analysis from 2010 onwards. In addition, where insufficient data were provided for fleet segments these may have been excluded from all or some of the analyses. As, for confidentiality reasons, not all data were provided for the German pelagic trawlers, but from 2021 onwards a complete dataset of the pelagic trawlers was provided. Four high seas Polish vessels were not included in the analysis. Trends and absolute regional figures should therefore be interpreted and considered with care.

The analysis includes reported landings from 10 Member States' fleets: Belgium, Denmark, Germany, France, Ireland, Lithuania, the Netherlands, Portugal, Spain and Sweden. These fleets target high value species including common sole (the Netherlands, Belgium, Germany and France), common shrimp (The Netherlands, Germany, Denmark and Belgium) and Norway lobster (Denmark, Sweden, the Netherlands, Belgium, and to some extent Germany). Other important demersal species include Atlantic cod (Spain, Germany, Denmark, and France) and European plaice (the Netherlands, Denmark and Belgium). Furthermore, a number of these fleets also target pelagic species such as Atlantic mackerel and Atlantic herring (Denmark, the Netherlands, Germany and Sweden).

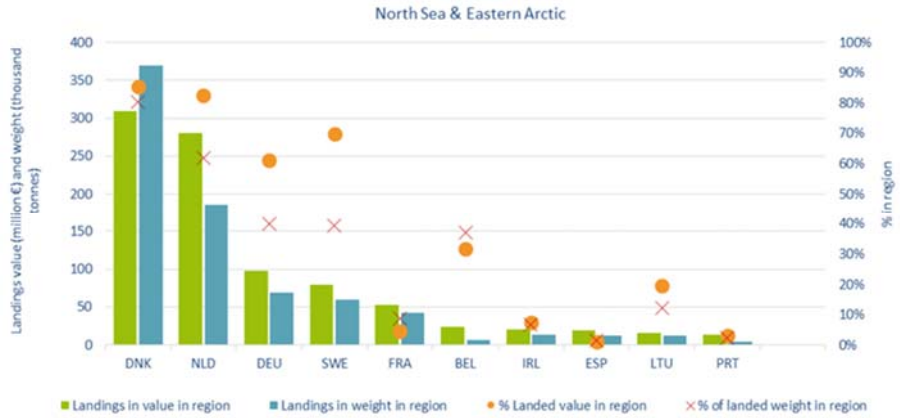
Annex 2 contains the tables with all the economic performance figures of the NSEA fleet by Member State, main type of fishing activity and fleet segment.

None of the Member States' fleets is entirely dependent on the region for their fishing activity, yet based on the value of landings, the NSEA is a very important fishing region for Denmark (86% of total landings), the Netherlands (83%), Germany (61%), Sweden (70%) and Belgium (32%) (Figure 3.1).

Two main players dominate the seascape of this region. In 2021, the Danish fleet was the most important in terms of both landed weight (about 370 000 tonnes) and landed value (EUR 309 million). Furthermore, the Dutch fleet is also an important contributor (186 000 tonnes and EUR 281 million). The share of the French, German, Swedish and Belgian fleets is considerably lower, but except for the French fleet, the region itself is of major importance for these national fleets (Figure 3.1).

In terms of landed weight, Denmark caught 80% of their landings in the NSEA region, followed by Germany (62%), the Netherlands (62%), Sweden and Germany (about 40% each) and Belgium 37%. The pelagic fisheries influence these ratios to a large extent. Large volumes of sandeel are caught by the Danish fleet, while this is not a high valued species. The sandeel quota varies grossly from year to year.

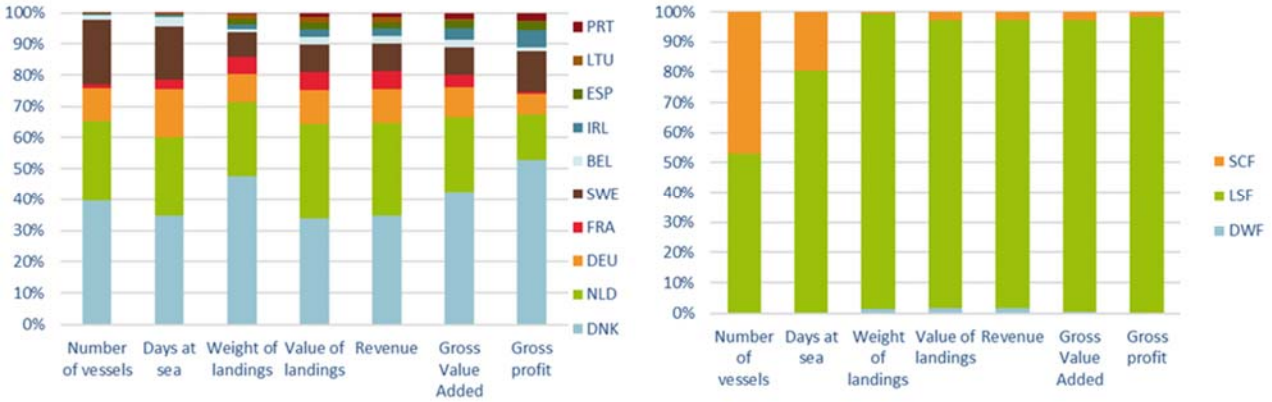
**Figure 3.1** Importance of the NSEA for MS fisheries in landings weight and value, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Even though the share of the number of small-scale vessels is more than 50% and the effort is about a quarter of the total days-at-sea in the NSEA, their economic contribution as well as their share of the landed weight is marginal. The LSF landed 99% of the total weight and 97% of the total value (Figure 3.2).

**Figure 3.2** Share by MS fleet and fishing activity in the NSEA, 2021



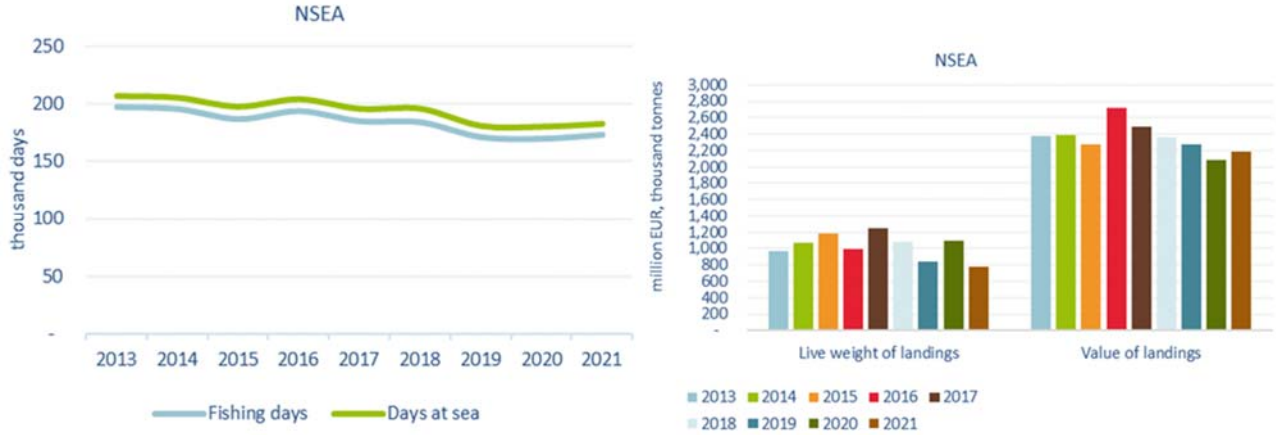

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Overview of the main results for EU fleets in the NSEA*

*Fishing effort and landings*

Fishing effort increase marginally (<2%) while landings have decreased significantly (30%), to the lowest level since 2013 (Figure 3.3). The value of landings in 2021 fell below average between 2013 and 2021, decreasing with 13%. For a number of important North Sea fish species prices varied grossly compared to 2018. The price for common shrimp was particularly high in 2016 and 2017, but dropped 30% in 2018, which was then overcompensated by doubled weight of landings. However, in 2019 prices dropped by 26% and landings by even 60% with some recovery in 2020 (prices +22%, weight +12%). In 2021 weights of landing further dropped 8%, however prices continued to recover compared to 2020 with an increase of over 6%. Prices for herring dropped over 20% in 2019, remained unchanged in 2020 but further dropped over 10% in 2021, while prices for cod (-11%) and mackerel (-4%) decrease. Saithe which was on the top 10 in 2020 was no longer in the top 10 fished species in 2021. The total landings in weight decreased by about 33% in 2021 compared to 2020. Fuel prices increased significantly in 2021. Fuel is an important operational cost and therefore an important driver for profitability.

**Figure 3.3** Trends on effort and landings for MS fleets operating in the NSEA




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Employment, wages and labour productivity*

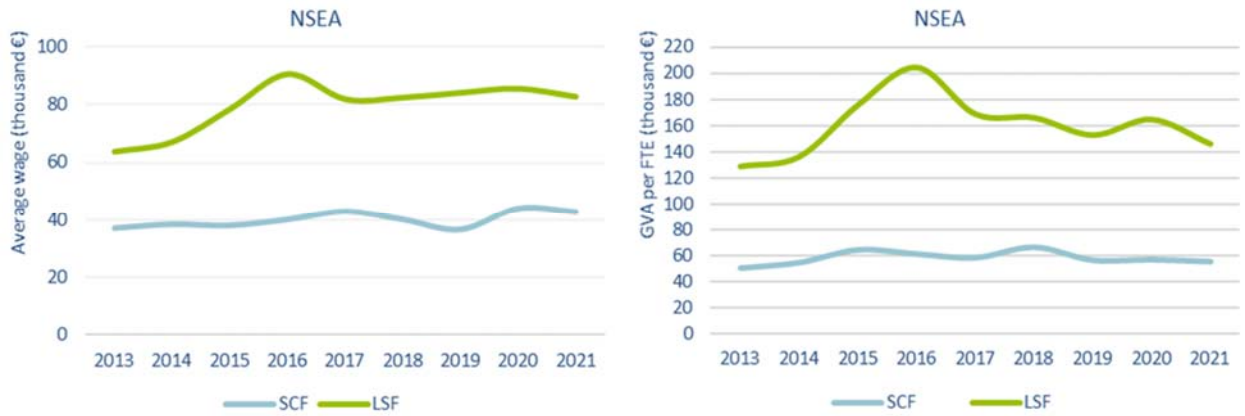
Over the past years, employment measured in terms of FTE showed a rather stable trend between 2010 and 2018 with an estimated 3 580 FTE for 2019. In 2021 the FTE (3 570) remained near on stable

compared to 2020. The main contributors to the employment are the Netherlands (39%), Denmark (23%) and Sweden (13%).

Wages per FTE remained stable in the LSF from 2020 to 2021. There was a trend between 2013 and 2021 where the wages per FTE increased by 30% (Figure 3.4). In 2021, the average wage in the LSF was estimated at EUR 82 723. In the SSCF there was a slight increasing trend (15%) between 2013 and 2021. Between 2018 and 2019 the average wage per FTE for the SSCF decreased by 3.5%, being EUR 35 937. Between 2020 and 2021 the average wage per FTE decreased by 3%, being EUR 42 474.

The productivity (GVA/FTE) of the LSF increased considerably between 2013 and 2016 (+23%). This coincided with a slight increase in employment. In 2017, 2018 and 2019 labour productivity dropped for three years in a row but then increased again in 2020, but dropped again in 2021. For the SCF, labour productivity showed a slight increase from 2013 to 2018 when it reached the highest value. Since 2018 the labour productivity has fluctuated around the same value up to 2021.

**Figure 3.4** Trends on average wage per FTE and GVA per FTE by fishing activity for MS fleets operating in the NSEA




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

The revenue generated by the NSEA fleet in 2021 was estimated at about EUR 958 million, a decrease by 1.7% compared to 2020 (the United Kingdom excluded).

GVA produced by the fleets covered in the analysis was estimated at about EUR 487 million, representing an overall decrease of about 8% compared to 2020. The fleets made about EUR 208 million in gross profit, an estimated 18% decrease compared to 2020 (Figure 3.5).

**Figure 3.5** Trends on revenue and profits for MS fleets operating in the NSEA


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Trends by Member State fleet*

*Fleet capacity and employment*

EU fleets operating in NSEA in 2021 numbered 2 005 vessels, a decrease of about 0.7% from 2020. The Danish NSEA fleet comprised the largest in number (798 active vessels), accounting for 40% of the total reported for the region and 67% of their national fleet (Figure 3.6)

Overall, the number of vessels operating in the region has followed a decreasing trend between 2013 and 2021 but may be stabilising in the last couple of years. The employment, measured in terms of FTE, showed a rather stable trend between 2013 and 2018, but a sharp decline (-18%) in 2019 (Figure 3.6). This decline continues in 2020 with a further 5% decrease. In 2021 however, an increase of 1.3% in FTE was estimated. In terms of employment, the SCF generated 861, mostly part time jobs (260 FTE) while the LSF generated 3 737 jobs (3 215 FTE), indicating an increase of part time jobs in the LSF.

**Figure 3.6** Trends on number of vessels and employment (in FTE) for MS fleets operating in the NSEA

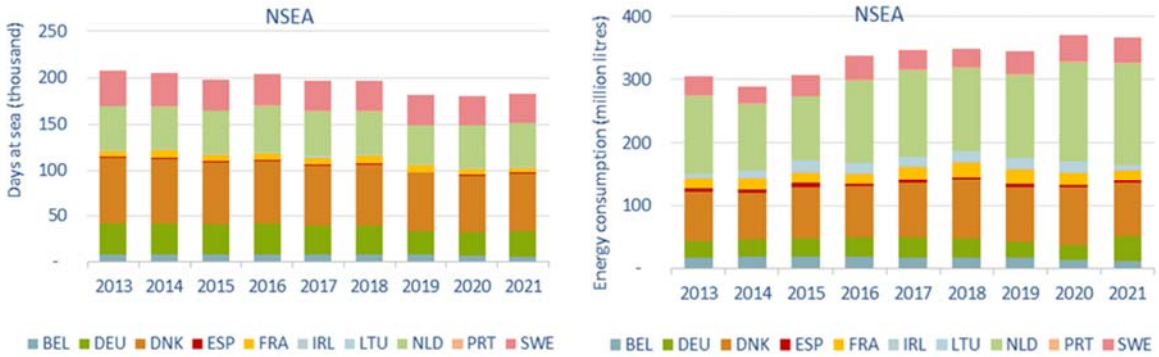

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

*Fishing effort*

Effort followed the fleet capacity development, with a stable phase between 2013 and 2017 and considerable decrease since 2017 mainly attributed to the Dutch, Danish and German fleet. Since 2014, fuel consumption has slightly increased until 2017 and remained almost unchanged until 2019, with a sharp increase now shown for 2020 and smiliar fuel consumption although a bit less in 2021 (Figure 3.7).

Around 19.5% of the days-at-sea (DaS) were undertaken by SSCF. Danish and Swedish small scale vessels accounted for 45% and 46% of this effort, respectively. LSF accounted for most of the remaining 80% of the DaS. Denmark (32%), the Netherlands (31%), Germany (19%) and Sweden (11%) were the most active nations with respect to DaS of the LSF.

**Figure 3.7** Trends on fishing effort (in days-at-sea) and fuel consumption for MS fleets operating in the NSEA



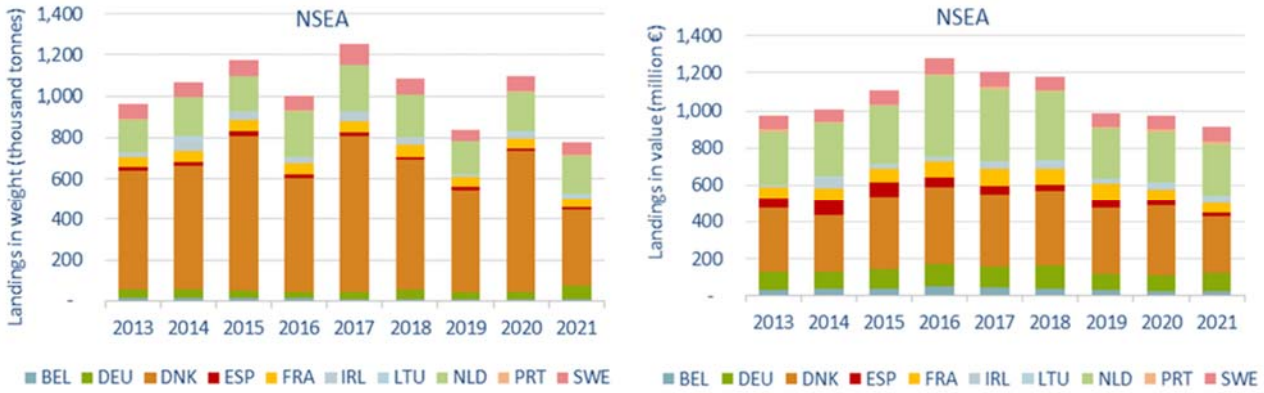

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

*Landings and top species*

In 2021, the weight and value of landings generated by the EU-27 fleet amounted to approximately 777 million tonnes and EUR 915 million, respectively. In 2020, landings in weight increased sharply by about 23% compared to 2019, comparable to the landed weight in 2018, but decreased again (-29%) to the lowest value since 2013. The value of the landings decreased by almost 6% in 2021 compared to 2020.

Landings increased steadily from 2013 onwards, and due to the contribution of the Danish fleet, dipping in 2016. Landings in 2017 were rather high, but then decreased in 2018 and again in 2019 (Figure 3.8). In 2020 landing in weight increased again, and similar to previous events, because of an increased landings in weight by the Danish fleet, but dropped again in 2021 also due to the reduced landed weight by the Danish fleet. Value of landings increased from 2013 to 2016 when it reached an high in this time sereis (Figure 3.8). Despite lower landings in terms of weight, there was a strong increase in value in 2016. Since 2017 the value of landings has decreased, particularly sharp in 2019. The decrease of landings in value continues in 2020 but to a much smaller extent. A more noticable drop in vlaue of landings is again present in 2021.

**Figure 3.8** Trends on landings in weight and value for MS fleets operating in the NSEA

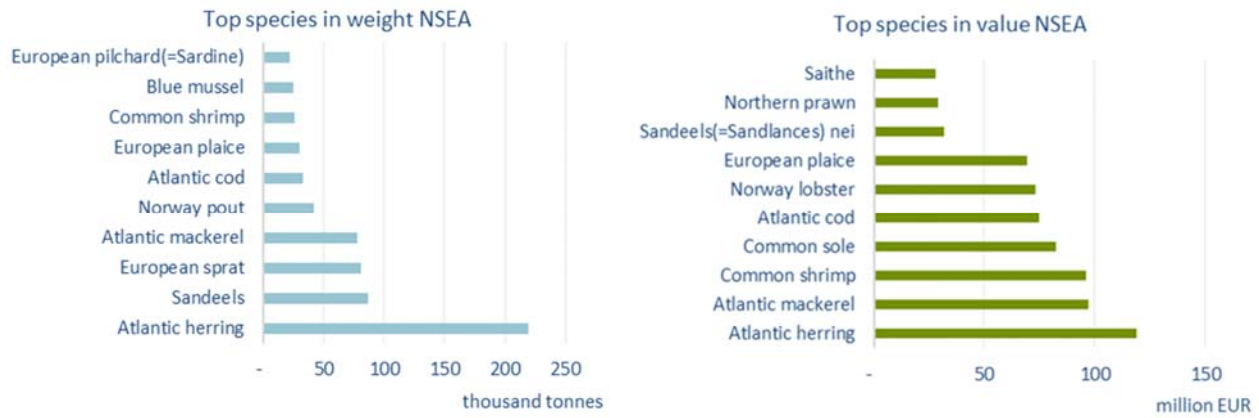



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021 Atlantic herring (319 000 tonnes, -16%) and Sandeel (87 000 tonnes; still -58%) were the most important species in terms of weight. Landings of European sprat (81 000 tonnes; -52%), Atlantic mackerel (78 000 tonnes; -19%) and Norway pout (43 000 tonnes; -40%) were the next most important species in terms of weight (Figure 3.9).

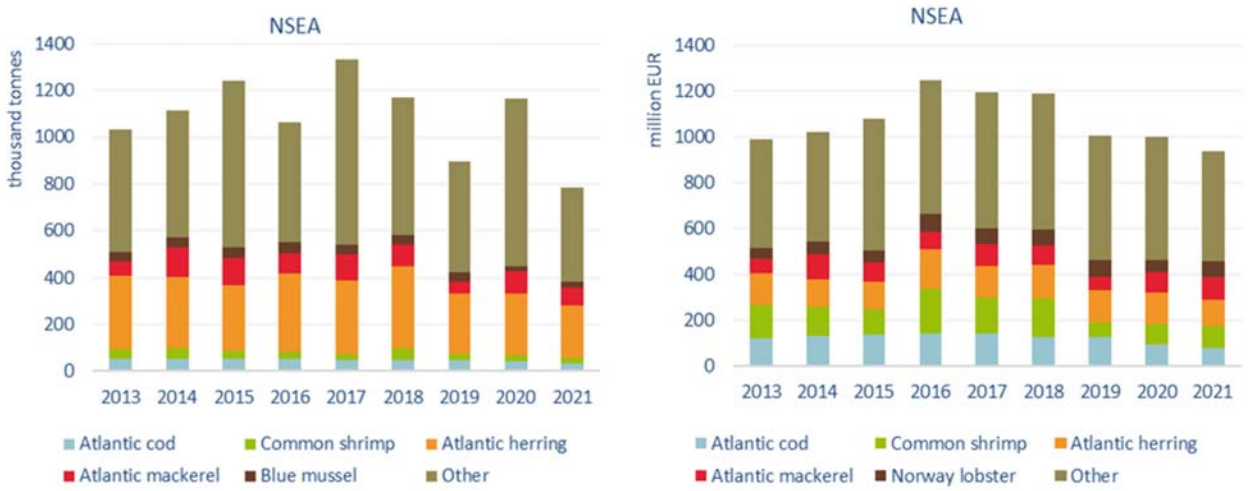
In terms of value, the most important species in 2021 were: Atlantic herring (EUR 119 million), Atlantic mackerel (EUR 97 million), Common shrimp (EUR 96 million), followed by Common sole (EUR 82 million), Atlantic cod (EUR 75 million), Norway lobster (EUR 73 million), and European plaice (EUR 69 million) (Figure 3.9). Especially, the increase in landed value of Norway lobster (+40%) and decrease in landed value of Sandeels (-44%), Northern prawn (-25%), Atlantic cod (-21%) and the absence of Saithe from the top ten were noteworthy in 2021.

**Figure 3.9** Top 10 species in landed weight and value from the NSEA, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.10** Trends on landings for the top species in landed weight and value for MS fleets operating in the NSEA




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

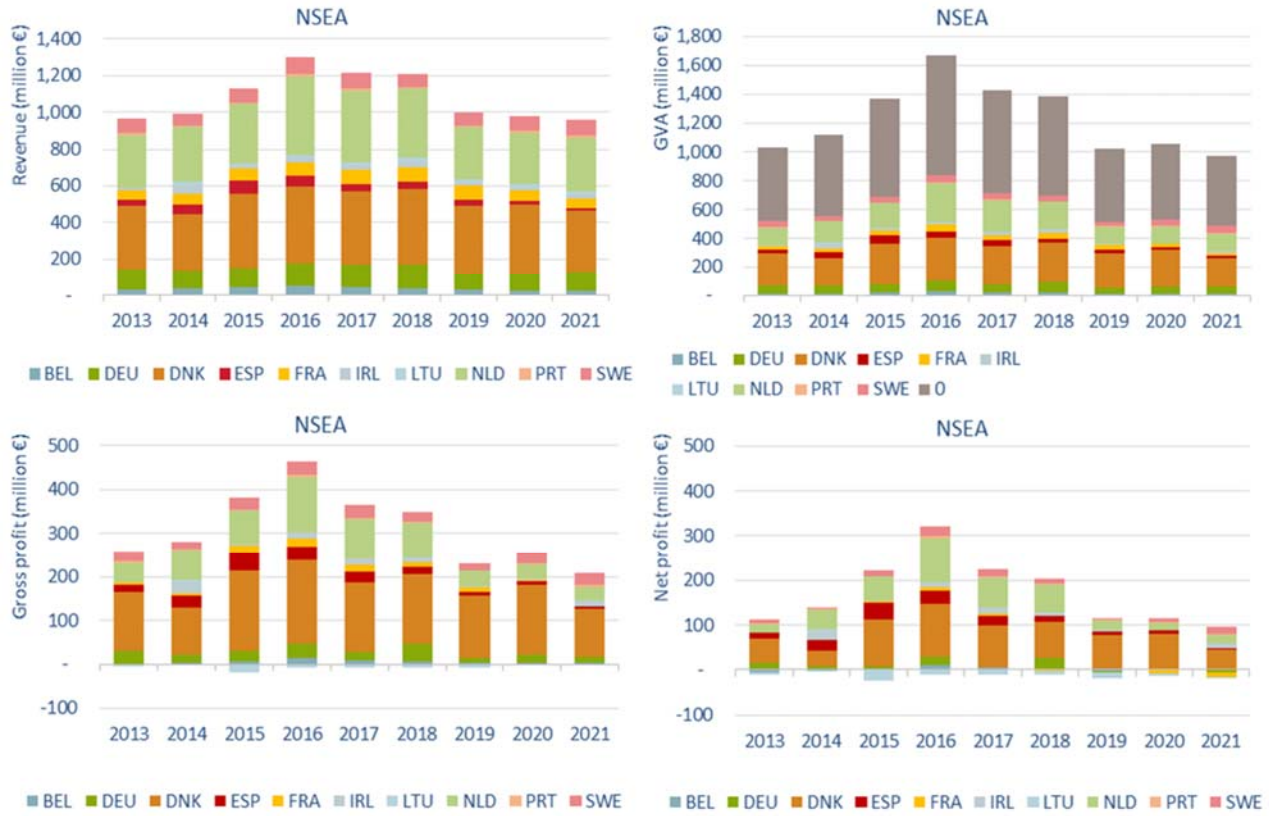
The revenue generated by the EU-27 NSEA fleet in 2021 was estimated at EUR 959 million, 35% of which was provided by Denmark (EUR 333 million), 30% by the Netherlands (EUR 288 million), and 11% by Germany (EUR 104 million) (Figure 3.10).

Although total revenue remained about stable between 2020 and 2021 some differences between countries can be noticed when comparing 2020 to 2021. Countries that had a noticeable decrease in revenue were Denmark (EUR 50 million; -13%), Lithuania (EUR 9 million; -32%) and Spain (EUR 6 million; -24%), while countries with a noticeable increase in revenue were Ireland (EUR 18.6 million; +790%), Germany (EUR 16 million; +18%) and The Netherlands (EUR 9 million; +3%). The improved economic performance of the German fleet may be a reflection of the complete dataset of pelagic trawlers and thus inclusion of these data in the analyses. The economic performance of the German fleet in comparison with previous years should therefore be placed in correct context.

GVA produced by the fleet covered in the analysis was estimated at about EUR 487 million in 2021. This represented an overall increase of 8% compared to the GVA generated in 2020. The fleets made EUR 207 million in gross profit, an 18% decrease compared to 2020 (Figure 3.11).

By fishing activity, the SSCF generated EUR 27 million in revenue, a 2.7% increase relative to 2020, while the LSF generated EUR 913 million in revenue, a decrease of 1% from 2020.

**Figure 3.11** Trends on revenue and profit (GVA, gross profit and net profit) for MS fleets operating in the NSEA




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Main factors affecting the performance of the fleet*

As in the previous year, the overall changes have been mostly driven by the LSF, whereas the trends for the SSCF in the NSEA are less clear.

Factors that may have contributed to the overall situation include:

- The uncertain situation concerning TACs because of Brexit in the beginning of 2021 and lacking agreements with the United Kingdom. Important demersal species were set on 25% of the quota for 2020 in the first quarter of the year. For pelagic species like North-East Atlantic mackerel, horse mackerel and blue whiting the quota were set on 45-60% for the first quarter of the year because of seasonality of catches.
- Later in 2021 the EU agreed with the UK about total TAC for important and shared species. The UK claimed a larger share of the TAC. 25% of the value of fishing quota of the EU landings in UK waters is considered to be transferred to the UK which gradually reduces fishing opportunities for EU fleets from 2021 to 2025. Most of the transfer has happened in 2021 (60%) and the remainder will be transferred in 2022 (70%), 2023 (92%) and in 2024 (100%). Brexit therefore has reshaped fisheries relations with consequences for some EU fleets operating in the North Sea but also in the English Channel, Irish Sea and the Atlantic Ocean. Fish stocks in the North Sea have become shared stocks with the UK, which must now also be jointly managed. Access for EU vessels to UK waters is now subject to licences delivered by UK authorities. The quota reduction in value for the EU will mainly

affect France, Ireland and the Netherlands, but also Denmark, Germany, Spain and Belgium, and to a lesser extent Sweden, Poland, Portugal, Estonia, Lithuania and Latvia.

- Negotiations between the EU and Norway, Faroe Islands and Iceland about TAC shares (mainly for blue whiting and mackerel) have led to unfavourable development of EU TAC shares and landings.
- Effects of COVID-19 turned up also in 2021 but in a different way. The market recovered partly which resulted in higher prices for fish but also for fuel. Almost all fish prices increased. Shrimp by 17%, Common sole by 10% and other flatfish species between 4 and 8%. Pelagic species like herring, mackerel and blue whiting on average slightly higher. The fuel prices increased by more than 50% and have burdened the sector.
- A decrease in landings of (flat)fish. Landings of Common sole for instance decreased by 8% compared to 2020 (while quota increased by 14%).
- Vertical integration leading to shifts in ownership stopped in 2021.

Factors that may hamper economic performance in the future include:

- The implementation of the ban on the pulse fishing technique (mid 2021) resulting in increasing fuel costs and decreasing net profits in flatfish fisheries.
- Ongoing quota adjustment as a consequence of the Brexit since 2021 will have a substantial negative impact on pelagic (herring) as well as flatfish (common sole and plaice) fishing performance in the region.
- In the Netherlands, the BAR (Brexit Adjustment Regulation) will open doors to entrepreneurs in fisheries to stop fishing activities. As a result of less fishing opportunities, for flatfish, vessels will be decommissioned. This will cut capacity and it is expected that the remaining (flatfish)segment will not be able to produce enough fish in the coming years and quota will be underexploited.
- The catchability of flatfish is going down and it is not known what the cause is.
- Innovation and energy transition is hampering because of lack of R&D and solutions that can be implemented.

*Regulation and Fisheries management in the region*

The management plans in force in 2022 that impacted the North Sea/Eastern Arctic included:

- Conservation of fisheries resources and the protection of marine ecosystems through technical measures. These technical measures are partly related to fishing gear. One of the technical measures that has a strong impact in particular for the Dutch fleet (and to a lesser extend for the Belgian and German fleet), is the pulse ban. Fishing with electric pulse trawl is now prohibited in all Union waters as of 1 July 2021 (Regulation EU 2019/1241). The use of electric pulse trawl remained possible during a transitional period until the mentioned date of 30 June 2021 and under certain strict conditions.
- Long-term plan for cod stocks and the fisheries exploiting of those stocks (Council Regulation (EC) No 1342/2008). The effort controls of the cod recovery zone were repealed in November 2016 by EU Parliament and Council Regulation No 2016/2094. This is a long-term plan and as it was already implemented in 2016, it will have a slight impact on 2022 results.
- A multiannual plan for demersal stocks (e.g. cod, haddock, sole, plaice, saithe etc.) in the North Sea and the fisheries (Regulation EU 2018/973) exploiting those stocks, specifying details of the implementation of the landing obligation in the North Sea and repealing Council Regulations (EC) No 676/2007 and (EC) No 1342/2008.
- A multiannual plan for certain demersal stocks fished in the Western Waters and adjacent waters (Regulation 2019/472 of the European Parliament and of the Council)
- Fishing opportunities available in EU waters and, to EU vessels, in certain non-EU waters (Council Regulation (EU) No 40/2013 of Jan 21, 2013), including European Union and Norway bilateral fisheries arrangements.

- Other EU and national legislation that may affect economic performance of the fleets operating in the North Sea include marine protected areas and spatial management issues, like:
  - Wind farms: in particular the extension of wind farm areas will have a strong effect on fishing opportunities. This process has been accelerated due to recent political developments. Wind farm areas are in general closed for fishing and thus further limit the areas left for fishing. Moreover, the installation and operation of wind farms will have an impact on the marine fauna.
  - NOx emission: the Dutch (mainly shrimp-) vessels fishing near the Dutch coastline are obliged to install a scrubber before October 1st of 2023 in order to bring the NOx emission down to a very limited quantity.
  - Closed areas: from 2023 January 1st, the Dutch government did not issue permits for bottom trawling (shrimp fishery) in N2000 areas which are along the Dutch coastline. From a formal point of view, fisheries in N2000 areas are not allowed by law at the moment. A temporary permit (a derogation) is given until the end of 2023 before it is known whether the government can grant a permit for shrimp fisheries in these areas or not. A juridical procedure is running now. The Dutch shrimp fishery is depending heavily on these areas.

*Status of important stocks*

At the overall level, the majority of the stocks in the NSEA are having a fishing pressure below $F_{MSY}$ (ICES 2022). The estimations for the spawning stocks of flatfish are good, but recruitment is lower than expected. Unless ICES says that stocks of Common sole and European plaice are very healthy, it is recommended to lower the TAC's for these species considerably, also for turbot and brill. It is remarkable that uptake of flatfish quota is very low the last few years. Fishermen have stated for some time that they are not able to catch the allowed quantities and they consider the flatfish stocks less abundant than investigated and stated by ICES.

Atlantic herring, haddock, saithe, hake and Norway lobster in the North Sea are all managed at biomass levels compatible with producing the MSY. However, not all Norway lobster stocks have an MSY analytical target. Yet, some Norway lobster, Hake and Plaice stocks have a high spawning-stock biomass (SSB). According to ICES advice, the plaice stock's spawning stock biomass continues to develop favourably under the current management plan, which has not changed in recent years (ICES 2022). As between stock variability for MSY and SSB has increased in recent years, close attention needs to be paid to MSY and SSB for each stock, and only careful general conclusions should be made.

Despite the implementation of the cod management plan since 2003, the fishing mortality of North Sea cod is still above $F_{MSY}$. The recovery did not occur as quickly as expected by the ICES assessment group in 2017 (ICES 2017). Therefore, cod in the North Sea and Eastern English Channel still remains a point of concern but TAC has going up slightly in 2023.

Brown shrimp (*Crangon crangon*) is the third most important species in value landed from the NSE. There is no TAC regime for this specie. There is a PAP (Productie en Aanvoer Plan/Production and Landings Plan) for this species in the Netherlands which includes harvest control rules and measures that can be taken to regulate the weekly fishing effort. The PAP qualifies shrimp fisheries to fish under a sustainability certificate (MSC) since 2017.

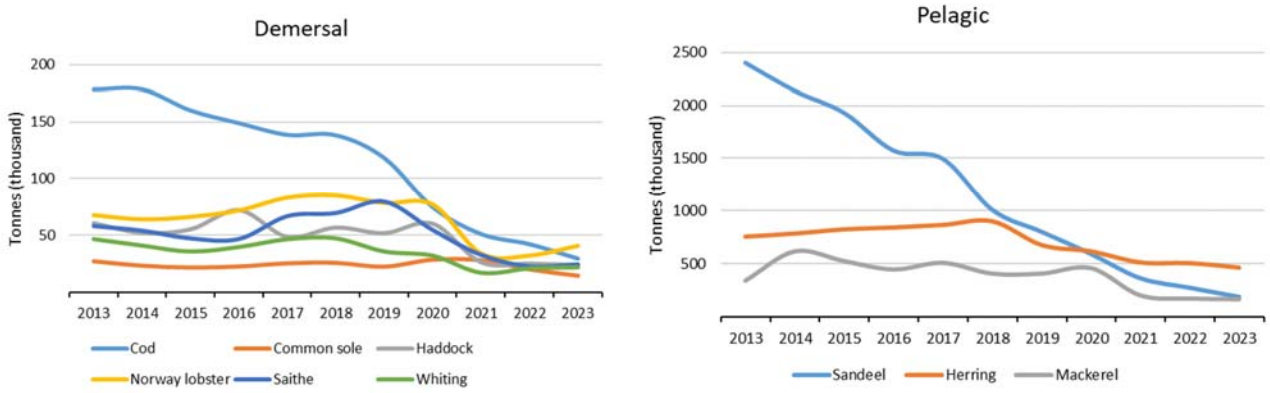
TAC development of main species

Figure 3.12 shows the EU TACs for 2013 to 2023 for some pelagic and demersal species. It should be noted that in some cases the TAC areas are not limited to the NSEA and include adjacent waters. Figures for herring, cod, common sole and Norway lobster comprise more than one stock. It has to be pointed out that up to 2020 figures include the United Kingdom quota, hence numbers from 2021 onwards are by default lower as United Kingdom shares are no longer contained. Without pointing out particular stocks, it is evident that EU quotas in the region have decreased considerably in recent years, especially for the demersal sector.

Sandeel quota has been decreasing strongly since 2013 onwards. Mackerel quota was increased in 2020 but shows a strong decrease since then, now stabilising towards 2023. Herring quota has been decreasing slightly since 2018. Cod and saithe quota show a constantly decreasing trend. Norway lobster, sole and

haddock show a stable or slightly increasing trend in recent years, with especially Norway lobster showing an increase in quota towards 2023.

**Figure 3.12** TACs pre-uplift for demersal species (left) and major pelagic species (right)




Source: Calculated based on EU TAC dataset.

Landing obligation

As in 2020, in 2021 an economic impact by the implemented LO was hard to observe due to many exemptions of the discard ban for certain species in the North Sea. In the North Sea discard plan a number of exemptions from the LO were granted for the duration of the Delegated Regulation. In 2023 Member States again have to indicate whether fisheries can implement the LO and have to submit additional scientific information supporting the exemption in order for STECF to assess the provided scientific information.

According to Ullrich (2018), highest risk for the incidence of choke species was seen with Northern hake in trawl fisheries and North Sea plaice in small-meshed beam trawl fisheries. According to the 2021 ICES mixed fisheries considerations (ICES 2021), cod might become a choke species for several fleets in 2022 and further.

- *Description of relevant fisheries in the region*

The most important LSF segments were the Danish pelagic trawlers over 40 metres based on revenue (EUR 120 million), followed by the Dutch beam trawlers over 40m (EUR 115 million) and the Danish demersal trawlers of 24-40m (EUR 66 million). The most important fleets in terms of GVA were again the Danish pelagic trawlers over 40m and Dutch beam trawlers over 40m.

Small-scale coastal fleet

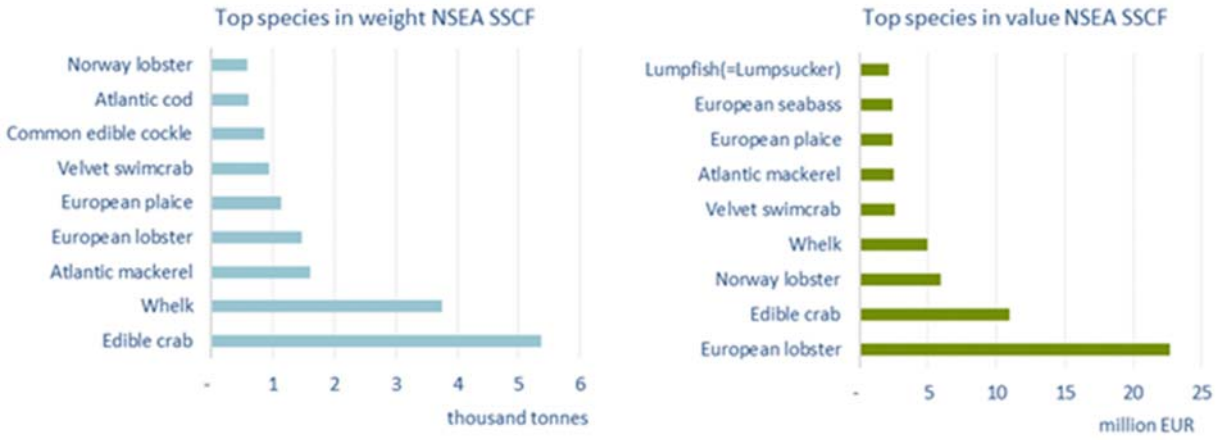
SCF from six Member States operated in NSEA in 2021. Of these, the Danish fleet, consisting of 473 vessels and employing 79 FTEs, generated the highest revenue (EUR 14 million), and the second highest negative net profit (-EUR 35 000) after Sweden with a negative net profit of -EUR 799 000. In the NSEA region, Danish SSCF contributed by 23.6% of total active vessels, 2.2% of FTE and 1.4% of revenues. The Swedish SSCF, with 281 vessels generated revenue of EUR 8.8 million, but a negative net profit of -EUR 799 000.

Overall, the SSCF segment was profitable in 2020, posting a EUR 72 505 net profit, although a strong decrease by 58% from 2019. Indeed, from all SSCF in the NSEA region, the Swedish Danish and German fleets generated net losses.

The most profitable in terms of gross profit were the SSCF fleets of Denmark and The Netherlands with EUR 1.2 million and EUR 953 000, respectively. In terms of net profit the fleet of Denmark made a negative -EUR 35 000 and The Netherlands EUR 583 000, the latter being the highest net profit for the SCF in 2021. All Member States fleets in the NSEA demonstrated a lower FTE in comparison with total employed indicating that a large majority of those employed in the SSCF are part-time or casual workers. SCF fisheries contributed to 7% of total FTE in the region.

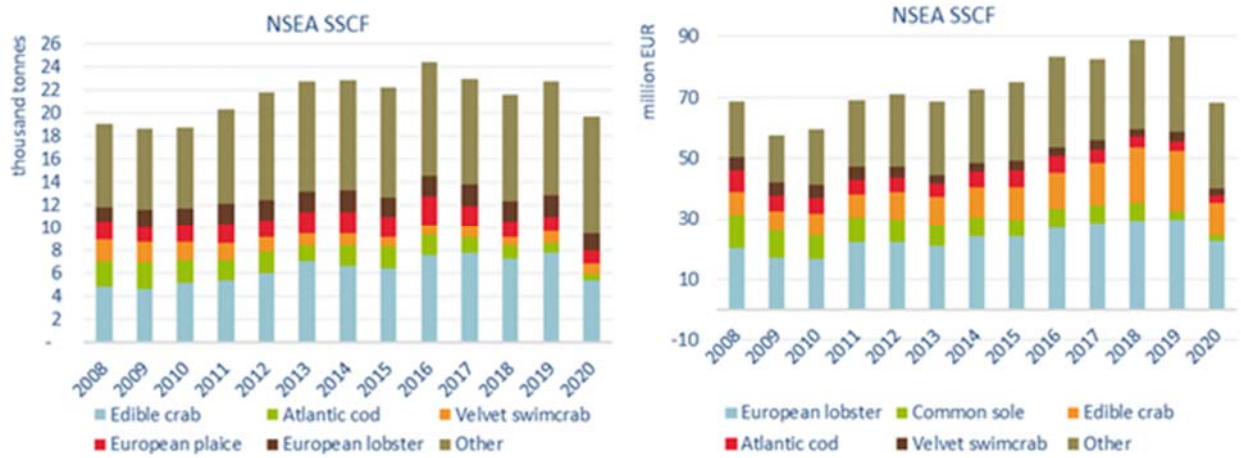
Landings were valued at EUR 25 million in 2021. The most important species for SSCF in 2021 were Atlantic herring, Atlantic mackerel and European plaice in weight. In value the top species were Norway lobster, common sole and European lobster (Figure 3.13).

**Figure 3.13** Top 10 species landed in weight and value by MS SSCF operating in the NSEA, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.14** Trends in landings of the top species landed in weight and value by MS SSCF operating in the NSEA




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Large-scale fishery*

There were nine Member States LSF operating in the NSEA totalling 1 059 vessels. The Netherlands, Denmark, Germany and Sweden had the largest number of active vessels contributing 94% of the total active vessels in the region.

The Danish and Dutch LSF, consisting of 326 and 330 vessels, respectively, generated the highest revenue (EUR 320 million and EUR 285 million, respectively), followed by the German LSF (EUR 104 million).

Overall, the LSF was profitable in 2021, generating EUR 470 million in GVA and EUR 204 million in gross profit. Compared to 2020, GVA and gross profit decreased by 8.6% and 19%, respectively. The most profitable fleets in terms of gross and net profit were the Danish fleets with EUR 109 million and EUR 44 million, and the Dutch fleets with EUR 116 million and EUR 29 million, respectively.

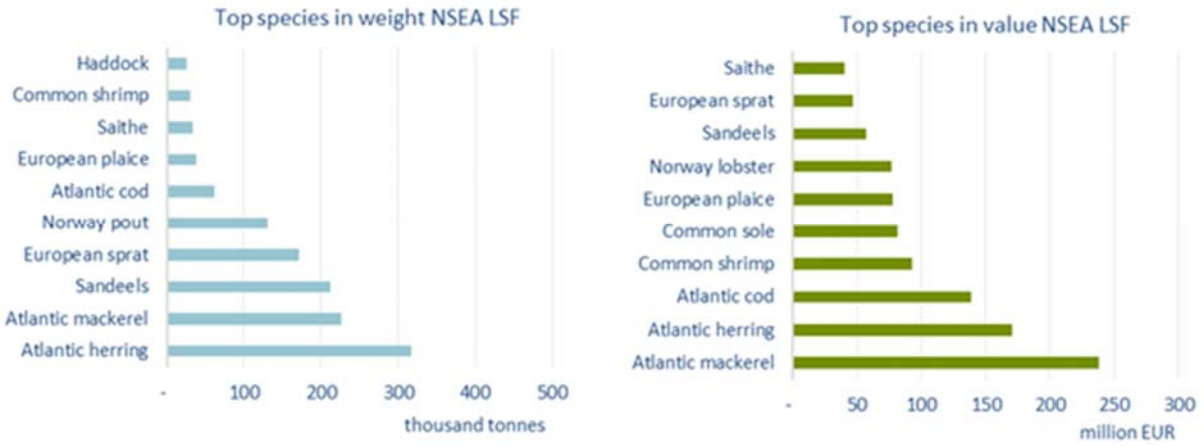
Total employment for the LSF was highest for the Netherlands and Denmark totalling 1 357 and 928, respectively. While the SSCF demonstrates a difference between the total number employed and total

FTE for all Member States, the LSF figures for total employed and FTE are closer in value, indicating the high level of full time employment in this segment.

Landings were valued at EUR 873 million in 2021. Danish LSF contributed to 32% of landings value in the region. In term of weight, the most important species for the LSF in the region in 2021 were Atlantic herring, Sandeels and European sprat, whereas the top species in value were Atlantic herring, Common shrimp and Atlantic mackerel.

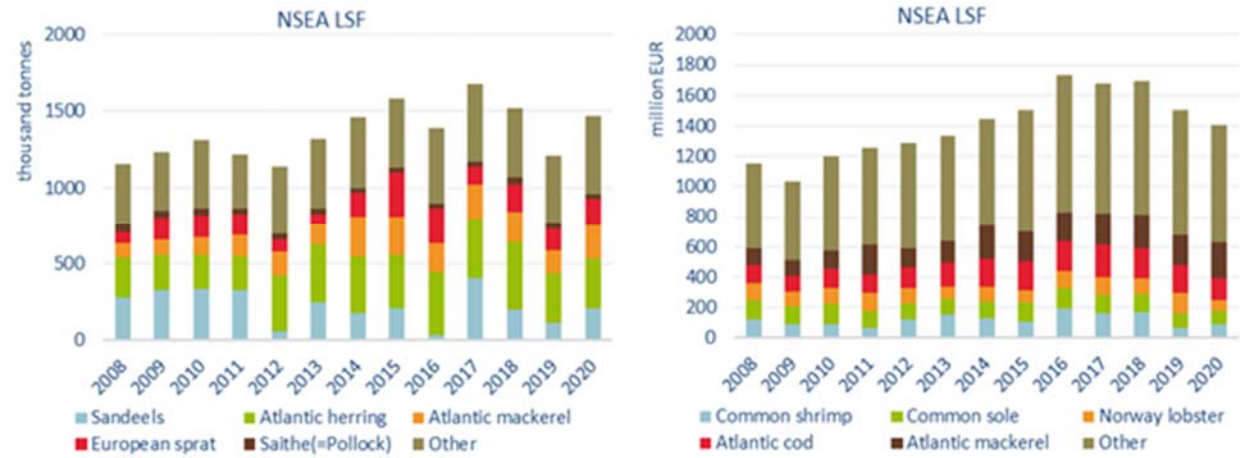
Three Spanish demersal trawlers and two Lithuanian vessels engaged in demersal fisheries are active in the Eastern Arctic. As these are in a cluster with the long-distance fleet, these vessels are displayed under "LDF". As for all fleets covering more than one region the figures on employment, cost and economic performance are estimated based upon disaggregation procedures. As the segment is very small, the data must be interpreted with particular caution. Lithuanian catches are not included in Figure 3.15 and Figure 3.16, but as these are small the main species would not, in any case, be amongst the top 10 species.

**Figure 3.15** Top 10 species landed in weight and value by MS LSF operating in the NSEA, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.16** Trends in landings of the top species landed in weight and value by MS LSF operating in the NSEA




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Pelagic fishery*

The pelagic fishery operates in the North Sea and the Eastern Arctic but also in the North East Atlantic, NWW and SWW. Member States involved are, in order of importance, Denmark, The Netherlands,

Sweden, Germany, France, and Ireland. A distinction can be made between industrial and non-industrial fisheries. In general, a large share of the Danish and Swedish landed volume consists of sandeel, European sprat, and some volume of Atlantic herring. Sandeel and sprat are used for industrial purposes (e.g. fishmeal and fish oil), whereas Atlantic mackerel, Atlantic herring and horse mackerel are important species for human consumption.

The Danish pelagic fishery in the North Sea mainly targets Atlantic herring, sandeel, sprat and Atlantic mackerel. In Denmark, all these species are under an ITQ regime. The fishery is executed mainly by large pelagic trawlers, but also by vessels from the demersal segment, which switch gears seasonally.

The Dutch pelagic fleet in the NSEA consists of large (freezer)trawlers (from 60 to over 100 metres). These vessels mainly target Atlantic herring, Atlantic mackerel, and, to a lesser extent, horse mackerel and blue whiting. The fishery is for human consumption and not directed for industrial purposes. All these species are under an ITQ regime and overall managed by the international organisation called Pelagic Freezer-trawler Association (PFA).

The German pelagic fishery is performed by large freezer trawlers and medium sized trawlers targeting Atlantic herring and Atlantic mackerel. Pelagic trawlers of about 30 metres perform a seasonal fishery on sandeel. The data of these vessels were now included in the analysis therefore impacting the German data slightly.

For Sweden, major amounts of Atlantic herring and sandeel are also fished and are more important in terms of value of landings than any other species caught by this fishery. Most of these vessels are in an ITQ system and land their catches mostly in Denmark.

For the small amount of Irish pelagic fisheries in the area the most important species is Atlantic mackerel followed by Herring.

*Demersal roundfish and Nephrops (Norway lobster) fishery*

Important target species are cod, Norway lobster, haddock, saithe and hake. Haddock and hake were fished close to or below $F_{MSY}$, cod fisheries were still above $F_{MSY}$ in 2020, while saithe was above $F_{MSY}$ only in 2020. The cod recovery plan in the North Sea had not yet fulfilled assessment experts' expectations on improvement of the stock status over the past years.

The Danish demersal roundfish fishery targets cod, haddock and saithe. A broad range of vessel segments are involved in that fishery. Moreover, the Danish fleet is the largest fleet according to the value of landings in the Norway lobster fishery in the North Sea, and also in relation to the cod fishery.

The French fleet also participates in the cod and saithe fishery in the ICES Division 4a.

The main species for German demersal trawlers in the North Sea is saithe in the ICES Division 4a, involving vessels between 30 and 41 metres in length. These vessels also catch some cod and minor amounts of haddock. The fish is landed in Denmark or Germany and is destined for the fresh market, but also for processing. While the Norway lobster fishery has gained importance for some vessels it remains of minor importance overall.

The Dutch so called demersal roundfish fishery vessels targets cod and Norway lobster, but this fishery is of minor importance in the total national context. Turbot and plaice are bycatch, and the vessels contribute to the overall revenues. The vessels are medium sized with a length of 24-30 metres. The species are all landed fresh and exported to markets in France, Italy and Spain.

While Swedish demersal vessels catch large amounts of Norway lobster, cod, saithe and haddock, overall, these fisheries are of minor importance with respect to the total catch of these species.

The Spanish demersal trawler fleet was mainly active in the Eastern Arctic with a TAC for Atlantic cod (EU and Norway waters 27.1, 27.2b).

Belgium has a very small demersal fishing fleet with fishing rights targeting primarily Norway lobster and European plaice. Ireland also has some minor catches and landings of Norway lobster in the area.

Lithuanian and Polish vessels perform fisheries targeting Northern prawn.

*Flatfish fishery (plaice and sole)*

The main Member States that took part in the flatfish fishery in 2021 were the Netherlands, Denmark, Belgium, Germany and France. Important target species were Common sole, European plaice and, at a lower level, turbot and brill. The spawning biomass of Comon sole in 2022 was estimated as one of the

highest since the start of the time series in 1957. Overall, the performance of most flatfish beam trawl fleets was slightly positive in 2021. However, since 2016 there is a decreasing trend in terms of landed weight and value and therefore a lower economic performance. It is expected that economic performance in future will be zero or negative.

The Netherlands is by far the most active country in the flatfish fishery, mainly carried out by large beam trawlers in the southern North Sea (ICES Division 4c). Until June 2021 using the pulse trawl technique and after that the tickler chains technique. In 2018 almost all EU permitted 'pulse fisheries exemptions' were used in Dutch fleets, resulting in considerable fuel savings (minus 40-50% compared to conventional beam trawling with tickler chains). Common sole is a very important species due to high prices. As a result, this fishery is or was profitable. Developments in innovation has stopped and R&D is almost zero.

The plaice stock biomass is at a very high level again, but the fishing industry did not profit very much from it. Quota for this specie was not fully exploited. The catchability of this species has dropped and it is supposed that stocks have moved from their original living grounds to more Northern areas, and that the population has spread out further.

The Danish fleet targets flatfish mainly using otter trawls in ICES Division 3a and area 4. Common sole catches are rather low whereas plaice is a target specie in some fisheries. In the cod and Norway lobster fisheries plaice is bycatch.

For Belgian beam trawlers flatfish is a major species in the southern North Sea. Where the Dutch used pulse gear, the Belgian beam trawlers used the more traditional beam trawl gear, although they have made a number of technical adjustments in order to reduce also fuel consumption. In the Belgian beam trawl fleet there were newly built vessels ordered in 2019 and were indeed entering the fleet starting 2020 till 2022. Most of these vessels are aimed to save fuel consumption and energy costs.

French vessels target plaice and sole in the Channel area (ICES Division 7d). Sole catches are considerably higher than plaice catches.

The German flatfish fishery is operated by a small number of (mostly Dutch owned) beam trawlers. These vessels fish in a similar manner as the Dutch fleet.

Brown Shrimp Fishery

The main Member States that fish for shrimp in 2021 were the Netherlands, Germany, Denmark, and Belgium. The fishery is carried out by smaller beam trawlers (mainly below 24 metres). Considerable catches are being made in coastal areas (almost all N2000 areas) of the southern North Sea and in the Wadden Sea. Overall, the performance of the participating fleets was deteriorating. In 2021 prices went up. Dutch and German catches account for more than 90% of the total volume of shrimp. Some German vessels operate under Dutch ownership. Some Dutch vessels switch between flatfish and shrimp fishery.

## 3.2 Baltic Sea

### *Regional Details*

The Baltic Sea covers ICES divisions 27.3b, c and d and is bounded by the Swedish part of the Scandinavian Peninsula, mainland Europe and the Danish islands. The central part of the Baltic Sea is bordered on its northern edge by the Gulf of Bothnia, in the northeast by the Gulf of Finland, and in the east by the Gulf of Riga. For simplicity, hereafter the EU vessels operating in these areas are referred to as the EU Baltic Sea fleet or fisheries. Tables in the Annex 2 contain a summary of the economic performance of the Baltic Sea fleet by Member States, fishing activity and fleet segment, respectively.

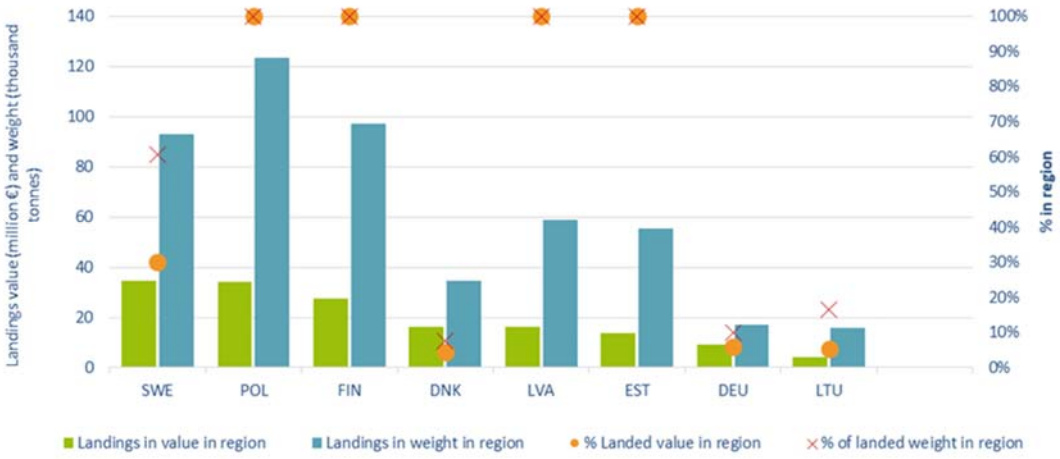
Eight Member States were involved in Baltic Sea fisheries in 2021: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden (Figure 3.17). Most of the Member States bordering the Baltic Sea are highly dependent on the region, where the main species targeted include herring, sprat and cod.

In terms of landings, and based on the EU-MAP data available, the Estonian, Finnish, Latvian and Polish fisheries are fully dependent on the Baltic Sea region. However, it should be noted that Estonian, Latvian and Polish vessels operating in the high seas (DWFs) are not included in the analysis for reasons of confidentiality. On the other hand, the Lithuanian low dependency rate is due to the DWF operating in other areas. Some Danish and Swedish vessels operate in both the Baltic and North Sea fishing regions, while German vessels operating in the Baltic usually do not switch to the North Sea.

In 2021, the Swedish fleet was the most important fleet in terms of landed value (EUR 34 million), while the Polish fleet was the most important fleet in terms of landed weight (123 000 tonnes) (Figure 3.17).

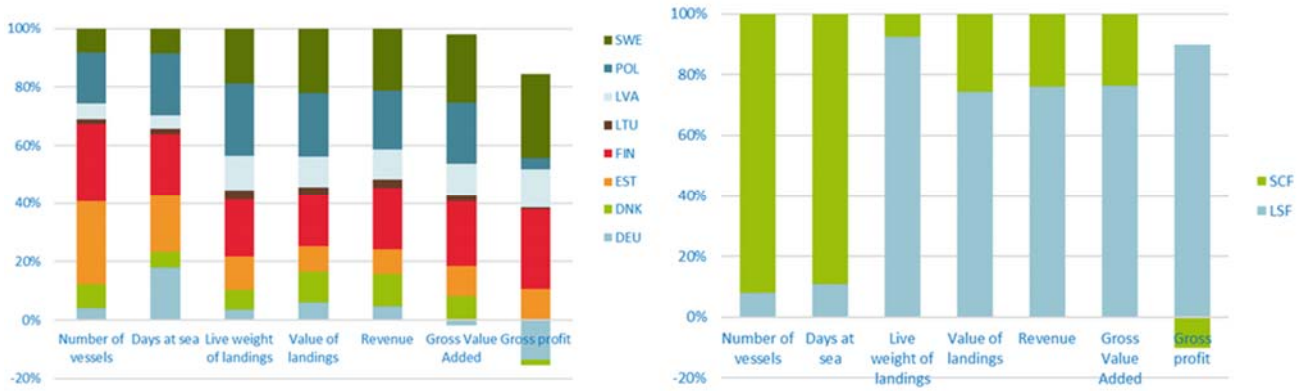
Some of the time series are influenced by the fact that for 2021 economic data were available also for the German pelagic fleet. For value and weight of landings this has been the case for the entire time series, but all other data were not contained in the dataset before.

**Figure 3.17** Importance of the Baltic Sea region for MS fleets in terms of landings in weight and value, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.18** Share by MS and fishing activity fleets operating in the Baltic Sea, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Overview of the main results for EU Baltic Sea fleet*

Fishing effort and landings

The EU Baltic Sea fleets spent 292 000 days-at-sea in 2021 (2.5% less than in 2020). Generally, the effort variables show a decreasing trend all over the time series since 2013. The weight and value of landings was approximately 495 000 tonnes and EUR 156 million. Landings (by weight) from the Baltic increased slightly from 2013 to 2018. However, from 2019 to 2021 the weight of landings decreased by 7%. The value of landings decreased significantly in 2014 (due to slump in the price for small pelagic species) and, after slight recovery in 2015, is on a constant decrease. In 2021, the value of landings decreased again by 14% (Figure 3.19).

**Figure 3.19** Trends on effort and landings for MS fleets operating in the Baltic Sea region


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Employment, wages and labour productivity*

For the SSCF, the overall average wage per FTE remained almost unchanged in 2021 compared to 2020, thus being EUR 12 030 in 2021 (Figure 3.20). Average wages per FTE in the LSF decreased by 3.0% to EUR 27 122 from 2020 to 2021.

The overall labour productivity (GVA/FTE) for the SSCF increased 26.4% in 2021 compared to 2020, being EUR 10 206 in 2021. The overall labour productivity (GVA/FTE) for the LSF decreased 20.7% to a level of EUR 53 507 (Figure 3.20).

**Figure 3.20** Trends on average wage and GVA per FTE by fishing activity for MS fleets operating in the Baltic Sea


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

The revenue generated by the EU Baltic Sea fleet in 2021 was estimated at almost EUR 173 million, a substantial decrease of 12% compared to 2020.

The GVA produced in 2021 was around EUR 88 million and compared to 2020, decreased by 19%. The fleets operating in the region made almost EUR 30 million in gross profit, a substantial 33% decline from the previous year profits record (EUR 44 million). Net profit decreased even sharper by 42% to EUR 6 million (Figure 3.21).

**Figure 3.21** Trends on revenue and profits for MS fleets operating in the Baltic Sea


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Trends by Member State fleet*

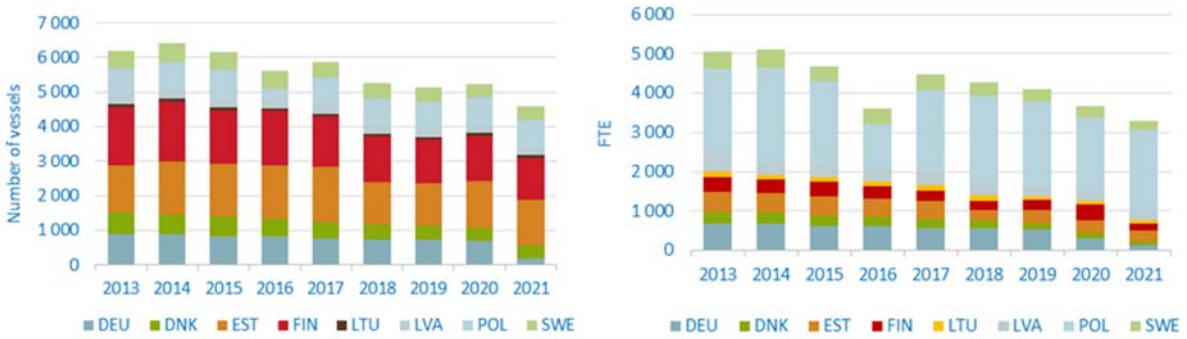
*Fleet capacity and employment*

Member State fleets operating in the Baltic Sea collectively numbered around 4 597 active vessels in 2020 (12% less compared to 2020). Total employment in the region amounted only to 3 301 FTE in 2021, 10% reduction compared to 2020. Compared to 2013 the total number of vessels operating in Baltic Sea decreased by 26% (Figure 3.22). The Estonian fleet was the largest, in terms of number of vessels, with 1 304 active vessels (1 317 active vessels in 2020), some 26% of the total EU Baltic fleet, followed by Finland – 1 317 vessels and Poland 807 vessels.

The capacity of the fleet was reduced by 2% in 2021 and amounted to 55 500GT with the largest share made up of Polish fleet (15 317 GT) followed by Finnish (10 334 GT). The largest decline of GT during 2020-2021 was observed in Finnish and Danish fleet, 16% and 9%, respectively.

The dominance of SSCF fisheries in the region indicates predominantly part-time nature of employment mostly represented by Estonian and Finnish fleets with average 0.23 and 0.17 FTE per person employed, respectively. SSCF contributed to as much as 62% of the total FTE employment on the Baltic in 2021. Employment, measured in terms of FTE, showed a decreasing trend over the period (2013-2021). SSCF FTE decreased by 12% in 2021 while LSF 6% only. In 2021 (compared to 2020) the largest reductions in the employment were observed in German, Finnish and Danish fleets, while in Polish and Latvian fleet the employment increased by 8%. The total number of FTE employed in Baltic fleets in 2021 were 25% lower than the long term (2013-2020) average.

**Figure 3.22** Trends on the number of vessels and employment in FTE for MS fleets operating in the Baltic Sea

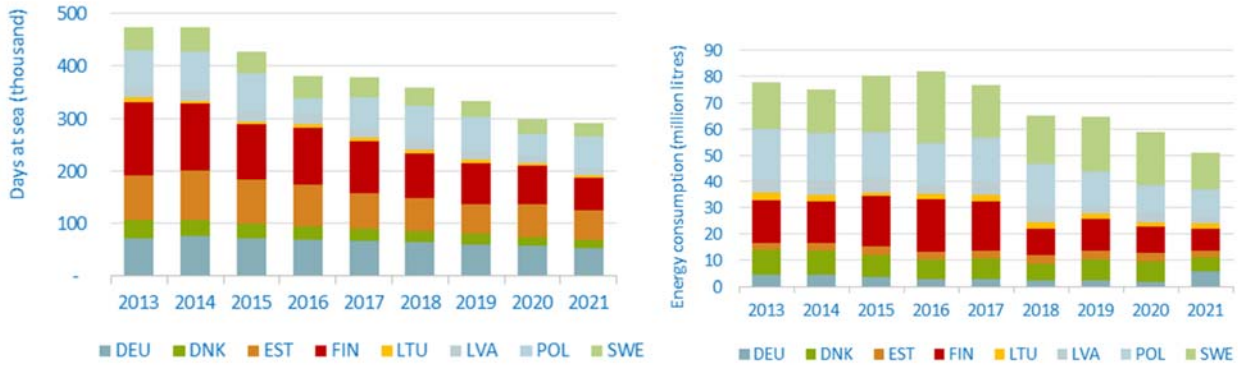



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023))

### *Fishing effort*

The EU Baltic Sea fleets spent 292 000 DaS in 2021, a 2% decrease compared to 2020 (or 25% decrease compared to long term average 2013-2020) and reached the lowest level since 2013 (Figure 3.23). In 2020 the decline in fishing effort was under conditions of COVID-19 lockdown in 2021 it was affected by reduced herring catch possibility as well as continued closure of direct cod fishing (only bycatches allowed). In some MS effort recovered after a one-year decline. The biggest increase of fishing effort was observed in Polish and Lithuanian fleets. In 2021 DaS for these two countries increased by 50% and 13% while for others decreased between 7% (Germany) and 17% (Finland).

**Figure 3.23** Trends on effort (in days-at-sea) and energy consumption for MS fleets operating in the Baltic Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023))

Vessels from Finland, Poland and Estonia had the highest effort, accounting for 62% of total DaS in the region because of the small-scale fleet dominance in these Member States. The combined effort of these three countries was 25% lower in 2021 than long term (2013-2020) average or 17%, 27% and 31% respectively for Estonia, Finland and Poland.

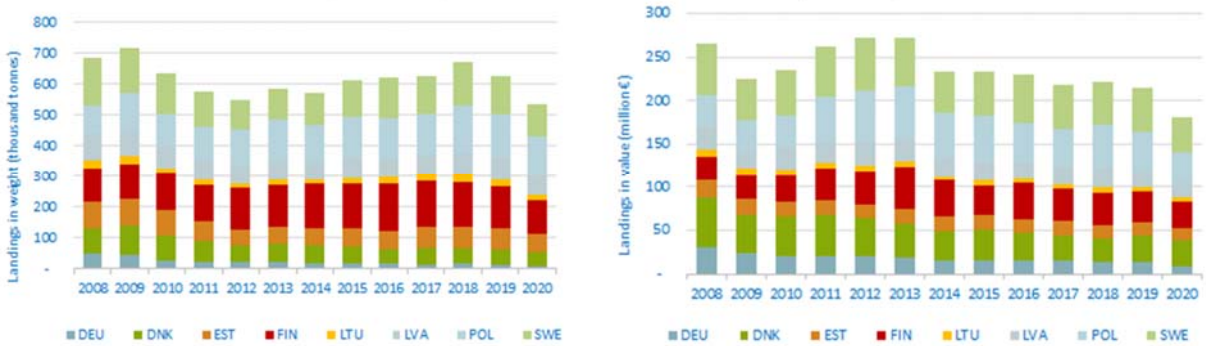
In 2021, Baltic Sea fleet consumed estimated value of 51.1 million litres of fuel and, compared to 2020, it decreased by 14%. Fuel consumed per landed weight of seafood, in 2021, was 7% lower than in 2020 or 14% compared to 2013-2020 average, indicating improvement in energy efficiency of the Baltic Sea fleet.

### *Landings and top species*

The weight and value of landings was 495 thousand tonnes and EUR 161.4 million in 2021 with 9% and 12% decline in comparison to 2020, respectively. The volume and value of Baltic fish landed in 2021 were 21% and 28% lower compared to the 2013-2020 average.

In terms of landed weight, Poland (123 000 tonnes), Finland (97 000 tonnes) and Sweden (92 000 tonnes) were the leading Member States. Sweden (EUR 34.5 million), Poland (EUR 34.0 million), Finland (EUR 31.0 million) and Finland (EUR 27.4 million) collectively accounted for around 61% of the total value of landings in 2021.

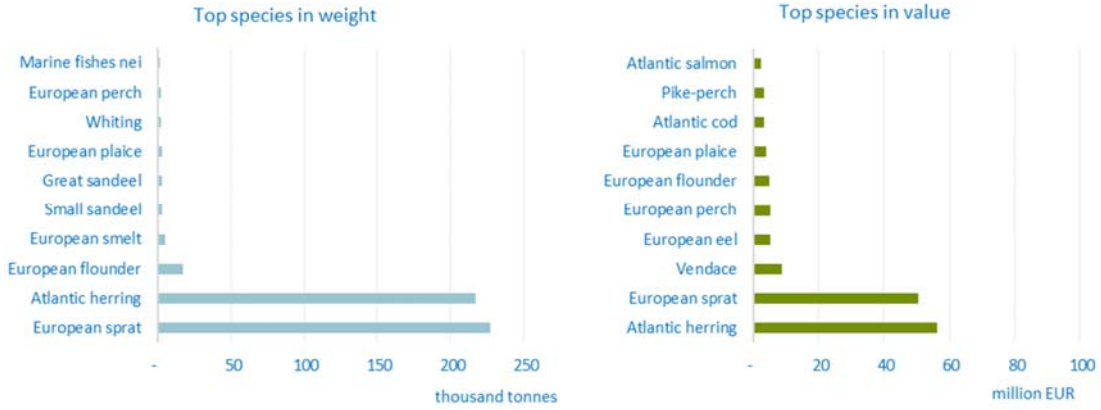
**Figure 3.24** Trends on landings in weight and value for MS fleets operating in the Baltic Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

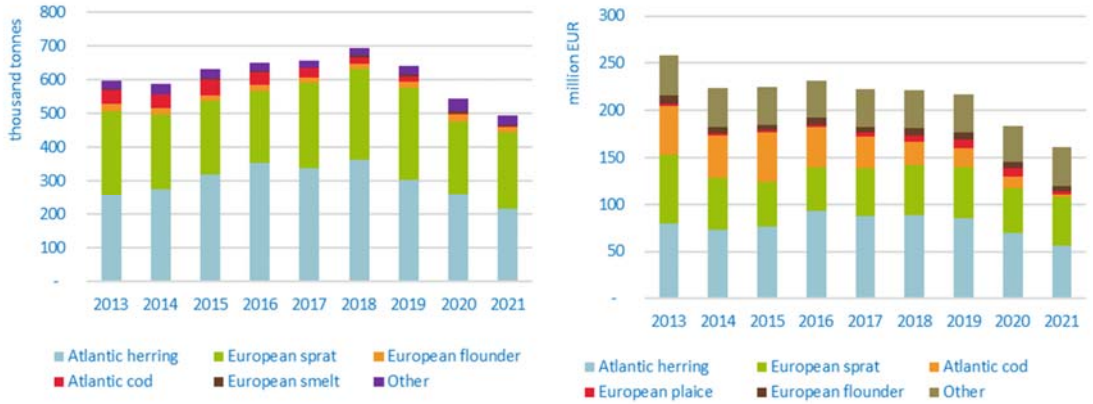
In 2021 the most important species (by weight of landings) were European sprat (227 300 tonnes, 45% of the landed weight), Atlantic herring (217 100 tonnes) and European flounder (17 000 tonnes) (Figure 3.25). Atlantic herring generated the highest value (EUR 56.4 million), representing 36% of the landed value), followed by European sprat (EUR 50.7 million, 31% of the landed value) and vendance (EUR 8.7 million, 5% of the landed value) (Figure 3.25).

**Figure 3.25** Top 10 species in landed weight and value by MS fleets operating in the Baltic Sea, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.26** Trends on landings of the top six species in landed value for MS fleets operating in the Baltic Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Atlantic cod landings value decreased as much as 91% in 2021 compared to the 2013-2020 long term average. The total landed weight and value of Baltic herring declined by 31%. Also landings of sprat, another economically important species for the Baltic fishing fleet, decreased by 6% in 2021 compared to the 2013-2020 long term average (Figure 3.26).

### *Economic performance*

The profitability of the Baltic fleet decreased in 2021, however remained positive. The fleet generated EUR 29.4 million gross profit and EUR 6.3 million net profit compared to EUR 44.1 million gross profit and EUR 10.8 million net profit in 2020 (33% and 42% decrease). Regardless of the overall positive net profitability in 2021, Germany and Denmark experienced again highest net losses in the region (Figure 3.27). On the other hand, Estonian and Lithuanian profitability improved from negative to positive values. Swedish fleet maintained to be the most profitable one generated EUR 6.5 million net profit.

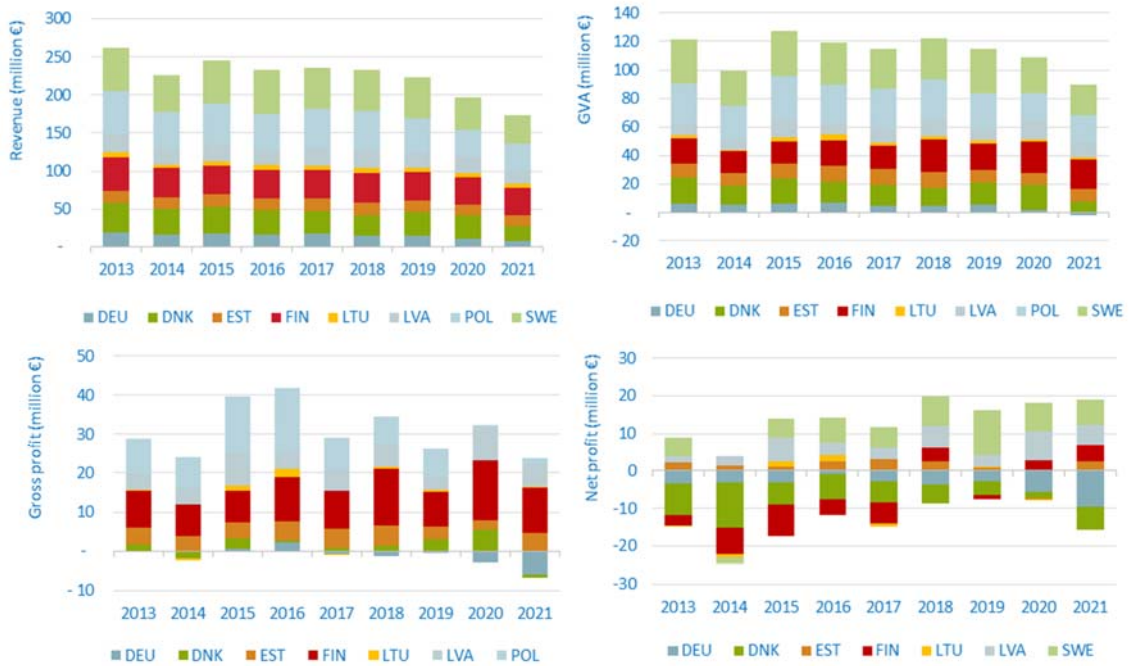
The revenue generated in 2021 was EUR 172.8 million with a decrease of 12% compared to 2020 or 25% decline compared to 2013-202 average. Three Member States accounted for over 60% of all revenues: Sweden (EUR 36.9 million), Poland (EUR 34.6 million) and Finland (EUR 36.8 million).

The GVA generated by the Baltic fleet in 2021 was EUR 88.1 million, a 19% decline compared to 2020 GVA (EUR 109.2 million). The indicator deteriorated heavily for the German fleet – GVA of EUR 1.7 million turned from positive to negative value. The Danish fleet produced EUR 7.5 million GVA, a sharp decline (-57%) compared to 2020. Latvian, Swedish and Finnish fleets suffered from 22%, 16% and 8% decreases. On the other hand, some MS fleets managed to improve results, e.g. Estonian by 11%, Lithuanian by 8% and Poland by 1%.

The net profit of the EU Baltic fleet amounted to EUR 6.3 million, 42% a decline compared to 2020. Two MS reported negative profitability, Germany (-EUR 9.6 million) and Denmark (-EUR 6.2 million). Two fleets, Estonian and Lithuanian, that faced net losses in 2020, managed to improve profitability and generated a positive outcome in 2021 - EUR 2.4 million and EUR 15 000, respectively. The net profit of the Polish fleet improved significantly in 2021 from EUR 455 000 to EUR 3.0 million in 2021. An improved economic condition of the SSCF was the main reason of that. In 2020 the largest net profit margins in the Baltic region were observed in Latvia (30%), Estonia (17%) and Sweden (18%).

Increased energy costs and lower landings revenues (caused by Central herring and Eastern cod TACs cuts) were two main reasons that negatively affected profitability of the Baltic fisheries in 2021.

**Figure 3.27** Trends on revenue and profits for MS fleets operating in the Baltic Sea region




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Main factors affecting the performance of the fleet*

The major factors that may have negatively influenced economic performance:

- In 2021, TAC for herring decreased considerably overall: Central herring -36% (--55 833 tonnes), Western herring -50% (-1 575 tonnes), Bothnian unchanged, Riga +15% (+5 001 tonnes). As herring has been an important part of the catch of Baltic fishing fleet, this has a substantially negative effect on the economic performance.
- The cod stocks both in the Eastern and Western part of the Baltic Sea are in critical condition. The commercial cod fishing was significantly reduced in 2019 and direct fisheries on cod were not permitted in 2020-2023, except for small-scale fisheries on the Western cod stock. The cod catches are allowed only as an unavoidable by-catch. Eastern cod quota was reduced by another 70% in 2021 (after -92% in 2020) while Western cod quota remained almost unchanged (+5% after -60% in 2020). Altogether, this is an ongoing threat to a considerable part of the regional fleet. ICES expects that the cod stock most probably will remain in a dire condition in the middle-term.
- Fishing performance, especially in the SSCF, is very weather dependent. Even with favourable economic conditions, it can be a limiting factor for fleet performance, especially for seasonal fisheries.
- In some areas the increasing population of seals has been reported as substantial problem when performing fisheries using passive gears. Damage to both gear and fish has been experienced, thus resulting in the cessation of certain fisheries.

The major factors that may have contributed to the positive situation:

- The quota for Baltic sprat increased 6% in 2021. It is a commercially important species, but only for few specialised fleets. The only Baltic herring stock with a TAC increase was the Gulf of Riga herring (+15%). A TAC increase applied also to main basin salmon (+9%).
- Compensations from the EMFF funds have been provided to the owners of the fishing vessels for the temporary cessation of fishing activities due to the protection of cod stock. Such compensations could provide significant support to the fishing companies in the short-term.
- The EMFF has also provided measures to improve profitability including increased added value (for the SSCF) and utilisation of by-catch arising from the landing obligation (for the LSF). Measures are already applicable in some Member States fishing in the Baltic region.

- Policy management instruments, specifically quota allocation (introduced in some countries), may have helped to improve the economic performance of certain fleets.
- While aging vessels, obsolete equipment and insufficient investment all lead to increased maintenance costs and reduce the profitability of the fleet, the EMFF does provide the possibility of engine replacement if the fishing capacity is proven to be in balance with exploitation. Some Member States have already introduced such schemes. However, as the poor status of several important stocks has a negative impact on the balance indicators, several fleet segments in the Baltic are regarded not in balance and, hence, do not qualify for this kind of support.

*Regulation and fisheries management in the region*

A multiannual plan for the stocks of Western Baltic cod (ICES divisions 22-24), Eastern Baltic cod (ICES division 25-32) Central Baltic herring (ICES divisions 25-29 and 32), Western Baltic herring (ICES division 22-24), Gulf of Riga herring (ICES division 28.1), Gulf of Bothnia herring (ICES division 30-31) and Baltic sprat (ICES division 22-32) was adopted by European Parliament and the Council on 6 July 2016 (Regulation (EU) 2016/1139). The plan shall contribute to the achievement of the objectives of the common fisheries policy in particular by applying the precautionary approach to fisheries management and shall aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce MSY. The plan shall also contribute to the elimination of discards by avoiding and reducing unwanted catches, and to the implementation of the Landing Obligation (LO). The plan was last amended in November 2020 (Regulation (EU) 2020/1781) by adding details for the implementation of the landing obligation in the Union waters of the Baltic Sea for Atlantic salmon (Salmo salar) in ICES Subdivisions 22-32 and open possibility for fishing capacity reduction for vessels that targeted Eastern Baltic cod, Western Baltic cod and Western Baltic herring.

Council Regulation (EU) 2020/1579 fixing for 2021 the fishing opportunities for certain fish stocks applicable in the Baltic Sea maintained protecting measure aimed at eliminating misreporting of catches in Baltic salmon fishery. According to the regulation it shall be prohibited for fishing vessels to fish for sea trout beyond four nautical miles measured from the baselines in subdivisions 22-32 from 1 January to 31 December 2021. When fishing for salmon in those waters, by-catches of sea trout shall not exceed 3 % of the total catch of salmon and sea trout at any moment on board or landed after each fishing trip.

The LO has been in force since 1 January 2015 for pelagic and demersal fisheries in the Baltic Sea. Regulation (EU) 2018/306[9] aims to progressively eliminate discards for Baltic Sea cod and plaice fisheries through the introduction of a landing obligation.

Technical measures were implemented in 2019 for the Baltic Sea region in the frame of the conservation of fisheries resources and the protection of marine ecosystems. The activities include prohibition to retain on board or land any quantity of marine organisms unless at least 85% of the live weight thereof consists of molluscs and/or Furcellaria lumbricalis; to have on board or deploy any driftnet, or to use bottom-set gillnets, entangling nets and trammel nets for some species. To optimisef exploitation patterns and to provide protection for juveniles and spawning aggregations of marine biological resources, Regulation (EU) 2019/1241[10] on the conservation of fisheries resources and the protection of marine ecosystems through technical measures was established. Some of the objectives are to minimise incidental catch of sensitive marine species and potential negative impacts of fishing on marine habitats.

The European eel recovery plan (Regulation (EU) 1100/2007) also affects several Baltic states. Within this plan, Member States are required to allow 40% of adult eels to escape from inland waters to the sea where they can spawn. EU regulations also comprise technical conservation measures, including mesh size, minimum landing size, by-catch limitations as well as periods and areas closed for fishing.

The work also is underway on protected areas determination in the Baltic Sea with the aim to protect valuable marine and coastal habitats. Involvement of fishers in fisheries management in protected areas could ensure sustainability of marine resources in the long term.

The Baltic Sea coastal and inland fisheries are mainly regulated by each Member State in the region through their national legislation. While coastal fisheries are managed nationally, fisheries advice is provided by the ICES and the STECF. The key species in Baltic Sea are cod, herring, sprat, salmon, and plaice and these fisheries are all managed using TACs.

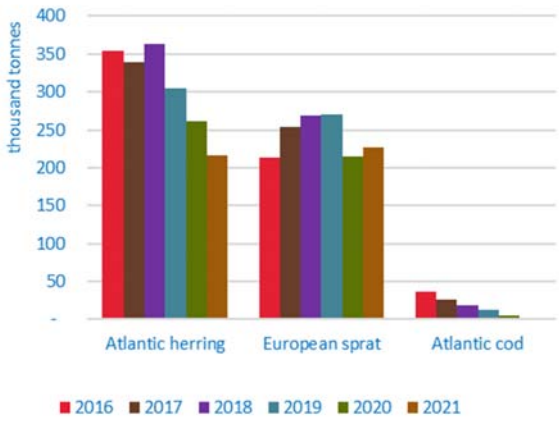
[9] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R0306
[10] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R1241

*TAC development of main species*

Atlantic cod, Atlantic herring, European sprat, Atlantic salmon and plaice are the main species in the Baltic Sea which are managed by TAC. Cod is managed by two stocks, Eastern and Western cod. Herring is managed by four stocks: Western, Central, Bothnian and Gulf of Riga herring. Salmon is managed by two stocks, Gulf of Finland and main basin salmon.

Figure 3.28 provides the development of catches for the TAC species herring, cod, and sprat in the Baltic Sea. Overall, the decrease in catches over time is evident.

**Figure 3.28** Reported catches for the important TACs species herring, sprat, and cod in the Baltic Sea region, 2016-2021



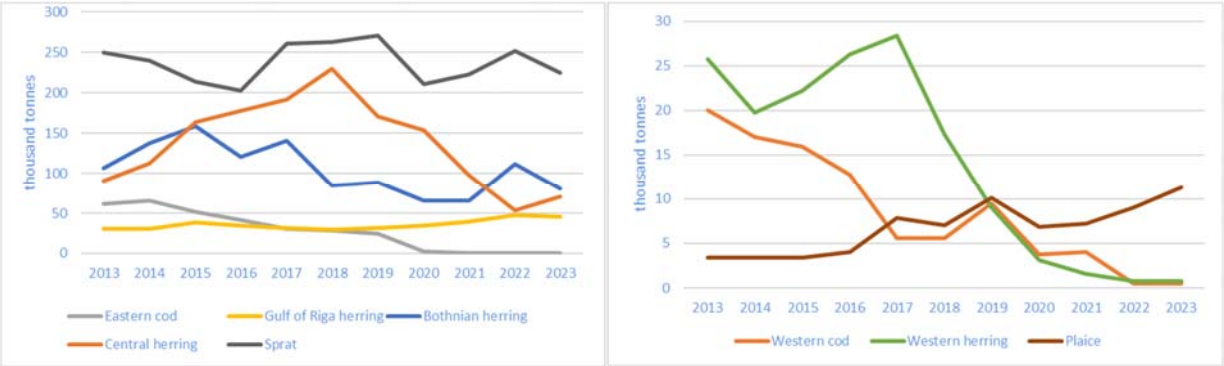

Data source: Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)

The TACs set for 2021 were as follows:

- Western Baltic herring 1 575 tonnes (-50%).
- Bothnian herring 65 018 tonnes (+0%).
- Central herring 97 551 tonnes (-36%).
- Gulf of Riga herring 39 446 tonnes (+15%).
- Eastern Baltic cod 595 tonnes (-70%).
- Western Baltic cod 4 000 tonnes (+5%).
- Main basin salmon 94 496 fish (+9%).
- Gulf of Finland salmon 8 883 fish (-8%).
- Plaice 7 240 tonnes (+5%).
- Sprat 222 958 tonnes (+6%).

The time series of these stocks, including 2022 and 2023 data, is shown in Figure 3.29. While sprat, Bothnian herring, Gulf of Riga herring and plaice show a stable or slightly increasing trend over the years, the dramatic decrease of TACs for Western and Eastern cod as well as for Western and Central herring is evident.

**Figure 3.29** EU TACs for the main Baltic stocks 2013-2023




Data source: EWG 23-07 produced.

*Status of important stocks*

Based on ICES advice in 2022, sprat stock was at MSY level and harvested sustainably. However, the TAC for sprat is not going to increase due to the mixed fishery with herring which the TAC decreased significantly.

The Western Baltic herring stock biomass in Skagerrak and Kattegat continued to be below MSY. ICES provided a scientific advice of no catches. Also, the Central Baltic herring stock is below levels capable of producing MSY, while the Gulf of Riga herring stock was at MSY level and harvested sustainably. The Bothnian Sea herring stock was assessed to be at MSY level in 2021 but the latest assessment was not accepted, and the status of the stock was undefined.

Cod stocks in Baltic Sea are at the lowest historical level and a targeted fishery will not be allowed in the medium term.

There is a multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks (Regulation (EU) 2016/1139). The objective of this plan is to adapt the exploitation rates of cod, herring and sprat in the Baltic Sea to ensure that the exploitation of those stocks restores above levels that can produce MSY.

*Description of relevant fisheries in the region*

Small-scale coastal fleet

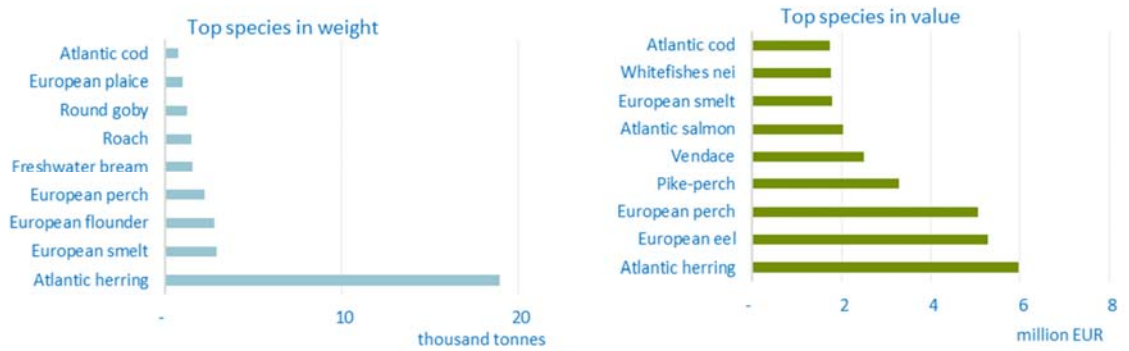
Socio-economic aspects determine the importance of the Baltic SSCF. In 2021, as much as 92% of the total number of Baltic Sea vessels belonged to that fleet (no change compared to 2020). The total number of people employed onboard the small-scale vessels amounted to about 4 650 fishers (11% less compared to 2020) or 2 040 FTE (12% less compared to 2020). In 2021, SSCF contributed 75% (or 62% in FTE) of the total employment in the Baltic Sea.

The fleet accounts for 8% of weight and 26% of the landed value from the Baltic Sea. Revenue generated by the SSCF in 2021 was EUR 41.4 million, 6% less compared to 2020.

In 2021, the SSCF generated a gross value added of EUR 20.8 million (EUR 18.7 million in 2020). The overall profitability of the SSCF remained negative. However, it improved compared to 2020. The fleet produced net losses of EUR 9.9 million in 2021 compared to net losses of EUR 18.9 million in 2020. The negative net profit margin amounted to -23.9% and improved from -42.8% in 2020. GVA per FTE indicator improved from EUR 8 075 per FTE to EUR 10 200 per FTE.

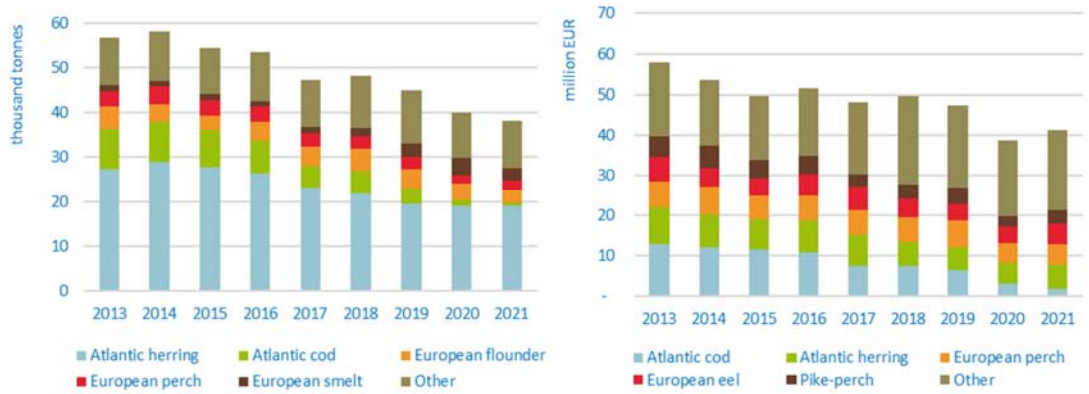
Atlantic herring (50%), European smelt (8%) and European flounder (7%) are the three most important species in terms of landings weight (Figure 3.30). The species composition of SSCF landings has changed over the past ten years. Atlantic cod no longer is the most important one in terms of revenues. That has been a result of the deteriorated stock status of both cod stocks. As a consequence, a clousure of cod fisheries has been imposed in 2019 (July 22) for ICES subdivisions 24, 25 and 26 of the Baltic Sea (except for bycatches allowed under the quota system), with some derogation (possibility to fish in shallow waters) given to vessels less than 12 metres LOA. The contribution of Atlantic cod in total revenues of SSCF has decreased from 37% in 2008 to 14% in 2016 and dropped again to 2% only in 2021. On the other hand, the share of the European smelt for example, in the total revenues, has raised from 3% to 8% between 2013 and 2021.

**Figure 3.30** Top 10 species landed in weight and value by the SSCF operating in the Baltic Sea, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.31** Trends in landings of the top species landed in weight and value by the SSCF operating in the Baltic Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

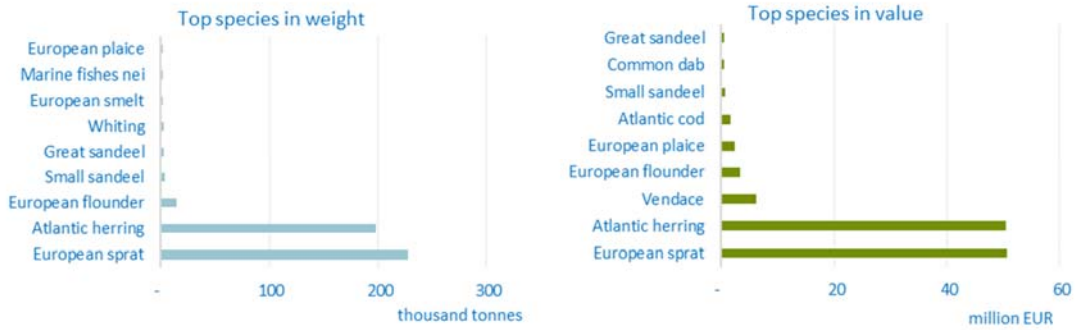
The deteriorated status of Baltic cod and herring stocks has affected German coastal fisheries the most. Between 2013 and 2021, the landings value of German SSCF decreased by 47%, followed by Denmark (-38%), Poland and Sweden (-33%). On the other side there are two countries where revenues of SSCF increased, i.e. Estonia (10%) and Latvia (17%). In case of Estonia the increase was caused by higher herring landings. Latvia opened a new Round goby fisheries in 2016 (145 tonnes) and could increase catches to 818 tons in 2021. The share of Estonian SSCF value of landings in the total value of the Baltic SSCF increased in the 2013-2021 period from 10% to 15%, the Latvian one from 2% to 4%.

Finland (EUR 3 million), Estonia (EUR 1.5 million), Latvia (EUR 1.3 million) and Lithuania (EUR 45 000) were the only Member States which generated gross profits. Poland (-EUR 4 million), Denmark (-EUR 2.5 million, Germany (-EUR 1.6 million) and Sweden (-EUR 1.4 million) reported gross losses.

### Large-scale fleet

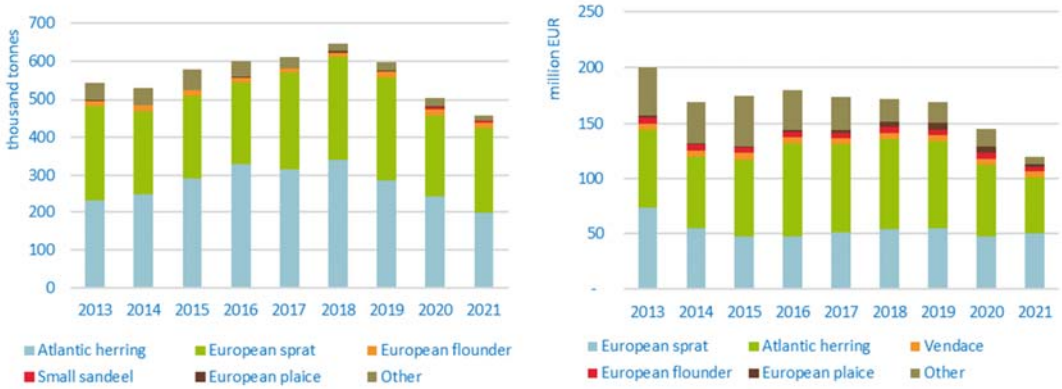
In 2021, the LSF in the Baltic consisted of 369 vessels, 8% less than in 2020. Revenue generated by the fleet in 2021 amounted to EUR 131.4 million, 14% less compared to 2020. Gross profit and net profit generated by LSF decreased by 37% and 46%, respectively. Lower values of landings and higher energy costs were the main drivers for the deteriorated profitability of the fleet. The number of people employed continued its decreasing trend in 2021 (-6% both FTE and total jobs). The GVA/revenue indicator deteriorated compared to 2020 (from 59% to 51%), GVA itself decreased to EUR 67.3 million (-26%).

**Figure 3.32** Top 10 species landed in weight (left) and value (right) by LSF operating in the Baltic Sea, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.33** Trends in landings of the top species landed in weight and value by the LSF operating in the Baltic Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

European sprat (EUR 50.6 million), Atlantic herring (EUR 50.4 million) and Vendace (EUR 6.2 million) were three the most important species in terms of landings value in 2021 (Figure 3.32). The fishing pattern of the fleet landings has changed significantly over the last years (2013-2021), thus disfavoring demersal species. The value of Atlantic cod landings decreased by 80% and its contribution to total revenues of the LSF decreased from 19% in 2013 to 1% in 2021. In the same period, the contribution of Atlantic herring and European sprat to revenues increased from 35% and 37% in 2013 to 42% in 2021 (Figure 3.33).

Sweden, Poland and Finland are the three most important countries in terms of LSF value of landings, accounting for 25%, 23% and 16%, respectively, of the overall LSF landings in 2021.

The LSF net profit in 2021 was lower than in 2020, however, remained positive and amounted to EUR 16.2 million (-46% compared to 2020). Total GVA of the fleet decreased to EUR 67.3 million (-26%), averages per vessel or per FTE deteriorated to 20% and 21%, respectively.

The Swedish fleet continued to be the most profitable in the region (EUR 13.8 million gross profit) followed by the Finnish (EUR 8.6 million) and Polish fleet (EUR 7.6 million). Germany was the only country with LSF gross loss (-EUR 4.1 million) in 2021 compared to -EUR 0.9 million in 2020, what was mainly caused by decreased revenues.

Labour and energy costs were the two most important items in the costs structure, both changed compared to 2020. Labour costs decreased -9% while energy costs increased 21%.

### *Performance by fleet segment*

There were 52 fleet segments operating in the Baltic Sea in 2021 (same as in 2020). Segments using passive gears (PG, PGP and DFN) dominated the fleet accounting for 92% (4 214 units) of the total number of vessels, followed by pelagic trawlers (TM, 224 vessels) and demersal trawlers (DTS, 116 vessels). Demersal trawlers dominated the output contributing to 50% of the total value, followed by passive gear segments (26%) and the pelagic fleet (24%) (Figure 3.34). Pelagic trawlers produced the highest gross profit (EUR 21.9 million after EUR 33.3 million in 2020), followed by DTS (EUR 12.5 million after EUR 20.0 million in 2020). Though the economic performance of the passive gear segments improved overall, results remained negative (-EUR 4.0 million in 2021 compared to -EUR 9.4 million in 2020).

One important reason for the net losses of smaller vessels was the estimated opportunity cost of unpaid labour. For the fleet segments below 12 metres, and to a certain extent for the 12-18 m segments, the estimated cost of labour may be high in proportion to the catch value, making the gross profit negative.

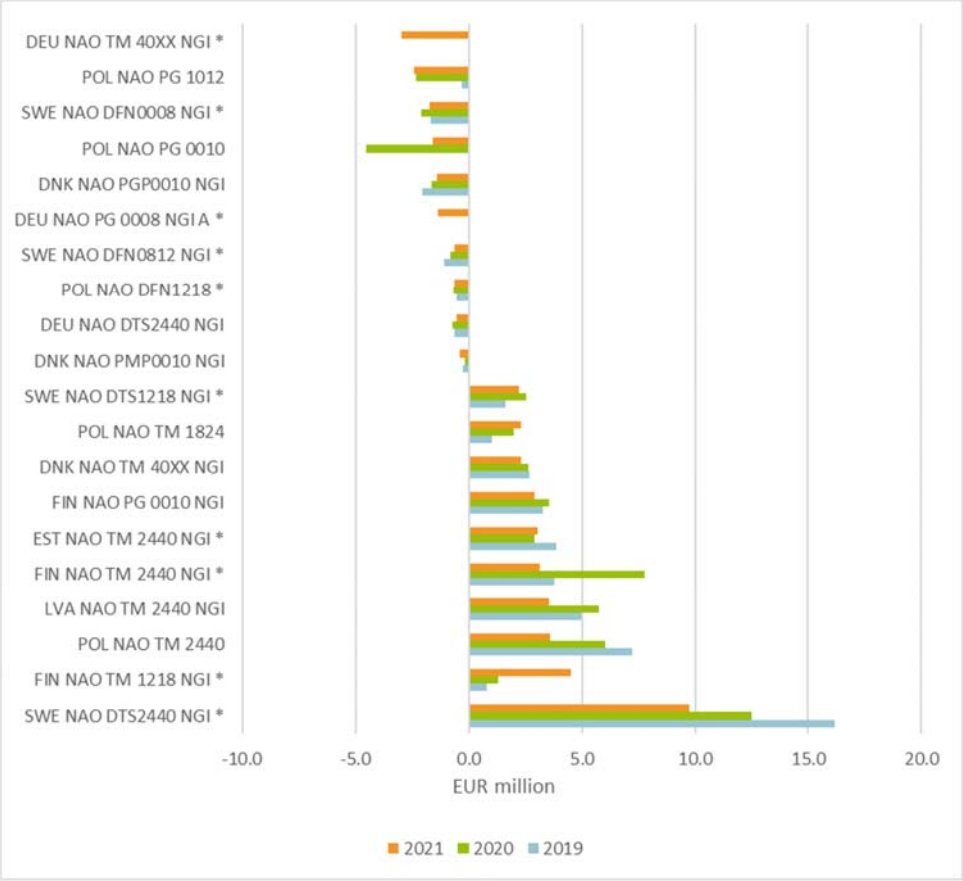
Segments using passive gears deployed the highest effort with 260 000 fishing days in 2021 (-1% compared to 2020) followed by TM with 17 900 days (12% less than in 2022) and DTS with 8 300 days (-24% compared to 2020).

Of the 52 fleet segments, 26 made positive gross profits in 2021 (no change compared to 2020). From the top 10 most profitable segments seven belonged to pelagic trawlers, two to demersal trawlers and one to passive gear vessels below 10 metres (FIN PG0010). Similar to 2020, the 10 least profitable segments were dominated by SSCF segments out of which eight belonged to either PG, PGP, PMP or DFN, one to DTS and one to TM.

At the fleet segment level, the Swedish 24-40m demersal trawlers and seiners segment kept generating the highest profit in 2021 (EUR 9.7 million compared to EUR 12.5 million in 2020), followed by the Finnish 24-40m pelagic trawlers segment (EUR 4.5 million in 2021 compared to EUR 7.8 million in 2020) and the Polish 24-40m pelagic trawlers segment (EUR 3.6 million compared to EUR 6.1 million in 2020). One reason for the successful fishery performed by the Swedish 24-40m demersal trawlers and seiners could be that the segment is fishing also (half by half) in North Sea waters, thus being more flexible while using quotas in both management areas.

Deteriorated economic indicators of the segments were caused by two factors - reduced catch opportunities (ongoing substantial quota cuts, e.g. Central herring, or lowest overall levels, e.g. cod) and increased fuel costs.

**Figure 3.34** Top ten most profitable and top ten least profitable fleet segments operating in the Baltic Sea, 2019-2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

## 3.3 North Western Waters

### *Regional Details*

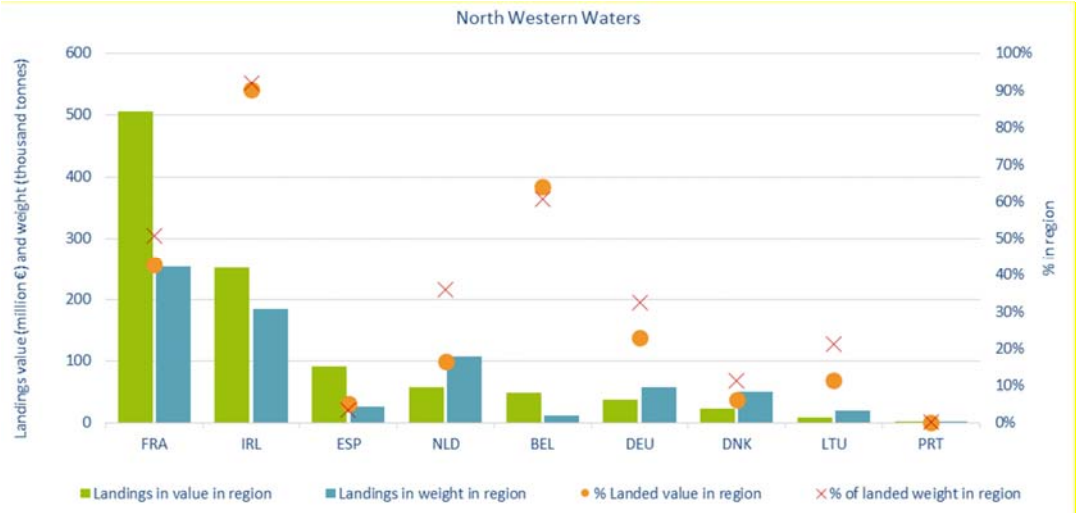
The North-western waters cover the Atlantic ICES areas 5, 6 and 7. For simplicity EU vessels operating in the aforementioned fishing areas are referred to as the EU North Western Waters (NWW) fleet.

The Member States fishing in the NWW are Belgium, Denmark, France, Germany, Ireland, Lithuania, the Netherlands, Sweden, Portugal, and Spain. The main fleets operating in 2021 were from France and Ireland. Spain, Netherlands, Belgium, Denmark, Germany, Lithuania, and Portugal also conduct part of their fishing activity in the NWW (Figure 3.35).

Based on the value of landings, the French and Irish fisheries have the highest level of landings in the NWW. However, Ireland has the highest total percentage of national landed value from the region at 90% indicating their high dependency on this area (97% of the days-at-sea -DaS- take place in these waters). Belgium (54%) and France (29%) also have a high dependence on the area in terms of DaS. While Ireland and Belgium have high dependency, the highest share of fishing is conducted by France and Ireland (Figure 3.36). It is worth noting that from 2021 onwards, data for the German pelagic trawler fleet operating the NWW are included in the report for the first time which represents a break in the time series.

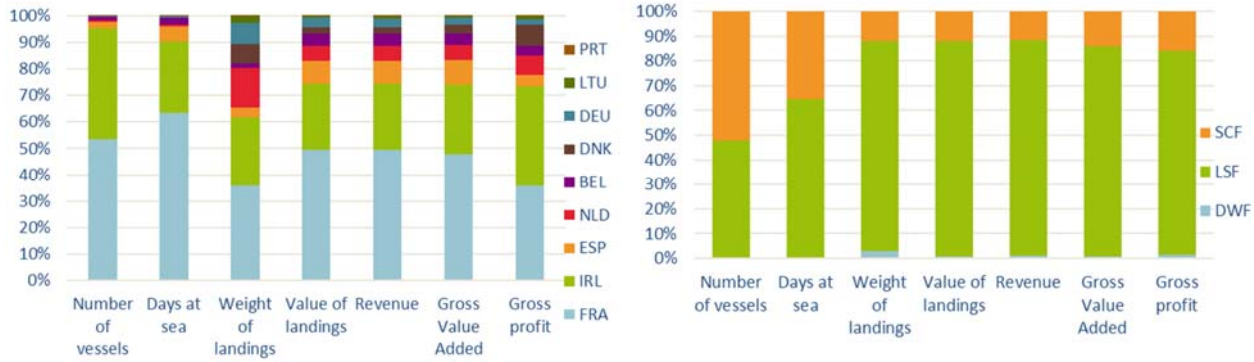
Tables at the end of this section contain a summary of the economic performance of the NWW fleet by Member State, main type of fishing activity and fleet segment.

**Figure 3.35** Importance of the North Western Waters for MS fleets in terms of landings in weight and value, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.36** Share by MS fleet and fishing activity in NWW, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Overview of the main results for EU fleets in the NWW*

*Fishing effort and landings*

Fishing effort has demonstrated a stable trend between 2014 and 2019. However, there was a marked difference in 2020 with a -11% reduction in DAS linked to COVID-19 restrictions. In 2021, there was an increase of 6% in DAS compared to 2020 but it was still down -5% from pre-COVID-19 levels in 2019. The total landings in weight increased by 5% to 710 302 tonnes in 2021 compared to 2020. The highest value of landings was observed in 2017 followed by a decrease in 2018, a slight increase in 2019 and a further decrease to the lowest value in the past eight years in 2020 (EUR 961 million). There was an overall increase in value of 6% in 2021 bringing the total value to EUR 1.02 billion. The increase in value was experienced by five Member States, France (10%), Ireland (6%) and from fleets typically with a lower dependence on the area in terms of DaS, including Germany (64%), Lithuania (48%) and Portugal (5%). There were decreases in value for Denmark (-40%), Spain (-11%), the Netherlands (-7%) and Belgium (-4%).

**Figure 3.37** Trends on effort and landings for MS fleets operating in NWW


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Employment, wages, and labour productivity*

Total employment in this region in 2021 was estimated at 7 890 with the number of FTE employees at 5 920, an increase of 2% in terms of FTE from 2020. The most important fleets in terms of overall employment correlate to those fisheries that have the highest dependency on this area. In 2021, France has the highest level of total employment with 2 751 FTE, follow by Ireland (1 618 FTE) and Spain (1 045 FTE).

Total employment for the LSF is highest for France, Ireland and Spain totalling 2 955, 1 296 and 995, respectively, reflecting the high number of active vessels in these Member States. These numbers have been relatively stable for the last years. The SSCF, for all Member States, demonstrates a marked difference between the numbers of total employed and total FTE indicating that many of those employed in the SSCF are part-time or casual workers. Total employed for the SSCF was again highest for France (1 144), Spain (995) and Ireland (960) reflecting their high number of SSCF vessels. LSF figures for total employed and FTEs are closer in value indicating a high level of full-time employment in this segment in comparison to the SSCF except for Spain which demonstrates a higher level of FTE than total employment which can be explained by the fact that one FTE is equivalent to 1 800 hours (one working day), but in Spain their fisherman are working 2 000 hours which results in higher FTE than total engaged crew.

The overall average wage per FTE for the SSCF increased by 4% from 2020 to 2021 to a value of EUR 43 600. For the LSF, average wage increased by 9% to a value of EUR 70 100 (Figure 3.38).

**Figure 3.38** Trends on average wage and GVA per FTE by fishing activity for MS fleets operating in NWW


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

The revenue (income from landings and other income) generated by the NWW fleet covered in the analysis in 2021 was estimated at EUR 1.07 billion, representing 17% of the total revenue for the EU fleet. This represents an increase in revenue of 7% from 2020. GVA was estimated at EUR 569 million, representing an increase of 1% compared to the previous year. The fleet made EUR 186 million in gross profit, an increase of 14% compared to 2020. The net profit at EUR 85 million also increased by 6% compared to 2020 (Figure 3.39).

In 2021, the price of fuel was 0.52 euro/litre (29.5% higher than in 2020) and fuel consumption increased by 14% from 2020 following the increase in effort. Fuel is an important operational cost and therefore an important driver for profits which will no doubt begin to show negative impacts with the increase in fuel prices experienced from 2022 as a result of the war in Ukraine and rising inflation levels.

**Figure 3.39** Trends on revenue and profits for MS fleets operating in NWW


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Trends by Member State fleet*

*Fleet capacity and employment*

The nine Member States fleets operating in the NWW collectively numbered over 2 443 active vessels in 2021, an increase of 4% from 2020. The French and Irish fleets combined contributed to more than 97% of the total of vessels in 2021. The number of vessels has remained relativity stable in the last decade even excluding the United Kingdom over the entire time series. An increase in vessel numbers was recorded in 2015 accounted predominantly by Ireland but this is an artefact of better data reporting that allowed vessels, especially in the SSCF, to be assigned to a fishing region (Figure 3.40).

The highest FTE levels in recent years was 7 023 FTE in 2019. In 2021, employment in the region reached 5 920 FTE, a 2% increase from 2020 (but down -17% from pre-COVID-19 numbers in 2019). The French fleet contributes to 49% of the total FTE, with a total number of FTE reaching 3 006 in 2021, followed by the Irish (24%) and Spanish (21%) fleets. The French fleet represents the dominance of LSF activity for this Member State in that region. Employment trends followed the increase of fleet capacity from 2013 to 2019 reaching a peak of 7 023 FTE, followed by a -19% decrease in 2020 to 5 810 FTE and a 2% increase in 2021 to 5 920 FTE.

**Figure 3.40** Trends on the number of vessels and employment (in FTE) for MS fleets operating in NWW


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

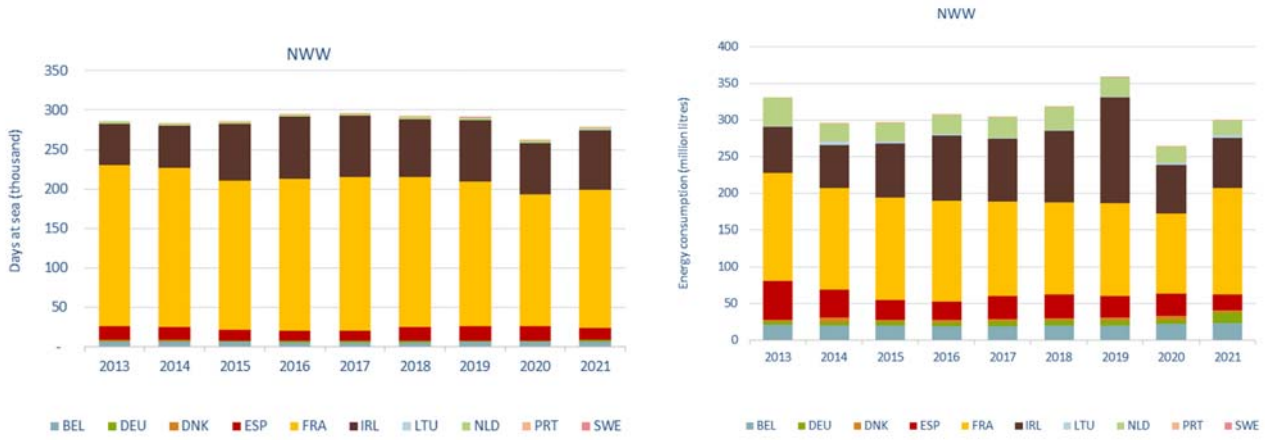
*Fishing effort*

The EU NWW fleet spent over 277 739 DaS in 2021 corresponding to a 6% increase from 2020. French and Irish fleets represented almost the total effort deployed in the region (90% of total in 2021). It must be noted that Ireland had partial effort data for some fleet segments less than 10 metres LOA and only for the years 2013 to 2020, so conclusions regarding effort need to be taken with caution as Ireland's effort is underestimated for its less than 10 metres segments (Figure 3.41).

Energy consumption for the EU NWW fleet amounted to 299 million litres in 2021, 71% of which were consumed by the French and Irish fleets. Spanish, Belgium, and Dutch fleets combined contribute to 21% of the total energy consumption, due to the dominance of the LSF activity for these Member States in that region.

Fishing effort and energy consumption has followed a similar trend from 2013 to 2019 followed by a decrease of -11% in effort (DaS) and -30% in energy consumption in 2020. In 2021, effort and energy consumption increased by 6% and 13% respectively reflecting the easing of COVID restrictions. The fishing effort (DaS) for the French fleet increased by 5% while there was a large increase of 28% in energy consumption compared to 2020. For the Irish fleet, there was an increase of 15% of effort (DaS) and a small increase (4%) in energy consumption.

**Figure 3.41** Trends on fishing effort (in days-at-sea) and energy consumption for MS fleets operating in NWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

*Landings and top species*

The weight and value of landings amounted to over 710 000 tonnes and EUR 1.02 billion, respectively in 2021, increases of 5% and 6% from 2020. In terms of landed weight, the French, Irish, Dutch, and German were the leading national fleets, together accounting for 85% of the total weight landed (Figure 3.42).

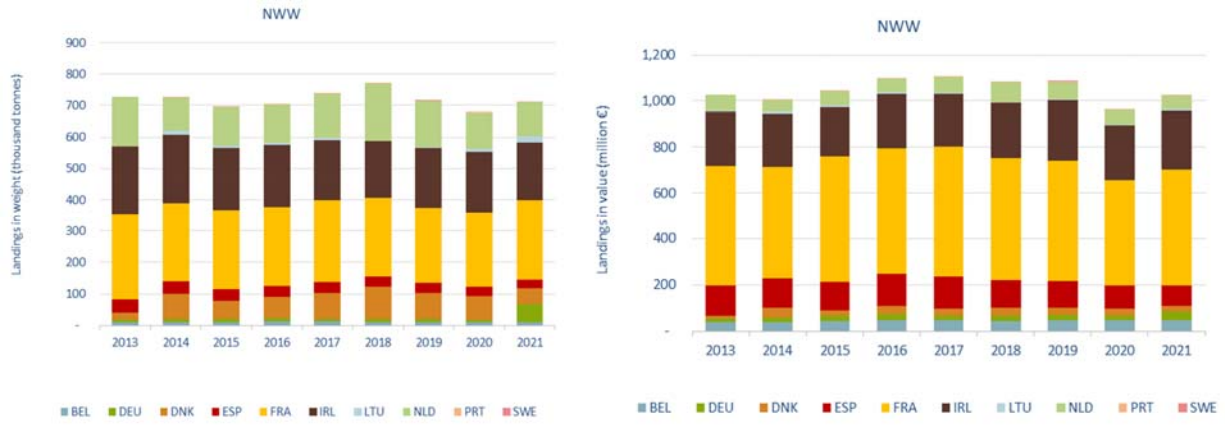
With regards to the landed value, French, Irish and Spanish fleets contributed 49%, 25% and 19% respectively of the total of the EU NWW fleet in 2021. The contribution of the Netherlands (6%) and Germany (4%) was less important in value than in volume, the majority of their landings being pelagic species.

At NWW fleet level, landings weight and value had many variations over the period 2013-2021. At Member State fleet level, Denmark's landings increased from 2013 to 2018 by four times in weight (and by almost three times in value reaching a peak of 102 400 tonnes for EUR 34.2 million. There has been a downward trend since 2018. In 2021, landings by weight had decreased to 51 100 tonnes valued at EUR 22.2 million down -35% and -40%, respectively compared to 2020. From 2013-2021, Irish landings by weight have decreased by -6% in weight and increased by 6% in value. During the same period, Spanish landings have followed a decreasing trend by approximately -43% in weight and -36% in value.

In 2021, the two main species landed in terms of weight were small pelagic species including blue whiting, and Atlantic mackerel (Figure 3.43).

The top 10 species in value included Atlantic scallop and Atlantic mackerel and but also a diversity of other species like pelagic (mainly large in landed weight) or species with high price values as crustaceans, bivalves, flatfishes, and whitefishes: European hake, blue whiting, Norway lobster, anglerfishes, common sole and monkfishes.

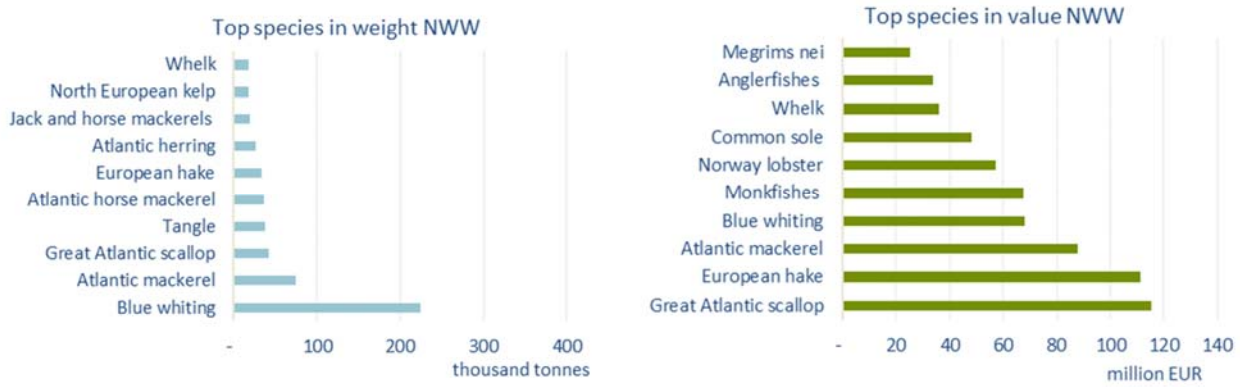
**Figure 3.42** Trends on landings in weight and value from MS fleets operating in NWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The top species, through their availability, TACs and quotas and fish market prices, are drivers for fleets' performance. The share in landed values of the crustaceans, Norway lobster and edible crab, is dominated by Ireland. The great Atlantic scallop and the whelk landing values are dominated by France. Atlantic mackerel landing values are dominated by Ireland and France. The share in landed values of European hake is dominated by Spain and France, while Belgium and France dominated for common sole.

**Figure 3.43** Top 10 species in landed weight and value for MS fleets operating in NWW, 2020




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Temporal trends in the value and weight of landings, have been significantly influenced by fluctuations in TAC and quotas for Atlantic mackerel, blue whiting, and hake (Figure 3.44).

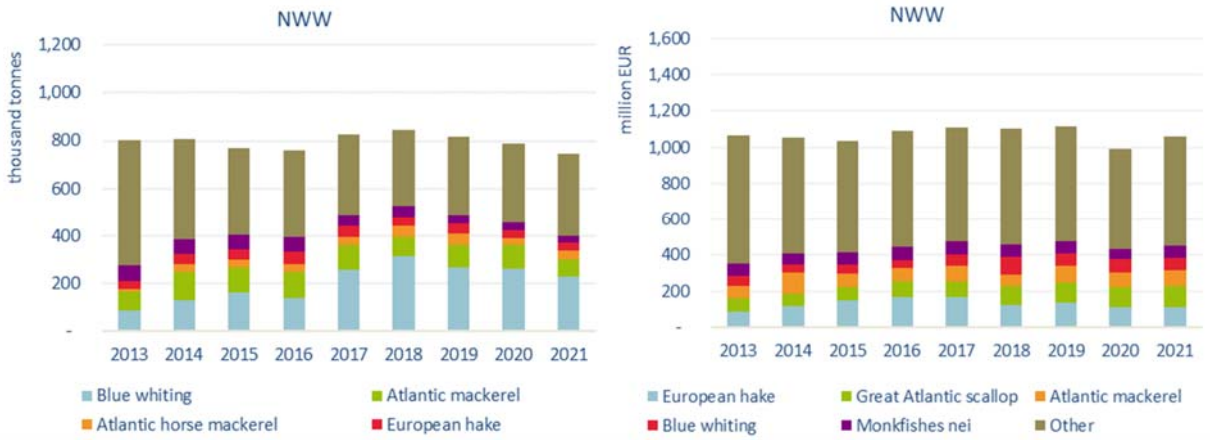
Mackerel landings have fluctuated since 2013. They increased from 2013 to 2016, then decreased to 2018 followed by another increase from 2018 to 2020. In 2021, mackerel landings decreased by 26% to a total of 74 400 tonnes, the lowest landed weight in this timeframe.

Blue whiting landed weight and value peaked in 2018 but has experienced a decreasing trend each year since and specifically by -15% from 2020 to 2021.

European hake landed weight had a significant increasing trend from 2013 to 2016 (47%) to a peak of 51 300 tonnes followed by a -41% decrease to 33 800 tonnes in 2021 compared to 2016. The landed value of European hake reached its highest value in 2017 at EUR 164.8 million up by 66% compared to 2013 followed by a decreasing trend (-39%) to EUR 111.2 million in 2021.

Great Atlantic scallop landings by weight decreased by -22% from 2013 to 2015 and increased by 52% in 2021 compared to 2015 as TAC increased during the same period. In terms of value, Great Atlantic scallop landings decreased by -14% in value from 2013 to 2014 followed by a significant increase reaching the highest value of EUR 115.3 million in 2021, an increase of 53% compared to 2015.

**Figure 3.44** Trends on landings of the top six species landed value for MS fleets operating in NWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2022)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

The revenue generated by the NWW fleet covered in the analysis in 2021 was estimated at EUR 1.07 billion with over 83% produced by three Member States fleets: France (EUR 530.3 million), Ireland (EUR 269.1 million) and Spain (EUR 92.8 million) (Figure 3.45).

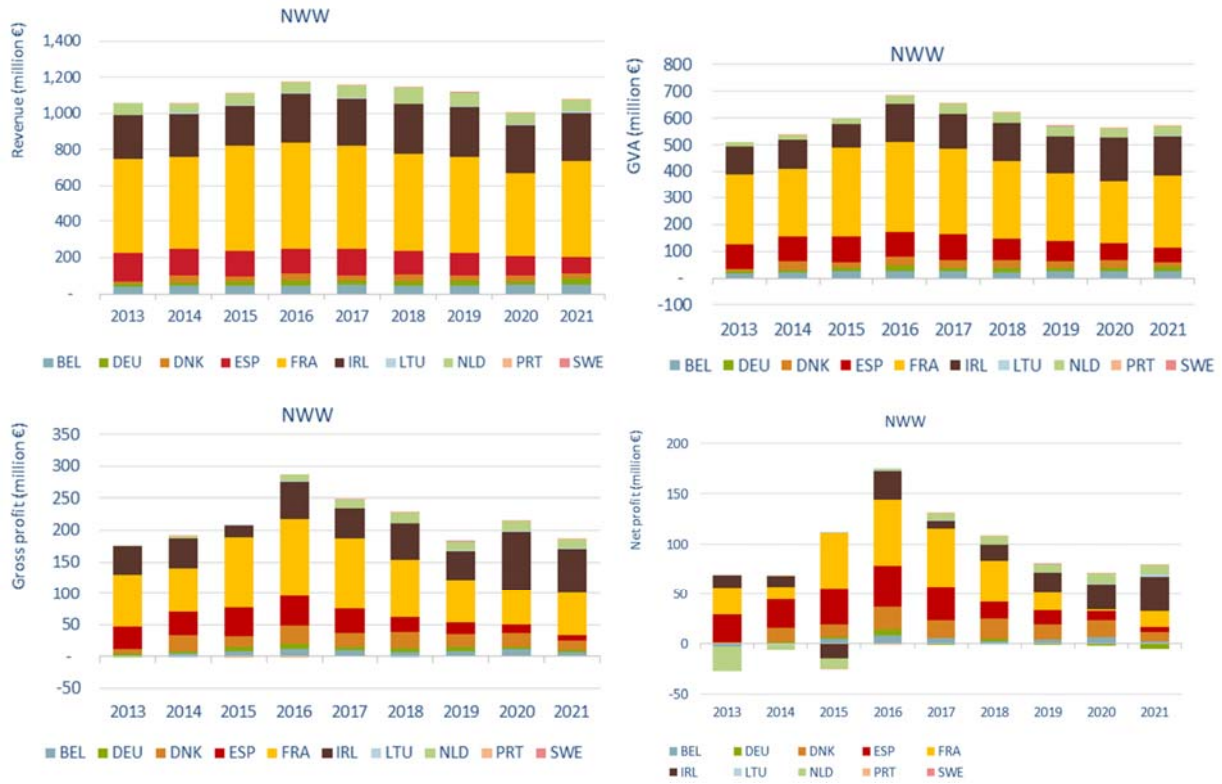
The majority of Member States saw an increase in overall revenue from 2020 to 2021 with the exception of Spain which had a decrease of -15%. Three Member States had large increases in revenue: Germany (63%), Lithuania (52%) and Denmark (33%). Two of the highest-ranking Member States' fleets saw increases in revenue of 18% and 3% for France and Ireland respectively linked to increased fish prices.

The GVA produced was estimated at EUR 569 million in 2021. This represented a slight increase of 1% compared to 2020. Decreases in GVA were experienced by Ireland, Belgium, Denmark, Spain, and the Netherlands.

The fleet earned EUR 186.3 million in gross profit, an increase of 14% compared to 2020. Ireland (EUR 69.7 million), France (EUR 66.8 million), Denmark (EUR 14.7 million) and the Netherlands (EUR 13.5 million) accounted for 88% of the total gross profit in 2021. Most of the Member State's fleets operating in the NWW generated increases in terms of positive gross and net profits in the past year. Belgium and Denmark had the highest increases in gross profit, 45% and 42% respectively. Belgium had an increase of 106% in net profit, while Denmark had a -55% decrease in net profit. France and Lithuania had significant increases in gross profit (22% and 62%, respectively) and net profits (157% and 93%, respectively). Spain had sharp decreases in both gross profit and negative profit (-47% and -54%). Ireland and the Netherlands had decreases in gross profits and increases in net profits.

The temporal variation in total annual revenue is primarily linked to annual fluctuations in TACs, quotas, and fish prices. In this sense, the value of landings and the weight of landings in 2021 increased by 6% and 5% from 2020.

**Figure 3.45** Trends on revenue and profit for MS fleets operating in NWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Main factors affecting the performance of the fleet*

*Main drivers affecting fleet performance in the region*

**Factors that may have contributed to the positive situation include:**

- Recovery of some stocks, e.g., the biomass of most herring stocks has increased, and the Northern hake stock continues to follow a positive trend.
- Increased TACs for a several stocks and increasing fish prices.
- An overall increase in landed weight by 5% and value of landing by 6%.
- Fish prices for LSF increased compared to 2020.

**Factors that may have hampered economic performance in the region include:**

- Energy costs have increased by 14% compared to 2020.
- With the EU-UK Trade and Cooperation Agreement (TCA), there will be large impacts on fleets operating in the region over the next decade due to the previous high dependency on the United Kingdom waters for several Member States including Ireland, France, Spain, Belgium, the Netherlands, and Germany.

*Regulation and Fisheries management in the region*

- The TCA sets out preferential arrangements in areas such as trade in goods and in services, digital trade, intellectual property, public procurement, aviation and road transport, energy, fisheries, social security coordination, law enforcement and judicial cooperation in criminal matters, thematic cooperation, and participation in Union programmes. The TCA was signed on 30 December 2020, applied provisionally as of 1 January 2021, and entered into force on 1 May 2021. In June 2021, the EU and the United Kingdom concluded the negotiations on an agreement in principle setting out catch

limits for jointly managed fish stocks for 2021. The agreement closes the first ever annual consultations on fishing opportunities between the EU and the UK under the terms of the TCA. The agreement established the parties (UK and EU) share of the Total Allowable Catch (TAC) for 124 stocks of common interest, including changes to the shares in each of the years 2021 to 2025 and 2026 onwards. These TAC changes include 55 stocks where the United Kingdom share has increased whereas the total share available to the EU has reduced accordingly. This has had an impact on many remaining EU Member States operating in the NWW.

- Council Regulation (EC) No 1300/2008 established a multi-annual plan for the herring stock distributed to the west of Scotland and the fisheries exploiting that stock in international and EU waters in ICES Divisions 5b and 6b, and the northern part of ICES Division 6a excluding the Clyde. The Irish fleet are the most important fleet segment for this fishery. Most herring stocks (North Sea, Irish Sea, and Celtic Sea) are fished in accordance with MSY, with corresponding 2016 TAC for these stocks. The situation is also positive for southern and western horse mackerel and the TAC allows fishing at levels corresponding to MSY in 2016.
- Long-term plan for cod stocks and the fisheries exploiting those stocks (Council Regulation (EC) No 1342/2008). The long-term plan for cod has an impact on the North-eastern Member States. In 2021, the French, Belgian, German, Irish, Dutch, Spanish and Portuguese fleets all had quota for cod and thus interact with the cod fisheries.
- Council Regulation (EC) No 509/2007 established a multi-annual plan for the sustainable exploitation of the stock of sole in the Western Channel (ICES Division 7e). The sole fishery is the most important to French fleet. - Council Regulation (EU) No 713/2013 establishing the fishing opportunities for anchovy in the Bay of Biscay for the 2013/14 fishing season. This management plan concerns mainly Spanish and French fleets.
- Measures for the recovery of eel. Area covered includes EU estuaries and rivers that flow into seas in ICES areas 3, 4, 6, 7, 8 and 9 and the Mediterranean (Council Regulation (EC) No 1100/2007 of 18 September 2007). In the region, this management plan applies mainly to France.
- Council Regulation (EC) No 811/2004 to increase the quantities of mature fish in the Northern hake stock to at least 140 000 tonnes. This management plan concerns Spanish, French, Portuguese, Irish, Dutch, and Belgian fleets and has been successful.
- Other management measures that may affect economic performance of the fleets operating in the NWW include marine protected areas and other legislation that has a multispecies impact.

*Status of important stocks*

Overall fishing mortality (F) for shellfish, demersal, and pelagic fish stocks has reduced since the late 1990s, although the pelagic stock are now above the reference point according to ICES. The ICES Ecoregion for the Celtic Seas, which mostly correlates with the NWW regions indicated that Mean F is now closer to the level that produces maximum sustainable yield (MSY). The fishing mortality on 43 stocks has been evaluated against MSY reference points; of these, 33 stocks are now fished at or below $F_{MSY}$.

*TAC development of main species*

In 2021, there were quotas for over 34 fish species defined for the NWW region.

**Demersal species:**

- The total TAC increase from 2013 to 2021 is mainly due to the positive development of hake stocks and increasing ling TAC.
- TAC of anglerfish increased by 28% from 2008 to 2019, stable in 2020, and decreased in 2021 by -16%.
- Norway lobster TAC in NWW had been quite stable but has experienced decreases in 2020 by -6% and in 2021 by -58%.

- However, from 2020 there has been an overall -26% reduction in the TAC of this area.

**Pelagic Species:**

TACs for pelagic species in the Northeast Atlantic region have varied since 2001 especially for blue whiting and mackerel with very high values in 2005 and then again in 2014.

- After a peak in 2014, the mackerel TAC decreased from 2014 to 2015, horse mackerel TAC decreased in NWW from 2014 to 2015. Both of these reductions impacted the Irish fleet and had a knock-on effect on total revenue and economic indicators. Mackerel quotas in the area experienced a reduction in 2018 and 2019 by 20% annually since 2017 impacting negatively in the overall revenue of the NWW fleets in 2018. While TAC of Mackerel improved in 2020 it must be highlighted that the TCA had negatively impacted the quota for all pelagic species. In 2021, TAC of Mackerel decreased by -56%.
- TAC of blue whiting increased by 107% from 2008 to 2017, with an 85% increase from 2016 and 2017. This increase positively affected the five most important Member State fleets in the NWW. However, in 2019 and 2021 the decrease were significant and future trends show that the TAC will impact on the stock in 2023.
- Herring has fluctuated with an overall decline from 2013 to 2020. In 2021, this reduced by a further -13% and in 2022 the TCA will again reduce this figure.

### *Description of relevant fisheries in the region*

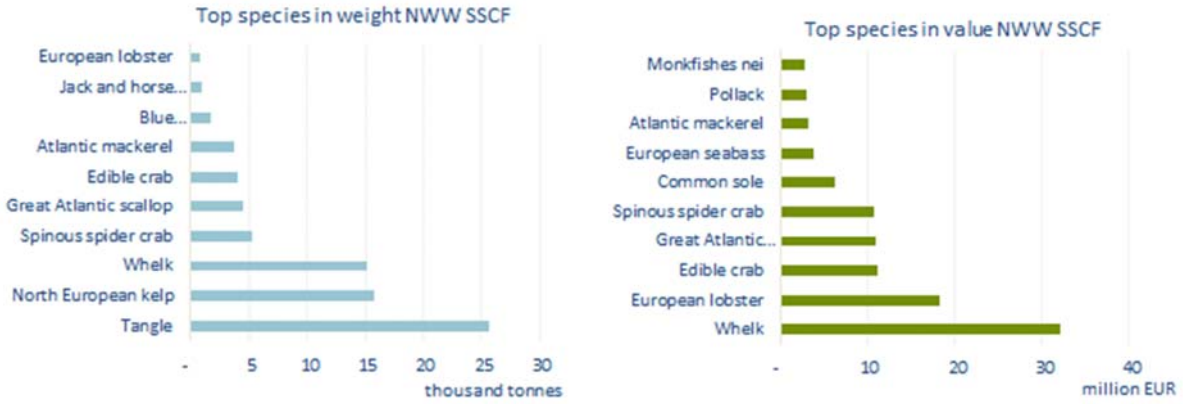
*Small-scale coastal fleet*

There were SSCF from two Member States (France and Ireland) operating in the NWW. While 100% of Irish SSCF fished in the NWW in 2021, it represented only part of the SSCF fishing activity for France (47%), as they were also active in the Mediterranean Sea and/or in the North Sea. In terms of vessel numbers, Ireland and France had the highest number of active SSCF vessels with 645 and 628 active vessels, respectively.

Total employment for the SSCF is highest for France totalling 1 144 jobs, followed by Ireland with 960 jobs, reflecting the largest number of active vessels. These Member States in the NWW demonstrated a lower FTE figure in comparison with total employed indicating that a large majority of those employed in the SSCF are part-time fishers.

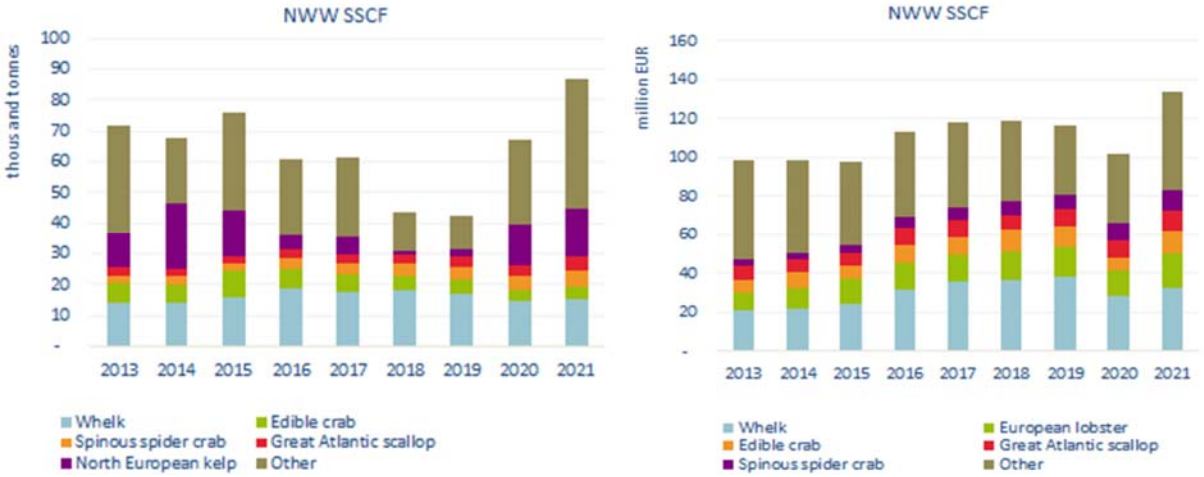
Overall, the SSCF was profitable in 2021, totalling EUR 80 million in GVA and EUR 30 million in gross profit. The most relevant SSCF fleet with high profitability was the Irish SSCF, with gross profit margins of 36%. In terms of productivity, the GVA per FTE varied from EUR 106 000 (France) to EUR 37 000 (Ireland).

**Figure 3.46** Top 10 species landed by SSCF operating in NWW, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2021).

**Figure 3.47** Trends in landings of top species landed by SSCF operating in NWW

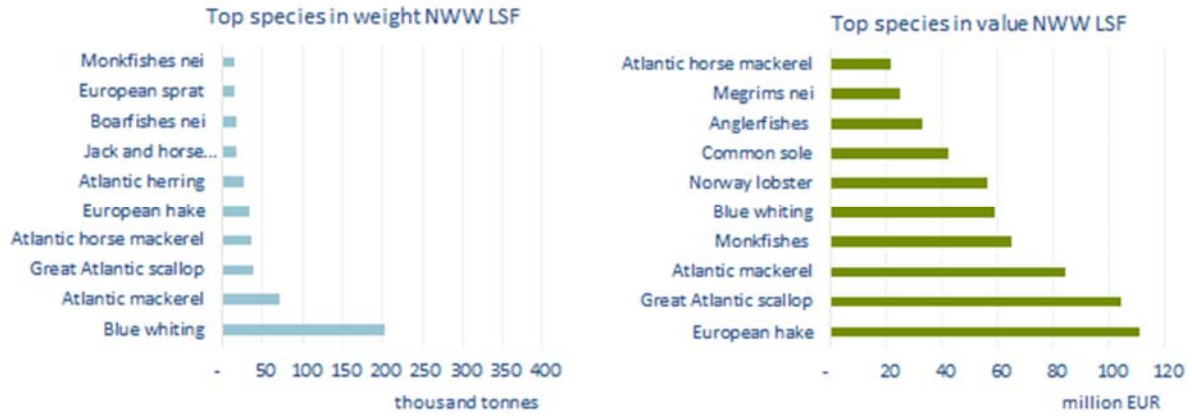



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Large-scale fleet*

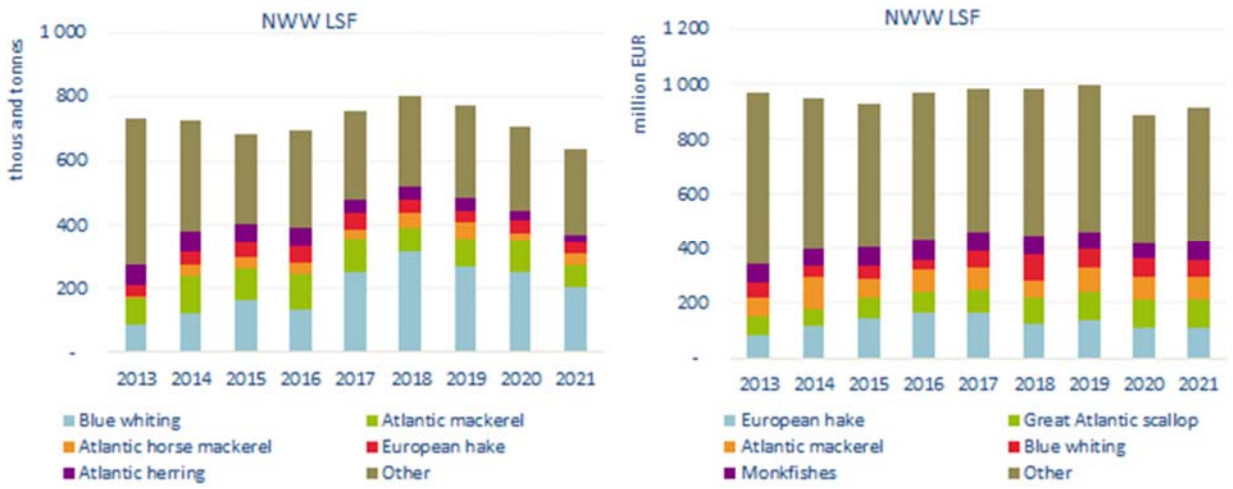
- There were eight Member States' LSF operating in the NWW region totalling 1 169 active vessels. France has the largest number of active vessels in the area with 677 vessels. However, the area is more important to the Irish fleets with 378 vessels or 84% of their LSF active in the area. Total employment for the LSF is highest for France totalling 2 955 jobs, reflecting the high number of active vessels in this Member State.
- Overall, the LSF was profitable in 2021, totalling EUR 485 million in GVA and EUR 154 million in gross profit. The French NWW LSF, generated the highest revenue (EUR 439 million), followed by Ireland (EUR 235 million) and Spain (EUR 93 million).
- At Member State level, all LSF generated gross profits in 2021. Additionally, one DWF Lithuanian fleet was also active in the region in 2021. It should be noted that data on the EU DWF operating in the region is limited and the economic indicators are to be interpreted with caution. Member States can be classed into different categories according to their dependency which is representative of their LSF landings composition in the NWW:
- In Ireland, the highest value species were Atlantic mackerel and Norway lobster totalling 43% of the total value. These two species had landing values of EUR 108 million.
- In the Netherlands, Germany and Denmark, main species were blue whiting (EUR 40 million), in addition to mackerel (EUR 13 million).
- For Spain and France, there was a more diverse landing composition, with hake playing a key role for both Member States. The main species by landing value for France were scallop (22%), monkfish (15%), and hake (11%).

**Figure 3.48** Top 10 species landed by LSF operating in NWW, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.49** Trends in landings of top species landed by LSF operating in NWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Performance by fleet segments*

There were an estimated 71 segments operating in the NWW. At fleet segment level, the French demersal trawlers between 24-40m generated the most revenue in 2021 (EUR 94 million), followed by the French demersal trawlers between 18-24m (EUR 81 million), followed by the Irish pelagic trawlers over 40m (EUR 69 million) and the French dredgers between 12-18m (EUR 53 million).

There were 21 EU fleet segments (Ireland and France) that operated 80% or more in the NWW region in 2021, accounting for 57% of the number of vessels, 48% of the DaS deployed and 44% of the FTE. Collectively, these "resident" fleets represent more than 43% of the value and 34% of weight of landings, as there is a mix of LSF and SSCFs.

For the four segments with the highest revenue their economic indicators were as follows:

- The French demersal 24-40m segment has a GVA of EUR 45 million, gross profit of EUR 10 million and GVA per FTE (labour productivity) of EUR 109 700.
- The French demersal 18-24m segment has a GVA of EUR 37 million, gross profit of EUR 9 million and GVA per FTE (labour productivity) of EUR 102 000.

- The Irish pelagic trawler over 40m segment has a GVA of EUR 43 million, gross profit of EUR 22 million and GVA per FTE (labour productivity) of EUR 1 000 000.
- The French dredgers between 12-18m has a GVA of EUR 31 million, gross profit of EUR 9 million and GVA per FTE (labour productivity) of EUR 134 000.

## 3.4 Southern Western Waters

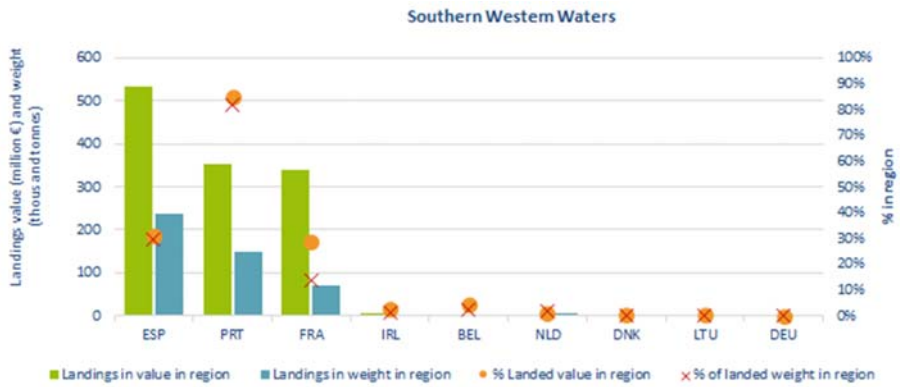
### *Regional Details*

The Southern Western Waters (SWW) covers the Atlantic zone running from the tip of Brittany in the North to the Strait of Gibraltar in the south and including the outermost regions of Madeira, the Azores and the Canary Islands (ICES areas 8, 9 and 10, and the COPACE divisions 34.1.1, 34.1.2, 34.2.0). For simplicity EU vessels operating in the aforementioned fishing areas are referred to as the EU SWW fleet.

The main fleets operating in the region were the Spanish, the French, and the Portuguese. Besides those, six more EU fleets operated in the region in 2021: Belgium, Germany, Denmark, Ireland, Lithuania and the Netherlands, but having limited fishing activity in the region (effort share of these MS as a whole was 0.16% and landings were 1.12% in value and 2.23% in weight of the region totals).

Based on the value of landings, Spain produced the most from the region, followed by Portugal and France. Spain has the highest total percentage of national landed weight from the region (51%), followed by Portugal (32%) and France (15%). Portugal is the country that most depends on these waters: 98% of the Portuguese fleet effort occur in the SWW, producing 85% and 82% of the total value and weight of landings, respectively).

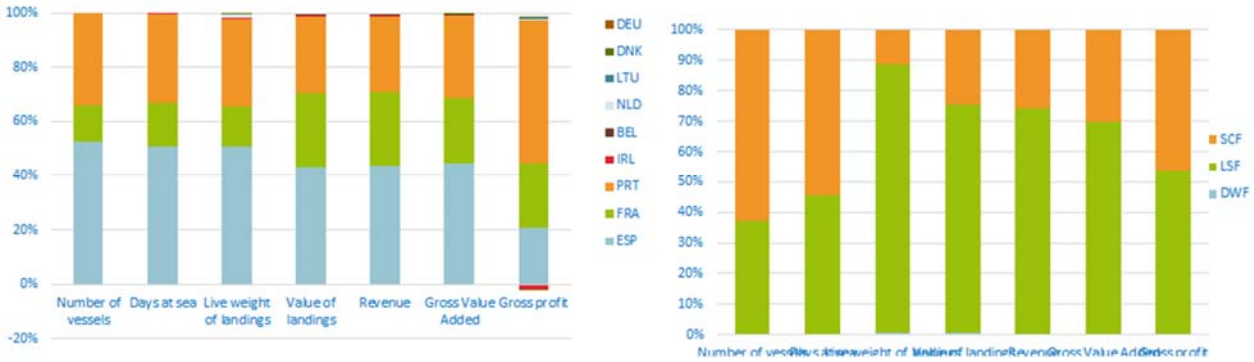
**Figure 3.50** Importance of the SWW for MS fleets in terms of landings in weight and value, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call MARE/A3/ASC(2023; All monetary values have been adjusted for inflation; constant prices (2020).

SSCF dominates in number of vessels (63%) and effort (54%) while the LSF is the main segment in terms of production (88% in weight and 75% in value) (Figure 3.52).

**Figure 3.51** Share of MS fleets and fishing activity in the SWW, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call MARE/A3/ASC(2023; All monetary values have been adjusted for inflation; constant prices (2020).

### *Overview of the main results for EU fleets in the SWW*

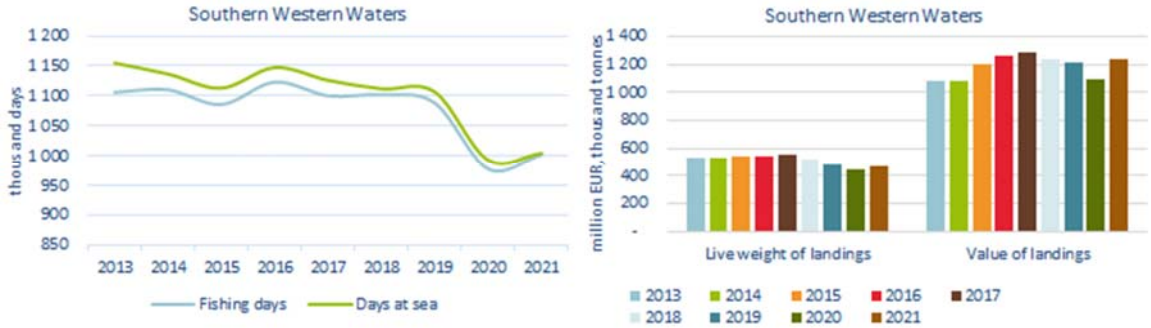
*Fishing effort and landings*

Fishing effort had been decreased from 2017 to 2020 at the same time than weight of landings and value of landings. However, in 2021 an increase trend was observed. The increase of 1% in days at sea had led to a rise by 5% in weight of landings and 12% in value of landings (Figure 3.52).

The main species landed were European pilchard, European anchovy, Atlantic horse mackerel and Atlantic mackerel. In terms of value, the main species were European hake, albacore, octopus and anchovy. Among these species, it is particularly important the price as in the case of the octopus, whose landings were 10 703 tonnes and the value of landing reached EUR 81 million (7.6 euro/kg).

Fishing opportunities and prices are major drivers of revenues, but also operational costs, as fuel, whose prices averaged 0.56 euro/litre.

**Figure 3.52** Trends on effort and landings for MS fleets operating in the SWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

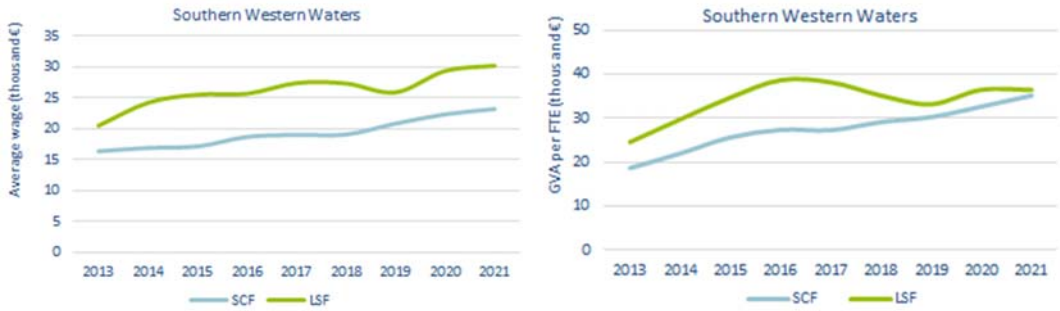
*Employment, wages and labour productivity*

Total employment in the region was estimated at 33 534 fishers and 20 855 FTE, showing the significance of part-time work in this region. Engaged crew has followed a decreasing trend from 2013 to 2020, but an increase was observed in 2021 (+3%). The rising of the FTE was higher (+8%) which reveals the grown in the full-time work. While in Spain the grown of FTE and engaged crew was equivalent, in Portugal was observed an intensification of full-time work.

Average wages per FTE in the SSCF have grown 4% in 2021, being 20% above the average of the previous 10 years.

The LSF also showed a positive trend from 2013, despite the deterioration in 2019. From then, the average wage increased in 17%. Currently, the LSF salaries are 15% above the average of the last 10 years. The gap in wages between SSCF and LSF has been fluctuating and has been around EUR 7 000 in the last two years (Figure 3.53). However, the gap between labour productivity (GVA per FTE) in the SSCF and LSF has been narrowing and the values are now closer than ever before.

**Figure 3.53** Trends on average wage and labour productivity (GVA per FTE) by fishing activity for MS fleets operating in the SWW

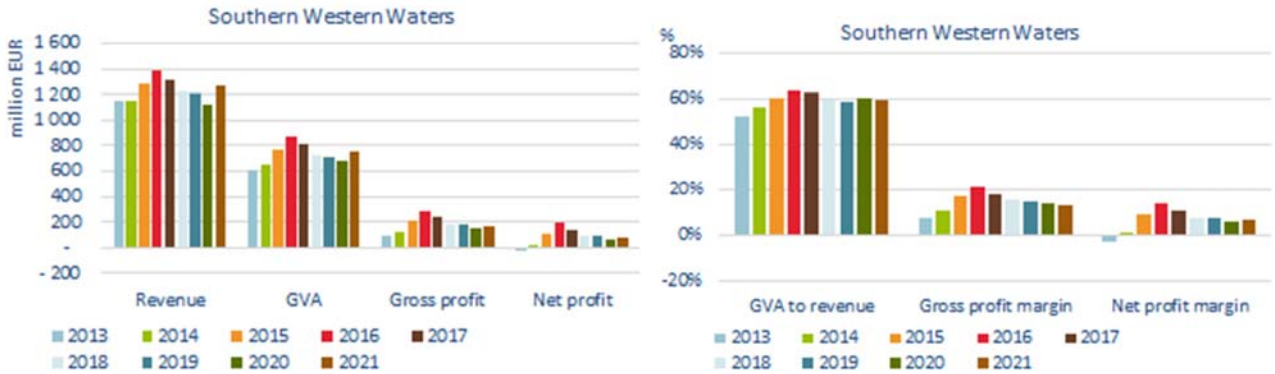



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

In 2021, the fleet operating in the SWW generated over EUR 1.3 billion in revenue, EUR 758 million in GVA and EUR 168 million in gross profits. Overall, revenue and profits have recovered since 2013, going from a loss-making position to posting net profits, although they have deteriorated from 2015 to 2020. However, in 2021 there was a recovery with an increase of 12% in revenue. This fleet as a whole was profitable in 2021, posting a net profit of over EUR 84 million (7% profit margin) (Figure 3.54).

**Figure 3.54** Trends on revenue and profits for MS fleets operating in the SWW.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The personal costs are the most important expenditure for the fleet operating in the SWW (47%), followed by the energy costs (14%). The cost structure had been relatively constant along the time, but an intensification of the energy costs (+34%) as occurred from to 2020 to 2021. Even though, the energy costs were in 2021 9% under the average of the period 2013-2020. On the other hand, the personal costs had been increasing over the time and the 2021 value is

### *Trends by Member State fleet*

*Fleet capacity and employment*

The Member States fleets operating in the SWW collectively numbered about 10 200 vessels even though Spain, Portugal and France represented 99.9% of the total. The Spanish fleet comprised the largest fleet in number (5 378 active vessels in the region), followed by Portugal (3 470) and France (1 344).

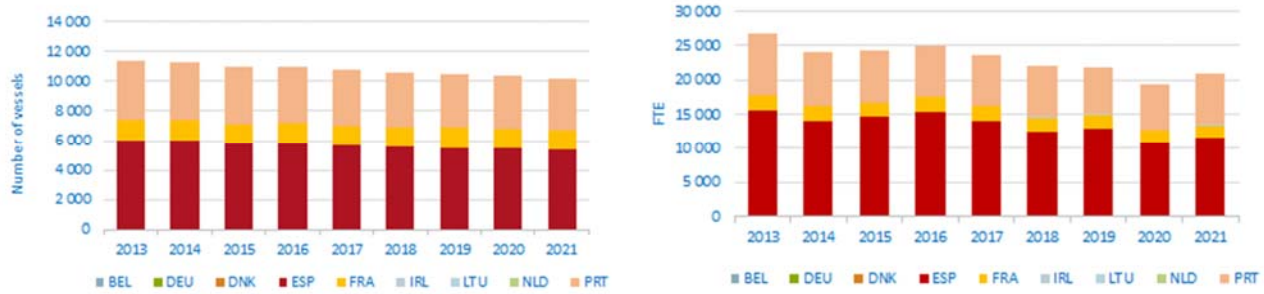
Fleet capacity and employment in the region have followed a general decreasing trend over the analysed period. The Portuguese fleet has fallen 8% in number of vessels when comparing the year 2021 with the average of 2013-2021, while the Spain has dropped 6%. However, the FTE of the SWW Spanish fleet is 16% under the average of 2013-2022 while the Portuguese only decreased 2% (Figure 3.55).

In 2021, the employment estimated for the SSW fleet amounted 33 534 jobs corresponding to 20 855 FTE. The most important fleets in terms of overall employment correlate to the same fleets with the highest production in the region. The Spanish fleet employed 52% of the SWW crew (corresponding to 35% FTE), while the Portuguese is responsible for 38% of the jobs (corresponding to 35% FTE), indicating the greater importance of part-time employment in Portuguese fisheries. Together, these three Member States covered almost 100% of the employment in the region.

Total employment for the SSCF was highest in Spain and Portugal reflecting their high number of SSCF vessels in the region. The SSCF, for these two Member States, demonstrates a marked difference between the number of totals employed and total FTE indicating that a large number of those employed are part-time employees. In Portugal, the FTE increased in 17% when compared to 2020, when the COVID pandemic led to the interruption in the activity of a large number of fishermen.

Employment for the LSF is also the highest for Spain and Portugal, 59% and 31% of the LSF FTE, respectively, reflecting the high number of active vessels of these Member States in the region, especially the Spanish fleet. Compared to 2020, the FTE has increased 8% in Spain and also in Portugal, indicating a recovery after the COVID restrictions in 2020. LSF figures for engaged crew and FTEs are closer in value in the SSCF fleet, indicating a high level of full-time employment.

**Figure 3.55** Trends on the number of vessels and employment (in FTE) for MS fleets operating in the SWW.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023))

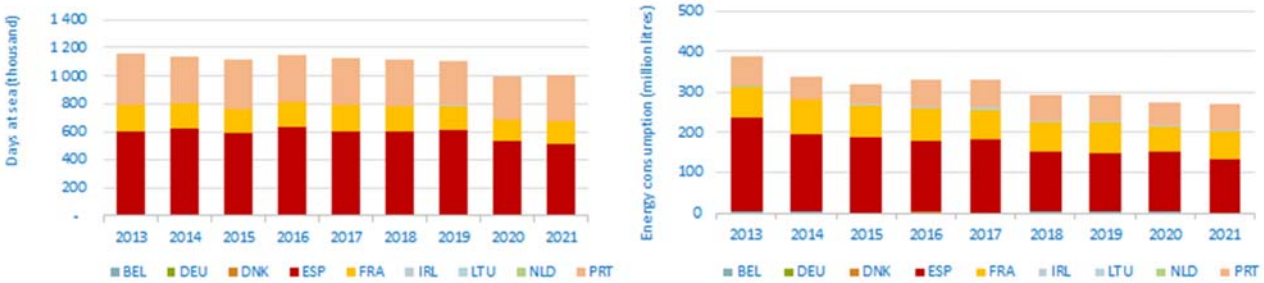
*Fishing effort*

SWW fleet spent over 1 million DaS in 2021, 51% of which were deployed by the Spanish fleet (Figure 3.56). It is important to notice that, while the Portuguese fleet spent 9% days more fishing in the SWW when comparing to 2020, the Spanish, have reduced the activity in 3%. The number of DaS per member state (considering the three main countries in this region) has remained quite constant along the time: the Spanish accounting with 51-55% of the DaS, Portugal with 29-33% and the French with 16-17%.

Fishing effort has decreased much in line with capacity, with a 11% decrease in the number of vessels from 2013 and a 13% decrease in DaS. Between 2013 and 2021, more than 1 230 vessels ceased activity in the region, 54% of which were Spanish vessels. This decreasing trend in vessel number and also in engine power and gross tonnage is expected to continue for the coming years.

Energy consumption has also followed a general decreasing trend from 2013 to 2021. However, from 2020 to 2021, France and Portugal have increased the energy consumption by 13% and 15%, respectively, while the Spanish fleet decreased by 13% the litres of fuel used.

**Figure 3.56** Trends on fishing effort (in days-at-sea) and energy consumption for MS fleets operating in the SWW.



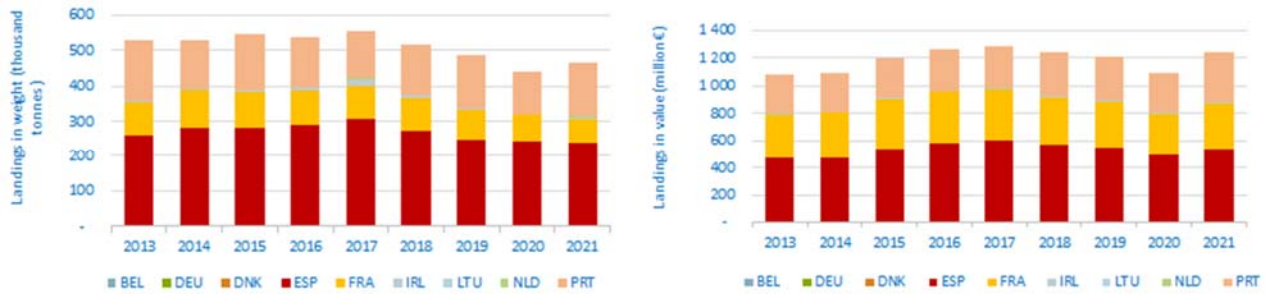

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023))

*Landings and top species*

The weight and value of landings generated by the SWW fleets amounted to approximately 465 296 tonnes and EUR 1.24 billion, respectively. In terms of landed weight, the Spanish (51% weight, 43% value), Portuguese (32% weight, 29% value) and French (15% weight, 27% value) were the most important national fleets, and together accounted for over 99% of the totals.

Although the negative trend from 2013 to 2020, landings in weight have increased by 5% in 2021 compared to 2020. On the other hand, the value of landings has been increasing over the period and in 2021, the value is 14% above the 2020 value and the average of 2013-2020 values (Figure 3.56).

**Figure 3.57** Trends on landings in weight and value from MS fleets operating in the SWW

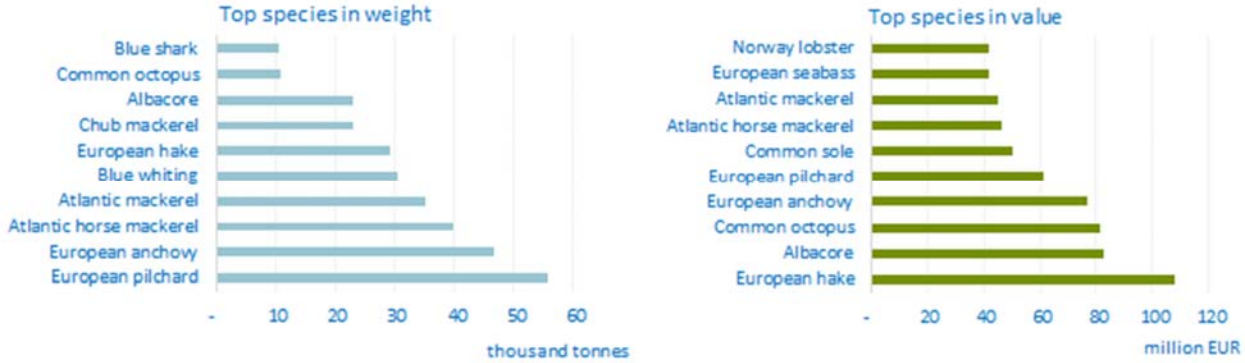



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the main species landed by the SWW fleet in terms of weight were small pelagic species, namely: European pilchard (57 717 tonnes), anchovy (46 604 tonnes) Atlantic horse mackerel (39 954 tonnes), Atlantic mackerel (35 256), followed by blue whiting (30 526) and hake (29 175 tonnes). These species all together represented 51% of the total landings weight in the SWW. In terms of value, European hake was the most important species in 2021 (EUR 108 million), followed by albacore (EUR 82 million), octopus (EUR 81 million), anchovy (EUR 76 million) and European pilchard (EUR 61 million) (Figure 3.57).

The top species can be seen as drivers for this region's fleets. The share of landed value of European hake is dominated by Spain and France (92%). Norway lobster, common sole and European seabass landings values, were dominated by France, with 78%, 80% and 66% of the total, respectively. Albacore landed values were dominated by Spain (76%). Regarding small pelagic fishes, European pilchard landings were led by Portugal (50% share) and Spain (35%). For European anchovy and Atlantic mackerel, Spain was the main Member State dependent on these species with 78% and 79%, respectively. Finally, common octopus is led by the Portuguese (66%) and followed by the Spanish fleet (25%).

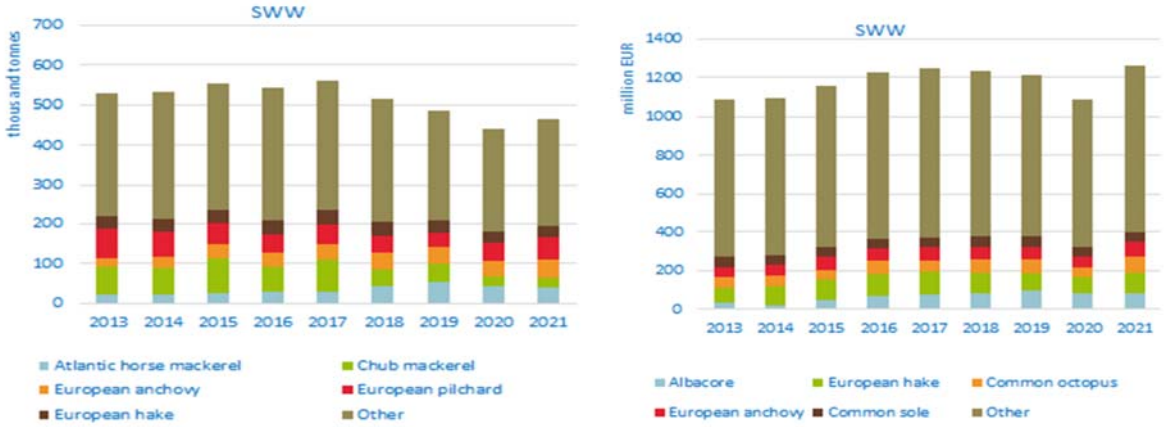
**Figure 3.58** Top 10 species in landed weight and value for MS fleets operating in the SWW, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Temporal trends in the value and weight of landings have been influenced by fluctuations in TAC and quotas for Atlantic mackerel, blue whiting and hake. Mackerel went through a decrease in 2019 followed by an increase in 2020 and new decrease in 2021, which impacted the total value of landings for Member States targeting this species. European pilchard (*sardina pilchardus*) is of particular importance in the region, the biomass of which has been improving over the last years and, consequently, landings in 2020 and 2021 (Figure 3.59).

**Figure 3.59** Trends on landings of the top species in landed weight and value for MS fleets operating in the SWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

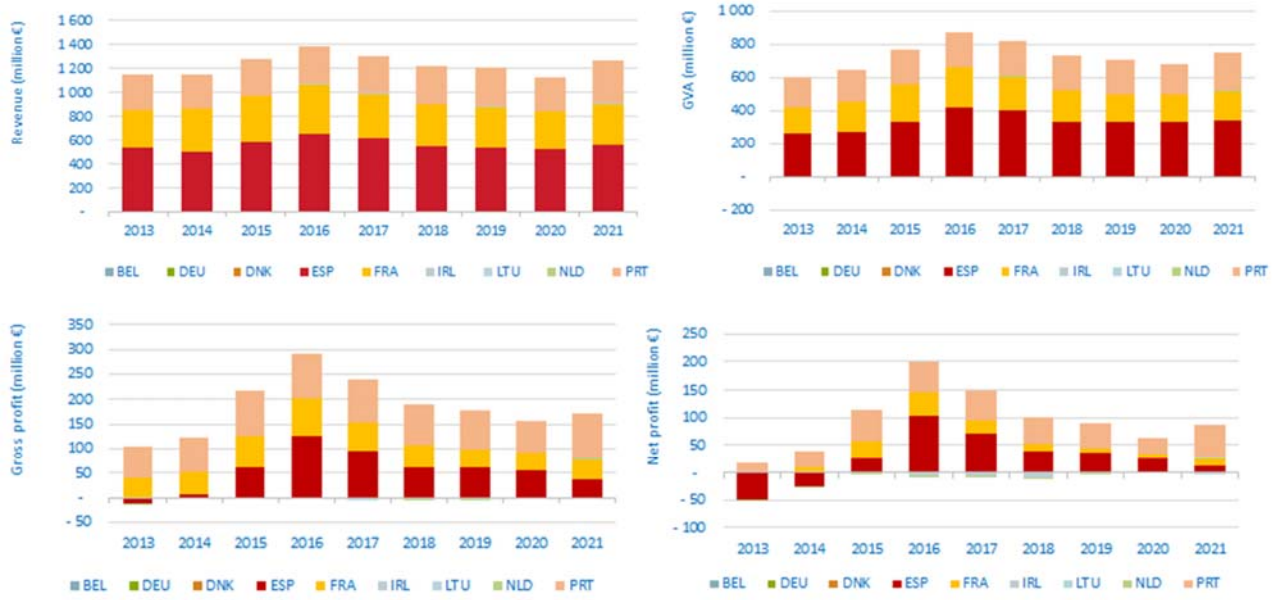
*Economic performance*

The revenue generated by the SWW fleet in 2021 was estimated at EUR 1.3 billion. Almost 99% of it was produced by three Member States fleets: Spain (44%), France (27%) and Portugal (28%). Revenue increased by 12% in 2021 in comparison to 2020, being the growth especially important in Portugal (24%). (Figure 3.60).

The GVA generated amounted to EUR 751 million, an increase of 10% compared to 2020. The GVA increased particularly in the Portuguese fleet (+24%), while in the French fleet the increase was around 12% and only 1% in the Spanish fleet.

The fleet made EUR 168 million in gross profit, an increase of 6% compared to 2020 contrary to the negative trend since 2016. By Member States, the Portuguese fleet produced the highest gross profit (EUR 92 million), followed by the French fleet (EUR 41 million) and then the Spanish fleet (EUR 36 million).

**Figure 3.60** Trends on revenue and profit for MS fleets operating in the SWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Net profit had amounted EUR 84 million in 2021, being the Portuguese fleet responsible for 72% of the value. Regarding this indicator, it was observed that, while the Portuguese and French fleet operating in the SWW had an important improvement from 2020 to 2021 (89% and 156%, respectively), the Spanish fleet observed a decrease of more than 50%.

### *Main factors affecting the performance of the fleet*

*Main drivers affecting fleet performance in the region*

**Factors that may have hampered economic performance in the region include:**

- The management plan for western waters was based on the possibility of using catch bands around MSY (Art. 4), in order to take account of the complexity of managing mixed fisheries, which are particularly present in south-western waters. In this sense, the setting of fishing opportunities could not exceed the value of the TAC associated with the median Fmsy for all stocks.
- Decreased TACs for a number of stocks, e.g., blue whiting.
- All the ICCAT recommendations formalising the exploitation rule for northern albacore provide for a dual objective of precautionary management of the stock (60% probability of green zone Kobe diagram, recovery) and maximising catches, over the long term and on average.
- The landing obligation creates an incentive to develop more selective fishing gear and reduce unwanted catches, while on the other hand, the lack of quota for some species caught in mixed fisheries forces the premature closure of some fisheries (the "choke effect").
- The variation of the prices for the main species such as blue whiting, Atlantic horse mackerel and chub mackerel, albacore or octopus.
- Increase in fuel prices resulting in higher energy costs, especially for pelagic fisheries.

*Regulation and fisheries management in the region*

- Commission Delegated Regulation (EU) 2020/2015 of 21 August 2020 specifying details of the implementation of the landing obligation for certain fisheries in Western Waters for the period 2021-2023
- Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures, amending Council Regulations (EC) No 1967/2006, (EC) No 1224/2009 and Regulations (EU) No 1380/2013, (EU) 2016/1139, (EU) 2018/973, (EU) 2019/472 and (EU) 2019/1022 of the European Parliament and of the Council, and repealing Council Regulations (EC) No 894/97, (EC) No 850/98, (EC) No 2549/2000, (EC) No 254/2002, (EC) No 812/2004 and (EC) No 2187/2005.
- Regulation (EU) 2019/472 establishing a multiannual plan for stocks fished in the Western Waters and adjacent waters, and for fisheries exploiting those stocks.

*Status of important stocks*

Fishing has generally progressed towards MSY in all areas of the Northeast Atlantic since 2006 and specifically in the SWW region. Some important stocks in this area are:

- Hake, the problems detected in the southern hake (ICES Divisions 8c and 9a) assessment in 2020 led ICES to reject the mathematical model with which the stock had been assessed in recent years, and to give management advice based on abundance indices. In 2021, the status of the stock in relation to candidate reference points was unknown, therefore, the precautionary buffer was applied to the ICES 2021 advice. However, this situation improved with the new advice of ICES in 2022, when ICES published advice for the 2023 TACs and quotas with a new assessment model (recovering category 1, the maximum in terms of quality and reliability of the data for ICES), which made it possible to request a revision of the 2022 TAC in the second part of the year, and for 2023 we will have a TAC with this new assessment.

- On the same way a benchmark has been carried out on northern hake, resulting in a new assessment model, which updates the reference points. On average the new assessment estimates a 71% larger stock size over time (ICES, 2022c). The SSB estimates made prior to 2022 include males and females while estimates in this assessment are female only. SSB remains above the MSY Btrigger, while recent fishing mortalities are now estimated below FMSY.
- Management of southern horse mackerel, blue jack mackerel, and Mediterranean horse mackerel under a combined TAC prevents effective control of the single-species exploitation rates and could lead to overexploitation of any of these species. The ICES has issued its assessment of a new rebuilding plan for western horse mackerel (Trachurus trachurus) in ICES Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a–c, and 7.e–k. ICES advises that the evaluated rebuilding plan as proposed by PELAC shows potential to reach the specified target (three consecutive years > Bpa) within the time frame specified in the plan (< ten years) and is considered to be precautionary in the long term. The time frame to rebuild the stock is estimated to be two years longer following the rebuilding plan (by 2028) compared to zero catch (by 2026) given current starting conditions. Once rebuilding is achieved, ICES advises that alternative harvest control rules (HCRs) should be examined for long-term management of the fishery to satisfy maximum sustainable yield (MSY) objectives.
- Anchovy has two separate stocks, one for ICES Division 9a and another one for ICES area 8. The one in Division 9a is divided in two components, for the southern component, the spawning-stock size is below Bpa and Blim. On the other side, the one in ICES area 8 the SSB has been above $B_{lim}$ since 2010, and the year 2020 is assessed as the highest of the historical series. Recruitment has been mostly above the long-term average since 2010, and continues to increase in 2021, after a slight decrease in 2019.Harvest rates have been below the long-term average since the reopening of the fishery in 2010.
- Finally, Iberian sardine (Sardina pilchardus) in ICES Divisions 8c and 9a is seriously evolving form a situation clearly outside safe biological limit to be inside those. The biomass of age 1 and older fish (biomass 1+ or B1+) is above MSY $B_{trigger}$. Recruitment in 2019 is the highest since 2004 and above the long-term geometric mean. Fishing mortality has been declining since 2012; however in 2021 increased being above $F_{MSY}$. A recovery plan for the Iberian sardine is being implemented for Portugal and Spain jointly, updated in 2021 following the successful implementation of previous ones in terms of the recovery of the stock. In this new plan management of the Iberian sardine stock is expected to be applied till 2026, according to the stock management measures such as a HCR; fishing activities are limited for a maximum of 9 months.

*TAC development of main species*

The impact of changes in TACs and prices at Member State level varies as their species composition and species dependency of the fleets can differ considerably. In the SWW, the main fishing Member States, Spain, France and Portugal, relay on a diversified group of species.

Concerning the year 2021, it is important to highlight the following quotas:

**Demersal species:**

- In 2021, the TAC for southern hake and northern hake is slightly lower than in 2020.
- TAC of common sole showed a small decrease in 2020 returning to the 2018 level and continues to decline in 2021.
- Norway lobster has some different stocks covering SWW. The stock in ICES Division 8abde has increased slightly compared to 2020. The stock in ICES 9a (shared by Spain and Portugal) returns to the 2018 TAC level in 2020 and continues to decline in 2021. Due to the analysis of the stock in different functional units (FMUs), ICES maintained its recommendation of applying a precautionary buffer, to limit catches in FMUs 26 (south of Galicia) and 27 (north of Portugal) to a percentage of the TAC and the total amount in FMU 30 (Gulf of Cadiz).

**Pelagic Species:**

- TAC for mackerel had a peak in 2014 and, from then it has tended to decrease. It is important to notice that due to its wide distribution, this TAC is one for the whole area and it is agreed at the level of Coastal States of NEAFC (this one from 2016 to now). The TAC in 2020 in ICES Divisions 8c and 9a for Spain, Portugal and France had an increase of 7%, however in 2021 has decreased again.
- TAC for horse mackerel (Trachurus trachurus in Division 9.a) has increased from 2020.
- TAC for anchovy in ICES area 9 is in 2020 and 2021 slightly smaller than 2019.
- TAC for anchovy in area 8 (shared by France and Spain) has increased to 33000 tnn (the same value as 2019).
- TAC for blue whiting increased each year from 2014 to 2018. However, in 2020 and 2021 had a slightly decrease. It is also important to point that this TAC is also negotiated at Coastal States, where EU has a high percentage of the total TAC.

### *Description of relevant fisheries in the region*

*Small-scale coastal fleet*

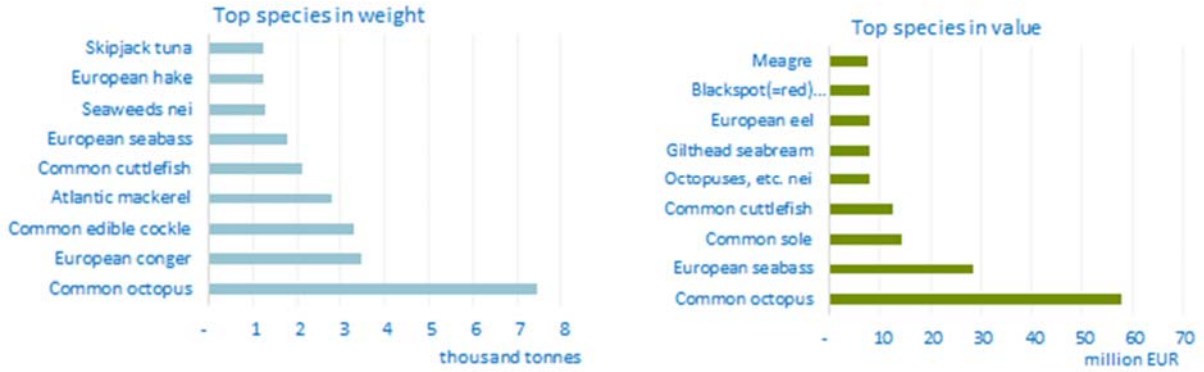
Three Member States have SSCF in the SWW: Spain, France and Portugal. The dependency of these fleets of this area is different. While 100% of the Portuguese SSCF fished in the area in 2021, it represented 74% of the SSCF fishing activity for Spain and 12% for France. In terms of vessel numbers, Spain and Portugal had the highest number of active SSCF 2 929 and 2 761 vessels, respectively.

Overall, the SSCF was profitable in 2021, totalling EUR 227 million in GVA and EUR 77 million in gross profit. The most profitable in terms of gross and net profit margins was the Portuguese SSCF with 43% and 36%, respectively. In terms of labour productivity, the GVA per FTE varied from EUR 29 915 (Spain) to EUR 113 602 (France), being the Portuguese at the same level than Spain.

Total employment for the SSCF is highest for Portugal and Spain, totalling 6 946 and 6 135 jobs, respectively, reflecting the high number of active vessels in these Member States. All of them in the SWW demonstrated a much lower FTE figures than total employed (about 40%-50% of the total jobs) indicating that a large majority of those employed in the SSCF are part-time employees. The employment, both in engaged crew and FTE, have been decreasing in the three main countries operating in SWW. In 2021, however, these figures have increased in Portugal: +17% FTE and +4% engaged crew.

The most important species caught by this fleet are the common octopus (19% of the landed value) followed by the European seabass (9%).

**Figure 3.61** Top 10 species landed by SSCF operating in the SWW, 2021

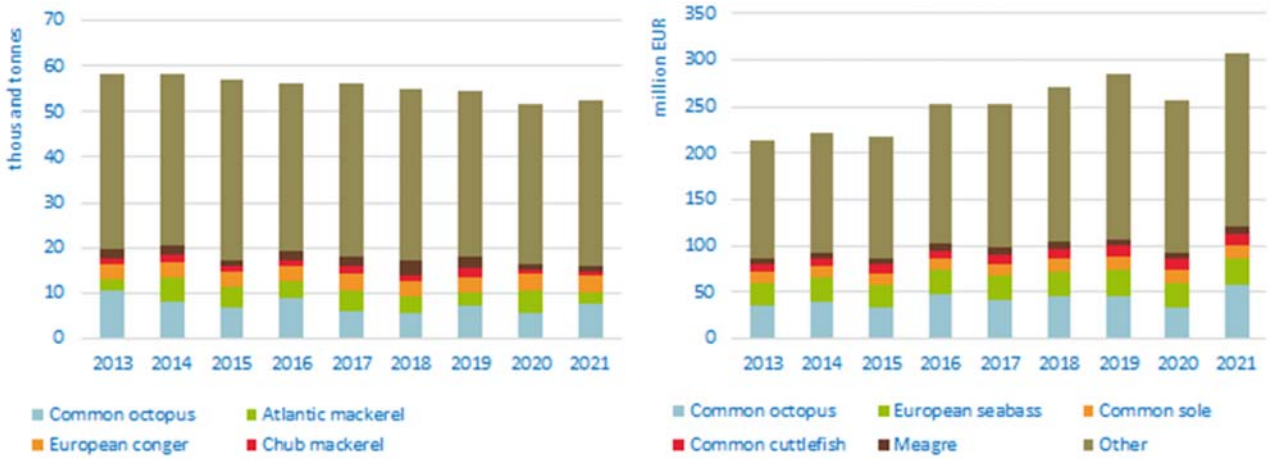



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The quantities caught in the SWW have been suffering a decreasing trend along the period 2013 to 2020. Although the slightly increase of 1% in the weight landed in 2021 when compared to 2020, the value recorded in 2021 is 6% under the average of the period 2013-2020. On the contrary, the value of landings had been increasing since 2013. In 2021 the value of landing was 20% above the 2020 value

and 25% above the average value from 2013 to 2020. The decrease in the market supply and the rising costs, has conducted to sales price valuation, being the price in 2021 34% above the average price of the period 2013-2020.

**Figure 3.62** Trends in landings of top species landed in weight and value by SSCF operating in SWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Large-scale fleet*

There were six Member States LSF operating in SWW totalling 3 801 active vessels. Spain, Portugal and France had the majority of active vessels and together account for 99.8% of the total number of vessels in the region.

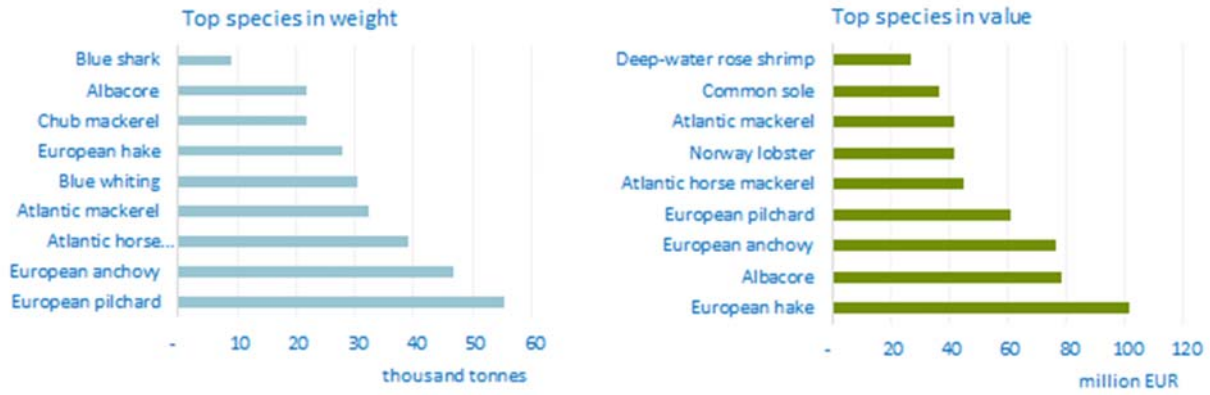
The LSF was profitable in 2021, totalling EUR 521 million in GVA and EUR 89 million in gross profit. The Portuguese LSF is responsible for 48% of the gross profit of the LSF in the SWW region, followed by Spain that contributed with 28% and the French fleet with 25%. As for profitability, gross and net profit margins were 18% and 8.2% for the Portuguese fleet, 5.8% and 1.3% for the Spanish and 9.2% and 0.9% for the French fleet, respectively. When considering average GVA per vessel, differences are also noticeable; around EUR 204 000 for the Portuguese fleet, EUR 188 000 for the French fleet and EUR 103 000 for the Spanish fleet.

Total employment for the LSF for Spain and Portugal totalled 11 261 and 5 925, respectively, reflecting the high number of active vessels of these two Member States in the region. While the SSCF, for all Member States, demonstrates a considerable difference between the numbers of total employed and total FTE, the LSF figures for total employed and FTE are closer in value indicating the high level of full-time employment in this segment.

Member States can be classified into two categories according to their dependency which is representative of their LSF landings composition in SWW:

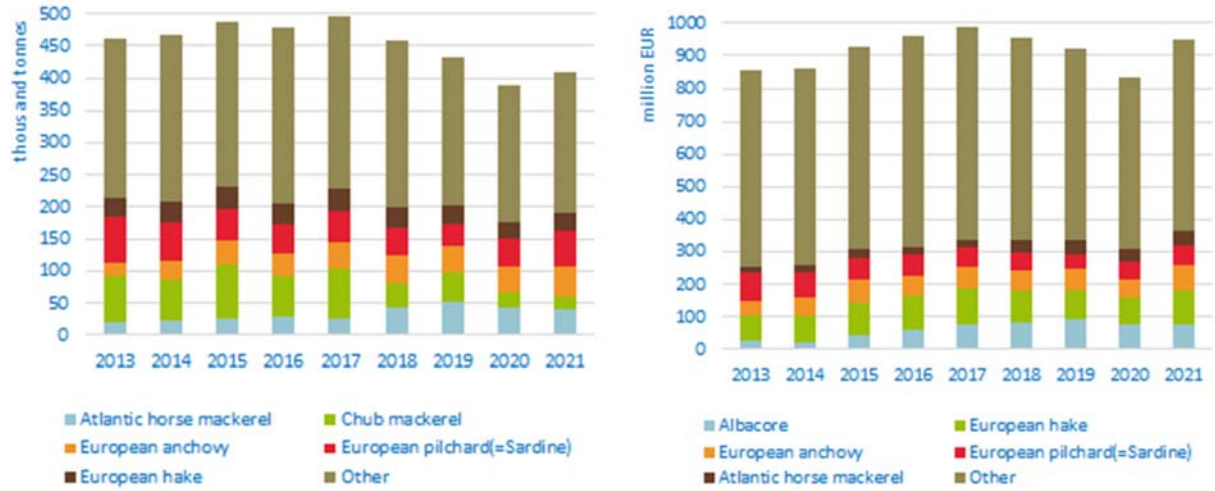
- Three Member States had a high dependency on one specie in the region. For the Belgian fleet common sole constituted 89% of landing. Albacore represented 98% of the landing value of the Irish fleet. The Deutch fleet targets Atlantic horse mackerel (41%), blue whiting (36%) and Atlantic mackerel (22%).
- For Spain, France and Portugal, the landing composition was more diverse, with hake playing a key role. The main species by landing value for Spain were albacore (14%), hake (13%), anchovy (13%) and Atlantic mackerel (7%). For France, hake (15%), Norway lobster (15%), sole (11%) and cuttlefish (6%). Finally, the main species by landing value for Portugal were sardine (13%), Atlantic horse mackerel (9%), anchovy (8%) and octopus (6%).

**Figure 3.63** Top 10 species landed by LSF operating in the SWW, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.64** Trends in landings of top species landed in weight and value by LSF operating in SWW




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Additionally, two distant water fleets (Portuguese and Spanish fleets) had some activity in the region in 2021. The EWG notes, however, that data on the EU distant water fleets operating in the region is limited and the economic indicators are to be interpreted with caution.

### *Performance by fleet segments*

50 fleet segments, out of the 135 fleet segments identified in the area, represented 80% of the vessels, 90% of the landed weight and 84% of the value generated by fleets in the region in 2021.

At fleet segment level, the Spanish demersal trawlers between 24 and 40 metres generated the most revenue (EUR 83 million), followed by the Spanish purse seiners between 24 and 40 metres (EUR 81 million) and the Spanish vessels using active and passive gears under 10 metres (EUR 70 million).

The segments (in the top 50) with the highest profitability were Portuguese vessels under 10 metres using pots and/or traps (345 vessels achieving 51% overall net profit margin) and the Portuguese vessels under 10 metres using passive gears only (1 352 vessels achieving 32% overall net profit margin).

Considering labour productivity within the top 50 fleet segments, the 10 upper positions were occupied by the French fleets, being the purse seiners between 12 and 18 metres the one with the higher labour productivity (191 090 GVA per FTE). The following are vessels under 10 metres using gillnets (130 909 GVA per FTE) and trawlers vessels between 10 and 12 metres (116 011 GVA per FTE). Considering the

Spanish and Portuguese fleet, it is observed that the most productive fleet segments was the Portuguese vessels under 10 meters using pots and/or traps (61 520 GVA per FTE), followed by Spanish purse seines between 24 and 40 metres (49 928 GVA per FTE), and the Portuguese trawlers between 24 and 40 metres (49 856 GVA per FTE).

In the range of the top 50, there is a wide gap between the most and the least efficient fleets, measured by gross profit margin. The most efficient is the Portuguese vessels under 10 metres using pots and traps (55% GRPm), being the latter position occupied by the Frech trawlers above 40 metres vessels (-39% GRPm).

## 3.5 Mediterranean Sea

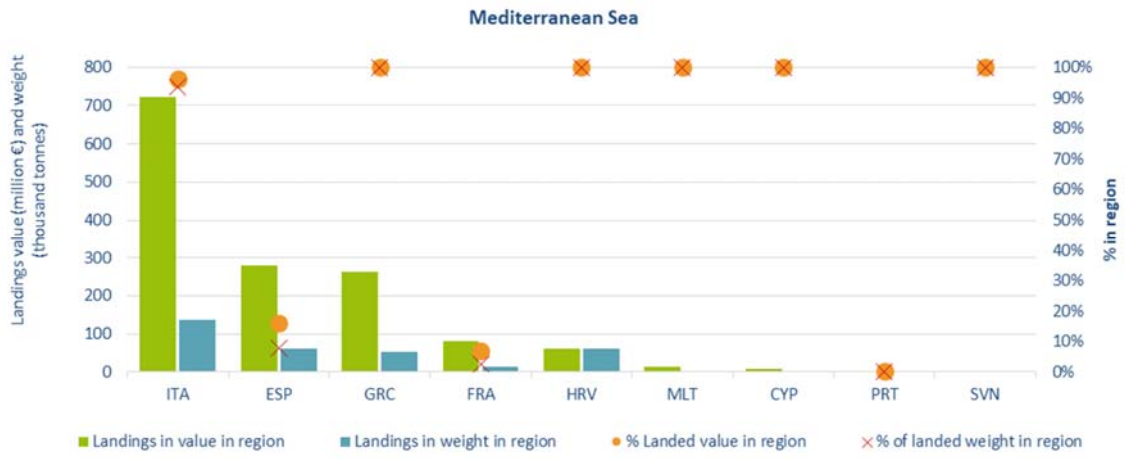
### *Regional Details*

The Mediterranean region covers FAO fishing areas 37.1, 37.2, and 37.3 and nine Member States: Croatia, Cyprus, France, Greece, Italy, Malta, Portugal, Slovenia, and Spain. Due to incomplete datasets for time series, Greece, one of the main fishing nations in the region, is included in the trends analysis starting from 2018.

The Mediterranean fleet accounted for 57% of all EU vessels and 47% of the EU employment (FTE) in 2021. The Mediterranean fleet also contributed 9% of the EU landings in weight and 24% in value.

Most Member States' fleets depended on the Mediterranean basin for their primary fishery production. Almost all landings by the Cypriot, Croatian, Greek, Italian, Maltese, and Slovenian fleets originated from the region. For Spain and France, the percentage of landings in weight originating from Mediterranean waters was less than 10%, and marginal for Portugal (Figure 3.65).

**Figure 3.65** Importance of the Mediterranean Sea for MS fisheries in terms of landings in weight and value, 2021.

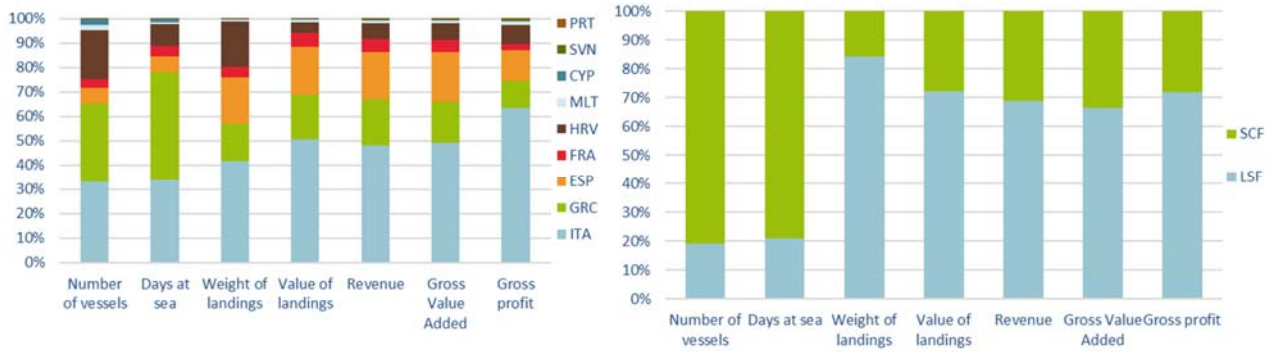



Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The Italian and the Greek fleet are the main contributors in terms of the number of vessels (33% and 32%, respectively) and days-at-sea (34% and 48%, respectively). The Italian one is the dominant fleet in terms of landings (41.5% in weight and 50.6% in value), revenue (48%), gross value added (61%) and gross profit (33%) (Figure 3.66).

Regarding landed weight, Spain caught 18.9% of the Mediterranean landings, followed by Croatia (18.6%) and Greece (16%). In terms of employment, Italy (38.6%), Greece (32.8%), Spain (14.4%), and Croatia (8.7%) accounted for 94% of it.

**Figure 3.66** Share by MS fleets and fishing activity in the Mediterranean Sea, 2021.




Data source: MS data submissions under DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The economic performance was mostly driven by the LSF, which contributed to 72% of the landings value from the Mediterranean and to 84% of landings weight in 2021. In contrast, 81% of the vessels operating in the region belong to SSCF.

Around 79% of the DaS were undertaken by SSCF vessels. LSF accounted for 21% of the DaS, of which most were undertaken by the demersal fleet.

The Mediterranean SSCF generated 31% of the revenue in 2021, which increased for 5.2% compared to 2020. LSF generated EUR 1.03 billion in revenue, which decreased by 7% compared to 2020.

The main SSCF fleet segments in terms of the number of vessels are the Greek Drift and/or fixed netters 6-12m (4 721 vessels), and the Italian Vessels using polyvalent passive gears only 6-12m (4 907 vessels), which combined accounted for 31% of the Mediterranean fleet in 2021.

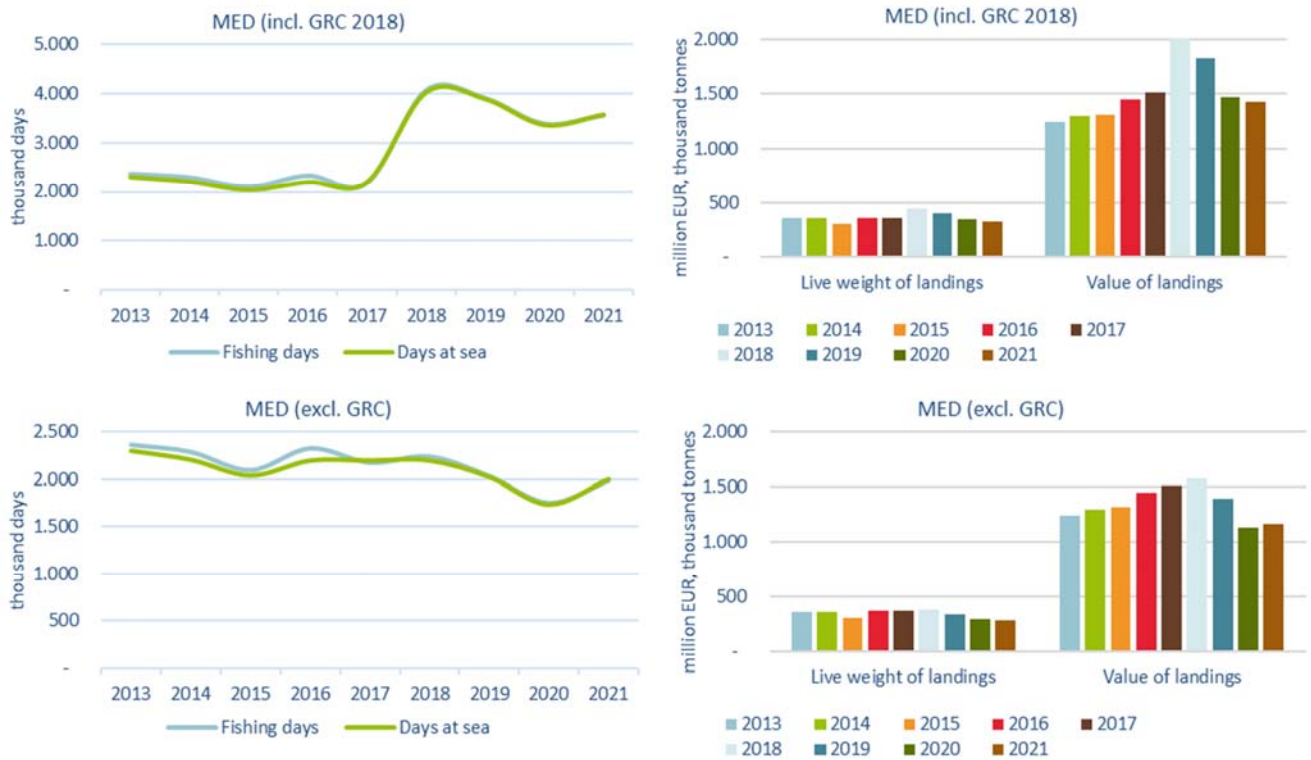
The main LSF fleet segments are the Italian demersal trawlers between 12-18m, 18-24m and 24-40m, the Spanish demersal trawlers between 18-24m and Greek demersal trawlers 24-40m, which altogether represented around 29% of total revenue from the area and 7% of the fleet covered.

### *Overview of the main results for EU Mediterranean Sea fleet*

*Fishing effort and landings*

Fishing effort increased compared to 2020 (Figure 3.67) (3.57 million DaS and 3.56 million fishing days in 2021, including Greece). Landings in weight and value decreased by 6% and 3% between 2020 and 2021. The weight and value of landings were approximately 328 468 tonnes and EUR 1.42 billion in 2021.

**Figure 3.67** Trends on effort and landings for MS fleets operating in the Mediterranean Sea.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020), including Greece from 2018 and excluding Greece for the whole time series.

*Employment, wages and labour productivity*

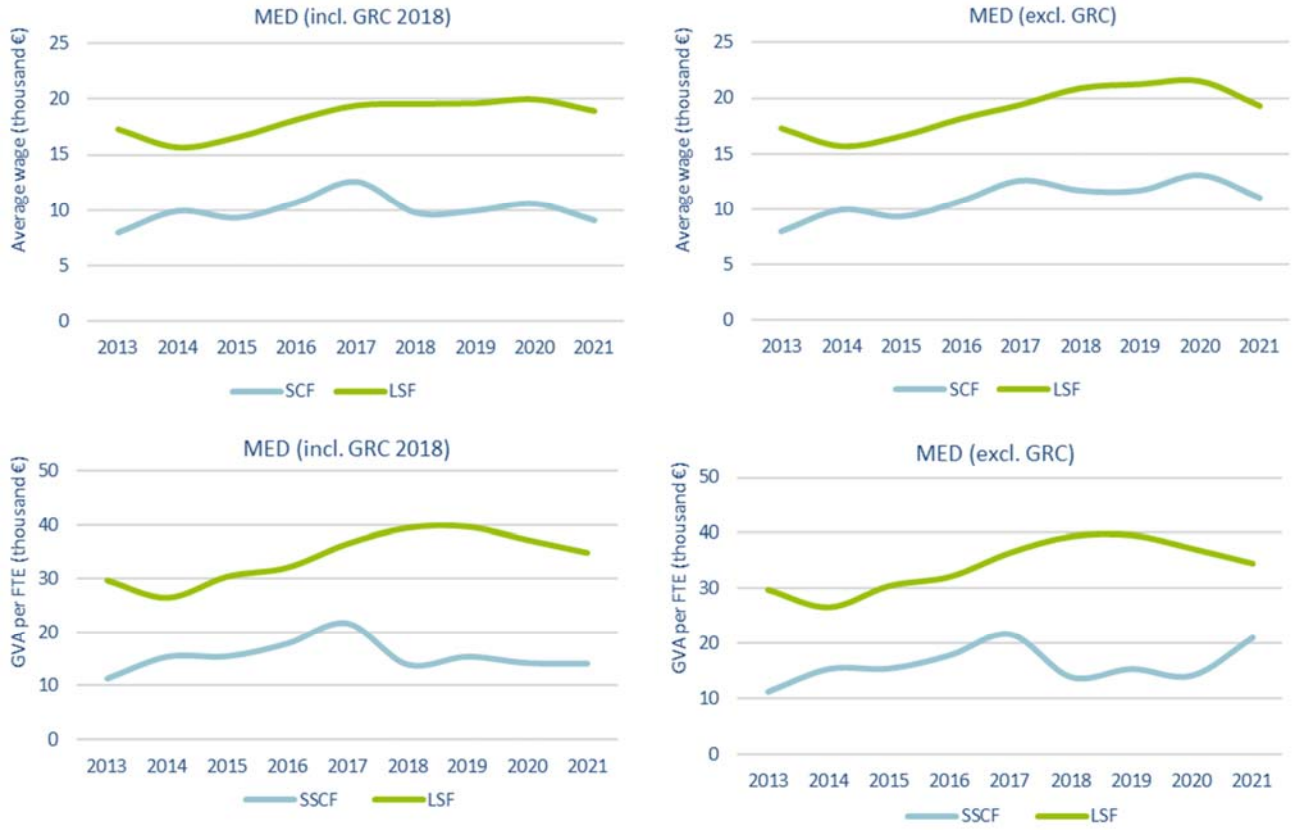
Employment in the Mediterranean fishing fleet in 2021 was estimated at 56 727 jobs, corresponding to 38 585 FTEs. Employment (measured as FTE) has a slight decrease relative to 2020. More than half of the employment is created by the SSCF; 33 385 jobs correspond to more than 59% of total jobs, and

21 424 FTEs correspond to almost 55.5% of total FTEs. The average employment per vessel is about 1.8. Additional information on capacity and employment are provided in the trend sections.

Annual average wages and salaries in 2021 for fishers in the SSCF and LSF were EUR 9 059 and EUR 18 889, respectively. Average wages in the LSF decreased by 5% relative to 2020. In the SSCF, average wages decreased by 14% compared to 2020 (Figure 3.68).

In LSF, the labour productivity (GVA per FTE) decreased by about 1% compared to 2020, estimated at EUR 34 893, while in the SSCF, labour productivity decreased by 1% to EUR 14 046.

**Figure 3.68** Trends on average wage (up) and labour productivity (down) by fishing activity for MS fleets operating in the Mediterranean Sea.

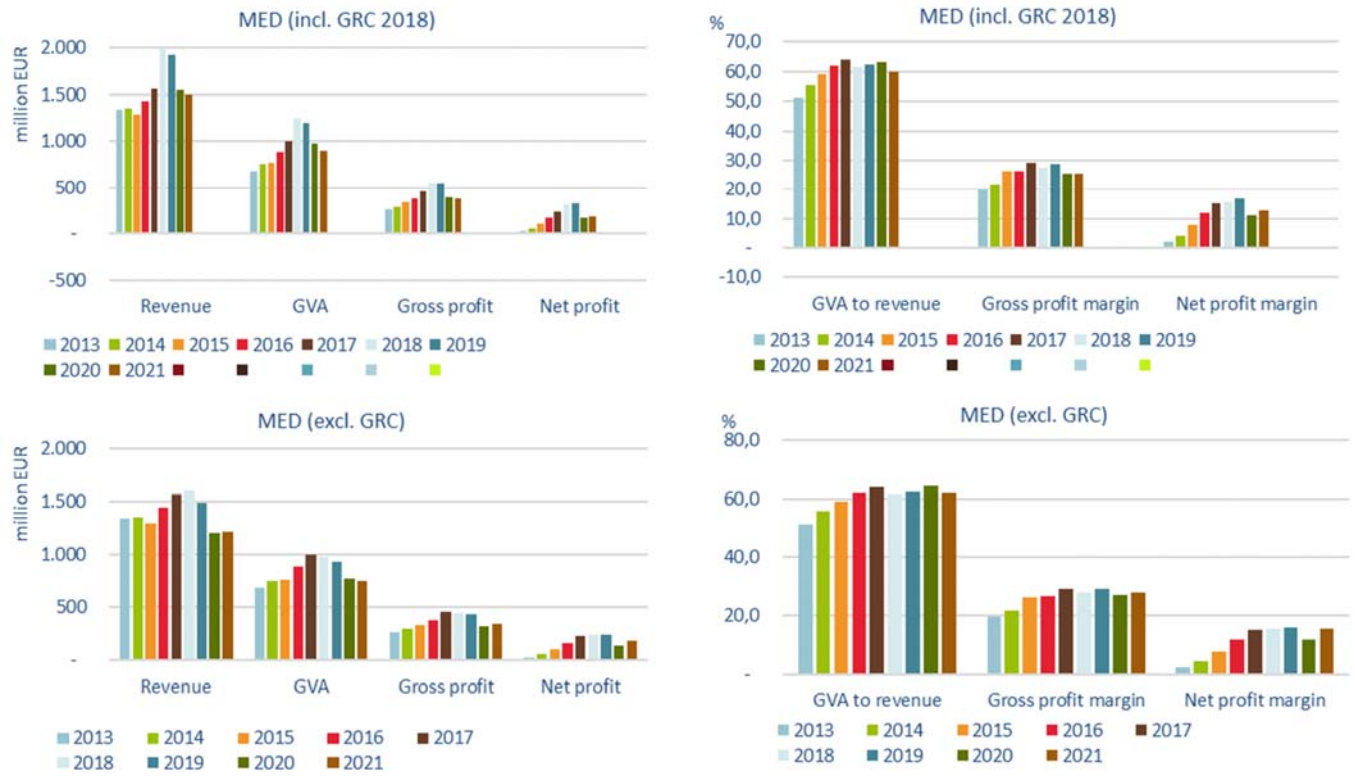



Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Including Greece from 2018 and excluding Greece for the whole time series.

*Economic performance*

In 2021, after several years of continuous improvement since 2015, the Mediterranean fleet reached a point of stagnation concerning the economic performance indicators analysed. The revenue was estimated at EUR 1.49 billion, decreasing by 4% compared to 2020. GVA produced by the fleets amounted to EUR 0.89 billion. GVA decreased by 8% compared to 2020. The Mediterranean fleets made almost EUR 389 million in gross profit, a decrease of 3% compared to 2020. Finally, the net profit was EUR 191 million (an increase of 12% compared to 2020). In addition, the gross profit margin slightly increased by 0.25%, while the net profit margin increased by 16% in 2020-2021 (Figure 3.69). GVA to revenue pursued a decrease of 5% in the period mentioned.

**Figure 3.69** Trends on revenue, profits and profit margins for MS fleets operating in the Mediterranean Sea.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020), including Greece from 2018 and excluding Greece for the whole time series.

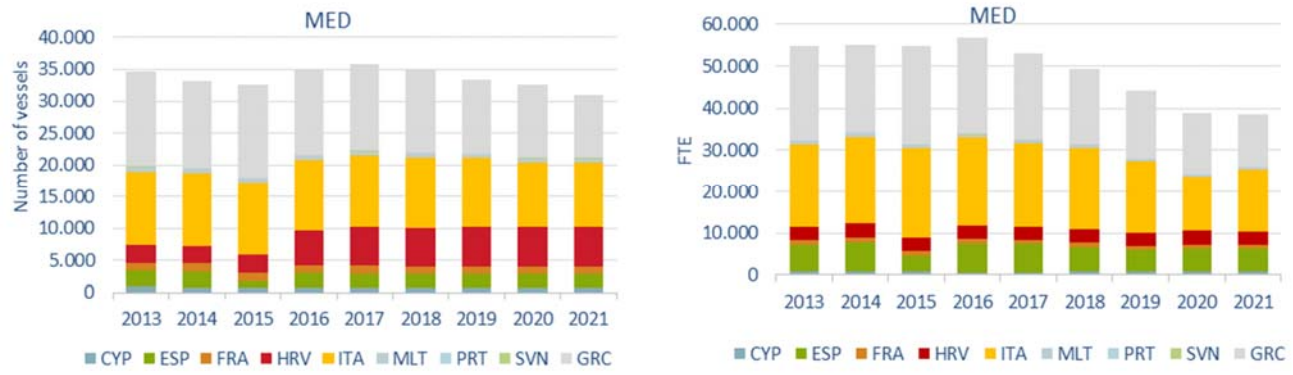
### *Trends by Member State fleet*

*Fleet capacity and employment*

The Mediterranean fishing fleet numbered 31 123 active vessels. The SSCF comprised 25 104 vessels (81% of the regional fleet). Among them, 33% belonged to the Italian fleet. Total employment was estimated at 56 727 jobs, corresponding to 38 585 FTEs (Figure 3.70) in 2021.

Trends on the number of vessels have remained relatively stable. Number of vessels and FTE have decreased in 2021 by 8% and 15%, respectively, compared to the period 2013-2020, mostly due to a decrease in the French and Greece fleets.

**Figure 3.70** Trends on the number of vessels and employment (in FTE) for the MS fleets operating in the Mediterranean Sea.

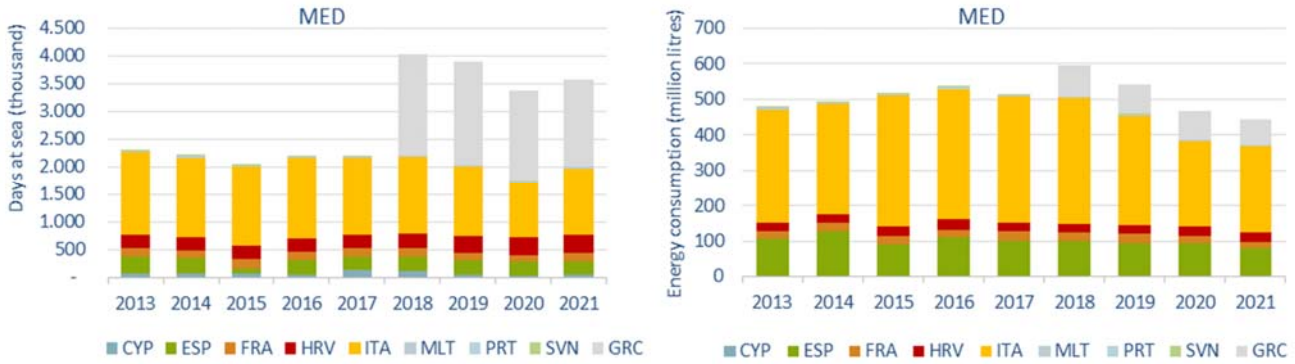



Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); Includes Greece.

*Fishing effort*

The Mediterranean fleet spent 3.6 million DaS in 2021. The Greek fleet accounted for about 44% of the number of days, followed by Italy (34% of the overall activity) (Figure 3.71). The SSCF accounted for 79% of these DaS.

**Figure 3.71** Trends on fishing effort (in days-at-sea) and energy consumption for MS fleets operating in the Mediterranean Sea.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); Includes Greece from 2018.

Energy consumption in 2021 (442 million litres) decreased by 5% compared to 2020, mostly due to a 16% decrease in the Spanish fleet and 15% decrease in the French fleet.

In 2021, Italy had the highest energy consumption in the region (56%), followed by Spain and Greece, with 17% and 16% energy consumption, respectively. Effort (DaS) deployed in the region followed a general decreasing trend with a stability between 2013 and 2018 and a reduction in period between 2019 and 2021 (Figure 3.71).

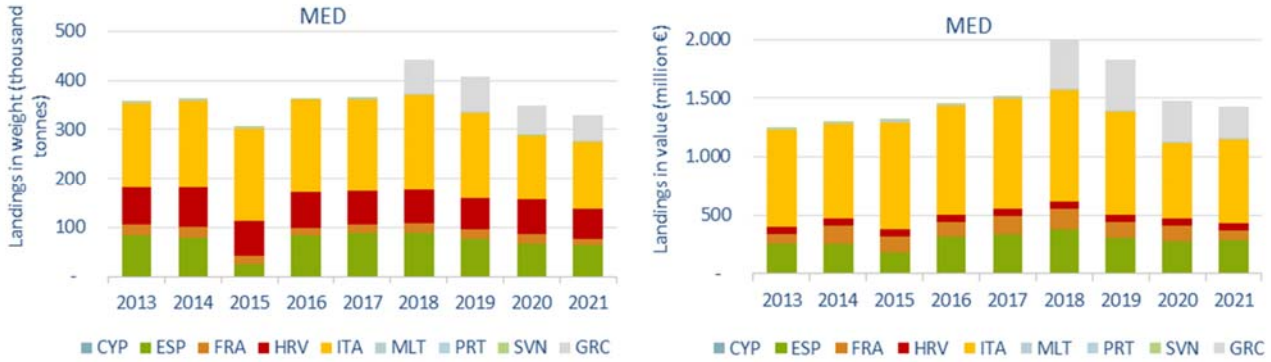
*Landings and top species*

The weight and value of landings generated by the regional fleet in 2021 amounted to approximately 328 469 tonnes (-6% compared to 2020) and EUR 1.43 billion (-3% compared to 2020), respectively.

Regarding landed weight, Italy (136 380 tonnes), Spain (62 075 tonnes), Croatia (61 166 tonnes), Greece (51 502 tonnes) were the leading countries, together accounting for 95% of the total weight and almost 93% of the value of landings from the EU Mediterranean basin.

The Croatian fleet landed 19% of the seafood in weight but only generated 4% of the value, indicating the predominance of low valued species composition of the catch (i.e. small pelagic species). The Italian fleet landed 42% of the weight and generated 51% of the value (Figure 3.72).

**Figure 3.72.** Trends on landings in weight and value by MS fleets operating in the Mediterranean Sea.

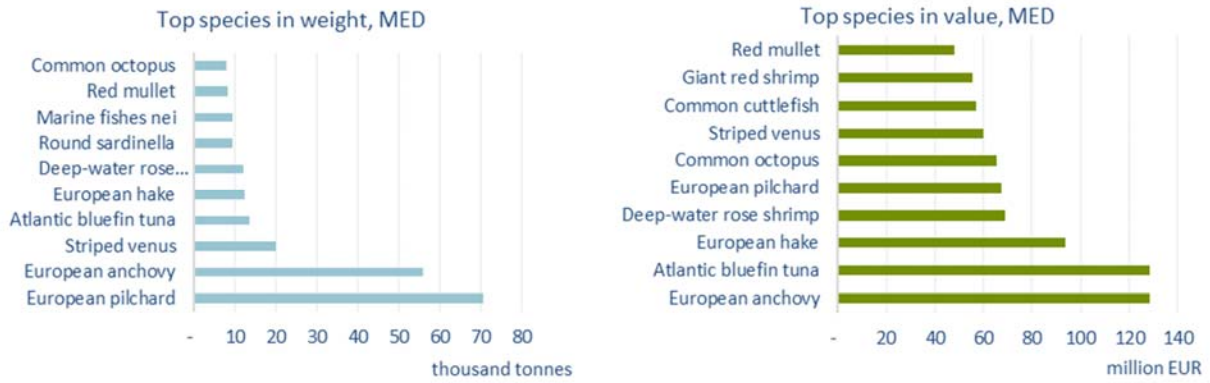



Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Includes Greece from 2018.

In 2021, the main species (by weight) were pilchard (sardine, 70 652 tonnes), followed by European anchovy (55 876 tonnes), striped Venus (19 872 tonnes) and bluefin tuna (13 457 tonnes).

By value, the most landed species were bluefin tuna (EUR 128 million), anchovy (EUR 128 million), hake (EUR 94 million), deep-water rose shrimp (EUR 69 million), sardine (EUR 67 million), and common octopus (EUR 65 million) (Figure 3.73).

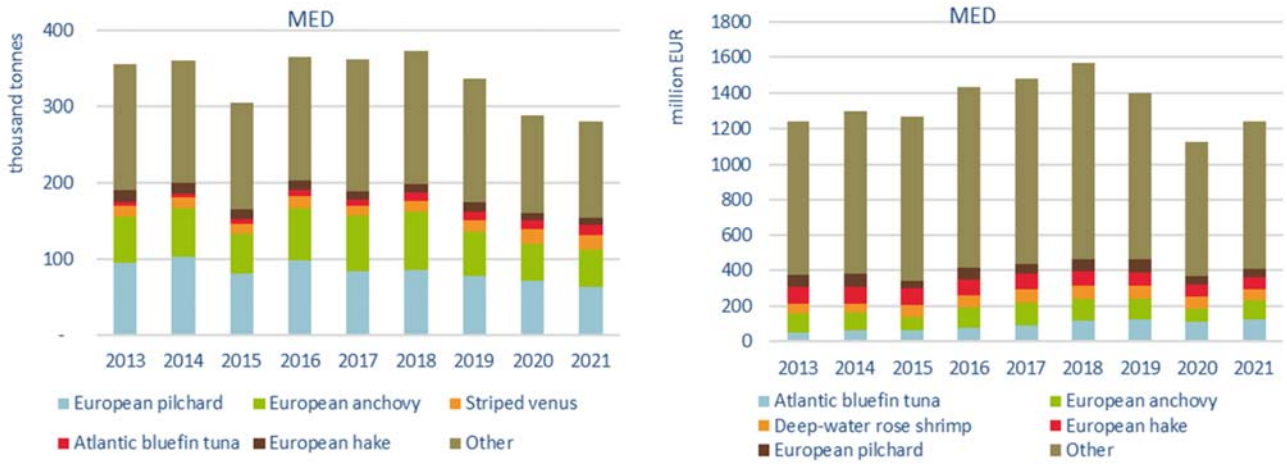
**Figure 3.73.** Top 10 species in landed weight and value for MS fleets operating in the Mediterranean Sea, 2021.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Includes Greece.

Landings of small pelagic species have increased until 2018; since 2019, a huge decrease has been registered in weight; 2021 landings of sardine and anchovy decreased 25% in weight and 4% in value compared to the average 2013-2020. The management measures imposed on these stocks in the Adriatic Sea, one of the most important fishing areas for these stocks, had a direct impact on the landings of the fleet segments targeting small pelagic species (i.e. purse seiners and mid-water pelagic trawl). The price of the anchovies registered a strong increase in 2021, reaching and average price of 2.26 euro/kilos; the increase is to be ascribed to the Italian fleets while in Croatia, the other important country for small pelagic landings, the price has not increased; this different trend is due to the product destination; in Croatia a large quantity of small pelagic fish landed on the landing sites is designated for tuna feeding while in Italy anchovies are sold fresh for local consumption and, in minor quantities, for export.

**Figure 3.74.** Trends on landings for the top species in landed weight and value for MS fleets operating in the Mediterranean Sea.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Excludes Greece.

*Economic performance*

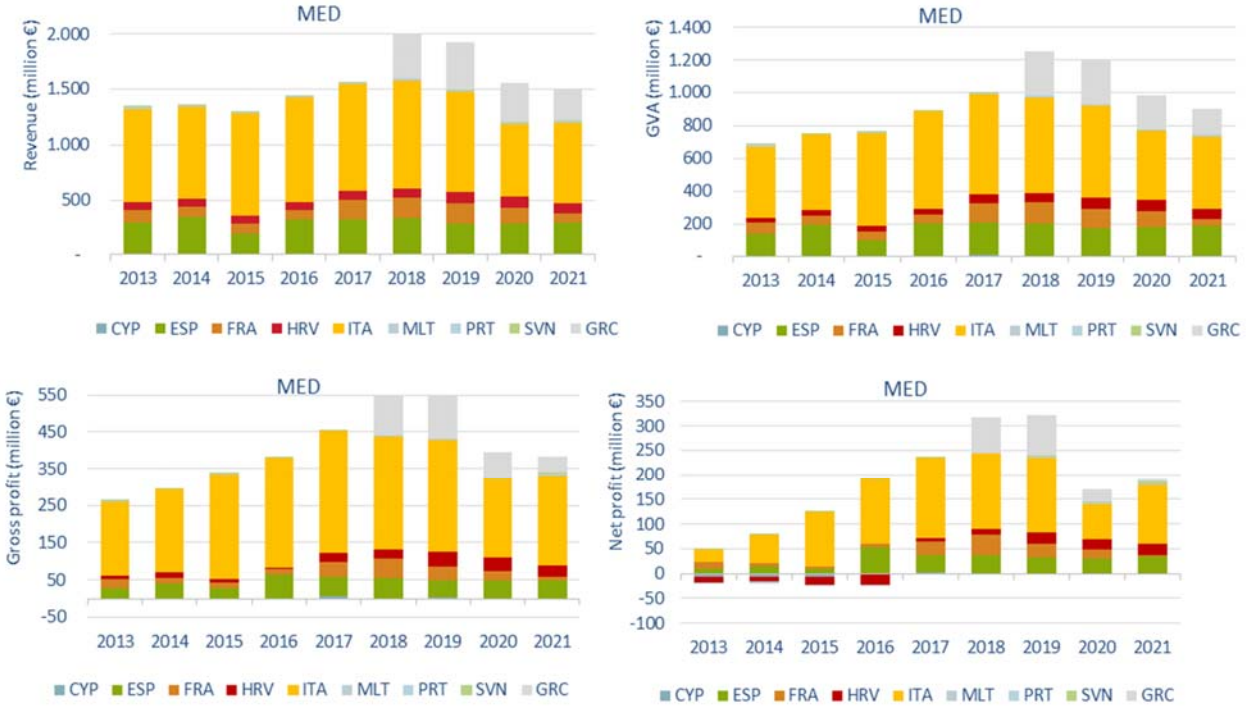
The revenue (income from landings and other income) generated by the Mediterranean fleet in 2021 was over EUR 1.5 billion, 98% of which was provided by five Member States: Italy (EUR 721 million), Spain (EUR 288 million), Greece (EUR 284 million) Croatia (EUR 98 million) and France (EUR 82 million) (Figure 3.74).

Revenue decreased in 2021 by 4% compared to 2020; in France, Croatia and Greece revenues decreased compared to the previous year, while the other Member States have seen their revenues increase. Italy has had an increase of 9% and Spain 3%.

GVA produced by Mediterranean fleet covered in the analysis was over EUR 900 million in 2021, a decrease of 8% compared to 2020. The largest decrease in GVA was recorded in France and Greece. The fleets operating in the region made almost EUR 381 million in gross profit, an estimated 3% decrease compared to 2020.

The Mediterranean fleet generated net profits in 2021 of about EUR 191 million with an improvement of 12% compared to 2020. All Member States reported net profits in 2021, except for Cyprus.

**Figure 3.75.** Trends on revenue and profits for MS fleets operating in the Mediterranean Sea.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Includes Greece from 2018.

### *Main factors affecting the performance of the fleet*

In 2021, the regional fishing fleet's economic performance did not change significantly with respect to the previous year; the COVID-19 pandemic continued to have an impact on the economic performance in 2021 as restrictions and social distance have been imposed for a substantial part of the year. In addition, restrictions imposed in different fishing areas (West Mediterranean, Adriatic Sea and Strait of Sicily) on fishing effort and the enter in force of several FRAs affected the economic profitability of several fleet segments. For these reasons, the economic performance reached before the pandemic in terms of gross profit and net profit has not been achieved in 2021. A different trend can be observed for LSF and SSCF. SSCF continued to improve on all the economic performance indicators, while LSF registered a decreased trend in GVA and gross profit, mainly due to a 4% reduction in the value of landings and a +20% increase in energy costs. The positive trend in SSCF can be explained by an increase in other income, mainly in Greece and Italy, linked to related activities such as fishing tourism and to the increase of the average price of landings. The SSCF sold at higher prices compared to the large-scale fleet thanks to shorter fish supply chain, direct sales to end consumers and to restaurants.

**Factors that may have negatively affected the fleet performance in the region are:**

- Stock status: Mediterranean fisheries are highly multi-specific (mixed) and many of the stocks under assessment are reported as overexploited. According to the STECF, only very few demersal stocks are currently being sustainable exploited, even if the recent trend shows some little improvements both in biomass and in the ratio F/FMSY for some stocks and in some GSAs.
- The marine resources and ecosystems of this region have come under increasing pressure in recent years, driven by diversification and intensification of marine and maritime activities. In addition, competition of the EU fishing vessels with vessels from other countries that do not have to follow EU legislation and restrictions is perceived as growing by fishermen.
- Fishing sector is losing social and economic importance at local level: in 2021, the number of active vessels decrease by 4% compared to 2020 and this led to a job loss of about 3 000 fishers; factors such as the high average age of fishers, the difficulty in attracting the younger generations, the poor working conditions and low wages severely affected the fishery sector in the region. Inefficient vessels with poor economic performance, exit from the sector or stay inactive. EMFAF introduced permanent cessation measures by scrapping the fishing vessel or by decommissioning it; the implementation of this instrument may lead to an additional reduction of the active vessels in the short period.
- Energy efficiency has not improved in the region; this is due to a low level of investment in new fishing gears and equipment with lower environmental impact.
- Annual wages and salaries decreased, mainly in LSF; the reduction can be linked to the negative trend in revenues as, in most countries, labour costs are directly related to revenues and variable costs as the traditional based income sharing system between the ship-owner and the crew is the most prevalent.

**Factors that may have contributed to an improved situation include:**

- High average prices: in 2021, an increasing trend in prices has been registered for small pelagic species (anchovies and pilchards) and giant red shrimps. For the first, the role of Producer Organizations has improved in recent years, with the adoption of initiatives aimed at improving product quality and a better control of the supply. For the giant red shrimps, the introduction of innovative market strategies, including the implementation of labelling and certification schemes helped the demersal trawlers to add value to the fishery product.
- Increase of the EU quota for bluefin tuna: this impacted positively the profitability of purse seiners and longliners involved in tuna fisheries. In 2021, in terms of value, bluefin tuna was the first most important species in the region (increase of 11% in value of bluefin tuna landings compared to 2020).

*Regulation and fisheries management in the region*

The management of Mediterranean fisheries was mainly based on technical measures that control fishing effort by limiting the capacity and the activity of the fleet. Since 2019, significant advances have been made in terms of managing fisheries resources, with the adoption of several multiannual management plans; according to GFCM (FAO, 2022), management plans and spatial and technical measures is providing tangible results in reducing unsustainable fishing pressure for key species; one of the direct impact of this MAPs has been the reduction of effort (expressed in sea days) in LSF (-12% in 2021 compared to 2013-2020 average).

For the Western Mediterranean, the Multi-Annual Plan for demersal stocks, adopted in June 2019, introduced combined measures to achieve the goal of sustainable fisheries management by 1 January 2025: temporal and permanent closures of fishing areas and a reduction of trawling fishing effort by 7% in 2022.

In the Adriatic Sea, two GFCM Recommendations (GFCM/44/2021/20 and GFCM/44/2021/1) established a multiannual management plan for small pelagic stocks and for key demersal stocks; both the plans introduced effort regime in terms of fleet capacity for pelagic fisheries and maximum allowable fishing days for demersal fisheries.

Finally, in the eastern-central Mediterranean, GFCM adopted two multiannual management plans for sustainable trawl fisheries targeting giant red shrimp and blue and red shrimp; as a consequence, fishing opportunity for 2023, for the first time, introduced catch limits to manage Mediterranean species with

high commercial value (i.e. deep-water shrimps) in the Strait of Sicily, the Ionian Sea and the Levant Sea.

Regarding spatial management measures, to date, ten FRAs have been established by the GFCM, including one large deep-water FRA below 1 000 m (Bari Canyon), among these, the Jabuka/Pomo Pit fisheries restricted area, the first to be introduced in 2017, is considered an example of best practice in transnational cooperation and in the integration of the views of fishers and stakeholders in the implementation of spatial protection measures. The socio-economic impact of this spatial based approach should be relevant to the coastal communities; for this reason, concerns arise from fishermen regarding the lack of information on the economic impact of the FRAs for fishermen communities.

*Status of important stocks*

Fishing pressure in the Mediterranean and the Black Sea has decreased on average by 21% over the last decade and, for certain priority species subject to management measures, by as much as 75% (FAO, 2022). Despite this, most commercial stocks (73%) are fished outside biologically sustainable limits, and fishing pressure is still twice the level considered sustainable ($F/F_{MSY}$ = 2.25) (FAO, 2022).

Since 2012, the average fishery exploitation ratio in the Mediterranean and the Black Sea has consistently decreased. A number of stocks of priority species (e.g. European hake in the Strait of Sicily and common sole in the Adriatic Sea) have consistently shown improvements in their exploitation ratios over recent years (FAO, 2022).

The stock assessments in the Adriatic, Ionian and Aegean Seas indicate that 5 out of the 15 stocks are being significantly overfished (among these European hake, Spottail mantis shrimp and Deep water shrimp in the Adriatic), 8 are being fished close or at $F_{MSY}$ and 2 are under-exploited. In addition, in 2021, out of the 5 overfished stocks, two are behind transition to $F_{MSY}$ in 2026 the other three are not currently in a MAP; in the Western Mediterranean Sea, the assessments indicate that 13 out of the 15 stocks with quantitative advice are being overfished, 4 are being fished close or at $F_{MSY}$, and 2 are under-exploited (STECF-22-16 and STECF-22-09).

*TAC development of main species*

The current management approach to highly migratory species in the Mediterranean concerns bluefin tuna (Thunnus thynnus), swordfish (Xiphias gladius), and albacore (Thunnus alalunga). The 2018-2020 recovery plan (Recommendation 2017-07) provides an increase of the annual TAC for bluefin tuna stock; the EU quota was increased to 19 360 tonnes in 2020 (121% increase compared to 2014 EU quota) and set at 19 312 tonnes in 2021 and 2022. The fleet segments targeting this stock (purse seiners and longliners) were positively affected by this increase; in addition, the average price remains on a high level (about 10.00 euro/kg), despite the largest production.

A 15-year recovery plan was implemented for swordfish in 2017. A TAC of 6 560 tonnes for swordfish in the Mediterranean was set for 2021 (Council Regulation (EU) 2021/92), and allocated to all EU Mediterranean countries apart from Slovenia as is the case for bluefin tuna. The TAC has been reduced since 2018, to achieve a reduction of 15% in five years. Swordfish is among the most valuable commercial species in the Mediterranean Sea; the price (9.00 euro/kg) remains quite stable in the last 3 years.

The pelagic fleet segments operating in the Adriatic Sea have to respect a catch limit for anchovy and sardines (set at 91 698 tonnes in 2022 according to Council Regulation (EU) No 2022/110). Except for the indication that the catch for Slovenia should not exceed 300 tonnes, the quota has not been allocated among Croatia and Italy. Small pelagic species are the main resources of the Adriatic Sea, accounting for a large part of the total catches and revenue.

*Landing obligation*

The landing obligation came into force gradually, starting in 2015, with full implementation since January 2019. In the case of Mediterranean Sea all species with a MCRS (minimum conservation reference size) according to part A of annex IX of Regulation 2019/1241, were subject to this LO. Derogations were in force for small-pelagic species and for demersal species.

Several ongoing projects in the region are aimed at providing more knowledge on selectivity, gear technology and fleet behaviour in relation to the stocks status and fleet economic performance with the aim to minimize discard rates through innovative technologies and fishing practices.

IMPLEMED project (Improving the selectivity of trawl gears in the Mediterranean Sea to advance the sustainable exploitation pattern of trawl fisheries) had the objective to test selectivity devices aimed at improving the exploitation pattern and reducing discard rates of regulated species. A cost benefit analysis was applied to evaluate the economic impact on a single vessel of the new gear configurations in the short term. Projections in terms of losses of the gross and net profits and the gross value added showed that, the implementation of one of the technical devices analysed by a single vessel would produce losses. These losses are expected to be very relevant for some fleet segments, determining an economically unsustainable condition with a negative net profit and a likely exit of the vessels from the fleet. The results of IMPLEMED confirmed that selectivity studies are associated with high variability in the results; therefore, there is the need to continue in collecting data, increasing the number of experiments for each species, both at spatial and temporal level.

### Description of relevant fisheries in the region

*Small-scale coastal fleet*

The SSCF in the Mediterranean represents 80.7% of the total fleet by the number of vessels and 58.8% of the employment (55.5% of the FTE). In 2021, there were 25 104 small-scale vessels following a decreasing trend (Greece 30%, Italy 22.8%, and Croatia 17.3%) with a combined gross tonnage of 50 713 GT and total power of 687 763 kW active in the region.

Although the SSCF deployed over 79.1% of the effort (fishing days), these vessels landed only 15.6% by weight and 27.7% by value, following a slight increase compared to 2020. The Greek SSCF deploys 41% of the effort (fishing days) and follows the Italian SSCF with 13%. The average landing weight per fishing day was 18 kg for SSCF compared to 370 kg of LSF.

SSCFs are essential from a social point of view. In 2021, 33 385 fishers were directly employed in the Mediterranean SSCF, corresponding to 21 424 FTEs, presenting a slight increase (6%) compared to 2020. Most of them are family-based enterprises. Two Member States represented major employers: Greece with 10 640 FTEs and Italy with 6 537 FTEs. Greece faced a significant decrease (by 8% in FTEs). Annual average wages and salaries in 2021 for fishers in the SSCF were EUR 9 059, and for LSF, it was EUR 18 889. Average wages in SSCF and LSF decreased by 14% and 5%, respectively, relative to 2020. The SSCF in the Mediterranean follows a decreasing trend in terms of active vessels and employment. Moreover, it is crucial to mention the role of women often through unpaid labour that supports the SSCF.

The SSCF in the Mediterranean involves a significant number of fishing techniques (static nets like trammel nets, gillnets, set longlines, pots, and traps) targeting a variety of species, including common octopus (mainly Italy, Croatia, Greece, Spain, France, and Malta), European hake (mostly Italy, Croatia, Spain, and France), gilthead seabream (mainly France, Italy, Greece, Spain, and Croatia), red mullet (mainly Italy, Spain, France, Greece, and Croatia) and surmullet (mainly Cyprus, Greece, Italy, France, Malta, and Spain). Other target species include common cuttlefish (mostly Italy, Croatia, Greece, and Spain) and common sole (mainly Croatia and Slovenia). The main SSCF fleet segments in terms of vessels are the Greek DFN and HOK, Italian and Croatian PGP, corresponding to more than 60%, and in terms of FTEs, to more than 40%.

The higher value achieved by the SSCF (compared to the LSF) appears to reflect higher prices linked to differences in quality, freshness, product size, and different marketing channels. In addition, the SSCF generally operates through very short supply chains.

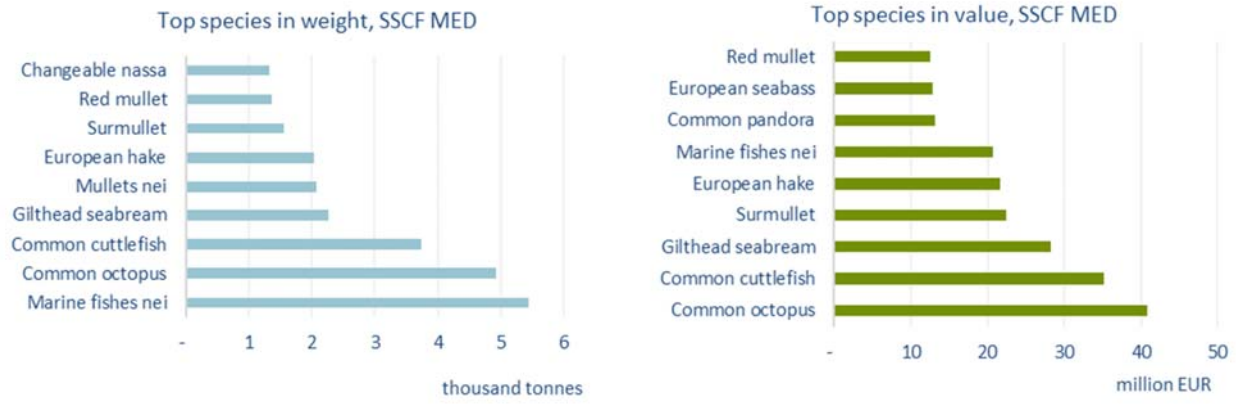
In 2021, SSCF vessels generated 15.6% of the landed weight and 27.7% of the landed value. The landed weight decreased by 5.8%, while the value increased by 10.9% compared to 2020. The total weight landed by the SSCF was 54 million kg. The weight of landings had a decreasing trend for many of the top species in 2021, like marine fishes nei (-53%), European hake (-15%), gilthead seabream (-14%), changeable nassa (-11%), compared to 2020 with the exemption of surmullet (+53%), Common octopus (+15%) and mullets nei (+21%). The value of landings has also faced a slightly increasing trend (+10.9%), but some had an increased value, like common spiny lobster (+34%), common octopus (+31%), European seabass (+22%), common cuttlefish (+12%), while others went down like Swordfish (-11%) and European hake (-6%). (Figure 3.76).

The Mediterranean SSCF generated 31% of the revenue (EUR 464 million) in 2021. GVA was around EUR 300 million (33% of the region), with a gross profit of EUR 106 million (28% of the region) and a net profit of EUR 49 million. The economic performance of SSCF in the Mediterranean improved after the impacts of the Covid-19 pandemic. Labour productivity (GVA per FTE) was EUR 14 046, a slight increase

compared to 2020. GVA to revenue reached 65%, gross profit margin 23%, and net profit margin 10.7% significant improvement in 2021 compared to 2020.

Overall, the economic performance of the SSCF had a positive net profit margin in the region but followed a decreasing trend. All the Mediterranean SSCF segments provide positive economic performance, with only one exception of the Cypriot SSCF. The Italian SSCF generated the highest net profit at EUR 120 million unless the deteriorated performance was faced during the last years.

**Figure 3.76** Top 10 species landed by SSCF, 2021.



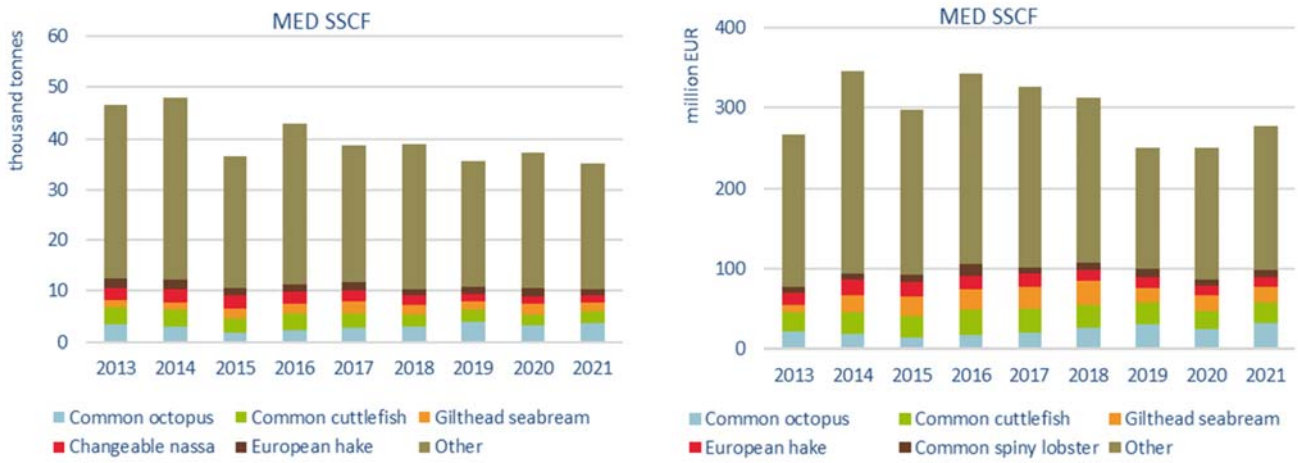

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Includes Greece.

Higher average prices mainly drove the higher value of landings due to the use of other market channels like short supply chains or new attractive ways to contact consumers (e.g. the use of an interactive website connected with mobile technologies to inform consumers in real-time of the direct sales possibilities in their local area).

Among problems that negatively still affect the economic performance of small-scale fishers, there are:

- Competition with an increasing number of recreational fishers usually fish in coastal areas and sometimes illegally sell their catch at low prices.
- The conflict between the small-scale and large-scale fleet.
- Older age profile, if compared with LSF employment: there is a low generational change because small-scale fisheries, less rewarding than large-scale ones, are less attractive.

**Figure 3.77** Trends on landings for the top species in landed weight and value for SSCF operating in the Mediterranean Sea.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Excludes Greece.

*Large-scale fleet*

In 2021, the LSF fishing in the Mediterranean consisted of 6 019 vessels (19.3% of the overall Mediterranean fleet), with a total tonnage of 230 875 GT and engine power of 1 084 million kW, representing 82% and 61.2%, respectively. Italy, Spain, Croatia and Greece have the most important fleets regarding the number of vessels, total tonnage, and engine power. These four Member States also had the region's largest number of active vessels, with 3 348, 952, 870, and 638 active vessels, respectively. Between 2020 and 2021, the number of vessels decreased by 4.5%.

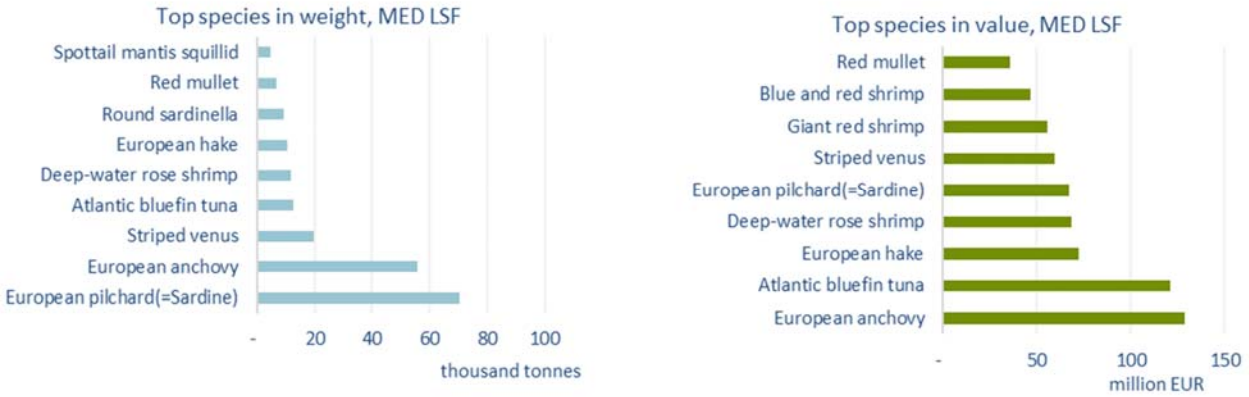
LSF vessels generated, by far, the highest landed weight (84.4% of the total) and 72.3% of the landed value. The total weight landed by the LSF was 277 221 tonnes (-5.8% compared to 2020). With an estimated revenue of EUR 1.03 billion, these fleets recorded almost EUR 598 million in GVA and a gross profit of EUR 274 million. In addition, GVA to revenue and GVA per FTE reached 57.9% and EUR 34 893, respectively. In 2021, LSF registered a decline in all the economic performance indicators; GVA decreased by 15% and gross profit by 14%.

The main fleet segments regarding the number of employees were the Italian demersal trawlers from 12-18m, 18-24m and 24-40m, the Spanish demersal trawlers from 18-24m and the Greek DTS24-40m. These segments represented 20% of the overall LSF-FTEs.

Small pelagic species accounted for more than 40% of the weight of the total landing of the area and 16% of the landings value in 2021. Croatia, Italy, and Greece led the catch of sardines, while anchovies were mainly landed by the Italian pelagic fleet, followed by the Spanish and Greek fleets.

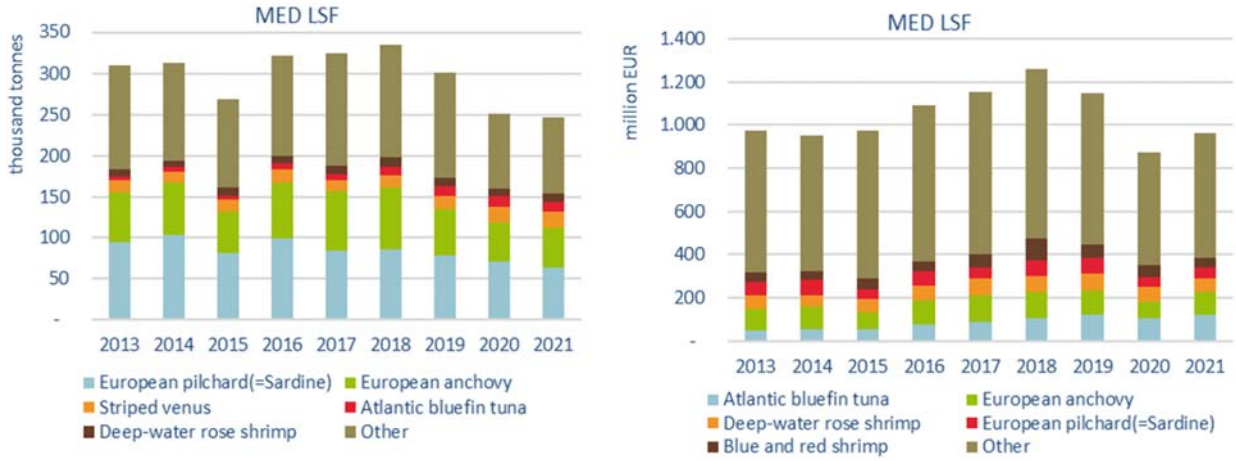
The Mediterranean LSF is also heavily dependent on some demersal species, such as the European hake, blue and red shrimps, deep-water rose shrimp, and giant red shrimp, combined accounted for 21% of total landings value in 2021. In addition, bluefin tuna represented 12% of the total landings value (Figure 3.78).

**Figure 3.78** Top 10 species landed by MS LSF operating in the Mediterranean Sea, 2021




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Includes Greece.

**Figure 3.79** Trends on landings for the top species in landed weight and value for MS LSF operating in the Mediterranean Sea.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Excludes Greece.

*LDF Mediterranean with dependency on ICCAT species*

Activity of the LDF in the Mediterranean is largely directed towards bluefin tuna by purse seiners and towards swordfish by longliners. Landings of bluefin tuna have increased over the last few years.

**Table 3.1** Estimated summary results for the Mediterranean EU ICCAT fleet, highlighting segments with high dependency on activity in the ICCAT RA, 2021.

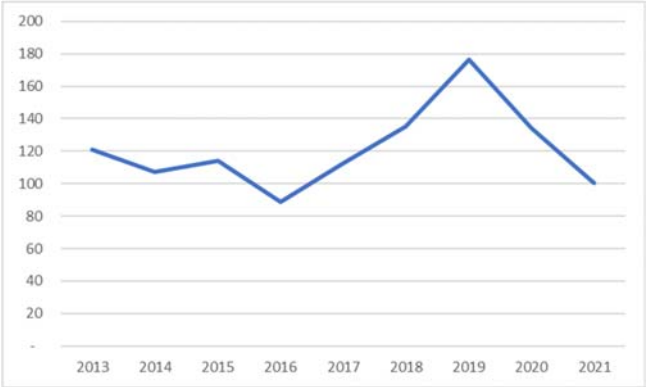
| ICCAT (EU LDF Mediterranean) | MS | Fleet segment | Number of vessels | FTE | REVENUE (EUR) | GVA (EUR) | Gross Profit (EUR) | Net profit (EUR) |
|---|---|---|---|---|---|---|---|---|
| 2021 | ESP | ESP MBS PS 2440 NGI * | 20 | 250 | 24,997,457 | 21,259,290 | 12,688,388 | 6,833,824 |
| 2021 | ESP | ESP MBS HOK1824 LLD * | 19 | 97 | 7,689,416 | 4,680,602 | 1,741,406 | 1,734,079 |
| 2021 | ITA | ITA MBS HOK1824 NGI * | 35 | 87 | 6,198,774 | 4,291,673 | 2,693,408 | 2,690,269 |
| 2021 | MLT | MLT MBS MGO1824 NGI * | 3 | 5 | 358,821 | 263,452 | 225,813 | 225,676 |
| 2021 | MLT | MLT MBS HOK1824 NGI * | 11 | 39 | 1,836,773 | 1,,355,513 | 1,098,969 | 1,098,164 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). ITA MBS PS240XX and FRA MBS PS2440 not included

Figures below present the main trends of the selection of the fleet segments representing the LDF (over 18 metres with a >=20% landings value dependency on ICCAT major species) selected for the Mediterranean.

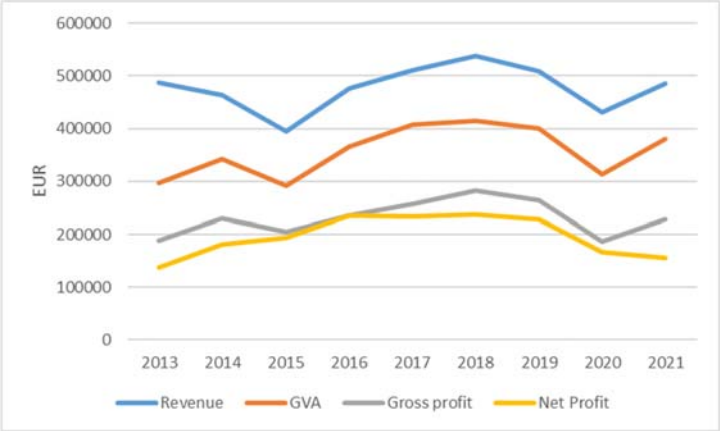
The selected number of vessels are 100 which implies a big reduction from those obtained in 2020 (134).

**Figure 3.80** Trends on number of vessels for the EU Mediterranean ICCAT LDF.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)). FRA MBS PS2440 not included in 2021

**Figure 3.81** Trends economic indicators for the EU Mediterranean ICCAT LDF combined (by average vessel)




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). ITA MBS PS240XX and FRA MBS PS2440 not included

Given the reduction in the number of vessels selected all the aggregated economic indicators present a downward trend. Therefore, it has been decided to calculate the average per vessel. These average indicators also present a better situation than in 2020 for revenue, GVA and gross profit although a reduction in net profitability.

*Performance by fleet segment*

Demersal trawlers and purse seiners segments are the most important Mediterranean fleet segments in terms of economic performance. They include 38 segments out of the 116 active ones in the region, representing 13% of the number of vessels; covered 15% of the effort deployed (DaS); 35% of jobs; 72% of energy consumption; generated 54% of the landing value (EUR 765 million); 47% of the GVA (EUR 425 million); and 47% of the gross profit (EUR 179 million). Italy and Spain have the most important demersal trawlers and purse seiners fleet regarding the number of vessels, landing value, and GVA.

At the fleet segment level, the Italian demersal trawlers from 12-18m, with 3.2% of the number of vessels, generated the highest revenue, EUR 109 million, or 7.3% of the total from the Mediterranean region in 2021. The Italian demersal trawlers from 18-24m followed them in importance with 7% of the total revenue produced (EUR 113 million). The Italian demersal trawlers from 24-40m produced 5.1% of the revenue (EUR 76 million), and the Spanish demersal trawlers from 18-24m the 4.8% of the revenue (EUR 71 million). The same fleet segments also generated the highest GVA, EUR 199 million combined, or 22% of the total GVA generated by the regional fleet.

Purse seiners lead in terms of GVA per vessel. The top two segments amount to EUR 0.77 million GVA per vessel, while the average of all Mediterranean segments is EUR 28 908. The Maltese purse seiners from 18-24m and Spanish purse seiners from 24-40m produced the highest value, on average EUR 0.77 million per vessel and high GRP margins, followed by the Greek purse seiners with GVA EUR 0.28 million per vessel and 34% gross profit margin and Italian from 24-40m with GVA EUR 0.28 million per vessel and 33% gross profit margin.

Conversely, 19 out of 116 segments with negative gross profit represented 37% of the number of vessels and 26% of the number of jobs (14 805 jobs and 9 698 FTEs). Most of these vessels are included in segments of vessels using drift and/or fixed netters, hooks and polyvalent passive gears (11 503 vessels).

## 3.6 Black Sea

### *Regional Details*

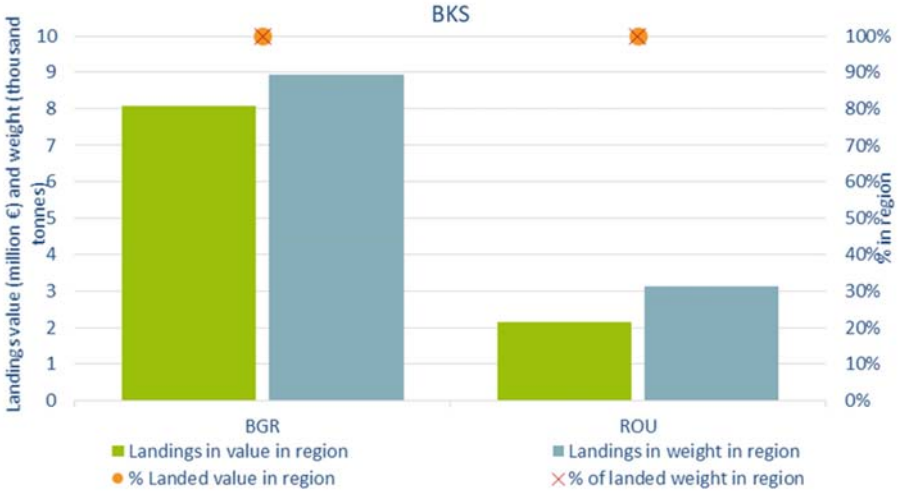
The Black Sea region covers FAO fishing area 37.4. Two Member States were involved in the Black Sea fisheries in 2021: Bulgaria and Romania. All landings by the Bulgarian and Romanian fishing fleets originated only from the Black Sea and both fleets operate mainly in waters under their respective national jurisdictional.

A comprehensive economic analysis, including both coastal Member States fishing fleets, was completed using data on the structure, activity and production for all vessels collected by Bulgaria and Romania. The data collection programme in place includes all economic and social variables.

A trend analysis is provided for the period 2013-2021. Tables in the Annex 2 contain a summary of the economic performance of the Black Sea fleet by Member States, fishing activity and fleet segment, respectively.

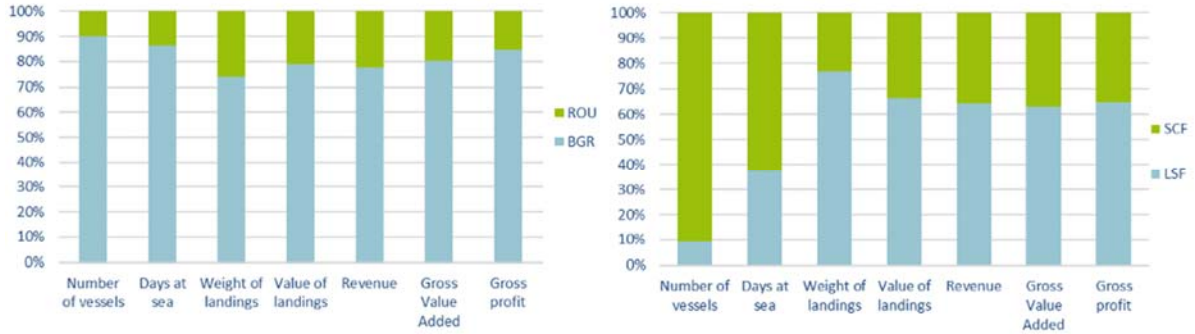
There are two TAC species in the Black Sea: turbot and sprat. The quota for turbot is divided equally between Bulgaria and Romania. For sprat, Bulgarian and Romanian national quotas are set at 70% and 30% of the total EU quota, respectively.

**Figure 3.82.** Importance of the Black Sea for MS fleets in terms of landings in weight and value, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.83.** Share of MS and fishing activity in the Black Sea, 2021



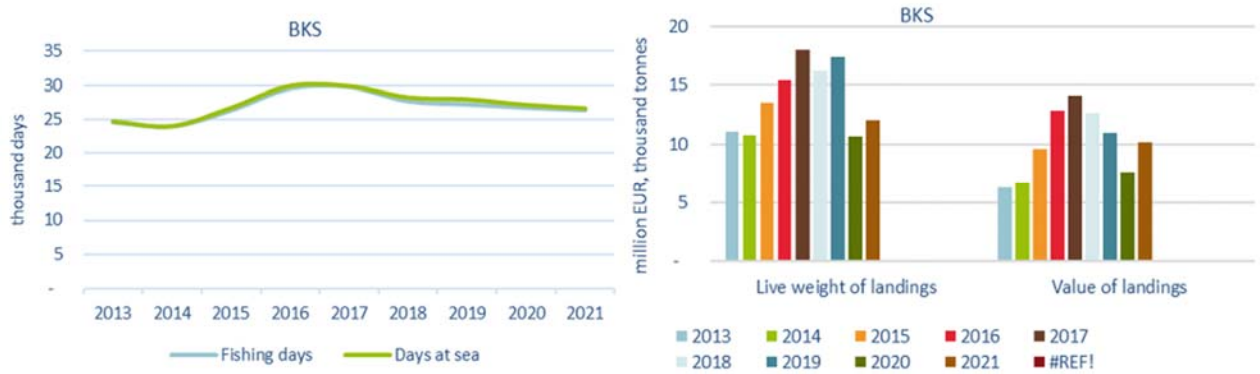

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Overview of the main results for EU Black Sea fleet*

*Fishing effort and landings*

Fishing effort in the Black Sea fleet decreased by 1% in 2021, in comparison with 2020. The increase in the number of days-at-sea during the period 2014-2017 corresponds to the gradually growing weight and value of the landings in the same years. Since 2018 the overall picture for landings in weight and the value of landings deteriorated, but in 2021 increased by 13% and 34% compared to 2020, respectively. Only Days at Sea continued with following the trend and in 2021 decreased by 2% compared to 2020 (Figure 3.84).

**Figure 3.84.** Trends on effort and landings for MS fleets operating in the Black Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

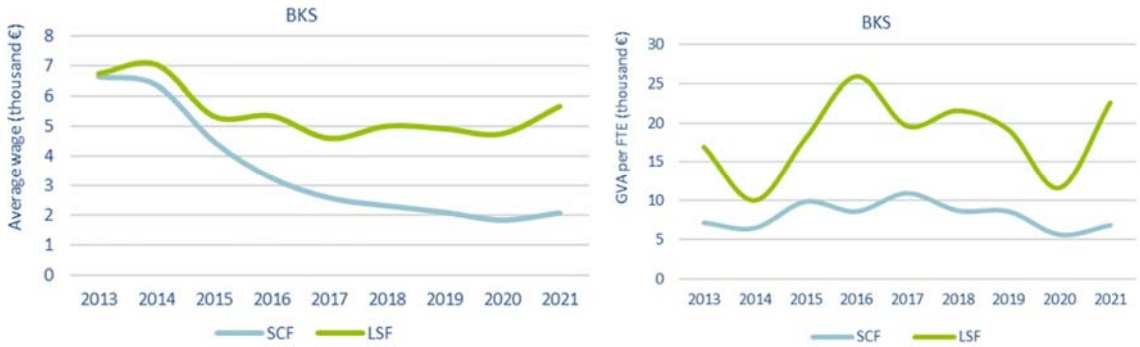
*Employment, wages and labour productivity*

In 2021 the average wage per FTE in the SSCF grew up by 13% compared to 2020 and fell by 43% to the period 2013-2020.

Wages for the LSF grew up 19% in 2021 compared to 2020. The average wage in 2021 was EUR 5 650, -20% lower compared to the highest level observed in 2014. The values of the average wages in 2021 for both LSF and SSCF showed improvement compared to 2020 but they are still lower compared to the period 2013-2020 (Figure 3.85).

Labour productivity (GVA/FTE) in the LSF segment was increasing gradually from 2014 to 2016, when it reached its' highest value around EUR 26 000. From 2017 to 2020 fluctuating in wide ranges and in 2021 reached EUR 22 690 which is 94% increase compared to 2020 and 27% compared to 2013-2020 period. The situation for the SSCF is different from the LSF, labour productivity was fluctuating with much lower ranges in the period 2013-2019. In 2020 labour productivity decreased significantly reaching the lowest value for the indicator in the period analysed while in 2021 increased by 22% compared to 2020.

**Figure 3.85.** Trends on average wage and GVA per FTE by fishing activity for MS fleets operating in the Black Sea

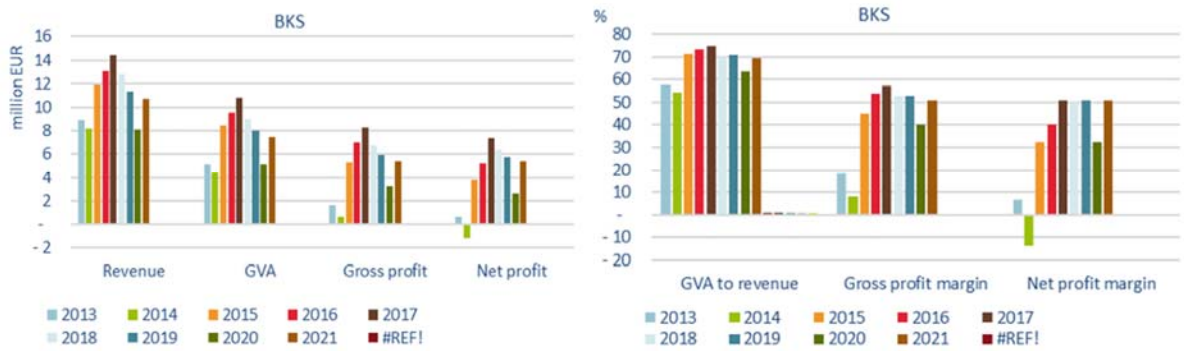



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

Revenue in 2021 was estimated at EUR 10.7 million, increasing by 32% compared to 2020 but decreasing by 4% compared to the average 2013-2020 period. GVA produced was EUR 7.4 million, representing an overall increase of 45% compared to 2020 and 2% decrease to the average for the period from 2013 to 2020. Gross profit was estimated to be EUR 5.4 million, a 68% increase compared to 2020. Net profit also increased in 2021 reaching EUR 5.4 million which was double then 2020 (Figure 3.86).

**Figure 3.86.** Trends in revenue and profits for MS fleets operating in the Black Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Trends by Member State fleet*

*Fleet capacity and employment*

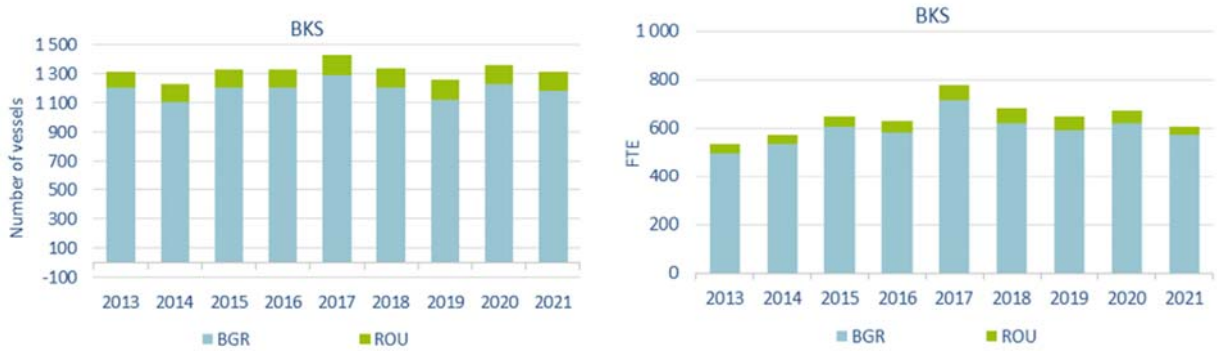
Trend in the number of vessels in the Black Sea has remained relatively stable. The lowest number of vessels was registered in 2008 and the highest in 2017. The 4% decrease in the number of vessels was due to the decrease in the Bulgarian vessels in 2021, while the number of vessels of Romania was almost the same in 2018, 2019, 2020 and 2021 (136, 138, 130 and 130 vessels, respectively). Following the 4% decrease in the number of vessels in 2021, the days-at-sea for 2021 decreased by 2%, this is continuation of the trend for decrease of the days at sea in the region since 2017 (Figure 3.87).

Total employment in 2021 was estimated at 1 958 jobs, corresponding to 608 FTEs.

Total employment in both countries is higher in the SSCF due to the larger number of vessels, but the FTE per vessel ratio is lower, 0.34, compared to 1.71 in the LSF, due to the seasonal nature of the small-scale fishery and the lower effort.

The total employment decreased by 11% between 2020 and 2021, due to the decrease of the number of total employees in the Bulgarian fleet. The decrease in the FTE by 10% followed the decrease in the total employment.

**Figure 3.87.** Trends in the number of vessels and employment (in FTE) for the MS fleets operating in the Black Sea



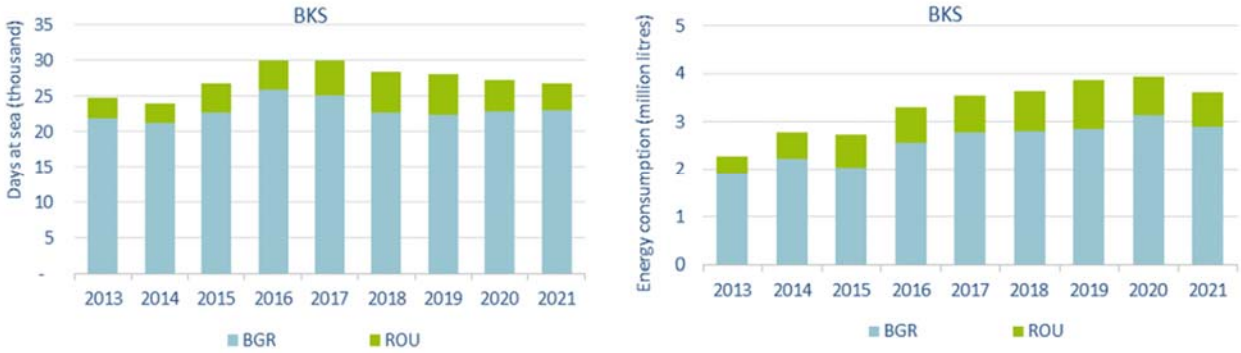

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

*Fishing effort*

The EU Black Sea fleet spent 26 677 DaS in 2021, which is a 2% decrease compared to 2020 but 12% more than the average for the period 2008-2019. The decrease in the region is mainly due to the Romanian days which decreased by 17% compared to 2020, while the days spent by the Bulgarian fleet increased by 1% only. The Bulgarian fleet accounted for 86% of the days, while the Romanian contribution was 14%. (Figure 3.88).

While the number of days-at-sea was stable in the period from 2010 to 2014, there has been a gradual increase in 2015 and 2016. The consistent number of days-at-sea in 2016 and 2017 can be explained by the growing interest in harvesting sea snails. The decrease in the last four years was mainly due to the reduction of the number of vessels in Bulgaria and decrease in DaS in Romania.

**Figure 3.88.** Trends on fishing effort (in days-at-sea) and energy consumption for MS fleets operating in the Black Sea



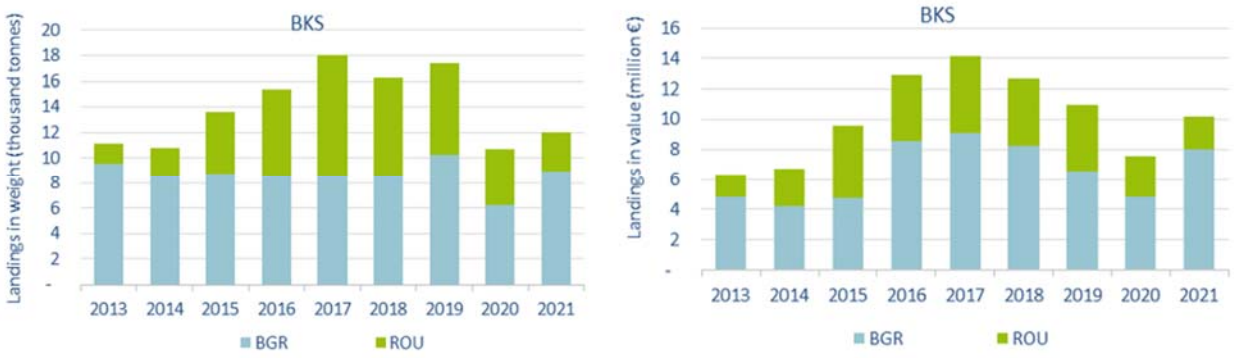

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

*Landings and top species*

The weight and value of landings generated by the Black Sea EU fleet in 2021 amounted to approximately 12 046 tonnes and EUR 10.21 million, respectively. In terms of landed weight, Bulgaria landed 8 919 tonnes and Romania 3 127 tonnes with the value of landings being EUR 8.06 million and EUR 2.14 million, respectively. The distribution of both the value and weight of landings, by country, is shown in Figure 3.89.

In 2021, LSF accounted for 77% of all landings by weight, equivalent to 67% of the landed value. Although over 63% of the effort was deployed by the SSCF, these vessels landed only 24% by weight and 33% by value. However, the SSCF is more important from a social point of view than the LSF, representing almost 80% of the total employment and 66% of FTEs.

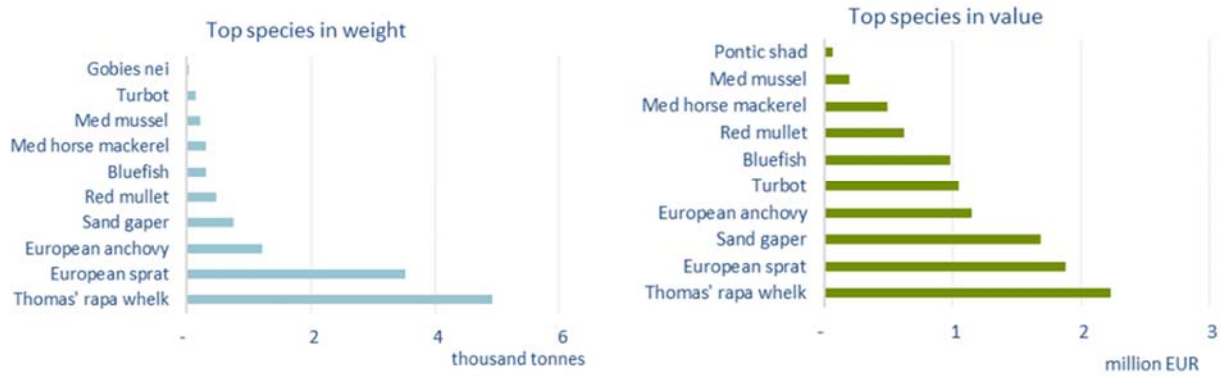
**Figure 3.89.** Trends on landings in weight and value by MS fleets operating in the Black Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the main species (by weight) were sea snails (4 912 tonnes), followed by European sprat (3 526 tonnes), European anchovy (1 215 tonnes) and sand gaper (758 tonnes) (Figure 3.90).

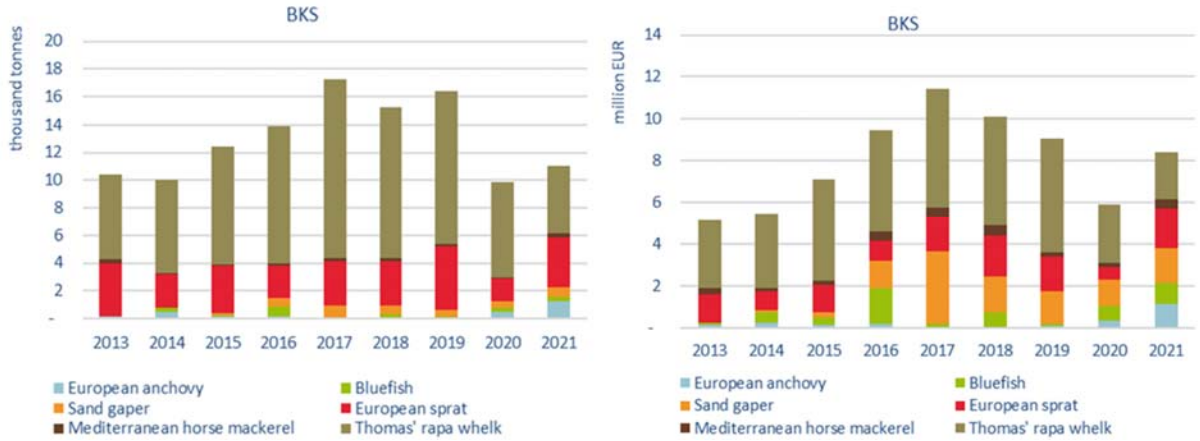
**Figure 3.90.** Top 10 species in landed weight and value for MS fleets operating in the Black Sea, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In value of landings, the most important species were sea snails (EUR 2.23 million), European sprat (EUR 1.87 million), sand gaper (EUR 1.68 million), European anchovy (EUR 1.14 million) and turbot (EUR 0.87 million) (Figure 3.90).

**Figure 3.91.** Trends in landings of the top species in landed weight and value for MS fleets operating in the Black Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

The revenue generated in 2021 was EUR 10.7 million, 78% of which was obtained by the Bulgarian fleet (EUR 8.3 million). The amount of GVA was EUR 7.45 million of which EUR 1.45 million were added by Romanian and EUR 6 million by the Bulgarian fleet.

Total gross profit for the region was estimated at EUR 5.43 million. The Bulgarian fleet generated the larger gross profit in 2021 amounting to EUR 4.6 million (Figure 3.92).

Three of Bulgaria's SSCF segments and one Romanian LSF segment reported gross losses in 2021: vessels between 6 and 12 metres using passive gears only; vessels under 6 metres and vessels from 6 to 12 metres using hooks and vessels using polyvalent active and passive gears 24-40 metres. The three Bulgarian SSC segments represent 38 vessels (3%) from the Bulgarian fleet. In the Romanian segment PMP 2440 there is only one vessel. The gross losses of these segments were probably due to the low fishing activity of the majority of the vessels in them. These amounted to -EUR 177 893. Overall net

profit amounted to EUR 5.4 million in 2021, but this includes four segment that recorded a net loss (-EUR 171 418).

**Figure 3.92.** Trends in revenue and profit by MS fleets operating in the Black Sea


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

As in previous years, amongst the operating costs, the two major expenses remain crew wages costs and energy costs, accounting for EUR 2 and EUR 1.8 million, respectively. In terms of crew costs, Bulgaria was leading with EUR 1.3 million and Romanian costs were EUR 0.63 million. Regarding the energy costs, the situation was similar EUR 1.3 million for Bulgaria and EUR 0.49 million for Romania.

While the SSCF accounts for 91% of the total fleet by number (1 191 vessels) and accounts for 63% of the effort (16 747 days) it landed only 23% of the total by weight (2 808 tonnes) and 33% by value (EUR 3.4 million).

The LSF of Bulgaria was more profitable than the LSF in Romania, with gross profit margin estimated at 56.2% for the Bulgarian LSF and 28.9% for the Romanian LSF. For the SSCF the situation was similar, while the Romanian SSCF recorded a 40.9% gross profit margin, the Bulgarian SSCF generated a 53.7%.

Net profit margins were estimated at 37.7% for the Romanian SSCF and 55.7% for Bulgarian SSCF while for the LSF the Romanian fleet reported a 23.22% margin and the Bulgarian LSF 56.9%.

### *Main factors affecting the performance of the fleet*

After the improvement of the fleet's economic performance between 2015 and 2017 with an increase in both gross and net profits, in 2018 and 2019 both indicators decreased and this negative trend continued until 2020 where the level of economic profitability was decreased significantly. In 2021 both indicators showed improvement of the economic profitability with a level close to the one observed for 2019.

**Factors that may affect positively the fleet performance in the region:**

- Additional increase in the turbot quota for both Bulgaria and Romania in in last three years together with management plan for third countries fishing in the Black Sea;
- The stable average prices for some important species with significant landings as sea snail and maintaining the average prices for the other species;
- The sea snails stock in GSA 29 is fished near $F_{MSY}$, which means that fishing vessels and processing plants utilising this species could continue to provide employment in the region;

- Keeping the trend with almost stable fuel costs at the regional level is directly connected with the energy costs, which remain the major percentage of the expenses.

**Factors that may affect negatively the fleet performance in the region:**

- The weather conditions in the Black Sea, including strong winds and large temperature differences between winter and summer, significantly affect fishing activities by the SSCF, which led to a reduction of the DaS and value of landings, and of course a negative impact of the total employment;
- The LSF of both countries consists mainly of vessels with trawls and vessels with polyvalent active and passive gears. As trawling is fuel-intensive, the trend of a stable level of the days-at-sea is leading to the relevant stable energy costs.

**Other factors that affected fleet performance in the region include:**

- The Black Sea fishery is highly dependent on very few valuable species. In terms of landing weight and value, the sea snail is the most profitable species and according to the most recent available consideration from 2021, its stock in the Black Sea was considered to be outside safe biological limits. Sprat, which is the second most important fishery is evaluated as sustainably exploited;
- The GFCM has established a set of emergency measures for stocks in the Black Sea region to align the implementation of management measures by all countries operating in the region.

*Regulation and fisheries management in the region*

The recommendations adopted by the GFCM in the last 5 years have established a set of emergency measures that look to align the implementation of management measures by all countries operating in the region.

In 2021 during the postponed 44th session of GFCM number of new recommendations were adopted for the management of the fisheries in the Black Sea. Recommendation GFCM/44/2021/9 on management measures for the sustainable exploitation of sprat in the Black Sea (geographical subarea 29), Recommendation GFCM/44/2021/10 on management measures for sustainable piked dogfish fisheries in the Black Sea (geographical subarea 29) and Recommendation GFCM/44/2021/17 on a catch certificate scheme for turbot in the Black Sea (geographical subarea 29) introduced new obligations in order to insure the sustainability of the sector. All recommendations accepted during the 43rd session of GFCM in 2019 are also applicable. One Recommendation was applicable for the Black Sea: Recommendation GFCM/43/2019/3 amending Recommendation GFCM/41/2017/4 on a multiannual management plan for turbot fisheries in the Black Sea (geographical subarea 29). At the initiative of the EU, the GFCM amended recommendation GFCM/41/2017/4 which provides a multiannual management plan for turbot fisheries in the Black Sea and lays down a list of measures. The specific objectives of the multiannual management plan and transitional measures are to maintain fishing mortality for turbot within agreed precautionary reference points to achieve or maintain fishing mortality at MSY. The recommendation from 2017 established fleet management measures, management of fishing effort and monitoring, control and surveillance (MCS) programme (Note: Recommendation GFCM/41/2017/4 also repeals Recommendation 40/2016/6 see below).

The main amendment and the most important for the fisheries sector in the region was that for the years 2020–2022, the total allowable catch was increased based on scientific advice and considering the socio-economic importance of fisheries exploiting turbot and the need to ensure their sustainability.

*Status of important stocks*

Commercially important stocks for the Black Sea fisheries in 2021 remained the same as in the past decades - turbot, sea snails, sprat and picked dogfish.

During 2020 Turbot stock in GSA 29 was found to have a positive evolution of biomass and an improved or unchanged evolution of the overexploitation status. In 2021 the Working group on the Black Sea under GFCM confirm that the stock trajectory is following the increasing evolution seen in past years. In terms of landing weight and value, the sea snail is the most profitable species and since there was no stock assessment in 2018 and 2019. In view of the consistent, deteriorating, signals, qualitative advice was provided in 2021. The Black Sea's rapa whelk stock was considered in possible overexploitation and fishing mortality should not be increased on a precautionary basis. Sprat, which is the second most important fishery and the stock assessment during 2021 shows that the status was considered in sustainable exploitation. The Working group on the Black sea (WGBS) under GFCM agreed on a roadmap

towards the finalization of the benchmark. Both countries are fishing less quantity than their European sprat quotas. In 2020 and 2021 Bulgarian fleet landed 22% and 46%, respectively of the TAC, while Romanian fleet landed less than 1% in both years. For the picked dogfish in the Black Sea, there is an established catch limit agreed between both countries and the European Commission. While for the Romanian fleet it's mainly bycatch, for the Bulgarian fleet it is a target fishery. Both countries, limit their catches to 2015 catch levels and inform the European Commission quarterly of the actions taken to meet this objective.

*TAC development of main species*

Quotas for turbot and sprat TAC were introduced in 2008 following the accession of Bulgaria and Romania to the EU. The quota for turbot is divided equally between both Member States, while Bulgaria is allocated 70% of the EU sprat TAC and Romania 30%. In the period 2011-2017, the EU TACs were 86.4 tonnes for turbot and 11 475 tonnes for sprat per year.

GFCM Recommendation GFCM/43/2019/3 amended the TAC for turbot for 2018 and 2019 and set the EU share of this TAC at 114 tonnes in each of the two years.

With amendments of the multiannual management plan for turbot due to decisions taken during WGBS held in September 2019 was adopted Council Regulation (EU) 2019/2236 of 16 December 2019 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and the Black Sea. With the regulation quota for sprat remain the same while turbot quota was increased to 75 tonnes for Bulgaria, 32% compared to the previous one and for EU Black Sea countries was allocated to 150 tonnes which is 17.5% of the total quota for the basin. The other quotas were fixed to 497 tonnes (58%) for Turkey, 160 tonnes (18.7%) for Ukraine, 20 tonnes (2.3%) for Georgia, and 30 tonnes (3.5%) for others. With Council Regulation (EU) 2021/90 of 28 January 2021 and Council Regulation (EU) 2022/10 of 27 January 2022 the same fishing opportunities were fixed for 2021 and 2022 respectively in the Black Sea.

### Description of relevant fisheries in the region

*Small-scale coastal fleet*

The Black Sea fishery is dominated by SSCF vessels dispersed across 76 landing places (18 in Romania and 58 in Bulgaria). They utilise many different fishing techniques including set gillnets, hand-lines, pole-lines (mechanised or hand-operated), set longlines, drifting longlines, pots and traps, and vessels without gear (divers), all adapted to fishing seasons and fluctuations in species abundance.

The 1 191 vessels that comprise the SSCF had a combined capacity of 2 056 GT and 24 365 kW. The number of vessels in 2021 decreased by 4% compared to 2020, GT and kW decreased by 3% and 5%, respectively. These are of vital importance to the region where they make up 91% of the total fleet by number and 80% of the total employment (66% of FTE). In 2021, 1 570 fishers were directly employed, corresponding to 400 FTEs. In the majority of cases, vessels are operated by the owner or a family member.

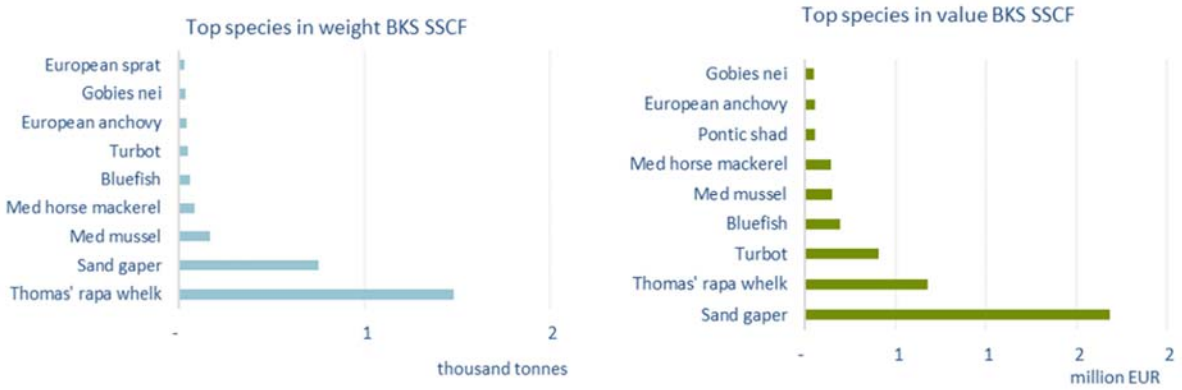
Landings by the Black Sea SSCF amounted to 23% of the total landed weight in the region and 33% of the total value. The lower value achieved by the SSCF (compared to the LSF) appears to reflect also the use of different marketing channels. The SSCF generally operates through very short supply-chains.

Even though SSCF vessels are small they are locally very important in the Black Sea. Besides generating revenue for the owner, there are vessels with a low activity where the catch is not intended for the market, but it is consumed directly by the owners and their families.

The SSCF accounted for 63% of the total DaS in the region and generated revenues of EUR 3.8 million. GVA was estimated to be EUR 2.7 million, gross profit EUR 1.9 million and net profit EUR 1.9 million. In 2021, labour productivity (GVA per FTE) increased by 22% compared to 2020 but decreased by 17% to the average for 2013 to 2020 and reached EUR 6 855.

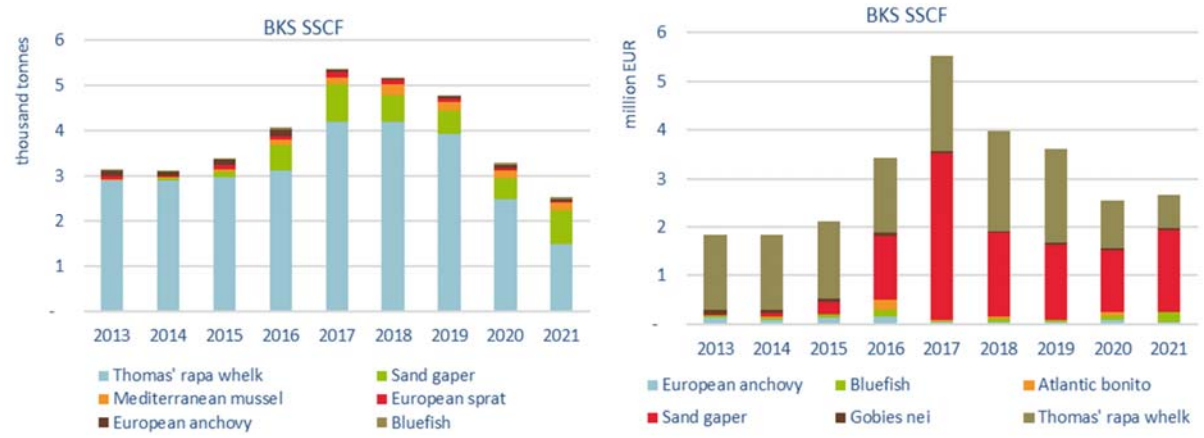
The SSCF target several species including sea snails, sand gaper, Mediterranean mussel, European sprat, European anchovy, pontic shad, turbot, gobies and Mediterranean horse mackerel. In terms of value, the most important species for the SSCF were sand gaper, followed by sea snails, turbot, bluefish and Mediterranean mussel (Figure 3.93).

**Figure 3.93.** Top 10 species landed by SSCF operating in the Black Sea, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.94.** Trends in landings of top species landed by the SSCF operating in the Black Sea




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Large-scale fleet*

In 2021, the LSF in the Black Sea consisted on 121 vessels or 9% of the entire fleet. These had a total capacity of 3 994 GT and 19 241 kW. The Bulgarian LSF represented 82% of the EU Black Sea LSF with 99 vessels while the Romanian LSF consisted on 22 vessels. The main gears used remained pelagic trawls. There were also vessels using passive and active gears during the year and vessels using beam trawls.

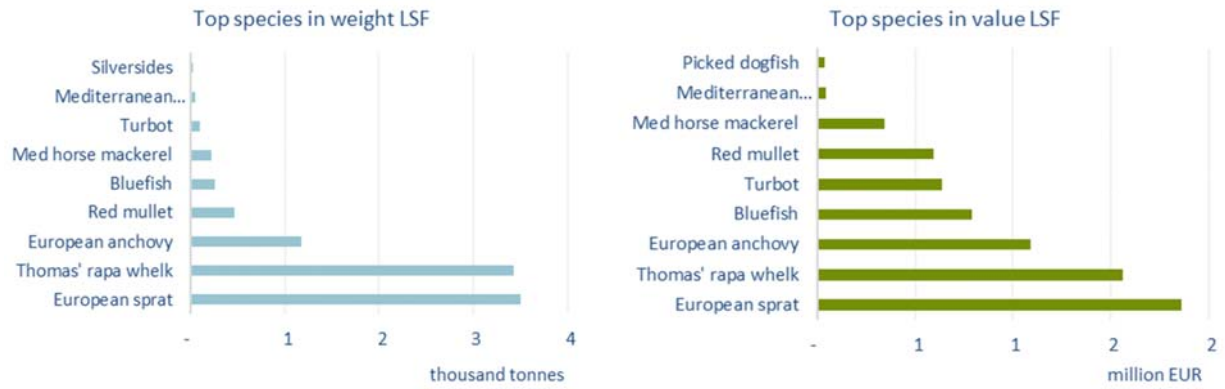
The LSF employed a total of 388 people, corresponding to 207 FTE. Total labour costs in 2021 were EUR 1.1 million and the labour productivity (GVA per FTE) increased to EUR 22 690, which is a 94% increase compared to 2020 and by 27% compared to the average the 2013 to 2020 period.

Untill 2018, the LSF accounted for 30-37% of the total DaS for the entire Black Sea fleet. However, while the proportion remained relatively constant, the total number of days in 2017 decreased compared to 2016 and 2015, in 2018 and 2019 they increased again to 10 300 and 11 300, respectively. In 2020 the DaS spent by the LSF decreased by 10% (10 200) and in 2021 they decreased by 2% (9 930) compared to 2020.

The LSF targets the same species as the SSCF with European sprat making up the highest proportion (by value and by weigh). Other important species for the LSF are sea snail with almost the same importance as sprat, European anchovy, bluefish, red mullet, turbot and Mediterranean horse mackerel (Figure 3.95).

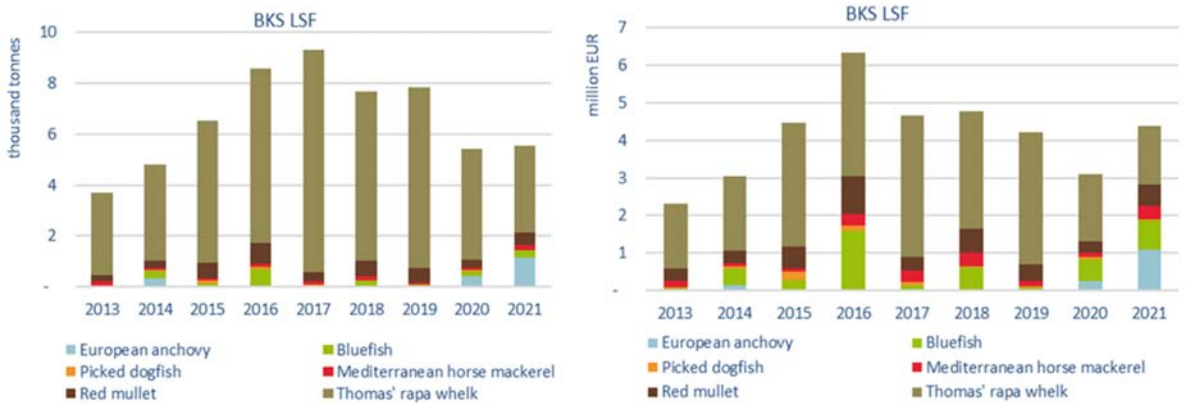
The LSF landed 77% (9 238 tonnes) of the total landed weight in the region in 2021 valued at EUR 6.8 million or 67% of the total value. This generated EUR 476 million in GVA and a net profit of EUR 3.5 million. None of the LSF segments reported a net loss in 2021. The LSF generally operates through longer supply-chains than the SSCF, but the marketing channels are more developed. In 2021, the highest landings in terms of weight and value were pelagic trawlers, followed by the polyvalent vessels with both active and passive gears. Pelagic trawlers consumed more energy than polyvalent vessels and also more energy per tonne landed.

**Figure 3.95.** Top 10 species landed by LSF operating in the Black Sea, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.96.** Trends in landings of top species landed by the LSF operating in the Black Sea, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### *Performance by fleet segment*

In terms of revenue, live weight and value of landings the top five fleet segments operating in the Black Sea (out of 20 active fleet clustered segments) represented 22% of the total number of vessels; but these five segments (three LSF segments and two SSCF segment) landed 72% of the fish, corresponding to 68% of the value of landings and revenue. These segments provided work to 656 employees, corresponding to 184 FTEs.

There were ten segments with net profit less than EUR 0.1 million (seven from the SSCF and three from LSF), which represent 35% (455 vessels), which spent 22% of the total days-at-sea for the fleet but landed 8% of the fish, corresponding to 9% of the value. These 10 segments were not so profitable, but they provided work to 622 employees or 203 FTEs.

At a fleet segment level, Bulgarian 24 to 40 metres pelagic trawlers generated the highest revenue from the Black Sea region in 2021 (EUR 2.29 million), followed by the Bulgarian vessels using polyvalent active and passive gears for vessels 6 to 12 metres (EUR 1.33 million), Bulgarian pelagic trawlers 12 to

18 metres (EUR 1.3 million) and Romanian 12 to 18 metres segment with polyvalent active and passive gears (EUR 1.18 million).

There are 11 segments from the SSCF (9 from Bulgaria and 2 from Romania) which represent 91% of the fleet, but generated only 36% of the revenue.

## 3.7 EU Outermost Regions (OMR)

### *Background and regional details*

The EU Outermost Regions (OMR) refers to the nine remote territories belonging to three Member States: six French territories - Guadeloupe, French Guiana, Martinique, Mayotte[11], Reunion, and Saint-Martin; two Portuguese autonomous regions - Azores and Madeira and one Spanish territory - Canary Islands. All the outermost regions are islands, archipelagos except for one land territory (French Guiana), and are located in the western Atlantic Ocean, the Caribbean and Amazonian basins, and the Indian Ocean.

Under the fleet economic data call, Member States identify fleet segments based in the OMRs by allocating a geographical indicator to the fleet segment definition, as provided in Table 3.2. All fleet segments identified with a geographical indicator pertaining to one of the OMRs are considered.

**Table 3.2** Geographical indicator codes used in the EU-MAP data calls to identify OMR fleet segments

| Geo Code | Name | Definition |
|---|---|---|
| P2 | Madeira | Portuguese outermost region (autonomous region) |
| P3 | Azores | |
| IC | Canaries | Spanish outermost region (autonomous community) |
| GF | French Guiana | French outermost region (overseas department) |
| GP | Guadeloupe | |
| MQ | Martinique | |
| MF | Saint-Martin | French outermost region (since 2009) (overseas community) |
| RE | Reunion | French outermost region (overseas department) |

Source: EWG 23-07

### *Data issues*

Data availability issues have to be considered:

No data was provided for Saint Martin. Economic data are missing for French Guiana segment DTS18-24m.

- Data for Canaries islands and Mayotte has been only available since 2017 and 2015, respectively.
- Data sets have improved over the last years although improvements should still be considered regarding indicators (effort and energy consumption, coherence between landings value and gross value of landings, structure of costs, capital value and depreciation, FTE, operating subsidies related to EMFAF or other public organizations, etc.).
- The level of activity is very heterogeneous within the fleets (vessels fishing less than 50 days/year to vessels that fish 250 days/year can be found in the same segment) meaning that average figures derived from aggregates are not always relevant for analysis and interpretation.

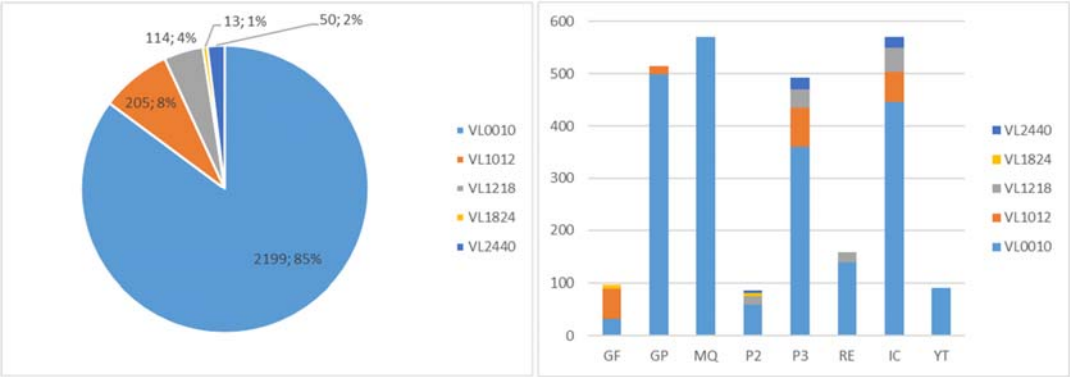
### *Overview*

In 2021, the number of active vessels was 2 581, although in some regions, significant parts of the registered fleet were inactive. Most of the OMR fleet is small scale and labour intensive with 93% of the

[11] Since the adoption of the Lisbon Treaty, Mayotte is included in the list of EU Outermost Regions (Article 349 TFEU) as of 01.01.2014. Saint-Barthelemy changed status in 2012 to become part of the Overseas Countries and Territories (OCT) within the meaning of the TFEU.

vessels under 12 metres LOA. Vessels over 12 metres operate mainly in Canaries Islands, Azores and Madeira, La Réunion and to lesser extent in French Guiana.

**Figure 3.97** Number of active vessels per length categories (left) and per OMR (right), 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Total engaged crew was 6 666 (2.6 per vessel on average) for 3 512 FTEs. Total days at sea (DaS) were around 190 000 for an energy consumption of 23.5 million litres (124 litres/DaS). Energy consumption average figures were 1.5 kg and 5.9 euro of fish landed per litre of fuel consumed but with heterogeneous situations between OMRs and segments. In 2021, landings from the OMR fleets combined amounted to 35 163 tonnes valued at EUR 138.4 million. Average price was 3.9 euro/kg. GVA and NVA were EUR 86.9 million (61% of total revenue) and EUR 73.4 million, respectively. Gross profit and net profit were estimated to EUR 17.3 million and EUR 4.9 million. These figures do not consider operating subsidies which may change segments performance (see below). In 2021, GVA per crewmember was EUR 13 045 and GVA per FTE was EUR 24 761.

**Table 3.3** Summary results for the EU OMR fleet by region and Member State, 2021

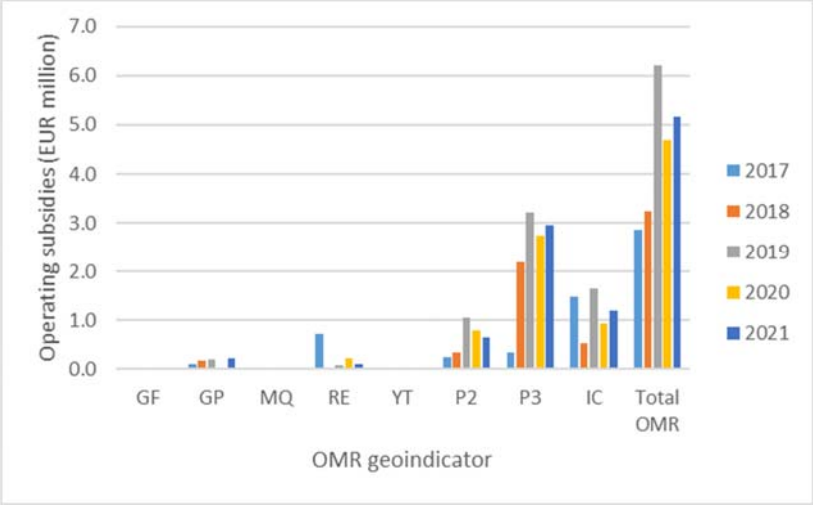
| | OMR Geo indicator | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| France | GF | 96 | 324 | 236 | 12 657 | 0.5 | 2497 | 6.4 | 7.4 | 5.0 | 4.7 | 1.8 | 1.6 | 0.0 |
| | GP | 515 | 933 | 400 | 39 749 | 3.4 | 2418 | 19.8 | 19.8 | 12.3 | 9.9 | 2.8 | 0.6 | 0.2 |
| | MQ | 571 | 943 | 197 | 21 037 | 2.1 | 1159 | 12.6 | 12.2 | 7.6 | 6.2 | 1.6 | 0.4 | 0.0 |
| | RE | 158 | 303 | 173 | 13 241 | 2.9 | 2635 | 15.5 | 17.9 | 8.9 | 7.1 | 1.8 | 0.0 | 0.1 |
| | YT | 91 | 217 | 137 | 10 337 | 1.5 | 1202 | 6.1 | 5.6 | 0.9 | 0.3 | -1.7 | -2.2 | 0.0 |
| **Total France** | | **1431** | **2720** | **1142** | **97 021** | **10.4** | **9911** | **60.4** | **63.0** | **34.6** | **28.1** | **6.3** | **0.4** | **0.3** |
| Portugal | P2 | 86 | 437 | 317 | 7 403 | 2.3 | 4176 | 11.3 | 11.6 | 6.8 | 5.9 | 0.7 | -0.1 | 0.7 |
| | P3 | 493 | 2124 | 1306 | 40 946 | 6.1 | 12985 | 39.8 | 39.7 | 27.8 | 23.0 | 10.5 | 5.9 | 3.0 |
| **Total Portugal** | | **579** | **2561** | **1623** | **48 349** | **8.4** | **17161** | **51.0** | **51.3** | **34.6** | **29.0** | **11.2** | **5.8** | **3.6** |
| Spain | IC | 571 | 1385 | 747 | 43 909 | 4.8 | 8091 | 26.9 | 27.9 | 17.7 | 16.3 | -0.2 | -1.4 | 1.2 |
| **Total Spain** | | **571** | **1385** | **747** | **43 909** | **4.8** | **8091** | **26.9** | **27.9** | **17.7** | **16.3** | **-0.2** | **-1.4** | **1.2** |
| **Total général** | | **2581** | **6666** | **3512** | **189 279** | **23.5** | **35163** | **138.4** | **142.2** | **87.0** | **73.4** | **17.3** | **4.9** | **5.2** |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data. Operating subsidies excluded.

In 2021, 1 431 vessels and 2 720 engaged crew were active in the French OMR (1.9 per vessel on average) compared to 579 vessels and 2 561 engaged crew in the Portuguese OMRs (4.4 per vessel), 571 vessels and 1 385 engaged for the Spanish OMR (2.4 per vessel). With EUR 60.4 million and 9 911 tonnes (6.1 euro/kg average price), French OMR fleets accounted for 44% of the landings in value and 28% in weight, followed by the Portuguese OMR fleets with EUR 43.5 million and 12 575 tonnes (3.0 euro/kg) representing 37% of the total OMR value and 49% in weight. For Canaries islands, the value of landings was EUR 29.7 million for 9 778 tonnes (3.3 euro/kg average price) representing 19% and 23% of the total OMR in weight and value. In most cases, landings are sold to local markets but in some regions, a significant part of the landings are exported (Azores, Reunion).

In 2021, GVA was estimated to EUR 34.6 million (40%) and EUR 17.7 million (20%) for the French, Portuguese and Spanish OMRs, respectively. Total gross profit and net profit per country were positive except for Canaries Islands. Operating subsidies including EMFAF compensation costs programs have to be considered. These subsidies increased from EUR 2.9 million in 2017 to a maximum of EUR 6.2 million in 2019 to reach EUR 5.2 million in 2021 but these values seem to be underreported by some regions.

**Figure 3.98** Operating subsidies by OMR between 2017 and 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, operating subsidies represented 3.6% of OMR total revenue (4.5% in 2020) but with significant differences between member states and OMR. They represented 7.0% of revenue in Portuguese OMRs, 4.3% in Canaries islands and only 0.5% for the French OMR. These subsidies may have a significant impact on profitability of the segments.

### *Trends in the OMRs*

OMR active vessels declined by -23% between 2013 and 2023 (Canaries Island and Mayotte excluded) and by -14% between 2017 and 2021 for the whole OMR fleet (total eight OMR). Engaged crew and DaS followed quite the same trend with however, significant differences between OMRs (see below). However, energy consumption did not reduce as such suggesting that vessels who left the fleet or became non active were consuming little fuel.

**Figure 3.99** Trends in key indicators for EU OMR


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data. Operating subsidies excluded.

Even if live weight of landings fluctuated over the period, with a significant drop in 2020 due to COVID-19 crisis, total six OMR landings in weight show no significant trend. Average total weight was around 25 000 tonnes over the 2013-2021 period. For these six regions, increased in total gross value of landings (+10%) and GVA (+12%) were observed. Gross and net profit indicators showed a positive trend until 2019, declined significantly in 2020 but did not recover to previous values in 2021. Canaries Islands and Mayotte included, the trends for the total eight OMRs are more constrated. GVA trend was decreasing since 2017 and the contribution of these region to total gross and net profit was limited. Beyond these global changes, several drivers may explain these evolutions (exit of non-active or less active vessels, decommissioning schemes, resource evolution, operating subsidies ...) at either OMR and segments levels.

### *Portugal*

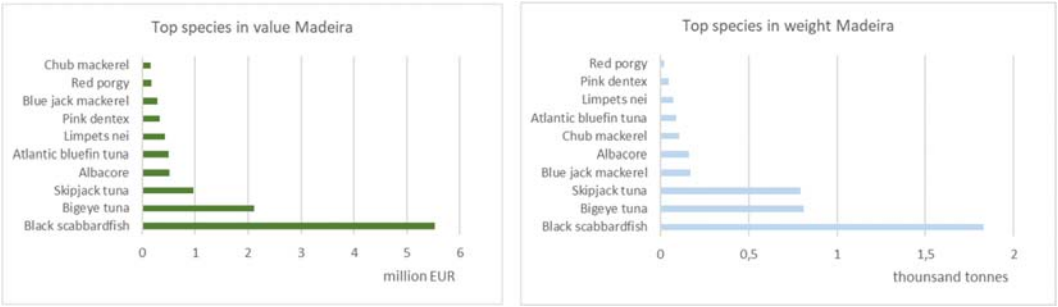
The Portuguese OMR fleet in 2021 was composed of 579 active vessels, operating mainly in FAO 27.10.a and FAO 34.1.2. 80% of the active vessels belongs to the SSCF. Both in Madeira and in the Azores, 5% of vessels are over 24 metres. The landings from the OMR fleets amounted 12 575 tonnes and generated a value of EUR 43.5 million. Engaged crew was responsible for 2 561 jobs corresponding to 1 623 FTE.

GVA and NVA were EUR 34.6 and EUR 28.9 million, respectively. Gross and net profit of EUR 11.2 and EUR 5.8 million, respectively. The most representative species in value were blackspot seabream, skipjack tuna and bigeye tuna, representing 17%, 15% and 13%, respectively, of the total value of landings.

*MADEIRA (P2)*

The Madeira fleet was composed of 86 active vessels in 2021. Overall, 70% of the vessels are less than 10 metres LOA and 87% are less than 18 meters LOA. The total number of jobs created by this fleet was 437, corresponding to 317 FTE. In terms of effort, all these vessels together spent 7 403 DaS and used up 2.3 million litres of fuel (308 litres/DaS). The total live weight of landings was 4 175 tonnes generating an income of EUR 11.2 million, which means an average price of 2.70 euro/kg. Regarding the fleet performance, revenue was EUR 11.6 million and GVA and NVA were EUR 6.8 million and EUR 5.9 million, respectively. Gross profit and net profit were EUR 743 000 and EUR -119 248 operating subsidies excluded. Most of the active vessels operated with long-lines and the most representative specie was the black scabbardfish, once the 1 800 tonnes landed (44% of the total landings of these fleet) yield EUR 5.5 million (49% of the total value of landings). Tunas are also representative of the fishing activity in Madeira and the main species of tunas accounted for around 31% of the total value and 41% weight landed.

**Figure 3.100** Top species landed in value (left) and weight (right) in Madeira, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Vessels of the Madeira fleet operate in the different following fisheries around Madeira archipelago:

- Slope fishery: vessels mainly targeting demersal species black scabbardfish mainly using set-longlines and small pelagic such as blue jack mackerel and chub mackerel using purse seiner.
- The large pelagic fishery: vessels using polyvalent active gears to target large pelagic species (skipjack tuna, bigeye tuna, bluefin tuna and albacore).

Between 2013 and 2021, the number of active vessels was stabilised, while FTE and crew decline -23% and –18%, respectively. There was an increase in GT and KW in the segments under 10m (HOK0010 and MGP0010) although the number of vessels did not change in the period under analysis.

Generally, the total vessel tonnage has been decreasing systematically in Madeira region. Despite a decrease in days at sea (-13%) compared to 2013, DaS registered a 10% increase when compared to 2020 and the energy consumption increased 7% and 26%, compared with 2013 and 2020, respectively.

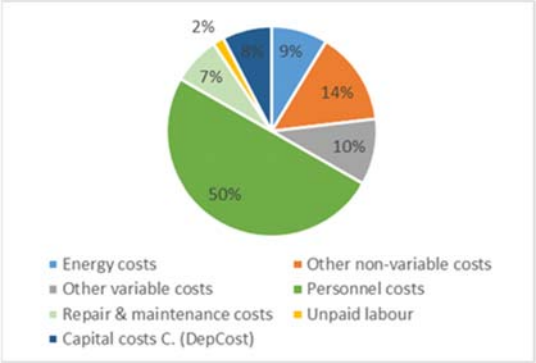
The landings in weight fell by -16% while the value of landings increased by 3%, however, it is important to note the increase of weight and value of landings in 2021, compared to last year. The year 2020 was an atypical year, where there was a brutal drop in terms of catches, much due to covid. Total GVA and NVA was EUR 6.8 and EUR 5.9 million in 2021, the lower value registered 2013-2021 period. Compared to 2020, gross profit worsened in -68%, operating subsidies excluded.

**Figure 3.101** Trends on capacity, effort, landings, GVA and profit for the Portuguese OMR fleet in Madeira.


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the cost structure of the Madeira fleet was dominated by wages and salaries (50%) followed by other non-variable costs (14%) and others variable costs (10%). Energy costs represented 9% of total costs.

**Figure 3.102** Cost structure for the Portuguese OMR fleet in Madeira, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

The fleet structure is characterised by a dominance of vessels using set-longlines targeting demersal species black scabbardfish, and vessels operating with pole and line targeting large pelagic species. The Madeira fleet is structured in six fleet segments.

The most relevant segment in terms of number of vessels is the HOK0010 with 53 vessels representing 62% of the active fleet, 33% of the DaS and 20% of the value of landings. This fleet targets mainly

demersal species (black scabbardfish represents 34% in weight and 23% in value) and also tunas (bigeye tuna and Atlantic bluefin tuna together represents 32% and 36% in weight and value of landings, respectively). The fleet segment employed 73 FTEs (23% of the total). Economic indicators for this fleet reported a gross profit of EUR 0.6 million.

The HOK1218 segment is composed by 15 vessels, representing 17% of the active fleet, 34% of the days at sea and 45% of the value of landings. The fleet targets mainly demersal species (black scabbardfish represents 85% in weight and 87% in value). The fleet segment employed 116 FTEs (37% of the total). Economic indicators for this fleet reported a gross profit margin of 10%.

Segment HOK2440 is composed only by 5 vessels and represents 6% of the active vessels, 13% of the DaS and 18% of the value of landings. The fleet targets mainly large pelagic species (skipjack tuna represents 55% in weight and 38% in value and big eye tuna represents 36% in weight and 45% in value). The fleet segment employed 61 FTEs (19% of the total). Economic indicators for this fleet reported a negative gross profit of -EUR 13 000 and -EUR 0.4 million net profit. Despite a big fall observed in this fleet segment in economic variables and indicators in 2020, in more recent year there was a slight improvement in their economic situation.

Between 2013 and 2021, the fleet was stable in terms of number of vessels. However, is important to note that HOK1218 have significantly worsened their economic performance in the last 3 years.

**Table 3.4** Summary results for the Portuguese *OMR fleet segments in 2021: Madeira (P2)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRT NAO HOK0010 P2 * | 53 | 143 | 73 | 2 450 | 0.3 | 495 | 2.2 | 2.3 | 2.3 | 1.6 | 1.5 | 0.6 | 0.5 | 0.084 |
| PRT NAO MGP1824 P2 * | 3 | 29 | 24 | 541 | 0.1 | 278 | 0.4 | 0.5 | 0.5 | 0.3 | 0.2 | 0.0 | 0.0 | 0.012 |
| PRT NAO MGP0010 P2 | 7 | 23 | 10 | 499 | 0.0 | 73 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.2 | 0.1 | 0.010 |
| PRT NAO HOK2440 P2 | 5 | 64 | 61 | 928 | 1.1 | 1 170 | 2.0 | 2.1 | 2.1 | 1.0 | 0.7 | 0.0 | -0.4 | 0.066 |
| PRT NAO HOK1218 P2 | 15 | 144 | 116 | 2 487 | 0.5 | 1 726 | 5.1 | 5.2 | 5.2 | 3.8 | 3.6 | 0.7 | 0.5 | 0.406 |
| PRT NAO HOK1824 P2 | 3 | 34 | 33 | 498 | 0.2 | 434 | 1.1 | 1.1 | 1.1 | -0.2 | -0.3 | -0.8 | -0.9 | 0.080 |
| Total | 86 | 437 | 317 | 7 403 | 2.3 | 4 176 | 11.3 | 11.6 | 11.6 | 6.8 | 5.9 | 0.7 | -0.1 | 0.657 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

### Main factors affecting the performance of the fleet

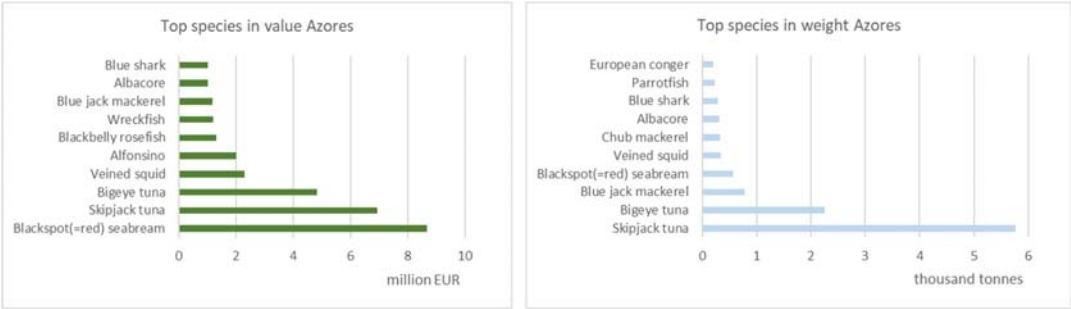
- The crew costs, which represents the main operational costs, may increase in order to keep and recruit crew to operate the fleet. Besides the increase of the wages observed since 2014 the value is still low when compared with the mean salary in the OMR regions. The fleet faced the lack of incentives to attract young fishers to the sector. In addition to this constraint, there is a lack of available labour in the region.
- Lack of a training school in Sea and Fisheries to attract young people to the sector.
- In some cases, the value of landings may not be sufficient to cover the trip expenses.
- Very limited fish quotas, particularly for tuna, which means that the tuna fleet works for little more than 3 to 4 months.
- The ageing and outdated fleet also affects the results of the activity.
- In 2022, aid was granted to compensate operators in the fisheries and aquaculture sector in the Madeira for the additional energy costs, created by the invasion of Ukraine. The value was attributed per vessel considering the fleet segment in which it is included and the respective length class.
- A compensation scheme for the additional costs in the OMR in the fisheries sector is established and funded by EMFF within the 'Promoting marketing and processing of fisheries and aquaculture products' priority. In 2020 EUR 0.9 million were paid to the Madeira OMR under this aid.

*AZORES (P3)*

The Azores fleet was composed of 493 active vessels in 2021. Overall, 73% of the vessels are less than 10 metres LOA and 95% are less than 18 metres LOA. The total number of jobs created by this fleet was

2 124, corresponding to 1 306 FTE. In terms of effort, all these vessels together spent 40 946 DaS and used up 6 million litres of fuel (149 litres/DaS). The total live weight of landings was 12 984 tonnes generating an income of EUR 39 777 million, which means an average price of 3.32 euro/kg. Regarding the fleet performance, revenue was EUR 39.6 million and GVA and NVA were EUR 27.7 million and EUR 23 million, respectively. Gross profit and Net profit were EUR 10.4 million and EUR 5.9 million. Like in Madeira, also the Azorean fleet was dominated by longliners (HOK), which in 2020 represented 84% of the active vessels. 94% of the Azorean fleet operates using passive gears only. The remaining fleet (6%) were purse seiners. The Azores OMR is very rich in biodiversity and fishing fleets target cephalopods, demersal and large pelagic species. The main species landed, by value, were blackspot seabream (22%), skipjack tuna (17%), bigeye tuna (12%) and veined squid (6%).

**Figure 3.103** Top species landed in value (left) and weight (right) in Azores, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Between 2013 and 2021, the active fleet decreased by -18%, while FTE and crew decline 31% and 39%, respectively. The decrease in DaS and energy consumption was 45% and 42% showing that fuel consumption per DaS increased 6%, despite a decrease registered in terms of engine power. The landings in weight fallen 4% from 2013 to 2021 and value have increased 17%, resulting in a considerable increase in the average price (+23%). After 2016, where it was observed the lowest values for landing weight and value for all-time series, landings start to improve in a consistent way, specially caused by some recovery of the large pelagic species (skipjack tuna, albacore, and bigeye tuna) catches. In terms of value of landings 2019 it was the highest one in 2013-2021 period, due to the increase of landing value for veined squid which in 2019 registered the double of the value, compared with 2018. GVA and NVA increased 17% and 26%, respectively, in time series 2013-2021. In terms of economic performance, the profitability of the Azorean OMR fleet as a whole in 2021 was positive.

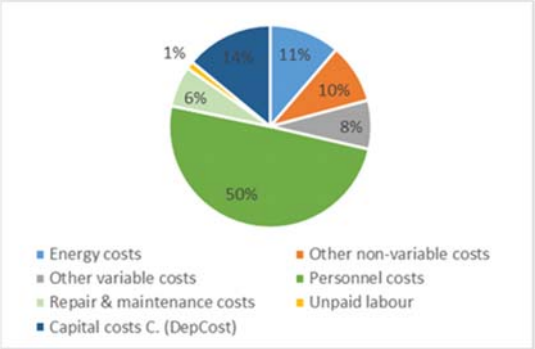
The sharp fall of the effort curve in 2015 is a reflection of the lack of 2015 energy consumption data of the Azorean fleet.

**Figure 3.104** Trends on capacity, effort, landings, GVA and profit for the Portuguese OMR fleet in Azores.


Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the cost structure of the Azorean fleet is dominated by wages and salaries (50%) followed by capital costs C. (14%) and energy costs (11%).

**Figure 3.105** Cost structure for the Portuguese OMR fleet in Azores, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

The Azorean fleet is structured in 9 fleet segments, dominated by vessels using longlines targeting cephalopods, demersal and pelagic species.

The most relevant segment in terms of number of vessels is the HOK0010. With 293 vessels represents 59% of the active fleet, 46% of the DaS and 29% of the value of landings. This fleet targets demersal and cephalopods species - veined squid and red seabream - which combined represent 26% and 50% of the total weight and value of landings of the fleet segment, respectively. In 2021, the total value from landings was EUR 11.4 million, approximately 29% more than 2020. The discrepancy between the representativeness weight and value demonstrates the price valuation of these species. The blackspot seabream increased 39% in terms of value of landings compared with 2020. The fleet segment employed

299 FTEs (23% of the total) but generated 784 jobs (37% of the total), revealing the importance of partial employment in this segment. Economic indicators for this fleet reported a gross profit of EUR 4.1 million.

Segment HOK2440 is composed by 23 vessels operating mainly in area FAO 27.10.a (Azores) and FAO 34.1.2 (Madeira). This fleet represents 5% of the active vessels, 8% of the DaS, but is responsible for 29% and 47% of the value and weight of landings of the Azorean fleet, respectively. The fleet targets mainly tuna species (skipjack, bigeye tuna, blue shark and albacore). In 2021 the value of landings was almost EUR 11.7 million, 33% more comparing to 2020, resulting from the increase of 77% in the weight of landings. The fleet segment employed 280 FTEs (21% of the total). Economic indicators for this fleet reported a gross profit of EUR 2.1 million.

**Table 3.5** Summary results for the Portuguese *OMR fleet segments in 2021: Azores (P3)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRT NAO HOK2440 P3 * | 23 | 332 | 280 | 3 221 | 3.2 | 6 159 | 11.7 | 11.6 | 11.6 | 7.9 | 5.7 | 2.1 | 0.0 | 0.560 |
| PRT NAO PGP0010 P3 * | 22 | 57 | 29 | 1 893 | 0.1 | 228 | 0.9 | 0.9 | 0.9 | 0.6 | 0.5 | 0.3 | 0.2 | 0.072 |
| PRT NAO PS 1012 P3 * | 8 | 58 | 48 | 1 498 | 0.2 | 488 | 0.6 | 0.6 | 0.6 | 0.4 | 0.3 | 0.2 | 0.1 | 0.039 |
| PRT NAO HOK0010 P3 | 293 | 784 | 299 | 18 740 | 0.8 | 1 724 | 11.4 | 11.4 | 11.4 | 8.2 | 7.0 | 4.1 | 3.0 | 0.699 |
| PRT NAO PS 0010 P3 | 17 | 54 | 18 | 1 295 | 0.1 | 223 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.010 |
| PRT NAO PS 1218 P3 | 4 | 20 | 12 | 533 | 0.1 | 210 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.0 | 0.012 |
| PRT NAO HOK1218 P3 | 31 | 267 | 210 | 4 142 | 0.7 | 2 331 | 6.1 | 6.1 | 6.1 | 4.5 | 4.1 | 1.4 | 1.0 | 0.721 |
| PRT NAO DFN0010 P3 | 29 | 76 | 33 | 1 978 | 0.1 | 224 | 0.7 | 0.7 | 0.7 | 0.5 | 0.4 | 0.1 | 0.1 | 0.137 |
| PRT NAO HOK1012 P3 | 66 | 476 | 377 | 7 646 | 1.0 | 1 398 | 7.6 | 7.6 | 7.6 | 5.3 | 4.6 | 2.1 | 1.4 | 0.707 |
| Total | 493 | 2 124 | 1 306 | 40 946 | 6.1 | 12 985 | 39.8 | 39.7 | 39.7 | 27.8 | 23.0 | 10.5 | 5.9 | 2.956 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

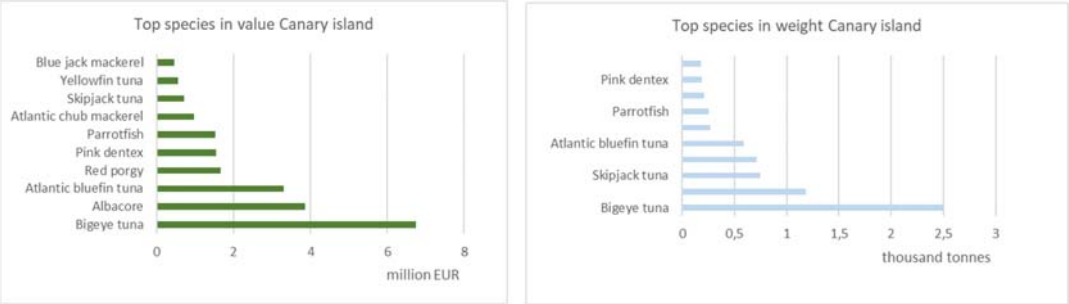
### Main factors affecting the performance of the fleet

- The fleet faces the lack of incentives to attract young fishers to the sector. In addition to this constraint, there is a lack of labour supply in the region.
- The observed fluctuation and catch restrictions of the tuna species, in particular skipjack tuna, affect the fleet economic performance, especially the HOK2440 and HOK1824 fleet segments.
- The reduced TAC on some demersal species, does not allow the fleet to work all year round.
- The low price of fish sold for the industry and marketing also affects the results of this fleet. Difficulty in exporting fish via area/sea.
- Illegal fishing (e.g. bottom longline settled in coastal areas, recreational fishing for commercial purposes, etc.) is putting pressure on some fish stocks (mainly coastal species), and the corresponding commercialization of these species is putting pressure on the markets, both challenging the sustainability of SSCF.
- The Azores Archipelago faces several storms especially during the winter season, preventing the activity of the fishing sector, especially small-scale vessels. In 2019, the Hurricane Lorenzo destroyed several ports.
- Blooms in large quantities of invasive algae that cause anoxia. The lack of oxygen eliminates algae and fish from the ecosystem, with impact on hatchery and juvenile fish, which in the long term will have strong impacts on the number of fish around the islands.
- The implementation of marine protected areas with the goal of 30% of the Azores Sea protected, with at least 15% of the area fully protected, by 2023.
- In 2022, aid was granted to compensate operators in the fisheries and aquaculture sector in the Azores for the additional energy costs, created by the invasion of Ukraine. The value was attributed per vessel considering the fleet segment in which it is included and the respective length class.
- A compensation scheme for the additional costs in the outer most regions in the fisheries is established and funded by EMFF within 'Promoting marketing and processing of fisheries and aquaculture products' priority. In 2020 EUR 3.3 million were paid to the Azores OMR under this aid.

### *Spain*

For Spain, fishing activity of the OMR fleet is spread out in FAO 34.1.2. In 2021, the Canary Island fleet was composed of 571 active vessels, of which 88% are small scales (under 12 metres LOA). Engaged crew was 1 385 (747 FTE). Total effort expressed in DaS was 43 909 days for total fuel consumption of 4.7 million litres (108 litres/DaS). Total landings in weight and value were 9 090 tonnes for EUR 26.9 million, respectively and average price was 3.3 euro/kg. GVA and NVA was EUR 17.7 million (63.5% of the revenue) and 16.3 million respectively. The main species in weight were bigeye tuna, albacore and skipjack; and in value bigeye tuna, Atlantic bluefin, and albacore. In this sense the main species landed are the different species of tuna followed by small pelagic species. Most of the landings are sold locally directly to consumers or fish mongers. It is important to note that this fleet is dependent on species assessed or followed by the ICCAT.

**Figure 3.106** Top species landed in value (left) and weight (right) in Canary Island, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Vessels operate in two different fisheries:

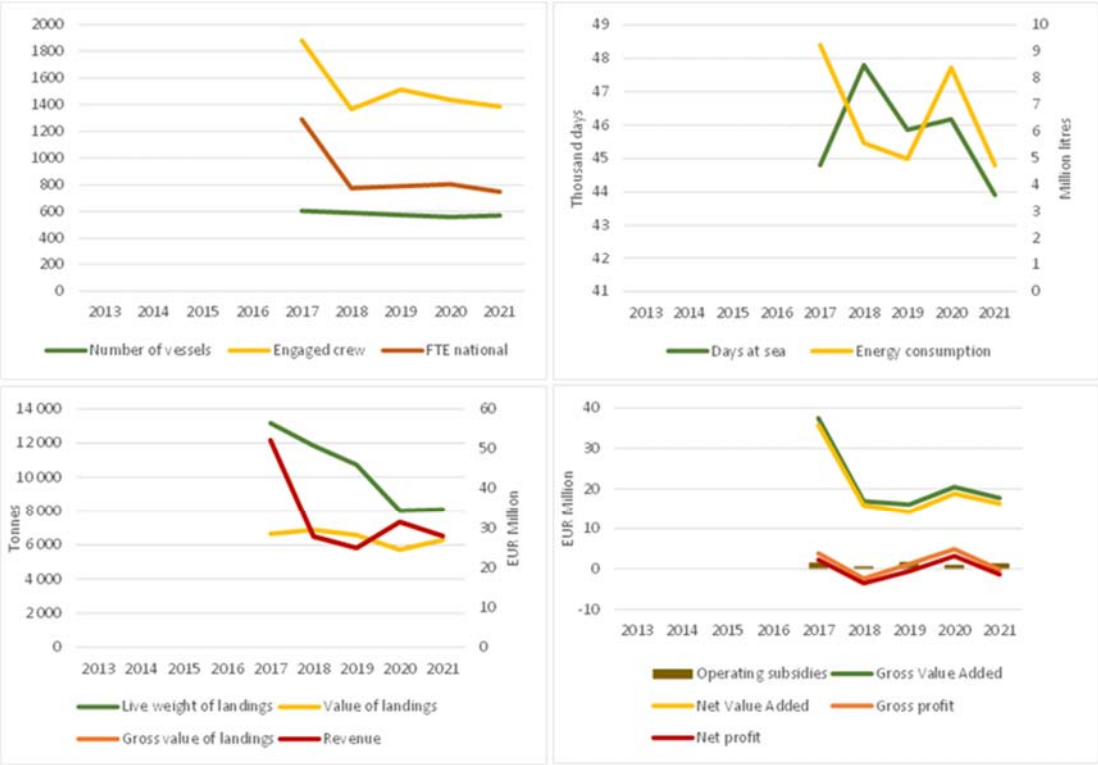
- Coastal fisheries: vessels use small gears, such as pots, gillnets, and hooks to target small pelagic and demersal species.
- The large pelagic fishery: vessels operate with hand lines and trolling lines to target large pelagic species (tunas). Here we can find purse seiners for catching the bait.

Most of active vessels are polyvalent and may operate using several combinations of gears targeting more than one specie. Moreover, the level of activity is very heterogeneous within the fleet and segments, so we can find vessels fishing less than 50 days/year to vessels that fish 250 days/year. For most of the fishers, fishing is a complementary activity that is carried out part-time. The main problem for this fleet is the inactivity; 21% of the Canary Island fleet is inactive. The fleet is mainly composed of non-decked vessels with outboard engines operating on a one-day trip basis. Average crew is 1 or 2 members with some exceptions for vessels over 18 metres.

Between 2017 and 2021, the active fleet decreased by 5.6%, however the crew and the FTE decreased by 26% and 42%, respectively. This drop means that most fishers had other activities, so income from the fishing activity is just a complement. DaS decreased by 2% however, energy consumption decreased by 48.6% showing a significant change in fuel consumption per DaS. The landings in value decreased by 5% and weight decreased by 38.5%, it means that the average price has increased in the last years. One of the reasons for the increase of the price can be the COVID-19 situation.

Total GVA and NVA also decreased over the period (-52.6% and -54%, respectively). The drop over the period may be due to a high figure in 2017.

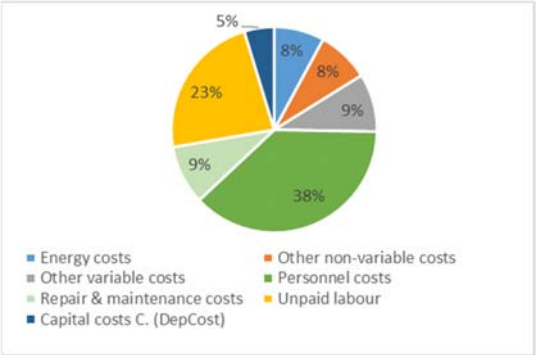
**Figure 3.107** Trends on capacity, effort, landings, GVA and profit for the Spanish OMR fleet in Canary Island.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the cost structure of the Canary fleet is dominated by wages and salaries (38%) followed by unpaid labour and repair and maintenance costs (23% and 9%, respectively).

**Figure 3.108** Cost structure for the Spanish Canary Island OMR fleet, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

In Canary Islands we can find six clustered segments. The most important segment in number of vessels is PMP0010 with 446 vessels. This segment gives employment to 428 FTEs, the 57% of the total jobs generated by the Canary Island fishing fleet. It generates 41% of total landings value and 27% of total weight in the Canary Island fishing fleet. This segment together with FPO1012 (13 vessels) fish mainly in the coast targeting small pelagic species.

There are three clustered segments that fish with hooks (HOK1012 – HOK1218 – HOK2440). These three segments have 101 vessels and give employment to 263 FTEs, the 35% of the total jobs generated by the Canary Island fishing fleet. It generates 49.7% of total landings value and 56.6% of total weight in the Canary Island fishing fleet. This segment together with purse seiner segment (PS1218) targets mainly tunas.

In Spain the geoindicator (IC) started to be used in 2017. Regarding PMP0010 the number of vessels has decreased over the years by 8%, as the same time than sea days (3%) and weight of landings that have decreased by 39%; however, the value of landing has increased by 6%. GVA has shown a high variability between years and Gross Profit has increased over the years since 2018. With respect to hook segments, the number of vessels has been increasing over the years in parallel with the decrease of purse seiners except in 2021 that increased from 8 vessels in 2020 to 11 vessels in 2021. Compared to 2017 the weight of landing has decreased by 36% and the value of landing by almost 11%. GVA and Gross Profit have shown a high variability between years.

**Table 3.6** Summary results for the Spanish *OMR fleet segments in 2021: Canary Islands (IC)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ESP NAO FPO1012 IC * | 13 | 30 | 17 | 1 200 | 0.1 | 121 | 0.6 | 0.5 | 0.5 | 0.3 | 0.3 | -0.1 | -0.1 | 0.000 |
| ESP NAO HOK1012 IC * | 45 | 105 | 34 | 2 235 | 0.5 | 874 | 2.8 | 2.0 | 2.0 | 1.4 | 1.3 | 0.4 | 0.3 | 0.081 |
| ESP NAO HOK2440 IC * | 22 | 242 | 191 | 3 149 | 1.7 | 2 392 | 6.9 | 7.7 | 7.7 | 4.0 | 3.5 | -1.4 | -1.8 | 0.450 |
| ESP NAO PMP0010 IC * | 446 | 806 | 428 | 33 469 | 2.1 | 2 209 | 11.1 | 15.2 | 15.2 | 10.5 | 10.1 | 1.1 | 0.8 | 0.602 |
| ESP NAO PS 1218 IC * | 11 | 49 | 39 | 1 438 | 0.1 | 1 180 | 1.8 | 1.1 | 1.1 | 0.8 | 0.8 | 0.1 | 0.0 | 0.048 |
| ESP NAO HOK1218 IC | 34 | 153 | 38 | 2 417 | 0.3 | 1 316 | 3.7 | 1.4 | 1.4 | 0.8 | 0.5 | -0.4 | -0.6 | 0.018 |
| Total | 571 | 1 385 | 747 | 43 909 | 4.8 | 8 091 | 26.9 | 27.9 | 27.9 | 17.7 | 16.3 | -0.2 | -1.4 | 1.199 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

### Main factors affecting the performance of the fleet

- The variations in TACs and Quotas of the main tuna species (BET, BFT, ALB, YFT) are one of the main factors affecting the performance of the fleet. The closure of the fisheries for skipjack, bluefin tuna and bigeye tuna, mainly affects the profitability of pole-and-line tuna fishermen.
- The landing prices have increased over the past years but poaching fish activities reduced the market availability affecting also the price.
- Fuel price is one of the main factors affecting the performance of the fleet. In 2022, aid was granted to vessels-owning companies to compensate for the increase in production costs caused by the increase in fuel prices resulting from the situation created by the invasion of Ukraine. The aid was granted according to the gross tonnage (GT) of the vessels, with 11 tranches being established. The first tranche corresponds to vessels of less than 25 GT, which account for 80% of the Spanish fleet.
- A compensation scheme for the additional costs was established and funded by EMFAF. The most important were for improving market organisation of fisheries and aquaculture products (art.70) and strategies for local development (art. 63).
- Given the age of the vessels, it is possible that the operational efficiency, productivity, and competitiveness of artisanal fishers is being affected. There is also a need to involve a new generation in the fishing activity to ensure the continuity of the sector and his competitiveness.
- The implementation of floating offshore wind turbins may have an impact on artisanal fishing in the Canary Islands.
- Changes in the ecosystem, overfishing by some industrial fleets were reported as to impact the availability of fishing stocks around Canary Islands.

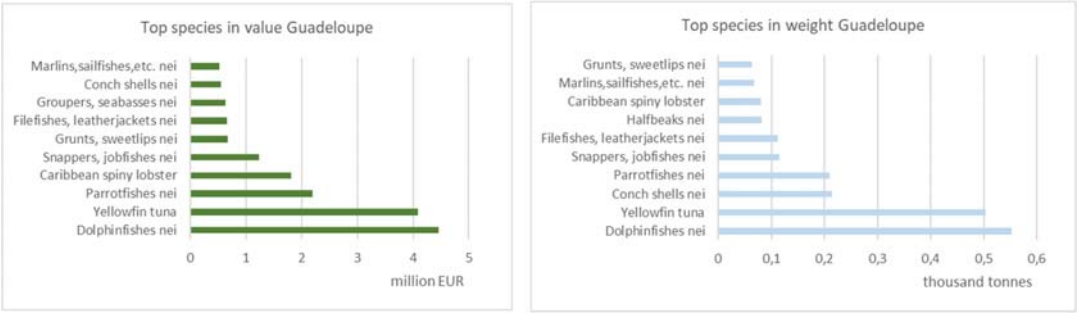
### France

For France, fishing activity of the OMR fleet is spread out in the Atlantic and Indian oceans. 98% of the active vessels are small scale (under 12 metres LOA). Only French Guiana, Martinique and Reunion fleets have vessels between 12 and 24 metres. The main fishing zones in terms of operation are in the Western Central Atlantic areas 31 (French Antilles), 31 and 41.1.1 (French Guiana), in the Western Indian Ocean 51.6 and 51.7 (Reunion and Mayotte). In 2021, landings from the OMR fleets combined amounted to 9 911 tonnes valued at EUR 60.4 million. Engaged crew was 2 720 (1 142 FTE), GVA and NVA were EUR 34.6 and EUR 28.1 million, respectively. Gross and net profit were EUR 6.3 million and EUR 0.4 million, respectively and without considering operating subsidies. The top species landed in value were large pelagic species (yellowfin tuna and other tunas, common dolphinfish, swordfish and blue marlin, etc.) but also coastal species (parrotfishes, spiny lobster, conchs and acoupa).

#### *GUADELOUPE (GP)*

In 2021, the Guadeloupe fleet was composed of 515 active vessels (97% under 10 metres LOA) in the fleet. Engaged crew was 933 (400 FTE). Total effort expressed in DaS was around 40 000 for a total fuel consumption of 3.4 million litres (85.7 litres/DaS). Total landings in weight and value were 2 418 tonnes for EUR 19.1 million, respectively and average price was 8.2 euro/kg. GVA was EUR 12.3 million (62% of the revenue), NVA EUR 9.9 million (50% of the revenue) and gross profit EUR 2.8 million (14% margin). Net profit without subsidies was EUR 0.6 million. The main species in value were common dolphinfish, yellowfin tuna, parrotfishes, spiny lobster and filefishes. Snappers, groupers and conchs are also key species for the fleet. This landings composition reflects the different fisheries in which the vessels operate. All the landings are sold locally directly to consumers or fishmongers and restaurants. It is important to note that the Guadeloupe fleet is highly dependent on species assessed or followed by the ICCAT (yellowfin tuna, blue marlin, dolphinfish) and the WECAFC (conchs, spiny lobster, etc.).

**Figure 3.109** Top species landed in value (left) and weight (right) in Guadeloupe, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Vessels operate in the different following fisheries around Guadeloupe archipelago.

- Coastal insular shelf fisheries: vessels use mainly traps, gillnets, hand line to catch a great diversity of demersal and benthic species, trammel nets to target spiny lobster or stromboïd conch, and encircle nets to target small pelagic species and demersal species. Snorkelling is also practiced;
- Slope fishery: vessels mainly targeting snappers mainly using small set-longlines and traps.
- The large pelagic fishery: vessels operate hand lines and trolling lines to target large pelagic species (dolphinfish, yellowfin tuna, blue marlin, wahoo, etc.) around mainly private Moored Fishing Aggregating Devices (MFADs) or on free schools.

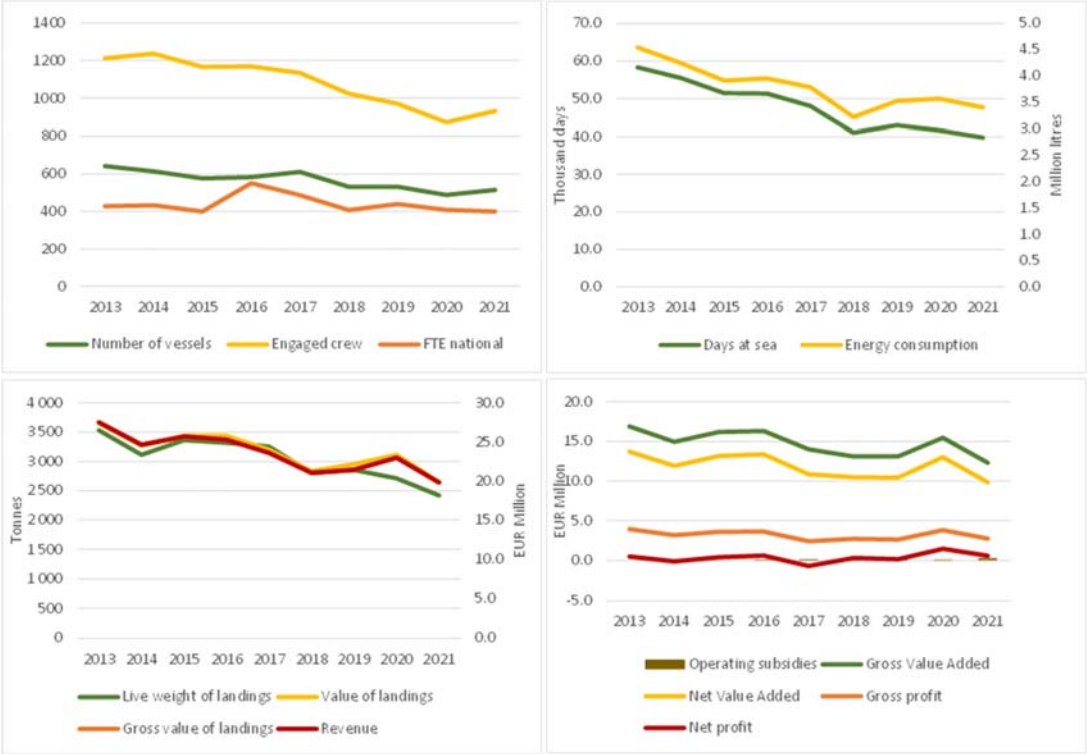
Most of active vessels are polyvalent and may operate in the different fisheries using several combinations of gears. However, the EU segments are not always relevant to differentiate the main fishing strategies in the fleet. Moreover, the level of activity is very heterogeneous within the fleet and segments. Vessels fishing less than 50 days/year to vessels that fish 250 days/year can be found in the same segment.

The fleet is mainly composed of non-decked vessels with outboard engines operating on a one-day trip basis. Average crew is two members with some exceptions for vessels using encircle nets. Crew members are from Guadeloupe. However, the fleet includes decked vessels, some of them operating longer trips

on the Saint-Barthelemy and Saint-Martin insular shelf. The level of activity is very variable within the fleet and segments.

Between 2013 and 2021, the active fleet decreased by -20% and FTE by -7%. This evolution was combined with a change in the structure of the fleet with vessels of larger size and engine power in the less than 10 metres category. The decrease in DaS and energy consumption was around -32% and –25% showing a recent increase in fuel consumption per DaS and thus despite an increase in the average engine power of the vessels remaining in the fleet. The landings in weight and value followed the same trend (-32% and -28%) with average price which has remained almost stable over the period except for the two last years. Total GVA, NVA and gross profit also decreased over the period (-28%), but net profit increase by 19% showing a rationalization of the active fleet. If trends in GVA per vessel and per engaged crew was positive between 2013 and 2020, the values for 2021 decreased compared to 2020.

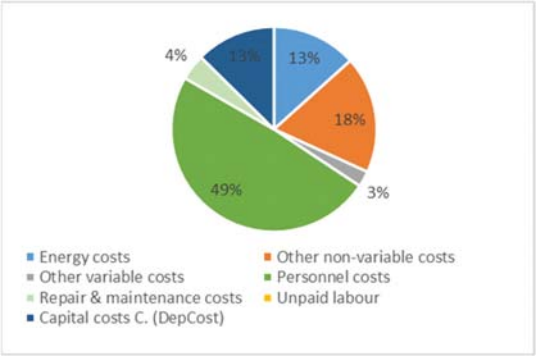
**Figure 3.110** Trends on capacity, effort, landings, GVA and profit for the Guadeloupe fleet (GP).




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the cost of energy represented 13% of the total costs but the dependence to fuel is highly dependent on the segments considered. Vessels targeting large pelagic species with hooks and line around MFADs are more dependent than vessels operating in coastal areas. Non-variable cost represented on average 18% of the total costs. This so-called non variable cost is highly dependent on gear costs and the gears used. Personnel costs (49%) based on a share remuneration system include social security costs for which contribution rates are reduced compared to France mainland.

**Figure 3.111** Cost structure for the Guadeloupe OMR fleet, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

The fleet structure is characterised by a high level of gear polyvalence that the main gear based DCF segmentation imperfectly represents. According to this segmentation (6 segments), the main fleets are the PGP0010 (176 vessels representing 34% of the active fleet, 42% of the days at sea and 41% of the landings in weight), the HOK0010 (124 vessels representing 24%, 19% and 33% of the previous indicators), followed by the FPO0010 (105 vessels, 20%, 18% and 10%) and DFN0010 (71 vessels 14%, 15% and 11%). Average landing price is higher (8-11 euro/kg) for the FPO0010 and DFN0010 targeting coastal species compared to HOK0010 targeting mainly large pelagic species (7.4 euro/kg). The HOK0010 is the most energy dependent but remain the most performant fleet in terms of fleet and average economic indicators. The value added of this fleet represents 67% of the revenue when it is only 54 and 62% for the FPO and DFN. Their gross profit was positive but net profit of both these fleets was negative in 2021. It is important to note that average figures which can be derived from aggregates are difficult to interpret as it includes a significant part of the vessels for which the level of activity (DaS) is low.

Between 2013 and 2021, the most important vessel reduction concerned the PGP0010* (-40%) and the PGP1012* (-33%) and to a less extent the DFN0010 (-9%) and the HOK0010 (-2%). The FPO0010 increased by 5%. It is important to note that the number of vessels per segment changed a lot from year to another. The HOK0010 segment increased its GVA per vessel (+18%) when FPO0010 and DF00100 decreased (-21%, -36%). These evolutions seem to be related mainly to availability of species and reduced number of operators in the fishery.

**Table 3.7** Summary results for the French *OMR fleet segments in 2021: Guadeloupe (GP)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRA OFR FPO0010 GP | 105 | 171 | 64 | 7 112 | 0.4 | 231 | 2.4 | 2.5 | 2.5 | 1.4 | 0.9 | 0.1 | -0.3 | 0.035 |
| FRA OFR HOK0010 GP | 124 | 199 | 68 | 7 641 | 1.2 | 793 | 6.0 | 5.9 | 5.9 | 4.0 | 3.4 | 1.2 | 0.7 | 0.040 |
| FRA OFR DFN0010 GP | 71 | 131 | 60 | 5 815 | 0.3 | 261 | 2.1 | 2.1 | 2.1 | 1.3 | 1.0 | 0.3 | 0.0 | 0.015 |
| FRA OFR PS 0010 GP | 23 | 102 | 43 | 1 743 | 0.1 | 104 | 0.8 | 0.8 | 0.8 | 0.6 | 0.5 | 0.2 | 0.1 | 0.008 |
| FRA OFR PGP1012 GP* | 16 | 36 | 12 | 935 | 0.1 | 37 | 0.4 | 0.5 | 0.5 | 0.2 | 0.1 | 0.0 | -0.1 | 0.001 |
| FRA OFR PGP0010 GP* | 176 | 294 | 153 | 16 503 | 1.4 | 993 | 8.2 | 8.1 | 8.1 | 4.9 | 4.0 | 1.0 | 0.2 | 0.132 |
| Total | 515 | 933 | 400 | 39 749 | 3.4 | 2 418 | 19.8 | 19.8 | 19.8 | 12.3 | 9.9 | 2.8 | 0.6 | 0.230 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

### Main factors affecting the performance of the fleet Main factors affecting the performance of the fleet

- The lack of suitable and accessible training for the fishers at regional level is a key issue for the sustainability and attractiveness of the sector. The recent digitalisation of administrative procedures is also a significant constraint for fishers. Moreover, the cost of entry (capital cost) to the sector has

increased over the last ten years due to the increase of vessels characteristics (size, engine power) and unit capital price.

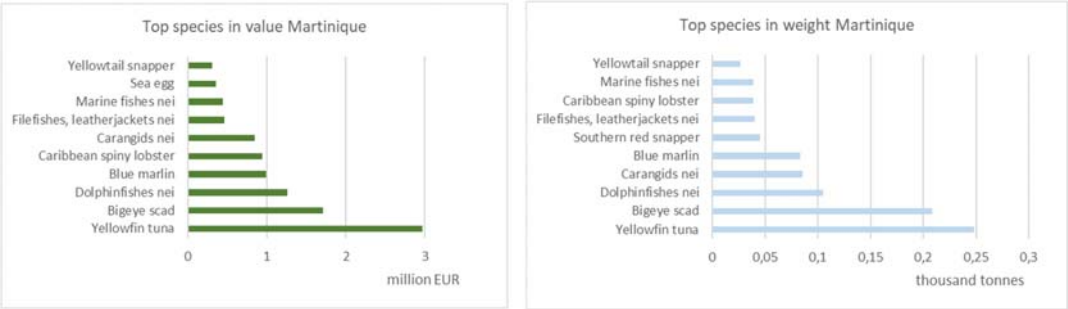
- Guadeloupe like other OMRs is geographically far from sources of supply. These constraints generate for the local economic operators, additional costs compared to mainland. These additional costs undermine the competitiveness of the fishing sector, in since 2021 due to the increase in fuel price, transportation cost of materials (gears, engines, etc.) to Guadeloupe and more recently supply chains difficulties. A compensation scheme for the additional costs was established and funded by EMFAF but the returns and benefits for local fishers were still limited in scope.
- In 2022, average annual fuel price reached more than 1 euro/litre. Different measures including a tariff shield were adopted by national authorities at the end of the first quarter 2022 to attenuate the impact of these increases for fishing companies including a discount at pump and/or direct additional aids (from 0.25 to 0.35 euro/litre depending on the period) in France mainland, and in outermost regions.
- The increase in landing prices over the past ten years has been very limited in scope. One of the reasons given is the importation of seafood from international markets in a context of region's high dependence on imports. However, the supply chain of local products is considered by local operators as not well organized.
- The number of landings points is very important in Guadeloupe. The quality of port infrastructure is heterogeneous over the territory and a key factor for maintaining fishing activity and attracting young fishers.
- There is a prefectural act for fisheries management including technical measures (gear regulation, species mesh size) but internal competition within the SSCF sector is a key issue in Guadeloupe. The main reason is the lack of regulation for access to the fishing stocks and fishing grounds. Except the entry permit to the fleet, there are few licences schemes with fixed numbers (*numerus clausus*) for the different fisheries. Moored Fishing aggregating devices (MFADs) regulations are also poorly respected. However, new regulations for commercial fishers have been subject to discussion in 2023 notably for the regulation of the number of MFADs per vessel. Local illegal fishing and recreational fishers are also serious competitors and a new regulation for recreational fisheries was set up in 2019. The conch stocks being subject to worry, the fishery was closed for the 2020-2021 season and re-opened in October 2021.
- Several no take zones were set up within the National Park area. However, the sustainability of the sector is threatened by the quality of habitats environment dependent on coastal development and agriculture. Permanent pollution of coastal habitats by pesticide (Chlordecone) used by agriculture led to the ban of coastal fishing areas in the southern part of the island (Basse-Terre). Currently, no solution is within sight to resolve these issues except fisher's financial compensation for the prohibited fishing areas due to pesticides.
- Since 2011, massive Sargassum algae inflows (stranded and floating blankets) in the Caribbean led to massive changes in the pelagic and coastal ecosystems with impacts on the fishing stocks. Fishing activity in Guadeloupe is also significantly impacted by these events (difficulties to operate vessels and fishing gears). Dedicated projects are aiming to prevent harbours clogging but with limited effectiveness.
- Marine ecosystems and fishing activity are subject to the occurrence of extreme events. Ten hurricanes occurred between 2004 and 2017.

*MARTINIQUE (MQ)*

In 2021, the Martinique fleet comprised 571 active vessels and most of them (97%) were under 10 metres. Total crew was 943 persons corresponding to 197 FTE. Total effort expressed in DaS was around 21 037 for a total estimated fuel consumption of 2.1 million litres (100 litres/DaS). Total landings in weight and value were, respectively 1 159 tonnes for EUR 12.2 million and average price was 10.9 euro/kg. GVA was estimated to EUR 7.6 million (62% of the revenue), NVA was EUR 6.2 million (50%)

and gross profit EUR 1.6 million (13.0% margin). Net profit without subsidies was EUR 0.4 million. The main species in value and weight were large pelagic species (dolphinfish, yellowfin tuna, blue marlin) but also coastal species (conches, spiny lobster, eggs from urchins, coral reef fishes). This landings composition reflects the different fisheries in which the vessels operate. All the landings are sold locally directly to consumers or fish mongers. It is important to note that the Martinique fleet is dependent on species assessed or followed by the ICCAT (Yellowfin tuna, blue marlin, dolphinfish) and the WECAFC (conchs, spiny lobster, etc.).

**Figure 3.112** Top species landed in value (left) and weight (right) in Martinique, 2021



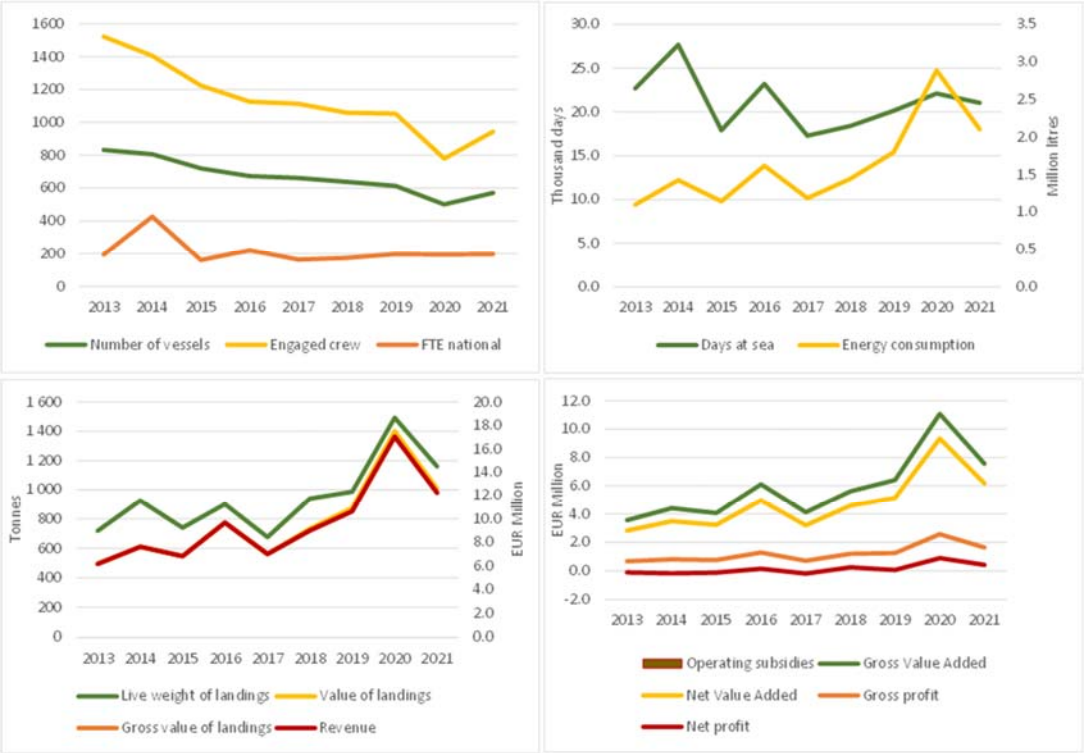

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Vessels operate in the different following fisheries around Martinique.

- Coastal insular shelf fisheries: vessels use mainly traps, gillnets, hand line to catch a great diversity of demersal and benthic species, trammel nets to target spiny lobster or stromboïd conch, encircle nets to target small pelagic species and beach seine. Snorkelling is also practiced;
- The large pelagic fishery: vessels operate hand lines and trolling lines to target large pelagic species (dolphinfish, yellowfin tuna, blue marlin, wahoo, etc.) on free schools but also around Moored Fishing Aggregating Devices (MFADs).
- Most of active vessels are polyvalent and may operate in the different fisheries using several combinations of gears. The fleet is mainly composed of non-decked vessels with outboard engines operating on a one-day trip basis. However, the fleet includes decked vessels operating longer trips. Few vessels over 12 metres operate in the French Guiana EEZ to target snappers with pots. Average crew is 2 members with some exceptions for vessels using encircle nets or beach seines. Crew members are mainly from Martinique.

Between 2013 and 2023, the active fleet decreased by -31%, engaged crew (-38%) and FTE was quite stable (+2%). The days at sea decreased by -7%. According to the data, energy consumption per DaS increased by 100% over the same period which is difficult to interpret. Landings in weight and value increased by respectively 61% and 104%. GVA also improved from EUR 3.6 million to 7.6 between 2010 and 2021 with 2020 as an exceptional year. Even low, gross profit and net profit also increased. Part of these improvements may be explained by the exclusion of a significant part of inactive vessels from the fleet over the recent years.

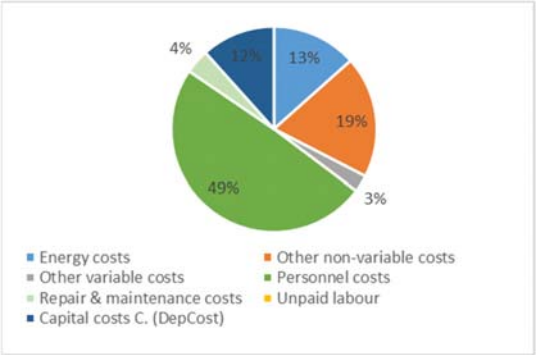
**Figure 3.113** Trends on capacity, effort, landings, GVA and profit for the Martinique fleet (MQ).




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2020, the cost of energy represented 13% but the dependence to fuel is highly dependent on the segments considered. Vessels targeting large pelagic species with hooks and line around MFADs are more dependent than vessels operating in coastal areas. Non-variable cost represented on average 19% of the total costs. This cost is highly dependent on gear costs and the gears used. Personnel costs (49%) include social security costs for which contribution rates are reduced compared to France mainland.

**Figure 3.114** Cost structure for the Martinique OMR fleet, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

The fleet structure is characterised by a high level of gear polyvalence that the main gear based DCF segmentation imperfectly represents. According to this segmentation, the main fleets are the PGP0010 (217 vessels representing 42% of the active fleet, 31% of the days at sea and 33% of the landings in weight), the FPO0010 (125 vessels representing 32%, 11% and 4% of the previous indicators), followed by the HOK0010 (133 vessels, 26%, 8% and 10%) and DFN0010 (56 vessels 11%, 2%, 1%). Average landing price was higher (13.6 euro/kg) for the FPO0010 targeting coastal species compared to HOK0010

targeting mainly large pelagic species (11.5 euro/kg). The HOK0010 was the most energy dependent fleet (8 200 litres per vessel) but remain the most performant fleet in terms of fleet and average economic indicators. The value added of this fleet represented 67% of the revenue when it was only 61% and 54% for the PGP and FPO. The gross and net profit were positive for the fleet in 2020 except the net profit for the FPO0010. It is important to note that average figures which can be derived from aggregates are difficult to interpret as it includes a significant part of the vessels for which the level of activity (days at sea) is low.

Between 2013 and 2021, the reduction in the number of vessels concerned all the segments, the PGP0010* (-46%), DFN0010 (-34%) and to a less extent the FPO0010 (-15%) and HOK0010 (-13%). It is important to note that the number of vessels per segment changed a lot from year to another. The HOK0010 and also the PGP0010 improved their GVA per vessel significantly compared to the other segment especially the last four years and thus despite the COVID-19 outbreak. These evolutions in GVA per vessel seems to be related mainly to availability of species and reduced number of operators in the fisheries.

**Table 3.8** Summary results for the French *OMR fleet segments in 2021: Martinique (MQ)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRA OFR FPO0010 MQ | 165 | 253 | 38 | 4 401 | 0.2 | 93 | 1.3 | 1.3 | 1.3 | 0.7 | 0.5 | 0.1 | -0.1 | 0.000 |
| FRA OFR HOK0010 MQ | 133 | 227 | 29 | 3 007 | 0.6 | 248 | 2.8 | 2.8 | 2.8 | 1.9 | 1.6 | 0.6 | 0.3 | 0.000 |
| FRA OFR DFN0010 MQ | 56 | 83 | 9 | 1 146 | 0.0 | 31 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.000 |
| FRA OFR PGP0010 MQ * | 217 | 380 | 122 | 12 483 | 1.3 | 787 | 8.2 | 7.8 | 7.8 | 4.7 | 3.9 | 1.0 | 0.2 | 0.000 |
| Total | 571 | 943 | 197 | 21 037 | 2.1 | 1 159 | 12.6 | 12.2 | 12.2 | 7.6 | 6.2 | 1.6 | 0.4 | 0.000 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

### Main factors affecting the performance of the fleet

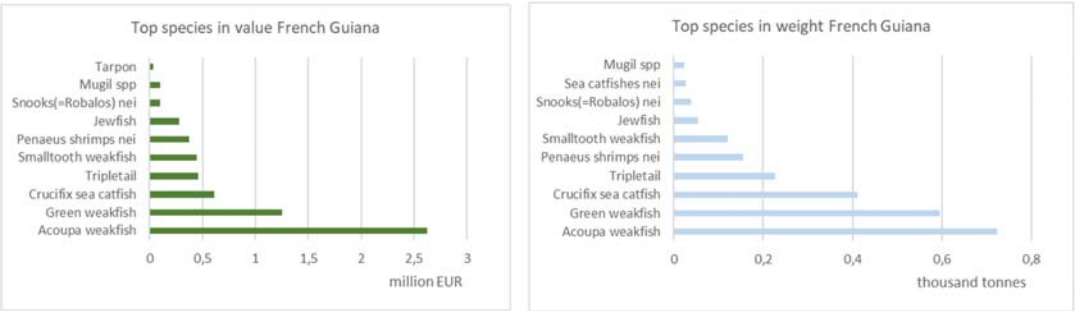
- Fuel price and large pelagic species availability are one of the main factors affecting the performance of the fleet. Fuel price reached 1.02 euro/litre in 2023. Different measures including a tariff shield were adopted by national authorities at the end of the first quarter 2022 to attenuate the impact of these increases for fishing companies including a discount at pump and/or direct additional aids (from 0.25 to 0.35 euro/litre depending on the period) in France mainland, and also in outermost regions.
- Martinique like other OMRs is geographically far from sources of supply. These constraints generate, for the local economic operators' additional costs compared to mainland. These additional costs increase the final price of inputs, which may undermine the competitiveness of the fishing sector. A compensation scheme for the additional costs was established and funded by EMFAF but the returns for local fishers are still limited in scope.
- Even if average landing prices increased over the last decade, the supply from the sector seems to subject to the competition from imports from international markets and from foreign vessels landing in Martinique.
- Internal competition within the SSCF sector is a key issue in Martinique. The main reason is the lack of regulation for access to the fishing stocks and fishing grounds. Except the entry permit to the fleet, there are few licences schemes with fixed numbers (*numerus clausus*) for the different fisheries. Local illegal fishing and recreational fishers are also serious competitors. A natural marine park was established in 2017 covering the entire Martinique EEZ.
- The sustainability of the sector is also threatened by the quality of habitats environment dependent on coastal development (e.g., wastewater treatment plant not up to standards) and agriculture. Permanent pollution of coastal habitats by pesticide (Chlordecone) used by agriculture (banana plants) led to the ban of coastal fishing areas in the western part of the island. Currently, no solution is within sight to resolve these issues except fisher's financial compensation for the prohibited fishing areas due to pesticides.

- Since 2011, massive Sargassum algae inflows (stranded and floating blankets) in the Caribbean led to massive changes in the pelagic and coastal ecosystems with impacts on the fishing stocks. Fishing activity in Martinique is also significantly impacted by these events (difficulties to operate vessels and fishing gears). Dedicated projects are aiming to prevent harbours clogging but with limited effectiveness.
- Marine ecosystems and fishing activity are subject to the occurrence of extreme events. Moored fishing aggregating devices and pots fishing were especially subject to currents over the last years.
- Landings are distribution over many landings' points. The quality of port infrastructure and services is also an important element for maintaining fishing activity and attracting young fishers.

*FRENCH GUIANA (GF)*

In 2021, the French Guiana OMR fleet comprised 96 active vessels. Within this fleet, 32 vessels from 00-10m and 57 vessels from 10-12m use drift nets. 7 trawlers from 18-24m targeted tropical shrimps. Total crew was 324 persons corresponding to 236 FTE. Total effort expressed in DaS was around 12 657 for a total fuel consumption of 506 000 litres. Total landings in weight and value were respectively 2 497 tonnes for around EUR 6.4 million and average price was 2.4 euro/kg. Economic indicators concerned only the small-scale fleet under 12 metres. In 2020, GVA excluding the trawlers fleet was EUR 2.7 million (67% of the revenue), NVA was EUR 5.0 million (49%) and gross profit EUR 1.8 million (25% margin). The main species in value and weight were Acoupa[12]. Acoupa weakfish swim blades are also highly value and contribute the revenue of fishers. *Penaeus shrimps nei* are harvested by trawlers and mostly exported. Snappers are also exploited in the French Guiana EEZ but by foreign Venezuelan fleet and thus not reported here. For some species (snappers, shrimps) stock status is followed by the WECAFC.

**Figure 3.115** Top species landed in value (left) and weight (right) in French Guiana, 2021 (GF)



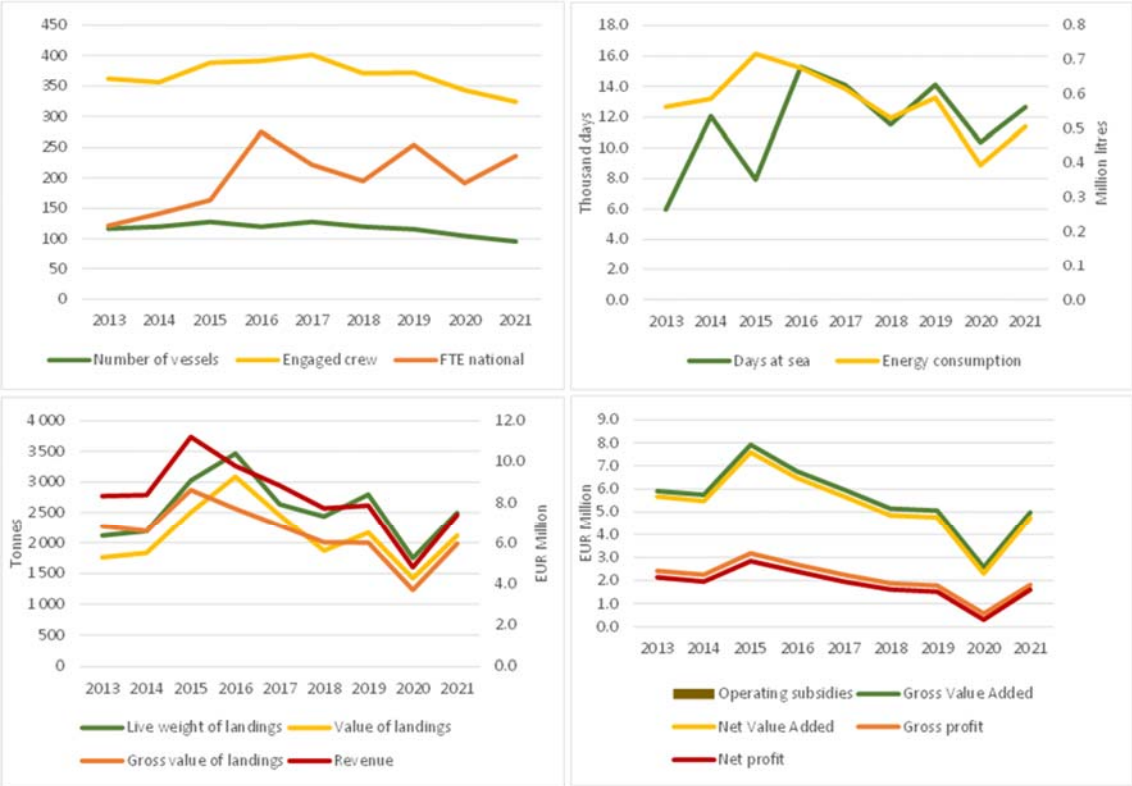

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

A significant part of the driftnet small scale fleet is based around the main city of Cayenne with 36 vessels in Cayenne and 18 vessels in Rémire Montjoly the neighbouring city. The other part of the fleet is distributed along the coast in harbours located in the river mouths. These vessels operate on coastal areas and mainly use driftnets to catch demersal species. Even if vessel operators are French, most of these non-EU fishers involved the crews are from Brazil. For the segment composed of bottom shrimp trawlers, all the crew members are from Brazil and Guyana. The driftnet fishery is subject to high competition from foreign IUU in French Guiana EZZ.

Between 2010 and 2020, the active fleet was quite stable but it decreased in 2020 and 2021 (-9%). Therefore, engaged crew and FTE reduced. Despite fluctuations, DaS followed a positive trend (+113%) but energy consumption decreased by -10% which may be explained by the change in the structure of the fleet. Landings in weight and value recovered in 2021 after a significant drop in 2020 due to the COVID-19 crisis. Landings' prices were quite stable over the period.

[12] This segment is mainly composed of non-decked vessels with outboard engines also called locally "pirogue", "canots créole" and "canots creoles améliorés". There are also some decked vessels with inboard engine called "tapouilles". These local names reflect the degree of equipment of the vessels that the vessel size categories do not.

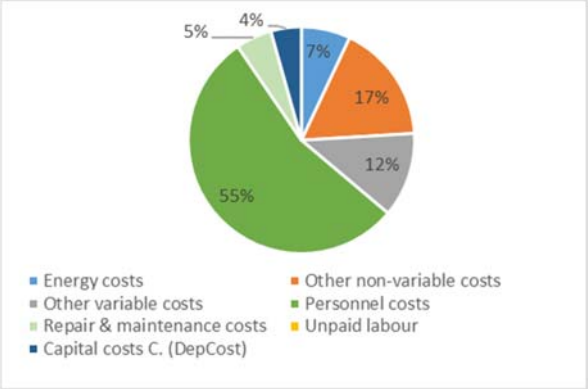
**Figure 3.116** Trends on capacity, effort, landings, GVA and profit for the French Guiana fleet (GF).




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the cost of energy for the driftnet segment represented 7% of the total costs which quite low compared to other French OMRs segments (see also fuel consumption per day per segment). Other variable costs and non-variable cost are relatively high and represented 12% and 17% of total costs, respectively. Personnel costs (55%) based on the share remuneration system include social security costs for which contribution rates are reduced compared to France mainland.

**Figure 3.117** Cost structure for the French Guiana OMR fleet, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

In 2021, 32 vessels (33% of the active fleet under 10 metres) made up the DFN0010 segment with 89 crew members engaged (60 FTE). DaS were 3 895 and total fuel consumption 170 000 litres (43 litres per DaS). Total landings in weight and value were 935 tonnes for EUR 2.4 million (2.4 euro/kg average price). Total revenue was EUR 2.06 million for a GVA of EUR 1.9 million (74% of the revenue). Gross

and net profit were respectively positive (EUR 0.8 and EUR 0.7 million). Average GVA per FTE and per vessel were respectively EUR 31 603 and GVA EUR 59 059.

57 vessels (59% of the active fleet under 10 metres) made up the DFN1012 segment in 2019 with 201 crew members engaged (160 FTE). DaS were 8 167 and total fuel consumption 336 655 litres (41 litres per DaS). Total landings in weight and value were, respectively 1 397 tonnes for EUR 3.6 million (2.7 euro/kg average price). Total revenue was EUR 4.8 million for a GVA of EUR 3.1 million (64% of the revenue) and gross profit EUR 1.1 million (17% margin) for a net profit of EUR 0.9 million. Average GVA per FTE and per vessel were EUR 19 088 and EUR 54 287, respectively. Most of the indicators recovered compared to 2020.

No economic data was available for the trawlers segment (DTS1824) in 2020 and for the previous years.

Between 2013 and 2021, the fleet structure changed with a reduction in the vessel number for the DFN0010 (-42%) and an increase for the DFN1012 (+36%). The GVA per vessel decreased over the period especially the last two years but more intensively for the DFN2012. The DTS1824 segment faced a sharp reduction in vessel number (-65%).

**Table 3.9** Summary results for the French *OMR fleet segments in 2021: French Guiana (GF)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRA OFR DTS1824 GF | 7 | 35 | 17 | 595 | 0.0 | 165 | 0.4 | - | - | - | - | - | - | - |
| FRA OFR DFN1012 GF* | 57 | 201 | 160 | 8 167 | 0.3 | 1 397 | 3.6 | 3.8 | 4.8 | 3.1 | 2.9 | 1.1 | 0.9 | 0.000 |
| FRA OFR DFN0010 GF* | 32 | 89 | 60 | 3 895 | 0.2 | 935 | | 2.2 | 2.6 | 1.9 | 1.8 | 0.8 | 0.7 | 0.000 |
| Total | 96 | 324 | 236 | 12 657 | 0.5 | 2 497 | 6.4 | 6.0 | 7.4 | 5.0 | 4.7 | 1.8 | 1.6 | 0.000 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

### Main factors affecting the performance of the fleet

- The increase in demand of Asian market for Acoupa weakfish swim blades has put significantly pressure on the resources and the artisanal fishing activity in French Guiana, especially. This product which was, for the past decade a source of additional income for the French Guiana crew members is now subject to an organized foreign IUU piracy activity to provide Chinese buyers through Brazilian and Surinamese retailers. Acoupa weakfish is now targeted specifically for the value of the swim bladder in a context where the landing price of demersal species are low. This product yields additional and significant incomes for the small-scale fleets in French Guiana. However, due to IUU activities from Brazil, Suriname and Guiana Acoupa weakfish are subject to concern with recent IUCN red list assessment indicating that the species is considered to the be 'vulnerable' on its entire range. In terms of fisheries management, illegal harvesting is reported for these species and is the major concern on its entire range.
- Additionally, illegal fishing (IUU) is observed on both the west and east side of the coastal shelf it is also reported well within the French Guiana EZZ using serious hardship for local fishermen. In terms of number of vessel number and harvesting (take and gillnet length) IUU from neighbouring countries is considered to represent at least three times the effort of French Guiana legal fleet, creating serious issues in terms of conflicts at sea, socioeconomic consequences, and fisheries management.
- Landing site infrastructures, especially for the 00-10m and 10-12m are practically inexistant in number and the quality of equipment not even measurable. Landings in some places can only happen at high tide time. There are less than ten landing points for all the SSCF that are sometimes also used by recreational fishers. This situation is source of conflict with sport fishing and in general marine leisure sectors since there are barely any infrastructures to share.
- Most of the crew members in the small-scale fleet 00-12m are foreign fishers. The crew turnover is considered high and difficulties in regularizing the residence permits of crew members do not allow all vessels operators to activate their very rudimentary vessels. The lack of attractiveness of the fishing sector does not allow, under the current conditions, to positioning of French crews on board. There is a shortage of around 130 fishers in order the tire Guyanese coastal fishing fleet can be fully

operational. The small-scale fleet is, for the most part, unsuited to the requirements of living conditions on board in terms of safety, hygiene, and reporting under EU norms.

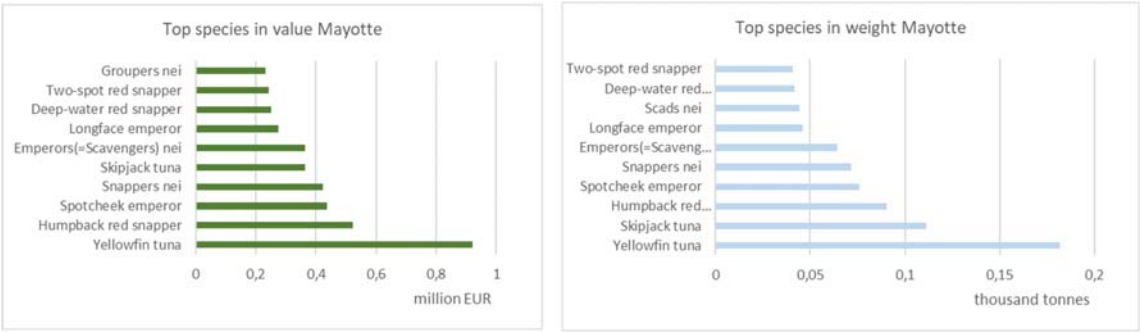
- Shrimp landings from the trawlers operating on the shelf have strongly decreased in the last decade. Various factors could explain this evolution: the increase of the fuel price and relative high level of fuel consumption by shrimp trawlers, in a context of global environmental changes; the decrease of shrimp price in international market and competition aquaculture products is certainly a factor. The extremely humid and oxidizing equatorial climate makes it difficult to maintain the fleet operational. These combined effects of various factors have probably contributed the decline in the economic performance of the segment and the decline in attractiveness of the fishery. At the same time, bycatch reduction and collaborations with NGOs and scientific entities aimed at reducing environmental impacts of French Guiana fisheries.

- French Guiana like other OMRs is geographically far from sources of supply. These constraints generate, for the local economic operators' additional costs compared to mainland. These additional costs increase the final price of the products, which may undermine the competitiveness of the fishing sector. A compensation scheme for the additional costs was established and funded by EMFF but the returns for local fishers are limited in scope.
- In 2022, different measures including a tariff shield were adopted by national authorities at the end of the first quarter 2022 to attenuate the impact of these increases for fishing companies including a discount at pump and/or direct additional aids (from 0.25 to 0.35 euro/litre depending on the period) in France mainland, and in outermost regions.
- The vast majority of companies in the fishing sector experience difficulties in accessing bank financing, mainly for the following reasons (Under-capitalization, difficulties of pre-financing of investment, …).

*MAYOTTE (YT)*

In 2021, the registered fleet from Mayotte was composed of 91 active vessels. Engaged crew was 217 (137 FTE). Total effort expressed in DaS was around 10 337 for a total energy consumption of 1.5 million litres (145 litres per DaS compared to 69 in 2020). Total landings in weight and value were respectively 1 200 tonnes for EUR 6.1 million and average price was 5.1 euro/kg. Most of the species are sold locally. GVA was EUR 0.9 million (15% of the revenue), NVA was EUR 0.3 million (5%). Gross profit was -EUR 1.7 million (18% margin) and -EUR 2.2 million. No operating subsidies were reported. Economic performance deteriorated due to abnormally high oil consumption and fuel costs compared to previous years. The main species in value and weight were yellowfin and skipjack tunas, Spotcheek emperor and snappers. Large pelagic species are followed and/or assessed by the IOTC.

**Figure 3.118** Top species landed in value (left) and weight (right) in Mayotte, 2021



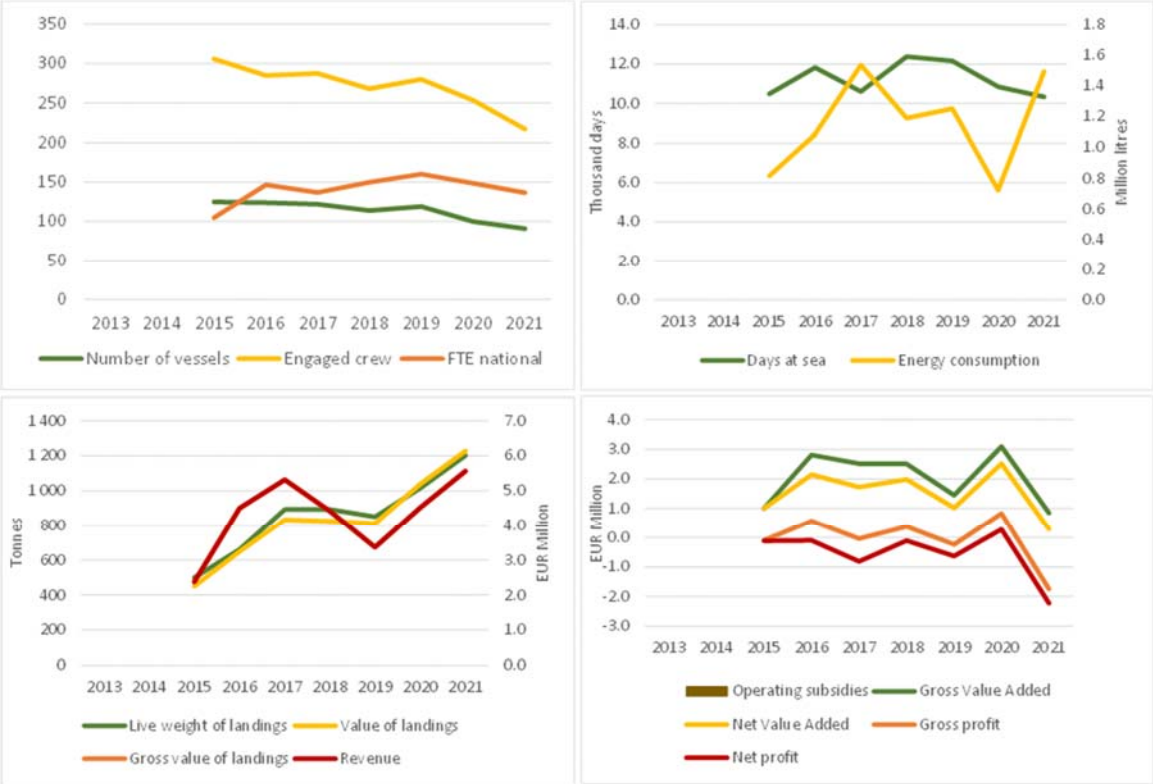

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The main gears used are hand lines and trolling lines, followed by nets (gillnets and encircling gillnets), drifting longlines and diving. Vessels operate in the different following fisheries:

- In coastal (lagoon) areas, demersal species are harvested mainly by hand line. A few boats use nets to target small pelagic fish.
- Demersal species are also harvested offshore.
- Outside the lagoon, large pelagic species are targeted by trolling liners on free schools or around MFADs. A few boats target swordfish and tuna (bigeye and yellowfin tuna) using longlines within the 20 nautical miles around the barrier reef with extension to 75 nautical miles for some vessels.

The trips are usually daily but can reach 4 to 5 days for the fleets operating on the outer reefs. Between 2013 and 2021, the active fleet and crew decreased by –27% and –29%, respectively. Despite this decrease, fishing activity remained quite stable between 10 000 and 12 000 DaS. Landings in weight and value increased over the period from 500 to 1 200 tonnes and from EUR 2.5 to EUR 6 million, respectively. Average price ranged from 4 euro/kg to 5 euro/kg with no trend. However, trend in revenue is more difficult to explain. GVA, gross and net profit value fell significantly in 2021 compared to previous years, the last two indicators becoming negative in 2021.

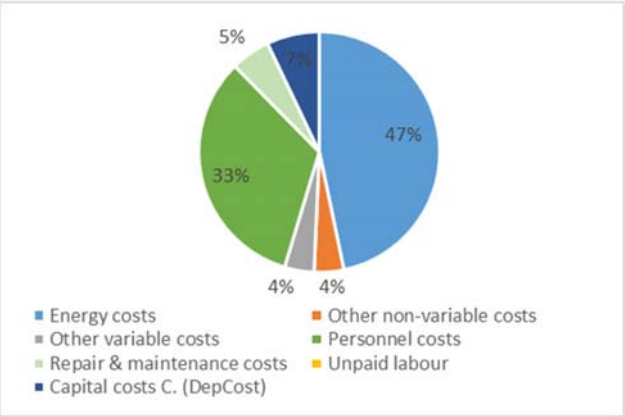
**Figure 3.119** Trends on capacity, effort, landings, GVA and profit for the Mayotte fleet (YT).




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the cost of energy represented 47% of the total costs (18% in 2020) which was quite high considering the type of fishing in Mayotte. Personnel costs (33%) include social security costs for which contribution rates are reduced compared to France mainland.

**Figure 3.120** Cost structure for the Mayotte OMR fleet, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

Hooks and lines and netters were clustered in 2020 meaning that there is now only one segment in the fleet.

**Table 3.10** Summary results for the French *OMR fleet segments in 2021: Mayotte (YT)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRA OFR HOK0010 YT* | 91 | 217 | 137 | 10 337 | 1.5 | 1 202 | 6.1 | 5.6 | 5.6 | 0.9 | 0.3 | -1.7 | -2.2 | 0.000 |
| Total | 91 | 217 | 137 | 10 337 | 1.5 | 1 202 | 6.1 | 5.6 | 5.6 | 0.9 | 0.3 | -1.7 | -2.2 | 0.000 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

### Main factors affecting the performance of the fleet

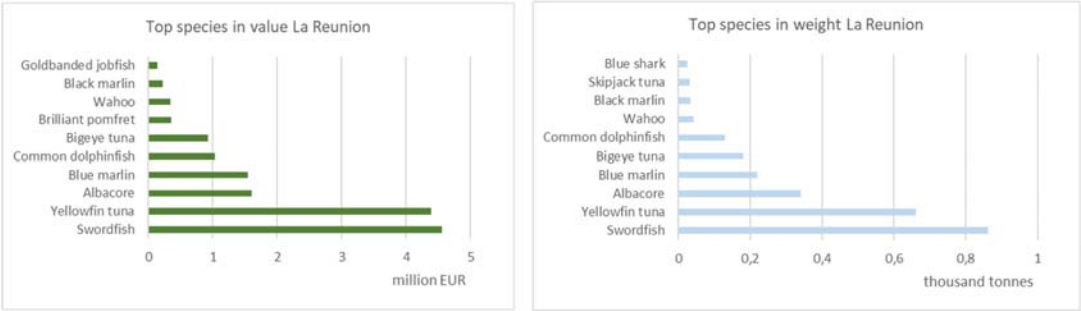
- The registered fishing fleets coexist with a subsistence fishing fleet and recreational fleet (around 1 500 vessels) operating in the inner lagoon and barrier reef demersal resources. Even if difficult to estimate, illegal fishing is considered to be around 40% of total fishing pressure. Part of these fleets also operate unfair competition with registered vessels through the informal sale of their catches on local markets. One of the objectives of the authorities and stakeholders is to improve the structuration of the sector with a gradual transition from an informal/illegal activity to a professional activity, more monitored and regulated.
- One of the major problems for the fleet is the lack of suitable infrastructure. Even if there are some exceptions, this current situation does not allow fishers to operate their vessels to land their products in suitable conditions. The objective of the authorities is to create a limited number of landings points in order to provide a correct upstream environment (ice – fuel – bait – fishing equipment) and a better organisation of the local supply chain respecting health and safety rules. These infrastructures are supposed to facilitate the renewal of the fleet.
- Young fishers face difficulties for an installation (absence of second-hand vessels, reduced financial capacities, lack support of banks) and the EMFAF is often considered as not adopted to the case of Mayotte.
- The coral reef of Mayotte is subject to high fishing pressure. The lack of reef resources represents an obstacle to the development of the sector, thus making a transition to large pelagic fishing necessary. However, only 0.1% of the Mayotte fleet is able to operate offshore. In order to try to address the demersal resources decline, local authorities and marine Natural Park covering the entire EEZ encouraged fishers to exploit pelagic species, by settling a park of MFADs around the island.

- Only vessels registered in Mayotte and the European flag vessels can obtain authorization to fish in waters less than 100 nautical miles from Mayotte. However, access to Mayotte waters by non-EU fishing vessels is possible subject to fishing agreements concluded with the EU. Mayotte EEZ is also exploited by French, Spanish purse seines (1 000 tonnes in 2019) and Seychelles purse-seiners (2 600 tonnes in 2019) targeting tropical tunas with mainly drifting MFADs.
- In 2022, different measures including a tariff shield were adopted by national authorities at the end of the first quarter 2022 to attenuate the impact of these increases for fishing companies including a discount at pump and/or direct additional aids (from 0.25 to 0.35 euro/litre depending on the period) in France mainland, and in outermost regions.

*LA REUNION (RE)*

In 2021, the Reunion fleet was composed of 158 active vessels. Within this fleet, 139 vessels were 00-12m and 19 vessels were clustered in the 12-18m segment including 18-24 meters vessels. Total crew was 303 persons, corresponding to 173 FTE. Total effort expressed in DaS was around 13 250. Total fuel consumption was 2.9 million litres (219 litres/DaS). Total landings in weight and value were respectively 2 635 tonnes for EUR 15.5 million and average price was 5.9 euro/kg. In 2021, Total revenue was estimated to EUR 17.9 million and GVA to EUR 8.9 million (49% of revenue). Gross profit was EUR 1.8 million (10%) and net profit EUR 0.04 million. The main species in value and weight were mainly large pelagic species, swordfish, yellowfin tuna, blue marlin, albacore, bigeye tuna, common dolphinfish and wahoo followed and/or assessed by the IOTC. Demersal species including snappers were also harvested. Swordfish is mainly exported when other species are sold locally.

**Figure 3.121** Top species landed in value (left) and weight (right) in Reunion, 2021




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

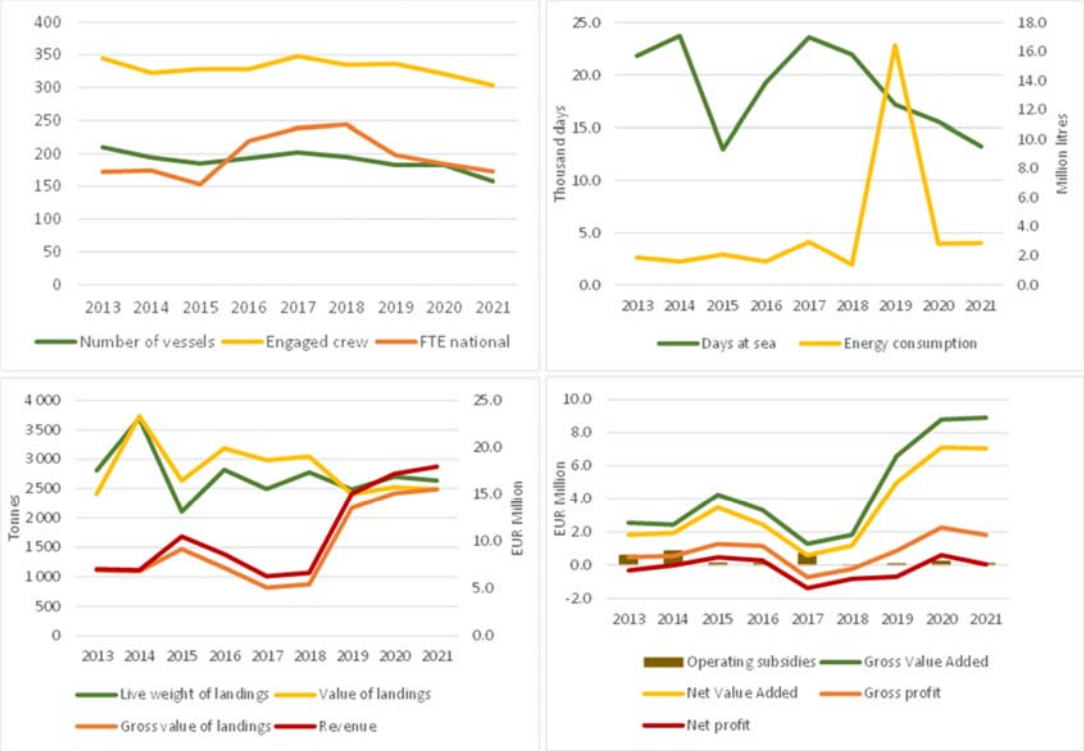
Vessels operate in the different following fisheries around Reunion Island:

- Coastal insular shelf fisheries: insular shelf is very limited in size. Gears used by small scale vessels are hand line to target demersal stocks and small pelagic species, beach seines, and various nets to target small pelagic species. The use of pots and traps is limited in scope.
- Slope fishery: small scale vessels mainly target a diversity of deep-sea species including snappers. The gear used is mechanized hand line.
- Coastal large pelagic fishery: vessels operate hand lines and trolling lines to target large pelagic species on free schools or around Moored Fishing Aggregating Devices (MFADs). In The Reunion, MFADs are organized collectively by the regional fisheries committee.
- Offshore large pelagic fishery: vessels operate longlines to target swordfish around Reunion Island and in western waters up to Madagascar.

Between 2013 and 2021, the active fleet and days at sea decreased by -25%, engaged crew by -12% but FTE increased by 1%. 3%. Year 2019 excluded energy consumption progressed by 54% despite a reduction in days at sea Landings in weight decreased by -6% but value increase by 3%. Average price ranged from 5.4 euro/kg to 7.8 euro/kg with a decreasing trend since 2016. However, price transfers mechanisms within the longliners supply chain may influence price evolution. Global trends in economic

indicators are difficult to interpret considering differences between value of landings, gross value of landings and revenue between 2013 and 2018.

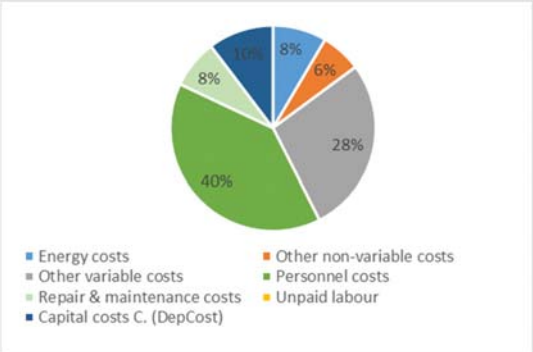
**Figure 3.122** Trends on capacity, effort, landings, GVA and profit for the Reunion fleet (RE).




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the cost of energy represented 8% but the dependence to fuel is highly dependent on the segments considered. Non-variable costs represented on average 6% of the total costs. This cost is highly dependent on gear costs and the gears used. Personnel costs include social security costs for which contribution rates are reduced compared to France mainland.

**Figure 3.123** Cost structure for the Reunion OMR fleet, 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### Fleet structure and key results

In 2021, the segment HOK0010* concerned 139 vessels (88% of the active fleet) with 189 crew members engaged (70 FTE). Total effort expressed in DaS was around 10 300. Fuel consumption was 1.5 million litres (144 litres/DaS). Total landings in weight and value were respectively 1 046 tonnes for EUR 8.0 million and average price was 7.8 euro/kg. In 2021, GVA and NVA were EUR 5.9 million and

EUR 4.9 million (69% and 57%), respectively. Gross profit and net profit were EUR 2.3 million and EUR 1.3 million (27% and 15%), respectively. The fleet benefited from operating subsidies. The main landed in value species were large pelagic species such as yellowfin tuna, common dolphin, swordfish, wahoo, blue marlin and albacore. This segment included vessels using trolling and hand lines but also some small longlines vessels targeting swordfish. The trends in terms of economic indicators are difficult to identify.

Two segments HOK1218 and HOK1824 using longlines were merged in a cluster. In 2021, 19 vessels (12% of the active fleet) made up this segment with 114 crew members engaged (103 FTE). Total effort expressed in days at sea was around 2 930 days for total fuel consumption of 1.5 million litres (482 litres/DaS). Total landings in weight and value were respectively 1 610 tonnes for EUR 7.5 million and average price was 4.65 euro/kg. Total revenue was EUR 9.4 million. The segment benefited from EU EMMF aids for the exportation of the landings and compensation of costs. GVA and NVA was respectively EUR 3.0 million and EUR 2.2 million and gross profit and net profit was negative with -EUR 0.5 million and -EUR 1.2 million, respectively. In 2021, the main species in value were swordfish, yellowfin tuna and albacore. The trends in terms of economic indicators are difficult to identify.

**Table 3.11** Summary results for the French *OMR fleet segments in 2021: La Reunion (RE)*

| | Number of vessels | Engaged crew | FTE national | Days at sea | Energy cons. (Million litres) | Live weight of landings (tonnes) | Value of landings (Million EUR) | Gross value of landings (Million EUR) | Revenue (Million EUR) | Gross Value Added (Million EUR) | Net Value Added (Million EUR) | Gross profit (Million EUR) | Net profit (Million EUR) | Operating subsidies (Million EUR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRA OFR HOK1218 RE | 19 | 114 | 103 | 2 927 | 1.4 | 1 610 | 7.5 | 7.7 | 9.4 | 3.0 | 2.2 | -0.5 | -1.2 | 0.032 |
| FRA OFR HOK0010 RE | 139 | 189 | 70 | 10 314 | 1.5 | 1 026 | 8.0 | 7.9 | 8.6 | 5.9 | 4.9 | 2.3 | 1.3 | 0.079 |
| Total | 158 | 303 | 173 | 13 241 | 2.9 | 2 635 | 15.5 | 15.5 | 17.9 | 8.9 | 7.1 | 1.8 | 0.0 | 0.110 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020). Based on incomplete data for economic data.

### Main factors affecting the performance of the fleet

- Fuel price and large pelagic species availability are one of the main factors affecting the performance of the fleet. However, La Reunion like other OMRs is geographically far from sources of supply. These constraints generate, for the local economic operators' additional costs compared to mainland. These additional costs increase the final price of the products, which may undermine the competitiveness of the fishing sector. A compensation scheme for the additional costs was established and funded by EMFAF as well as EMFF contribution to fish exports which has a significant impact on fleet performance especially for vessels over 12 metres.
- In 2022, average annual fuel price reached more than 1 euro/litre. Different measures including a tariff shield were adopted by national authorities at the end of the first quarter 2022 to attenuate the impact of these increases for fishing companies including a discount at pump and/or direct additional aids (from 0.25 to 0.35 euro/litre depending on the period) in France mainland, and in outermost regions.
- Competition with recreational fishing is particularly high for the small-scale segment. It encompasses different practices, both fishing by vessel or on-foot. There is no recent study on recreational fishing vessels activities in Reunion but an assessment carried out in 2006 estimated at 320 the number of recreational fishing vessel. Recreational fishing includes spearfishing and all fishing practices on demersal and pelagic fishes (beach seine, fishing rod, octopus on reef flat and shoreline fishers…). This competition exists both to access fishing areas and for targeted stocks, such as pelagic fishes on MFADs and the demersal fishes on the insular shelf or on reef flats. Even if sometimes difficult to distinguish recreational and illegal fishing, illegal fishing can be considered as significant and concerns such species as spiny lobsters, and more generally all species with high commercial values.
- If difficult to quantify, the level of competition with sharks has to be considered with potential interaction with sharks' depredation, mostly on demersal fishery using handline seasonally, exceptionally on moored FAD.

### *Main drivers for OMR fleet*

- Most OMRs are islands and geographically far from sources of supply. These constraints generate, for fishers' additional costs compared to mainland. Compensation scheme for the additional costs were established and funded by EMFAF but the returns and benefits for local fishers seems to be limited in scope in Guadeloupe, Martinique and French Guiana.
- The increase in the cost of capital is considered as a main issue for fleet renewal and access to fisheries for newcomers in most of the OMRs. Fuel price is also one of the main factors affecting the performance of the segments, especially the most dependent. Major increases in fuel price and more generally inputs (gears, engines) were reported for 2022 with potential effort reduction. Compensation measures for fuel price increases have been established Portuguese, Spanish and French OMRs for 2022 and 2023. In Portugal, the aids have been granted according to fleet segment and length categories when in Spain GT categories have been used. In France, the system changed over a time wit at first discount at pump and secondly a unique direct additional aid per litre of fuel consumed.
- The landing prices have increased over the last years for Canaries islands but this trend is not similar in other regions like Guadeloupe or Martinique where the importation and competition from seafood from international markets is high.
- In some OMRs, the lack of suitable infrastructures for vessels operations including landings create dis-incentives to enter or to continue to operate in the sector. In most OMRs, the fleets faced the lack of incentives to attract young fishers to the sector with contrasted situation between islands; unemployment or lack of labour. Additionally, this issue is reinforced by the lack training for the fishers at local level and administrative digitalization constraints.
- The variations in TACs and Quotas of key species are one of the main factors affecting the performance of the fleets mainly in Canaries Islands, Madeira and Azores. In Guadeloupe, the Conch fishery was closed for the season 2020-2021 with impact on dependent vessels. If fisheries are regulated through technical measures (gear regulation, species mesh size), the lack of access regulations to fisheries (licences …) is source of internal competition and increased cost of operation within the SSCF sector in most of the French OMRs. The funding of Moored Fishing Aggregating devices and their management is also a key driver of and fisheries and fleet evolution in the OMR where they are used (Mayotte, Reunion, Guadeloupe, Martinique).
- In most OMRs, competition with recreational fishing and illegal fishing (foreign or/and local) is particularly high for the small-scale segments. The situation is critical in French Guiana EEZ with IUU neighboring fleets. Poaching fish activities also reduce the market availability affecting also the price in some regions. In the Atlantic Ocean and the Indian Ocean, OMRs fleets harvest the same stocks as large-scale fleets especially on large pelagic species. Projects of windfarms in Canaries may also impact the fishery sector.
- Marine ecosystems and fishing activity in the OMRs are subject to the occurrence of extreme events (hurricanes or storms) or change in the environment (vase amazon, algae) with impact on gears and harbour infrastructures. Since 2011, massive Sargassum algae inflows (stranded and floating blankets) in the Caribbean led to massive changes in the pelagic and coastal ecosystems with impacts on the fishing stocks. Fishing activity in Guadeloupe, Martinique and to a less extent French Guiana are regularly impacted by these events (difficulties to operate vessels and fishing gears).
- The sustainability of the fishing sector is also threatened by the quality of habitats environment dependent on coastal development and agriculture. Permanent pollution of coastal habitats by pesticide (Chlordecone) used by agriculture led to the ban of coastal fishing areas in Guadeloupe and Martinique.

## 3.8 Long Distance Fleet (LDF)

### *Fleet selection*

To analyse the economic performance of the EU fleet at the regional level, the economic data provided by fleet segment at the supra-region level are disaggregated based on transversal data (effort and landings) that are provided at the sub-region level (FAO level 3 or 4) (see 2021 AER Annex report for more details on the methodology used).

Due to the particular characteristics of the RFMOs, some adaptions from the standard regional disaggregation methodology are required.

Over the years, the definitions and criteria used to select fleets for the OFR analysis have changed. Analysis of fleets operating in the RFMOs and OMRs has taken on an almost ad-hoc nature, becoming clear that a more common and refined approach is needed. In addition, fishing activity in these areas is essentially assessed in the context of LDF. Thus, refinements proposed for the current methodologies, taking into account the level of granularity of the DWF and EU-MAP data, also contemplate the fact that not all fishing fleets operating in RFMOs are DWF, i.e., vessels over 24m LOA. There are other fleet segments that also have significant activity in certain RFMOs and thus, are considered as well in the analysis to obtain a fuller picture of the extent of the EU fleet's activity overall.

**Table** 3.12 outlines the criteria for fleet selection in this report (EWG 23-07), which has not been altered from the one used in the AER 2021.

**Table 3.12** Overview of the definitions and criteria used to assess the performance of the EU fleets operating in the RFMOs

| RFMO | | Geographical coverage | Vessel length | Target species | Degree of dependency | Assessment |
|---|---|---|---|---|---|---|
| ICCAT | AER 2023 | Atlantic Ocean and adjacent seas (Mediterranean and Black Sea) | >24m LOA for the Atlantic stocks and | All ICCAT species and stocks | >=40% of a fleet segment's total landed value in 2018 | Assessed fleet segments in the LDF with high dependency on ICCAT |
| | ICCAT EU Fleet | | >18m for the Mediterranean stocks<br>All fleet segments | ICCAT major species and stocks | Landings of at least one ICCAT major species | Assess all EU fleet activity in ICCAT |
| | ICCAT EU LDF | | >18m LOA for the Atlantic and Mediterranean stocks | | >=20% of a fleet segment's total landed value in 2019 | Assess EU LDF high level of dependency on ICCAT |
| IOTC | AER 2023 | Indian Ocean (FAO statistical areas 51 and 57) and adjacent seas, north of the Antarctic Convergence | >24m LOA | IOTC major species and stocks | >=40% of a fleet segment's total landed value | Assessed fleet segments in the LDF with high dependency on IOTC |
| | IOTC EU Fleet | | All fleet segments | | Landings of at least one ICCAT major species | Assess all EU fleet activity in IOTC |
| | IOTC EU LDF | | >18m LOA | | >=20% of a fleet segment's total landed value in 2019 | Assess EU LDF with high level of dependency on IOTC |
| NAFO | AER 2023 | FAO major fishing area 21 | >24 m LOA | All species | >=40% of a fleet segment's total landed value in 2018 | Assessed fleet segments in the LDF with high dependency on NAFO RA |
| | NAFO LDF (no ICCAT) | | >18 m LOA | All species excluding the ICCAT major species | >=20% of a fleet segment's total landed value in 2019 | Assess EU LDF with high level of dependency on NAFO excluding ICCAT activity in the area |
| CECAF | AER 2023 | FAO major fishing area 34 | >24m LOA | All species | >=40% of a fleet segment's total landed value | Assess EU LDF with high level of dependency on CECAF |
| | CECAF LDF (no ICCAT) | | >18 m LOA | All species excluding the ICCAT major species | >=20% of a fleet segment's total landed value in 2019 | Assess EU LDF with high level of dependency on CEACF excluding ICCAT |
| NEAFC | AER 2023 | NEAFC CA: FAO major fishing area 27 | >24m LOA | All species | >=40% of a fleet segment's total landed value | |
| | NEAFC LDF (no ICCAT) | NEAFC RA: international waters in FAO major fishing area 27 | >18 m LOA | All species excluding the ICCAT major species | >=20% of a fleet segment's total landed value in 2019 | Assess EU LDF with high level of dependency on NEAFC CA and RA excluding ICCAT activity in the area |

Source: AER 2021

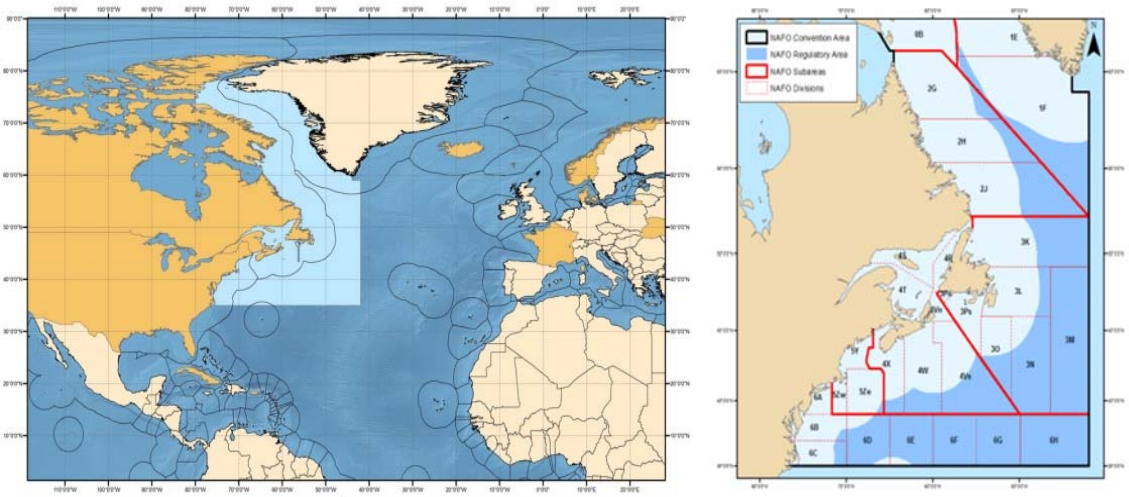
### *NAFO - Northwest Atlantic Fisheries Organization*

*Background*

Fisheries in the Northwest Atlantic are performed in the exclusive economic zones of the coastal states and on the high seas where fishery is regulated by the Northwest Atlantic Fisheries Organization (NAFO). NAFO was founded to manage most fishery resources in the EEZs of Contracting Parties (straddling stocks) and outside the national jurisdiction in the NAFO Regulatory Area. Currently NAFO has 13 Contracting Parties with the entry of UK in 2020[13].

The NAFO Regulatory Area is defined in the NAFO Convention as that part of the Convention Area, which lies beyond the areas in which Costal States exercise fisheries jurisdiction (outside of the Exclusive Economic Zones) (Figure 3.124).

**Figure 3.124** The scientific and statistical subareas, divisions and subdivisions are outlined in Annex I of the NAFO Convention




Source: NAFO, GEOMAR http://www.marineplan.es/ES/fichas_kml/rfbs.html

The three main fisheries regulated in the NAFO area are cod, Greenland halibut, and pelagic redfish. NAFO does not manage sedentary species (e.g., shellfish) and species managed by other fishery bodies, i.e., salmon (NASCO), tunas/marlins (ICCAT), and whales (NAMMCO).

The ground fish (Atlantic cod, Greenland halibut and shrimp) fishery occurs mainly in NAFO Divisions 3LMNO within the *Fishing Footprint* and is conducted using mainly bottom trawls. The moratorium on the 3M shrimp was lifted in 2020 allowing a days-at-sea system (effort regime).

*Fleet selection and data limitations*

In previous editions of the AER (AER from 2019 and 2020), all effort and landings of all species by fleet segments operating within the RA were considered taking into account the following criteria:

- Only fleet segments over 24 metres LOA were included.
- High dependency on NAFO CA was set at 40% of landings value.

To refine results to the activity of the RFMO and reduce the overlap with the ICCAT analysis, in the AER 2021 it was proposed an updated definition including the following criteria:

- The exclusion of the ICCAT major species[14].
- Consideration of all fleet segments over 18 metres as LDF.

[13] Canada, Cuba, Denmark (in respect of Faroe Islands and Greenland), EU, France (in respect of St. Pierre et Miquelon), Iceland, Japan, Norway, Republic of Korea, Russian Federation, Ukraine, United Kingdom and the Unites States of America.

[14] Further refinement can be made by including only the list of species covered by NAFO

- High dependency, set at 20% of value of landings from the CA.

The EWG 23-03 and EWG 23-07 decided to maintain this approach for the AER 2023 (as in AER 2022) to show the overall activity of the EU fleet with presence in NAFO but focused its analysis in comparing the activity of the two main fleet segments which have a high dependency expressed in 40% of more of value of landings, i.e. the Portuguese and Spanish demersal trawlers over 40 metres LOA. The reason is that the rest of fleet segments have a dependency ratio lower than 10%.

*Brief description of the EU NAFO fleet*

In 2021 eight fleet segments from four Member States showed some activity in NAFO (excluding ICCAT major species). All eight fleet segments were over 18 metres LOA, but only two of them showed high dependency, which in this case is 40% or more of the total value of landings in the CA: the demersal trawler segments over 40 metres from Spain and Portugal. It is worthwhile to note that Spain had 12 trawlers with reported days at sea in NAFO RA and Portugal had 10 trawlers (two of them operating in the NEAFC). The methodology, however, based on the value of landings, estimates only seven vessels from Spain and eight from Portugal as highly dependent.

According to the reported EU-MAP data, activity of the EU NAFO fleet was composed of an estimated number of 24 vessels which produced 43 269 tonnes valued at EUR 87.2 million. The total number of active vessels increased from 23 in 2020 to 24 in 2021. The main fishing nations are Portugal and Spain. Estonia did not report data of activity to EU-MAP for 2021. The Danish fleet consisted of two vessels and German and Lithuanian fleets each one of them consisted of one vessel fishing seasonally in the region. France, in respect of St. Pierre et Miquelon and Denmark, in respect of Faroe Islands and Greenland, are not included (no data provided by these under EU-MAP) in the analysis as they are to this effect independent contracting parties.

The decreasing trend, shown since 2012, in number of vessels and employment (with only an increase in 2018) has been discontinued in 2021, due to the increase in both variables. Other parameters such as energy consumption and number of days at sea have also increased. However, the volume and value of landings have not experienced a concordant increase, both variables being below the 2020 data.

None of the national fleets are heavily dependent on the region, although specifically, Portuguese demersal trawler fleets above 40 metres obtains around 80% of its total landings in value from activity in NAFO. The other Member States' fleets have less than 5% dependency on this area.

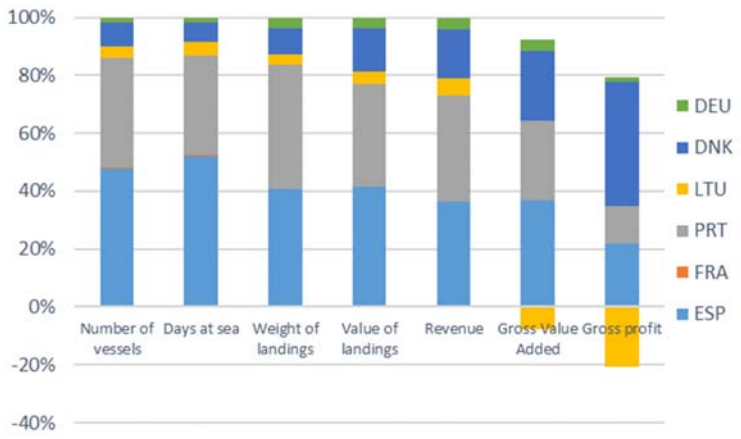
Based on the proposed criteria described above, the two industrial demersal trawler segments from Spain and Portugal identified for the EU NAFO LDF (high dependency on NAFO excluding ICCAT major species) landed 35 477 tonnes valued at EUR 64.7 million in 2021 (Table 3.13 Member State's fleets with activity in NAFO (excluding ICCAT species), 2021). That is a decrease from that of 2020, when landings were reported on 37 991 tonnes with a value of EUR 79.1 million. The reduction was particularly significant in value terms.

**Table 3.13** Member State's fleets with activity in NAFO (excluding ICCAT species), 2021

| NAFO | Estimated no. of vessels | % of total NAFO active vessels | % of NAFO FTE | as a % of NAFO DAS | Weight of landings | as a % of NAFO landings | Value of landings | as a % of NAFO value | as a % of NAFO revenue |
|---|---|---|---|---|---|---|---|---|---|
| | 2021 number | (%) | (%) | (%) | kg | (%) | € | (%) | (%) |
| PRT | 9 | 38% | 44% | 35% | 18.570.142 | 43% | 30.942.771 | 35% | 37% |
| ESP | 12 | 48% | 44% | 52% | 17.657.442 | 41% | 36.138.449 | 41% | 36% |
| DNK | 2 | 8% | 2% | 7% | 3.765.760 | 9% | 12.938.557 | 15% | 17% |
| DEU | 0,5 | 2% | 2% | 2% | 1.686.936 | 4% | 3.390.671 | 4% | 4% |
| LTU | 0,9 | 4% | 8% | 5% | 1.587.593 | 4% | 3.751.515 | 4% | 6% |
| FRA | 0 | 0 | 0% | 0% | 1.657 | 0% | 6.922 | 0% | 0% |
| EU NAFO | 24,3 | 100% | 100% | 100% | 43.269.530 | 100% | 87.168.885 | 100% | 100% |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 3.125** Member State fleet percentage in NAFO (excluding ICCAT species), 2021

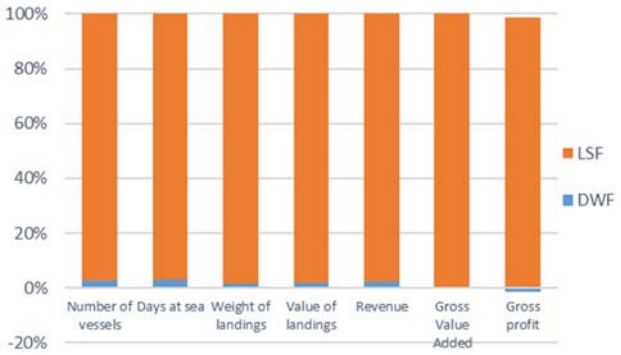



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Capacity*

In terms of fishing capacity, the Portuguese demersal trawlers show 15 733 GT and Spanish demersal trawlers 9 137 GT. Both segments represent 84.2% of the total fishing capacity displayed in the area by the EU fleet.

**Figure 3.126.** Capacity of EU NAFO fleet targeting non ICCAT major species: 2021

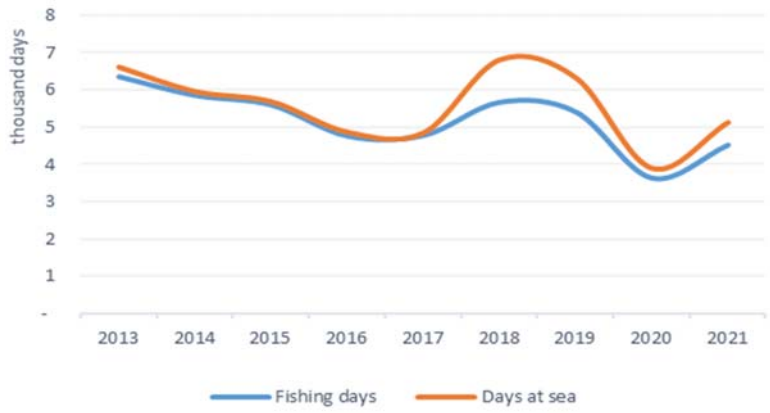



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

*Fishing effort*

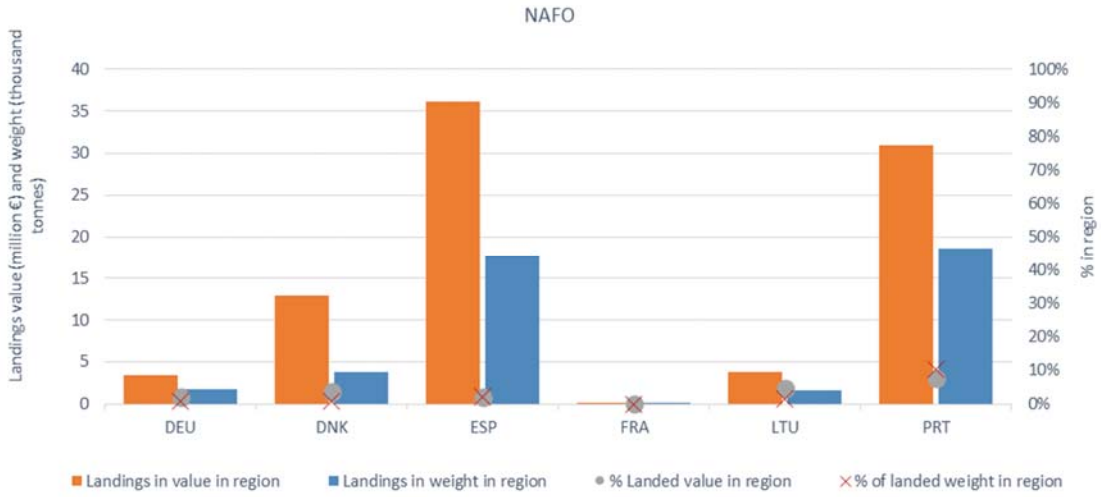
In terms of fishing effort expressed in kw/days and DaS, there was 594 DaS in excess of total number of fishing days. This is mainly attributable to the Spanish demersal trawler fleet segment over 40 metres, reporting 1 415 DaS vs 1 127 fishing days.

**Figure 3.127.** Trends on fishing effort by the EU fleet operating in NAFO targeting non ICCAT major species: 2013-2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

**Figure 3.128.** Landings and value of landings by MS in NAFO targeting non ICCAT major species: 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

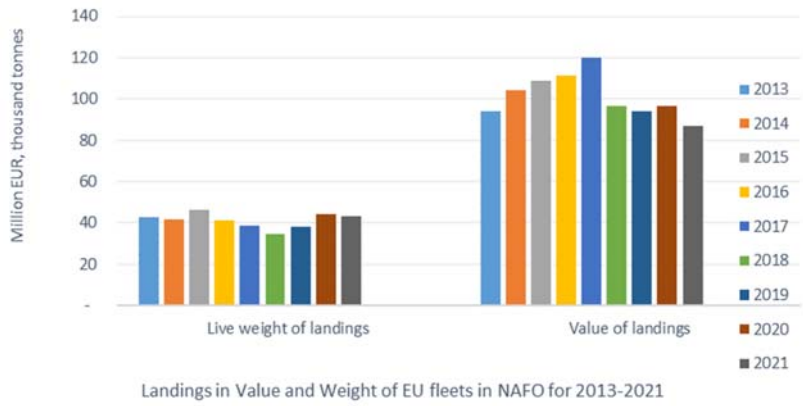
*Landings and dependency*

In 2021, Spain leaded landings in value (EUR 36.1 million), followed by Portugal, with EUR 30.9 million. Regarding the weight of landings, Portugal reached the highest figure with 18 570 tonnes followed by Spain (17 657 tonnes). Spain spent 2 675 DaS in the region, and Portugal 1 765. The rest of fleet segments spent less than 350 DaS in the region and they had a minor activity. Danish, German and Lithuanian trawlers catched near 3 800, 1 700 and 1 600 tonnes of catch in weight, and EUR 12.9, EUR 3.4 and EUR 3.7 Euro in value, respectively. The catch from France was negligible.

Regarding the comparative historical trends, according to EU MAP 2021, landings have reached EUR 87.2 million in value and 43 269 tonnes in weight. This is a considerable decrease in terms of value from the two previous years (where value was between EUR 94 million and EUR 97 million) and a less pronounced drop in terms of volume compared to the previous year (where weight was 44 114 tonnes). Regarding the historical period 2013-2021, landings in weight (excluding ICCAT species) have fluctuated between 34 000 and 45 000 tonnes in the period 2013-2021, reaching a peak of 46 554 tonnes in 2015. The value of landings has fluctuated between EUR 87 million and EUR 120 million in the same period, reaching its peak in 2017. Overall, the average price has fluctuated between 2.0 and 3.0 euro/kg in the

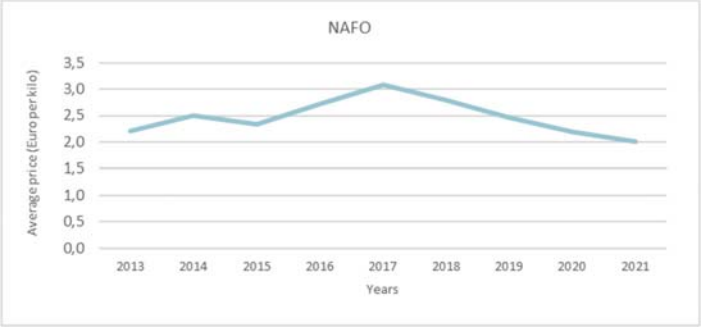
period 2013-2021. Year 2021 show the lowest price in the entire time series, of 2.01 euro/kg, a steady decline down from 3.0 euro/kg in 2017.

**Figure 3.129.** Landings and value of landings trends in NAFO targeting non ICCAT major species: 2013-2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

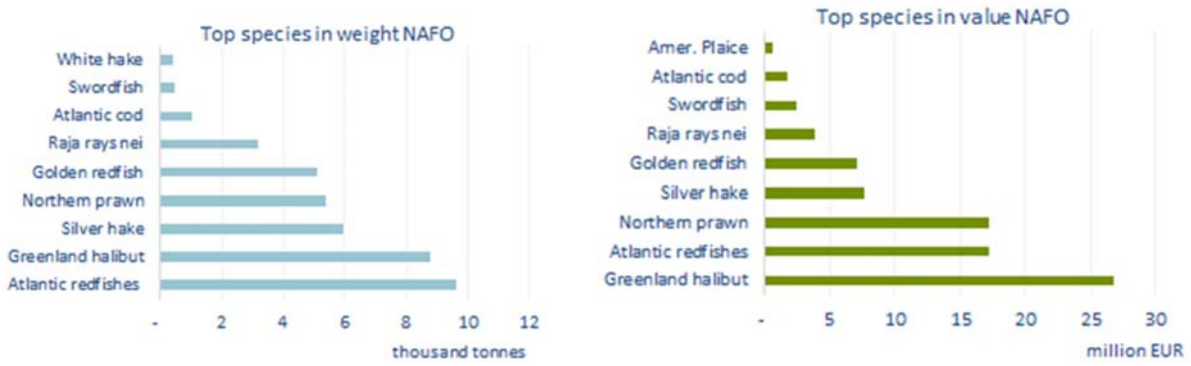
**Figure 3.130.** Average price for fleets operating in NAFO (excluding ICCAT major species), 2013-2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The main species landed from NAFO in 2021, in terms of volume, were Atlantic redfish (9 604 tonnes), Greenland halibut (8 756 tonnes) and silver hake (5 941 tonnes), followed closely by Northern prawn (5 390 tonnes) and golden redfish (5 082 tonnes). In terms of value, the main species were Greenland halibut (EUR 26.8 million), Atlantic redfish (EUR 17.2 million) and Northern prawn (EUR 17.2 million), far ahead of silver hake (EUR 7.6 million) and golden redfish (EUR 7.1 million). It is noteworthy the strong increase in the catch of silver hake in 2021, and the consequent increase in its turnover. The Spanish fleet is to a great extent responsible for this rise. Hake, in its different species, is one of the main target species of this fleet, and catching silver hake in greater quantities is a way of diversifying catches in view of the scarcity of quotas of other target species, and a way of consolidating market channels.

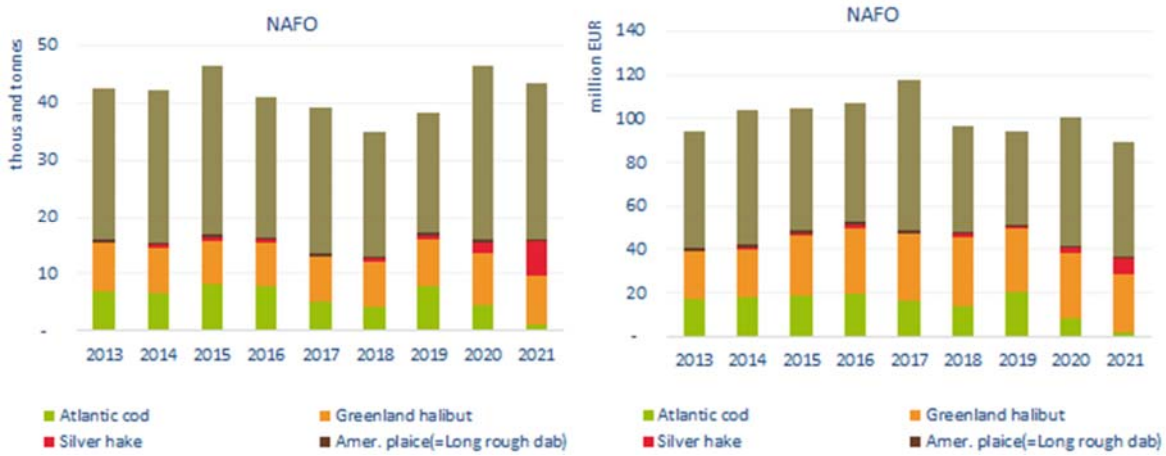
**Figure 3.131** Top species landed in weight and value by EU fleets operating in NAFO (excluding ICCAT major species), 2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In terms of landings, the Spanish fleet caught near 3 990 tonnes of Greenland halibut in 2021 with a value of EUR 16 million; 3 163 tonnes of Atlantic redfish valued at EUR 5.3 million, and 3 750 tonnes of silver hake valued at EUR 3.9 million.

**Figure 3.132** Trends on landings in weight and value by EU fleet operating in NAFO targeting non ICCAT major species, 2013-2021.

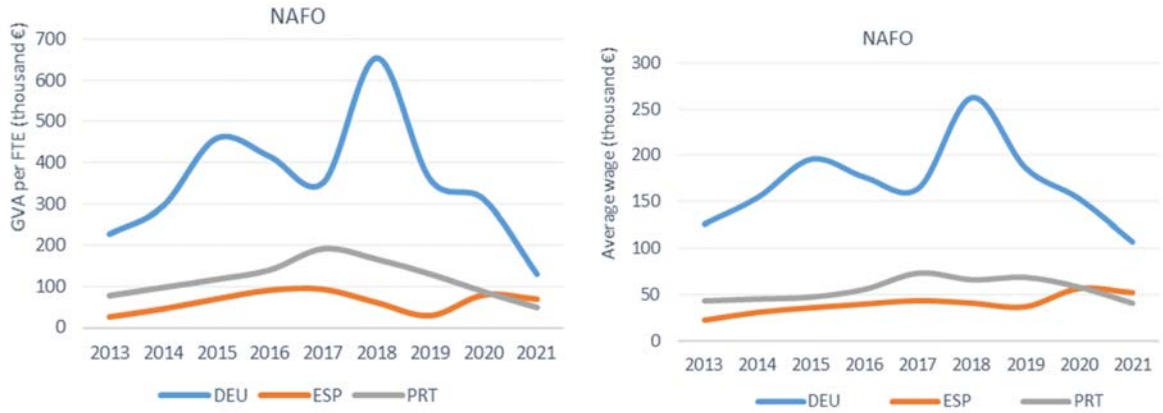



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Economic performance*

When comparing GVA generated unit of work (FTE) between the three main fleet states, we can see remarkable differences. Germany shows the higher value with EUR 129 861 (a marked decline from 2020, when it rwas eported EUR 311 000), while Spain reports EUR 68 804 and Portugal EUR 50 397. The historical performance 2013-2021 shows a decreasing trend since 2017 for Spain and Portugal and since 2018 for Germany. In the case of Germany, this is due to the sharp decline in GVA since 2018 related to the lower value obtained in sales, combined with a continued increase in FTE since that year. The Portuguese fleet also suffers from a significant decrease in GVA since 2017, and at the same time there has been a more intensive use of crew since 2018, which has led to a lower value of the GVA per FTE indicator. Regarding Spain, although there has also been a downward trend in GVA since 2016, this has been reversed from 2019 onwards, and, contrary to the other two countries, the trend in FTE has been decreasing between 2018 and 2020. As a result of this, the GVA per FTE indicator has started to rise since 2019 with only a slight decrease in 2021.

**Figure 3.133.** GVA per FTE and average of EU fleet operating in NAFO targeting non ICCAT major species, 2013-2021.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The average wages between these three countries show also a great disparity, which can be partially attributed to overall employer costs. In 2021, for the first time in the period 2013-2021, Spain shows a value higher than Portugal, by a margin of EUR 11 387. This is because the fall has been continuous since 2017 for Portugal, while in the case of Spain there has been some recovery since 2019. The gap between these two countries and Germany has been considerably reduced compared to the previous year, from over EUR 95 000 to around EUR 55 000.

Economic performance results for 2021 shows a decrease in revenue, GVA and gross profit for the fleet operating in the area with respect to that of 2020. In that year, the change in fishing strategies as a result of the pandemic involved a reduction in operational costs, which partially explained the significant increase in revenue, GVA and gross profit that broke the downward trend observed since 2016 in all variables. In 2021, however, the gradual return to normality led to an increase in operational costs and a recovery of the downward trend.

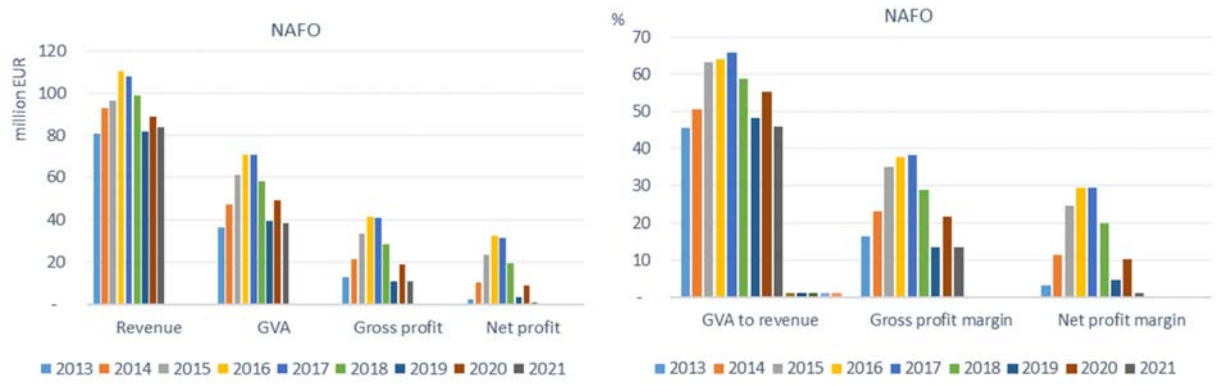
The total revenue was EUR 84.1 million (from EUR 92.5 in 2020), considerably lower than values from the period of 2014-2018, which are all in the region or above of EUR 100 million. The Portuguese (37%) and Spanish (36%) demersal trawlers fleet combined represented 73% of the total revenue with EUR 61.5 million. In 2021, GVA of the EU NAFO fleet was EUR 38.5 million, and gross profit was of EUR 11.2 million. The net profit shows the lowest value in the historical trend, with EUR 0.8 million.

At the fleet segment level, the economic performance of demersal trawlers from Portugal and Spain is quite different. While Portugal has reduced its landings in the area from 22 321 tonnes in 2020 to 18 570 in 2021, Spain has increased them from 15 700 tonnes reported in 2020 to 17 657 tonnes in 2021. Regarding the value of the landings, the increase in the case of Spain (from EUR 35.7 million to EUR 36.1 million) and the strong reduction in the case of Portugal (from EUR 43.4 million to EUR 30.9 million) have reversed the situation of the previous year, making Spain the country with the highest value of landings of all the fleets operating in the area. It is noteworthy that, in percentage terms, the reduction in the value of Portuguese landings (-28.8%) is much greater than the reduction in their volume (-16.8%). This can be attributable to the lower average first sale prices of commercial species targeted by the Portuguese fleet, Atlantic redfish, cod and halibut, for consumption of their internal market vis a vis the Spanish catch which is mainly oriented to exports.

Gross profit generated by the two fleet segments differs extensively, at EUR 2.5 million for the Portuguese trawlers (from 7.7 in 2020) versus EUR 4.2 million for their Spanish counterparts (from 4.3 in 2020). This year the Portuguese and Spanish trawlers have practically converged in labour intensity in the area in terms of national FTE (247 in Portugal vs 245 in Spain), but Spanish spent more on wages (for the first time in the period 2013-2021), and the Spanish energy consumption was higher in terms of volume (10.6 vs 10 million litres) but not in terms of value (EUR 4.8 million vs EUR 6.7 million), due to the lower price of fuel thanks to national subsidies (0.45 euro/litre in Spain vs 0.67 euro/litres in Portugal). The Portuguese demersal trawlers average 26.7 FTE per vessel while the Spanish demersal trawlers average 21 FTE per vessel. Labour productivity was higher in 2021 for Spanish vessels (EUR 68

804) than for Portuguese vessels (EUR 50 397). Both fleets have experienced a decline in labour productivity compared to 2020, although much greater in the Portuguese fleet (-43%) than in the Spanish fleet (-12%). Net profit for Portuguese demersal fleet was negative (-EUR 2 million), while the Spanish demersal trawlers reached a net profit EUR 1.4 million. Net profit margins were - 6.7% and 5.1%, respectively.

**Figure 3.134** Trends on revenue, profits and costs for the fleets operating in the NAFO (left) and cost structure by MS fleet (right)




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Result by Member State

- **Spain**

The Spanish demersal fleet operating in NAFO is composed mainly of freezer trawlers targeting halibut, Atlantic redfish, skates and cod (ESP NAO DTS VL40XX). These vessels generally operate between NAFO (FAO 21) and NEAFC (FAO 27). The Spanish fleet also has longliners operating in the region, targeting mainly blue shark and swordfish which fall within the remit of ICCAT and are therefore excluded from this analysis.

In 2021, the fleet segment of demersal trawlers >40m represents the 28% of NAFO fishing effort (DaS), obtaining 34% of NAFO landed value and weight. The fleet's dependency on activity in NAFO has increased steadily since 2017.

In NAFO, this fleet mainly targets Greenland halibut, Atlantic redfish, silver hake, cod and rays in the Flemish Cap (3M) and Grand Bank (3LNO) areas.

Landings (excluding ICCAT species) amounted to 17 657 tonnes, valued at EUR 36.1 million in 2021.

Landings of the top species amounted to 3 990 tonnes for Greenland halibut value at EUR 16 million, closely followed by silver hake (3 750 tonnes) although with a considerably lower value in relative terms (EUR 3.9 million), which is a reflection of first sale prices (1.04 euro/kg vs 4.01 euro/kg for halibut). Atlantic redfish with 3 163 tonnes landed with an estimated value of EUR 5.3 million shows a better value/weight ratio than silver hake (1.67 euro/kg).

Out of a total of 12 NAFO authorized Spanish vessels, 9 of them operated in the NAFO Regulatory Area in 2021 with a combined effort of 1 246 fishing days. Many of the 9 active vessels in NAFO also combined their activities with other fishing grounds, as a result of decreasing fishing opportunities for target species such as cod and Greenland Halibut in the Regulatory Area. As an example, one vessel alternated fishing activity in NAFO RA with cod fishing in the Barents Sea (Svalbard and Norwegian EEZ), where other two reported combined activity in NAFO and the Atlantic South West, targeting hake and squid. Additionally, other two vessels also had licenses issued by the British authorities to fish within the Falklands EEZ".

- **Portugal**

The Portuguese fleet operating in NAFO is mainly composed of the demersal trawlers over 40 metres targeting Atlantic redfish, cod and halibut. There are also some longline vessels operating in the region, catching mainly blue shark, shortfin mako and swordfish.

This segment was composed of nine vessels operating in 2021. Total landings (excluding ICCAT species) amounted to 18 570 tonnes, valued at EUR 30.9 million in 2021. The fleet's dependency on activity in NAFO has generally increased since 2008, stabilising from 2016 onwards, but faced a decrease in 2020 that has been intensified in 2021. The fleet operates mainly in NAFO Divisions 3LMNO, targeting Atlantic redfish (38% of landing value), golden redfish (22%) and Greenland halibut (17%).

The Portuguese trawlers have reported the highest live weight of landings in the region between 2018 and 2020. However, the considerable drop in the volume of landings has meant that the top position is now occupied by the Spanish fleet. Landings (excluding ICCAT species) amounted to 18 570 tonnes, valued at EUR 30.9 million in 2021. According to the NAFO data, catch for Portugal in 2021 was 17 328 tonnes (total coverage of the EU-MAP).

In terms of economic performance, this fleet segment was not profitable in 2021 and the average price fell. This is also reflected in a decreased GVA and gross profit.

- **Germany**

The German fleet segment with presence in NAFO did not show high dependency, with only 12% of the value of landings reported coming from the area. The fleet segment mainly targets Greenland halibut (1 673 tonnes) and less quantities of roundnose grenadier (5.4 tonnes), northern wolffish (4.1 tonnes) and golden redfish (3.8 tonnes), in the NAFO CA.

Most of the activity of this fleet segment is in NEAFC, corresponding to 90% of the days at sea and 88% of the value of landings in 2020.

- **Estonia**

Estonia has low activity in NAFO, which brings confidentiality issues that prevent the publication of activity and economic data. Despite a stable level of catches around 5 500 tonnes are shown at the catch estimates provided by NAFO (STATLANT), catches of this fleet have not been reported to the EU in the last years. Their main target species are Atlantic redfish, Atlantic cod and Greenland halibut. These discrepancies in data reporting need to be further explored by the EWG in future reports.

- **France**

No data are reported for France on behalf of St. Pierre et Miquelon fleet under the DCF. The NAFO official statistics report 307 tonnes in 2021, 535 tonnes in 2020 and 729 tonnes in 2019.

*Main drivers and factors affecting the performance of the fleet*

- All the EU fleets presented a good economic performance from 2013 to 2017 due to a high value in the key commercial species landed and energy efficiency (lower or stable fuel prices). However, in recent years they showed a decreasing trend in 2018 and 2019 on both weight and value of landings, reaching in 2019 one of the lowest value of landings of all the time series (EUR 82 million), close to the minimum recorded in 2013 (EUR 80.7 million). In 2020, there was a remarkable recovery and increase both in terms of live weight (46 551 tonnes) and value of landings (over EUR 100 million). In 2021, however, both variables have decreased again, although they remain above the values recorded in 2019 (43 270 tonnes valued at EUR 84.1 million).
- After the increase in landings in weight and value in 2020, and the subsequent higher profitability of the fleets compared to 2019, in 2021 gross and net profitability have fallen to the lowest levels of the entire period (gross profit margin of 13.4%). This can be attributed, on the one hand, to the high non-variable and variable costs (partly associated to COVID-19 related measures), and, on the other hand, to low average price of catches (1.94 euro/kg), the second lowest in the whole period after 2013 (1.89 euro/kg).
- Capacity, effort, and landings in weight have decreased in general since 2013. This seems to be consistent with the adaptive fishing strategies and business plans of the concerned fleets due to lower availability of fishing opportunities in the convention area, particularly for Cod, Redfish, and Prawns. In recent years, demersal fishing trawlers targeting cod and redfish have increased their annual level of catch in other fishing grounds such as the North-East Atlantic (FAO 27) or the South-West Atlantic

(FAO 41), targeting other demersal species. This factor could partially explain the overall decrease in days at sea in the area.

- There is a slight but steady decline in employment (in FTE), although after a significant decline in 2020, attributable to measures taken during the pandemic, the levels of 2019 have been restored in 2021. The general downward trend in FTE might be partially linked to the modernisation of boats and mechanisation of processing activities at sea, together with a rotation system of the employed full-time staff on several fishing trips.
- The annual wages have experienced remarkable fluctuations depending on the year. This might be linked to the number of fishing trips where the crew is hired. Portugal seems to show high fluctuations on average wages depending on the year with a decreasing trend in the last five years, from a peak of EUR 73 140 in 2017 down to EUR 40 421 in 2021). Spain shows a more stable range of wages at a lower level (although on an upward trend since 2019, which has made it overtake Portugal in 2021, with EUR 51 809). These generally lower amounts could be also explained in the way the fixed salary is reported without considering in kind contributions or bonus linked to catch. Germany has the highest wages although there are significant differences between years, being 2021 the lowest of the last decade, with EUR 106 748.
- The witch flounder 3NO stock was reopened in 2015, following many years with no directed fishery. This may positively affect the Baltic States which have historical rights to fish it but have a negative effect for Spanish and Portuguese vessels as they could keep on board by-catches for this fishery while it was on moratoria (up to 5% of total catch), and with the reopening they will be forced to discard any catch of this species.
- The HCR for Greenland halibut was adopted at the NAFO Annual Meeting in September 2017 stemming from the new Management Strategy Evaluation, implemented in 2018 with a TAC of 17 500 tonnes. It continues applying and it has contributed to provide a stable framework allowing to adapted fishing strategies and planning for concerned operators.
- On 1 January 2021, the United Kingdom abandoned the CFP, becoming an independent coastal state. This involved renegotiating the country's membership of regional fisheries management organisations in which it was integrated as an EU member. On 3 April 2020, the United Kingdom notified the European Commission of its intention to express its consent, in its own capacity, to be bound by five international agreements establishing five regional fisheries management organisations, intended to be applied during the transition period, in the area of the Union's exclusive external competence on fisheries. Those agreements are: the Convention on Future Multilateral Cooperation in the North-East Atlantic Fisheries establishing the North-East Atlantic Fisheries Commission (NEAFC); the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries establishing the Northwest Atlantic Fisheries Organization (NAFO); the International Convention for the Conservation of Atlantic Tunas establishing the International Commission for the Conservation of Atlantic Tunas (ICCAT); the Agreement for the establishment of the Indian Ocean Tuna Commission (IOTC); and the Convention for the Conservation of Salmon in the North Atlantic Ocean establishing the North Atlantic Salmon Conservation Organization (NASCO). The UK joined NAFO as a new independent member in September 2020, becoming NAFO's 13th contracting party. In 2021, the UK was allocated a total of 140 tonnes of cod quota in NAFO area 3M. In 2022, the quota of UK increased to 373 tonnes due to a large TAC increase, and the UK transferred out all this quota to Norway (187 tonnes) and to the Faroe Islands (186 tonnes) as part of bilateral quota transfer deals.

*Outlook for 2022 and beyond*

- The NAFO Conservation and Enforcement Measures (CEM) incorporate all NAFO measures presently in force as adopted by the NAFO Commission in accordance with provisions of Articles VI and XIV of the Convention on Cooperation in the Northwest Atlantic Fisheries. Every year the NAFO CEM is revised by the Commission. These measures shall, unless otherwise provided, apply to all fishing

vessels used or intended for use for the purposes of commercial fishing activities conducted on fishery resources in the RA as defined in Article 1 of the NAFO Convention.

- The applicable CEM measures for the period analysed in this report (2021): https://www.nafo.int/Portals/0/PDFs/COM/2021/comdoc21-01.pdf
- Also, more information on the historical archive of management measures and quota tables can be consulted at NAFO website: https://www.nafo.int/Fisheries/Conservation

- NAFO Scientific Advice is generated through a joint effort by NAFO members (13 CPCs in 2021) and makes use of different data sampling programs carried out by the Member States. Additionally, available statistics on the resources and their environment are also used when producing the advice.
- The 44th Annual Meeting of the Northwest Atlantic Fisheries Organization took place in September 2022. During the meeting, NAFO made significant progress in further developing its groundbreaking ecosystem approach framework to fisheries management by adopting an ecosystem reference point, the "total catch index" (TCI) to complement stock assessments and to help inform management decisions regarding the potential risk of ecosystem overfishing. NAFO also recognized that significant progress was made in 2022 on its revision of its precautionary approach framework, which is a priority for the Organization, despite difficulties arising from the pandemic. This revision is expected to be finalized at the September 2024 Annual Meeting. In addition, NAFO adopted a Management Strategy Evaluation Workplan for both Greenland halibut in Divisions 2J+3KLMNO and redfish in Divisions 3LN, and it also adopted measures to prohibit the landing and retention of Greenland sharks in the NAFO Regulatory Area (NAFO Annual Report 2022).
- A Management Strategy Evaluation (MSE) for Greenland halibut was adopted at NAFO Annual Meeting in September 2017 with a starting TAC of 17 500 tonnes, and shall be in force from 2018 to 2023 inclusive. This management plan contains a harvest control rule (HCR) which has proven to be robust to date (2023) and contributed to provide economic stability and predictability in the level of catches in the region of 16 000 tonnes to 17 000 tonnes for the coming years.
- A protocol for exceptional circumstances for Greenland halibut MSE was subsequently developed in 2018 to guarantee that the full process is respected. This protocol has not been used yet as exceptional circumstances have not occurred to date.
- Due to the poor biological situation of the 3M Atlantic Cod stock, a drastic reduction of the TAC has been adopted in recent years. In 2020, the TAC was set in 1 500 tonnes, coming down from 17 500 tonnes in 2019 and from 11 145 tonnes in 2018. However, in 2021 the situation improved slightly and it was agreed to set up a TAC of 4 000 tonnes in line with the scientific advice. The TAC of 4 000 tonnes was maintained for 2022.
- On top of this TAC setting, the following three flanking measures apply since 2021 as additional conservation and control measures to protect spawning aggregations and juvenile fish in the Flemish Cap area on the basis of recommendations made by the NAFO Scientific Council (measures 1 and 2) and STACTIC (measure 3), respectively:
    - Time area closure of the directed fishery for the 3M cod stock for January-March.
    - Compulsory use of sorting grids for all trawlers with a directed fishery on cod.
    - 100% Control of landings for vessels engaging in directed fishery on 3M cod stock.
- The economic impact of the decrease of TAC and the time area closure of the directed fishery for cod in 3M is likely to be very detrimental for Portuguese and Spanish demersal trawlers, as they will be forced to change their fishing strategies in the North Atlantic and look for alternative fishing grounds, at least during the time of the closure. Displacement of fishing effort might occur as well as loss of income for those operators more reliant or with higher dependency on this fishery (in particular, Portuguese demersal trawlers). Also, there might be a switch in the target species towards other demersal species such as redfish, Greenland halibut or hake in the short term.

- The benchmark review of the cod (3M Subdivision) initiated in 2018 to develop a HCR is now in stand-by. Work will resume soon trying to provide more stability in the long term to the fleets and avoid big fluctuations in TACs between years. However, this task will be extremely challenging given the dire state of the stock and the poor level or recruitments. The HCR has not yet been developed due to scientific issues with the modelling, but further work is ongoing at the Scientific Council. At the 2021 annual meeting, the Commission agreed on the TAC of 6 100 tonnes for 2023.
- The Commission adopted in 2014 an MSE approach for redfish in Division 3LN (FC Doc. 14/29). This approach uses a HCR designed to reach 18 100 tonnes of annual catch by 2019 to 2020 through a stepwise biannual catch increase, with the same amount of increase every two years. At the 2021 annual meeting, it was decided to continue using the HCR and extend the 18 100 tonnes annual TAC for the period 2023 to 2024. The MSE is currently subject to review. In 2022, available data indicate that biomass is at or below the long-term mean. The stock appears to be above the interim limit reference point ($B_{lim}$).
- The 3M shrimp fishery had a high importance and commercial and socioeconomic value for many EU fishing vessels in the past, but it was under a moratorium from 2011 to 2019. The EU is by far the largest NAFO CPC in terms of quota share for this stock, which was the most valuable one in terms of landings during the period 1995-2010. Within the EU, Estonia is the largest fishing nation of 3M shrimp followed by Lithuania, then Latvia and, to a lesser extent, Denmark, Poland, Spain and Portugal. During the period of closure, there was a slow and gradual improvement of the biomass and in 2019 it was above $B_{lim}$. The commercial shrimp fishing was reopened in 2020 in 3M, with an effort scheme based on allocation by CPCs, corresponding to the EU 823 out of the total 2 640 fishing days. However, it was closed again with effect January 2022 as a result of catch limits being exceeded with only 20% of the fishing effort allocated for 2021. At the 2021 annual meeting, it was agreed to continue the moratorium on the fishing of this stock for 2023.
- The uncertainty on the management of this fishery proves that the management system is not fit for purpose and any future reopening of the fishery will be subject to an agreement on a new system that could be based on quotas, fishing effort or being a mixed system. This situation has already caused the loss of significant incomes for the specialised demersal trawl fleet from Estonia and Latvia. NAFO is planning intersessional work to review the current management approach for shrimp in Division 3M and agree on modalities for transition from an effort to a TAC and quota system, provided that there is agreement between the contracting parties in terms of allocation keys based on reference periods of historical catches. At the intersessional meeting in 2022 to discuss a fishing regime for this stock, there was broad support on moving to a TAC-based regime in order to ensure the effective and sustainable management of this stock.
- The development of an ecosystem-based approach to fisheries management in the NAFO regulatory area and the setting of a coherent network of Vulnerable Marine Ecosystem (VME) areas could bring about new closures or expansion of existing ones (e.g., seamounts, sponges and gorgonians, sea pens concentrations, black corals, bryozoans, etc.). In 2021, a rollover of the current VME closures in the NAFO RA was agreed for an additional year, pending a more comprehensive review. In 2022, VME closures were agreed for the period 2022-2026. A much more exhaustive enumeration of the boundary points delineating the seamount closures in the NAFO Regulatory Area was carried out (and new six closures were added), the boundary points delineating the 3O Coral Area Closure in the NAFO Regulatory Area remained unchanged for the new period, and the polygons delineating areas of high sponge and coral concentrations were redefined as "Polygons delineating vulnerable marine ecosystem area closures". All seamount areas in the NAFO Regulatory Area at fishable depth (i.e. shallower than 4 000 metres) are now closed to bottom contacting fishing gears until December 2026. In total, the areas closed to bottom fishing have a surface area of 372 201 $km^2$, representing 14% of the NAFO Regulatory Area.
- A study on the impact of bottom fisheries in the NAFO area was conducted in 2021. However, a preliminary evaluation that assessed eight fisheries in areas where there are VMEs found that while the Greenland halibut fishery does overlap with polygons containing VMEs, the longline cod and the shrimp fisheries do not. Other fisheries analysed showed an intermediate level of overlap. The NAFO Scientific Committee recommended that this first analysis be augmented with more detailed data including VMS and haul data. The outcomes of this study could influence the dynamics of specific EU fleet segments through closures/displacement and/or reduced effort and/or concentration of catches in other areas.

- Proposals from new areas of closure adjacent to fishing grounds can create a risk of fishing effort displacement. The threshold established by the scientists of 60% of protection for specific areas labelled as VMEs may cause significant economic impacts on areas where there are a consolidated fisheries footprint or adjacent to fishing grounds and important for transit or passage.
- Apart from proposals to potentially close certain fishing areas, the NAFO regulatory area will also likely be affected by other human economic activities that impact the seabed; these include oil and gas drilling and deep-sea mineral mining in the continental platform of Canada. Indeed, any licence to prospect or commercially extract known deposits in the seabed might have an adverse effect on the fishing activities of EU fleets operating in the area. In 2021, the Commission requested the Secretariat and the Scientific Council with other international organizations, such as FAO and ICES, to inform the Scientific Council's work related to the potential impact of activities other than fishing. The NAFO Secretariat has also been mandated to conduct outreach with other international organizations to ensure that NAFO's efforts to protect marine biodiversity are known. NAFO and a coastal State have also established an arrangement to exchange information concerning fisheries and oil and gas activities in the NAFO Regulatory Area.
- An EU funded project developing a method for a multispecies assessment in Subdivision 3M for looking at the ecosystem and the predator-prey interactions between cod, redfish and shrimp was finalised and presented in 2019. This includes a bioeconomic tool to test management scenarios and evaluate economic trade-offs. This approach could bring further uncertainty for those fleets dependent on one commercial species and create unexpected changes in their fishing patterns. A roadmap is being developed to include reporting on progress in multi-species models and simulations to evaluate the reliability of decision rules for species aggregated catch levels (total catch indicator indexes). In a recent study (Pérez-Rodríguez et. al., 2022), a multispecies gadget model (GadCap) simulating the interactions among the Flemish Cap cod, redfish and shrimp has been incorporated as the operating model in a management strategy evaluation (MSE) framework (a4a-FLR) to test the performance of multiple combinations of HCRs for the three stocks when recruitment uncertainty and assessment error are accounted for. The results support the need of accounting for species interactions when designing management strategies for a group of interdependent commercial stocks.
- The COVID-19 pandemic's impact on NAFO fisheries is being analyzed by the NAFO Standing Committee on International Control (STACTIC). At the 2020 Annual meeting, the Commission agreed that STACTIC should compile, make a first review of, including appropriate recommendations, and report for decision-making to the Commission on the measures undertaken by Contracting Parties (CP) via the compliance review. It was also agreed that the Annual Compliance Report for 2020 (to be produced in 2021), when indicating non-compliances by a CP with a given obligation on control, should identify as well any difficulties directly linked to the COVID pandemic to be differentiated from any other non-compliances. At the May 2021 Intersessional Meeting (COM Doc. 11-02), STACTIC developed a questionnaire survey for the purpose of evaluating COVID-19's impact on compliance (STACTIC WP 21-12 Rev). As of September 2021, four Contracting Parties (CPs) responded to the survey. The control measures impacted were the requirements pertaining to deployment of on-board observers (Article 30.5 and 30.6), Greenland halibut port inspection (Article 10.4 (e)), and port state measures (Article 43.10).

*Landing obligation*

- The LDAC adopted in September 2016 an advice in response to a consultation on a proposal for a regulatory text from the European Commission ("Delegated Act") following Article 15.2 of the Basic Regulation of the CFP (EU) No. 1380/2013, whereby it establishes a derogation from the LO for such NAFO stocks in which a specific legal conflict occurs with such articles under NCEM which authorize or require discards in certain cases.
- For the three cases identified, the proposal reflected the incompatibility of such NCEM rules with the LO as follows: the requirement not to retain on board redfish in zone 3M once the olympic quota has been completed (NCEM Art 5.3 (c)), the maximum limits to retentions and authorised by-catches involving the obligation to discard the excess (NCEM Art. 6), with the particular case of capelin as a species under a moratorium (NCEM Art. 6.3 (d)), and the mandatory discard of catches with sizes below the minimum included in Annex I.D (NCEM Art. 14).

- In all such cases, the priority of the international standard was recognised, and it was made clear that NAFO CEM rules should continue to apply, by specific derogation from the LO.
- The LDAC also made a listing and case study of potentially limiting species (choke species) under other situations which could prevent the normal catch of the allocated quotas for the EU Fleets, due to a conflict or a lack of legal certainty between an obligation under NAFO's CEM of not retaining on board, and the obligation to land at a port as provided for under Community legislation.
- The content of the LDAC advice is available here: http://ldac.eu/images/documents/publications/LDAC_Advice_on_Implementation_of_LO_in_NAFO.pdf
- As a result, the EC adopted a Delegated Act establishing a specific derogation to the application of the LO outside EU waters (Including NAFO RA).
- It also requested to STECF to provide scientific advice for those fisheries outside EU waters on possible rules for a de minimis exemption for certain target stocks.
- The reply of the Commission is available here: http://ldac.eu/images/documents/publications/Commision_reply_to_consultation_on_external_dimension_landing_obligation.pdf
- By proposal of Norway, a study was launched in 2019 to analyse potential implications of adoption of LO in NAFO by looking at the EU and Norwegian legislations with the aim of reflecting at possible measures to be discussed in future years. The results of this study will be presented and discussed at the forthcoming NAFO Working Group on Selectivity, By-Catch and Discards Working Group.

### ICCAT - International Commission for the Conservation of Atlantic Tunas

*Background*

The International Commission for the Conservation of Atlantic Tunas (ICCAT) is an intergovernmental regional fisheries management organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and adjacent seas.

ICCATs area of competence covers all waters of the Atlantic Ocean, including adjacent seas (FAO areas 21, 27, 31, 34, 37, 41, 47 and 48). About 30 species are covered by the Convention. Southern bluefin tuna is also covered, although currently the primary responsibility for assessing and managing this species rests with the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). In 2019, ICCAT was given an extended mandate to manage pelagic oceanic and highly migratory species of sharks and rays. These, currently, include pelagic oceanic sharks such as shortfin mako and blue shark.

ICCAT regularly performs stock assessments on the main targeted species and stocks under their remit. These assessments evaluate the current and proposed future harvest practices in light of the Commission's objective to maintain the populations at a level that permits their maximum sustainable yield. The main species and stocks regulated by ICCAT targeted by the EU vessels are:

- Tuna (major sp.) - Atlantic and Mediterranean bluefin tuna (BFT), Atlantic and Mediterranean albacore (ALB) and tropical tuna - skipjack (SKJ), yellowfin tuna (YFT) and bigeye tuna (BET);
- Billfish (major sp.) - Atlantic and Mediterranean swordfish (SWO), blue marlin (BUM), Atlantic white marlin (WHM), Atlantic sailfish (SAI)
- Sharks (major sp.) – blue shark (BSH), shortfin mako (SMA) and porbeagle (POR)
- Small tuna and other billfish (small t) - bullet tuna (BLT), Atlantic bonito (BON), frigate tuna (FRI), little tunny (LTA), common dolphinfish (DOL).

**Table 3.14** List of major species or stocks covered by ICCAT

| Tuna (major sp.) | | Tuna (small t) | | Sharks (major sp) | |
|---|---|---|---|---|---|
| Albacore | ALB | Atlantic bonito | BON | Blue shark | BSH |
| Atlantic bluefin tuna | BFT | Atlantic Spanish mackerel | SSM | Porbeagle | POR |
| Atlantic sailfish | SAI | Blackfin tuna | BLF | Shortfin mako | SMA |
| Atlantic white marlin | WHM | Bullet tuna | BLT | | |
| Bigeye tuna | BET | Cero | CER | | |
| Blue marlin | BUM | Common dolphinfish | DOL | | |
| Longbill spearfish | SPF | Frigate tuna | FRI | | |
| Skipjack tuna | SKJ | King mackerel | KGM | | |
| Southern bluefin tuna | SBF | Little tunny(=Atl.black skipj) | LTA | | |
| Swordfish | SWO | Plain bonito | BOP | | |
| Yellowfin tuna | YFT | Seerfishes nei | KGX | | |
| | | Serra Spanish mackerel | BRS | | |
| | | Slender tuna | SLT | | |
| | | Wahoo | WAH | | |
| | | West African Spanish mackerel | MAW | | |

Source: EWG-23-03.

*Fleet selection and data limitations*

Due to its geographical situation, the EU fleet operates in both the Atlantic and Mediterranean Sea. The fleet also targets species covered by ICCAT in coastal, insular and open-sea offshore areas by artisanal,

small-scale vessels as well as larger vessels over 40m. The EU fishing fleet operating within the ICCAT RA is therefore not entirely a long-distant fishery.

To capture the full scale of the fishery at the EU level, as well as in the context of the LDF, the activity of the EU fleet is analysed in two main parts: (1) ICCAT major-species fleet and (2) ICCAT LDF fleet:

- The EU ICCAT major-species fleet includes all fleet segments with reported landings of one or more of the major species or stocks (as listed in Table 3.21) in the ICCAT RA (Atlantic and/or Mediterranean Sea) in 2020. Due to the low dependency of some of these fleet segments on these stocks, only a general overview of the activity will be assessed, i.e., the economic performance by fleet segment will not be considered.
- To analyse the EU ICCAT major-species LDF fleet, all fleet segments over 18 metres LOA and with 20% or more of their landings in value obtained in 2020 from one or more of the major species or stocks in the ICCAT RA are selected. This method is the same than the one adopted in AER 2021 but differs to that used in previous AERs in three aspects: (1) only the major ICCAT species and stocks are considered, (2) vessel length group 18-24 metres is included and (3) high dependency on the ICCAT RA in terms of value of landings is set at 20%, as opposed to 40% used in AER 2020 (and 60% used in the AER 2019).

As the effort deployed is 100% in many cases, seeing that the ICCAT RA covers the Atlantic Ocean, the value of landings (provided by sub-region) is used to disaggregate the economic data provided at the fleet segment level by supra-region, instead of a combination of effort and landings variables by fleet segment (as is the case with the other regional analyses). Usually, effort (days at sea) is used to disaggregate the number of vessels of a fleet segment to a region. As a result of this methodology, estimations on capacity (number of vessels, GT, kW), economic (revenue, GVA, etc.) and employment (FTE, etc.) variables may be over or under-estimated.

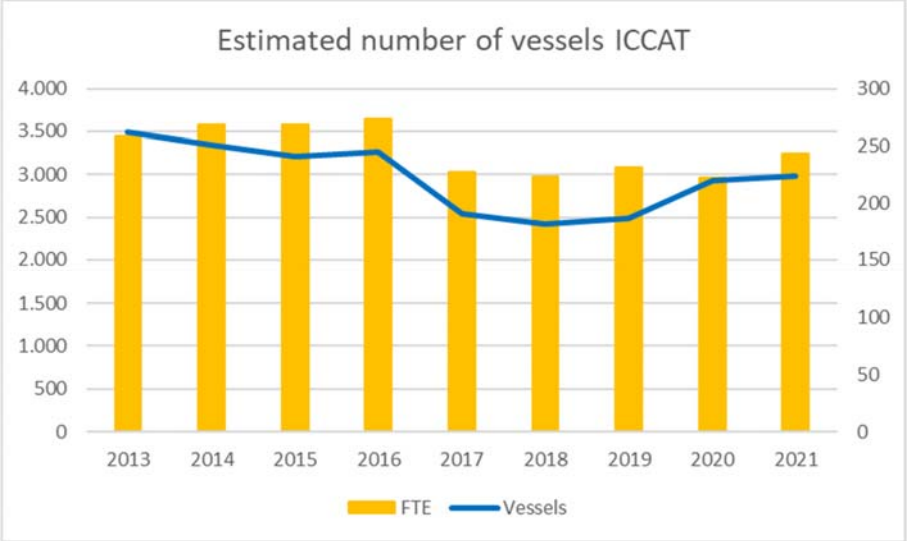
The EWG 23-07 includes a new ICATT fleet selection criteria, which excludes the Mediterranean Sea and the EU Outermost Regions (OMR). The segments that target ICCAT species in these areas are now included in the Mediterranean Sea EU Regional Analysis and in the EU Outermost Regions chapters.

*EU ICCAT Fleet*

According to data submitted, the EU fleet amounts to an estimated number of 223 commercial vessels, 3 vessels more than 2020, and total reported EU landings for the main species regulated by ICCAT in the Atlantic Ocean amounted to 164 543 tonnes in 2021, valued at EUR 321.6 million (Figure 3.135).

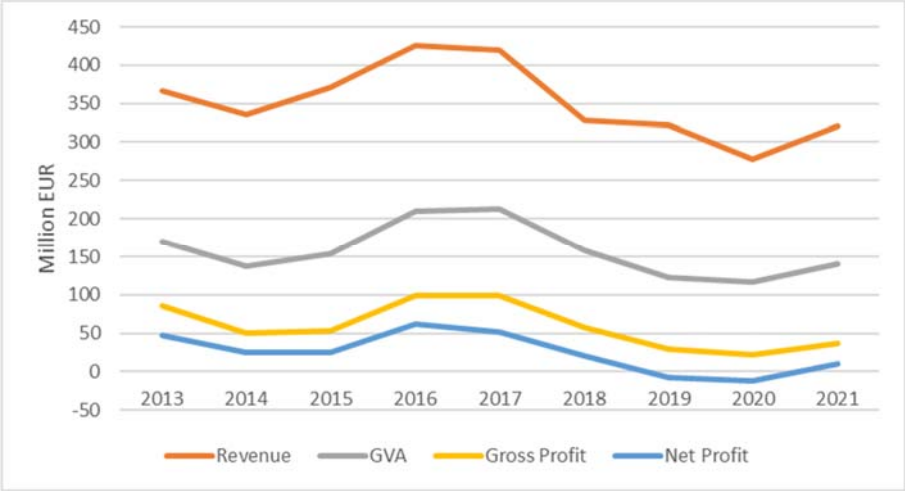
After experiencing a downward trend in previous years, the indicators show a change in 2021 that should be confirmed by the results of the performance of the fleet in the following years (Figure 3.136).

**Figure 3.135** Trends on number of vessels and FTE for the EU Atlantic LDF on ICCAT species.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)).

**Figure 3.136** Trends economic indicators for the EU Atlantic ICCAT LDF on ICCAT species.

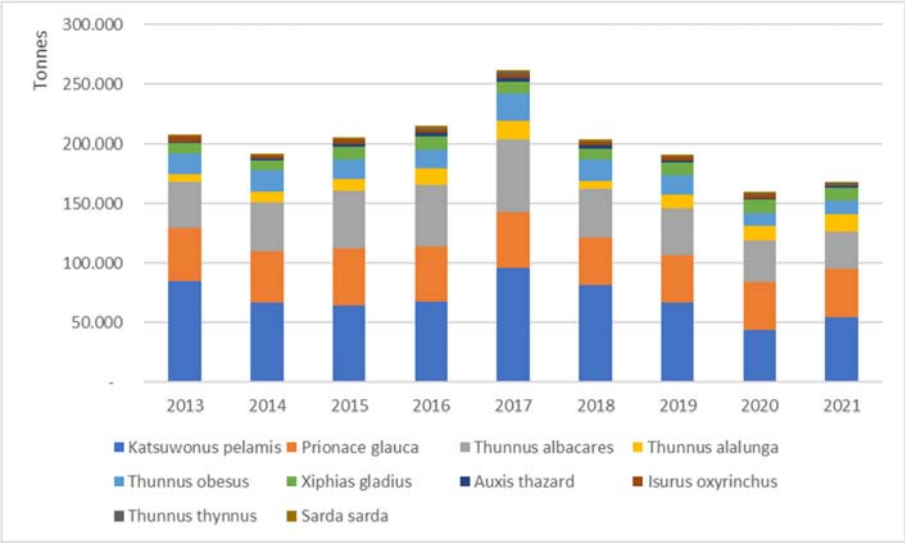



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In 2021, the estimated landings remained almost the same in weight, but increased in value 6%. The average price of the landings increased by 6% compared to the previous year.

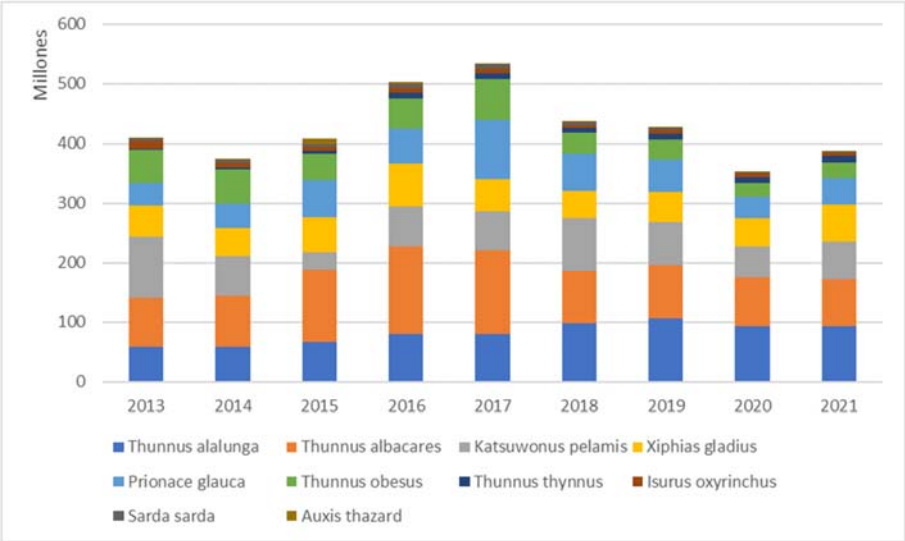
The main species landed in 2021 were skipjack (54 393 tonnes, 33% of the total landings), blue shark (40 743 tonnes), yellowfin tuna (30 947 tonnes), albacore (15 088 tonnes) and bigeye tuna (11 428 tonnes). In 2021, 59% of the major species and stocks landed consisted of tropical tuna. Landings of bluefin tuna amounted to 1 051 tonnes in 2021, 23% more than in 2020 (Figure 3.137).

**Figure 3.137** Trends on landings in weight by the EU fleet of ICCAT major species




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)).

**Figure 3.138** Trends on landings in value by the EU fleet of ICCAT major species




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*LDF Atlantic fleet with high dependency on ICCAT species*

Activity of the LDF in the Atlantic is largely directed towards tropical tuna by purse seiners and longliners.

**Table 3.15** Estimated summary results for the Atlantic EU ICCAT fleet, highlighting segments with high dependency on activity in the ICCAT RA, 2021

| ICCAT (EU LDF ATLANTIC) | MS | Fleet Segment | Number of vessels | FTE | Revenue (EUR) | GVA (EUR) | Gross Profit (EUR) | Net Profit (EUR) |
|---|---|---|---|---|---|---|---|---|
| 2021 | ESP | ESP NAO DFN1824 NGI * | 9 | 106 | 2.963.811 | 1.722.400 | 120.173 | -72.184 |
| 2021 | ESP | ESP NAO HOK1824 NGI | 18 | 93 | 4.824.445 | 3.090.529 | 713.431 | 407.264 |
| 2021 | ESP | ESP NAO HOK2440 LLD * | 31 | 418 | 25.999.321 | 11.431.868 | 952.825 | -950 |
| 2021 | ESP | ESP NAO HOK2440 NGI | 17 | 175 | 8.187.113 | 5.495.200 | 1.026.629 | 648.841 |
| 2021 | ESP | ESP NAO PS 2440 NGI | 33 | 486 | 33.784.360 | 24.237.350 | 5.520.587 | 4.267.215 |
| 2021 | ESP | ESP OFR HOK2440 LLD | 35 | 756 | 46.736.571 | 13.302.830 | 2.713.873 | 678.098 |
| 2021 | ESP | ESP OFR HOK2440 NGI * | 2 | 32 | 3.018.174 | 781.640 | -362.748 | -551.078 |
| 2021 | ESP | ESP OFR PS 40XX NGI | 7 | 438 | 91.913.934 | 42.387.256 | 24.834.956 | 19.421.478 |
| 2021 | ESP | ESP OFR PS 40XX NGI | 7 | 30 | 4.697.638 | 2.146.183 | 365.339 | -110.582 |
| 2021 | FRA | FRA NAO TM 1824 NGI A * | 6 | 128 | 41.816.998 | 13.800.816 | -2.313.814 | -10.550.416 |
| 2021 | FRA | FRA OFR PS 40XX IWE A * | 12 | 125 | 6.612.306 | 3.607.618 | 807.593 | 133.010 |
| 2021 | PRT | PRT NAO HOK1824 NGI | 17 | 168 | 11.328.325 | 3.485.313 | -1.085.662 | -2.874.165 |
| 2021 | PRT | PRT NAO HOK2440 NGI | 5 | 78 | 6.639.886 | 1.569.265 | 71.764 | -633.821 |
| 2021 | PRT | PRT OFR HOK2440 IWE * | 1 | 22 | 1.771.007 | 314.211 | -176.677 | -388.669 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The table above present the main trends of the selection of the fleet segments representing the LDF (over 18 metres with a >=20% landings value dependency on ICCAT major species) selected for the Atlantic.

The selected number of vessels are 199. This also has an impact on the total FTE which has been increased from 2 963 in 2020 to 3 050 in 2021.

*Results by Member State fleet*

- ***France***

The French pelagic trawlers, TM 18-24m, consisted of 9 vessels in 2021, operating in Atlantic Ocean. The fleet targets in particular Albacore (ALB), which represents 32% of the total volumes landed by the fleet in 2021 (38% of the landings values).

The French industrial fleet of Purse Seiners over 40m consisted of 20 vessels in 2021 (including 4 vessels registered on the island of Mayotte), and half of those vessels is made of freezer tuna seiners operating in the Atlantic Ocean (10 vessels in 2021).

In 2021, total volumes of landings of tropical seiners amounted around 110 000 tonnes for all the vessels of the fleet segment, in increase compared to the previous year.

In general terms French segments were not profitable during the year 2021.

- ***SPAIN***

In Spain, various segments target Albacore (ALB) seasonally from June to September. Some of these segments are classified as longliners, such as NAO HOK 18-40m, while others employ different predominant fishing gear, such as DFN 18-24m. Spanish longliners are profitable while netters registered net losses.

There are also two segments of surface longliners of more than 24 meters that target mainly blue shark (BSH) and swordfish (SWO). The gross profitability for the NAO 24-40m segment is weak and OFR 24-40m segment registered gross losses.

In addition, there is presence of 7 industrial purse seiners above 40 metres that target tropical tuna. The segment is profitable and the value of landings increased since 2020.

Regarding OFR HOK 24-40m, there is an estimate of 2 vessels but this segment targets mainly tropical tuna (95% of the weight of landing) in CECAF waters. This segment is not profitable in 2021.

As for the 10 longliners that predominantly fish in Moroccan waters, in addition to targeting species covered under the agreement, they also target bluefin tuna (BFT) in the waters surround Gibraltar Strait (44% of the value and 36% of the weight of landings).

- ***PORTUGAL***

According to the national statistics, in 17 vessels belonging to NAO HOK 24-40m 12 vessels belonging to NAO HOK 18-24m segment have operated in the ICCAT area in 2021.

This fleet targets blue shark (64% and 42% of their landings in weight and 39% and 23% in value, and swordfish 28% and 44% in weight and 51% and 62% in value respectively).

Regarding OFR longliners, the segment HOK 24-40m had 6 vessels that operated in the ICCAT area in 2021, targeting blue shark (86% of their catches, corresponding to almost 4 000 tonnes that valued at EUR 4.68 million).

All segments reported a negative performance in 2021, demonstrating a decline in profitability, with some segments even showing negative numbers.

*Main drivers and limiting factors affecting fleet performance in the ICCAT RA*

- The main commercial species and stocks regulated by ICCAT targeted by the EU vessels are:
- Tuna (major sp.) - Atlantic and Mediterranean bluefin tuna (BFT), Atlantic and Mediterranean albacore (ALB) and tropical tuna - skipjack (SKJ), yellowfin tuna (YFT) and bigeye tuna (BET);
- Billfish (major sp.) - Atlantic and Mediterranean swordfish (SWO), blue marlin (BUM), Atlantic white marlin (WHM), Atlantic sailfish (SAI)
- Sharks (major sp.) – blue shark (BSH), shortfin mako (SMA).
- In terms of volume and value of landings, the main fisheries in the area are tropical tuna stocks (yellowfin, bigeye and skipjack), albacore, swordfish and blue shark.
- After a year of low fuel costs, there was an increase of a 39% in the fuel price. The increase of the average price for key stocks was 22%.
- In terms of fleet segments, most of EU purse seiners fishing in the Atlantic have managed to achieve positive gross profit margins in 2021 (between 16-27%) except for French purse seiners over 40m, with a declared gross loss of –5.5%. Spanish surface longliners reached a weak profitability ranging between 3% and 6%. Most of the Spanish and Portuguese longliners declared reasonable levels of profit. However, the segment PRT NAOHOK2440 exhibited weak profitability. Lastly, pelagic trawlers demonstrated a good profitability, with Danish and Irish fleets being the most profitable.
- The overall reduction of landings reported in ICCAT from both French and Spanish purse seine vessels targeting tropical tuna stocks can be partially explained by the current regulatory framework with a combination of quotas and effort regime system consisting on implementation of a suite of technical

measures including decrease of limit of operational buoys to be deployed, 3 months FAD closure, as well as the considerable reduction of catches (20% in relation to the average of the previous 3 years) because of the biological status of bigeye and, in lesser extent, skipjack tuna stocks.

- In addition, the increase of MCS measures in terms of control of tuna landings at ports, margin of tolerance and monitoring of transhipments has been an extra bureaucratic and operational burden for the activity of this segment.
- Measures such as the 3 months' time closure for FADs (Fish Aggregating Devices) might continue having a negative impact in terms of fleet presence of French and Spanish purse seine active vessels in ICCAT RA. In October 2021, the Chair's draft for a revised ICCAT multi-annual conservation and management programme for tropical tunas included a section related to the management of FADs, displaying the general objectives of minimizing the impact of FAD fishing on purse seine fishing efficiency, on the productivity of bigeye and yellowfin stocks, on non-target species and on pelagic and coastal ecosystems. In order to reduce the fishing mortality of juvenile bigeye and yellowfin tunas, purse seine, baitboat and support vessels, shall be prohibited from deploying, servicing or setting on FADs from 1 January to 31 March each year, throughout the Convention area.
- A reduction of the FAD closure is not foreseen in the short term, given that it is still difficult for SCRS to evaluate its impact in the last 3 years and disaggregate the effect of these closures from the global pandemic. A more detailed analysis is expected to take place in 2023.
- Regarding shortfin mako, the restrictions imposed by ICCAT for vessels to catch and retain on board, tranship or land North Atlantic shortfin mako. Stringent trade measures derived from the application of the inclusion of shortfin mako under CITES Appendix 2 with documentation requirements coupled with increases in observer coverage might likely have as well an impact in terms of catches of these species reported by Spanish and Portuguese surface longliners and a possible increase of pressure on other target species (such as blue shark or swordfish) and displacement of effort to other areas (Indian and Pacific Ocean) might occur.
- In 2021, scientific stock assessments were carried out for three species: Atlantic bigeye tuna, South Atlantic albacore and West Atlantic bluefin tuna. A full assessment of Atlantic bigeye tuna stock was conducted in 2021 using similar assessment models to those used in 2018, updating the data until 2019. The model used natural mortality assumptions with some significant changes derived from new information and new assumptions on maximum age, the relative abundance indices used and the fleet structure. The trends in relative biomass and fishing mortality estimated for the 2021 reference case were more optimistic than equivalent trends estimated in the 2018 assessment. However, the results of the assessment shows that in 2019 the Atlantic bigeye tuna stock was overfished. The situation of the South Atlantic albacore stock in the last completely reported year (2019) shows a sum of 15 640 tonnes, which is below the TAC set for this stock of 24 000 tonnes. The fishery status for West Atlantic bluefin tuna in 2020 was determined to be not overfishing with greater than 95% probability.

*Outlook for 2022 and beyond*

**General institutional and operational framework**

- The ICCAT 23rd Extraordinary Meeting in 2022 was the first face-to-face meeting in 3 years. Due to the COVID-19 pandemic, ICCAT Annual Plenary Meetings and intersessional Panels took place remotely in the period 2020-2021 via written correspondence through the website. This has posed several logistic and technical challenges, exacerbated by the high number of Contracting Parties (50 including the EU), mostly developing countries, number of languages, and time difference due to its wide geographical distribution. As a result, no significant progress was made in passing new conservation and management measures, and work has focused only on a limited number of decisions to extend existing measures, with special attention to the Atlantic bigeye tuna and the northern shortfin mako due to the low biological state of both stocks.

**Tropical tuna stocks (bigeye, yellowfin, skipjack)**

- At the ICCAT Annual Meeting in 2021, no agreement was reached on a recommendation on a new multi-annual conservation and management programme for tropical tunas. This resulted in the rollover of the current temporary measure Rec 19-02 to 2022, with a compromise proposal containing a 72-day closure of fishing with fish aggregating devices (FADs) at the beginning of 2022 and a total allowable catch increase to 62 000 tonnes. At the Annual Meeting in 2022, a simple extension of the

current measure was ratified for 2023 (i.e., TAC for bigeye tuna of 62 000 tonnes and 72-day FAD fishing closure).

- Further work will need to be carried out to ensure that robust management measures can be adopted. Some key outstanding issues to be discussed at future intersessional meetings are: setting of the total allowable catches (TAC) for bigeye tuna (BET) reflecting the improvement in the situation of the stock, the reallocation of fishing opportunities to developing coastal states to secure a more equitable distribution of fishing opportunities, better management of fishing capacity, the management of FADs and also improvement monitoring, control and surveillance (MCS) measures of the fishery.
- According to the last SCRS advice in 2022, the Atlantic bigeye stock continues to be overfished, but not subject to overfishing.
- The effective increase in time and coverage (extending the FAD closure from Gulf of Guinea to the entire Atlantic Ocean) has already had a knock-on effect on the activity of these fleets, in addition to the limits and reductions in the number of FADs deployed and number of supply vessels per PS fleets. More detrimental economic consequences are expected in terms of the performance of the French and Spanish purse seine fleets in ICCAT in relation to catch (landings) and effort (DaS) patterns. They might also bring about displacement of fishing effort towards the Indian and, in a lesser extent, the Pacific Oceans. Work on the adoption and implementation of a multi-species Management Strategy Evaluation (MSE) for the tropical tuna species (yellowfin, skipjack and bigeye) is still ongoing, following a similar scientific process that the ones made and already completed for albacore tuna (2018) and most recently on Bluefin tuna (2022). However, it is still pending of agreeing a set of clear objectives as well as improving the effectiveness of management measures currently in place. There are also significant information gaps for some parts of these fisheries (in particular longliners, pole and lines, etc.) and specific allocation keys cannot be set for yellowfin or skipjack for this reason. Economic stability could be achieved for the fleets in the long term if data issues are resolved and there are clear HCR for each of the stocks with catch limits based on science and pre-agreed decision-making processes.
- The adoption of further management measures for drifting FADs will also, potentially, have an impact on the way that FAD dependant fisheries are conducted. Such management measures on FADs might include inter alia a limit on the number of deployed FADs, the use of non-entangling and further research on biodegradable ones, monitoring and tracking systems for lost or abandoned FADs, etc. Such measures can be expected to impact the economic performance and profitability of the purse seiners and could bring about changes to fishing patterns and/or displacement of effort.

**Albacore tuna**

- The EU, as the main player in the Northern Albacore fishery, tabled to ICCAT at the Annual Meeting in 2021 a forward-looking proposal to upgrade the existing harvest control rules to a fully-fledged Management Procedure. The measure was successfully adopted and was a big step forward for a more effective and efficient management of this fishery. It is the very first complete management procedure to be adopted by ICCAT, marking a milestone in the management of Northern albacore and an example for the development of future management procedure for other fisheries and stocks.
- The introduction of a Harvest Control Rule for Northern Atlantic Albacore Tuna in 2018, together with a 20% TAC increase has given increased certainty to EU operators, particularly in Spain and France, around future management of this stock using a set of clear rules. A fully fledge management procedure could bring further benefits in terms of economic certainty and predictability of the fishery, with potential increased landings by Spanish and French purse seiners and longliners for the years to come. The aim for 2022 is to implement the management procedure (MSE), as well as adopt a protocol on exceptional circumstances and a multiannual management plan.
- Further scientific work is needed to get more reliable and robust data for both the North and South Atlantic swordfish stocks. While total catches are below the EU TAC, at least one EU Member State (Spain) is near full exploitation of its individual quota. In addition, the EU fleet may retain, as by-catch, up to 15% of individuals below the minimum landing size (by number) within its declared catches thereby reducing the degree of discarding.
- ICCAT adopted catch limits for South Atlantic albacore for the period 2023-2026, which includes a TAC of 28 000 tonnes for the period 2023-2026.

**Bluefin tuna**

- At its 23rd Special Meeting in November 2022, ICCAT adopted for the first time in its history a management procedure for Atlantic bluefin tuna. The TAC set for the period 2023-2025 was 2 726 tonnes, and 40 570 tonnes for western and eastern Atlantic bluefin tuna.
- On bluefin tuna in the Eastern Atlantic and the Mediterranean, ICCAT adopted a strengthened monitoring, compliance and control measures through an ambitious in-depth revision of the Recommendation 19_04. This includes a comprehensive set of modifications ensured that potential loopholes in the controls of farming activities are addressed and therefore prevent IUU fishing.

**Sharks**

- The ICCAT Commission finalized in 2019 the protocol to amend the International Convention for the Conservation of Atlantic Tunas, which had been developed over the past six years. The new text modernizes the Commission and provides a mandate to manage oceanic sharks and rays as directed or by-catch fisheries. This will likely result in better accountability and reporting of catch and landings data along with improved control systems for these species.
- Following previous measures in place since 2017, ICCAT adopted its Recommendation 19-06 on the conservation of North Atlantic stock of shortfin mako (SMA) caught in association with ICCAT fisheries. Technical and spatial conservation measures are already in place, including enhanced reporting of catch, safe handling and release of live specimens to reduce incidental mortality due to high survivability. This will likely have a short-term economic impact in terms of lower landings for the concerned Portuguese and Spanish surface longline fleets.
- In 2021, a decision was adopted of based on a recommendation from the EU on a rebuilding programme with a focus on driving current fishing mortality down to sustainable levels. As a result, a 2-year prohibition on the retention of SMA a non-retention policy of both death alive specimens came into force on 2022, to reduce overfishing and increase the chances of rebuilding the North Atlantic stock of such species. The plan contains complementary measures such as best handling practices to increase the survivability of incidental catches and a scientific process to explore in the future a range of mitigation measures form spatial and temporal closures to gear modification. Finally, it also contains an incentive for the fishing sector to go beyond the targets set by the plan by allowing a limited degree of retention of dead fish if mortality levels are driven below the target level.
- In November 2022, ICCAT agreed on a measure for South Atlantic shortfin mako sharks in 2023, similar to that adopted in 2021 for the northern stock, with the objective of ending overfishing immediately and gradually reaching biomass levels sufficient to support MSY between now and 2070 with a probability ranging from 60% to at least 70%. The total annual fishing per total annual catch was set at a maximum of 1 295 tonnes until 2024.
- In practice, the measures on northern shortfin mako established mean a de facto a closing of a targeted fishery with significant socio-economic impact for two specific fleet segments: Spanish and Portuguese longliners between 24 and 40 metres. Those fleets are the ones contributing to provide data in terms of catch reporting, length, size and sex ratio of specimens, or increased observer coverage above the minimum 5%, amongst others. All this data could be lost if the fishery is effectively closed (i.e. a TAC equal of below 500 tonnes).
- In addition to the above, in March 2019, the International Union for the Conservation of Nature (IUCN) classified the Atlantic shortfin mako and the longfin mako as Endangered Species. In August, they were included in the Appendix II Listing of the Convention on International Trade in Endangered Species (CITES), together with other 16 threatened species of sharks and rays this is a valuable fishery for Spanish and Portuguese surface longliners operating in ICCAT RA and it requires extra verification and documentation. This means that a new trade measure is in place in addition to the conservation and management measures, requiring on the operators to provide evidence and documentation on sustainability of the fishery to be sold. This has already raised specific problems in terms of operations and logistics. For example, in 2020, the Spanish Trade Ministry set a quota unilaterally established which does not let allow operators to commercialise legally caught makos from ICCAT which are kept in the meantime stored in freezing facilities. This decision by the Spanish Minister of Energetic Transition has been legally challenged by Spanish longline fleet organisations and will likely produce financial losses because of storage and freezing costs and potential loss of income if they cannot sell their catch.

- Regarding blue shark, ICCAT established for the first time at its Annual Meeting in November 2019 a total TAC for the southern Atlantic blue shark of 28 923 tonnes; and a quota allocation for the northern Atlantic blue shark stock of 39 102 tonnes [Rec. 19-07, amending the Rec 16-12]. The EU got a quota allocation for the northern blue shark stock of 32 578 tonnes for 2020. This was in line with current levels of reported catches in the area so there should be no big alterations in forthcoming years.
- In November 2022, CITES adopted a resolution to include blue shark in the Appendix II not because of concerns related to the conservation status of the stock (in the green Kobe Plot) but on the basis of the "look alike" criteria, meaning it is difficult to distinguish in international trade the blue shark from other shark species which are found to be critically endangered or may become so if trade is not closely controlled. Future international trade of blue shark will continue to be possible if a CITES non-detrimental finding certificate for such species.
- For the case of sharks, further challenges are expected in terms of work coordination between CITES and ICCAT in terms of ensuring a comprehensive and consistent approach for conservation and management of both shortfin mako and blue shark, ensuring exchange of information to improve accountability, MCS and dispatch of NDFs certificates for trade purposes.

**Atlantic Swordfish**

- In November 2022, new management measures were also adopted for both the North and South Atlantic swordfish stocks.

**Compliance and control and trade aspects for fleets**

- In terms of commercial aspects, Spanish and Portuguese surface longliners witnessed a sharp fall in demand in target countries (Italy, Brazil, Senegal…) for swordfish and frozen sharks in 2020 and 2021 so a substantial part of their landings has been stored in freezing facilities in Galicia (Vigo, A Guarda, Marín) or Portugal (Viana do Castelo, Porto).
- Tuna purse seiners saw a drop in the prices due to frozen tuna and tuna loins purchased from China because of the new regulation setting autonomous tariff quotas (ATQs) for certain fishery products for the years 2021-2023, for which they can import 30 000 tonnes each year from non-EU countries at a reduced or zero-duty tariff.
- Regarding monitoring, control and surveillance, there is work to develop integrated monitoring measures (IMM) including a set of minimum standards for electronic monitoring is under study. Progress is also being made on a regional observers' program to better implement Rec. 19-02; as well as a review of Statistical Document Schemes.
- The Compliance Committee has focused on the 23rd Annual meeting in 2022 on some key issues and has adopted a program of actions for future compliance issues, as well as a Recommendation on the use of the integrated online management system.

### IOTC - Indian Ocean Tuna Commission

*Background*

The Indian Ocean Tuna Commission (IOTC) is the RFMO mandated to manage the fisheries on tuna and tuna-like species in the Indian Ocean and adjacent seas. It was established in 1993 and entered into force in 1996. It is an intergovernmental organisation gathering the countries bordering the Indian Ocean and the countries having an interest in the tuna fisheries in the area. The objectives are to promote cooperation among its members for the conservation and optimal utilisation of the tuna stocks in the area and to ensure the establishment of a sustainable fisheries in the region. To achieve these objectives, IOTC embers meet annually, discuss and adopt measures for the conservation and management of tuna and tuna-like species.

The EU became a member of IOTC in 1995. The other members of IOTC are Australia, Bangladesh, China, Comoros, Eritrea, France on behalf of its overseas territories, India, Indonesia, Iran, Japan, Kenya, Korea, Madagascar, Malaysia, Maldives, Mauritius, Mozambique, Oman, Pakistan, Philippines, Seychelles, Somalia, Sri Lanka, South Africa, Sudan, Tanzania, Thailand, the United Kingdom and Yemen.

The IOTC area of competence is the Indian Ocean (FAO statistical areas 51 and 57) and adjacent seas, north of the Antarctic Convergence, insofar as it is necessary to cover such seas for the purpose of conserving and managing stocks that migrate into or out of the Indian Ocean.

The species under the management mandate of IOTC are tropical tuna stocks (i.e., skipjack, yellowfin and bigeye), albacore tuna, frigate tuna and swordfish (Table 3.16 List of major species or stocks covered by IOTC). In addition, the IOTC Commission's Secretariat collates data on non-target, associated, and dependent species affected by tuna fishing operations, i.e., marine turtles, marine mammals, seabirds, sharks and fish species caught incidentally (bycatch).

**Table 3.16** List of major species or stocks covered by IOTC

| Tropical tuna | | Temperate tuna | | Neritic tuna | | Billfish | | Sharks | |
|---|---|---|---|---|---|---|---|---|---|
| Bigeye tuna | BET | Albacore | ALB | Bullet tuna | BLT | Black marlin | BLM | Blue shark | BSH |
| Skipjack tuna | SKJ | | | Frigate tuna | FRI | Blue marlin | BUM | Oceanic whitetip shark | OCS |
| Yellowfin tuna | YFT | | | Kawakawa | KAW | Indo-Pacific sailfish | SFA | Scalloped hammerhead | SPL |
| | | | | Longtail tuna | LOT | Striped marlin | MLS | Shortfin mako | SMA |
| | | | | | | Swordfish | SWO | Silky shark | FAL |

Source: EWG 23-03

*Fleet selection and data limitations*

The EU fleet targeting species covered by IOTC, excluding the OMR are entirely a LDF. The EU IOTC fleet includes all fleet segments with reported landings of one or more of the major species or stocks in the IOTC RA in 2021.

Due to the low dependency of some of these fleet segments on these stocks, only a general overview of the activity will be assessed, i.e., the economic performance by fleet segment with low dependency levels will not be considered.

To analyse the EU IOTC LDF fleet, all fleet segments over 18 metres LOA and with 20% or more of their landings in value obtained in 2021 from one or more of the major species or stocks in the IOTC RA are selected.

This method is the same than the one used in the previous AER 2022 containing three aspects: (1) only the major IOTC species and stocks are considered; (2) the vessel length group 18-24 metres is included and (3) high dependency on the IOTC RA in terms of value of landings is set at 20%.

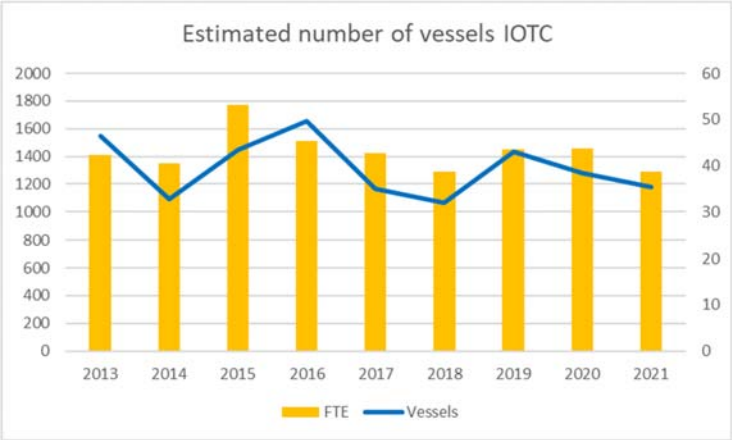
The segments that target IOTC species in Outermost Regions (Reunion and Mayotte) are now analysed in the EU Outermost Regions chapter.

*EU IOTC Fleet*

According to the EU-MAP IOTC fleet data, four Member States were active in the IOTC Convention region in 2020: Spain, France, Portugal and Italy. The EU fleet active in 2021 consisted of estimated 35 vessels: 20 from Spain, 12 from France, 2 from Portugal and 1 from Italy.

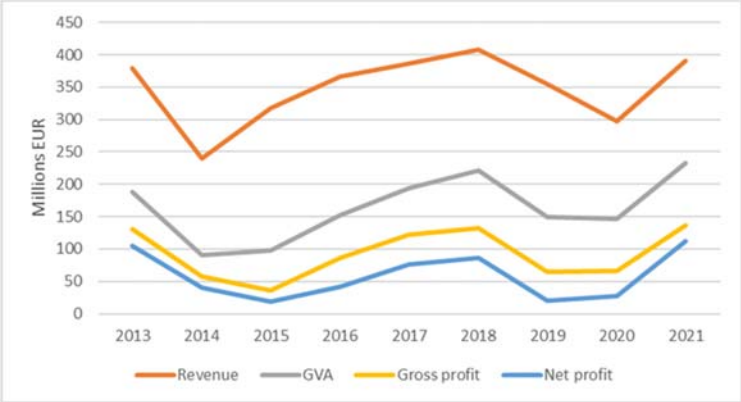
Profitability experienced a 52% increase in Gross Value Added (GVA) in 2021 and the gross profit doubled compared to 2020 (Figure 3.140).

**Figure 3.139** Trends on number of vessels and FTE for the EU Atlantic LDF on IOTC species.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023))

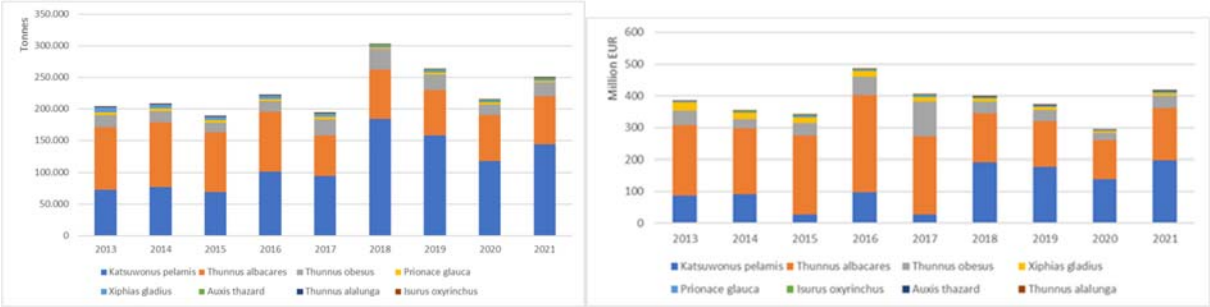
**Figure 3.140** Trends economic indicators for the EU Atlantic IOTC LDF on IOTC species.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

The top species in landings were the tropical tuna species skipjack (143 536 tonnes and EUR 198 million), yellowfin (75 577 tonnes and EUR 164 million) and bigeye (21 817 tonnes and EUR 38 million). Regarding sharks, blue shark (2 798 tonnes and EUR 4 million) and shortfin mako (475 tonnes and EUR 1.6 million) are the main species. Landings of swordfish amounted to 1 850 tonnes and EUR 9.5 million (Figure 3.141).

**Figure 3.141** Trends on landings in weight and value by the EU fleet of IOTC major species




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*EU IOTC LDF*

For the EU IOTC LDF, four fleet segments over 18 metres, with an estimated 27 vessels, showed high dependency on activity in IOTC in 2021 (Table 3.17).

The four fleet segments are: Spanish, French and Italian purse seiners above 40 metres LOA; and Portuguese longliners above 40 metres.

Landings for the IOTC LDF amounted to 243 280 tonnes valued at EUR 392.0 million (Table 3.17). Thus, the IOTC LDF with high dependency covered 98% of the IOTC fleet's landings in weight and 97% of the landings value in 2021.

**Table 3.17** Selected IOTC LDF fleets, 2021

| ICCAT (EU LDF IOTC) | MS | Fleet Segment | Number of vessels | FTE | Revenue (EUR) | GVA (EUR) | Gross Profit (EUR) | Net Profit (EUR) |
|---|---|---|---|---|---|---|---|---|
| 2021 | ESP | ESP OFR PS 40XX NGI | 13 | 849 | 273.760.552 | 177.771.177 | 125.483.454 | 115.925.527 |
| 2021 | FRA | FRA OFR PS 40XX IWE A * | 12 | 241 | 102.682.676 | 50.071.467 | 10.501.592 | -4.299.637 |
| 2021 | ITA | ITA OFR PS 40XX IWE | 1 | - | - | - | - | - |
| 2021 | PRT | PRT OFR HOK40XX IWE * | 1 | 23 | 1.502.091 | -33.730 | -477.472 | -134.102 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Results by Member State fleet

- **France**

The French industrial fleet of Purse Seiners consisted of an estimate of 12 vessels out of the 20 vessels that conform the segment in 2021 (including 4 vessels registered on the island of Mayotte) and half of those vessels is made of freezer tuna seiners operating in the Indian Ocean (10 vessels in 2021)

In 2021, the segment total volumes of landings of tropical seiners amounted an estimate of 782 000 tonnes, an increase of 35% compared to the previous year.

At the global level of the segment, tuna species caught were mainly skipjack (55.4%), yellowfin tuna (37.4% of the total volumes of landings), and big eye tuna (6.2%). Almost three quarters of skipjack catches are made in the Indian Ocean.

- **Spain**

The Spanish industrial fishing fleet operating in the IOTC RA is composed of large (over 40 metres) purse seine and longline (24-40 metres) vessels. The purse seiners target tropical tuna stocks while longliners target swordfish and blue shark but this segment is less dependent on this agreement to catch its targeted species.

The Spanish industrial purse seiner fleet has a presence on the west coast of Africa, in the Indian Ocean, and in the Pacific Ocean.

This segment is the most important EU fleet in the IOTC RA in terms of landings with an estimate of over 150 000 tonnes in weight and EUR 269 million in value. It is composed of an estimate of 13 vessels, employs 849 FTEs and its main target species consist of skipjack, yellowfin tuna and bigeye tuna. This

fleet segment was profitable in 2021 with an estimated gross profit of EUR 104 million with an increase of a 115% since 2020.

- ***Portugal***

There was an estimated number of one vessel active, targeting big pelagic species in the Pacific Ocean, in the area regulated by the IOTC RA. This fleet, composed of longliners up to 24 metres. For confidentiality issues it is not possible to detail the activity in this regulatory area. The most representative species are blue shark (42%) and swordfish (41%).

- **Italy**

Only one Italian vessel was active in the IOTC RA in 2020. This Italian purse seine vessel over 40 metres targets tropical tuna stocks (skipjack, yellowfin tuna and bigeye tuna) exclusively in the IOTC area. Due to confidentiality issues, economic data is unavailable for this fleet.

*Drivers and limiting factors affecting the performance of the EU fleet*

- The main issue in the IOTC relates to lack of comprehensive and quality scientific data. The result is patchy and incomplete data which is used to underpin the scientific assessments. It is therefore crucial that the IOTC increases activities to assist developing states in improving data collection and reporting, and verification of their capacity to monitor compliance with quotas in near-real time.
- Increase in observer coverage (EMS included) would be needed as up to now only EU purse seiners have a 100% observer coverage. An increase in observer coverage, with a minimum of 20% of the activity covered in all industrial vessels, could help to have a more accurate picture of by-catches (e.g., dolphin fish, wahoo, barracuda, etc.) and discards by gears, to understand interactions with tuna purse seiners and long liners. A big step forward has been made in 2023 with a resolution on electronic monitoring systems (EMS) or remote electronic monitoring (REM) of catches for a better scientific data collection, becoming the first RFMO that adopts such standards. This will allow to raise the observer coverage in the future, something that was not possile with the sole use of human observers (half of the catches in IOTC are taken by artisanal vessels).
- Skipjack and yellowfin tuna are the two main species fished in this area, both in terms of volume and value of the total landings. After a 25% decrease in the catches of Skipjack in 2020, there is an increase of 21% in 2021. Yellowfin, contrary to skipjack, landings have been decreasing due to the catch limits adopted by IOTC since 2017, representing over 30% of the total landings.
- The Spanish and French purse seiners above 40 metres LOA show a high degree of dependency in this area. The Spanish purse seine fleet degree of dependency is around 70% in terms of value of landings looking at the last three years analysed (2019-2021); while the French purse seiners degree of dependency is above 60% in the same period. This confirms that the Indian Ocean is currently the main fishing ground for both fleet segments followed by the Atlantic Ocean, where they have over 20% of their value of landings. There is also one Italian purse seiner above 40 meters consistently showing a 100% dependency in this fishing ground for the last years.
- There is an overall increase in the purse seiners fleet growth and benefits, which can be partly explained due to a higher ratio of catches for the main tropical tuna species.
- During COVID-19 in 2020 and 2021, the EU purse seine companies supported increased operational costs to tackle the health crisis: crews had to be put in quarantine at hotels before going onboard, vessels were put in quarantine at port due to positive COVID-19 cases onboard, increases in expenses for the purchase of individual protection equipment and the chartering of planes to conduct crew changes when passenger flights were disrupted or temporally suspended.
- Yellowfin tuna's quota in the Indian Ocean, implemented since 2017, has had an impact on purse seine fishing activity. The EU adopted catch limits assigned to purse seine fleet from Italy, France and Spain. The implementation of the catch limits by each Member State imposed more stringent management to reduce in average 17% of the catch average from the period 2014-2016. If we consider the EU catch by the reference year (2014), the effective reduction by EU flag state differed markedly, with Spain assigned the highest reduction, at 21%, while such reduction was at 4% for the French fleet (Italy had no activity in 2014). In 2019 the Spanish government also implemented a limit on total tropical tuna catch that has reduced fishing opportunities for the Spanish fleet since that year, while such arrangement does not exist for other fleets. The IOTC also imposed enhanced reporting

and control obligations coupled with a reduction in the ratio of one supply vessels for two purse seiners. This ratio was then revised to two supply vessels for five purse seiners.

- The measures adopted in 2018 to reduce 15% average catch of yellowfin tuna have been reflected in the DCF data with a proportional decrease in landings of 8 000 tonnes for the EU purse seiner fleet, with a corresponding sudden increase in skipjack which in 2018 and 2019 was caught in higher quantities than in the past while having a lower market value in overall terms.
- The reduction of purse seiner's catches is having serious socio-economic consequences not only for the European fleet, but also for the economies and livelihoods of some coastal countries in the Indian Ocean where these companies have investments and work with supply chains. Some of the detrimental effects are reduced access fees, lack of raw material at canning factories, and economic loss due to a drop of services and economic activity in several coastal countries.
- Regarding catch data reporting, divergencies have been noted between different sources, e.g., submission of catch data by EU Member States and CPCs to IOTC and via official statistics from EUROSTAT and EU-MAP. This could bring discrepancies on the data collected by the EU-MAP while cross-checked with IOTC to perform analysis.
- Regarding estimate of total catch, including target species and non-target species (by-catch and discards), there are data deficiencies and gaps that need to be addressed. Currently there is a non-existing level of reporting of by-catch data by most CPCs, with only EU purse seiners and long liners collecting this sort of information. This ends up in a rough estimation of nominal discards. There is a need to fill this gap to improve knowledge of sensitive species such as turtles or silky sharks.
- More information would be desirable in the way fishing effort is accounted for and reported for all gears in the IOTC area. Some CPCs such as Korea, Japan and Mauritius have made already a specific request on this in Annual Meetings.Overfishing and IUU fishing by non-EU fleets undermines conservation and management of tuna stocks and puts in risk the future economic viability of the fishery for the EU fleet, due to the deterioration of the stock and the vicious circle of decrease of quotas due to the lack of level playing field between all concerned CPCs.

*Regulatory framework, data issues and outlook for 2022 and beyond*

- In recent years, the IOTC adopted management measures including catch and effort limits for purse seine and other fisheries. For tropical tunas, the measures adopted include Harvest Control Rules for skipjack, catch limits for yellowfin tuna (Resolution 19/01), and measures to limit fishing effort for purse seine fisheries as a whole; as well as procedures on a fish aggregating devices (FADs) management plan, including a limitation on the number of FADs, more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incidence of entanglement of non-target species. It also includes a resolution for the conservation of albacore caught in the IOTC area of competence; observer schemes and regional programme for monitoring transhipments at sea.

**Summary of outcomes of IOTC Annual Meeting 2021**

- The 25th Session of the Indian Ocean Tuna Commission (IOTC Annual Meeting), held on 7-11 June 2021, adopted an updated resolution on an interim rebuilding plan for the Indian Ocean yellowfin tuna stock (which has been overfished and subject to overfishing since 2015). The new measure will come into effect on 1 January 2022. If fully implemented, the adopted measure projects a resultant yellowfin tuna catch level of 401 000 tonnes, an amount that meets the recommendation of the IOTC Scientific Committee. The poor biological situation of the yellowfin tuna stocks will likely lead to further catch reductions for those CPCs abided by the Resolutions. Since the establishment of the rebuilding plan for yellowfin tuna in 2016, the EU has continuously reduced its yellowfin tuna catches by more than 21% as compared to 2014 levels (more than 20 000 tonnes).
- There are a number of IOTC members which have refused to abide by this rule to date, with 6 major harvesters: India, Indonesia, Iran, Madagascar, Oman and Somalia that have objected to date to be subject to the rebuilding plan and have increased their catch unilaterally. At the 2022 annual countries, the same countries have reiterated their unwillingness to participate to the conservation effort. Commitment to continue with diplomatic efforts in 2022, a special session will be called to discuss future solutions at latest by the first quarter of 2023.
- The IOTC did not manage to adopt the proposal to bring back the catches of skipjack within the agreed TAC. Some parties of the IOTC were not willing to take action to ensure that the fisheries on skipjack

remain sustainable on the long-term. This might be counteractive and exacerbate the risk of deterioration of skipjack stock in the medium term.

- However, the IOTC adopted a far-reaching management procedure on bigeye tuna, an important step forward for well-informed science-based management decisions for the management of the bigeye tuna stock in the future.
- In addition, an EU proposal on observer coverage - creating the basis for the introduction of more electronic monitoring system on board - has been adopted by the IOTC parties.
- The EU accepted a further reduction of 6% in catches of yellowfin tuna, summing up to a total reduction of 21% compared to 2014 catch levels (around 92 000 tonnes). As such, the EU is the main contributor to the catch reduction scheme. For the EU fleet (mainly Spanish and French purse seiners), the cut in the TAC is estimated to be around 4 500 tonnes for 2022 for the Spanish and French tuna purse seiners (from 77 694 tonnes in 2021 to 73 146 tonnes in 2022. This reduction in quota will be coupled with the reduction of supply ancillary vessels from 2 for each 5 purse seiners to 3 for each 10. These measures combined will have a likely effect of effort displacement towards EEZs of countries where the EU has tuna agreements in place (Seychelles, Ivory Coast, Gabon…) or fishing in international waters. Longer fishing trips might also reflect into lower energy efficiency, higher fuel consumption and costs.
- However, it is still uncertain if this reduction in YFT catch will be achieved, given the intent expressed by six IOTC member nations (namely, Oman, Iran, India, Madagascar, Somalia and Indonesia) to object to the measure. These six countries represent near 40% of the total catch of yellowfin and a TAC has not been agreed for this stock for them. In the case that all IOTC parties do not fully implement the yellowfin measure, the catch levels recommended by the IOTC Scientific Committee are likely to be exceeded.
- In January 2022, the IOTC set the catch limit for yellowfin tuna at 287 140 tonnes. The EU was allocated a total of 73 146 tonnes of yellowfin tuna, down from 73 945 tonnes in 2021. The other top beneficiaries included Maldives (47 195 tonnes), Sri Lanka (31 066 tonnes), Seychelles (30 359 tonnes), Yemen (26 262 tonnes), and Pakistan (14 468 tonnes). The lowest allocation went to France (territories), the Philippines, and the U.K. at 500 tonnes, 700 tonnes, and 500 tonnes, respectively. There were no new catch limits for Madagascar, Oman, and Somalia. The IOTC is pursuing implementation of its resolution on 21/01 on an interim plan for rebuilding the Indian Ocean yellowfin tuna stock. The resolution came into effect on 17 December, 2021, and applies to all contracting and cooperating non-contracting parties except Indonesia, Iran, Madagascar, Oman and Somalia, whose catch limits are based on IOTC Resolution 19/01.
- In May 2022, IOTC adopted a management procedure (MP) for bigeye tuna, sponsored by Australia, the Maldives, Pakistan, Tanzania, South Africa and the EU. IOTC has adopted the first full MP for any tropical tuna species, and becomes the first to rely on harvest control rules (HCR) to manage more than one species (bigeye and skipjack tuna). The final MP will set a catch limit for bigeye starting in 2024. The MP includes a directive to avoid overfishing and an overfished state with a 60% probability, as well as extensive management strategy evaluation (MSE) testing. IOTC also expects to finalize MPs for swordfish, albacore and yellowfin tuna by 2024.
- Failure in recovering this stock could have a direct economic impact in EU and other fleets as many retailers and supermarkets in developed countries (following mandate from organisations such as ISSF or GTA) have agreed to reduce their annual sourcing of Indian Ocean yellowfin tuna in the event that IOTC does not take appropriate action.
- The EU proposal to bring back the catches of skipjack within the agreed Total Allowable Catch (TAC) was not adopted due to opposition of other IOTC parties. However, a proposal submitted by Maldives on skipjack tuna management without allocation keys was adopted. This is not envisaged to produce any short- or medium-term effect in the catch levels for this species.
- The IOTC agreed to the mandatory use of non-entangling and non-meshed material FADs from 1 January 2020 and encouraged the use of biodegradable FADs from 1 January 2022. In addition, the Commission further reduced the limit on active FADs to 300 for 2020 (down from 550 in 2015 and 350 in 2017) and the number acquired annually per purse seiner to 500 (down from 1 100 in 2015 and 700 in 2017). The non-entangling FADs should not have a great economic impact in the fishing activity of French and Spanish purse seiners as they have them already installed and internalized in their operating costs.

- At the IOTC Annual Meeting in 2021, there was a proposal aiming to further regulate the management of drifting fish aggregating devices (dFADs), reducing the number of FADs from 300 to 150 per vessel, which was rejected by a narrow margin. However, the Commission did not agree on whether the 2/3 majority was met as there was disagreement on whether the votes cast as 'abstain' should be included in the total count of votes, and advice from the FAO Legal Office was requested on this matter. The Commission did not report that a CMM on the management of fish aggregating devices in the IOTC area of competence had been adopted.

**Summary of outcomes of IOTC Annual Meeting 2023**

The 27th annual meeting of the Indian Ocean Tuna Commission (IOTC), that took place from 8 to 12 May 2023 in Mauritius, delivered some important results for sustainable fisheries in the Indian Ocean and concluded in the adoption of 9 important conservation and management measures grouped within the following themes:

Sustainable management of tropical tuna species

- Regarding bigeye tuna, a specific measure was adopted to ensure the sustainable management for this stock introducing clear catch limits for all countries fishing in the area to ensure that the global quota will not be exceeded. Furthermore, special provisions were agreed to enable coastal states to be able to develop their own fisheries. The EU agreed to contribute the most to the catch reduction, reducing EU catches by 18.7% against the 2017-2021 declared catch average.
- Regarding yellowfin, no agreement could be reached.
- Regarding skipjack tuna, there was no agreement on setting catch limits.

Compliance with existing rules

- A long-standing proposal of the EU was successfully adopted to improve the compliance process of the IOTC. The IOTC finally agreed to amend the rules of the IOTC Compliance Committee, an important step forward to make sure that fishing activities are conducted in accordance with applicable laws, regulations, and conservation measures. Moreover, the proposal supports IOTC countries to identify the priority areas where compliance is to be improved.
- The IOTC Compliance Committee has expressed concern repeatedly with low levels of compliance with the commission's regulations. In response, it has produced several recommendations on how to achieve targets set by IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs). In particular, there were low levels of compliance with Resolution 15/02, covering mandatory statistical reporting requirements, and Resolution 17/05, covering the conservation of sharks caught in association with fisheries managed by IOTC. The committee has recommended that the IOTC should carry out a review of its conservation and management measures alongside subsequent reports that point out the challenges encountered during their implementation.
- Within 2022, the committee proposed, the IOTC Secretariat should also provide an analysis highlighting problems and possible solutions on the implementation of resolution 19/04, which concerns the IOTC's records of vessels authorized within its area of competence, so as to guide CPCs in a possible future review.
- Meanwhile, the committee said the IOTC should consider making the use of electronic port-state measures (ePSM) applications mandatory. It should also consider endorsing the Working Party on the Implementation of Conservation and Management Measures' recommendations, with the goal of having the system implemented before the next IOTC compliance assessment in 2023, but IOTC members encountering problems with the system will be allowed to continue using a paper system.

Protection of ecosystems

- The IOTC adopted an important measure to protect seabirds, and cetaceans from adverse impacts of the tuna fisheries. The measure to protect cetaceans was co-sponsored by the EU. These measures reinforce the "ecosystem approach" taken by the IOTC, that aims to take into consideration the whole ecosystem when managing the fisheries.

Electronic monitoring of catches for a better scientific data collection

- The IOTC adopted a proposal co-sponsored by the EU to adopt minimum electronic monitoring standards (electronic monitoring system - EMS - or Remote Electronic Monitoring - REM). The IOTC is the first RFMO that adopts such standards. This will allow to raise the observer coverage in the

future, something that was not possible with the sole use of human observers (half of the catches in IOTC are taken by artisanal vessels).

Fish aggregating devices (FADs)

- The IOTC has not been able to agree on a new resolution for the management of drifting fish aggregating devices (FADs). The EU proposed a new resolution that addressed all the relevant aspects of the FAD fishery, including tackling plastic pollution to limiting the number of FADs. The proposal would have covered all fleets fishing in the region under a single management plan but did not go ahead. The objective was to replace and improve Resolution 23/02, which was adopted in the February special session of IOTC, but to which most of the members fishing on drifting FADs have formally objected including the EU and was not adopted at the Annual Meeting. This proposal aimed to establish a suite of measures on DFADs including a 72-day FAD closure period and a reduction of the number of deployed drifting FADs from 300 to 200 per vessel, through a newly established DFADs register with the provision forbidding the possibility of replacing them overtime, or real-time tracking of DFADs, amongst other measures. In the view of EU and other CPCs, these measures were lacking scientific basis to assess its effectiveness, timing, duration and location.
- It is expected that more stringent measures on FAD management are likely to be adopted in forthcoming years, which would have a real impact on the ground for purse seine vessels fishing with DFADs. Some controversy might arise due to the different approaches by some coastal states CPCs with predominance of artisanal pole and line fleets or fishing with anchored FADs versus those IOTC member nations fishing on DFADs including the EU.

No boarding and inspection measures for vessels in the high seas

- The EU proposal to establish a scheme for the boarding and inspection of vessels in the high seas could not be adopted, despite enjoying wide support.

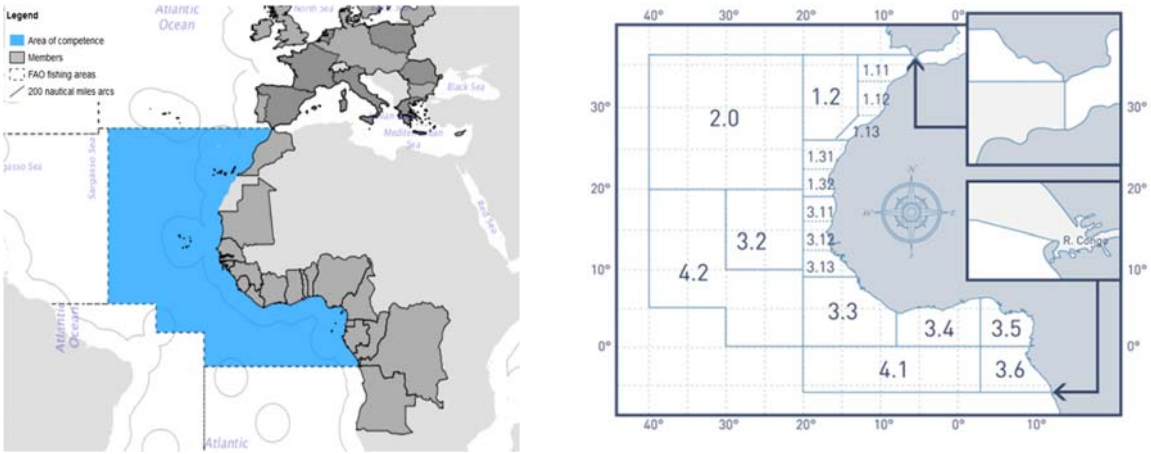
### *CECAF - Fishery Committee for the Eastern Central Atlantic*

*Background*

CECAF is an advisory body and hence has no mandate on fisheries management in its area of competence (Figure 3.142). The Committee covers all living marine resources within its area of competence.

Most of the EU fleet activity in this area falls under the framework of six tuna SFPAs in West Africa (Cape Verde, Ivory Coast, Gabon, Liberia, Sao Tomé e Principe, and Senegal) and three Multi-species SFPAs (Guinea-Bissau, Mauritania and Morocco). The mixed or multi-species agreements offer fishing opportunities for demersal and pelagic species, tuna, cephalopods and shrimp, mainly involving trawlers, purse seiners and longliners.

**Figure 3.142.** Map of the CECAF Area of Competence




Source: FAO http://www.fao.org/figis/geoserver/factsheets/rfbs.html

*Fleet selection and data comparisons/limitations*

A large part of the activity in the CECAF region is related to the tuna fishery, which overlaps with ICCAT. To refine the results and reduce the overlap with the ICCAT analysis, since AER 2022 a third criteria have been introduced: 1. focus is given to the fleets targeting small pelagic and demersal fisheries in the CECAF AC by excluding the ICCAT major species; 2. vessels over 18 metres are selected to exclude activity of OMR local fleets in national waters, specially taking into account that Canary Islands were included in OFR until 2017 3. The segments predominantly get its catches from Outermost Regions are now analysed in the EU Outermost Regions chapter.

According to the three criteria above mentioned combined, only 4 fleet segments are identified with a dependency >20% on CECAF activity for 2021. The estimated number of vessels amount to 39 with 902 FTE. Landings (all species) amounted to 54 670 tonnes valued at EUR 100 million in 2021. These includes only demersal and small pelagic species and excludes all the tropical tuna and big pelagics that are within the remit of ICCAT.

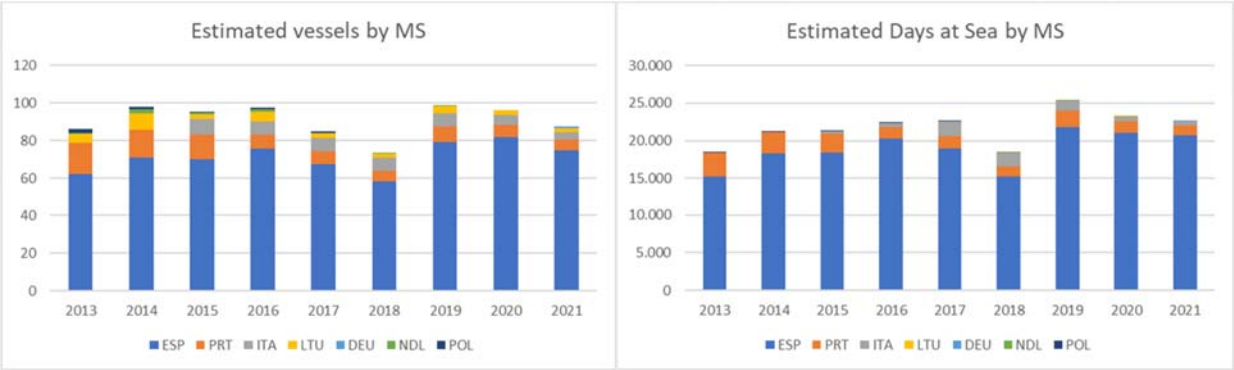
The EWG 23-03/07 reiterates the statement made by EWG 22-06 and EWG 21-08 that an in-depth assessment of the economic performance of the EU fleets operating in CECAF could help to better understand the importance of this area as a fishing ground for several small pelagic and demersal stocks. It also notes that, while it will be difficult to overcome the current limitations in the short term, disaggregated data can be made available beforehand for experts to within the EWGs in the coming years. This will provide useful information for assessing the economic dependence and performance of the EU fleets when getting access to the fishing stocks under SFPAs in third countries waters.

France mainly or exclusively targets tuna and tuna-like species in the area (shown by the absence of CECAF no ICCAT data). Italy and Poland activity is low. Portugal outside its OMRs, Germany and The Netherlands dependency on this area is very low.

*Brief description of the EU fleet activity in CECAF*

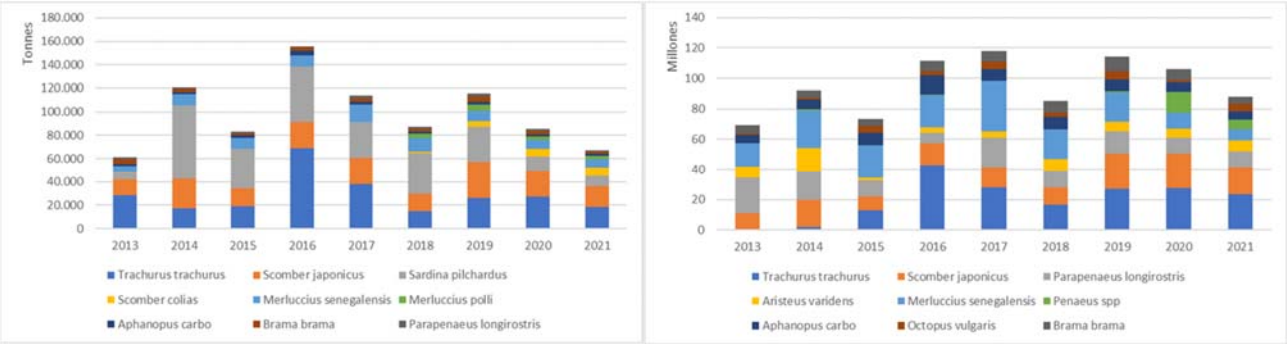
The EU large scale fleet over 18 metres LOA with some activity in CECAF in 2021 is made up of 16 fleet segments and comprised an estimated 87 vessels. This represents a decrease of vessels compared to 2021, but is within the normal range observed over the last years.

**Figure 3.143** Trend on capacity (no. vessels) and effort (days at sea) for the LDF EU fleet active in the CECAF Area of Competence




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)).

**Figure 3.144** Trend on landings in value and weight by LDF EU fleet activity in the CECAF Area of Competence.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A3/AC(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

Historically, the min species landed in value are the tropical tunas (yellowfin, skipjack and bigeye tuna), chub mackerel and Senegalese hake. When excluding the ICCAT major stocks, the top species landed in value are Atlantic horse mackerel (HOM) with 18 367 tonnes, chub mackerel (MAS) with 17 754 tonnes and sardine (PIL) with 8 850 tonnes. However, it is important to underline the importance of other species such as the Senegalese hake (HKM), deep-water rose shrimp (DPS) and striped red shrimp (ARV) due to its high value.

*Brief description of the EU CECAF LDF with a high dependency on the area*

The long-distance fleet, defined as vessels over 18 metres LOA with high dependency on CECAF excluding ICCAT), included an estimated 39 vessels from four Members States[15] in 2021: Spain, Portugal, Italy and Lithuania. This is a small decrease with respect of 2019, where there were 48 vessels from the same Member States.

These vessels combined landed 54 571 tonnes (61 727 tonnes in 2020) in weight with a value of EUR 100 million (EUR 107 in 2020).

[15] Note: France is not included as the fleet targets only ICCAT species in the area; fleets from Poland, Germany, Latvia and the Netherlands are also not included as only partial DCF data were submitted due to confidentiality issues.

The highest number of vessels corresponded to Spain, with 62% of the total (33 vessels including demersal trawlers and longliners), followed by Italy (4) and Lithuania (2 demersal trawlers).

In terms of fleet segmentation, there were six LDF segments targeting non-ICCAT main species in 2021, namely:

- Two Spanish (one demersal trawler and one longline between 24-40 metres each);
- Two Lithuanian pelagic trawler over 40 metres;
- One Italian demersal trawler over 40 metres.

**Table 3.18** Summary results for the 4 long distance fleets over 18 metres LOA operating in the CECAF area with high dependency on non-ICCAT species (EU-MAP)

| CECAF (EU LDF CECAF) | MS | Fleet Segment | Number of vessels | FTE | Revenue (EUR) | GVA (EUR) | Gross Profit (EUR) | Net Profit (EUR) |
|---|---|---|---|---|---|---|---|---|
| 2021 | ESP | ESP OFR DTS2440 NGI | 24 | 673 | 53.979.580 | 19.966.158 | 8.304.111 | 6.717.069 |
| 2021 | ESP | ESP OFR HOK2440 NGI * | 9 | 113 | 4.961.789 | -2.906.178 | -4.787.517 | -5.498.148 |
| 2021 | ITA | ITA OFR DTS40XX IWE | 4 | - | - | - | - | - |
| 2021 | LTU | LTU OFR TM 40XX NEU * | 2 | 116 | 44.932.090 | 23.275.971 | 19.477.903 | 18.448.079 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)). All monetary values have been adjusted for inflation; constant prices (2020).

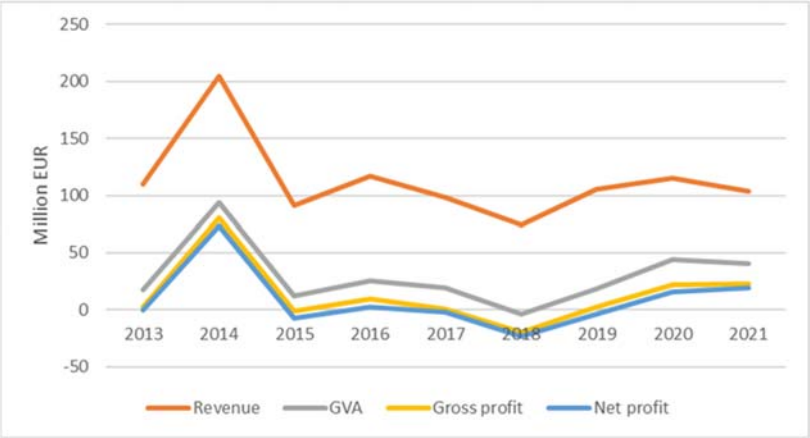
Amongst these four fleet segments, there were three which had a high degree of dependency on this area, i.e., close to 50% or more of the total share of value of their landings the lowest dependency was shown by Spanish longliners of 24-40 metres with 36%. The most dependent fleets were the Italian demersal trawlers over 40 metres operating in international waters that operates exclusively on this area. They were followed by the Spanish demersal trawlers 24-40m and the Lithuanian pelagic trawlers over 40m (62% and 52%, respectively).

The Lithuanian pelagic trawlers over 40m landed the most catch in weight with 37 848 tonnes (showing a lower level than in 2020 where it reported 44 711 tonnes), followed by the Spanish demersal trawlers between 24-40m with 13 958 tonnes (slightly below the 15 532 tonnes reported in 2020).

The Italian demersal trawlers over 40m have the highest ratio value/weight with EU 6 950 per tonne, representing a substantial increase from 2020, where it was EUR 3 057 per tonne. They are followed by the Spanish demersal trawlers 24-40m with 3 420 per tonne, a decrease from last year (EUR 3 574 per tonne), and Spanish longliners 24-40m (EUR 3 053 per tonne). This might be partially explained due to factors such as proximity to the fishing ground implying low fuel consumption and high energy efficiency, as well as reduced transport and operational costs as most catch is channelled to local consumption from neighbouring markets as the target species are mainly sold in the Spanish and Portuguese auctions and markets. Lithuanian pelagic trawlers over 40m present the lowest ratio value/weight with 1 041 which can be explained by the price of small pelagic fish compared with demersal species.

Figures below present the main trends of the selection of the fleet segments representing the LDF (over 18 metres with a >=20% landings value dependency on none ICCAT major species).

**Figure 3.145** Trends economic indicators for the EU CEAFC LDF (no ICCAT) with high dependency in the area




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Combined, the CECAF LDF with high dependency in the area was profitable in 2021, improving on its loss-making position in 2018 but showing a certain stagnation in respect of 2020. The number of vessels and FTE has decreased as did landings in weight and value.

*Results by Member State fleet*

- ***Spain***

**Spanish Hook and line 24-40 segment (ESP OFR HOK 2440 NGI)**

The Spanish hook and line 24-40m segment operating in CECAF (on no ICCAT stocks) was composed of 9 vessels that landed 1 667 tonnes with a value of EUR 5.3 million in 2021. These vessels employed 113 FTE and obtained a negative GVA of -EUR 2.9 million and gross losses of -EUR 4.8 million. The fleet segment obtains most of its revenue from targeting tuna stocks in the same area, but the main target out of tuna is Atlantic pomfret (POA) with 28% of the weight and 47% of the value of landings.

**Spanish Demersal trawler 24-40 segment (ESP OFR DTS 2440 NGI)**

The Spanish demersal trawlers between 24-40 metres reported an estimate of 24 active vessels out of the 34 total vessels in the segment, that landed almost 14 000 tonnes in weight (compared to 15 500 tonnes in 2020.

The value of landings amounted to EUR 48 million in 2021 (14% less than in 2020).

The profitability of the segment has grown due to an increase in the value of landings but the dependency on this fishery is diminishing (62% of the value in 2021 and 76% in 2020) because of a higher presence in SEAFO waters. This has an impact on the economic indicators as they suggest a better performance of this fleet while the estimations for this region are worse than the previous year (value of landings decreased by 14%).

In terms of employment, FTEs have reached their lowest point since 2013, with a total of 672, representing a 20% decrease compared to 2020.

**Spanish longline fleet operating predominately in the Morocco Coastal fishing grounds**

Apart from the fleet over 18m, there is an additional segment, the Spanish longline fleet 12-18m. This is a special case as most of the vessels are small-scale and operate mostly in the Morocco Coastal region (FAO area 34.1), while some activity occurs in the Mediterranean (GSA 1 and GSA 3) and in FAO area 27.9.a (south coast of Spain).

In 2021, this fleet comprised an estimate of 17 vessels (10 more than 2020), the majority being vessels under 12 metres in length using hooks.

Landings (in weight and value) are dominated by splendid alfonsino (BYS), European hake (HKE) and alfonsino (BXD).

The 12 vessels employed 10 FTE and spent 975 DaS to landed 213 tonnes with a value of EUR 153 899. The fleet segment obtained a revenue of EUR 379 651 and had a weak profitability in 2021, generating a GVA of EUR 269 796 and gross profit of EUR 44 389.

- ***Italy***

The Italian trawlers over 40 metres operating in FAO 34 (Sierra Leone and Senegal) included 4 vessels in 2021, one less than in 2020, belonging to two shipowner companies. The fleet has a 100% dependency on CECAF activity and mainly targets demersal species.

Economic data have not been reported for the year 2021.

Between 2020 and 2021, the species composition of landings changed; in 2021, the high valued species increased (common octopus and common cuttlefish), while the incidence on total landings of lower valued species such as monkfish decreased.

- ***Lithuania***

Lithuanian long-distance fleet predominantly operates in CECAF area but have also reported fishing effort in NEAFC. Due to confidentiality reasons, economic data for DWF is reported by clustered segment and

disaggregated by the estimation methods to the level of fishing area. In 2021, two Lithuanian pelagic trawlers were operating in CECAF. Estimated weight of landings in 2021 decreased to 37 848 tonnes, valued at EUR 39.4 million, compared to 44 711 tonnes and EUR 46.8 million in 2020. In comparison with 2020, the weight of landings in CECAF was 15% and 16% lower in weight and value. Fishing effort in terms of DaS declined by 10% compared to 2019. The main species landed included Atlantic horse mackerel, chub mackerel and European pilchard.

Estimated number of employees in CECAF area decreased by 15% to 116 FTE in 2021. Despite the decline in the fishing effort and weight of landings, the segment is still profitable and reported a GVA of EUR 23.3 million and a gross profit of EUR 18.5 million.

*Main drivers and factors affecting the performance of the fleet*

- During the last few years there have been several CECAF actions aimed at assessing and implementing agreements, and to know the state of the fisheries. On June 2022, the CECAF Secretariat organized an Intersessional Meeting in Dakar, Senegal. The purpose of the Intersessional Meeting was to review an independent study on the CECAF Cost-Benefit Assessment (CBA) with the objective of identifying options to improve the functioning of CECAF. Fourteen delegates representing CECAF member countries and the CECAF Secretariat met at the Intersessional Meeting to (i) discuss the revised independent study report; (ii) examine the details and implications of different options presented to the delegates; and (iii) prepare the results of the Intersessional Meeting discussions and recommendations to be presented to CECAF.
- Also, the Working Group for the Assessment of Small Pelagic Fish off Northwest Africa has met annually to update stock assessments and advice on the management of key small pelagic species and stocks in the region. Three meetings have been held between 2019 and 2022 since the last meeting of the scientific subcommittee in 2018. This group did not meet in 2020 due to the COVID-19 pandemic. The following species were analyzed and evaluated by the group: sardine (*Sardina pilchardus*), sardinella (*sardinella aurita* and *Sardinella maderensis)*, horse mackerel (T*rachurus trecae, Trachurus trachurus* and *Caranx rhonchus, Trachurus spp.*), mackerel (*Scomber colias*), bonga (*Ethmalosa fimbriata*) and anchovy (*Engraulis encrasicolus*) in the region between the southern border of Senegal and the northern Atlantic border of Morocco, including the Canary Islands. The annual reports present the principal trends in catches of the main pelagic fishes, recent changes in the fisheries, data quality issues related to sampling, an update on the results of the assessment of small pelagic species and stocks, and the management recommendations of the 2022 Working Group. Among the 10 stocks assessed, five are overfished (round sardine Sardinella aurita, flat sardine S. maderensis, Sardinella spp, horse mackerel Trachurus trecae and bonga Ethmalosa fimbriata), three stocks are fully exploited (horse mackerel Trachurus trachurus, horse mackerel Scomber colias and anchovy) and the two sardine stocks (Sardina pilchardus) are not fully exploited.

*Outlook for 2022 and beyond*

The EU is one of the members that has signed the most agreements with other CECAF countries. Agreements are currently in force with Cape Verde, Côte d'Ivoire, Gabon, Guinea-Bissau, Mauritania, Morocco, Sao Tome and Principe, Senegal and The Gambia. A brief description of these agreements follows:

- Fisheries Partnership Agreement between the EU and Cape Verde: The fisheries agreement between these two territorial entities has been tacitly renewed since 2007. The current protocol covers a period of 5 years (20.05.2019-19.05.2024) and authorizes extractive fishing by 69 European seiners, longliners and pole-and-line vessels from Spain (45), France (16) and Portugal (8). The species authorized to be caught are tuna and tuna-like species, and the annual contribution amounts to EUR 750 000.
- Fisheries Partnership Agreement between the EU and Côte d'Ivoire: Since 2007, this agreement has been renewed for a period of 6 years. The current protocol is valid from 01.08.2018 until 31.07.2024. This agreement benefits 36 Tuna seiners and Surface longliners vessels from Spain (22), France (12) and Portugal (2). The species authorized for their catch will be tuna and the annual contribution amounts to EUR 682 000.
- Fisheries Partnership Agreement between the EU and Gabon: The Fisheries Partnership Agreement has been concluded between the EU and Gabon for five years (29.6.2021-28.6.2026), which can be tacitly extended. This fishing agreement allows tuna seiners, Trawlers for deep sea crustaceans under exploratory fishery and Poles and lines vessels from the EU (37) from Spain (24) and France (13) to

fish in Gabonese waters and is part of the tuna net fishing agreements in West Africa. The species authorized to be caught will be tuna and the annual contribution amounts to EUR 2 600 000.

- Fisheries Partnership Agreement between the EU and Guinea Bissau: Since 2007 this agreement has been renewed for a period of 5 years, the current one covering the period 15.6.2019-14.6.2024. This is an agreement for catches of mixed species, such as tuna, cephalopods, shrimp, demersal species and small pelagics. The authorized European vessels come from several countries, including Spain, Portugal, Italy, Greece, France, Lithuania, Latvia and Poland. The economic contribution to this agreement is EUR 15 600 000.
- Fisheries Partnership Agreement between the EU and Mauritania: This agreement is tacitly renewed every 6 years, with the current one running from 16.11.2021 to 15.11.2027. The species authorized for capture are shrimp, demersal fish, tuna and small pelagic fish, up to a total of 287,050 tons per year. The economic contribution to this agreement is EUR 57 500 000.
- Fisheries Partnership Agreement between the EU and Sao Tome and Principe: The current protocol is for 5 years and is stipulated for the period between 19.12.2019 and 18.12.2024. This agreement allows European seiners and longliners from Spain (21), France (12), and Portugal (1) to fish for tuna. The financial contribution to this agreement is EUR 840 000.
- Fisheries partnership agreement between the EU and Senegal: The current fisheries partnership agreement concluded between the EU and Senegal covers the period 18 November 2019 - 17 November 2024, and is tacitly renewed for 5-year periods. This agreement allows tuna seiner, longliners, pole-and-liners, and trawlers vessels from Spain (29), France (16) to catch tuna and a limited amount of demersal hake. The financial contribution to this agreement is EUR 1 700 000.
- Fisheries Partnership Agreement between the EU and The Gambia: The duration of this agreement is 6 years (31.7.2019 - 30.7.2025) with an option to renew. This agreement allows tuna seiners, pole-and-liners, and trawlers vessels from Spain (26), France (14), and Greece (1) to catch tuna. The financial contribution to this agreement is EUR 550 000.
- Fisheries Partnership Agreement between the EU and Morocco: The current protocol is for 4 years and is stipulated for the period between 18.07.2019 and 17.07.2023. This fisheries agreement allows a total number of 128 EU vessels coming from Spain, Portugal, France, Germany, Lithuania, Latvia, Poland, Netherlands, Ireland, Italy and United Kingdom, to fish in the Moroccan exclusive economic zone (EEZ). The economic contribution to this agreement is EUR 208 million over a 4-year period.

On 29th September 2021 the General Court of the European Union annuled the Council decisions concerning the Sustainable Fisheries Partnership Agreement (cases T-344/19 and T-356/19) for being applied to Western Sahara. Such ruling was appealed by the European Commission, so the protocol remains in force if there is no final ruling, or until July 2023.

As set in the External Dimension of the Common Fisheries Policy, the objective of the Fisheries Agreement is to enable the Union and the Kingdom of Morocco to work together more closely on promoting a sustainable fisheries policy and sound exploitation of fishery resources in the fishing zone defined in the Fisheries Agreement and supporting the Kingdom of Morocco's efforts to develop the fisheries sector and a blue economy. It thereby contributes to achieving the objectives of the Union under Article 21 of the Treaty on European Union.

### *NEAFC - The North East Atlantic Fisheries Commission*

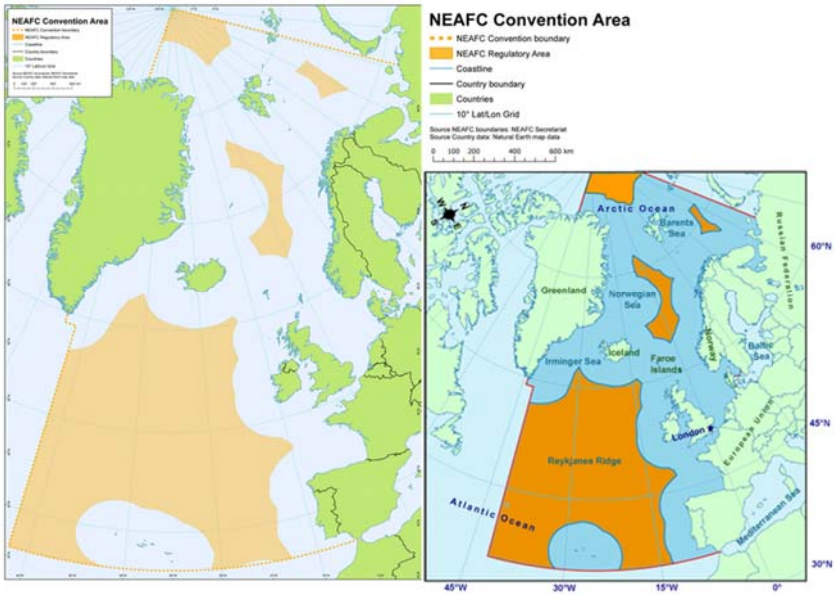
*Background*

The North East Atlantic Fisheries Commission (NEAFC) is the Regional Fisheries Management Organisation for the North East Atlantic. NEAFC is comprised of six Contracting Parties, namely: Denmark (in respect of the Faroe Islands & Greenland), European Union, Iceland, Norway, the Russian Federation and United Kingdom (since 2020), which have signed up to the Convention on Multilateral Cooperation in North East Atlantic Fisheries, which entered into force in November 1982. They also have three cooperating non-contracting parties, namely Bahamas, Canada and Panama.

The area covered by the NEAFC Convention stretches from the southern tip of Greenland (42° W), south to Spain (36° N) and west to the western tip of Russia at Novya Semlya (51° E). The Convention area does not include the Mediterranean Sea and the Baltic Sea (Figure 3.146). NEAFC's objective is to ensure the long-term conservation and optimum utilisation of the fishery resources in the Convention Area, providing sustainable economic, environmental and social benefits. To this end, NEAFC adopts conservation and management measures for various fish stocks and control measures to ensure that they are properly implemented. NEAFC also adopts measures to protect other parts of the marine ecosystem, in cooperation with OSPAR, from potential negative impacts of fisheries. All these objectives are channeled through the implementation of the NEAFC Scheme of Control and Enforcement (NEAFC Scheme) and NEAFC Recommendations.

The institutional framework for EU member countries is completed with the Joint Deployment Plan (JDP). This implements both the NEAFC guidelines as well as the EU conservation and control measures applicable to EU fishing vessels in the NEAFC RA, in accordance with Article 17 of Regulation (EU) No. 1236/2010. The NEAFC JDP has been applicable since 2009 and involves Cyprus, Denmark, Estonia, France, Germany, Ireland, Latvia, Lithuania, the Netherlands, Poland, Portugal, Spain and Sweden.

**Figure 3.146** Map of the NEAFC area of competence




The main fisheries in the NEAFC CA are:

- Redfish (oceanic *Sebastes Mentella* and pelagic deep-sea *Sebastes Mentella*)
- Mackerel
- Haddock
- Herring (Norwegian Spring- Spawning Atlanto-Scandian)
- Blue whiting
- Deep-sea species

Total catches in the North East Atlantic are approximately 10.5 million tonnes. The four top main fisheries regulated in the NEAFC Regulatory Area give catches in the NEAFC Convention Area of approximately 3.3 million tonnes, which is 31 % of total catch.

*Fleet selection and data limitations*

All fleet segments over 18 metres with a high dependency on stocks in the (1) NEAFC CA and (2) NEAFC RA, excluding ICCAT major species.

Once agreement is made regarding the area to be assessed (CA or RA), further refinements can be made, such as calculating the dependency of fleet segments only on the species considered by NEAFC.

The main difficulty in providing an accurate assessment of the performance of the EU fleet active in the NEAFC RA is the granularity of the spatial (transversal) data. In the fleet economic data call, effort and landings data are called for at FAO fishing area level 3 (Division) in the North Atlantic, and at level 4 (Sub-division) for the Baltic Sea. Thus, it is currently impossible with the level of data to limit the analysis to fleet activity only within the NEAFC regulatory areas. One solution would be to call transversal data (effort and landings) at the level of ICES statistical rectangle or by C-square cells, as requested in the FDI data call. A potential issue with this would be related to confidentiality rules, which is already an issue in some cases at level 3 or 4. However, as NEAFC appears to consider catch in the Convention Area (i.e., FAO major fishing area 27), then this is no longer an issue.

Table 3.19 provides summary statistics for the EU fleet operating in the NEAFC RA in 2020 as well as the Member State fleet with high dependency on the area.

**Table 3.19** Estimated summary results for the EU NEAFC fleet, highlighting fleet segments with high dependency on activity in the NEAFC RA, 2021

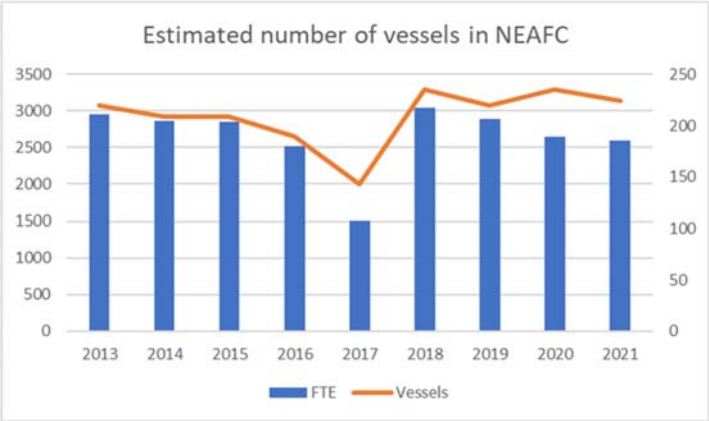
| NEAFC (EU LDF NEAFC) | MS | Fleet Segment | Number of vessels | FTE | Revenue (EUR) | GVA (EUR) | Gross Profit (EUR) | Net Profit (EUR) |
|---|---|---|---|---|---|---|---|---|
| 2021 | DEU | DEU NAO DFN2440 NGI * | 4 | 9 | 1.780.077 | 114.043 | -824.171 | -975.825 |
| 2021 | DEU | DEU NAO DTS40XX NGI | 4 | 108 | 25.248.430 | 11.653.263 | 1.155.039 | -5.015.534 |
| 2021 | ESP | ESP NAO DTS2440 NGI | 16 | 283 | 33.463.653 | 21.683.954 | 8.455.756 | 7.661.035 |
| 2021 | ESP | ESP NAO DTS40XX NGI | 2 | 56 | 15.930.014 | 12.544.336 | 5.632.211 | 5.084.848 |
| 2021 | ESP | ESP NAO PGP2440 NGI * | 33 | 630 | 46.686.311 | 22.693.731 | -2.090.798 | -3.846.877 |
| 2021 | FRA | FRA NAO DFN2440 NGI A * | 16 | 204 | 23.958.981 | 10.997.555 | 3.116.917 | 1.848.456 |
| 2021 | FRA | FRA NAO DTS2440 NGI A * | 14 | 96 | 27.286.108 | 15.645.541 | 5.529.589 | 3.124.323 |
| 2021 | FRA | FRA NAO DTS40XX NGI A | 1 | 24 | 9.758.892 | 5.716.211 | 2.343.634 | 883.455 |
| 2021 | FRA | FRA NAO HOK2440 NGI A * | 9 | 108 | 11.586.383 | 3.229.928 | -1.181.383 | -1.972.099 |
| 2021 | IRL | IRL NAO DFN1824 * | 9 | 52 | 3.683.617 | 2.579.504 | 1.330.579 | 1.092.345 |
| 2021 | IRL | IRL NAO DTS1824 | 19 | 93 | 14.904.394 | 6.976.114 | 1.440.089 | 496.950 |
| 2021 | IRL | IRL NAO DTS2440 | 22 | 113 | 21.054.778 | 7.467.392 | 2.056.859 | 545.740 |
| 2021 | IRL | IRL NAO TM 2440 | 6 | 17 | 6.990.089 | 2.492.771 | 304.748 | -896.032 |

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Figures below present the main trends of the selection of the fleet segments representing the LDF (over 18 metres with a >=20% landings value dependency none ICCAT major species).

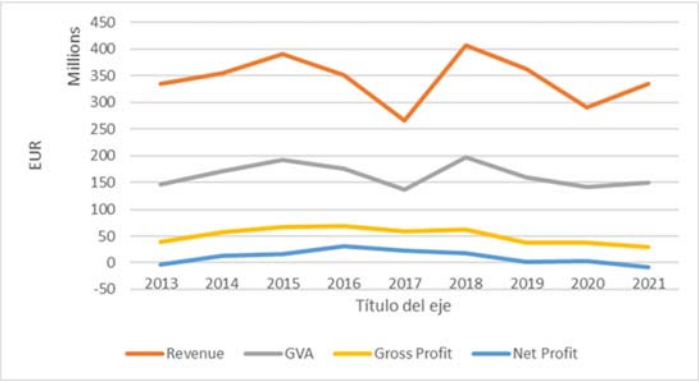
The selected number of vessels are 151 a number similar to the one obtained in 2020 (152). This also has an impact on the total FTE which has been reduced from 1 929 in 2019 to 1 793 in 2021.

**Figure 3.147.** Trends on number of vessels and FTE for the EU NEAFC (no ICCAT) LDF.




Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023));

**Figure 3.148** Trends economic indicators for the EU NEAFC (no ICCAT) with high dependency in the area (by average vessel)

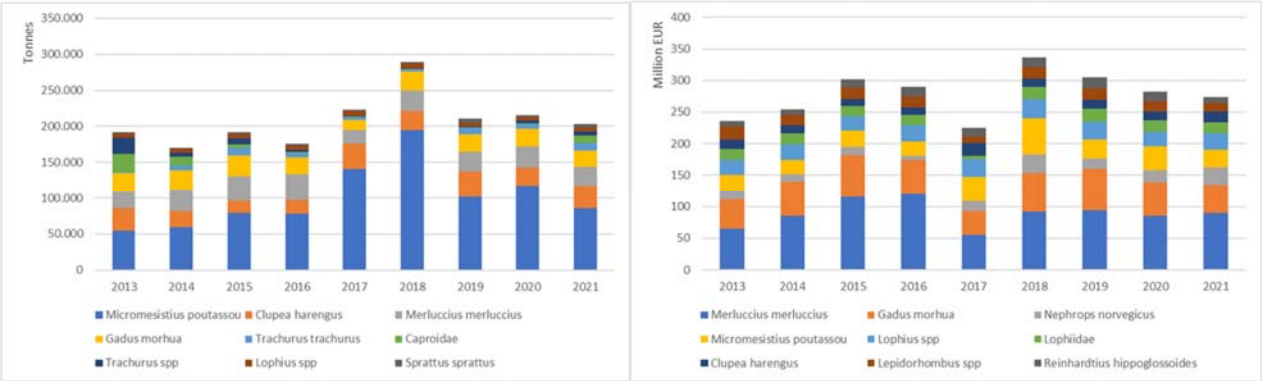



Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Given the reduction in the number of vessels selected gross and net profit indicators present a downward trend. Therefore, it has been decided to calculate the average per vessel resulting in a negative net profit for 2021, the first one since 2013.

The main landings in weight for this area are blue whiting (WHB) with 85 437 tonnes, Atlantic herring (HER) 31 309 tonnes, European hake (HKE) 27 016 tonnes and cod (COD) 22 398 tonnes. In terms of the value, the main landings are European hake (HKE) EUR 90.1 million, cod (COD) EUR 44.0 million, Norway lobster (NEP) EUR 28.6 million and Atlantic herring (HER) EUR 27.7 million.

**Figure 3.149** Trends value of the main landings for the EU NEAFC (no ICCAT)



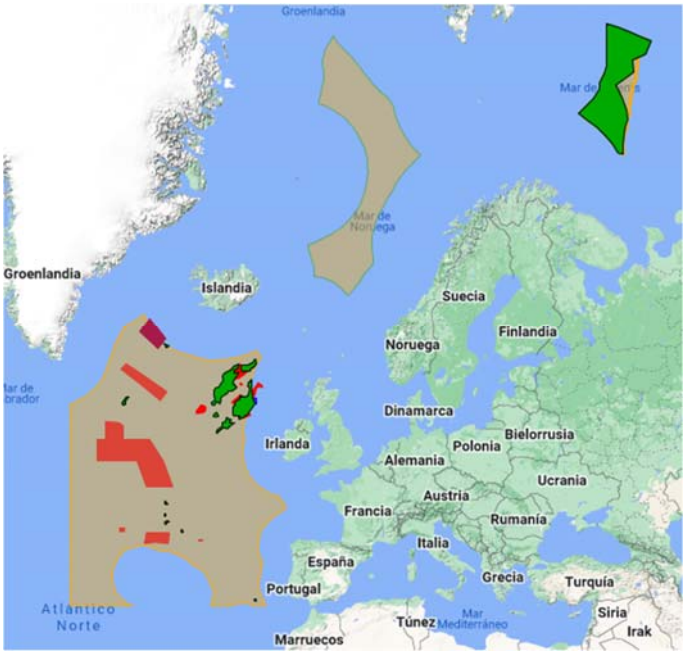

Data source: MS data submissions under the 2023 Fleet Economic data call (MARE/A4/ACS(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Due to time constraints, STECF EWG 23-07 was unable to provide a detailed account of the main fishing fleets operating in NEAFC. Furthermore, the EWG requests more guidance on what fleet activity should in essence be assessed in the NEAFC chapter, i.e., activity in the NEAFC convention area or activity in the regulatory area. For the latter, more detailed and digitalised data from NEAFC, such as catches by species and Member State fleet in the RA, would be required.

*Main drivers and factors affecting the performance of the fleet*

NEAFC has adopted several restrictive measures regarding fishing in its waters. These limitations are of two types: those applied to areas and those applied to species. Regarding the areas closed to fishing, Figure 3.150 shows their geographical location. The objective of these measures is to protect vulnerable marine ecosystems, thus there are closures of Hatton Rockall and the closed area of Haddock, closure of Blue Ling (seasonal, South Iceland) and 13 areas defined as existing bottom fishing areas. The characteristics of the closure of the most important areas are detailed below:

- Mid-Atlantic VME closure: The period of closure is 2009-2027. There are five exclusion zones, the coordinates of which are detailed below: zone 1 (LAT. 59°45’00 and LON. -33°30’00), zone 2 (LAT. 57°30’00 and LON. -27°30’00), zone 3 (LAT. 56°45’00 and LON. -28°30’ 00), zone 4 (LAT. 59°15’00 and LON. -34°30’00), and zone 5 (LAT. 59°45’00 and LON. -33°30’00).
- Rockall Haddock closure: The period of closure is 2015-2027. There are four exclusion zones, the coordinates of which are detailed below: zone 1 (LAT. 57°00’ and LON. -15°00’), zone 2 (LAT. 57°00’ and LON. -14°00’), zone 3 (LAT. 56°30’ and LON. -14°00’), and zone 4 (LAT. 56°30’ and LON. -15°00’).
- Blue ling seasonal closure: The period of closure is 2013-2023. There are four exclusion zones, the coordinates of which are detailed below: zone 1 (LAT. 60°58’76 and LON. -27°27’32), zone 2 (LAT. 60°56’02 and LON. -27°31’16), zone 3 (LAT. 60°59’76 and LON. -27°43’48), and zone 4 (LAT. 61°03’00 and LON. -27°39’41).
- Irminger sea closure: The period of closure is 2015-2027. There are five exclusion zones, the coordinates of which are detailed below: zone 1 (LAT. 63°00’ and LON. -30°00’), zone 2 (LAT. 61°50’ and LON. -27°58’), zone 3 (LAT. 60°75’ and LON. -28°75’), zone 4 (LAT. 62°00’ and LON. -31°58’), and zona 5 (LAT. 63°00’ and LON. -30°00’).
  - **Figure 3.150** Map of NEAFC Regulatory Area VME Closures and Existing Fishing Areas




Data source: NEAFC (2023).

Regarding the closures applied to species, the following list refers to the characteristics of the regulatory measures adopted by NEAFC that are still in force (2023):

- Recommendation on Conservation and Management Measure for Deep Sea Chimaeras in the NEAFC Regulatory Area: This measure shall be in force from 1 January 2020 to 31 December 2023. At the time of the approval of this recommendation, the chimaera species affected by this recommendation were the *Chimaera monstrosa* (Rabbit fish) *Hydrolagus mirabilis* (Large-eyed rabbit fish or Ratfish), and *Rhinochimaera atlantica* (Straightnose rabbitfish). In February 2022, this regulation was extended to include more chimera species: *Chimaera opalescens* (Opal chimaera), *Hydrolagus affinis* (Small-eyed rabbitfish), *Hydrolagus lusitanicus* (Portuguese rabbitfish), *Hydrolagus pallidus* (Pale chimaera), *Harriotta haeckeli (*Smallspine spookfish), and *Harriotta raleighana* (Narrownose chimaera).
- Recommendation on Conservation and Management Measures for Deep Sea Rays (Rajiformes) in the NEAFC Regulatory Area: This measure shall be in force from 1 January 2020 to 31 December 2023. For the purposes of this Recommendation, 'deep sea rays' means the species, *Raja fyllae* (Round Skate), *Raja hyperborea* (Arctic Skate) and *Raja nidarosiensis* (Norwegian Skate).

- Recommendation on Conservation and Management Measures for Deep Sea Sharks in the NEAFC Regulatory Area: This measure shall be in force from 1 January 2020 to 31 December 2023.For the purposes of this Recommendation, 'deep sea sharks' means the species *Centrophorus granulosus (*Gulper shark*), Centrophorus squamosus (*Leafscale gulper shark*), Centroscyllium fabricii (*Black dogfish*) Centroscymnus coelolepis (*Portuguese dogfish*), Centroscymnus crepidater (*Longnose velvet dogfish*), Dalatias licha (*Kitefin shark*), Etmopterus princeps (*Greater lanternshark*), Apristuris spp (*Iceland catshark*), Chlamydoselachus anguineus (*Frilled shark*), Deania calcea (*Birdbeak dogfish*), Galeus melastomus (*Blackmouth dogfish*), Galeus murinus (*Mouse catshark*), Hexanchus griseus (*Bluntnose six-gilled shark*), Etmopterus spinax (*Velvet belly*), Oxynotus paradoxus (*Sailfin roughshark*), Scymnodon ringens (*Knifetooth dogfish*) and Somniosus microcephalus* (Greenland shark).
- Recommendation on Conservation and Management Measures for Basking Shark (*Cetorhinus maximus*) in the NEAFC Regulatory Area: This measure shall remain in force from 1 January 2020 until 31 December 2023. Under this measure, each contracting party shall prohibit fishing of basking shark.
- Recommendation on Conservation and Management Measures for Porbeagle (*Lamna nasus*) in the NEAFC Regulatory Area: This measure shall remain in force from 1 January 2020 until 31 December 2023. Under this measure, each contracting party shall prohibit fishing of porbeagle.
- Recommendation on Conservation and Management Measures for Orange Roughy in the NEAFC Regulatory Area: This measure shall be in force until 31 December 2024. Under this measure, each contracting party shall prohibit fishing of Orange roughy (*Hoplostethus atlanticus*).

*Outlook for 2022 and beyond*

- The EU is the region with the highest number of permits for vessels authorized to fish or tranship in the NEAFC Regulatory Area until 31 December 2023 (303). Among its Member States, Ireland (131) and Spain (83) lead in terms of vessels under their flag, followed by France (19), Portugal (16), Germany (9), Lithuania (7), the Netherlands (7), Sweden (7), Cyprus (5), Estonia (5), Poland (2) and Latvia (1).
- In terms of the number of vessels authorized from the rest of the world, Norway is the flag country for 113 vessels, which is close to the number of Russian-flagged vessels (90). The remaining countries with vessels fishing in a regulated manner until the end of 2023 are: United Kingdom (58), Bahamas (54), Faroe Islands (25), Iceland (23), Panama (20) and Greenland (3). It should be noted that there are no ships registered under the Canadian flag.
- Regarding regulatory changes, in 2022 and 2023, adjustments have been made to the NEAFC Control and Enforcement Regime. This is a relevant change in the management of the organization, as fishing vessels must comply with both the applicable management measures and the NEAFC Scheme of Control and Enforcement when fishing in the NEAFC Regulatory Area. Failure to do so may be considered illegal, unreported and unregulated (IUU) fishing.
- At the 40th Annual Meeting, held in November 2021, several binding changes were approved effective January 2022. The first of these changes was made to Article 16 of Chapter IV, which dealt with the transmission of information on inspections at sea through the https system or the NEAFC website. Annex V also underwent a change in the list of species, related to the use of the FAO's List of Species for Fishery Statistics (ASFIS). Finally, there has been another change, of lesser impact, whereby a legal term was changed in Annex XIX.
- For its part, the 2023 changes to the NEAFC Scheme of Control and Enforcement were approved at the 2022 Annual Meeting. Following an objection period, these amendments entered into force on 31 January 2023. Modifications have been made to Article 5, which approves new notification requirements for research vessels; Article 13, which makes changes to improve the monitoring and control of transshipment operations at sea; and Article 23, which prevents the commencement of landing prior to the estimated time of arrival indicated in the port State Control (PSC) form.
- NEAFC has also introduced other measures for the fishery, such as those related to shrimp fishing. Firstly, it encourages the use of sorting grids in shrimp trawl fishing in ICES subzones 1 and 2 and prohibits the use of a collecting bag to the outlet of the fish from the grid. Secondly, the contracting parties are also requested to ensure that vessels flying their flag do not exceed 22 mm of separation between the bars of the shrimp sorting grid. These measures are applicable as of March 2023. Another

species that has been regulated in 2023 is the spurdog (Squalus acanthias) in ICES Subareas 1-10, 12 and 14. For the year 2023 a catch limit of 17 353 tonnes has been set and for 2024 the catch limit is 17 855 tonnes.

- In addition, with regard to the implementation of certain fishing gears, by 2023, all fishing activities except longlining have been prohibited in the area delimited by the following coordinates: - 57° 00' N, 15° 00' W; - 57° 00' N, 14° 00' W; - 56° 30' N, 14° 00' W; - 56° 30' N, 15° 00' W.

# 4 EU NATIONAL CHAPTERS

## 4.1 Belgium

- *Short description of the national fleet*

In 2021 there were 70 vessels registered in the Belgian national fleet with a capacity of 14 378 GT or 47 457 kW; 63 (90%) of these vessels were active. This is the same number of vessels that were also active in 2020 but is a 9% decrease when considering the overall time series. In 2021 there are even fewer active vessels with 60 active vessels in the Belgian fleet.

*Fleet structure*

The Belgian fleet is small and mainly composed of demersal and beam trawlers. Only a few other fishing gears are used (seiners, dredges, pots, gill nets and trammel nets). Three important fleet segments as defined in the DCF were identified after clustering: large demersal trawlers (DTS VL2440) and beam trawlers (TBB VL1824 and TBB VL2440). Belgium does not have vessels of more than 40 metres.

*Fishing activity and production*

Belgian vessels operate mainly in the North Sea, English Channel, Bristol Channel and other areas of the North Atlantic. In 2021, a total of 12 037 days were spent at sea; 3% less than in 2020, and 9% less than the average 2008-2020. A clear decreasing effort trend can be observed from 2008 onwards.

Despite a declining fleet in terms of number of vessels, landed weight showed an increasing trend between 2008 and 2016. Since 2016 the trend is decreasing. Value of landings does not follow a decreasing trend before 2016 but does after 2016.

In 2021, just under 18 000 tonnes of seafood were landed by the fleet, with a value of EUR 75 million, a 10% decrease in landings but with a one percent increase compared to the previous year, respectively. The fleet mainly targets demersal species. Sole remained the dominant species, generating the highest landed value (EUR 31.3 million) and representing about 41.7% of the total landings value. In terms of weight, European plaice remained the top landed species (3 491 tonnes or 19% of the total landed weight) and generated the second highest landed value (EUR 7.9 million, 10.5% of the total). Values remained similar for sole and decreased to a small degree for plaice compared to 2020.

The North Sea (FAO area 27.4) was the most important area in terms of total landed value (33%), followed by the Eastern Channel (27.7.d) with 23%, the Bristol Channel (27.7.f) and the Celtic Sea (27.7.g,h,j) (together 26%), the Irish Sea (27.7.a) (11%), the Western Channel (27.7.e) (6%) and the Bay of Biscay (27.8) (5%). The share of the North Sea remained similar, while the combined share of Bristol Channel and Celtic Sea decreased compared to 2020.

*Employment and average salaries*

Total number of crew on board was estimated at 308 in 2021, without considering rotation, corresponding to a total employment of 232 FTEs. The segment with the highest employment was TBB VL2440 (69% of the national fleet) with an average of 5.5 FTE per vessel. In the DTS VL2440 segment there were 3.4 FTE per vessel, while in TBB VL1824 this further dropped to 1.6 FTE per vessel. These FTE values have been on the rise since before 2018.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The economic performance of the overall fleet remained in an improved state compared to most previous years. After years of being in a loss-making position, net profit was positive between 2015 and 2021, although the net profit has been decreasing over the years. In 2021 two of the four fleet segments were profitable (i.e., TBB 24m-40m and PMP 18m-24m), with only the PMP 1824 segment being highly profitable since 2019. This results in a reduced economic performance of the fleet in 2021 compared to 2020.

GVA, gross profit and net profit in 2020 were estimated at EUR 38.2 million, EUR 9.9 million and EUR 2.1 million, respectively. Considering the entire time series, these values represented a decrease of 12% for GVA, a decrease of 27% for gross profit and 58% for net profit. Compared to 2020, GVA decreased by 8%, gross profit and net profit decreased by 36% and by 71%, respectively. These results indicate an

overall reduced economic situation, and after 2020 which broke a negative profit trend, data of 2021 follows again a decreasing trend since 2016.

Compared to 2020, in 2021 total income (no income from fishing rights) increased by almost 3.5% to EUR 80.33 million. Revenue was very similar in 2021 compared to 2020 with an increase of about EUR 330 000 to EUR 77.8 million in 2021, as income from landings increase by 1%. Direct income subsidies increased by 1 138% compared to 2020 and increased by 140% compared to the average of all other years. This significant increase in 2021 is explained by subsidies given for building new vessels with innovative new technology for fishing and with new low emission engine units.

Total variable costs – excluding unpaid labour- increased when comparing 2020 to 2021 (9%). Energy costs increase by 24% and decreased by 18% compared to the average since 2013 (EUR 14.8 million). Personnel costs increased by 8%, and repair and maintenance costs increased by 11%. Energy and crew costs represent the largest costs (53% in 2020 as in 2019). Although, the share of energy costs has been decreasing each year since 2014, in 2021 the share of energy costs increased again. However, labour costs have always increased over these years.

Contrary to the situation in some other Member States, the crew share is a direct percentage of the gross value of landings (without first subtracting variable costs). The crew share usually amounts to about 30% of the value of landings. Value of landings increased by 1% in 2021. Personnel costs increased again in 2021 compared to 2020, in concordance with the increase of 3% in number of total FTE. Caution must be used when translating this into what the crew earned. Pay related social insurance taxes are not taken into account. Personnel costs represented 35% of the value of landings in 2021, a small increase compared to 2020 when it was 32%.

The value of physical capital of the Belgian fleet was estimated at EUR 65.8 million. The average age of the vessels is high but decreased by 2 years as a few newly built vessels entered the fleet. Still, newly built, or younger vessels rarely enter the fleet to replace older ones. Investments decreased by 6% in 2021. They had been steeply increasing in 2016 and 2017 and decreased again in 2018. However, they remained high in recent years when compared to previous years (before 2016).

### *Resource productivity and efficiency indicators*

The gross profit margin in 2021 was 13%, which is at the same level of 2019. This may indicate a reduced operating efficiency of the sector compared to previous years but is more likely the effect of geopolitical changes and challenges that occur in relation to higher personnel and fuel costs. Net profit margin was estimated at almost 3% in 2021, which is again at the level of 2019. Yet, this net profit margin is the lowest positive profit margin since this value became positive in 2015. It remains to be seen if this will restore itself again to higher levels in future years.

RoFTA also highly increased in 2015 (13%) and 2016 (52%) compared to earlier years. In 2017 RoFTA was not as high as in 2016, however, still higher than in all other years (22%). In 2018, it decreased to 8% and to 5% in 2019. In 2020 RoFTA increased again to 14% closer to the RoFTA of 2012, while in 2021 the RoFTA remained 0.

Landings per unit of fishing effort (kg per day at sea) have followed an increasing trend until 2016, but now appears to be decreasing continuously. This trend continues in 2021.

Energy consumption per landed tonne has followed an overall decreasing trend since 2008, with the lowest estimated value in 2016 of 1 390 litres per landed tonne. During a 5 year time period (2013-2017) energy consumption has stagnated around 1 500 litres, increasing to 1 600 litres in 2018 and even 1 760 litres per landed tonne in 2019. The increasing litres per landed tonne trend continued in 2020 and 2021 with respective values of 1 800 and 1 980 litres per landed tonne. In 2020, the total amount of energy consumed by the fleet decreased by 3% compared to 2019 and decreased another 2% in 2021. However, landings in 2021 also decreased by 10% negating to some extend the positive trend of reduced energy consumption in 2021.

In general, efforts have been made since the 2008 fuel crisis to use more fuel-efficient engines, include fuel monitoring systems, and more efficient fishing techniques, including lighter gears. Fuel prices were particularly high in 2008 and 2012. One of the reasons behind a still relatively high fuel consumption is that the fishing grounds are spread out and sometimes far away from the Belgian coast. Another explanation is related to the use of trawling gear, as the focus remains on catching demersal species. Despite this, the fleet still seems to be making efforts to reduce their fuel consumption and improve their overall efficiency.

The three most important segments in the Belgian fleet are all fairly fuel intensive. The energy efficiency was lowest (17.3%) for the demersal trawler/seiner fleet (VL1824) which includes 13 vessels and highest (22.1%) for the smaller beam trawl segment (VL1824) which includes 18 vessels. The large beam trawl segment (VL2440) including 29 vessels had an energy efficiency in between the other two segments (20.3%). Even though the demersal trawler segment had the lowest energy efficiency, it presented with the highest energy intensity (0.55 L/landed tonne), while the large beam trawl segment had the lowest energy intensity (0.48 L/landed tonne). Considering the fuel price break-even results for these fleet segments in 2021, the short-term break-even values are much higher compared to the long-term break even values due to the high values of consumption of mixed capital for each of these fleet segments, therefore reducing the operation profit value used to calculate these values.

Labour productivity (GVA/FTE) also increased significantly over the years, peaking in 2016 and still remaining high in the following years with a somewhat reduced values in more recent years. Overall income from landings has increased or remained similar while energy costs decreased (other operational costs included in GVA are less important) and the number of FTE also show a decreasing trend. This indicates that a unit of labour input is producing more output or that the same amount of output is being produced with fewer units of labour. Labour productivity may also provide an indicator of worker's wellbeing or living standards, assuming that increases in productivity are matched by wage increases, which seems to be the case. In recent years (from 2016 onwards) a decreasing trend of labour productivity has been noted. This decrease appears to lessen from 2018. A possible turning point is reached in 2021 where for the first time since 2013 the energy cost per landed tonne is higher compared to the landed weight per sea day. It remains to be seen if this trend, where more energy per unit of landed weight is spent compared to the effort that went into catching that weight, continues in the future years.

**Table 4.1** Belgium. Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| BEL NAO TBB2440 NGI | 0.42 | 0.73 | 0.45 | 20.3% | 2,065 |
| BEL NAO DTS2440 NGI * | 0.38 | 0.57 | 0.28 | 17.3% | 1,817 |
| BEL NAO TBB1824 NGI * | 0.47 | 0.56 | 0.31 | 22.1% | 1,893 |
| National average | 0.42 | 0.70 | 0.42 | 19.8% | 1,980 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Performance by fishing activity*

*Small-scale coastal fleet*

In 2014, there was only one active fishing vessel under 12 metres long, but there were no vessels belonging to a SSCF according to the European definition. Since 2016, one vessel was introduced that meets the SSCF definition used in this report (vessel under 12 metres using passive gears). Currently, this vessel is no longer active.

*Large-scale coastal fleet*

As the Belgian fleet only has a single vessel under 12 metres, the Belgian fleet can be considered a large-scale coastal fleet. The overall performance of this fleet has thus been discussed in above sections, while the specific fleet segments are discussed in the following sections. More detailed information is given in the following sections.

- *Performance of selected fleet segments*

The Belgian fleet is dominated by trawlers (beam, shrimp and otter). In 2021, as was the case in 2020, the larger beam trawlers (TBB VL2440) appear to perform better than the smaller ones (TBB VL1824) in terms of GVA to revenue and profit margins. The demersal trawlers (DTS VL2440) also have lower profits than the larger beam trawlers (less vessels). Their profit margins were higher in 2017 and 2018, running a loss in 2019 and remained stable in 2020 compared in to 2019. In 2021 these vessels are again running

a loss. In earlier years, this fleet segment seemed to be relatively performing the best, but this is not the case for 2019 or 2020. It must be noted that this is a clustered fleet segment containing a wide range of length categories. Also, noticeably in 2021 is that both the small beam trawlers (TBB VL1824) and demersal trawlers (DTS VL2440) have negative net profit margins, while vessels with mixed active and passive gears (PMP VL182) have the highest GVA to revenue and profit margins. Again, this last segment is a clustered fleet segment containing a variety of vessels.

This national division of fleet segments based on engine power forms the basis for management measures such as effort limitations and quota distribution. Roughly TBB VL2440 corresponds to the nationally defined "*large-fleet segment*" (engine power of >221 kW), consisting of vessels that make longer trips and visit the faraway fishing grounds. On the other hand, TBB VL1824 is a clustered segment and more or less corresponds to the "*small-fleet segment*" (engine power of ≤221 kW). These are the coastal vessels and *Eurocutters* that are allowed to fish within 12 nautical miles of the coast.

Beam Trawl 24-40m

There were 29 active vessels operating in FAO fishing area 27, predominantly in FAO area 27.7, but also in the North Sea (27.4) and Bay of Biscay (27.8). With fishing rights in the distant North Sea and the Northeast Atlantic, many vessels fish in campaigns. In between two fishing trips, these vessels do not return home, but land fish in foreign harbours. In 2021, the value of landings amounted to EUR 55 million, representing 73% of total landed value (increased compared to 2020). The vessels in this fleet segment target a variety of species, particularly common sole (36% total value of landings), European plaice (8%) and anglerfish (6%).

This fleet segment reported a positive gross profit of EUR 8.1 million and a net profit of EUR 2.3 million in 2021, a decrease of 25% and 64% compared to 2020. Average crew wage per FTE was highest in this fleet segment. Labour productivity was also relatively high compared to other fleet segments. The profitability of this fleet segment was esteemed weak in 2018 and 2019, while it was reasonable both in 2016 and 2017. This fleet segment regained a reasonable profitability in 2020 but falls again into a weak profitability in 2021. The gross and net profit margin were 14% and 4%, respectively.

Energy consumed per landed tonne has increased mildly compared to the value in 2020 (~2 000 litre/tonne), a value coming close to values seen in 2010 where notably more active vessels were still present in the fleet.

Beam trawl 18-24m

There were 18 active vessels operating predominantly in the North Sea, Eastern and Western English Channel, employing a little over 25% of total FTE. Value of landings amounted to EUR 7.2 million, about 10% of total national landings (a small decrease compared to 2020). These vessels target a variety of species including common shrimp (3.7% of total value of landings), common sole (3.3%) and European plaice (~1%).

Gross profit decreased in 2021 compared to 2020 (EUR 300 000) and thus a negative net profit of about EUR 0.35 million was generated. This is a fairly large decrease compared to 2020. GVA was EUR 3.2 million (~8%). While the profitability of this fleet segment was reasonable in 2016, it was esteemed weak in 2017, reasonable in 2018 and weak again in 2019. The profitability remained weak in 2020 and 2021. The gross and net profit margins were 4% and -5%, respectively in 2021, a clearly a worse result compared to 2020.

This fleet segment includes part of the smaller scale (coastal) section of the Belgian fleet. These vessels are less efficient than vessels in the larger fleet segment as they make short coastal trips and land low volumes. However, they are likely more vulnerable.

Demersal trawlers

This segment operates predominantly in the North Sea (27.4) and Eastern Channel (27.7d) and employed 44% of total FTE. Value of landings amounted to EUR 12.2 million (16% of totals; a decrease compared to 2020). Targeted species include Norway lobster (6% of value of landings), European plaice (2%) and common sole (3%).

Profitability in 2021 was weak with a negative net profit of -EUR 0.215 million. More negative compared to 2020 but not as negative as the -EUR 662 000 in 2019. The gross and net profit margin were 8% and -2%, respectively. Energy consumed per landed tonne was lowest for this fleet segment (1 817 litres/tonne). This fleet segment seems to have performed the best both in 2016 and 2017, but this was

not the case in the 2018-2020 period. For 2021, this fleet segment seems to have deteriorated the most compared to the beam trawler segments.

- *Drivers affecting the economic performance trends*

Since 2013, fuel prices have been decreasing and efforts have been made to reduce average fuel consumption leading to proportionally lower energy costs. Fish prices also increased leading to lucrative wages for the crew members. Overall economic performance improved between and figures between 2015 and 2017 were positive. In 2018 figures were still positive, however profitability decreased, a trend that continued in 2019. The year 2020 appeared to represent a first year of profit growth after three years of profit decline. In 2021 the profit of the fleet was again lower and more comparable to 2019.

Despite higher average fish prices in 2018, the total value of landings was lower and fuel costs were higher. The value of landings in 2019 was the lowest record since 2014 with the same number of vessels and even lower in 2020. Positively, the value of landings has increased again in 2021 even though the weight of landings has been the lowest since 2013.

Events such as the full implementation of the LO, COVID-19 outbreak (which still may happen in the coming years) as well as Brexit and heavily fluctuating fuel prices due to the Russian/Ukraine crisis make for less optimistic forecast in the years to come. Contrary to factors that negatively impact the economic performance of the fleet, increasing and thus high fish prices in 2021 have to some extent ameliorated the factors that negatively impact the performance of the fleet.

*Markets and Trade (including fish price)*

The average landed prices of sole decreased in 2017 but increased again in 2018. In 2019, the highest yearly average of the time series was reached: 12.1 euro/kg. This value dropped a small amount in 2020 but regained the high 12.1 euro/kg price in 2021. The value of landings for sole remained virtually the same compared to 2020 (~42% of the total value of landings).

Plaice prices have been increasing since 2013 and reached the highest yearly average in 2018: 2.5 euro/kg. This in part accounts for the profitability of TBB VL2440 and TBB VL1824. It slightly decreased in 2019 to 2.4 euro/kg and again in 2020 to 2.2 euro/kg but regained the 2.4 euro/kg price in 2021. Both value of landings and landed weight were lower in 2019 and 2020, a trend that continued in 2021.

Furthermore, average landed prices of common shrimp increased by 50% in 2016 compared to 2015. This led to an increase by 146% in the value of landings of shrimp, making the fleet segment targeting common shrimp (TBB VL1824) profitable for the first time in the time series. They remained profitable in 2017 and 2018, even though shrimp prices decreased by 47% in 2018 as landed weight increased by 112% and value of landings by 10% compared to 2017. In 2019, the prices were slightly lower than in 2018 and this fleet segment was not profitable. In 2020, the average landed price for common shrimp increased again (by 20%), and another 7% in 2021. This fleet segment although weak thus remained profitable in 2021.

Prices for Norway lobster increased considerably between 2014 and 2016, but decreased in 2017, 2018, 2019 and again considerably in 2020 (-30% compared to 2019). In 2021, the price restored somewhat with an increase of 30%. Value of landings and landed weight was restored to values comparable to values in 2019. However, 2018 and 2019 were difficult years for DTS VL2440 and in 2019 they were not profitable. Although, still non-profitable in 2020, the DTS VL2440 fleet managed to reduce its non-profitability. However, in 2021 this fleet segments' non-profitability increased again, even though value of landings and landed weight of *Nephrops* increased. This could be due to a higher common sole catch, which retained a high yearly average price.

Over the years common squid have become more important reaching the highest landings and value of landings in the time series in 2019 (516 tonnes; EUR 3.7 million). These species do not fall under quota measures and their introduction may be a response to policy measures such as the LO.

The dependency on the Netherlands markets was remarkable in previous years but decreased significantly in 2020 and remained similar in 2021. Thus, 51% of landings in foreign harbours occurs in Dutch ports in the Netherlands. However, in 2021 also 37% was landed in Denmark, a significantly reduced amount was landed in France (6%) while more catch was landed in Spain (7%) compared to 2020. The increased landings in Denmark are a direct effect of the weighing obligation in their ports. No landings were made in the United Kingdom in 2021, as a direct consequence of the BREXIT, and

remarkably no landings were made in Germany, although those landings were very small even in previous years. Almost 40% of the fleet is also owned by Dutch nationals (Velghe et al., 2022). These tend to land in their home ports, where the price for plaice is generally higher than in Belgium (higher demand). Sole tends to remain more valuable on internal Belgian markets. Belgium is a net exporter of plaice. France (shellfish) and the Netherlands (fish and crustaceans) are important trading partners. Exports to Spain and Italy either direct or indirectly (through the Netherlands), have also become important.

### *Management instruments and regulation (policy)*

The fleet is managed mainly through TACs for some species together with a range of additional effort limitations. Fishing rights are collectively managed by the Flemish authorities in Belgium. Several rather complex mechanisms have been put into place to manage catches. They usually use species, area and the nationally defined fleet segment (mainly based on engine power) as parameters. Sometimes gear is an additional specification and there exist a number of exceptions, especially for passive gears. It may be interesting to note that quota allocation and effort restrictions are on a vessel level and not on a company level. Leasing or hiring fishing rights is not possible.

### *The Landing Obligation*

The LO was gradually implemented and prohibits discarding all species with a TAC as of 2019. Measures were put into place to allow for some flexibility, such as quota uplifts. In Belgium, a *de minimis* exemption was set in the sole fisheries. In 2020 this exemption consisted of 105 tonnes of sole spread out over the different areas (51 tonnes in the North Sea) (Velghe et al., 2022). Once this amount exceeded, sole below the minimum conservation reference size was landed and subtracted from the national quota. The *de minimis* values for 2021 were not available to this EWG.

As no numbers were available for fish landed in Belgian harbours below minimum conservation reference size in 2021, the numbers of 2020 are given as reference point. In 2020 a total of 87 kg of cod, 1 745 kg plaice, 2 721 kg of sole and 2 604 kg of anglerfish below minimum conservation reference size were landed in Belgian harbours; for the first three species a decrease of 95%, 53% and 42% compared to 2019 (Velghe et al., 2022), respectively. The reduction is an effect of the decreased landings of these species.

In some cases, an exemption with regards to high survivability is permitted. For e.g., undersized plaice may be discarded in the North Sea for beam trawlers with mesh sizes 80-119 mm (vessels above 221 kW) if a benthos release panel is included in the gear. Vessels below 221 kW may discard undersized plaice if trawling time was less than 90 minutes.

### *Stock status, TACs and quotas*

Initial quota for Norway lobster and sole decreased in 2020 (-8% for sole) but increased in 2020 (+34% compared to 2019 for sole) and again in 2021 (+8% compared to 2020 for sole). Quota for plaice saw a yearly decrease between 2017 and 2021, however, was still relatively high (esteemed positive stock status). Initial quota for cod decreased significantly in 2019 (-32% compared to 2018) and 2020 (-59% compared to 2019) and again in 2021 (-29% compared to 2019). This is mainly caused by a decline of North Sea cod quota and its unfavourable stock status.

The Belgian fishery applies quota swaps in the framework of correct management of stocks and to allow fishers to fish year-round, while aiming to catch the quota (Velghe et al., 2023). The total quota for sole in 2021, which is especially important for the Belgian fleet, was set at 4 566 tonnes after swaps (56% of this was caught) (Velghe et al., 2023). The sole stocks in the Western English Channel (27.7.e), Celtic Sea (27.7.fg), eastern English Channel (27.7.d) and Bay of Biscay (27.8.ab) are currently exploited at sustainable levels. However, the spawning stock biomass (SSB) of the latter two stocks has dropped below their precautionary approach limits (MSY $B_{trigger}$ and $B_{pa}$). For the North Sea (27.4) and Irish Sea (27.7.a) stocks, the fishing pressure is estimated too high to ensure a long term sustainable yield. Moreover, the SSB for North Sea sole is below sustainable levels. Although the SSB for Irish Sea sole is estimated to be above sustainable levels, the situation remains precarious as the stock is still recovering from its historical low SSB in 2014.

The quota for plaice was 8 258 tonnes after swaps in 2021 (-15% compared to 2020); 42% of this was caught (Velghe et al., 2023). Plaice stocks have developed favourably under the current management, with spawning stock biomass at sustainable levels for plaice in the North Sea (27.420), the eastern and western English Channel (27.7.d and e), the Irish Sea (27.7.a) and the Southern Celtic Sea/South-west

of Ireland (27.7h-k). However, fishing pressure is estimated as too high for both plaice stocks in the English Channel. Additionally, the SSB of plaice in the Celtic Sea (27.7.fg) is perceived too low (unsustainable). Discard rates for plaice were estimated to be high (e.g. 51% in 2021 for the North Sea stock (27.420).

The quota for cod was 635 tonnes after swaps in 2021 (-26% compared to 2020) and 89% of this allowance was caught. North Sea cod (27.47d20) was harvested unsustainably for many years. Despite the implementation of the cod management plan since 2003 and some signs of stock recovery, the spawning stock biomass of this cod stock is still estimated to entail reduced reproductive capacity, hampering the recruitment of the stock. Fishing pressure is however at sustainable levels as a result of large reductions in TAC and additional management measures.

### *Operational costs (external factors)*

Crew costs and fuel costs represent the most important operational costs. Minimum crew shares have been legally set and are therefore, not as variable as energy costs. The only possibility for vessel owners to save on crew costs is by employing- less crew. However, this option is also very limited, as a minimum number of members on board is nationally defined for safety reasons.

Average fuel prices have been decreasing since 2013, started to increase again in 2017 and 2018, but decreased in 2019 and 2020. From the second quarter of 2020 fuel prices were on the rise again, progressing to prices at similar levels of the full economic crises in 2008 and 2012 at the time the current report is being written. The Belgian fleet is dominated by trawlers, both beam and demersal trawlers. Therefore, as trawling is typically fuel intensive, even slight decreases of the fuel price might make a difference. Fluctuations in fuel prices are therefore a key driver for the profitability of the fleet.

### *Innovation and Development*

Research on technical innovations and alternatives for the beam trawler in the flatfish and shrimp fishery is on-going. The fuel crisis of 2008 forced the fleet to adjust to the rapidly increasing fuel costs. A number of vessels changed from traditional beam trawling to alternative beam trawling methods. For example, to reduce drag forces, a beam on wheels was introduced (Ecoroll) or the beam was replaced by a wing (SumWing). Some vessels even adopted a combination of both. Other adjustments were to reduce the overall weight of the used gears and replace old engines, nozzles and propellers. Subsidies were granted to encourage taking these measures. Currently investments are made in modern engines that will be built in new ships. These modern engines can run on fossil fuel as well as on hydrogen fuel provided that an extra investment has to be made in order for these modern engines to run on hydrogen fuels.

Facing the implementation of the LO, research on gear selectivity has been on-going as well. Selectivity can be improved by using more selective gears (or by reallocating activities to areas with a different catch composition). Therefore, devices such as cut-away top panels, square mesh top panels, benthos release panels, T-90 cod-ends, square mesh cod-ends, narrow cod-ends and tunnels in square meshes are being developed and tested in Belgium. Furthermore, collaborative projects on technological innovations with the aim to reduce the bottom impact of trawling are ongoing.

### *Socioeconomic impact*

Specific programmes of the EU CFP oriented to decommissioning lead to an exponential decline in the number of active vessels. In 1992, there were 205 fishing vessels, while in 2002 there were 130 (-37%). This number remained relatively stable for some years. The fuel crisis in 2008 led to a further large decrease in the capacity and to poor economic performances. Furthermore, the commercial market plays an important role in determining fish prices. These have been low, leading to relatively lower revenue from landings. The decreasing number of vessels has had an impact on the number of jobs on board, presumably making the fishing profession much less attractive than other economic activities. Compared to 2020, fuel prices in 2021 were on the rise again, while crew costs rose through indexation measures in Belgium. Contrary to such negative impacts on socio-economic fleet performance, remaining strong average fish prices resulted in part in an amelioration of negative impacts. Still, 2021 was a year where the fleet became again less profitable. Yearly fluctuation in socio-economic performance is however expected to happen. However, if the rather positive trend from 2020 can continue, where the fishing fleet improves their economic performance, the social aspect of the fishing profession could improve. A good economic performance may provide the incentive to make fishing an attractive profession again.

- *Nowcasts for 2022-23 and beyond*

Model results

Overall, it is expected that 2022 and 2023 will be stable although slightly less profitable than 2021. For 2022 an overall positive and slightly increased profitability of the fleet compared to 2021 is forecasted. For 2023 the model predicts similar profitability as was obtained in 2021. Yet, an uncertainty factor must be taken into account as fuel prices have risen tremendously in 2021, 2022 and continued in 2023, and remain highly volatile and unpredictable. Fuel costs may be tempered in part by the activity of seven new vessels in the Belgian fleet from 2023 onwards, but this impact is currently difficult to predict.

Outlook

Initial quota for 2023 decreased for sole, increased for plaice, and also decreasing for cod and Norway lobster. However, regardless of the fishing opportunities, 2023 has been a more standard year (cfr. Pre-COVID year) for fishing activity. It remains to be seen if normal fishing activity can continue in the future due to increasing fuel prices as a consequence of the Russian-Ukrainian conflict. Average fish prices remain high, meaning that the demand for fishing products remained strong. Still, it remains to be seen how long this positive trend will continue in 2023 and if indeed this will last in the future with current increasing interest rates and financial inflation. Indeed, 2023 has already seen a fluctuation in fisheries products demand. The value of landings is predicted to decrease in 2023 (11%), as the landed weight decreased (-5%).

Increasing fuel prices

Fuel prices were on the rise during 2021 and continued to rise in 2022. A conflict that started in February 2022 between Russia and Ukraine only exacerbated the rise in fuel prices. Although fuel prices are generally high (at the time of writing), they can also fluctuate heavily. The small Belgian fleet can manage some bulking of fuel, and thus can buy fuel at times when prices are lower. As the Belgian fleet cost structure is highly dependent on fuel prices, the short-term direct impact will be felt by the fishery industry. Specifically, the direct impact will be mainly felt in the cost for the vessel owners and consequently lead to reduction of the ability to create some financial reserve, the ability to pay for maintenance or refurbishment works, and or the ability to pay loans for new vessels.

As the Belgian fishing sector is still being faced by consequences of the Brexit (e.g. what to do with landings in the United Kingdom) and the weighing obligation in landing ports (coming in 2022), the compounding direct impact of high fuel prices may again decrease the attractiveness of the fishing profession. Although there are some clear direct impacts of the high fuel prices, the potential longer-term effects could be more worrisome. High fuel prices also affect other industries and the purchasing power of seafood consumers. This could lead to a decreased general financial performance and increased inflation. Such long-term inflation will increase the crew costs on top of other costs that vessel owners have. Taken together, the cost-benefit balance may shift to cost and thus may result in vessels not fishing. When vessel owners decide not to fish, potentially the most severe long-term impact may be the loss of key personnel with expert operating knowledge (motorists, fishers, captains, etc.) from the fishing sector. Crew members that flow from the fishing profession into another profession very rarely return and can lead to a net loss of knowledge of fishing.

Although 2022 and potentially future years may look bleak, some solutions can balance the costs. For example, keeping average fish prices high by including the extra costs in these fish prices, and decreasing fossil fuel dependency, may be key strategies for the profitable operation of the Belgian fishing fleet. Seven new vessels are underway for the Belgian fishing fleet and will operate on engines that with an extra but reasonable investment can be rebuilt to work on hydrogen gas.

Although coming years will be challenging for the Belgian fishing sector, keened out investment strategies in personnel and technological innovations may help to shape the future of this sector.

- *Methodological considerations and data issues*

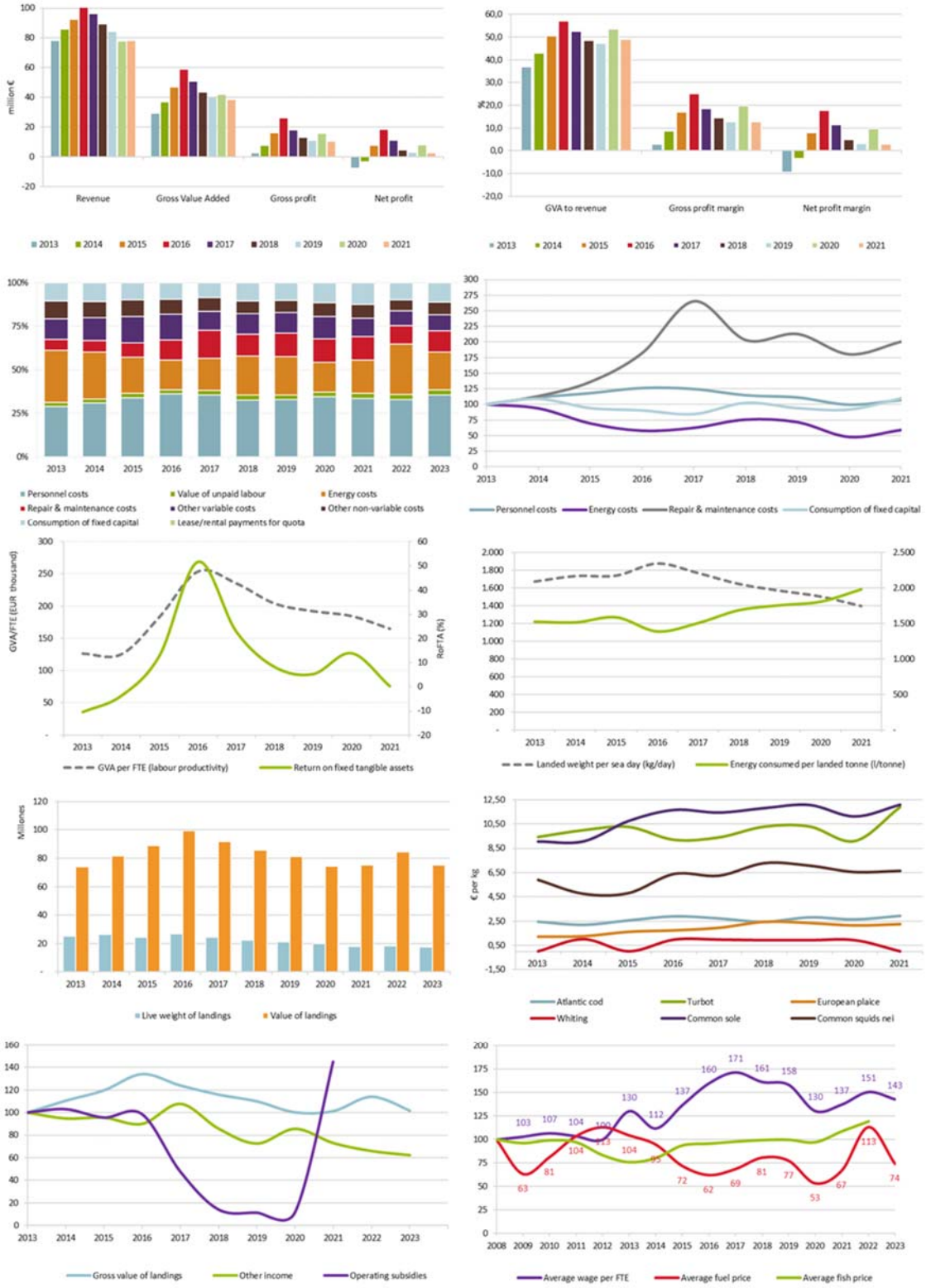
Data comes from the Department of Agriculture and Fisheries of the Flemish Government who conducts the data collection. The questionnaire was adjusted in 2017 and fine-tuned in 2018 to meet the needs of the New 2016 EU Decision. This may have an impact on the time series of certain variables requested in this data call. For example, investments increased enormously, and this may be an anomaly as a result of interpreting this variable differently. Furthermore, subsidies were now split into different variables and definitions annexed to the questionnaire were clarified, leading to some unusual trends. Direct income subsidies decreased by 51% in 2017.

Response rate with regards to number of unpaid labour was too low in 2017 and 2018 to make sensible estimations. In 2019, 2020 and 2021 an estimation was made; however, this value may not be representative. Similarly, response rate to total hours worked was very low and may not be very relevant to the Belgian case, explaining why it is so difficult to obtain this information.

Capital value and capital cost variables for inactive vessels are not known (refusal respond rate of 100%). Only about 10% of the fleet was inactive in 2021 (seven vessels).

As the Belgian fleet is small, fleet segment aggregation (clustering) has been inevitable. The Belgian fleet is mainly composed of demersal trawlers and beam trawlers. Only a few other fishing gears were in use (seiners, dredges, gill nets and trammel nets, and pots and traps). As the number of vessels using these as their main gear has been very low throughout the years, they were grouped in a separate fleet segment (PMP VL1824).

**Figure 4.1** Belgium: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.2 Bulgaria

- *Short description of the national fleet*

In 2021, the Bulgarian fishing fleet consisted of 1 821 registered vessels, of which 1 182 were active and the remaining 639 vessels were inactive. The active fleet had a combined GT of 4 699 tonnes, engine power of 38 274 kW and an average age of 26 years.

*Fleet structure*

The Bulgarian fishing fleet is divided into a SSCF (1 083 vessels, representing 92% in 2021) with an engine power of 22.6 kW and a LSF segment (99 vessels, representing 8% in 2021) with an engine power of 15.7 kW. The overall size of the Bulgarian fishing fleet decreased by 0.5% between 2020 and 2021, and by 5% compared with the average for the period 2013-2020. Between 2020 and 2021, the inactive vessels increased by 7% while the number of active vessels decreased by 4%. Compared to 2020, in 2021, the active SSCF decreased by 5%, while the active LSF increased by 2%. In the active SSCF, GT and kW decreased by 5% and 6% respectively, and in the active LSF, GT and kW decreased by 3% and 4%.

*Employment and average salaries*

Total employment in 2021 was estimated at 1 527 jobs, corresponding to 570 FTEs with an average of 0.5 FTE per active vessel. The level of employment decreased between 2020 and 2021 by 13% and the total employment for 2021 remains 11% lower compared to the average total employed for the period 2013-2020. The decrease in employment might be because of the decreasing of active SSCF vessels. The number of employed workers includes the number of unpaid labour. After unpaid employment became a possible choice in the questionnaire, a significant part of the fishers declared that they are unpaid labour. This can be explained by fact that 65% of the active vessels in 2021 had between 1 and 10 days at sea (DaS) and 15% had between 11 and 20 DaS for the whole year. Mainly the owner or family member uses these vessels.

*Fishing activity and production*

The Bulgarian fleet spent 23 040 DaS in 2021, a 1% increase compared to 2020 and a 0.2% decrease over the period 2013-2020. While the DaS remained steady in the period 2013-2015, data for 2016 and 2017 indicated almost 20% increase compared to the period. In 2021 the days-at-sea were at the same level as in 2019 and 2021 (23 040 days).

Compared to 2020, which was the year with lowest landings for the period 2008-2020 in 2021 there was a significant increase of the live weight and value of landings. Compared to 2020 the total weight increased by 43% and the value by 67%. The total landed weight was 8 919 tonnes of seafood, with a landed value of EUR 8.1 million. Compared to the analysed period (2013-2020) the total weight of landings increased by 4% and the value increased by 26%.

Regarding the top species in terms of value, the price of sea snails for 2021 changed the trend from the previous years and increased by 29% compared to 2020 and compared to the period 2013-2020, increased by 2%. The average first sale price for 2021 for European sprat increased by 44% compared to 2020, and compared to the period 2013-2020 increased by 21%. The price of sand gaper decreased by 20% compared to 2020 and by 16% compared to the period 2013-2020. In 2021 the price of bluefish increased by 17% compared to 2020, while the price of red mullet increased by 32%. Turbot continued to be very important due to the quota and the price has increased by 11% compared to 2020.

While in 2020 the main landed species for the Bulgarian fleet as a percentage of the total are the sea snails, with 44% in terms of weight and 22% in value, followed by the European sprat, with 26% in weight and 12% in value, in 2021 the European sprat represented 39% of the landings and 22% of the value. Even dough the sand gaper was on second place in terms of value with 20% in terms of weight it is taking the fourth place with 8.5%.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The amount of income from landings generated in 2021 was EUR 8.1 million while non-fishing income amounted to a further EUR 0.25 million, and the total amount of income EUR 8.35 million. In 2021, the income from landings increased by 67% compared to 2020 and it was 26% higher than the average for the period 2013-2020. The increase in income from landings was due to the increase in the total landings,

combined with the slight increase of the first sale price to some of the main commercial species. The other income, which is mainly coming from tourism activities, decreased by 34% to 2020 and remained far from the 2015 level, when it was more than EUR 2 million.

In general, total costs increased by 19% between 2020 and 2021. The wages and salaries of the crew increased by 2% in 2021 compared to 2020, but decreased by 35% to the period 2013-2020. The most valuable cost, energy costs, also increased and in 2021 it was 33% higher than in 2020.

The operating costs in 2021 amounted to EUR 3.7 million. Energy costs and crew costs remain the two major cost items (EUR 1.34 million and EUR 1.05 million, respectively). However, EUR 0.33 million of crew cost were estimated for the unpaid labour which remained in the hands of the fishers as working capital. Between 2020 and 2021, operating costs increased by 24%.

In terms of economic performance, the GVA, gross profit and net profit in 2021 were estimated at EUR 5.9 million, EUR 4.6 million and EUR 4.7 million, respectively. In 2019 and 2020 the net profit decreased compared to 2018 and 2017, but in 2021 it showed a significant increase – 137%, compared to 2020.

In 2021, the Bulgarian fleet had an estimated value of physical capital of EUR 16.3 million and investments amounted to EUR 0.07 million, which is a 1% increase of the value of physical capital and 34% decrease of the investments, compared to 2020. The estimated value of total assets in 2019 and 2020 was EUR 15.8 million, while for 2021 it was EUR 15.6 million.

The distribution of the fleet has not changed significantly over time. According to the number of vessels, SSCF is the main fleet in Bulgaria, with 1 083 active vessels in 2021. They spent 14 249 DaS and landed 1 778 tonnes of fish for EUR 2.5 million. The LSF engaged 99 vessels, which spent 6 333 DaS and landed 7 141 tonnes of fish for EUR 5.5 million.

The difficult access to funding by the Operational Program under EMFF for SSCF is the main reason for the very low value of investments during the last years. Fishers spent their own funds or use additional funding and generate debts that amounted near EUR 0.04 million.

*Resource productivity and efficiency*

In 2021, the gross profit margin was 55.43%, indicating 30% increase in operating efficiency of the sector compared to 2020, if it is compared to the period 2013-2020 an increase of 16% is observed. This also can be seen in the net profit margin for 2021 which increased by 48% compared to 2020 and by 100% over the period 2013-2020. A RoFTA near 26% in 2021, which is 136% higher than in 2020 derives from the significant increase in the net profit.

In 2020 labour productivity increased significantly by 94% compared to 2020. The indicator for 2021 was 22% higher than in the period 2013-2020.

Fuel consumption per landed tonne followed an overall increasing trend since 2013. In 2020, it reached new peak with 504 litres per landed tonne, which was 225 litres more per landed tonne compared to 2019, but in 2021 it decreased to 324 litres, which is 7% higher than the period 2013-2020.

**Table 4.2** Bulgaria. Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| BGR MBS TM 2440 NGI | 0.46 | 3.46 | 3.42 | 10.4% | 159 |
| BGR MBS PMP0612 NGI | 1.06 | 7.40 | 7.33 | 11.9% | 155 |
| BGR MBS TM 1218 NGI * | 0.45 | 1.65 | 1.60 | 20.5% | 387 |
| BGR MBS TM 1824 NGI | 0.41 | 1.67 | 1.59 | 19.4% | 418 |
| BGR MBS PMP0006 NGI | 1.39 | 12.25 | 12.17 | 9.5% | 100 |
| BGR MBS PMP1218 NGI * | 0.44 | 1.17 | 1.03 | 25.3% | 422 |
| National average | 0.46 | 2.06 | 1.97 | 16.6% | 324 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020)

In the table above are presented the break-even points of fuel for the four most important Bulgarian fishing segments in terms of value of landings. Even though the segments are from different length classes and are using different fishing techniques, there are no significant fluctuations between calculated variables.

Landings in weight per unit of effort (in DaS) followed the increasing trend starting from 2017 (after the lowest value in 2016) and after an increase by 22% in 2019, in 2020 it decreased by 21% compared to 2019. In 2021 there was an increase by 42% compared to 2020 and 3% than the average for 2013-2020.

- *Performance by fishing activity*

*Small-scale coastal fleet*

The majority of the vessels in 2021 (1 083 from 1 182 active vessels) had a total length under 12 metres, used only passive gears and carried out mainly a small-scale coastal, seasonal fishing. Their preferred fishing gear was gillnet (anchored) and for catching sea snail they used the manual method by scuba diving. The total number of employees was 1 282, but this number includes also the unpaid labour (1 168). For the majority of people involved in this type of fishing, this is a seasonal activity closer to a hobby or a small family business. Most of the small-scale fishers use the catches for private consumption by themselves and their families or they sell them in their own restaurant. The live weight of landings was 1 778 tonnes, decreased by 12% compared to 2020 and decreased by 28% to the period 2013-2020. The value of the landings in 2021 increased by 17% to 2020 and it was at the same levels as the average for 2013-2020. The net profit for 2021 increased by 15% compared to 2020 and it was 25% higher than the average for the period 2013-2020.

The net profit margin remained at the levels from 2020, but compared to the period 2013-2020 it was 64% higher. These significant differences were possible because over the period 2013-2020 there were 2 years (2013 and 2014) in which the net profit was actually a net loss, because the expenses of the SSCF exceed the income or total revenue produced during the years.

*Large-scale fleet*

The Bulgarian LSF consisted of 99 vessels in 2021: 21 of them were under 12 metres, but with active gears (11 of them were between 0-6m using beach seines, 3 were between 6-12m using beach seines, 6 were between 6-12m using mid-water trawls and 1 was using beam trawl). The FTE was 189 in 2021, which is 3% higher than in 2020 (representing 245 total employed 2% more) were employed in the LSF segment.

This LSF produced 7 141 tonnes of landings, which were 80% of the landings of the whole fleet. Its value was estimated at EUR 5.5 million, representing 69% of the value of all landings.

The income from landings increased by 108% and it reached the levels from 2019, after the significant decrease in 2020. The other income decreased by 60% compared to 2020 and 61% to the period 2013-2020. In 2021 wages and salaries of crew increased by 19% compared to 2020 and 9% to the period 2013-2020. The value of unpaid labour increased significantly compared to 2020 (by 432%). The number of unpaid labour in LSF was 48, or 3.1% of the total in the fleet. The main expenditure - energy costs, increased by 32%, the repair and maintenance costs by 46%. The other non-variable costs increased by 14%, while other variable costs decreased by 41%. The most significant changes between the values of variables in 2021 and the period 2013-2020 was the decrease of the value of other variable costs by 52%.

- *Performance of selected fleet segments*

The fleet is diverse with a broad range of vessel types targeting different species only in the Black Sea. The national fleet consisted of 28 active fleet segments in 2020, with a further 639 inactive vessels. The clustering scheme was changed in 2017 and based on it and on the low number of vessels in some fleet segments, there are 16 segments/clusters. It should be noted that the clusters are used only to keep the confidentiality of the data, but not for data collection. The data collection scheme is a c*ensus* and covers all vessels.

In 2021, part of segments of the Bulgarian fleet were clustered in eight clusters: drift net 12-18m (17 vessels), Vessels using hooks 6-12m (17 vessels), purse seiners 0-6m (14 vessels), vessels using active and passive gears 12-18m (17 vessels), vessels using p*ots and traps* 6-12m (29 vessels), pelagic trawls

12-18m (26 vessels), vessels using passive gears only 6-12m (8 vessels), beam trawls 12-18m (5 vessels).

The profitability of 13 fleet segments, which involve 1 144 vessels, was high for 2021, while 3 of the segments (38 vessels), showed weak profitability.

One fleet segment obtained more than 3 000 tonnes in live weight of landings, one segment more than 1 500 tonnes, followed by two fleet segments with more than 850 tonnes:

*Pelagic trawlers 24-40m*

In 2021, 10 vessels made up this segment that targets a variety of species but in particular European sprat and sea snail exploited by some vessels which had as a second fishing gear the beam trawl in the segment. In 2021, the total live weight of landings was 3 260 tonnes with a value EUR 2.28 million (increased 171% compared to 2020) and 42 FTEs were employed in this fleet segment. The profitability of the segment is high, and according to the economic development, the trend is improved. In 2021, the net profit margin increased by 69% compared over the period 2013-2020.

*Pelagic trawlers 12-18m*

In 2021, 26 vessels made up this clustered segment targets European sprat, sea snail and red mullet. In 2021, the total live weight of landings was 1 526 tonnes with a value EUR 1.29 million (increase of 170% compared to 2020) and 53 FTEs were employed in this fleet segment. The profitability was high and according to the economic development, the trend is improved. In 2021, the net profit margin increased by 805% compared over the period 2013-2020.

*Polyvalent active and passive gears 6-12m*

In 2021, 133 vessels made up the segment that targets mainly sea snails, sand gaper, red mullet and Mediterranean horse mackerel. In 2021, the total live weight of landings was 959 tonnes with a value EUR 1.3 million, and the fleet segment employed 56 FTEs, corresponding to 155 total employees. The net profit margin in 2021 increased by 36% compared to the period 2013-2020.

*Pelagic trawlers 18-24m*

In 2021, 10 vessels made up this segment that targets a variety of species but in particular European sprat, anchovy, sea snails, and Mediterranean horse mackerel. In 2021, the total live weight of landings was 894 tonnes with a value EUR 0.78 million and the fleet segment employed 23 FTEs.

- *Drivers affecting the economic performance trends*

The Bulgarian catches in 2021 increased compared to 2020 (43%) and compared to the average for the 2013-2020 period the total catches increased by 4%.

The prices of fish and fuel remain the main driving forces behind the overall sustainability of the fleet.

The increase in the average price of some important species with significant landings for the Bulgarian fleet as sprat and sea snail, together with the increased landings of sprat, had a positive impact on the profitability of some segments of the fleet.

*Markets and Trade*

The yearly consumption of fish and fish products had an increase from 5.6 kg per capita in 2020 to 6.2 kg for 2021. The local products are facing the competition of imported fish, especially from the supermarket chains. These supermarkets are offering a large variety of species, oceanic fish mainly, also salmon (from aquaculture), mackerel, bream, and others seafood, trout with a very competitive price, well presented and in large quantities.

According to the data from the National Statistical Institute, in 2021, total imports of fish and fishery products in Bulgaria amounted to 40 643 tonnes, which is 8% increase compared to 2020 level, due to an increase in supplies of fresh and chilled fish, frozen fish, fillets, salted and dried fish, crustaceans and molluscs (live, fresh, chilled, frozen, dried and preserved), while those of live fish, aquatic invertebrates and cooked and canned fish are decreasing.

About two-thirds of the total imported quantities of fish and fish products in 2021 were from EU member states. Deliveries from the EU increased by 13.2% on an annual basis, amounting to 26 962 tonnes, with the main partners being Spain (4 500 tonnes), the Netherlands (4 500 tonnes), Greece (3 800 tonnes).

The import of fish and fish products from third countries in 2021 amounted to 13 680 tonnes, which represents a relative preservation around the level of 2020.

In 2021, the total export of fish, other aquatic organisms and fish products was 16,435 tonnes. The quantity was 8.5% more on an annual basis, as the main contribution to this was the expanded sale of frozen and dried & salted fish. There was an increase in exports both to the EU and to third countries. The exports of fish and fishery products to the EU amounted to 12 681 tonnes, 8.1% above the previous year's level, accounting for just over 77% of total exports of fish and fishery products. The largest quantities were intended for Romania (6 400 tonnes) and Sweden (2 700 tonnes). The export of fish and fish products to third countries was 9.9%, up to 3 753 tonnes, exported to Serbia (1 615 tonnes), Japan (602 tonnes), South Korea (544 tonnes).

The situation in Bulgarian markets is complicated because the big quantity of imported fish and fish products are imported at a lower price than the price of Bulgarian catches from the Black Sea. Therefore, fishers cannot compete in this respect, even after processing and added value.

*Operational costs (external factors)*

After many years (2008-2017) in which the Personnel costs were the major costs item, from 2018 the energy costs represented 40% of the operational costs in 2018 and 46% in 2019. While in 2020 the personal costs and the energy costs shared the first place with 30% for each of them, in 2021 the energy costs again took the first place with 36%. The sector continues to offer very low wages, compared to the other sectors in the country. This is why the larger percentage of vessels` owners perceive fishing as a family work for livelihood, not as a business.

*Status of key stocks, TACs and quotas*

There are two species with quotas in Bulgaria. Turbot and sprat TAC for the Black Sea (quota system) was introduced in 2008 following the accession of Bulgaria and Romania to the EU.

At its 41st Annual Meeting in 2017, the General Fisheries Commission for the Mediterranean (GFCM) adopted Recommendation GFCM/41/2017/4 on a multiannual management plan for turbot fisheries in the Black Sea. The recommendation a total allowable catch (TAC) for turbot for 2 years (2018-2019) with a temporary allocation of quotas. With the adoption of Council Regulation (EU), 2017/2360 of 11 December 2017 quota for sprat was fixed at the same level as in 2017 while the quota for turbot was allocated to 57 tonnes for Bulgaria which is 32% more than in 2017.

After amendments of the multiannual management plan for turbot due to decisions taken during Working Group on the Black Sea (WGBS) held in September 2019 was adopted Council Regulation (EU) 2019/2236 of 16 December 2019 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and the Black Sea. With the regulation quota for sprat remains the same while turbot quota was increased to 75 tonnes for Bulgaria, 32% compared to the previous one and for EU Black Sea countries was allocated to 150 tonnes which is 17.5% of the total quota for the basin. The other quotas were fixed to 497 tonnes (58%) for Turkey, 160 tonnes (18.7%) for Ukraine, 20 tonnes (2.3%) for Georgia, and 30 tonnes (3.5%) for others. Whit Council Regulation (EU) 2021/90 of 28 January 2021 and Council Regulation (EU) 2022/110 of 27 January 2022 the same fishing opportunities were fixed for 2021 and 2022 in the Black Sea.

The total number of vessels engaged in fishing for turbot in Bulgaria was constant during the last years. In 2019, the fishing vessels, which were engaged in fishing for turbot, were 116, while in 2020, their number increase to 124, which is 7% increase, and this measure helps for improving part of fleet performance. The trend continues and in 2021 and in 2022 where 126 vessels are allocated to catch turbot.

*Management instruments*

As EU Member State and a contracting party to GFCM Bulgaria is applying monitoring, control and surveillance (MCS) activities in combating IUU fishing system and, consequently is working in strong cooperation with EFCA, of sound fisheries management to increase the control and monitoring of landings of all species and especially of turbot. All measures as designated ports to land turbot, equipment of all turbot fishing vessels with a tracking device, introduced minimum size for turbot, etc. have a very positive impact on reducing IUU-fishing.

Furthermore, an international scheme for joint inspection and surveillance in the Black Sea was established. Ensuring the minimization of the risk of IUU turbot fisheries all vessels who receive a permit

to catch turbot are obliged to be equipped with tracking devices regardless of their length. The fleet is managed mainly through TACs, together with a range of input controls. With the Recommendation, GFCM/43/2019/3 the multiannual management plan for turbot fisheries in the Black sea, which lay down a list of measures and total allowable catch for 2017-2019 was amended for the period 2020-2022.

*Innovation and development*

Under Operational Programme for support from the EMFF for the development of the Bulgarian fisheries sector for a Programming period 2014-2020, EUR 25.5 million was allocated to ensure the viability and sustainable development of the Bulgarian fisheries sector as well as the protection of its fishing/marine resources. The amount represents 22.47% of the total OP financial support.

In 2020, EUR 9 000 in subsidies for investments were provided to Bulgarian fishers, while in 2021 there were no subsidies for investments provided. The tendency from last years for basic development on the gear or engine reparation, as well as on improving terms of fish preservation or the processing is still valid which is understandable from fishers point of view which main aim is increasing product quality and value.

- *Nowcasts for 2022-23 and beyond*

*Model results*

Based on the model results for 2022 a decrease in the volume and value of landings is expected compared to 2021. The economic performance during 2022 showed a deterioration which corresponds to the overall performance during 2020. In regards to the projection for 2023, the overall deterioration of the Bulgarian fishing fleet is expected to continue following the decrease of landings in volume and value which is the main factor for decreasing the revenue. Fuel prices are the next driving force for the fleet which in 2022 are showing a substantial increase. Together with the complicated situation in the region and the mines in the Black Sea waters the deterioration during 2022 seems realistic. At the beginning of 2023, the fuel prices decreased significantly at the EU level and reached the limit from the beginning of 2022, and this could be a mitigating circumstance for the deterioration of the fleet in 2023 which is projected mainly by the economic results from the last year in which COVID-19 and increased fuel prices were affecting the economic performance of the fleet.

*Outlook*

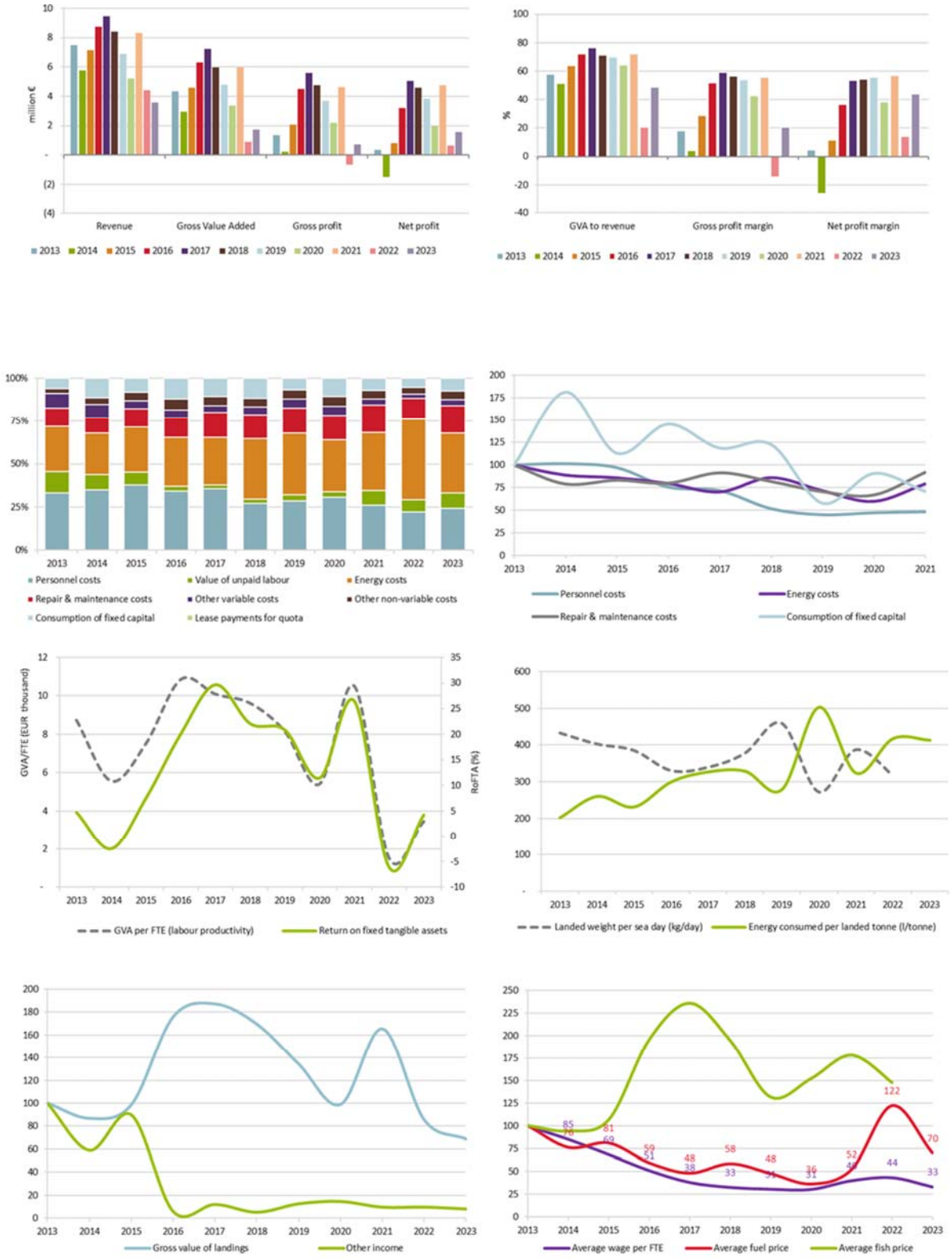
According to the data available in 2022, 5 546 tonnes of seafood were landed by the Bulgarian fleet, with a value of EUR 4.16 million which is 48% lower than the value of landings from 2021. The stable landings of rapa whelk were not enough to compensate for the decrease by more than 50% of the landing of sprat and together with the overall decrease of the landings and the decrease of the average prices are the main reasons for the significant decrease of the profitability in 2022.

- *Methodological considerations and data issues*

*Identify changes in respect to previous years*

There were no changes in respect to the previous years. All the clusters were used only for data reporting, not for data collection because the data was collecting through questionnaires from all vessels. No major improvements were achieved during the last year.

**Figure 4.2** Bulgaria: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (EUR/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2023).

### 4.3 Croatia

- *Short description of the national fleet*

In 2021 Croatian fishing fleet consisted of 7 757 vessels of which 6 240 were active (80.4%). Fleet capacity remained stable in 2021, with decrease of 1% in the number of vessels compared to 2021 and decrease by 1.6% compared to the average value 2015-2021. GT and kW have been reduced by 7%, compared to average values 2015-2021. Inactive vessels represented 19.6% of the total fleet registered in 2021.

*Fleet structure*

The Croatian fleet, which operates solely in the Northern Adriatic Sea, is divided into main commercial fleet and a category of small-scale artisanal coastal fisheries for personal needs consisting of some 3 500 vessels. These vessels were transferred into the commercial SSCF in 2015, pursuant to Croatia's Accession Treaty, however they continue to operate mostly for personal needs and are kept as a separate legal category with specific requirements and constrains.

In 2021, the active fleet was divided into 86% SSCF (5 370 vessels) and 14% LSF (870 vessels). Decline in fleet capacity is evident since 2013 due to reduction of LSF in 2021 by 20% in number of vessels, 15% in GT and 17% in kW compared to 2013, mostly due to scrapping of PS, DTS and DRB vessels.

The number of fishing enterprises totalled 5 530, with the majority (89%) owning a single fishing vessel, as is typical of artisanal fleets. More than 45% of Croatia's fishing vessels are registered as multipurpose vessels with a possibility to use different gears over the course of the year.

*Fishing activity and production*

In total around 325 258 days were spent at sea in 2021 (+2% compared to 2021) of which 68% in SSCF. In line with the limitation of effort for purse seiners for small-pelagic fish and temporal cessation in pelagic and demersal fishery, reduction of effort (expressed in sea days) compared to 2014 is evident in LSF which is continued in 2021 (-2% compared to 2013-2020 average). In contrast, effort increased in SSCF by 5% compared to 2021, and by 60% compared to 2015, which is consistent with the inclusion of small-scale artisanal coastal vessels to the commercial fleet in 2015.

The overall landing of seafood has been gradually decreasing since 2014 due to management measures at the level of the Adriatic Sea. Compared to 2014 when it has been at its highest, landings decreased by 11% to 61 166 tonnes of landed seafood products in 2021, while landed value has decreased by 5% amounting to EUR 60 million in 2021.

More than 120 species are caught commercially in Croatia as is typical of multispecies fisheries. However, small pelagic species targeted in purse seine fisheries, of which sardine and anchovy are most important, by far dominate the overall catch structure and accounted for 91% of total volume and 54% total value of products landed in 2021. Higher value species targeted by demersal fisheries, hake, red mullet, Norway lobster and deep-water rose shrimp, account for 4% in terms of quantity, but 17% in terms of the value.

Prices obtained for the key species targeted by the fleet generally remain stable in the period 2013-2020, increasing gradually. Slight annual variations of the prices are mostly resulting from changes in volume of landings over the period. Annual variations in prices are more evident for higher value demersal species.

As in previous years, in 2021 purse seiners from 24 to 40 metres LoA contributed for the majority of landed weight and value, 50% and 30%, respectively. Overall, purse seine segments amount to over 91% of volume and 51% of value of products landed and are managed under the provisions of a multiannual management plan for small pelagic fish in the Adriatic Sea as adopted under the GFCM.

*Employment and average salaries*

The total number of employees remained stable in 2021 and is estimated at 8 113, corresponding to 3 355 FTEs. Engaged crew in SSCF amounted to 70% (45% FTEs) and to 30% in LSF (55% FTEs). The level of employment is steadily increasing since 2013, and compared to 2013-2020 average, engaged crew increased by 32% and FTE by 19%. However, this increase is mostly due to activation of SSCF vessels in 2015, while engaged crew in LSC decreased by 11% compared to 2013-2020 average.

- *Economic results for 2021 and recent trends*

National fleet performance

In 2021, the economic performance of the overall fleet remained stable compared to previous years. Total revenue estimated at EUR 90.1 million has slightly increased by 3% compared to 2020 but compared to 2013-2020 average revenue increased by 17%. The major factor for the positive trend is higher revenues from landing income and an increase in income from other sources which has more than tripled since 2016 and represents 30% of all income in 2021.

The total amount of GVA and gross profit in comparison to 2020 increased by 13% and 28%, EUR 58.9 million and EUR 31.2 million, respectively, while net profit increased by 143% (EUR 9.9 million).

Total operating costs decreased in 2021 by 7% compared to 2020 and amounted to EUR 58.8 million. Decreased fuel costs (-24% compared to 2020) are a result of lower fuel prices in 2021, from 0.61 euro/litre in 2020 to 0.45 euro/litre in 2021, while energy consumption has remained almost the same (+4% compared to 2020). As in previous years, personnel costs have the highest share of 31% and followed by energy costs with 15% of all costs.

Decreasing trend of value of physical capital which started in 2015 has stabilized in 2021 and estimated (depreciated) replacement value amounted to EUR 280 million.

Resource productivity and efficiency

An overall improved development trend is present as of 2017. The gross profit margin in 2021 was 35%. Net profit margin was estimated at 11% in 2021, an increase since 2020.

Labour productivity (GVA per FTE) amounted to EUR 18 716, slightly increasing by 12% compared to 2020 and by 34% compared to the 2013-2020 average as both FTE and GVA increased by 17% and 55%, respectively, in the same period. Similarly, return on fixed tangible assets was 4% in 2021. Average wage remained stable in 2021 and amounted to 8 800 EUR/FTE.

Fuel intensity decreased to 381 litre/tonne in comparison to 408 litre/tonne in 2020, while landed weight per sea day stabilized to 221 kg/day in 2021 from 207 kg/day in 2020. In the period from 2013-2021 the Croatian fleet on average landed 278 kg/day with a fuel intensity of 367 litre/tonne. Overall, the fleet has been most efficient in 2014, mostly due to larger quantity of small pelagic fish caught in purse seine fisheries, and since then the ratio between landed weight per sea day and fuel consumed per sea day has decreased. One of the reasons for that is scrapping of purse seiners for small-pelagic fish and demersal trawlers and therefore changing the productivity and efficiency of the remaining fleet. Lower volume of landings of purse seiners mostly affected the productivity and fuel efficiency since these vessels have the best ratio between landed weight and energy use.

**Table 4.3** Croatia: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| HRV MBS DTS0612 NGI * | 0.68 | 0.70 | 0.39 | 45.9% | 2419 |
| HRV MBS MGO0612 NGI * | 0.32 | 12.73 | 11.93 | 2.3% | 841 |
| HRV MBS HOK0612 NGI * | 0.29 | 1.42 | 0.95 | 19.7% | 4619 |
| National average | 0.58 | 1.72 | 1.21 | 25.9% | 439 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020)

Overall, Croatian fishing fleet is operating at 26% energy efficiency, with an average energy intensity of 439 litres of fuel kg per tonne of landed sea product.

- *Performance by fishing activity*

The Croatian fleet has a range of vessel types using various gears and targeting different species exclusively in the Northern Adriatic Sea. In 2021, the fleet consisted of 23 (DCF) active fleet segments,

10 in SSCF (DFN, FPO, HOK, PGP and PMP) and 13 in LSF (DFNVL1218, DRB, DTS, MGO and PS), and five inactive length classes.

*Small-scale coastal fleet*

SSCF covers 86% (5 369) of active vessels and 2% and 15% of landed weight and value, respectively, in 2021. Number of fishers has remained stable in 2021 amounting to 5 635 persons and corresponding to 1 437 FTEs. The ratio between unpaid and paid fishers is much higher than in LSF, as 84% (4 736) fishers in SSCF are unpaid (self-employed, family workers or retired).

The amount of revenue generated by SSCF in 2021 was EUR 24 million or 27% of total revenue in 2021. Landings income constitutes 18% of total landings income and has decreased in 2021 by 6% to EUR 9.3 million, but overall landings income increased by 16% compared to the 2013-2020 average.

In the period from 2013-2021, GVA, gross profit and net profit have gradually improved even though a substantial fall was recorded in 2015 and 2016. The major factors causing the improvement in economic performance in this period included increases in landing income and a substantial increase of income from other sources (+90% in 2021 compared to 2013-2020 average) while operational costs remained relatively stable during the same period. Other income constitutes almost 58% of total income in SSCF in 2021, and only 19% in LSF. In 2021, the SSCF had an estimated (depreciated) replacement value of EUR 67.9 million. Investments by the fleet amounted to EUR 5.4 million in 2021.

In 2021 average length of SSCF vessels was less than 6 metres with an average age of 40 years, limiting fishing activities to fishing grounds near the port and to one-day fishing trips. Fishing activity of SSCF vessels has a distinct seasonal character with spring and autumn peaks, depending on migration of target species to the inshore area during the warmer period of the year, but also depending on other integrated activities such as tourism, transport, processing, aquaculture and agriculture. Catch is mainly sold on the local market and income from fishing is supplemented with other sources of income; 58% of income in 2021 was from other income.

The most prominent fleet segments with an important traditional and social character are the segments using fixed nets (DFN). Even though relatively low profitability is indicated for the fleet in relation to number of vessels, with low landing values, fixed nets segments are considered to be primarily highly artisanal and important in terms of social and economic elements for local population and communities.

The oldest segment is PGP in general (average vessel age of 41) and average vessels licence holders' age of 65 in 2021. This group of vessels, previously categorised as "for personal needs", falls into a separate category of commercial fleet. Most of the fishers are retired and occasionally engaged in fishing activities. Due to legal restrictions, authorized persons in this category can only be natural persons without legal rights to be involved in first sales and without obligations to pay social security fees. Since there is no landing income or salaries all the participants in PGP are considered as unpaid labour. Still, this category with a large number of participants is of great social importance as supplementary activity and food security for households.

*Large-scale fleet*

Majority of LSF in Croatia is constituted of high activity commercial purse seiners and demersal trawlers which are under a strict management regime. The number of LSF (882 vessels) stabilized in 2021 (-12%) compared to 2013-2020 average. In the period since 2012 capacity was reduced by 17% in GT and 16% in kW. Effort remained on the same levels in 2021 compared to 2020 (on average 113 days at sea per vessel).

Employment (2 351 engaged crew) has decreased by 11% compared to 2013-2020 average, which is consistent with the reduction of number of vessels by 12% in the same period. Number of FTEs (1 709 FTEs in 2021) is consistent in the period. The ratio between paid and unpaid workers is reversed in comparison to SSCF as 80% of persons in 2021 are paid workers.

In 2021, volume of landings (68 600 tonnes) and landing income increased by 11% and 5%, respectively, compared to 2020 mostly due to increased landing of small pelagic fish. Landings income constituted 71% of income in 2021, while income from other sources was only 19%. Due to strict management measures and reductions both in effort and catch the viability of LSF highly relies on EMFF support mostly through implementation of temporary cessation of fishing activities. In 2021, operating subsidies have increased by 16% compared to 2020 amounting to almost 10% of total income.

Operating costs in LSF (EUR 45 million) have decreased in 2021 by 9% compared to 2020, with a decrease of 11% compared to 2013-2020 average, mainly due to significant decrease in energy costs (-25% compared to 2020).

In 2021, GVA, gross profit and net profit increased by 50%, 52% and 186%, respectively. LSF had an estimated (depreciated) replacement value of EUR 135.6 million. Investments by the fleet amounted to EUR 7.8 million in 2021.

- *Performance results of selected fleet segments*

In 2021 the Croatian fleet consisted of 23 active fleet segments. Almost all segments with the exception of dredges from 6 to 12 meters and PGP vessels showed improved economic development trend compared to 2020. Based on the net profit margin, eight fleet segments showed high profitability, four segments a reasonable profitability and 9 a weak profitability. Net losses are registered for seven segments (DTS0612, DTS2440, DRB1218, DFN1218, PGP0006, PGP0612 and PMP0006).

In 2021, the most important fleet segment in terms of landing percentage was purse seiners (PS, 91% of total landings), whereas the largest number of vessels (17%) were active in fixed nets segment (DFN, in Croatia fixed nets – gill nets and trammel nets, 1 037 active vessels). In terms of landing of demersal fish most important segment is DTS VL1218 with 44% of total DTS landing. In purse seine segments, most significant are PS VL2440 with 56% and PS VL1824 with 29% of total purse seiner landings.

Most important segments in terms of contribution to total revenue are PS2440, DFN0612, PS1824 and DTS1218, with 23%, 15%, 11% and 10% share in total revenue, respectively.

*Drift and fixed netters 6-12m*

Not taking into account PGP vessels, although this segment had the highest share of active commercial vessels (27%) in 2021, its share in total volume and value of landing in the same year was small, 1% and 6%, respectively. These fishers operate predominantly in coastal areas targeting different species and using fixed nets, hooks, traps and longlines. The segment employed 16% of total FTE (excluding PGP), and in 2021 it had landing value of EUR 3.9 million, while income from other sources amounted to EUR 9.6 million, representing 67% of total revenue of this fleet segment. It reported a positive gross profit of EUR 7.4 million and a net profit of EUR 5.8 million in 2021. Average wage per FTE was EUR 7 000.

*Demersal trawlers / seiners 12-18m*

In 2021, 159 demersal trawlers (6% of active commercial fleet) operated in GSA 17 targeting different demersal species, mostly European hake, Norway lobster, red mullet and deep-water rose shrimp. This segment employed 10% of total FTE in 2021, and its share in landing volume and value was 3% and 10%, respectively. It reported a positive gross profit of EUR 2.6 million, and a net profit of EUR 1.3 million in 2021. Average wage per FTE was EUR 8 300. Segment contributed to 10% of total revenue.

- *Drivers affecting the economic performance trends*

*Markets and Trade*

In 2021 average landed price of 1.5 euro/kg decreased by 7% compared to 2020 but increased overall by 9% compared to average in the period 2013-2020. Of the top six commercially most important species Norway lobster and Common sole had the highest prices (12.6 and 8 euro/kg, respectively) in 2021, while sardine and anchovy were sold at relatively low prices (0.4 and 0.9 euro/kg, respectively). A high influence on fish prices of small pelagic species has the product destination. As Croatia is a bluefin tuna farming country, a large quantity of small pelagic fish landed on the landing sites is designated for tuna feeding. The small pelagic fish intended for tuna feeding are declared with low prices in the sales notes. These low prices have a minimizing effect on the average price of small pelagic fish. For tuna feeding, Croatia has a pronounced import of herring from other countries.

Croatia's accession to the EU had a substantial influence on fish market, along with facilitating transport it brought increased competition. Domestic market is still slow to adapt to the EU market in terms of competitiveness and prices, however higher prices are achieved in direct sales activities in local markets.

Croatia is a net exporter of fish and seafood products. Both import and export have been gradually increasing in the period 2013-2021. Within the EU, Italy, Slovenia and Spain are the main export destinations for fresh and salted fishery products. Sardine and anchovy originating from purse seine fisheries are the main species exported mainly to neighbouring countries, Italy and Slovenia. Demersal

fish and cephalopods are exported fresh mainly to Italy where fishers achieve higher fish prices than on domestic market which contributes to the profitability of demersal trawlers. Croatia is one of the main EU exporters of farmed Bluefin tuna which is exported almost exclusively to Japan. Export of fish and seafood in 2021 amounted to EUR 240.6 million and 68 000 tonnes, while main export partners are Italy, Japan, Spain and Slovenia. Imports originated mainly from Italy, Spain, Slovenia and the Netherlands and amounted to EUR 150.5 million and 70 300 tonnes in 2021 (EUMOFA, 2022).

Fish consumption in Croatia is lower than the EU average (24.4 kg in 2017) with a highly seasonal demand. According to latest data on consumption in 2020, apparent consumption was estimated at 20.82 kg per capita, a 7% increase compared with 18.7 kg per capita in 2017 (EUMOFA, 2021).

*Operational costs (external factors)*

The most important operational costs are personnel costs followed by fuel costs. Trends from the five-year period are followed in terms of share of personnel costs, and fuel costs in total costs. In 2021, share of fuel cost of 15% decreased compared to the average in the period 2013-2020. At the same time share of personnel costs increased to 31%, compared to 26% average value in the period 2013-2020 which is line with trend of increase of average wage. Other costs such as repair and maintenance, unpaid labour and other variable costs have been stable over period accounting for 9%, 5% and 9%, respectively, in 2021. The increasing trend of the fuel price in the period 2016-2020 affected profitability in fuel intensive fleet segments such as demersal trawlers, however in 2021 fuel costs were lowest since 2012.

*Status of key stocks, TACs and quotas*

Fishery in Croatia is based mostly on catch and effort management, spatio-temporal closures while only Bluefin tuna and swordfish fishery is restricted by TAC.

- Bluefin tuna: National quota was nationally allocated to commercial fleets: PS and HL fleet with the quantity also allocated to by-catch from commercial vessels not authorised for BFT fishery, and non-commercial fleets: sports, recreational and scientific. Quota after swaps was adjusted to 915.03 tonnes. Total catch in 2021 was 907.65 tonnes (99.2% of adjusted quota).
- Swordfish: in line with the ICCAT Recommendation 16-05, the Croatian Administration established the national list of vessels authorised to fish for swordfish and regulated the use of fishing gears. After three quota swaps the adjusted Croatian SWO quota was 56.94 tonnes for 2021. Total amount of catch in 2021 was 23.17 tonnes (40% of adjusted quota). Croatia applies approach of allocating individual quota per vessel for swordfish LL fishery, while swordfish HL fishery operates under the "Olympic" system with only the overall quota for the segment set.
- Small pelagic species in Adriatic Sea: in December 2016, for the first time, the Council set a catch limit for the EU concerning small pelagic species in the Adriatic Sea for 2017 (112 700 tonnes of small pelagic species - anchovy and sardine) -Annex IL of Regulation 2017/0127. Furthermore, Recommendation GFCM/42/2018/8 set an obligation to progressively over a three-year period (2020-2021) decrease the level of the catches of sardine and anchovy by 5% annually starting with the level of catches reported for 2014. This obligation was transposed into EU legislation which has for 2021 set a maximum catch limit for sardine and anchovy in Adriatic for EU Member States (Croatia, Italy and Slovenia) to a level of 101 711 tonnes.

GFCM working groups on stock assessment revised a total of 13 Adriatic Sea stocks in 2021 (11 demersal, 2 small pelagic), providing advice for all, including one instance of precautionary advice for blackbellied angler. Two stocks were considered overexploited with low fishing mortality (common cuttlefish and mantis shrimp), European hake was considered in overexploitation with biomass above the reference point, great Mediterranean scallop in overexploitation and depleted; deepwater rose shrimp and red mullet two in overexploitation with high biomass, while sardine and anchovy were considered to be overexploited and in overexploitation.

Following establishment of Jabuka/Pomo Pit FRA, according to recent years' monitoring programmes (MEDITS and FRA JABUKA/POMO survey), it is evident that these measures have already yielded positive results in increased abundance and size of many priority species within the FRA.

*Management instruments*

Croatian fleet is managed through capacity and effort limitations, as well as through temporal and spatial restrictions. Effort regulations are related to restrictions on issuing fishing licences and transfer of fishing rights from one license to another in terms of permitted fishing gears or fishing zones, as well as through issuing additional authorisations for fisheries under management plans. This system is preventing an increase of fishing effort related to fishing gear or fishing zone, or even subzone. Capacity limitation is related to increase of vessel power and length in terms of total national fleet capacity and total capacity for specific fisheries. Additionally, national regulations restrict transfer of effort between fishing zones of inner and outer fishing sea, preventing increase of effort in the most vulnerable areas of inner sea. Spatial and temporal closures have been used in past years for management of purse seine and trawling fishery. In the recent period this has become an effective measure in preventing catch of smaller categories of small pelagic as well as in protection of areas important for recruitment of target species.

In addition to the aforementioned, from 2014 GFCM management plan for small pelagic fish in GSA 17 has been in force. By the provisions of this plan maximum number of fishing days for targeting sardine and anchovy has been set, as well as temporal closure period. Given full implementation of these measures and additional national restrictions implemented for protection of small pelagic, the total number of days-at-sea will probably decrease further in the future.

In 2015, Italy and Croatia adopted joint management measures at the national level establishing no-take zone for bottom trawls in the area of Jabuka/Pomo pit. This regime was introduced from July 2015 to October 2016 after which a more stringent regime has been established for the three-year period. On the top of national legislations this new regime was also transposed into GFCM Recommendation 41/2017/3 on the establishment of a fisheries restricted area in the Jabuka/Pomo Pit in the Adriatic Sea.

In 2015 Italy and Croatia adopted joint management measures at the national level establishing no-take zone for demersal trawls in the area of Jabuka/Pomo Pit. This regime was introduced from July 2015 to October 2016 after which regime was modified and more stringent one has been established for the three-year period. On the top of national legislations this new regime was also transposed into GFCM Recommendation 41/2017/3 on the establishment of a fisheries restricted area in the Jabuka/Pomo Pit in the Adriatic Sea. New regime includes three zones where particular management regime applies, one in the middle where all kind of demersal (trawls and longlines) and sport fishery is prohibited, and two side zones where only limited number of authorised vessels can operate for limited time of two days per week. This is the first FRA area in the Adriatic Sea and an important measure for demersal fishery which has a significant impact on the fleets.

*Innovation and development (role of EMFAF)*

In 2021, investments remained stable compared to 2020. Although investments increased by 39% compared to 2013-2020 average the level of investment is still low (an average of EUR 5 200 per active vessel in 2021, excluding PGP vessels). LSF accounts for 59% of total investments and investments are much higher (EUR 9 000 per vessel) compared to investments in SSCF (EUR 1 000 per vessel).

After Croatia's accession to the EU in 2013, and changes that followed due to a full implementation of Mediterranean regulation, economic performance still cannot be considered stable. Firstly, this is because of the process of permanent cessation which was ongoing by the end of 2018, and which affected LSF purse seins, bottom trawlers and dredgers, but also due to a process of inclusion of large number of vessels in the small-scale PGP segment. In connection to the progressive, but still limited, increase of fishing activities in PGP segment, an overall increasing trend is expected in the values of fishing activity and economic indices. Nevertheless, due to their large number these vessels have a visible impact on the performance of the entire fleet.

Key challenges in Croatian fisheries sector are in ensuring competitiveness and sustainability of enterprises, including SSCF.

Investments over the segments are based on gear or engine reparation, improving selectivity of gears, as well as terms of fish preservation or processing aimed at increasing product quality and value. This trend can be expected in the future as well in line with EMFF and EMFAF.

In 2016, GFCM adopted Recommendation GFCM/40/2016/3 with additional restricting measures for 2017 and 2018 for small pelagic fisheries in Adriatic. In 2017, European Commission presented a proposal for multi-annual plan for small pelagic stocks in the Adriatic Sea and the fisheries exploiting those stocks. With the new plan for Adriatic small pelagic stocks, which are exploited mainly by Croatian and Italian

fishing vessels, the Commission proposed to introduce a major shift in fisheries management in this area, currently based on fishing effort, by setting TACs. In 2018, Parliament's Committee on Fisheries (PECH) supported maintaining the current fishing effort regime and opposed the introduction of TACs. It also required that catch limits for small pelagic species are set in 2020 at the level of the 2014 catches and reduced by 4% annually between 2021 and 2022. The improvement of safety and working conditions on-board is a high priority, especially since fishers are forced to conduct fishing activities in unfavourable conditions as number of possible days at sea has been limited due to spatial-temporal closures and limitations of catch and effort. Dependence of the sector on two species, sardine and anchovy, which are in poor condition, leads to the need for diversification in the production targeting different species and for value addition for the two species, in order to increase the income of fishers.

*Socio-economic impact*

Overexploitation and management measures implemented as a result of the stocks status remains to have a significant influence on the economic performance of the sector. This is true primarily for small pelagic fleets which have been under strong restrictions from 2015. These were also followed with appropriate measures from the EMFF which compensate their effect to a certain level. As the sector is heavily dependent on small-pelagic fish the effects of management measures, mainly temporary and permanent cessation of fishing activities, is expected to have a positive impact as Croatia intends to continue with the measures provided within the framework of the EMFF and EMFAF. Same measures have been implemented in the demersal fishery. Assuming that fuel prices remain fairly constant and fish prices continue to increase, the effects of conservation measures are expected to have a positive long-term impact on the general recovery of the sector. As for the demersal fleet, Fisheries Restricted Area (FRA) in the Jabuka/Pomo Pit is having a positive impact on the performance of demersal trawlers and longliners, since status of demersal stocks in the area has significantly improved.

- *Nowcasts for 2022-23 and beyond*

*Model results*

Number of active vessels in 2021 remained stable (6 235 vessels), while landed weight decreased by 11% and landed value dropped by 3%. Projections suggest that operating costs increased, due to increase in fuel prices in 2021. Forecasts indicate that the Croatian fleet operated at a profit in 2021.

*Outlook*

In 2021, over 61 000 tonnes of seafood were landed by the Croatian fleet, with a value of over EUR 60 million (provisional figures) while the overall days-at-sea slightly increased. Deterioration of economic performance is expected with lower Gross profit and an increase in the number of fleet segments with net loss. The negative economic trend is mainly due to the COVID-19 outbreak and decreased landing volume in value, so as increased fuel prices in 2021. Another important factor that could impact the performances of the fleet is the reduction in fishing days for demersal trawlers and purse seiners. Concerning the period beyond 2021, in line with management measures further reduction of fishing effort can be expected in the main commercial fleet - PS and DTS segments.

*Impact of fuel prices/indicators on energy efficiency by fleet segments*

Global economic crisis caused by the increase in fuel price since the beginning of 2022 has seriously impacted the Croatian fishing fleet.

Fuel costs are the most significant component of operational costs of the fishing fleet having and therefore profitability of the fishing fleet is affected by fuel price oscillations. Purse seiners and demersal trawlers are the most fuel intensive fleet segments, and on them the crisis had the greatest impact.

- *Methodological considerations and data issues*

No major issues detected. All fleet segments with major contribution to the total catch of the Croatian fleet have been sampled with satisfactory response rates. Where possible, administrative sources were used to include data for all vessels (including energy consumption, energy costs and subsidies).

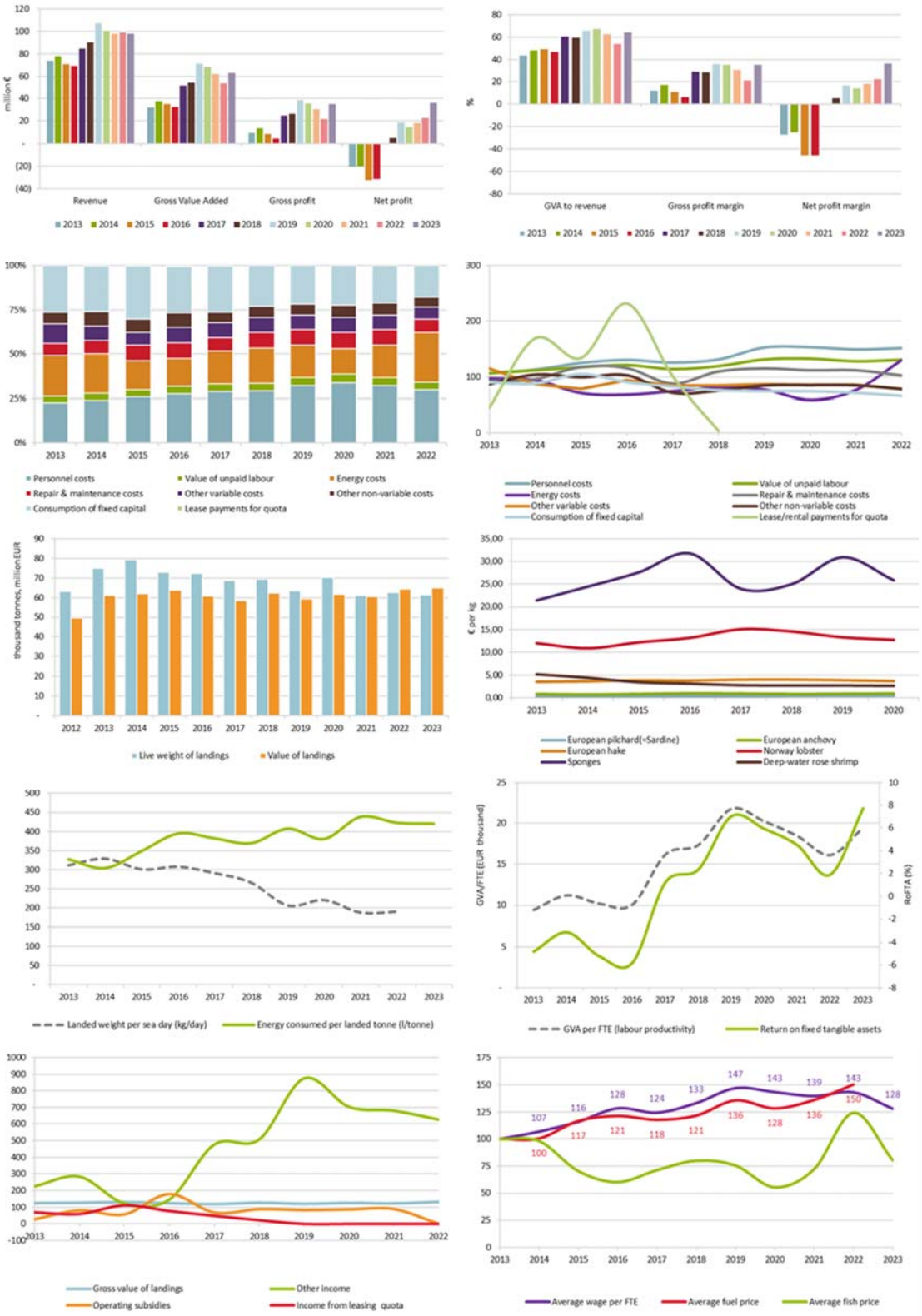
Capacity, effort, and landings data is collected for the entire fleet according to the Control Regulation and national legislation. Fishing reports are used for reporting on fishing activity for vessels below 12 metres LoA using passive gears.

Methodologies for estimation of value of unpaid labour, value of physical capital and consumption of fixed capital have been improved to allow more consistent results over time series. As a result of these changes values and figures may differ from previous reports.

Regarding the 3 500 small-scale vessels which were transferred into the commercial SSCF in 2015, all these vessels fall under the polyvalent passive gears segment (PGP), however, these fishers are not full-time engaged in fishery and most had very limited activity in 2015-2021. Therefore, economic indicators for the PGP segment should be taken with caution. Landing value has been estimated for these vessels however, most PGP vessels cannot place their catch on the market due to national legislation in force.

For the conversion of values of historical DCF economic data from national currency to euro, the average annual exchange rate for each referent year has been used.

**Figure 4.3** Croatia: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2022)); All monetary values have been adjusted for inflation; constant prices (2023).

### 4.4 Cyprus

- *Short description of the national fleet*

The Cypriot fishery is dominated by small-scale vessels dispersed across many landing places that use a variety of fishing gears, usually on the same fishing trip. Fisheries in the Mediterranean Sea are of mixed-species type, where more than one species is present in the area being fished and caught by the fishing gear no matter if these species are not the targeted ones.

Fleet capacity in 2021 was decreased slightly by 1% compared to previous year; following the declining trend during the period 2013-2020. It consisted on 853 registered vessels with a combined gross tonnage of about 3 894 GT and total engine power of around 40 550 kW.

On average, there was a reduction of 3% in the number of vessels if compared to the period 2013-2020 Yet, both the combined gross tonnage and the total engine power were increased by 8% and 2%, respectively, meaning that some vessels exit the Fleet Vessel Register or some vessels have substituted their engines with others with higher engine power.

The number of the vessels decreased by 1% when compared to year 2020 resulting in, both the combined gross tonnage and the total engine power were reduced by 1%, both.

Even though the active small-scale vessels decreased by 4% during the period 2013-2020, the large-scale ones increased by 18%. This is strengthened by the fact that both the total vessel tonnage and engine power for the large-scale vessels group, were increased by 25% and 26%, respectively, for the same time period.

The reduction in the number of SSCF vessels during the period 2013-2020 had a negative impact of 2% on the total engine power and 3% on the combined gross tonnage.

It is noted that vessels which ceased their fishing activities were scrapped in 2013 and end of 2015 through structural aid within the framework of the EFF 2007-2013 and EMFF 2014-2020. All of these vessels were part of the SSCF.

*Fleet structure*

In Cyprus, the fishing fleet related with the active vessels can be divided into a LSF consisting of vessels over 12 metres length overall with a total engine power of 8 221 kW in 2021 and SSCF consisting of vessels of less than 12 metres length overall with total engine power of 29 355 kW in 2021.

The LSF is mainly composed of polyvalent vessels with passive gears and few trawlers fishing in international and territorial waters. The large majority of the vessels belong in the length group 12-18m and thus, for sampling purposes, as well as for confidentiality reasons due to small number of vessels, all the polyvalent vessels were regrouped in the 12-18m length group. It is noted that all the groups of vessels using polyvalent passive gears with length over 12 metres are engaged in the same metiers since these vessels target the same group of species with the same gears despite their vessel's length. The vessels of this fleet segment are engaged in two fisheries; mainly in the large pelagic fishery using drifting longlines and operating in Cyprus waters and the eastern Mediterranean (targeting swordfish, bluefin tuna and albacore), but also in the inshore demersal fishery using mostly set nets and set longlines. A limited number of licenses are provided for this segment on an annual basis.

Demersal trawlers range from 19-27 metres. The demersal trawlers fleet segment below 24 metres are only two vessels and thus, for confidentiality reasons as it is impossible to report data without identifying these companies, they were regrouped in the over 24 metres length group. It is emphasised though, that both groups are engaged in the same metier and they target the same group of species with the same gear despite their vessel length. The licensed trawlers are categorised, based on their type of license, in those fishing in the territorial waters of Cyprus and those fishing in international waters (eastern and central Mediterranean). For the trawlers fishing in territorial waters a limited number (two) of licenses is provided every year, and an extended closed season (from 1 June until the 7 November) is employed.

The SSCF is mainly operated using bottom set nets and bottom longlines, targeting demersal species. Cyprus Fisheries Law[16] provides for a limited number of licenses for this segment annually and divides it into three subcategories: vessels with fishing license category A' (full-time activity in fisheries), vessels with fishing license category B' (part-time activity in fisheries) and vessels with fishing license category C' (periodic activity in fisheries). The professional fishing license category C' was introduced by a new national law in 2008 and based on this law their fishing activity is performed on a periodic basis since they are allowed to fish only a total of around 100 days each year. Consequently, their income from fisheries activities is too low. Thus, this new professional licence category with the low fishery activity was not grouped in the same category with the professional licences of category A' and B'. The vessels with fishing licence categories A' and B' belong to the fleet segment PG 0-6m and PG 6-12m whereas, the vessels with fishing licence category C' belong to the fleet segment PGO 0-6m and PGO 6-12m.

*Fishing activity and production*

An estimated 48 102 days were spent at sea in 2021, a big increase of around 17% compared to 2020 (41 236 DaS) but a significant reduction of 15% if compared to the period 2013-2020. The fishing days for both the SCF and the LSF increased significantly comparing to the previous year 2020 by 17% and 14%, respectively. On the one hand, the SCF shows decrease of 19% when compared to the period 2013-2020 but on the other hand, the LSF shows considerable increase of over 50%.

Due to the COVID-19 pandemic many measures were taken by governments to stem the spread of the virus like lockdowns that 'froze' the market and significantly reduced the demand. The increase in fishing days in 2021 compared to 2020 is explained by the fact that Cyprus has implemented a scheme of voluntary temporary cessation of fishing activities for 2 months for both fleet segments in 2020 as a measure to alleviate the economic consequences to fishermen, resulting in the reduction of fishing effort and thus, of fishing days in 2020. Some of the vessels did not want to join the scheme or did not meet its terms and conditions and thus could not join it but most of the vessels enter in the scheme. This scheme was not implemented in 2021.

The rise in fishing days and fishing trips performed, both by 17% for the small-scale fleet for the year 2021 in comparison to 2020, resulted in the amount of energy consumed to be increased by approximately the same percentage, around 16%. Taking into account the significant increase in fuel price from 0.615 euro per liter in 2020 to 0.732 euro per liter in 2021, together with the increase in the amount of energy consumed, the total energy cost for this part of the fleet, has gone up considerably showing a rise of 35% compared to 2020 despite the fact that SSCF performs shorter (closer to the shore) fishing trips than the LSF and thus it consumes lower amount of fuel in each trip. It is noted though that for this part of the Cyprus fleet the energy cost in 2021 is decreased by 11% when compared to the period 2013-2020.

The same picture stands for the LSF where the days spent at sea and fishing trips performed were increased by 14% and 18% respectively compared to the previous year 2020. This is mainly explained, as in the case of SCF, that in contrary to 2020 no temporary cessation schemes were implemented for 2021. Nevertheless however, the energy consumed continue following its declining trend since it was reduced by 6% compared to previous year and 14% compared to the period 2013-2020. This implies that the vessels were performing shorter fishing trips. Despite the reduction in energy consumption, the energy cost increased by 9% in comparison to 2020 due to the rise in in fuel price (0.615 euro/litre in 2020, 0.732 euro/litre in 2021). However, the current energy cost is still lower than the average of the period 2013-2020.

The weight of seafood landed including the production from the BFT purse-seiner, reached 1 381 tonnes a significant increase of 11% (1 245 tonnes in 2020), with a value of EUR 7.29 million in 2021 (EUR 6.34 million in 2020) representing an increase of 15% compared to 2020. The landed weight per sea day (kg/day) decreased slightly reaching 28.72 kg/day in 2021 (30 kg/day in 2020).

The bottom trawl fishery in the territorial waters and the inshore fishery with polyvalent passive gears target a mix of demersal species, as it is the case in all Mediterranean demersal fisheries. The exploited stocks are not shared with other countries' fleets. Landings of both fisheries are mainly composed by picarel bogue, red mullet, surmullet, common pandora and cephalopods: common octopus, musky

16 Basic Fisheries Law Cap. 135 and subsequent amendments of 1961 to 2007, Fisheries Regulations of 1990 to 2012 based on Article 6 of the Basic Law.

octopus, European squid and common cuttlefish. The inshore fishery with polyvalent passive gears catches also relatively large quantities of parrotfish, blotched picarel and spinefeet or rabbitfishes.

Concerning the large pelagic fishery, polyvalent vessels operate in the Eastern Mediterranean, catching basically swordfish, albacore and Atlantic bluefin tuna with drifting longlines. For the first time in 2017, Atlantic bluefin tuna has been caught by a purse seiner.

*Employment and average salaries*

Employment was estimated at 1 215 jobs in 2021, a decrease of 4% (1 267 jobs in 2020) compared to 2020 but only a minor decrease of 1% against the period 2013-2020.

In 2021, the total jobs corresponded to 755 FTEs, a significant decrease of 5% compared to 2020 (793 FTEs), which it is very important if taken into account the increase of 1% of the period 2013-2020. It is noted though that 2020-2021 are the years of health crisis, COVID-19 pandemic, which affected almost all sectors of the economy, affecting obviously the fisheries sector as well.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The Cypriot national fleet was in a net loss-making position in 2021 with a small net loss of EUR 37 thousand, but its economic performance was significantly better when compared to the previous year 2020 (around EUR 1.8 million Net loss in 2020) showing a significant increase of over 90%. In addition to this, the economic performance was also much improved if compared to the period 2013-2020, nearly 100%.

The total revenue obtained by the Cyprus fleet in 2021, basically the income generated from landings since there is no other source of income, was estimated at EUR 7.29 million (EUR 6.34 million in 2020). The increase in total value of landings in current year by 15% compared to last year, is the main reason driving the positive economic results since it is able to cover nearly all expenses.

It is important to have in mind, when comparing the year 2020 with the current year 2021 or with other period, that in 2020 fishermen enjoyed significant direct subsidies. Most of the operating subsidies given to fishermen concern the scheme of temporary cessation of fishing activities as a measure to mitigate the effects of COVID-19. Fishermen had no fishing activities for two months and thus no income for that period. Operating subsidies were not included in other income and thus, not in the estimation of calculating Net Profit. This is one of the main reasons for the big Net Loss in 2020.

The Gross Value Added (GVA) increased by 14% in 2021 compared to 2020, and it was estimated at EUR 3.16 million (EUR 2.76 million in 2020). Moreover, it is showing a considerable increase of 27% compared to the period 2013-2020. Gross profit and net profit in 2021 were estimated at EUR 1.362 million and -EUR 0.37 million, respectively, (EUR 1.146 million and -EUR 1.81 million in 2021) showing a significant improvement in the economic performance compared to the previous year 2020, especially in the case of net profit which increased by 98%.

The consumption of fixed capital (annual depreciation), the energy costs (fuel) and the variable cost are the main cost items for the Cyprus national fleet for 2021 of 25%, 21% and 19%, respectively. In 2021, the share of consumption of fixed capital to the total expenditure was the same as the one of last year estimated at EUR 1.69 million although it was increased by approximately 14% compared to 2020, whereas the energy cost was estimated at EUR 1.44 million showing a significant increase of around 14% in relation to the year 2020. The variable cost, estimated at EUR 1.31 million in 2021 had the bigger increase from all the expenditure variables of nearly 40% comparing to the previous year 2020.

Another operating cost item, the personnel costs (wages and salaries) which contributes around 12% to the total expenditures, was rather constant between the years 2020 and 2021. This variable is related only to the LSF and thus it does not affect the economic results of the SSCF. Value of unpaid labour, which is mostly related to the SSCF and its share to the total expenditure reaches 14% rose by considerably 34% from the last year.

The total expenditures in 2021 increased by over 17% compared to 2020 having a negative impact on the profitability of the sector. However, the significant increase by 15% in total value of landings in 2021 had a positive effect on the profitability of the fleet leading to an improved economic performance and only to a small net-loss making position of the Cyprus fishing sector.

*Resource productivity and efficiency*

The gross profit margin in 2021 was positive, approximately at 21%, indicating operating efficiency of the fisheries sector but at a lower rate (-5%) compared to last year's one. Considering that there were negative values in the past for this indicator it is not a surprise that it has been greatly improved compared to the period 2013-2020. The net profit margin in 2021 was slightly negative estimated at -1% showing though a significant increase of approximately 94% compared to 2020. In addition to this, it is even more improved (98%) in comparison to the period 2013-2020.

The RoFTA turned to -2% in 2021, showing a significant deterioration compared to 2020 which was estimated at -1.7%. Furthermore, it shows an incredible decline when compared to the whole period 2013 to 2020, of over 280%. Apart from the years 2017, 2018 and 2019 that RoFTA was positive, it has been negative for the rest of the whole period 2013 to 2020.

There is an overall upward trend when compared to previous year 2020 in all indicators and the same improved situation stands for most of them if compared to the period 2013-2020. This picture is also reflected in labour productivity (GVA/FTE) strengthening the economic performance since it increased significantly by 22% in 2021 at EUR 4 194 per FTE, compared to 2020 (EUR 3 508 per FTE in 2020). In addition, in 2021 GVA estimated at EUR 3.16 million and GVA to revenue estimated at 48%, both increased significantly compared to the period 2013-2020 by 27% and 44% respectively. Yet, GVA to revenue was rather constant since it decreased slightly by 3% compared to 2020, whereas GVA went up by 14% in comparison to 2020.

Nevertheless, in 2021 the number of total people employed declined by 4% compared to 2020 at 1 215 persons (1 267 in 2020). The same picture stands for the number of FTE which went down as well, by 5% at 755. This reduction can be explained if you consider that we were still going through a period of pandemic in 2021.

Fuel consumption per landed tonne continue its decreasing trend in 2021 and it reduced at 1.46 litres/tonne (1.53 litres/tonne in 2020), having a positive impact on the profitability of the Cyprus fleet. In 2019, this indicator was at 1.26 litres per landed tonne and 1.18 in 2018, reaching the lowest value of the whole period 2013 to 2020.

In 2017, landed weight per sea day was at its peak reaching 34 kg/day. The upward trend of the variable landings in weight per unit of effort (in weight per Days at Sea) during the period 2013-2017 followed a declining trend from 2018 and in 2021 the landings went down to 29 kg per sea day (in 2020 were 30 kg/day).

National average of short-term break-even fuel price (STBEFP) in 2021 was EUR 1.39 per litre, whereas average fuel price in 2021 was in EUR 0.72 per litre. Difference between average fuel price and STBEFP indicates that to make total costs equal to revenues, average fuel price can be increased up to 1.9 times. However, this is not the case for the national average of long-term break-even fuel price (LTBEFP) since the LTBEFP is EUR 0.55 whereas the fuel price in 2021 was in EUR 0.72 per litre. This is a big problem for the polyvalent vessels PGP1218 whose LTBEFP becomes negative. It is the segment with the highest, by far, fuel intensity from all other Cyprus fleet segments. A small increase in fuel price has great effect in its economic performance. It is noted that the PGO0006 and PGO0612 segments are of low activity segments with fishing effort restrictions.

**Table 4.4** Cyprus: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| CYP MBS PG 0612 NGI A | 0.72 | 1.77 | 1.24 | 22.0% | 2,057 |
| CYP MBS PGP1218 NGI A | 0.72 | 0.82 | -0.56 | 17.9% | 817 |
| CYP MBS DTS2440 NGI A | 0.72 | 1.89 | 1.29 | 24.8% | 2,364 |
| CYP MBS PGO0006 NGI L | 0.72 | 0.49 | -0.73 | 33.5% | 4,437 |
| National average | 0.72 | 1.39 | 0.55 | 22.0% | 1,567 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Socioeconomic Impact*

The fishery sector contributes very little to the Cyprus Gross National Product. However, it is an important sector for the fisheries dependent areas for direct employment (vessel owners and crew members) and auxiliary services such as fishmongers, gear repair, vessel repair and construction and families of fishers who help them in getting the fish out of the nets and fishery tourism, especially during the summer season. Also, it is significant, for other activities closely related to fishing activities like fish taverns and restaurants.

- *Performance by fishing activity*

Small-scale coastal fleet

The Cyprus fleet is dominated by the SSCF, which is by far the most significant segment of the Cyprus fleet representing around the 95% of the total fleet both in 2020 and in 2021 in terms of number of vessels and employment. In addition, it represents 36% of the total weight of landings and accounts for 48% of total value of landings in 2021. The higher percentage in relation to value of landings compared to their weight is that SSCF generally improves production price to a higher degree than the LSF, and the gap between prices at first sale can be very high. These gaps may be explained by the differences in quality linked to freshness and the size of the products, but also by the marketing channels. The selling prices of SSCF are high. The same species caught by SSCF are much higher than the ones caught by demersal trawlers (LSF).

Apart from the high quality of the landings and high selling prices the main patterns of this part of the Cyprus fleet are the small family–owned businesses usually of one physical person, area of operation closest to landing points (operated in Cyprus waters i.e., less than 12 nautical miles), use of one or more passive gears even in the same fishing trip and very limited daily landings. The main gears used are trammel nets (GTR), set gillnets (GNS) and set longlines (LLS).

The number of the small-scale vessels was rather steady between the years 2020-2021. It increased by only two vessels in 2021 with a combined gross tonnage of 1 722 GT and a total engine power of 29 355 kW.

An estimated 43 777 days were spent at sea in 2021 for the SSCF, a significant increase of 17% compared to 2020, which account for 91% of the total sea days of the Cyprus fleet for 2021. This part of the fleet consumed 58% of the energy consumption of the Cyprus fleet, around 1.17 million litres of fuel.

The income generated from landings was enough to cover all expenses made by SSCF and thus, it is in a net profit-making position in 2021 of EUR 296 591. In 2020 the fleet segment was slightly in net-loss making position, at around EUR -1691. The tremendous increase in Net profit compared to 2020, indicates the significant improvement of economic performance of this fleet segment. One of the main reasons that contributed in being the sector profit making, is the rise in value of landings by 24% compared to the previous year 2020. Unsurprisingly, the GVA went up by 24% as well compared to 2020, reaching EUR 1.87 million.

It is worth noticing that when considering the operating subsidies as part of other income, the fleet segment in 2021 will be further improved.

*Large-scale fleet*

The LSF is composed of polyvalent passive gears vessels and trawlers with length ≥12m. In 2021 the number of vessels decreased slightly reaching 41 vessels (one vessel less than in 2020) with a combined gross tonnage of 1 902 GT, an increase of 3% compared to 2020 and a total engine power of 8 463 kW, an increase of 2% compared to 2020 meaning that larger vessels have entered the FVR.

In 2021, there was a significant growth of 14% in the days spent at sea compared to 2020, reaching the 4 329 days. Additionally, the fishing trips were increased too by 18% performing 1 939 trips in 2021. On the other hand, energy consumption declined, as 6% less litres were consumed by this part of the fleet compared to the previous year, meaning that the segment was performing shorter trips mainly due to the increase in fuel prices.

Both weight and value of landings in 2021 went up by 1% and 8% respectively compared to 2020, generating 10% more income in relation to 2020. Yet, the income generated from landings was not enough to cover all the expenditure of the LSF resulting in a net loss-making position (approximately to EUR 354 000). Some cost items went down, and some items went up in comparison to 2020. In 2021

the cost item that had the biggest negative impact on the profitability of this part of the sector is the depreciation which was increased by 18% compared to previous year. Variable cost was the item that had the biggest increase compared to 2020 by nearly 50%. Although non-variable cost recorded an amazing downfall of 35% compared to 2020, it is small cost item contributing very little to the economic performance. The personnel costs and repairs and maintenance were at similar level as in 2020. The economic performance was significantly improved compared to 2020 but especially compared to the period 2013-2020, mainly due to the increase in the value of landings.

- *Performance results of selected fleet segments*

*Polyvalent 'passive' gears 6-12m*

The most important SSCF segment is the *Polyvalent 'passive' gears with length 6*-12m since it represents 38% of the total number of active vessels and thus of employment. In 2021, there were 297 active vessels of this small-scale part of the fleet operating in territorial waters, i.e., less than 12 n.m., a decrease of 2 vessels compared to 2020 where there were 299 vessels. It is noted that during 2015, 66 vessels from this fleet category were permanently withdrawn and their licences were cancelled through structural aid within the framework of the EMFF 2014-2020. In 2021 the FTEs decreased to 439 from the 460 in 2020.

In 2021 the value of landings amounted to EUR 2.86 million, 39% of the total value of landings of the Cyprus fleet (including the landings from the bluefin tuna purse-seiner). The income obtained was sufficient to cover all the operating expenditures and this fleet segment generated gross profit of EUR 0.92 million. Due to the significant increase in value of landings of around 17% compared to 2020 and as a consequence of the improvement in revenues, the segment could cover all the expenditures resulting in being in net-profit making position. The segment had Net Profit of EUR 537 266, representing a growth of 35 % in relation to 2020. Another important indicator is the net profit margin whose economic development improved compared to previous year, reaching the 18.79% (16.53% in 2020). However, the economic development trend has been deteriorated by around 50% if compared to the period 2013-2020. All the above estimated indicators, clearly show the improvement of economic position for the year 2021, mainly due to the increase in the value of landings by 17%. All the expenditures except for the repair and maintenance cost, increased in 2021 compared to 2020. The biggest increase, over 50%, is recorded in energy cost due to the large increment in fuel prices between the years 2020 and 2021 (0.615 euro/litre in 2020, 0.732 euro/litre in 2021).

The GVA reached the amount of EUR 1.75 million in 2021 a growth of nearly 14% compared to 2020 (EUR 1.54 million). The GVA to revenue is at a lower level in 2021, at 61.3% than in 2020 which was at 63.8%.

Fuel consumption was estimated at 2 057 litres per tonne of landed fish in 2021, a little below of that in 2020 which was estimated at 2 064 litres. On the contrary, the landed weight per sea day went up from 11.47 kg per day in 2020 to 12.23 kg per day in 2021.

There was a significant increase in the overall days-at-sea of the segment since the vessels spent 29 178 days in 2020 but 34 929 DaS in 2021. The fuel consumption in 2021 did not continue its declining trend observed since 2014 showing a 16% increase compared to 2020. Moreover, in 2021 the energy cost was well above the one in 2020 since it was increased by 38% due to higher fuel prices and the fact they performed many more fishing days.

Overall, the main economic indicators in 2021 improved compared to the year 2020 but worsen when compared to the period 2013-2020.

*Vessels using Polyvalent 'passive' gears with length ≥12m*

The most important LSF segment is the *Polyvalent 'passive' gears with length ≥12m.* It is the second most important segment in terms of revenues (25% of the total value of landings) after the *Polyvalent 'passive' gears with length 6*-12m segment. The vessels of this category range from 12-26m (the large majority from 12-18m) and are engaged in two fisheries; mainly in the large pelagic fishery using drifting longlines and operating around Cyprus waters and the eastern Mediterranean (targeting swordfish, bluefin tuna and albacore), but also in the inshore demersal fishery using mostly set nets and set longlines. A limited number of licenses are provided for this segment annually.

In 2021 this fleet segment consisted of 36 active vessels the same number as in 2020. Yet, the FTE national decreased from 153 in 2020 to 140 in 2021. It is noted, though, that the vast majority of the

crew comes from third countries (mainly Egypt) for as long as the duration of the fishery of albacore lasts.

In 2021 the value of landings amounted to EUR 2.14 million and it accounted for 25% of total value of landings of the Cyprus fleet (including the landings from the bluefin tuna purse-seiner). Due to the increase in value of landings by around 16% compared to 2020, the income was such that all the operating expenditures could be covered, and the fleet segment could generate positive gross profit of EUR 55 830 for the year 2021. However, the fleet segment was operating at a net loss-making situation in 2021; net loss at EUR 567 508, a deterioration compared to 2020 where the net loss reached EUR 410 096. The main factor behind this economic deterioration is the great increase in some of the cost items like the tremendous increase in energy cost by 77% compared to 2020. The variable costs were also well above the ones of last year by 66%.

- *Drivers affecting the economic performance trends*

The good condition of some of the main commercially exploited fish stocks may have a positive impact on the revenue of the sector.

In 2017 the lessepsians species like *Lagocephalos sceleratus* and the recently reported in Cyprus waters, lionfish, greatly affect the biodiversity and thus, the economic performance of the fisheries sector.

The attacks to the fisher's nets and catch by some of the protected species mainly by dolphins and sea turtles can have a negative impact on the limited fishing income and as a result, put at a risk the economic sustainability of the fleet segments especially the one of the small-scale inshore fishery fleet and of the polyvalent *'passive' gears* vessels *with length ≥12m*.

Recreational fishery is another driver that can negatively affect the economic performance of the professional fishers. The sport fishers are large in numbers and can have an important production in some species even in overfished species.

A significant reduction in the number of SSCF vessels, 107 in 2013 and 66 in the end of 2015, after decommissioning schemes through structural funds have become a driving force for the improvement of the economic performance of the Cyprus fleet overall but especially for the SSCF over time.

The only species managed in the Mediterranean by quotas until 2016 was the bluefin tuna. Cyprus after many years has issued a purse seiner license for bluefin tuna. Thus, from 2017 a new fleet segment, with only one vessel, exists. Since 2017, swordfish is the second species that it is managed by quotas. The allocation of quotas between the EU countries and the recovery plan for the species has been implemented since 2017. This fact could have a negative impact on the activities and economic performance of the *Polyvalent 'passive' gears with length ≥12m* fleet segment at least in the short run. From 2022 onwards, albacore, the most important species of Cyprus pelagic fishery, will also be managed by quotas. The annual quota allocated to Cyprus is much less than the average quantity fished by the *Polyvalent 'passive' gears with length ≥12m* fleet segment the last 5 years and thus, it is expected to seriously affect the income of this specific fleet segment.

*Markets and trade*

In Cyprus the fish is mostly sold fresh. The processing fishing industry in Cyprus is at its early stages.

Cyprus has a negative trade balance in fresh fishery products both in value and weight. The fish prices are relatively high compared to other Mediterranean countries and the main reason is the Cyprus trade deficit of fresh products.

It is noted that the small-scale fishery has small daily landings that are of high quality and thus they can enjoy higher selling prices compared to the ones obtained by trawlers for the same species.

In Cyprus there are no auctions. Around 30% of the fish of small-scale fishers is sold directly to consumers and the rest to wholesalers. In contrary, the catch of the large-scale-vessels is channelled to domestic wholesalers or, for the case of the large pelagic fishery, exported.

*Operational costs (external factors)*

The most important operational costs are the wages and salaries of the crew members and the fuel cost. Personnel costs include all the expenditures paid by the employers, including social security. The SSCF employs only individuals and their assistants. Neither the vessels' owners-fishers nor their assistants are paid any wages nor salaries. They get share of the value of landings. Consequently, for the SSCF the

value of the unpaid labour (for example the vessel owner's own labour) is estimated based on a minimum wage. Thus, this amount per vessel is fixed according to the number of assistants.

On the other hand, the LSF fleet owners (trawlers and polyvalent passive gears with length ≥12m) employ crew from third countries and these crew members are paid based on an agreed salary. It includes temporary, seasonal as well as rotation crew. These wages can vary from year to year but not remarkably. Currently, the crew wages are much higher during the period of the albacore fishing season, which it is the main fishing activity of the LSF and the vessels' owners hire a significant number of fishers from Egypt.

Fuel prices, from 2015 follow an upward trend with the exception of 2020 that declined significantly during the COVID-19 pandemic. There has been a significant decrease in fuel prices by nearly 20% in 2020 compared to 2019, whereas there has been a considerable increase by nearly 20% from to 0.615 euro/litre in 2020 to 0.732 euro/litre in 2021.

*Status of key socks, TACs and quotas*

In 2017, Cyprus has performed stock assessment for two of the main commercially important demersal stocks in GSA 25, bogue and stripped red mullet and both were found in low overexploitation status. It is noted that the assessment of stripped red mullet has been endorsed as 'accepted with qualitative advice', therefore, only qualitative information is given for the status of the stock. The time series used was 2005-2016 for both stock assessments performed. They were presented and endorsed by GFCM relevant scientific group.

In 2018, Cyprus performed a stock assessment for one of the main commercially important demersal stocks in GSA 25, common pandora (*Pagellus erythrinus*) which was found to be in a sustainable exploitation status with high SSB. The time series used was 1975-2017. The stock assessment was endorsed by the GFCM relevant scientific group.

In 2019 two stock assessments were presented and validated by the GFCM WGSAD, using a number of methods. Scientific advice for red mullet (*Mullus barbatus*) was given based on Extended Survivor Analysis (XSA) and diagnosis of the stock status showed a slight over-exploitation with intermediate SSB. An auxiliary cross validation and comparison exercise was also presented with four other models (LB-SPR, LBB, AMSY, and CMSY BSM) showing similar qualitative indications. The second stock for that year, common pandora (*Pagellus erythrinus*) was assessed based on Surplus Production in Continues Time method (SPiCT). The stock was found to be in sustainable exploitation with relatively high biomass. Similar results were obtained from runs using JABBA, LiME (length based), LBB (length based), LBSPR (length based), AMSY (survey based), CMSY BSM and an empirical indicator derived from the length trend of the 95th percentile of the larger individuals of the species from MEDITS survey data.

In 2020, a transitional assessment of red mullet was presented from XSA to the more robust Statistical Catch At Age (SCAA) type of models. A number of methods (XSA, LBSPR, LBB, Empirical Indicators) and variations were presented in order to demonstrate all possible combinations to the group and prove the concept. Scientific advise was given based on SAM SCAA model and the stock was found to be in over-exploitation with high SSB.

In 2022, within the framework of the GFCM WGSAD which was held online in February 2022, four stock assessments were presented. More specifically, a preliminary study of the alien species SRI was presented, showing a consistently steady biomass, despite the high rates of exploitation. The species CBR and MUR were accepted as qualitative assessments with the first one showing a sustainably exploited stock ($F/F_{MSY}$=0.669, $B/B_{MSY}$=1.28) and the second one a stock in overexploitation status with relatively low biomass ($F/F_{MSY}$=3.48). For the species SBA the assessment was endorsed as quantitative showing a stock in low overfishing status ($F/ F_{MSY}$=1.05) with intermediate levels of biomass.

In 2016, the only species managed in the Mediterranean by quotas was the bluefin tuna and the total initial available quotas (TAC) for the Cyprus fleet in 2016 amounted to around 98 tonnes. The quota was distributed only to the *Polyvalent 'passive' gears with length ≥12m* fleet segment operating with drifting longlines. The bluefin tuna TAC for 2017, 2018, 2019, 2020 and 2021 increased, and Cyprus was entitled to 117.7 tonnes, 138.65 tonnes, 153.4 tonnes, 169.35 tonnes and 168.94 respectively. In 2022 the quota is the same as in 2021. For the first time, in 2017 Cyprus distributed part of the quota, 60 tonnes, to a purse seiner targeting bluefin tuna leaving the rest of the quota for the *Polyvalent 'passive' gears with length ≥12m* vessels. Thus, since 2017, there is a new national fleet segment, the purse seiner, which includes only one vessel. The quota distributed to this vessel for 2018 was 75 tonnes, 85 tonnes for 2019, 95 tonnes for both 2020 and 2021 and 90 tonnes for 2022.

Since 2017, swordfish is the second species in Mediterranean that has a TAC within the recovery plan of this species adopted by ICCAT. Cyprus, based on the allocation key between the EU Member States, was entitled to 59 tonnes in 2017, 57.2 tonnes in 2018, 55.5 tonnes in 2019 and 53.85 tonnes in 2020, 52.23 tonnes in 2021 and 50.66 tonnes in 2022. The implementation of such a management measure is expected to negatively affect the Polyvalent 'passive' gears with length over 12 metres fleet segment at least in the short run.

During the ICCAT annual meeting in November 2021, a new multiannual plan was adopted for the restoration of the albacore (*Thunnus alalunga*) reserve in the Mediterranean (ICCAT Rec.21-06). The plan started being implemented from 2022 and includes, among other measures, the adoption of a quota for the species. The distribution of the quota allocated to the Republic of Cyprus for the year 2022 amounts to 431.94 tonnes which corresponds to 19.9% of the total quota of the EU (2 169.68 tonnes). This is the most important species for the LSF and it is expected to negatively affect its viability at least in the short run.

*Management instruments*

The fleet in Cyprus is managed mainly through effort limitations and technical measures. A limited number of licenses are provided for each segment annually. Furthermore, closed seasons, restriction measures on the use of gears and MCRS are employed, in accordance with national and European regulations.

Regarding the SSCF, the fleet segments *Polyvalent passive gears with length 0-< 6m and 6-< 12m* (category license A' and B') are allowed to operate every day all year round, with a number of restriction measures on the use of fishing gears and MCRS, according to the national and community law. In 2015, 66 vessels of A' and B' category of SSCF were scrapped with public aid within the framework of the Scheme of Permanent Cessation, co-funded by the EMFF 2014-2020 and their licences were cancelled, resulting in a significant reduction in the number of licenced vessels. The good news for these two fleet segments were the decision of the Cyprus Department of Fisheries and Marine Research to allow the fishers belonging in these groups to use nets of up to 600 m length of lower mesh sizes for targeting the *Spicara smaris* species for a certain period (25 February to end of April), increasing their value of landings and as a result, their income.

The fleet segments Polyvalent passive gears with length 0-< 6m and 6-< 12m (vessels with license category C') have a limited fishing period, with a maximum of 100 working days and strict measures on the use of fishing gears.

For the trawlers fishing in territorial waters a limited number of licenses (two) is provided every year, and an extended closed season (from 1 June until the 7 November) is employed. Furthermore, restriction measures on the use of trawl nets and minimum landing sizes are employed for all licensed trawlers, in accordance with national and community law.

As for the polyvalent passive gears with length ≥12m, a closed period for the swordfish is applied as required by the EU law.

An action plan was proposed by Cyprus in the 2020 Balance Report for demersal trawlers operating in territorial waters, with main measure the permanent cessation of fishing activities. The target of this cessation concerns the two trawlers operating in Cyprus waters and it is expected to be implemented in 2023 through the European Fund 2021-2027. The plan is expected to result in a capacity reduction of 218 GT and 696 KW. In the Action Plan Cyprus explains that in the case the permanent cessation is not achieved due to unwillingness of the trawlers' owners to join the plan, Cyprus will take other management measures such as the replacement of the diamond meshed trawl net of 50mm by a square meshed net of 40mm.

*Innovation and development*

The SSCF is not very technical advanced and neither the polyvalent segment. Only the trawlers segment does it use more advanced technology but even in this case, not at a great extent. Investing in new technology needs capital and the return is not assured.

The vessels can get funding for modernisation of their vessel for specific purposes such as hygiene and safety from the EMFF 2014-2020. Moreover, under the Operational Program, 'Thalassa' artificial reefs were created for the improvement of biodiversity and the protection of fish stocks. Improving quality of the marine environment will increase the fish stocks resulting in increasing the income of the fishers and their economic sustainability.

Also, fishers through the structural funds could participate in seminars for improving their skills and their fishing knowledge. There is great interest by fishers for attending seminars that promotes sustainable fishing and new fishing technologies.

- *Nowcasts for 2022-23 and beyond*

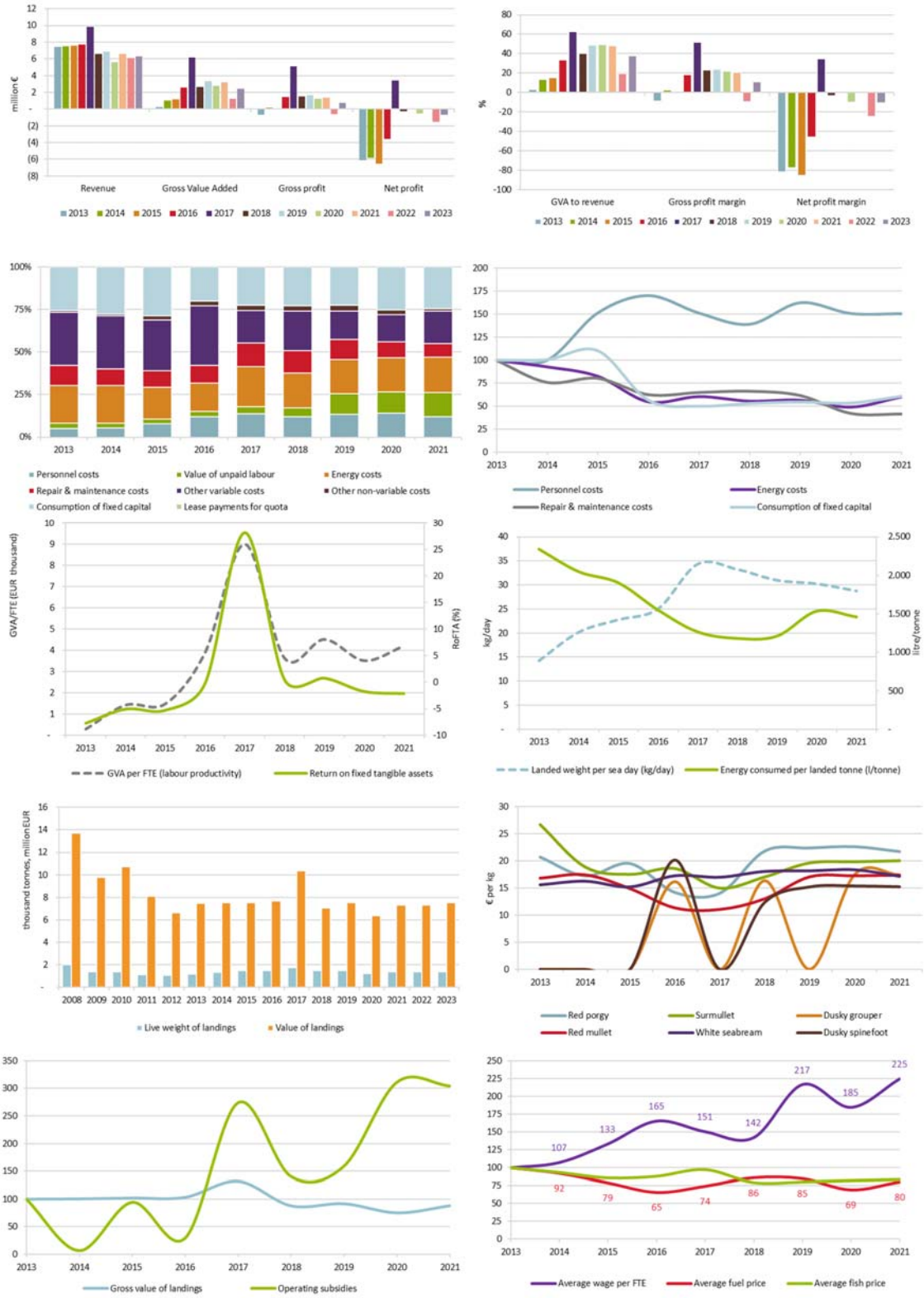
  *Model results*

Preliminary results for 2022 the increase in fuel prices for 2022 drives all profitability (gross profit) down. Overall and for the LSF the gross profit becomes negative, suggesting that the sector is not economically viable. However, results for 2023 project a recovery of the gross and net profits, painting a profitable situation for both indicators, although not reaching the values observed for 2021.

- *Methodological considerations and data issues*

A new fleet segment was introduced in the national fleet in 2017; the purse seiner segment targeting bluefin tuna. This fleet segment includes only one vessel and even though it was taking into account for data collection purposes it was not included in the economic analysis for confidentiality reasons. Cyprus has provided landings and effort information regarding this vessel.

**Figure 4.4** Cyprus: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.5 Denmark

- *Short description of the national fleet*

In 2021, the Danish fishing fleet consisted of 1 592 registered vessels, with a combined vessel tonnage of 72 500 GTs and engine power of 217 386 kW. The 1 592 vessels represent production units, which may be active or inactive, and some of these production units can include more than one vessel. In 2021, there were 1 185 active and 407 inactive production units. The number of registered fishing vessels decreased by 2% between 2020 and 2021. Comparing 2021 to the average for the period 2013 to 2020, the number of vessels were 11% lower in 2021; however, tonnage was 7% higher and engine power was 6% higher.

Around 70% of the active part of the fleet consists of vessels below 10 metres in 2021. These made up an even larger part of the fleet when including inactive vessels, because a major part of these inactive vessels are below 10 metres. The vessels between 24-40m and the ones above 40 metres corresponded to less than 5% of the total number of active vessels in 2021 but accounted for 49% of the total landings value. 62% of the Danish active vessels used passive gears only, 17% used demersal trawls or seine or both, 13% used both active and passive gears, while a minority of vessels (7%) used dredge, pelagic trawl, or beam trawl. The largest landings in 2021 in terms of value and weight continues to be made by the pelagic trawlers above 40 metres, catching species for human consumption (Atlantic herring, Atlantic cod, and Atlantic mackerel) and species for fishmeal and fish oil production (sprat, sandeel, and blue whiting).

*Fishing activity and production*

In 2021, the Danish fleet spent a total of around 80 000 DaS. The total number of days at sea decreased by 1% between 2020 and 2021. Fuel consumption was 96 million litres in 2021 and increased 9% compared to 2020.

In 2021, the total weight landed by the Danish fleet was 460 000 tonnes of seafood with a real landing value of EUR 361 million. In 2020, the weight was 821 000 tonnes and the real value EUR 450 million. Thus, the total weight of landings decreased from 2020 to 2021 by 44%, while the value of landings decreased by 20%.

Again in 2021, the primary species driving the development in total weight landed were the industrial species, primarily sprat, herring. However, landings of central consumptions species such as cod decreased by 46%.

*Employment and average salaries*

Total number of employees in 2021 was estimated to be 1 244 jobs, a similar value than the one estimated for 2020. Converting into FTEs, there were 951 FTEs employed in 2021. This is a decrease of 4% compared to 2020 and a 38% decrease compared to the period 2013-2020.

Average wage per FTE decreased from EUR 81 660 in 2020 to EUR 79 032 in 2021 in real terms (base 2020).

- *Economic results for 2021 and recent trends*

*National fleet performance*

The total income generated by the Danish fleet in 2021 was EUR 404 million, a decrease of 14% compared to 2020. The total income generated from direct fishing activities accounted for EUR 374 million (similar decrease as total income), EUR 30 million in non-fishing income (-13% compared to 2020) and EUR 13 million from leasing out fishing rights (-13% compared to 2020).

The three major variable costs consisted of labour (excl. the value of unpaid labour), energy and repair & maintenance. The costs for labour were EUR 75 million (7% less than in 2020), energy costs were EUR 46 million (+20% compared to 2020) and repair & maintenance costs, which decreased a 13%compared to 2020, with EUR 45 million.

The annual depreciation costs, which are the major group of capital costs, decreased 3.5% compared to 2020 to EUR 97 million.

In terms of economic fleet performance, GVA decreased a 21%, gross profit decreased 31% and net profit decreased a 41% compared to 2020.

In 2021, the Danish fleet had a value of physical capital (estimated replacement value) of EUR 937 million and an estimated value of fishing rights of around EUR 1.5 billion. Compared to 2020, the value of the physical capital remained similar although the estimated value of fishing rights decreased by 30%. Investments by the fleet amounted EUR 156 million in 2021, an increase of 136% from 2020. Generally, the investment levels vary considerably between the years.

*Resource productivity and efficiency*

The Danish fleet had a gross profit margin of 34% in 2020, which is a reduction compared to 2020, where it was 42%. The net profit margin was 13.7% in 2021, thus being 7 percentual points lower than in 2020, and lower than the mean of the period 2013-2020 (19.6%).

Labour productivity, measured as GVA against FTE decreased 18% from the record high level in 2020, although is still the highest second value of the 2013-2021 period.

The total energy consumption was 96 million litres in 2021, thus being 10% lower than in 2020. The FUI, was 12.7 kg/litre in 2021 compared to 6.2 kg/litre in 2020. Per landed tonne, the fuel use was in 2021 on average 208 litres/tonne compared to 129 litres/tonne in 2020.

The weight of landings per unit of effort (in DaS) in 2021 decreased 43% compared to 2020. In 2020, almost 10 tonnes were landed per day at sea on average, while it decreased to 6 tonnes in 2021.

**Table 4.5** Denmark: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| DNK NAO DTS40XX NGI | 0.47 | 2.91 | 1.87 | 11.3% | 157 |
| DNK NAO TM 40XX NGI | 0.47 | 3.43 | 1.49 | 10.1% | 101 |
| DNK NAO DTS2440 NGI | 0.48 | 1.04 | 0.36 | 20.7% | 549 |
| DNK NAO DTS1218 NGI | 0.51 | 0.72 | 0.11 | 14.2% | 384 |
| DNK NAO DTS1824 NGI | 0.48 | 1.15 | 0.35 | 13.0% | 401 |
| National average | 0.48 | 1.86 | 0.85 | 12.7% | 208 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020)

- *Performance by fishing activity*

*Small-scale coastal fleet*

The Danish SSCF operates mostly on the Baltic Sea, the Sounds and Kattegat, and consisted in 2020 of 867 vessels compared to 864 vessels in 2019, with a total vessel tonnage of 3 192 GT (-2%) and a total engine power of 37 939 kW (2%) in 2020. Compared to the average of the period 2008-2019, the number of vessels decreased by 17%, total vessel tonnage decreased 18% and total vessel power decreased 8%.

The value of the landings decreased 14% from 2019 to 2020 being EUR 19 million in 2020, which is 4% of the national landings value for fisheries. Total costs including crew costs were unchanged from 2019 to 2020, but fluctuations are observed within the underlying cost variables. For instance, energy costs decreased 18% to EUR 1.4 million, while repair and maintenance costs increased with 23% to EUR 4.2 million. Other variable costs decreased with 18%, while non-variable costs increased with 18%, when comparing 2019 and 2020, thus being EUR 3.5 million and EUR 3.4 million, respectively. Crew costs (incl. unpaid labour value) are a major expense for the SSCF, although it decreased with 2% from EUR 12.2 million in 2019 to EUR 11.9 million in 2020.

Looking at the economic performance indicators, gross profit decreased further from -EUR 1.3 million in 2019 to -EUR 2.9 million in 2020. Net profit continues being negative for this fleet, and a further worsening was observed in 2020 compared to 2019. In 2019, net profit was -EUR 3.1 million, while it was -EUR 5.6 in 2020.

*Large-scale fleet*

The Danish LSF operates to varying degree in all waters around Denmark, i.e. the Baltic Sea, the Sounds, Kattegat, Skagerrak, the North Sea, and some even further away in the Norwegian Sea, Faroese water, the Bay of Biscay, the English channel etc. In 2020 the LSF consisted of 352 vessels (-1% compared to 2019) with a total vessel tonnage at 62 330 GT (-5%) and a total vessel power of 150 923 kW (+1%). Compared to the average of the period 2008-2018 number of vessels has decreased 22%, total vessel tonnage has increased 2% and total vessel power has decreased 6%.

The value of the landings increased 9% to EUR 430 million, which is 96% of the national landings value for Danish fisheries. Total cost including crew costs decreased 2% to EUR 241 million. For the LCF, crew costs are the primary expense. It increased 2% to EUR 107 million (incl. unpaid labour value) in 2020. Energy costs decreased 27% to EUR 37 million, maintenance costs increased 11% to EUR 48 million, while the remaining costs increased with 5% from EUR 48 million in 2019 to EUR 50 million in 2020.

For the key economic performance indicators, gross profit increased 16% to EUR 194 million in 2020, while net profit increased 12% to EUR 103 million in 2020.

- *Performance results of selected fleet segments*

The Danish fleet is highly diversified with a broad range of vessel types operating and targeting different species predominantly in the North Sea, Baltic Sea, and North Atlantic. The national fleet consisted of 19 DCF fleet segments in 2020. Looking at gross profit, eight fleet segments made losses, while 11 fleet segments had a positive gross profit, which is a deterioration compared to 2019, where the numbers were three and 16 respectively. The Annex 2 provides a breakdown of the 2020 key performance indicators by all 19 fleet segments. The importance of a fleet segment can be based on an array of indicators, ranging from the number of vessels in a segment, their share of the total value of Danish landings, severe management impacts or a combination of several indicators.

The following fleet segments have thus been selected for a more detailed presentation of their economic performance:

- PGP 10-12m is selected due to their high dependency on fishing in the Baltic Sea

- DTS 12-18m is selected to reflect a fleet segment conducting a diversified fishery in several fishing waters also in the Baltic Sea, have a reasonable share of the total Danish landings value and involving around one hundred fishing vessels.

- TM 40XXm is selected due to the fact that they take a high share of the total value of Danish landing and furthermore do it in primarily do it in the economic exclusive zone of the UK

*Fleet segment: PGP 1012m*

PGP 1012m (polyvalent passive gears 10-12m) consisted of 45 vessels in 2020. Their overall importance in the Danish fishery is limited, they took around 1% of the total Danish landings value in 2020. However, most of these vessels have historically been dependent on fishing in the Baltic Sea, where the quotas in recent years have been reduced significantly to a level, where fewer vessels can make a living from this fishery. This implies that the vessels must either find other quotas to fish on or alternatively stop fishing.

In 2020, the total value of landings for this fleet was EUR 4.0 million and 31 FTEs were employed in this fleet segment. The total gross profit was -EUR 1.0 million and the net profit was -EUR 1.8 million. This is a major reduction in economic performance compared to 2019, where the numbers were EUR 0.5 million and EUR 0.07 million. Given that the outlook for the key stocks (cod and herring) in the parts of the Baltic Sea important for Danish fishers is not positive for the years to come, the vessels mostly dependent on fishing in the Baltic Sea must consider whether to continue fishing in other fishing areas, which implies buying quotas in these areas, or alternatively decommission. With respect to the latter possibility considerations are made regarding this, and approximately EUR 3 million have been reserved to a decommissioning scheme.

*Fleet segment: DTS1218m*

The fleet segment DTS1218m (Demersal trawl 12-18m) consisted of 106 vessels in 2020. These vessels contribute to approximately 8% of the total Danish landings value in 2020, which is a bit less than in 2019. These vessels fish in all the fishing areas around Denmark, but primarily Skagerrak (43%), Kattegat (32%) and the Baltic Sea (15%) and to a minor extend in the North Sea (10%). Lobster is the most important species for this fleet accounting for around 42% of their landings value, while European

plaice and Atlantic cod account for 17% and 11%, respectively. Sandeel (8%), European sprat (5%), sole (3%) and Norwegian pout (3%) are other important species. This fleet is thus an example of the multispecies and multiarea fishery that many Danish vessels conducts. Such a diversified behaviour gives them some robustness with respect to their economic performance, at least looking at it from an overall perspective.

In 2020, the total value of landing for this fleet was EUR 35 million and 156 FTEs were employed in this fleet segment. Total gross profit was EUR 3.4 million in 2020, which is a deterioration from EUR 4.5 million in 2019. Net profit also deteriorated compared to 2019 from EUR 0.2 million to -EUR 1.7 million. The reason for this worsening in economic performance is not completely clear, but given their dependency on lobster, which is a high quality/high price product, the COVID-19 pandemic is considered to have had an impact. The average price of lobster thus decreased from 2019 to 2020 and so did the landings of lobster.

*Fleet segment: TM 40XXm*

TM 40XX (Pelagic trawl >40m) consisted of 12 vessels which operates predominantly in the North Sea and the Norwegian Sea. The fleet targets pelagic species for consumption (mackerel and herring) as well as reduction species such as sandeel, European sprat, and blue whiting. These vessels are thus expected to be affected by Brexit.

This fleet segment is without question the one taking the highest share of the total Danish landings value, which in 2020 was 32%. In 2020, the total value of landings was EUR 146 million and 80 FTEs were employed in this fleet segment. This fleet segment reported a total gross profit of EUR 100 million and total net profit of EUR 64 million in 2020.

As mentioned in the beginning, Brexit will have an increasingly influence for the vessels in this fleet as the reductions in various quotas are implemented in the years until being fully implemented by 2025. For now, only minor reduction in the value of landings and economic performance measures are observed. However, it is in the forthcoming years going to be interesting to observe the potential effects for this fleet following Brexit, but also the consequences of changed access to the Norwegian waters and any unilateral United Kingdom regulatory initiatives that might affect these vessels, because of their high dependency on fishing in the United Kingdom economic exclusive zone.

- *Drivers affecting the economic performance trends*

*Markets and Trade*

The average landed fish price of the five by value most important species in the Danish fishery in 2020 decreased for four of these. For the most important species, herring, the price decreased with 1% from 0.55 euro/kilo in 2019 to 0.54 euro/kilo in 2020, for European sprat by 4% from 0.28 euro/kilo to 0.27 euro/kilo in 2020, Atlantic Mackerel with 10% from 1.34 euro/kilo to 1.21 euro/kilo and Norway pout by 6% from 0.26 euro/kilo to 0.25 euro/kilo. Only for the second most important species, sandeel, the price increased with 4% from 0.26 euro/kilo to 0.27 euro/kilo.

*Management instruments*

Most of the Danish fishing fleet is managed through variations of individual property rights schemes. These schemes have gradually been introduced since 2003, with the majority of the demersal fishery from 2007, and this has implied an increase in the capacity reductions observed in the Danish fishing fleet in number of vessels, tonnage and engine power.

The schemes have generally been in place for more than 10 years, and despite that restructuring is still occurring the indications are that this is happening at a reduced speed compared to the first years. New vessels are built, generally being larger and having new engines with better efficiency. In addition, focus is towards making the work environment and work safety conditions better for the crew.

Given that the system is generally considered to be well functioning, there are no current plans regarding changing the system fundamentally. However, adjustments are sometimes made to account for unwanted situations, such as quota concentration.

Also, major 'chocks' such as Brexit and the deteriorating stock situation in the Baltic Sea have required considerations about how to assist fishers with adapting to these situations. Given that these are 'chocks' have an effect within a short time, the fleets have potential problems with adapting to this without, at least from a political perspective, severe negative effects. Therefore, various compensation schemes are and have been considered in order to handle these situations.

*Status of Key Stocks, TACs and quotas*

The Danish quotas of the most valuable species to the Danish fishery were in 2020 the following: Atlantic herring 112 000 tonnes, sandeels 205 000 tonnes, European sprat 163 000 tonnes, Atlantic mackerel 35 000 tonnes and Norway pout 72 000 tonnes.

Compared to 2019, the quotas for European sprat and Atlantic herring have decreased with 4% and 12%, while the quotas for sandeels increased 77%, Atlantic mackerel 31%, and Norway pout 18%.

The important consumption species Atlantic cod and Norway lobster were in 2020, outside the top 5 of most important species. However, they are still important for many of the multispecies fleets in Danish fisheries. The quotas for these species were for Atlantic cod reduced with 61% but increased with 7% for Norway lobster. For the Atlantic cod, it was primarily the deteriorating stock situation in the Baltic Sea that drove the reduction.

Besides the general fluctuations in the quotas in the different fishing areas, a special focus is currently on the quotas in the North Sea due to the consequences following Brexit and the Baltic Sea following the severe conditions for the stocks in this area. Despite that the Baltic Sea only accounts for around 6% of the Danish total fishing value, the quota reductions will have severe economic consequences for especially the fishers highly dependent on the Baltic Sea. The Atlantic cod quota in Eastern Baltic Sea has been reduced from 6 300 tonnes in 2019 to 459 tonnes in 2020, while the quota in the Western Baltic Sea was reduced from 4 486 tonnes in 2019 to 2 275 tonnes in 2020.

*Innovation and Development*

Danish fishers work in a competitive environment, where focus is on delivering a high quality product and making an economic outcome securing a profit for the owner(s) and an attractive salary for the crew.

A range of initiatives can contribute to this. High product quality will also have an influence on the price obtained for the landed fish. Danish fishery is focused on this together with the processing industry in order to find innovative solutions to get the best product and the highest price. In addition, using invasive species and landings because of the landing obligation has been investigated, but it takes time for such innovations to be analysed and potentially put into a production process.

An important part of the economic outcome comes from the cost side. For instance, optimising the fuel use, sometimes by installing new engines, improving the engine technology etc. will have a direct effect on the cost of any fishing activity. Also, improving selectivity will reduce the cost of sorting and handling the fish afterwards. All such initiatives are ongoing in partnerships between the fishers, processors, gear technologists, researchers etc. in order to identify, test and implement the most promising ideas.

- *Nowcasts for 2022-23 and beyond*

*Model results*

Preliminary results for 2022 forecast a relatively stable situation from 2021, with the results driven by the decline of the number of vessels. Projections for 2022 suggest operating costs will increase, primarily driven by increased energy cost. In 2022 a decrease in the gros profit is predicted while net profit increases due to lower interest rates. Overall, it is expected that the Danish fleet keeps its positive profitability in 2022 and in 2023, although with a deterioration, especially for 2023. If we consider only the SSCF all the relevant indicators are reduced. This deteriorates the already bad situation of this segment of the Danish fleet (similar to all the SSCF of the Baltic Sea).

*Outlook*

The TACs and thus quotas continue to be one of the most important factors that influence the fleet performance, although in 2022 the situation with fuel price simply adds more complexity to the profitability of the fleet, especially of the SSCF.

- *Methodological considerations and data issues*

*Identify changes in respect to previous years.*

The calculations of FTE have now been adjusted to secure that the number of fishers are not above the number of FTEs.

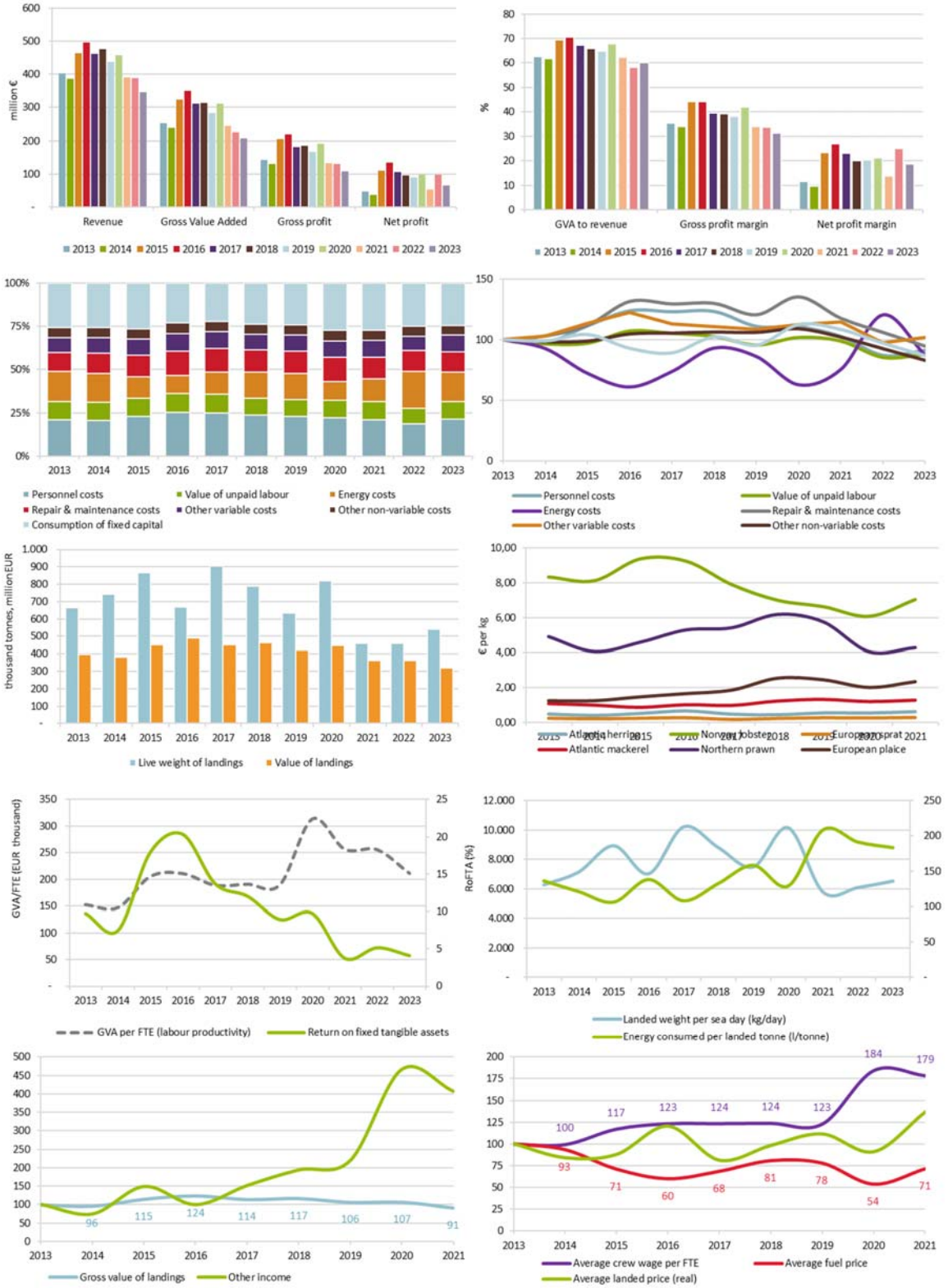
*Improvements achieved*

None.

*Problems identified*

This national chapter has only be updated in terms of numbers, so the EWG, has not been able to identify any possible problem.

**Figure 4.5** Denmark: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.6 Estonia

- *Short description of the national fleet*

*Fleet structure*

In 2021, total number of registered vessels continued to increase by 3% and reached 1 954 vessels. This increase was related to the registration of SSCF boats into the fishing fleet register. The estimated number of active vessels was 1 310, 1% less compared to 2020. The active fleet was divided in 3% of LSF (34 vessels) and 97% of SSCF (1 276 vessels). The LSF can be divided into trawlers operating in the Baltic Sea (28) and outside the Baltic Sea (NAFO and Eastern Arctic; two and four vessels, respectively). The SSCF operates in Estonian coastal waters using mainly passive gears.

*Fishing activity and production*

An estimated 56 344 days were spent at sea in 2021; decreasing 9% compared to 2020.

The live weight landed by the Estonian Baltic Sea fleet in 2021 was 55 500 tonnes of seafood, with a landed value of EUR 13.7 million. The total weight of landings remained stable compared to previous year. However, the total value of landings increased 3%.

In 2021, Atlantic herring generated the highest value (EUR 5.4 million) landed by the Estonian Baltic Sea fleet, followed by European sprat (EUR 4.7 million) and European perch (EUR 1.7 million). In terms of landings weight, Atlantic herring landings were 27 177 tonnes, European sprat 25 713 tonnes and European perch 792 tonnes.

*Employment and average salaries*

Employment was estimated at 1 163 jobs, corresponding to 266 FTEs in 2021. The big difference between numbers of total employed and FTE refers that there are many persons in the sector for whom fishing is not the only source of income. It mainly concerns the SSCF. Compared to 2020, the number of engaged crew and FTE decreased 12% and 17% in 2021, respectively. Average wage per FTE amounted to EUR 18 228 and remained stable compared to 2020.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The national fleet as a whole was profitable in 2021. Revenue, estimated at EUR 14.7 million in 2021, increased by 7% compared to a year ago.

GVA, gross profit and net profit were estimated at EUR 9.4 million, EUR 4.5 million and EUR 2.3 million, respectively. Compared to 2020, GVA, gross profit and net profit increased 11%, 80% and 1434%, respectively.

Total costs amounted to EUR 13.6 million. Compared to 2020, total costs decreased 4%.

The (depreciated) replacement value of the Estonian fleet was estimated at EUR 20.1 million in 2021 and investments amounted to EUR 1.8 million, which was 37% less than in 2020.

*Resource productivity and efficiency indicators*

The gross profit margin in 2021 was 31%. Net profit margin was estimated at 16%, which showed a rise compared to 2020.

The RoFTA was estimated at 7% in 2021 (–0.1% in 2020). Labour productivity (GVA/FTE) was EUR 35 194, increased 35% compared to 2020.

Fuel consumption per landed tonne has been quite stable compared to time period since 2013, with 48 litres per tonne in 2021. Compared to 2020, landings in weight per unit of effort (in DaS) increased in 2021 with 985 kg per sea day and has shown increasing trend since 2013.

**Table 4.6** Estonia: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| EST NAO TM 2440 NGI * | 0.64 | 2.03 | 1.41 | 18.1% | 50.2 |
| EST NAO PG 0010 NGI | 1.41 | 2.69 | -1.08 | 12.8% | 93.8 |
| EST NAO PG 1012 NGI | 0.91 | 10.62 | 8.53 | 4.7% | 13.0 |
| National average | 0.75 | 2.46 | 1.36 | 14.6% | 47.7 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Drivers affecting the economic performance trends*

The high uptake rates of herring and sprat quotas suggest that trawl fisheries were not affected by the COVID-19 outbreak in 2021. There was increase in average first-sale prices of the key species (herring, sprat and perch) in 2021. This was a reason for the increase in the total value of landings even though the quantities caught were a bit lower than a year ago. Energy costs increased despite lower energy consumption. Behind this change was the increase in fuel prices. The average fuel price in 2021 was 0.75 euro/litre, which is 0.17 euro/litre higher than in 2020.

*Markets and Trade*

Key species as sprat and herring were mainly landed at Estonian ports by the Estonian Baltic Sea trawlers, where the catch was sold to fish freezing or processing companies, unless the fishing company itself was engaged in the processing and marketing of fish. Fish was also landed at ports in Latvia and Finland. The proportion of catch landed at foreign ports increased from 5% in 2020 to 9% in 2021.

The export volume of frozen fish (sprat and herring) of Estonian origin was recovering after the loss of the Russian market in 2014. The main export market continued to be Ukraine in 2021. Large quantities of sprat and herring were also sold to Belarus and Latvia.

Compared with 2020, the average first-sale prices of sprat and herring increased in 2021, amounting to 0.18 and 0.20 euro/kg, respectively.

*Operating costs (external factors)*

Main change took place in energy costs. Compared to 2020, energy costs increased 13% in 2021. Behind this change was the increase in fuel prices.

*Status of key stocks, changes in TACs and quotas*

Herring, sprat and cod have been main internationally regulated/managed fish species targeted by the Estonian Baltic Sea fishing fleet.

International acoustic surveys of pelagic fish stocks conducted in the Baltic Sea in recent years show that the lion's share of the sprat stock is currently located in the central and eastern parts of the sea. Thus, the current status of the sprat stock in the economic zone of Estonia can still be considered as relatively satisfactory.

Unlike sprat, which is treated as a single stock unit, i.e., population across the Baltic Sea, in the case of herring the state of stocks is assessed and advice for exploitation is given for four stock units in different subdivisions of the Baltic Sea. Only two stock units, Central Baltic herring and Gulf of Riga herring, are offering more interest to Estonian fishers. The status of Gulf of Riga herring is regarded as relatively good, but the stock size of Central Baltic herring has dropped very close to the limit below which the stock is not sustainable.

In 2021, the Estonian trawl fleet's final sprat and herring quotas were 26 797 and 18 925 tonnes, respectively. After a 19% decrease in 2020, the sprat quota increased again by 5%, while the herring quota continued to decline for the third year, decreasing by 16% in 2021. Changes in the quotas were also reflected in catches. The catch of sprat landed in 2021 increased by 6% compared to the preceding year, while the herring catch declined by 14%. However, quota uptake was quite high for both species,

standing at 96% and 95%, respectively. Unlike sprat and herring, there was no directed fishing for cod in 2021.

*Management instruments*

The main management tools in Estonia are landings volume quotas (ITQs) in the open water fisheries (trawling) and gear usage quotas (ITE -Individual transferable effort-) in the coastal fisheries. Fishing quotas are allocated according to the historic fishing rights. The Estonian experience shows that ITQs can be considered an effective method for increasing the allocation of fishing rights to the most efficient enterprises and speeding the process of reducing excessive fleet capacity. The size of the Baltic Sea trawling fleet decreased 56% between 2008 and 2021 (from 64 to 28 vessels), however in the period 2013-2021 the trawling fleet has remained stable (2 vessels less). The main reason for that change was capacity reduction to achieve balance between the size of the fishing fleet and fishing opportunities.

*Innovation and development (role of EMFAF)*

Innovation and development of the Estonian fishing fleet were supported through EMFF for three actions in 2021:

- Support for gear improvement. The support was used for reduction of unwanted by-catches and mitigation of negative impact of seals.
- Support for innovation in fishing. The purpose of the support is to maintain the good state of fish stocks, to develop sustainable and environmentally friendly solutions for fishing, to develop innovative technologies to add value throughout the supply chain and to make efficient use of new, untapped living aquatic resources.
- Support for cooperation between scientists and fishermen. The purpose of the support is to increase the competitiveness and economic performance of the fisheries sector.

- *Performance by fishing activity*

*Large-scale fleet*

The LSF of the Baltic Sea operates outside the coastal zone using pelagic trawls. The fleet targets pelagic species such as sprat and herring. The live weight landed by the large-scale fleet in 2021 was 43 663 tonnes of seafood, with a landed value of EUR 7.8 million. Compared to 2020, the weight of landings decreased 3%. In contrast, the value of landings increased 2%. The main reason of this was increase in average first-sale prices of sprat and herring. Overall, the fleet was profitable. GVA, gross profit and net profit in 2021 were estimated at EUR 5.7 million, EUR 3 million and EUR 2.2 million, respectively. GVA, gross profit and net profit increased 3%, 4% and 44%, compared to 2020. Total costs amounted to EUR 7 million in 2021 (EUR 6.3 million in 2020) and increased mainly due to the rise in energy costs and repair & maintenance costs. The (depreciated) replacement value of the LSF was estimated at EUR 12.2 million and investments amounted to EUR 0.4 million in 2021 (EUR 1.8 million in 2020).

*Small-scale coastal fleet*

The SSCF operates in Estonian coastal waters. The largest catches taken in 2021 were of herring, followed by perch and smelt. The live weight landed by the SSCF in 2021 was 11 838 tonnes of seafood, with a landed value of EUR 5.9 million. Compared to 2020, the weight and the value of landings increased 9% and 6%, respectively. Overall, the fleet was profitable. GVA, gross profit and net profit in 2021 were estimated at EUR 3.7 million, EUR 1.5 million and EUR 0.3 million, respectively. Total costs amounted to EUR 6.3 million in 2021 (EUR 7.9 million in 2020) and decreased mainly due to the reduction in labour costs and other non-variable costs. The (depreciated) replacement value of the SSCF was estimated at EUR 7.9 million and investments amounted to EUR 1.4 million in 2021, increased 28% compared to 2020.

- *Performance of selected fleet segments*

*Pelagic trawlers 24-40m*

The 24-40 metres pelagic trawlers are the most important segment in the Estonian fishing fleet in the Baltic Sea. In 2021 this fleet segment consisted of 28 active vessels. The number of vessels increased by one compared to 2020. Employment in 2021 was estimated at 117 jobs, corresponding to 90 FTEs. The segment targets pelagic species such as sprat and herring. The total value of landings was EUR 7.8 million in 2021. The fleet segment was profitable. GVA, gross profit and net profit in 2021 were estimated

at EUR 5.7 million, EUR 3 million and EUR 2.2 million, respectively. Economic development trend shows improved situation.

*Passive gears <10m*

The segment with the highest number of vessels and employment in the Estonian fleet is the 0-10 metres passive gears segment that operates in the coastal fishery. In 2021, this segment consisted of 1 236 active vessels. The employment in 2021 was estimated at 980 jobs, corresponding to 159 FTEs. The fleet targets mostly freshwater species, such as perch, pikeperch, but also marine species such as flounder and herring. The total value of landings was EUR 3.9 million in 2021. The fleet segment made a loss. GVA, gross profit and net profit in 2021 were estimated at EUR 2.4 million, EUR 0.4 million and –EUR 0.6 million, respectively. Economic development trend shows improved situation.

- *Nowcasts for 2022-23 and beyond*

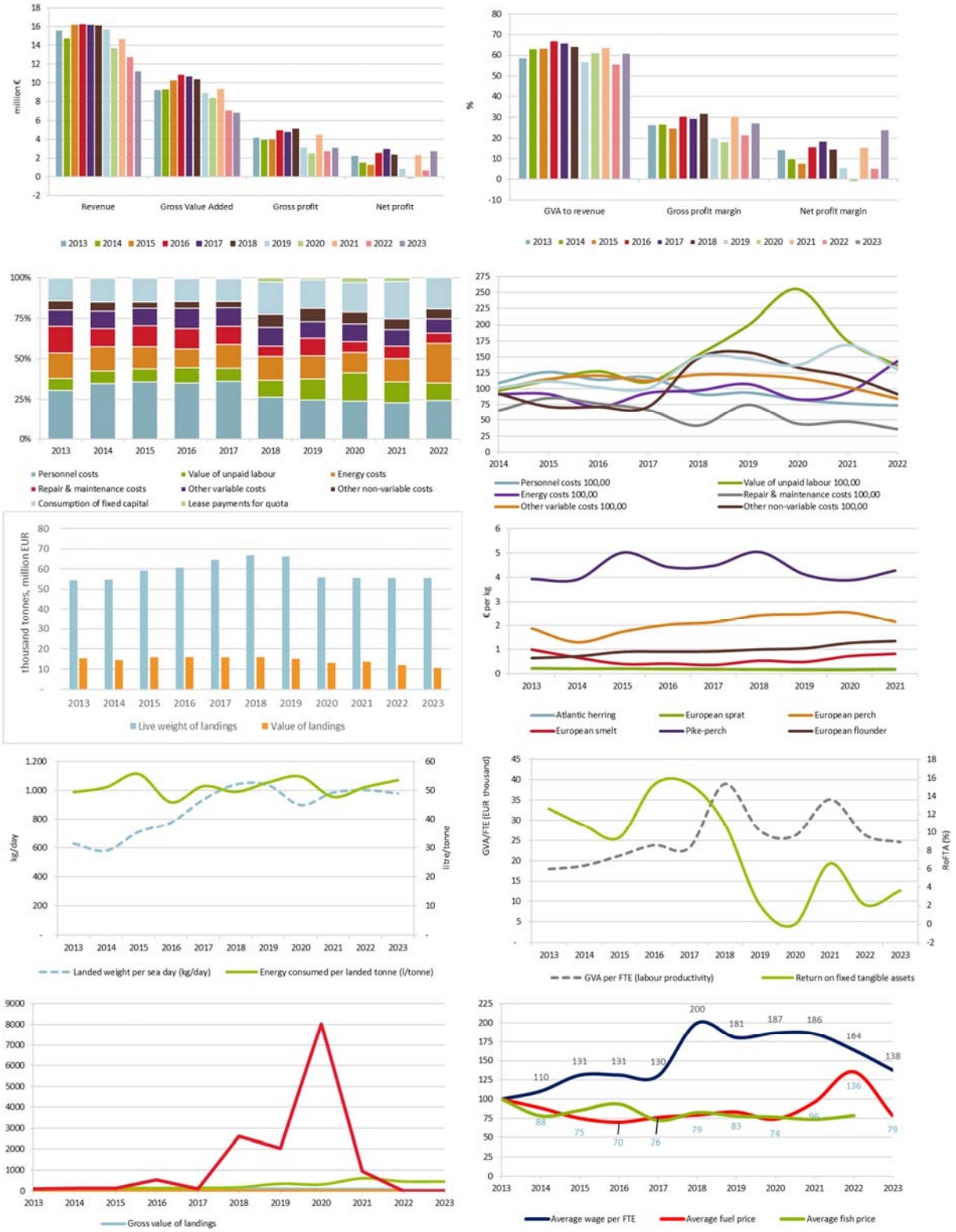
A deterioriration of the situation is projected for both 2022 and 2023, although for both years it is expected that the fleet overall remain with positive gross and net profits.

- *Methodological considerations and data issues*

Data for 2018 and following years is affected by a change in the data collection which was done to ensure better data availability. It affected the data of SSCF. Due to the low response rates in voluntary based surveys in previous years, Estonia changed the data collector. As the governmental organisation Statistics Estonia has a stronger legal base for obtaining the data, they took the leading role in economic data collection in 2019. At the same time, official databases related to coastal fishing also improved which made it possible to obtain more precise data on vessels activity in SSCF.

Due to confidentiality issues, only capacity data was submitted for the vessels operating in the NAFO and Eastern Arctic areas, where the Estonian fishing fleet is represented by two and four vessels, respectively.

**Figure 4.6** Estonia: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.7 Finland

- *Short description of the national fleet*

The Finnish fishing fleet consisted of 3 252 registered vessels of which 2 025 were inactive in 2021; the active fleet consisted of 1 227 vessels, with a combined gross tonnage of 10 334 GT and a total power of 81 500 kW. The capacity of active fleet decreased some 8% with the number of active vessels from 2020.

*Fleet structure*

The Finnish fishing fleet is dominated by small-scale vessels: 1 138 out of 1 227 (93%) active vessels were operating in SSCF. However, the 41 trawlers (LSF) accounted for the majority (73%) of the total fleet capacity in terms of tonnage.

*Fishing activity and production*

The total effort in 2021 was 61 000 fishing days, which is 17% less than the previous year. The SSCF accounted for 94% of the total effort, and there has been a declining trend during the past decade. After the implementation of the ITQ system in pelagic fisheries in 2017, the effort of LSF has also been decreasing. Effort in terms of fishing days decreased 17% from previous year, totalling 61 000 days in the year 2021. During the 2000s, the number of trap fishing and trawling days almost halved, and that of gillnet fishing decreased to one third, while that of hook and line fishing decreased to a tenth.

Finnish fleet operates exclusively in the Baltic Sea. The bulk of the catch was fished from the Bothnian Sea, while Finnish fishing vessels also operated throughout the Finnish coastline and in the southern Baltic Sea. A fifth of the catch was landed abroad, either in Estonia or Sweden. In Finland, the largest catch volumes were landed at the port of Kasnäs in Kimitoön. Outside Finland, the largest volumes were landed in Estonia at the southern port of Paldiski by the Gulf of Finland and in Sweden at the port of Norrsundet near Gävle.

The Finnish fleet landed a total weight of 97 000 tonnes of seafood in 2021 with a value of EUR 27.5 million. The trawler fleet caught the majority of this catch, which consisted mainly of Baltic herring and sprat. The catches of these pelagic species had been increasing until 2017 due to the strong herring stocks, particularly in the most important fishing grounds for the Finnish fleet in the northern Baltic Sea. However, since 2018, the TACs for Baltic herring were reduced and the catches have decreased significantly. In 2021, the weight and value of landings for LSF decreased by over 10%, while the landings in SSCF dropped by nearly 25%. Additionally, the value of landings diminished by 14% from 2020.

Baltic herring accounted for the highest landed value (EUR 16.7 million), followed by European sprat (EUR 2.8 million). Baltic herring catches dropped by 16 000 tonnes and European sprat landings increased by 2 000 tonnes from the previous year.

SSCF targets mainly various freshwater fish species and the most important species for the segment were perch, European whitefish, salmon, pikeperch and smelt. Catches of European whitefish, pikeperch and salmon were low compared with the long-term average (1980–2020), while perch and smelt had larger catches than normal. Temperate winter together with seal population and local impact of strong cormorant populations continued to hamper the small-scale coastal fishing.

*Employment and average salaries*

Total employment in 2021 was estimated at 1 104 jobs. Majority of the jobs (86%) are created by the SSCF that perform mainly seasonal fisheries and therefore the employment in that segment is usually only part-time. In terms of FTE the total fleet added up to 193 FTE. There was a significant drop in the total FTE which is almost solely the consequence of the decrease in the activity of SSCF. In addition, the FTE of pelagic trawlers over 24 meters diminished by one fifth. The number of commercial fishers has been dropping for a long time and the average age of fishers is high.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The amount of income generated by the Finnish fleet in 2021 was EUR 37.5 million, with a slight increase of 7%. Income consisted of EUR 31.3 million in landings income and EUR 6.3 million in other income. The increase in income was repercussion by remarkably high value of other income in the smallest pelagic trawler segment.

Profitability of the national fleet has been steadily improving from 2015 and in 2021 the GVA was EUR 21 million. Gross profit of EUR 15 million resulted in positive net profit for the national fleet with EUR 2.8 million. When excluding the doubtful high value of other income, the fleet national fleet would actualise with around EUR 500 000 net profit.

*Resource productivity and efficiency*

In 2021, the Finnish national fleet generated a GVA of EUR 21 million, representing an 8% decrease from the previous year. Both fleet segments made positive gross profits, with the SSCF earning EUR 3.1 million and the LSF earning EUR 8.8 million. However, the gross profit margin decreased to 32%, and the net profit was EUR 4.7 million. This improved profitability in terms of net profit was mainly due to the unusually high value of other income (EUR 4.3 million) in the pelagic trawlers 12-18m segment. Nevertheless, the net profit of the LSF was significantly higher than the long-term trend. In the SSCF, there are a large number of low-activity vessels, and when accounting for the consumption of capital of all the vessels in the fleet, the segment made zero net profit.

The energy consumed per landed tonne decreased in 2016 and has since remained at a lower level, indicating improved energy efficiency, particularly in the pelagic trawler fleet where some old vessels have exited the business. The relative share of energy costs has been decreasing for the total fleet; however, in 2021, energy costs still accounted for 20% of operation costs.

Although there was a slight increase in the landed weight per sea day, the catch remained below the peak years of 2018 and 2019. Labor productivity (GVA/FTE) nearly doubled compared to the previous year, primarily due to the significant decline (-63%) in reported full-time equivalent (FTE) of the SSCF.

**Table 4.7** Finland. Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| FIN NAO TM 2440 NGI * | 0.60 | 1.07 | 0.53 | 22.6% | 89.0 |
| FIN NAO PG 0010 NGI | 0.60 | 3.65 | 0.59 | 8.2% | 192.5 |
| FIN NAO TM 1824 NGI | 0.60 | 3.22 | 1.97 | 8.8% | 42.1 |
| FIN NAO TM 1218 NGI * | 0.60 | 14.35 | 12.82 | 10.1% | 57.2 |
| FIN NAO PG 1012 NGI * | 0.60 | 1.08 | -0.70 | 11.1% | 86.8 |
| National average | 0.60 | 1.96 | 1.02 | 16.7% | 88.0 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Performance by fishing activity*

*Small-scale coastal fleet*

The Finnish fishing fleet is mainly composed of small-scale vessels, with 97% (1 186 out of 1 227) of active vessels operating in the SSCF. In 2021, the SSCF accounted for 23% of the national total value of landings, with EUR 7.1 million. Despite the significant drop in live weight and value of landings compared to last year, the segment remains important from a social perspective, as it covers 86% of all fishers and employs half of the national FTE.

The value of landings in the segment decreased by 14% in 2021, resulting in total revenues of EUR 7.9 million. The segment generated EUR 4.7 million of GVA and gross profit of EUR 3.0 million. However, taking into account the consumption of capital of all vessels, including low-activity ones, the net profit decreased to EUR 400 000. However, the profitability of the most active part of the segment is much higher compared to those with low activity.

Since the 2015 fishing law, commercial fishing enterprises are classified into two groups: the first category (I) includes enterprises that are value-added tax liable (annual turnover over EUR 10 000), while the rest are classified as the second category (II) fishers. The first category fishers have priority in fisheries management and are eligible for EMFF funding. These units account for around 90% of the total value of landings in the SSCF segments. In 2021, the most active percentile accounted for 59% of

the total value of the segment. The increase in average size has a significant impact on the economic performance, and the profitability of category I fishers is higher compared to the whole segment.

- *Performance of selected fleet segments*

The Finnish fleet operates exclusively in the Baltic Sea and is based on two main fisheries: pelagic trawlers (LSF) and the SSCF. Pelagic trawlers are divided into three segments. The SSCF is highly diversified with a range of vessel types mainly using nets and traps targeting various species in waters along the Finnish coastline.

*Passive gears <10m and 10-12m (SSCF)*

The SSCF is the biggest Finnish fleet segment in terms of number of boats with 1 186 vessels in 2021. The SSCF consists of diversified vessels targeting mainly freshwater fish species: European whitefish, perch, smelt, pikeperch and salmon. In 2021, the total revenue of the small-scale fishery was EUR 10.1 million making a gross value added of EUR 5.6 million. The profitability in terms of Gross profit margin was 44% and it was just enough to cover the estimated capital costs: the SSCF made zero net profit.

The coastal fleet is operating mostly seasonally, and there is also a high variation in the activity of the vessels. The most active part of the segment classified as *category I* fishing units, covers approximately 85% of the total SSCF landings value. These most active vessels are highly profitable compared to the low activity vessels which have relatively high capital costs. The overall economic performance of the whole SSCF has been poor for years but since 2020 SSCF managed to record zero net profit.

*Pelagic trawlers 24-40m*

Pelagic trawlers 24-40m is economically the most important fleet segment in Finland targeting herring and sprat in the Baltic Sea. In 2021 these 16 vessels accounted for more than half (57%) of the total value landed by the Finnish fleet and employed 60 FTE. The average vessel revenue was EUR 1.2 million, employing 3.75 FTEs. The fleet segment generated a GVA of EUR 8.2 million. In 2021 the Gross profit margin was 17% which led to deteriorated economic performance with zero net profit

*Pelagic trawlers 18-24m*

Pelagic trawlers 18-24m segment consisted of six vessels in 2021, also targeting Baltic herring and sprat. The average vessel revenue was EUR 440 000, second highest in the Finnish fleet and average on-board employment is 1.7 FTE. The segment generated EUR 1.9 million of GVA. The fleet made Gross profit of EUR 1.0 million with the highest national gross profit margin of 38%. Also, the net profit margin (22%) was the second highest among the national fleet segments.

*Pelagic trawlers 12-18m*

Pelagic trawlers 12-18m is the smallest trawler segment in terms of individual vessel size and consists of 19 vessels. On average, each vessel employed 0.7 FTE, and the average vessel landings income was EUR 104,000. This fleet segment had a peculiarly high value of other income, which was over twofold (EUR 4.3 million) compared to the income from landings (EUR 2 million). In 2021, the segment generated EUR 5.2 million of GVA and EUR 4.6 million gross profit with a 73% margin. The gross profit was high enough to cover the estimated capital costs, and the fleet was profitable with a net profit margin of 66%. Excluding the doubtful high value of other income would result in zero net profit for the segment.

- *Drivers affecting the economic performance trends*

The most important driver for fisheries is the state of fish stocks. For several years, due to the good status of the most important fish stocks for the Finnish fleet, namely pelagic stocks, the total weight of landings broke the all-time record year after year.

However, since 2018, there have been quota reductions in Baltic pelagic stocks, with significant cuts in the most important Baltic herring stocks for Finnish fisheries. The original total Finnish pelagic quotas in 2021 were less than half of those in 2017, which had a marked impact on the fleet's economic performance. Although there was a substantial increase in quotas during 2021, fishing fleets were unable to fully adapt to this over the year. As a result, only 63% of the total Baltic herring quota was fulfilled. Also, the weight of herring catches in 2021 was lean and small which made fulfilling the quota harder.

Other main drivers for economic performance are the prices of fish and inputs, especially fuel prices. Prices for pelagic species remained stable in 2019 and 2020, while the price of herring for human consumption increased significantly in 2020 and remained high in 2021. The price development of the

most important species for coastal fishing have been rather favourable compensating low catches. Additionally, the price of salmon increased moderately in 2021.

Fuel costs are a major expense, particularly for the trawler fleet. In 2016, fuel prices hit their lowest point in a decade, but have since risen, impacting the sector's profitability. Fuel prices increased between 2016 and 2019, but the economic slowdown caused by the COVID-19 pandemic in 2020 led to a sharp drop in global fuel prices. During that year, fuel prices reached a record low, significantly impacting the energy costs of larger vessels. However, this favourable situation has since reversed, and fuel prices in 2022 have hit a record high, which will have a significant impact on the trawlers' profitability.

*Markets and trade*

Russia has traditionally been an important market for Baltic herring and sprat. The continued Russian embargo on EU food stuff as a countermeasure to EU sanctions due to the Ukraine crisis has forced Finnish fishers to find alternative markets in neighbouring countries for pelagic species. The average prices of pelagic species dropped significantly in 2015 as landings have been more heavily used as feed and domestically in fishmeal factories. COVID-19 has had an impact on fish markets: especially the fresh fish markets have been down which has a price impact on most valuable species affecting the profitability of SSCF.

*Management instruments and regulation (policy)*

The offshore fleet is managed mainly through TACs that are shared between Baltic Sea countries. Apart from salmon and herring the coastal fleet target mostly freshwater species that do not have quotas but are managed with licences and other time and gear restrictions.

From the beginning of 2017, ITQ regime was introduced in the Finnish pelagic fisheries and salmon fishery. The allocation of the fishing rights was based on grandfathering. The new management regime has had a significant impact to the trawler fleet structure and performance. In 2021, there were 41 active trawlers operating under ITQ. That is, 22 vessels less than when the ITQ was introduced.

*Operational costs (external factors)*

Fuel prices are the most significant cost item, especially for larger pelagic trawlers. Between 2016 and 2020, fuel prices steadily increased. However, in early 2020, there was a severe decline in fuel prices due to the impact of COVID-19. Depending on the fuel type, fuel prices decreased by approximately 10-20%. The consumer prices for gasoline and diesel decreased by 7% and 10%, respectively, while the consumer price for light fuel oil decreased by 22%. This favourable trend in fuel prices affected the profitability of trawlers, with the energy costs of larger vessels reaching record lows.

Since, the price of marine fuel oil begin to surge, and by late 2021, prices were 1.8 times higher than the previous year. The labour costs are the second major cost item and follows the revenue.

*Stock status, TACs and quotas*

Pelagic fisheries are the most important for the Finnish fleet by terms of weight and value. Both Baltic herring and sprat stocks were considered to be at biomass levels compatible with producing MSY in 2017.

Baltic herring stocks have been exceptionally strong in the past especially in the most important fishing grounds in the Bothnian Sea. However, after the highest recorded catches of herring in 2015-2017 there was a cut of TACs and catches in 2018.

Since 2018, there have been reductions in Baltic pelagic quotas, including significant cuts to the most important Baltic herring stocks for Finnish fisheries. This has had a significant impact on the economic performance of the pelagic trawler segments, as well as downstream activities in the value chain. In 2021, the original total Finnish pelagic quotas were less than half of those in 2017, which had a marked impact on the fleet's economic performance. Although there was a substantial increase in quotas during 2021, fishing fleets were unable to fully adapt over the year.

Salmon is the main quota species for the SSCF, but its quotas have been decreasing substantially since the early 20th century. However, in 2021, there was a slight increase in the quotas, resulting in a 6% increase in total. Additionally, there were positive indicators from the salmon migration monitoring conducted 2021 in one of the most important salmon rivers in the Baltic Sea, the River Tornio.

*Innovation and development*

The Finnish government has launched a development program aimed at promoting the use of domestic fish, with the goal of doubling the amount of domestic fish consumed by Finns in 2027. The biggest potential for increasing the supply of domestic food fish lies in the trawler fishing of Baltic herring.

Currently, majority of the herring catch is utilized as feed for fur farms or in the fishmeal factories. These fishmeal factories use some one third of the total Baltic herring catch in Finland. If used for human consumption the Baltic herring catch would bring more income for fishers through considerably higher prices and boost the profitability of trawlers. The price of foodstuff Baltic herring can be even quadruple the one that is paid for the herring for feed.

There are some positive indications regarding the effectiveness of the seal repellent, which could mitigate the damage caused by seals in coastal passive gear fishing. Officials have announced an increased investment subsidy, which is expected to have a positive impact on the landings of the SSCF.

*Socioeconomic impact*

The number of fishers in the Finnish fishing industry has been decreasing for a long time, and the average age of those remaining has been increasing. This trend has been especially visible in the SSCF segment. Although there was a temporary increase in the number and activity of fishers and vessels, this trend reversed in 2021, with a continued decline in activity.

ITQ system was introduced in the beginning of 2017. In other Nordic countries the implementation of ITQ led to a significant decrease in number of vessels and employment. Similar development has been seen in the Finnish pelagic segment. By 2021 the number of trawlers has decreased 30% since introducing the ITQ.

A fifth of the catch was landed abroad, either in Estonia or Sweden and many of the pelagic trawlers in the Finnish fleet have a foreign owner. The fisheries management together with the industry are urgently seeking new solutions for improving the domestic demand to improve the economic situation of the Finnish fleet and to maintain the employment.

- *Nowcasts for 2022-23 and beyond*

*Model results*

Baltic herring stocks have been exceptionally strong in the past, especially in the most important fishing grounds in the Bothnian Sea. However, after the highest recorded catches of herring in 2015-2017 there was a cut of TACs and catches in 2018. There were further quota cuts for herring in 2019 and 2020. This implies a significant impact on the fleet economic performance on the pelagic trawler segments and the depending downstream activities in the value chain.

Overall, the gross profit for 2022 and 2023 remains positive although net profit move from the psstive position reached in 2021, to negative both in 2022 and 2023, drived by status status and fuel cost increase.

*Outlook*

In 2022, a total of 70 million kilos of Baltic herring and 13 million kilos of sprat were caught. Compared to the previous year, the Baltic herring catch decreased by 7 million kilos, and the sprat catch decreased by 1.3 million kilos. The Baltic herring and sprat catches, mainly caught from the open sea by the trawler fleet, consisted of 95% of the total commercial marine catch. One fifth of the Baltic herring catch and a half of the sprat catch were landed outside of Finland.

In 2022, catches of vendace, smelt, perch, and burbot were higher than the average catches in the 2000s. However, the catches of many other species fished in coastal areas were smaller than average. The catches of European whitefish, pikeperch, and salmon were half of the average catches in the 2000s, while the trout catch remained at one-third.

There were less than 1 000 active fishers, which is more than half the corresponding figure at the beginning of the 2000s. Out of them, 40 vessels deployed trawls, while over 900 fishers used other types of gear. The majority of fishers were operating in coastal areas and using trap nets and gillnets to catch species such as perch, European whitefish, pike, pikeperch, bream, roach, and salmon.

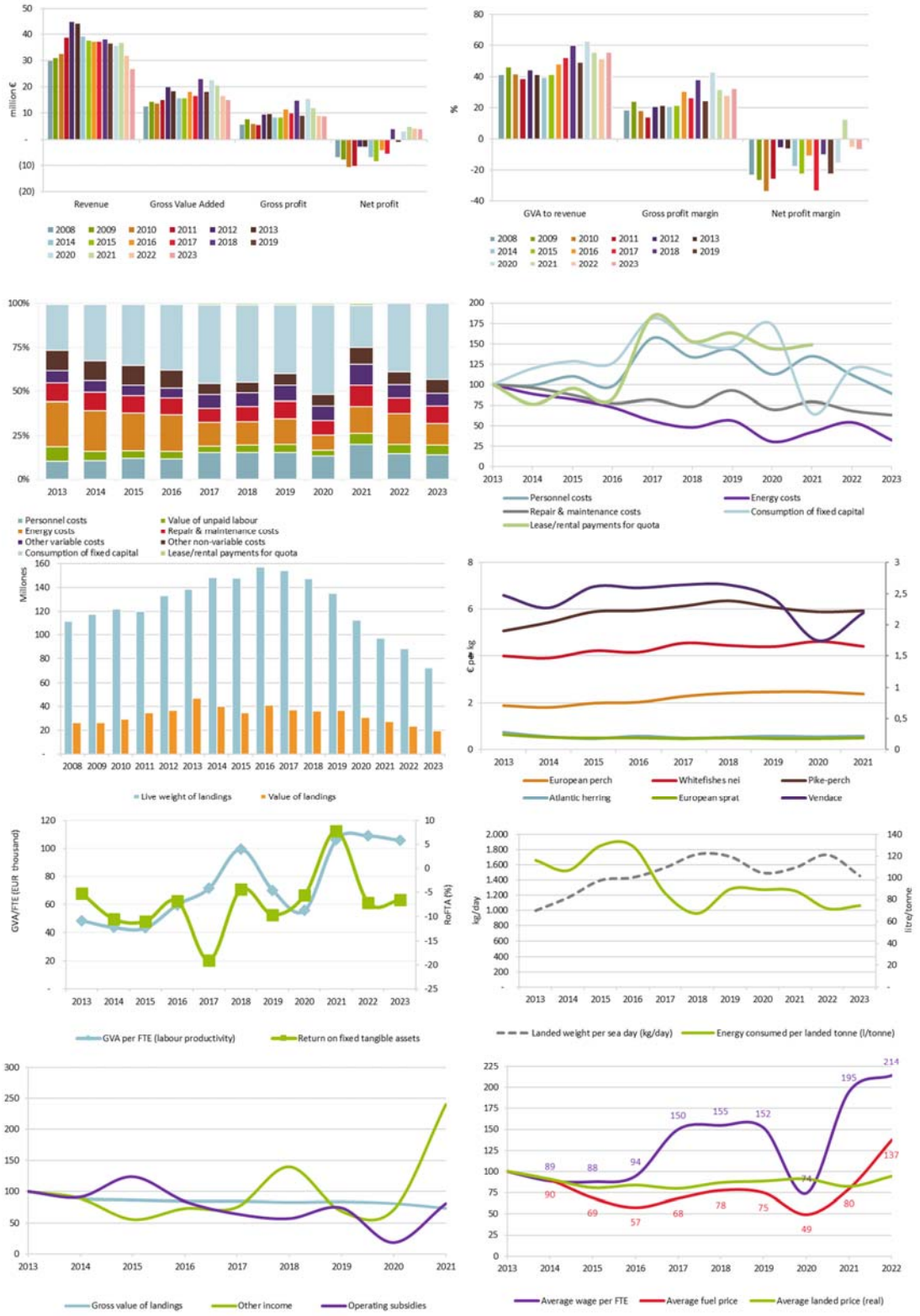
- *Methodological considerations and data issues*

Capacity, logbook and landings data are derived from sources which are covered by different legislation. All these data are available exhaustively. The bigger vessels are covered by logbooks and smaller vessels are covered by the coastal fishing reports. However, in the SSCF the method for correcting non-response was changed in 2014 based on the response loss survey. Furthermore, the fishing law reform sanctioned the coastal fishing reports mandatory for all SSCF vessels from the beginning of 2015 and therefore the estimation of non-response has been abolished. Therefore, there is a break in the time series relating to the SSCF. In addition, the financial results of the TM VL1824 segment in 2018 are exceptionally high because the figures include the sales revenue of one vessel, including fishing rights.

Economic data collection is based on a hierarchical multi-stage survey that combines information from different data sources. The main sources are the central control register on the commercial fishery (includes landings data, the vessel register, and first-hand sales of quota species), the financial database in Statistics Finland (SF) and additional account surveys for coastal fishers and trawlers. Starting from 2016, the account data is collected by the Natural Resources Institute Finland.

Due to the good coverage of the data collection and an efficient estimation method the achieved precision of the economic variables is satisfactory. However, there is a break in the time series of the number of active vessels in small-scale fishing in 2012 when the recording of active vessels was re-specified and then again in 2014 and 2015 due to the methodological changes described above.

**Figure 4.7** Finland: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2008=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2022 Fleet Economic (MARE/A3/ASC(2022)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.8 France

- *Short description of the national fleet*

In 2021, the national fleet capacity consisted of 6 159 vessels (including 893 inactive), having a combined GT of 177 450 tonnes and engine power of 960 732 kW. The number of vessels decreased by 1 % compared to 2020 and by 15% compared to 2013.

#### Fleet structure

The French fishing fleet is divided into:

- A SSCF (71 % of total active vessels, but 9% of the whole gross tonnage) which was mainly composed of vessels less than 10 metres long with a large diversity of metiers and an important part of polyvalent vessels operating in the Atlantic, Mediterranean and outermost regions.
- A LSF (28% of total active vessels) which was mainly made up of vessels using active gears, mainly demersal trawlers and dredgers with lengths ranging from less than 10 metres to more than 40 metres. Even though they were active in all the French regions, the major proportion of those vessels operated in North East Atlantic and North Sea. As they were most of time larger than SSCF vessels, they represented a major part of the fleet regarding the gross tonnage (67%).
- A DWF[17] composed of 20 tropical purse seiners over 40 metres catching tuna in South Atlantic and Indian Oceans; even if they represented only a small part of the fleet in terms of number, these vessels generated 11% of the national fleet's income.

In 2022, 4 733 fishing companies were considered active in the sector with the vast majority (86%) owning a single vessel. The percentage of individual companies slightly decreased over the years, at an average rate of 2% between 2013 and 2022 showing an increasing concentration in the sector.

*Fishing activity and production*

In 2021, the whole fleet operated 599 000 days at sea, 6% higher than in 2020. Fishing days also increased by 7%. Fuel consumption increased significantly by 21% in 2021, after a COVID-19 year 2020 at lowest level ever reached. In 2021, the highest increase was for LSF and DWF with an increase of consumption of 19% and 36%, respectively knowing that the major part of fuel was used by LSF, (68% of the whole fleet consumption). After 2 years of decreases, fuel price slightly increased with an average price of 0.51 euro/litre in 2021. Energy costs increased was 30% compared to 2020.

National production in value increased by 15% between 2013 and 2018, but since 2019 production in value decreased by 7% and by 12% in 2020 reaching EUR 1.15 billion. Landings in weight also decreased by 9% in 2019 and also by 9% in 2020 at 473 000 tonnes. In 2021, national production increased compared to 2020, reaching EUR 1.23 billion (+7%), and 505 000 tonnes (+9%). In 2021, great Atlantic scallop landings generated the highest value by the national fleet (EUR 101 million), increasing to 2020 by 10% and also weight of landings increasing to 2020 (16%). Price of great Atlantic scallop decreased from 2.7 euro/kg to 2.6 euro/kg. This species was followed by European hake (EUR 93 million), yellowfin tuna (EUR 85 million) and monkfishes (EUR 84 million). The high average landed price of common sole and European seabass (14.1 and 14.3 euro/kg) allowed these species to reach a value of EUR 63 million and EUR 39 million, respectively. SSCF Landings represented 94 520 tonnes with a value of EUR 285 million, comprising 19% (in volume) and 23% (in value) of the national production, respectively. The total production landed by the French LSF remained in the same level in weight from 2020 to 2021 while the value increased by 6% reaching EUR 803 million in 2021. It represented 60% of the total landings weight and 65% of the total landings value of the national fleet.

*Employment and average salaries*

Employment was estimated at 12 458 jobs in 2021, distributed as follows: 49% to the SSCF, 48% to the LSF, and 3% to the DWF. With smaller vessels, the SSCF displayed an average of 2 jobs per vessel, comparing to 4 for LSF and 25 for DWF. In 2021, the level of employment increased by 1% compared to 2020, after a constant decrease observed since 2013. Between 2013 and 2020, the average wage by FTE increased by 28%. In 2021, this average increased by 4.6% compared to 2020.

[17] In the AER report, the French distant water fleet takes into account a vessel using hooks of 33m length.

- *Economic results for 2021 and recent trends*

*National fleet performance*

At the national level, the French fleet, after reaching in 2016 its highest economic performances since 2008, driven by a high revenue, increased by 9% in 2021 compared to 2020, after a sharp fall by 13% in 2020 compared to 2019. Revenue, estimated at EUR 1.27 billion, consisted mainly of landed value (97%) and other income (2.7%). Other income decreased by 3% compared to 2020. Operating subsidies amounted to EUR 27 million, with a strong increase by 45% in 2021 (compared to 2020) and 216% compared to 2019 (EUR 6 million in 2019). Increases in these two items are due to COVID-19 related vessels stops, established to compensate the lack of income. Operating subsidies represented 2% of total revenues. There is no income from fishing rights in France because of the transferability of rights is forbidden by Law.

Total operational costs represented 90% of the total income (excluding operating subsidies). Fuel costs represented 13% of the revenue in 2021. Aside from the increase in fuel dependence, the operating cost structure have remained stable since 2016.

GVA and gross profit in 2021 were estimated at EUR 642 million, EUR 131 million respectively. GVA increased by 6% compared to 2020, while gross profit decreased by 2% compared to 2020. The net profit was negative, estimated at -EUR 13 million, but increasing by 61% compared to 2020. These results indicated a slight increasing trend for economic performance of the French fleet after sharp fall in performance, in 2020 and 2019, much more than in 2018 and 2017, but after a very good year in 2016.

*Resource productivity and efficiency*

At the national level, the national landing weight continued to increase in 2021 compared to 2020 by 7%, after a decrease in 2019 and 2020 (but increase over the period 2013-2018 by 7.5%). Energy consumption per landed tonne increased in 2021 compared to 2020 (13%) after a strong fall in 2020 (-10%). Because of that, the gross profit margin in 2021 was 10% (decreased by 10% compared to 2020), indicating an operating profitability of the French fisheries sector, close to 2020 and 2019, but down compared to the last 4 years (2015-2018). The net profit margin was –1% in 2021, as in 2019, but lower compared to the 10% and 7% in 2016 and 2017, respectively.

Based on an average price of 0.54 cent euro/litre fuel in 2021, energy efficiency and energy intensity of the national fleet were estimated as 10% and 0.52 (litre per landed kg), respectively. The following table presents data on the fuel prices, short-term and long-term break-even revenues, as well as energy efficiency and intensity for more energy-intensive segments of the French fleet.

**Table 4.8** France: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| FRA NAO DTS1218 NGI A | 0.52 | 0.86 | 0.61 | 18% | 1,561 |
| FRA NAO DFN1012 NGI A | 0.53 | 1.99 | 1.43 | 6% | 601 |
| FRA NAO DTS40XX NGI A | 0.47 | 0.28 | -0.50 | 21% | 821 |
| FRA NAO DFN0010 NGI A | 0.59 | 3.09 | 2.36 | 5% | 743 |
| FRA NAO TM 40XX NGI A | 0.49 | 0.85 | -1.65 | 9% | 126 |
| National average | 0.54 | 1.25 | 0.55 | 10% | 522 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Drivers affecting the economic performance*

*Operational costs (external factors)*

In 2021, the major cost items for the whole French fleet were labour, non-variable and energy costs, representing 41.3% 14.5% and 13.6% of the gross value of landings, respectively. Due to dependence on fuel, the fleets are sensitive to fuel price increase. In France mainland, the annual average fuel price (diesel fuel) increased from 0.35 euro/litre in 2020 to 0.51 euro/litre in 2021. Gross profit margin therefore falls to 10.1%, a limited decrease of 1.1 point compared to 2020 (year 2021 shows the lowest gross profit margin since 2013). In 2022, average annual fuel price reached 0.85 euro/litre. Different measures including a tariff shield were adopted by national authorities at the end of the first quarter 2022 to attenuate the impact of these increases for fishing companies including a discount at pump and/or direct additional aids (from 0.25 to 0.35 euro/litre depending on the period) in France mainland and also in outermost regions.

*Markets and trade*

The metropolitan French fishing sector were supplied daily by landings made in 60 ports and 35 auction halls operated along the coastline where landings are sorted, checked, weighted and kept in a cold room while awaiting their first sale. Market places are connected including remote sales with positive effect on the fish prices. In 2021, the top three species in terms of value landed in 2021, were great Atlantic scallop, monkfish and common sole representing respectively 10.1%, 9.3% and 8.7% of the total landed values sold in auctions. However, direct sales are still particularly developed for species such as the great Atlantic scallop (which 2021 season remained correct) or some species of crustaceans. For some species such as whelks, horse mackerel or anchovies, the amounts sold off-auction can represent more than half of the total amounts sold. In outermost regions, most of the landings are sold locally to consumers of fishmongers and ports are equipped with auctions halls. Depending on the target species, destination markets (tropical tuna, for example, is sold via private contracts, and fished to supply the canning industry, without going through the auction process), vessel operating modes (freezer vessels) or historical patterns, all vessels did not use this sales method to sell their production.

Regarding foreign trade, total seafood imports were around EUR 6.5 billion in 2021, and seafood exports were EUR 1.9 billion leading to an overall trade deficit of EUR 4.6 billion in 2021. France exported species like tuna to Côte d'Ivoire, Seychelles, smoked salmon, frozen shrimp, fresh species like cuttlefish, cod or squid to Italy, Spain, Germany, Belgium, etc. France also imported major species like salmon (Norway and the United Kingdom), shrimp (Ecuador, India, Venezuela, etc.), tunas (Spain, Seychelles, Ghana, Ecuador and Mauritius) and cod (Iceland), the first three species mentioned representing half of the imported values in 2021.

### Other external drivers

The Brexit exert constraints on specific segments of the fleet operating in the Atlantic area. The development of windfarms parks is also seen as a potential threat for vessels active in coastal areas concerned by these projects. Specific fleets, especially those harvesting scallop or shellfish in general, could be concerned by fishery bans due to phytotoxins blooms. In some outermost regions (Guadeloupe and Martinque), fishing areas were definitively closed due to contaminations to pesticides used in agriculture hampering their activity or forcing fishers to leave the sector.

*Stock status, TACs and quotas*

European hake (three stocks, one main stock for France): good news for North East Atlantic stocks. For the first time, the main stock (ICES areas 3a,4,6,7,8abd) was considered as in good state as fishing mortality is now below $F_{msy}$.

Common sole (Eight stocks, four main stocks for France): stocks still mostly overfished

Gadoids in the Celtic Sea (7 e-k, three stocks): Worrying stock status except for haddock

None of the three gadoids stocks were exploited at fishing rates consistent with $F_{msy}$ ranges. The cod stock status is worrying as biomass is still under reference point, and the stock is considered overfished. For whiting, fishing mortality is now below $F_{lim}$ and getting closer to $F_{msy}$, but the biomass is still low.

European seabass (two stocks, two main stocks for France): Good news for the North East Atlantic stock. The fishing pressure for the North Sea / Irish Sea / English Channel / Celtic Sea stock (ICES divisions 4bc,7a,d-h) strongly decreased between 2012 and 2019, and is now way below $F_{MSY}$ – caution should be still taken as F is recently increasing.

Norway lobster: good news for Bay of Biscay stock (ICES divisions 8abd).

Bluefin tuna (One stock): recovery of the stock confirmed.

**TACs and quotas (source: FIDES)**

Total available quota (TAC) for the French fleet in 2021 was 375 000 tonnes an increase of 7%/ (+23 635 tonnes) compared to 2020.

Looking at the main species for France in terms of value of landings, the quota trends between 2020 and 2021 are showed below:

**Table 4.9** Quota trends for French main species

| Species | Quota 2020 in tonnes | Quota 2021 in tonnes | Variation |
|---|---|---|---|
| Anglerfish (ANF) | 34 156 | 34 843 | 2.01% |
| Bluefin tuna (BFT) | 6 026 | 6 012 | -0.22% |
| Cod (COD) | 8 414 | 6 846 | -18.63% |
| European Hake (HKE) | 66 594 | 56 493 | -15.17% |
| Mackerel (MAC) | 22 763 | 19 528 | -14.21% |
| Norway Lobster (NEP) | 9 035 | 8 870 | -1.83% |
| Saithe (POK) | 26 720 | 19 423 | -27.31% |
| Common Sole (SOL) | 6 551 | 6 631 | 1.23% |
| Blue Whiting (WHB) | 13 982 | 19 794 | 41.57% |
| Whiting (WHG) | 12 052 | 11 164 | -7.37% |

Among the 126 stocks under TAC exploited by the French fleet in 2021, six stocks (five species) presented a quota uptake higher than 90% with an adapted quota higher than 1 000 tonnes:

**Table 4.10** Quota uptakes for French main species

| Stock | Species | Area | Adapted Quota | Catches | Quota uptake Level |
|---|---|---|---|---|---|
| Bluefin tuna | BFT | AE45WM | 6 012 | 5 852 | 97 |
| Cod | COD | 1/2B. | 3 540 | 3 533 | 100 |
| Rays | SRX | 07D | 1 051 | 976 | 93 |
| Mackerel | MAC | 2A34. | 1 813 | 1 631 | 90 |
| Albacore | ALB | AN05N | 5 927 | 5 393 | 91 |
| Herring | HER | 4CXB7D | 10 660 | 9 690 | 91 |

Among the species whose stocks in the Mediterranean are:

- recoverable/recovering: Atlantic-Mediterranean bluefin tuna, anchovy in the Gulf of Lion, sardine in the Gulf of Lion and swordfish;
- overfished: red mullet in the Gulf of Lion;
- overfished and degraded: albacore;
- collapsed: Gulf of Lion hake and eel.

Among the species not assessed are: octopus, mackerel, gilthead bream and anglerfish.

*Management instruments*

Depending on the fisheries, fleets are managed through several management tools, as TACs and quotas related to areas and fishing stocks, fishing licenses or multiannual management plans. Fishers' representatives (Fisheries Committees and producers organisations) are also involved in the regulation of the sector through catch limits and licenses. Fishing license (assigned to the pair "vessel*owner") targets a particular species or a type of gear in a specific area. They specify the field of application and all the corresponding technical requirements such as: Gear type and dimension (meshing); Vessel size; Depth; exemptions (e.g., if catches are below a threshold by year of meshing above a threshold); Fishing prohibition area or season (e.g. spawning area for Eastern English Channel sole, spawning season for netters targeting sole in Bay of Biscay or season for swordfish in the Mediterranean Sea); Maximum catches by year.

In 2022, a decommissioning scheme of fishing vessels also called "individualized support plan" (PAI) was organized by national authorities in relation to the Brexit context. Nearly 100 vessels will be removed from the fleet operating in the Atlantic Ocean with an expected significant impact on the fleet and supply chains. Another decommissioning program is underway in France in the Mediterranean area in the context of the Western Mediterranean management plan adopted in 2019, with the aim to restore stocks, notably hake and red mullet.

*Innovation and development*

Without seeking completeness, several R&D projects are or were recently conducted with the objective to improve knowledge in different areas:

- Stocks assessment (RECCRU, DREAM, Langolf-TV, eDNAbyss, etc.),
- Selectivity of fishing gears and discards (Game of Trawls, CASEP, APASE CELSELECT, etc.),
- Impacts of fishing gear on habitats (REIP PECHE , CONTRAST, etc.),
- Interaction with marine mammals (DELMOGES),
- Vessels Footprint reduction and energy consumption/costs savings (AREC, AMAREE),
- Value chains (DEFIPEL) and impact of COVID crisis on the sector through integrated analysis (COPECO).

- *Economic performance by fishing activity*

*Small-scale coastal fleet*

The French SSCF with 3 738 active vessels covered almost 61% of the whole national active fleet in 2021 for 43% of total horsepower (kW), 8% of total tonnage (GT) and 49% of total crew members. Heterogeneous in size and gears, the SSCF spread over all the supra-regions with 36% in the NE Atlantic, 28% in the Mediterranean Sea and 37% of vessels in the outermost regions.

In 2021, SSCF operated for 366 400 days at sea (61% of the total). Total landings were 94 500 tonnes and EUR 285.5 million (3.0 euro/kg average price) and gross added value was EUR 182.2 million accounting respectively for 19%, 23% and 28% of the total at national scale. GVA per vessel was EUR 48 700 when GVA per crew member and FTE was 29 900 and 66 600, respectively. Compared to 2020, the number of vessels in 2021 remained stable (-0.4%) but the number of days at sea and landings increased by 7% and 13%, respectively. However, revenue only increased by 5% and GVA by 2%. Since 2013, the active SSCF and crews decreased by 14% and 16%, respectively, total revenue increased by 12% and GVA by 11%. As a result, GVA per vessel and crew member increased by around 30%.

However, the situation was very different from a supra region to another. In 2021, 1 346 vessels and 2 367 crew members operated in the Atlantic for 140 524 DaS. Their landings in weight and value were 80 669 tonnes and EUR 188.5 million (2.3 euro/kg average price). This relative low price is explained by the seaweed with high volumes and low prices. Total GVA was EUR 31.5 million and GVA per vessel and crew member were respectively EUR 88 887 and EUR 50 554. Average fuel consumption per vessel was 14 427 litres and 138 litres per DaS. In the Mediterranean area, 1 010 vessels were considered as SSCF in 2021 with 1 250 crew members. These vessels spent 134 171 DaS for total landings weight and value of 5 817 tonnes and EUR 45.3 million (7.8 euro/kg average price). Total GVA was EUR 31.5 million and GVA per vessel and crew member were EUR 31 208 and 25 220, respectively. Average fuel consumption per vessel was 4 808 litres and 36 litres per DaS.

In the outermost regions as whole, most of vessels are SSCF. 1 382 vessels and 2 469 crew members spent 91 756 DaS for a total landing weight and value of 8 033 tonnes and EUR 51.7 million (6.4 euro/kg average price). Total GVA was EUR 30.4 and GVA per vessel and crew member were respectively EUR 22 026 and EUR 12 330 but a significant number of vessels are weakly active in certain segments. Average fuel consumption per vessel was 6 423 litres and 97 litres per DaS.

*Distant water fleet*

The French industrial fleet of Purse Seiners consisted of 20 vessels in 2021 (including 4 vessels registered on the island of Mayotte). The number of fishing vessels in this fleet has remained relatively stable over the years. (For 2021, 21 vessels made up this fleet segment, because of a vessel HOK2440 clustered to this segment).

The overwhelming majority of this fleet is made of freezer tuna seiners operating in the Indian Ocean (10 vessels in 2021) or Atlantic Ocean (10 vessels in 2021). The average age of those 20 active vessels reached 20.3 years in 2021. The average length reached by the vessels amounts to 78 metres. The average FTE was around 24 employees by vessel in 2021 (fishers employed come from both France and foreign countries -mostly African-).

In 2021, total volumes of landings of tropical seiners amounted around 110 000 tonnes for the vessels of the fleet segment, in increase compared to the previous year. However, the situation is contrasted according to the oceans worked: the level of catches was low especially in the Atlantic Ocean.

At the global level of the segment, tuna species caught were mainly skipjack (55.4%), yellowfin tuna (37.4% of the total volumes of landings), and bigeye tuna (6.2%). Almost three quarters of skipjack catches are made in the Indian Ocean. In the Atlantic Ocean, yellowfin and skipjack account for more than 90% of the catches, followed by bigeye tuna (about 5.6%).

Total values of landings for this fleet segment reached EUR 141.6 million in 2021. According to economic data collected, the three main cost items in 2021 were crew wages, energy costs and non-variable costs. They represented 38.5%, 23.3% and 23.1% of the total income in 2021, respectively.

As a result, operating profitability of the first segment of the French fishing fleet (in terms of landed value), is negative in 2021. The share of fuel and other non-variable costs in the operating costs partly explains this evolution.

However, the second half of 2021 materialized the recovery, after the crisis on raw tuna prices in the second half of 2019, followed by the COVID-19 crisis from February 2020, which had a strong impact on both fishing operations and markets for almost 18 months.

Finally, there are several concerns for companies targeting tuna species:

- Companies that operate vessels of this fleet segment (the first French fleet segment in terms of landed values in 2021) are worried about the impossibility of applying the clause of the EU control regulation concerning the margin of tolerance on the catch and landing estimates by species.
- The impact of the decrease in the yellowfin tuna quota in the Indian Ocean on the activity of the vessels.

- *Performance results of selected fleet segments*

The French fleet is highly dispersed over the Atlantic and Mediterranean coasts, and considering the outermost and distant fleets components. The fleet is very diverse with a wide range of vessel types, a significant diversity of gears used, and species landed. A short description of a selection of five important segments is provided hereafter. Some of these segments include one, two or three clustered small segments and economic indicators refer to these combined segments. Generally, these smaller segments only have a marginal impact on the indicators.

*Drift and fixed nets 10-12m in NE Atlantic*

133 vessels and 403 engaged crew (229 FTE) made up this segment which operated 18 931 DaS in the NE Atlantic. Landings were composed of a large variety of species including common sole, spinous spider crab, monkfish, seabass and pollack accounting for 29%, 13%, 7%, 6% and 5%, respectively of the total value of landings of this fleet segment. In 2021, total value of landings recovered to pre-COVID situation with EUR 42 million but with reduced landings, 8 102 tonnes compared to 8 932 tonnes in 2019.

GVA decreased by 5% to reach EUR 25.7 million but operated subsidies (EUR 1 million) increased over the same period. Gross and net profits were EUR 7.12 and EUR 4.68 million, respectively. The fleet decreased by –27% between 2013 and 2021 but average annual landings per vessel remained relatively stable (59 tonnes for a value of EUR 0.280 million). GVA per vessel and per crew member were EUR 178 885 and EUR 56 649 on average over the same period. Annual fuel consumption and cost were 36 675 litres and 19 539 euro per vessel, respectively, representing 258 litres per DaS.

*Drift and fixed nets 06-12m of the Mediterranean Sea*

With 486 vessels and 586 engaged crew (316 FTE), this segment operated 65 535 DaS in 2021. The fleet landings were mainly composed by gilthead seabream (23% of the total value of landings of this fleet segment) and a wide range of species contributing from 8% to 4% of the total value of landings (by decreasing order European seabass, spiny lobster, common sole, European hake, octopus and bluefin tuna). Despite more days at sea, landings in weight (2 615 tonnes) and value (EUR 21 million) were lower than in 2019 and also in 2020. GVA decreased by nearly 40% to reach EUR 10.8 million. Gross and net profits were EUR 1.74 million and EUR 0.280 million, respectively. A significant reduction in the number of vessels (-7%) occurred between 2021 and 2020. Average annual landings per vessel tend to decline over the period and average landings in weight and value were 5.66 tonnes and EUR 43 677 between 2019 and 2021. GVA per vessel and per crew member were EUR 29 105. Annual fuel consumption and cost were 4 514 litres and EUR 3 189, respectively per vessel representing 33 litres (EUR 23.6) per DaS.

*Demersal trawlers / seiners 12-18m*

137 vessels make up this segment in 2021 and they are predominantly based in the NE Atlantic, (almost half of the vessels are located in the two ports of Lorient and Guilvinec, in Brittany). With 377 engaged crew (FTE), this segment operated 29 120 DaS in 2021.

These vessels target a variety of species. The top three species in terms of landed value in 2021 were Norway lobster, great Atlantic scallop and common sole (33.3%, 6.7% and 6.7% of the total value of landings of this fleet segment, respectively).

Total income was EUR 74.7 million for this segment in 2021, accounting for 5.9% of the national fleet income. It increased by 14.5% compared to 2020 (post covid year).

Volumes increased slightly (2.1%). The increase in average prices was the main reason for the increase in sales in 2021.

It generated a gross profit of EUR 8.3 million in 2021 (11.2% of the income), with a decrease compared to 2020, explained in particular by the increase of some operating expenses such as fuel costs.

Even though the economic performance was much lower than the previous year, the profitability of this fleet segment remained reasonable.

*Demersal trawlers / seiners 18-24m*

169 vessels made up this segment in 2021 (considering the incremented cluster with 19 vessels MGP1824). The vast majority (77%) of these vessels operate in the Atlantic, North Sea and Channel, 18% of the vessels operate in the Mediterranean Sea and 5% in French Guyana (only landings data are available for this last Region). Considering the clusters made for this fleet segment (MGP1824), 166 vessels made up this fishing fleet in 2021.

Depending on the supra region, vessels have different fishing activities in terms of target species or number of days-at-sea. The vessels operating in the Atlantic, North Sea and the Channel target a variety of species, such as monkfish (24.3% of the total values of landings of this fleet segment), squids and Norway lobster (6.0% and 5.7%, respectively). In terms of volumes landed, monkfishes and Whiting represented 18.3% and 7.5% of the total volumes of landings in 2021, respectively. In the Mediterranean Sea, vessels targeted Octopuses (10% of the total values of landings of this fleet segment), Common

octopus and hake (9.99% and 9.8%, respectively). In French Guyana, vessels mainly caught Penaeus shrimp.

In 2021, total income value for this fleet segment was EUR 147.7 million, contributing to 11.6% of the total income from landings generated in the national fishing fleet. Landed values increased by 11.8% between 2020 and 2021. This fleet segment produced a gross profit of around EUR 12.4 million in the Atlantic area and EUR 2.2 million in the Mediterranean. Economic profitability for companies of this segment has improved in 2021, compared to the previous year.

If economic situation varies by the supra-region observed, several reasons for concern stand out clearly:

- Uncertainties linked to Brexit, for French vessels which are used to working in British waters;
- The implementation of the management plan for professional trawl fishing in the Mediterranean Sea for French vessels: the imposed reduction in fishing effort and spatio-temporal closures are a major source of concern for professional fishers.

*Dredgers 12-18m*

93 vessels, plus 7 dredgers between 18 and 24 metres and one vessel between 24 and 40 metres, made up this segment in 2021 (101 vessels for this cluster), which operates exclusively in the North Atlantic. The fleet mainly targets great Atlantic scallop (80% of the total value of landings of this clustered segment in 2021). Total income was around EUR 52.6 million in 2021 for all the vessel of the cluster, accounting for 4.1% of the national fleet.

Year 2021 was again satisfactory for vessels targeting scallops, which landings increased significantly over the period. The scallop fishery is framed at both community, national and regional levels. In France the shell season generally begins around the month of October and ends in May of the following year. The fishing zones are open as the season advances. European fishers are all regulated in terms of size of the catches, and in France, they can be regulated by quotas distributed between vessels, or by suitable fishing times.

The fleet segment registered a gross profit of EUR 9.4 million and a net profit of EUR 4.9 million. Companies in this fleet segment present a good operating profitability, reaching a gross profit margin of almost 18% in 2021.

- *Nowcast for 2022 and 2023 and beyond*

  *Model results*

In 2022, the economic activity in the Atlantic area declines. Income of landings decrease substantially by 5.2% in 2022 compared to 2021. This is due to a decrease in quota for some important stocks, e.g. blue whiting, saithe and mackerel. Projections suggest for 2022 a sharp increase in energy costs (79%) due to the war in Ukraine. So, the GVA falls by 27%. It is for this reason that the French government is taking measures to support the cost of energy for fishers, in order to avoid this expected economic collapse if nothing is done for the profession.

Projection results suggest a recovery for 2023, in the Atlantic area, with an increase of income landings by 1.4% compared to 2022. The energy costs decrease by 30% between 2022 and 2023. Economic indicator improve in 2023 but it does not reach the 2021 level.

### Outlook

The initial results available to date for 2022 (excluding OMR) show that fishing effort of national fleet decline 1% to 292 000 days at sea compared to 2021. Weight and value of landings increase by 5% and 9% respectively, to 400 thousand tonnes and EUR 1.146 billion. In the Mediterranean, the rise is significant with an increase of almost 30%.

The quota for stocks as hake, anglerfish, herring and haddock increase in 2022, but decrease in 2023. So, the expected economic performances are opposite for 2022 and for 2023. The reduction of the French fleet due to the decommissioning scheme of fishing vessels also called "individualized support plan" (Brexit plan) will impact economic performance in 2023.

- *Methodological considerations and data issues*

*Data source: effort and production data*

In France, detailed landings and effort data per vessel are available through the SACROIS platform. SACROIS[18] is a cross-validation tool for the fisheries statistics, aiming at providing the best possible fishing statistics data by cross-checking available data from the different declarative control regulation sources, as requested in article 145 of the EU control Regulation *(EC Reg. 404/2011)*. The application is crossing information, at the most disaggregated level, from the fishing fleet register, logbooks and coastal logbooks, sales notes data, geolocation data *(VMS)* and vessel fishing activity calendar census survey *(VFACCS)*, in order to build the most accurate and complete dataset compiling French fleet' fishing trips with their associated features *(dates, fishing area, metier, gear and mesh size, total weight and value of landings by species)*. Additional data collection is currently implemented for fleets for which coverage of declarative data is considered as insufficient. This is the case of the less than 12 metres length fleets operating in A) the Outermost regions (French Guiana, Guadeloupe and Martinique, La Réunion and Mayotte) for which complementary on-site sampling data are collected and calculation of their reference fishing activity' estimates is applied on this basis and B/ the supra-region Mediterranean for which a re-evaluation methodology[19] on the basis of the annual fishing activity calendars survey is applied to calculate their reference fishing activity' and landings estimates.

*Survey for economic data*

A probability sampling method was carried for the 2021 data as was the case since 2012. Vessels have been selected by using a systematic random sampling, and the fleet has been classified inside each segment by length and maritime district, to ensure a good representativeness of the overall diversity of the French fleet. When fishing vessel owners didn't answer, a statistical method was used to know the criteria (explanatory variables) that could explain the response rate. Then, vessels were merged into clusters according to that predicted response probability. Those clusters were used to weight again responding vessels, by increasing their weight. Concerning the partial non-responses, imputations of costs and earnings were processed. Direct subsidies and other income are not available for few segments, in particular, segments of over 40 metres, and some less than 12 meters segments in outermost regions.

In 2021, the distant water fleet gathered 20 purse seiners over 40 metres length, all of them operating in the Indian Ocean and in the South Atlantic Ocean. Data for purse seiners are provided for 18 vessels. Another source enables to get all landings for those two missing vessels which were included in the analysis, then values were computed with species' prices (mainly tuna). For those of French hooks 12-18m and 18-24m in the Indian Ocean, economic data are available from 2011 to 2021. Economic data for less than 12 metres in Guadeloupe, and French Guiana are available since 2010. In other fishing regions, consisting mainly of vessels less than 12 metres based in the islands of Reunion and Martinique economic data are not collected but estimation calculated since 2019 in Reunion and since 2010 for Martinique. Economic data are available in Mayotte from 2015 to 2021.

Data on total personnel costs of vessels is available for all the vessels sampled. Currently, we consider that they represent wages and salaries of crew for all vessels. Value of unpaid labour is null for France, considering that it is a marginal practise in the sector.

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[18] IFREMER SIH (2022). SACROIS - Algorithme de consolidation des données déclaratives. IFREMER https://doi.org/10.12770/6510e8e0-788d-45ba-9792-3d0585fe1009IFREMER SIH (2022). https://sih.ifremer.fr/Debarquements-effort-de-peche/Sacrois.

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[19] *details about the re-evaluation methodology applied is described in the 9th IFOMC proceedings p°105-108,*

*https://ifomcvigo.com/wp-content/uploads/2018/08/proceedings-9th-ifomc.pdf.*

*Identified changes in respect to previous years*

Since 2017, a calibration on direct margins has been carried out as a method of processing non-response. The new weights were spread and dispersion properties very comparable to the old ones. The impact on the macroeconomic results is small and is much more the result of calibration than the abandonment of a prior response model.

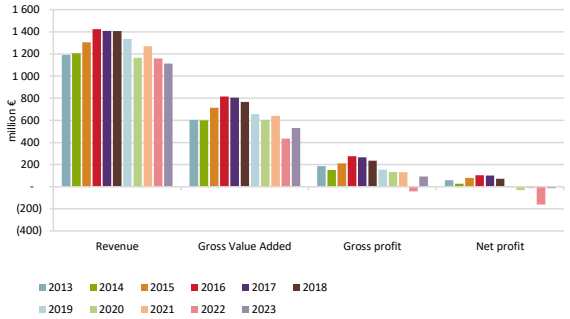
*Improvements achieved*

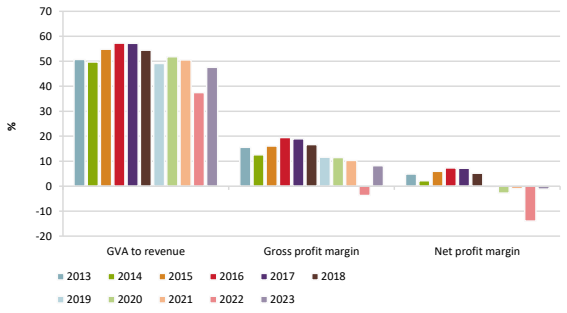
Thanks to change in methodology described above, the difference between Value of landings and Gross value of landings (Income), coming from two different sources has been reduced for the NE Atlantic and Mediterranean Sea supra regions. Series for Outermost regions are now complete. However, estimation of economic data has been calculated for less than 10 metres in Martinique for only 2010 and 2021 and in Mayotte from 2015 to 2021. Estimation for less than 12 metres fleet in La Reunion island has been calculated since 2019.

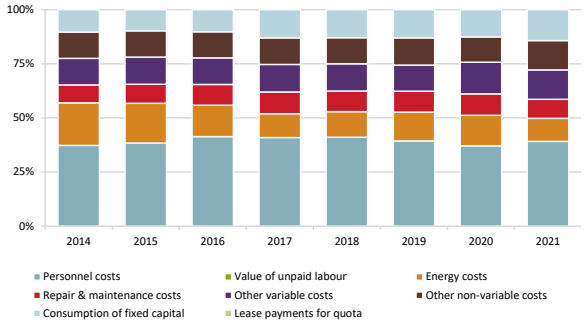
*Issues still remaining*

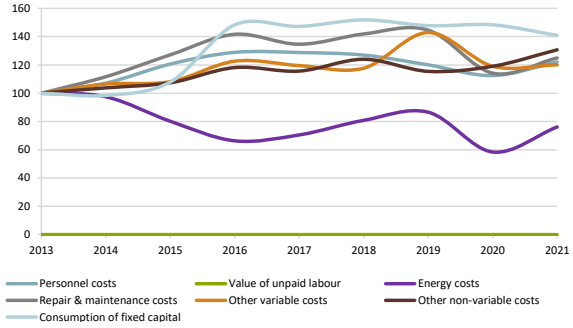
Economic data are not complete because data is missing for a fleet segment in French Guiana. This concerns 7 vessels of more than 18 metres in 2021.

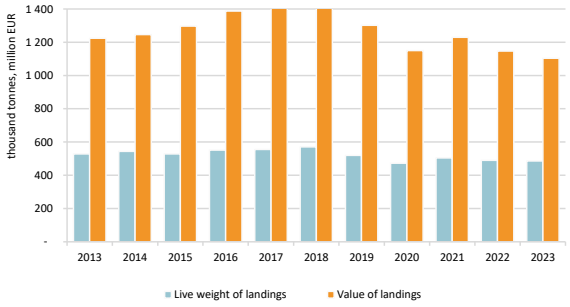
**Figure 4.8** France: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.

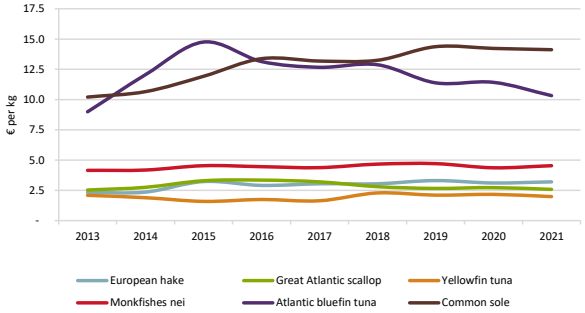


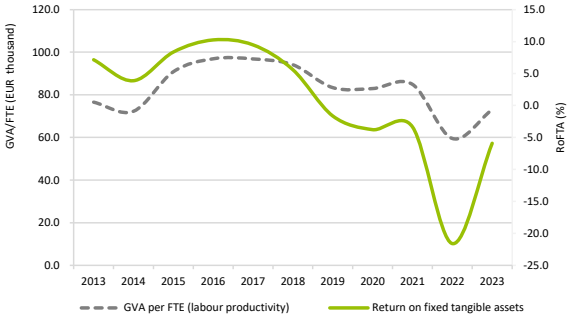



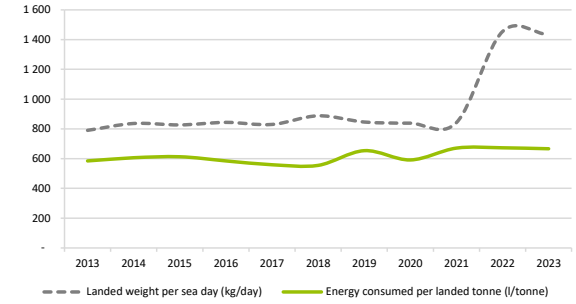



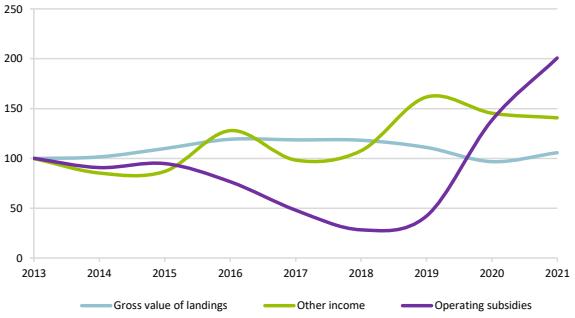



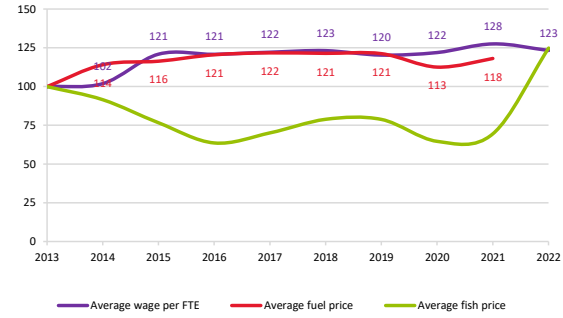




Data source: MS data submissions under the DCF 2022 Fleet Economic (MARE/A3/ASC(2022)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.9 Germany

- *Short description of the national fleet*

*Fleet capacity*

The national fleet capacity continued to decline, with a total of 1 279 vessels, 374 of which were inactive in 2021. The total fleet had a combined GT of 55 326 tonnes and engine power of 126 028 kW. In 2021, the total number of vessels decreased by 18 compared to 2020. Almost all the 374 inactive vessels belong to the smallest length class (below 10 metres). In that length class about 35% of the registered vessels have reported no activity in 2021 (similar to previous years). The percentage of inactive vessels decreases with increasing length – in the length classes above 18 metres only nine vessels were filed inactive.

Vessels targeting blue mussels are not included in the analysis even though they are included in the fishing fleet. They are defined as operating in the aquaculture sector and are therefore covered in the aquaculture report.

The German pelagic trawler fleet is excluded from the analysis except for capacity and weight and value of landings data as practically the entire segment is owned by one parent company. For confidentiality reasons the data cannot be published.

*Fleet structure*

In 2021, the German LSF consisted of 237 active vessels (27% of active fleet), whereas 668 active vessels (73% of the active fleet) were accounted for the SSCF. The decrease in number of vessels applied mainly to the SSCF (15 vessels less) while the LSF decreased by three vessels in 2021. However, the overall decrease in number of vessels was lower than in previous years, especially for the SSCF. Both the total engine power and the gross tonnage increased slightly by about 2% in 2021.

*Fishing activity and production*

About 82 000 days were spent at sea by the non-pelagic fleet in 2021, a slight decrease from 2020 (83 500 days). The pelagic fleet accomplished about 1 100 days at sea in 2021. The energy consumed in 2021 amounted to an estimated 68.2 million litres. The increase from the 2020 figures is due to the introduction of the pelagic fleet (26.6 million litres). Even excluding the pelagic fleet, the fuel consumption was considerably higher (+25%) than in 2020. As fuel prices increased sensibly in 2021 from a low level in 2020, the energy costs of the non-pelagic fleet increased from about EUR 11.9 million in 2020 to EUR 18.8 million in 2021 (+50%) – which is almost identical to the 2013-2020 average fuel cost. The pelagic fleet had fuel cost of about EUR 12.3 million. The average fuel price was still 5% below the 2013-2020 average.

German SSCF operates almost exclusively in the Baltic Sea, whereas cutters (<500 GT) above 12m fish in the North Sea and in the Baltic Sea. German high seas trawlers operate mainly in the North Atlantic and Eastern Arctic area, but to some extent also in African and in some years in Southern Pacific waters.

Total production shows an increasing trend from 2013 up to 2018 with a live weight of landings increasing from 219 000 tonnes to 258 000 tonnes. Since 2019, however, the weight of landings shows a steep decreasing trend from 207 000 tonnes in 2019 to 195 000 tonnes in 2020 and 174 000 tonnes in 2021(-33% since 2018). Between 2019 and 2021 catches were considerably lower than the average between 2013 and 2018. The main species are herring, blue whiting, cod, mackerel, common shrimp and Greenland halibut. In terms of weight blue whiting again replaced herring as the dominant species in 2021, whereas the highest revenue was generated through common shrimp.

*Employment and average salaries*

Employment was estimated at 1 209 jobs in 2021, corresponding to 749 FTEs. These figures follow the overall decreasing trend over time. Average wages per FTE are estimated at EUR 74 thousand. However, it has to be taken into account that until 2019 data were estimates, while from 2020 official totals are available. This results in a discontinuity in the time series.

- *Economic results for 2021 and recent trends*

*National fleet performance*

Overall, the German non-pelagic fleet generated a net profit from 2013 to 2018. In 2019, however, the economic performance turned into a significant loss. The situation improved slightly in 2020, but the

result remained negative. 2021 the non-pelagic fleet again faced a net loss which increased to € 15 million. The net loss of the pelagic fleet was particularly high in 2021 (EUR -11 million). Net profits were negative also for the high seas demersal fleet (EUR -7 million) and only few segments from the remaining fleet could achieve net profits.

The total revenue of the German fleet, excluding direct income subsidies, was estimated at EUR 160 million for 2021 – a decrease of -14% compared to 2020 and a decrease of -27% compared to the 2013-2020 average.

Direct income subsidies accounted for about EUR 2.6 million in 2021, a 45% decrease, compared to 2020. Figures were still high compared to preceding years, mainly due to payments for temporary cessation in the Baltic Sea.

Total operating costs of the non-pelagic fleet increased slightly (+6%) with EUR 109 million in 2021 compared to 2020 (EUR 102 million). Operating costs for the pelagic fleet added up to EUR 109 million in 2021. From 2020 to 2021, fuel costs of the non-pelagic fleet increased considerably (+57%), repair and maintenance costs increased 9%, and other variable costs 13%, while crew costs decreased (-8%). For the entire fleet including pelagic trawlers, GVA, gross profit and net profit in 2021 were estimated at EUR 67.0 million, EUR 11.7 million and -EUR 26.0 million, respectively.

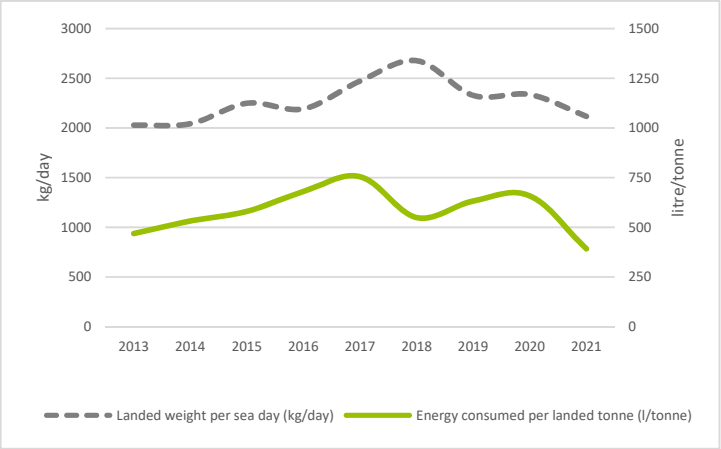
The (depreciated) replacement value of the German fleet, excluding pelagic vessels, was estimated at EUR 137 million in 2021, about EUR 3 million less than in 2020, while investments amounted to EUR 49 million (+14%). The estimated replacement value of the pelagic fleet amounted to EUR 71 million in 2021 with no investment activities. Overall, the cost structure has undergone some alterations, mainly due to the changing energy costs. Personnel costs develop proportional to the value of landings as wages are in most cases paid as crew share.

*Resource productivity and efficiency indicators*

The gross profit margin in 2021 was 6.9%. Net profit margin was estimated at -15.3%. The rate of RoFTA remained negative also in 2021 and dropped to -15.7%. Labour productivity (GVA/FTE) for 2021 was estimated at EUR 89.465 per FTE, almost unchanged from 2020.

In 2021, the fuel consumption rate was around 659 litres/tonne of catch for the German fleet, including the pelagic segments and grossly varying between fleet segments. The fuel consumption rate shows no clear trend. However, the fuel consumption per tonne is determined not only by vessel characteristics, but also by the catch per unit of effort, which also depends on the stock status. As, until 2020, the figures exclude the pelagic fleet with its very high fuel efficiency, the national total might appear high for that time compared with other fleets.

**Figure 4.9** Weight of landings per unit of effort excluding the pelagic fleet until 2021




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)).

The weight of landings per unit of effort (in days-at-sea) has fluctuated considerably throughout the time series since 2013 between 2028 kg/day in 2013 and 2677 kg/day in 2018. The value for 2021 was 2117 kg/day. However, this figure is grossly determined by the segment of vessels below 10m, accounting for more than 60% of the total days, but less than 5% of the catch.

Energy efficiency varies grossly across fleet segments (see Table 4.11). Energy intensity was lowest for the pelagic fleet as the catches per unit of effort are highest. Yet 22% of the revenue was required to cover fuel cost. Large demersal trawlers had a higher fuel intensity, but energy efficiency was lower than for the pelagic trawlers, i.e. only 16% of the revenues was required to cover fuel cost. The highest energy intensity was observed for the large beam trawlers. These vessels are using heavy gear with high towing resistance to target flatfish. Moreover, the catch per unit of effort is low. As the targeted species are of high value, the share of revenues to cover fuel cost is not affected to the same extent. According to the 2021 figures, the 12-18m beam trawlers are most resilient to changes in fuel prices in short term as the break-even fuel price is the highest. For none of the segments under consideration the actual fuel price was above the short-term break-even price. On the long term, though, both the high seas pelagic and demersal trawlers had negative break-even fuel prices. The difference between short and long term is that the latter accounts also for depreciation. Both segments contain several newly constructed vessels, hence the capital cost is extraordinarily high.

**Table 4.11** Germany: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price (€) | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency (fuel cost/revenue) | Energy intensity (l/kg) |
|---|---|---|---|---|---|
| Pelagic trawlers >40m | 0.46 | 0.69 | -0.07 | 22% | 202 |
| Demersal trawlers >40m | 0.41 | 0.47 | -0.40 | 16% | 696 |
| Beam trawlers 12-18m | 0.59 | 1.21 | 0.63 | 14% | 907 |
| Beam trawlers 18-24m | 0.55 | 0.84 | 0.36 | 19% | 1,395 |
| Beam trawlers >24m | 0.46 | 0.67 | 0.37 | 33% | 4,084 |
| National average | 0.45 | 0.67 | 0.03 | 20% | 392 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)).

- *Performance by fishing activity*

*Large-scale fleet*

In 2021, 247 active vessels were assigned to the LSF. These vessels mainly operate in the North Sea and the Baltic Sea, while the large trawlers fish also in the North Atlantic, Eastern Arctic and in distant areas. Economic data for pelagic trawlers are only included from 2021 onwards. Therefore, most comparisons, except for landings, between 2021 and 2020 exclude this segment. The cutters (<500 GT) target mainly brown shrimp, cod and saithe while the high seas trawlers fish herring, cod, Greenland halibut and other small pelagic species like mackerel.

The value of landings of the LSF (excluding pelagic fleet) decreased from 2013 to 2021 by about 12%, this is a 27% decrease compared with the 2013-2020 average. The weight of landings also decreased (about -17% compared to 2020 and -32% compared to the average 2013-2020). Compared to 2020, the pelagic fleet faced losses of -9% in weight and -17% in value of landings in 2021. In relation to the average of the period 2013-2020 these losses are even higher (-19% and -27%, respectively).

Labour costs decreased -11% in 2021, while energy costs increased considerably by 56%, but were about 18% below the average of 2013-2020. Repair and maintenance costs increased by 12% and other variable costs by 9%, while consumption of fixed capital dropped by -7% and other non-variable costs dropped by -2%. Gross profit decreased considerably (-65%), and overall, the non-pelagic fleet faced a net loss of EUR -9.7 million. The net loss of the pelagic fleet alone in 2021 was even more dramatic (EUR -11 million).

The number of people employed in the LSF was estimated at 720 in 2021, including the pelagic fleet.

*Small-scale coastal fleet*

In 2021, 650 active vessels were assigned to the small-scale fleet according to the EU definition (vessels under 12 metres using passive gears). These vessels almost exclusively operate in the Baltic Sea, targeting mainly herring and cod and also freshwater species which are not managed under a TAC regime.

The weight of landings of the SSCF decreased by about -14% from 2020 to 2021 (2 538 vs 2 966 tonnes) while the value of landings dropped by -15% from EUR 5.3 million to EUR 4.5 million. The estimated total effort in terms of days-at-sea decreased from 55 080 days in 2020 to 51 954 in 2021. The overall operating costs for the SSCF increased by about 14% in 2021. Personnel costs (+57%), energy costs (+107%) as well as other variable cost (+40%) increased substantially, while repair and maintenance costs (-27%) and other non-variable costs (-17%) decreased sensibly.

In 2021, the SSCF ended up with a gross loss of EUR -2.5 million and a net loss of EUR -3.5 million.

The number of people engaged on-board, including the skippers, was estimated at 489 in 2021.

- *Performance results of selected fleet segments*

The German cutter fleet (below 500 GT) is dominated by beam trawlers and, to a lesser extent, demersal trawlers.

*Beam trawlers*

German beam trawlers operate in the North Sea. Vessels up to 27 metres target almost exclusively brown shrimp. There are a few large beam trawlers over 27 metres targeting mainly flatfish. Thus, the beam trawler segment 24-40 metres contains both types of vessels.

The owners of the brown shrimp beam trawlers are usually also the skippers. They operate in coastal waters: smaller vessels with shallow draught can fish in the tide-ways and the Wadden area between the islands and the coast. These vessels depend on the tide and return to the port daily. These vessels usually do not fish in winter as the target species migrates to deeper areas. Larger vessels operate in greater depths and can also fish year-round. They stay at sea for several days.

Shrimp prices and fuel costs are the crucial elements for the economic performance of shrimp beam trawlers. Prices for brown shrimp increased slightly and could compensate slightly lower catches, but energy costs increased sharply. Thus 2021 was the third year in a row which was regarded unsatisfactory.

The brown shrimp fishery, backbone of the cutter fleet, was severely hit by both a price drop and a decrease in landings in 2019 already (54% of average weight 2008-2018, 48% of value). In 2020, the catch could be increased only slightly (60% av. weight, 70% av. value). In 2021 the situation did not improve sensibly (75% av. weight 2013-20, 78% av. Value 2013-2020). After this series of unprofitable years, catches remained stable (±0%) in 2022 while revenues (+27%) increased sensibly due to increased prices.

Both fuel consumption (+93%) and fuel costs (+184%) of the shrimp beam trawlers increased considerably in 2021. After an economically weak year 2020 (net profit EUR 1.1 million) the fleet of shrimp beam trawlers up to 24 metres faced a net loss of EUR 0.4 million in 2021 which is a very poor result, compared to an average annual net profit of EUR 6.4 million during the period 2013-2020.

Six flatfish beam trawlers flying the German flag are owned and operated mainly by Dutch fishers. They target mainly sole, plaice, and turbot. All of them are equipped with pulse gear. In 2021, a ban of this technique has become effective, thus increasing the energy consumption considerably. The catch is landed exclusively in the Netherlands. In 2021, the value of landings was EUR 8.5 million for these vessels. The segment of beam trawlers above 24 metres (including two shrimp trawlers) experienced a net loss of EUR 0.3 million in 2021, after a net profit of EUR 0.4 million in 2020.

*Demersal trawlers*

The German demersal trawler fleet can be divided into high seas trawlers above 45 metres, large cutters between 23 and 45 metres and smaller cutters below 23 metres. The high seas trawlers target mainly Greenland halibut, cod and redfish in Eastern Arctic and Greenland waters, the large cutters target saithe, cod, hake and haddock, the ones around 24 metres (eurocutters) also fish *Nephrops*. These vessels fish almost exclusively in the North Sea and Skagerrak. Some eurocutters shift temporarily to shrimp beam trawling or pelagic trawling for herring. The vessels of 20 metres and below almost exclusively fish in the Baltic Sea, targeting mainly cod, flatfish and – seasonally switching to pelagic gear – herring and sprat.

This indicates that the DCF length thresholds divide the demersal fleet into segments with heterogeneous fishing patterns. Thus, the performance indicators in most cases represent a mixture of different fisheries. For 2021, a net loss for demersal trawlers over 40 metres was estimated at EUR -7.5 million was estimated after a net profit of EUR 2.4 million in 2020.

For 2021, a net profit of EUR 1.4 million was estimated for demersal trawlers between 24 and 40 metres after a net loss of -EUR 960 000 in 2020.

The profitability of the vessels >40m is partly estimated upon internal prices as the vessels are part of companies that also operate in fish processing. This means that the profit is not necessarily assigned to the vessels only, but may be made at an advanced stage of the value chain as well. Two new high seas' demersal trawlers of 80m entered the fleet in 2017. Two newly built vessels slightly below 40 metres entered the fleet in 2019. These investment activities are a clear indication of long-term profitable fisheries. However, due to uncertainties in the context of Brexit and negotiations with Greenland and Norway one of the newly built large trawlers was sold in 2021 and replaced by a smaller, but older trawler. This trawler is going to be replaced by a newly built larger trawler in 2024.

For the segments with medium sized demersal trawlers (18-24 metres) net profits were determined (EUR 170 thousand), but as described before, this is a mixture of North Sea and Baltic Sea vessels. For the vessels below 18 metres, net losses were estimated at -EUR 0.6 million. In both cases, the poor status of Western Baltic cod had a negative impact on the profitability.

*Vessels using fixed nets and other passive gears*

Larger fixed netters and potters (between 26 and 31 metres) operated almost exclusively in Western waters, targeting anglerfish or red crab. Smaller vessels using passive gear almost exclusively operate in the coastal areas of the Baltic Sea. Main target species are cod, herring, and to some extent freshwater species in the brackish Bodden areas. All the smaller vessels fishing in the Baltic Sea suffered from very low TAC of Western Baltic cod and herring, making a targeted fishery impossible.

As the number of vessels in all related segments further decreased, they had to be clustered into one segment for confidentiality reasons. This cluster is quite heterogeneous, though. For the cluster a net loss of -EUR 2.2 million was estimated for 2021.

Vessels <12m using passive gear are covered under the small-scale chapter.

- *Drivers affecting the economic performance trends*

As the German fleet is dominated by trawlers, the fuel price always has a major impact on the overall economic performance. In 2021, fuel expenses of the non-pelagic fleet increased considerably (about +57%) from 2020, mainly due to increased prices, but also due to a 25% increase in consumption.

Prices for brown shrimp have a significant influence on the performance of the national fleet, as it has been the most important species of the German fleet in terms of value (except for 2019). In 2019, landings decreased considerably by about 51% from an average level, while prices per kg also dropped (-25%), and thus the total value of brown shrimp landings decreased dramatically by about 63% compared to 2018. In 2020, both prices and landings increased slightly, but due to still low catches the revenues remained very low compared to years prior to 2019. In 2021, slightly higher average prices could be achieved (+10%). This trend continued in 2022 (+28%). Prices for Greenland halibut decreased -24% in 2021. Catches are mainly sold to China, and due to lockdown consequences and altered exchange rates the achieved prices decreased. For all other species with major importance only minor price alterations could be observed.

The MSC certification remains important for sales of fish. Certification results in stable or higher prices. In several cases it has become a prerequisite for sales due to market requirements. For the high seas fisheries, important pelagic fisheries (North Sea herring, Atlanto-Scandian herring, blue whiting), were MSC-certified until the end of 2020. In March 2019, the mackerel certificate was suspended due to a lack of comprehensive international agreement on quotas (according to MSC), while by the end of 2020, MSC certificates on Atlanto-Scandian herring and blue whiting were suspended, due to an insufficient stock management (according to the MSC). The Atlanto-Scandian herring catches account for about 50% of the total MSC-certified herring catches. In March 2020, the European South Pacific mid water trawl jack mackerel fishery was certified for five years. In 2020, the Baltic sprat fishery was certified. North Sea herring was the only pelagic high seas fishery in European waters with relevance for the German fleet which was MSC certified in 2021.

All demersal roundfish fisheries of the high seas fleet are MSC certified (cod, haddock, saithe in Norwegian waters, North Sea saithe). In 2019, certification of Western Greenland halibut was finalised. All 2021 audits were successfully finalised. The North Sea cod certification was suspended in 2019 as the stock dropped below safe biological limit.

The cutter fishery on brown shrimp was certified in 2017.

*Markets and Trade*

Brown shrimp has been the most important species. It is mainly landed in Germany, to some extent also in the Netherlands. The wholesale market is dominated by two companies which have a huge influence on the price. However, as fishers formed a producer organisation to gain market power the detrimental results of 2011 did not repeat. Just to the contrary, prices for brown shrimp developed favourably until 2019, thus increasing the profitability of the related fishery. However, in 2019 the market was saturated as a considerable amount of the catch had been deposited in cold storage. As a consequence, priced dropped considerably, even though the catch dropped as well. In summer 2019 there was a temporary closure of the shrimp fishery.

Overall, in 2021 only about 24% of the total catch was landed in German ports, corresponding to about 37% of the total value, a sharp decrease from 2020 (28% and 50%, resp.). Almost the entire catch of pelagic species, with high volume, but low price, is landed abroad, mainly in the Netherlands. About 46% of the catch was landed in the Netherlands, about 24% in Denmark, and about 7% in Morocco. The degree of self-sufficiency for fish is rather low in Germany, about 16%. Thus, international trade plays a crucial role for the supply of the German market with fish products.

*Management instruments*

The predominant management measure are TACs.

The introduction of the LO was implemented with little extra effort in the pelagic as well as in the saithe fisheries as these fisheries traditionally have had low bycatch rates. In the case of cod and flatfish fisheries serious problems have been reported. In the Baltic Sea high amounts of undersized cod were observed. According to the industry no technical measures are available to solve that problem.

In 2019 and 2020, the closure of fisheries due to choke species could be avoided by quota exchange, to a considerable amount with the United Kingdom. The initial ban of quota exchange with the United Kingdom in 2021 was a problem for certain fisheries in the North Sea.

The pelagic industry is striving for EU membership in the North Pacific Fisheries Commission in order to complement fishing activities in the Southern Pacific with fishing activities in the Northern Pacific and thus increase the overall efficiency. The EU application was launched in 2018, the contract was finally concluded in spring 2021, suggesting extended catch opportunities for the high seas pelagic fleet in the future.

*Status of key stocks, TACs and quotas,*

Several stocks targeted by the German high seas fleet, e.g. Arctic and Greenland cod, Arctic haddock and saithe, are managed at MSY level. However, the certificates for Atlanto-Scandian herring and blue whiting were suspended by the end of 2020 due to an insufficient stock management, according to the MSC. In 2021, only about 33% of the catch of the German high seas fleet in the Northern Atlantic was MSC certified (2020: 67%).

Quota for 2021decreased -14% for the most important herring stocks and -22 for mackerel while the blue whiting dropped again by about -8%. In contrast to previous years, the horse mackerel quota remained rather stable. High seas pelagic fisheries in European waters targeted herring, mackerel, horse mackerel and blue whiting in European waters as well as sardine and mackerel in Moroccan waters. In 2021, one pelagic trawler moved to South Pacific waters for part of the year. According to the industry, high seas pelagic catches in European waters decreased -20% in 2021.

The demersal sector was mainly affected by further reduced cod quotas in the North Sea (-20%) while Greenland cod quota was increased (+22%). Quota on Norway cod and redfish stocks targeted by the high seas fleet were lowered -10% and -7%. The quota for Greenland halibut remained almost unchanged (-5%).

High seas demersal trawlers were struggling with a 2–4-month delay of the fishing season due to pending negotiations with Norway and Greenland. Overall, fisheries in Norwegian waters, Svalbard and the Barents Sea were regarded positive. However, catches of the targeted species (saithe, cod and haddock) decreased 36% from 2020. For a short period, a directed fishery on saithe took place in the North Sea, with mediocre results. Again, Greenland halibut fisheries in Eastern and Western Greenland waters were highly efficient. However, due to poor weather conditions and the delayed begin of the season the Eastern

Greenland halibut quota could not be fully exploited. Western Greenland cod and halibut as well as redfish quota could be fully exploited.

Brown shrimp, for most years the most important species of the German fleet, is not subject to TAC. Catches depend mainly on abundance, effort and prices. In 2020 catches increased slightly by 12%, while prices increased 32%. Catches in 2021 remained low (-3%) while prices increased slightly (+12%).

Most relevant North Sea stocks (herring, saithe, plaice, haddock, sole and *Nephrops* are managed at MSY level. In 2020 North Sea herring quota decreased -14% while and North Sea cod and plaice quota were cut by -20% each. Plaice quota remained almost unchanged (-3%) while saithe quota decreased by -30%.

The quota for Eastern Baltic cod stock was cut by -70% in 2021, thus resulting in a continuation of the moratorium for the targeted fishery. This quota is used for bycatch only. The quota for Western Baltic cod stock was increased slightly by +5% from a low level (4 000 tonnes in 2021). In the past, the Western cod stock has provided substantial amounts to the income of coastal fisheries and the continuing decline of quota over the last years caused a tense economic situation. Alternative fishing options, e.g. on herring or freshwater species, are limited and do not allow for a full compensation of losses in the cod fishery. Moreover, the Western Baltic herring quota was cut by -50% in 2021, thus amounting to less than 1 600 tonnes, which is less than 10% of the 2017 quota. The sprat quota remained almost unchanged in 2021 (+5%). Baltic plaice quota increased +5% in 2021. Overall, the ongoing unfavourable development of the Baltic Sea stocks is seriously threatening the existence of commercial fisheries.

In 2017, management measures for the recreational cod fishery (western Baltic stock) were introduced in the Baltic Sea to share the burden of rebuilding the western Baltic cod stock. These included a bag limit of three cod per day and angler in the closed season (Feb + March) and five cod per day and angler during the rest of the year. For 2020 the bag limit was set at five per day. Conditions for the closed season were kept constant. For 2021, the bag limit for Western cod was set at 5 fish per day, and 2 fish during the spawning season.

*Management instruments*

The predominant management measure are TACs.

The introduction of the LO was implemented with little extra effort in the pelagic as well as in the saithe fisheries as these fisheries traditionally have had low bycatch rates. In the case of cod and flatfish fisheries serious problems have been reported. In the Baltic Sea high amounts of undersized cod were observed in previous years. According to the industry no technical measures are available to solve that problem. However, in 2021, Baltic cod fishery was practically closed due to very low quotas of the related stocks.

The initial ban of quota exchange with the United Kingdom in 2021 was a problem for certain fisheries in the North Sea as choke species became an issue. This could be overcome over the course of the year when exchange mechanisms were re-established.

The pelagic industry is striving for EU membership in the North Pacific Fisheries Commission in order to complement fishing activities in the Southern Pacific with fishing activities in the Northern Pacific and thus increase the overall efficiency. The EU application was launched in 2018, the contract was finally concluded in spring 2021, suggesting extended catch opportunities for the high seas pelagic fleet in the future.

*Innovation and development (role of EMFAF)*

For the German fleet, only limited initiatives for innovation can be observed. Most of the large vessels have been replaced in recent years or will be replaced by newly built vessels, all of which are equipped with cutting edge technology. This investment was not eligible for co-funding by public money. Due to this investment the depreciation cost have increased in the related segments. Yet the return on the investment in modern equipment could has not fully become effective as external impacts, especially Brexit consequences, have outweighed these benefits. However, all these vessels are more fuel-efficient than their predecessors and thus help reducing energy cost.

The group of vessels <35m is overaged. Investment in new vessels is scarce and can be observed only in the small-scale range. In general, the industry is reluctant to invest in new vessels as recent years were economically detrimental for most enterprises while the outlook remains uncertain. The amount of

subsidies used for investment in innovation is very limited. According to the industry, the funding conditions are too restrictive to be attractive.

- *Nowcasts for 2022-23 and beyond*

  *Model results and outlook for 2022*

Landed weight decreased again by about 7% in 2022 compared to 2021, with an 8% increase in landed value. Projections suggest that operating costs of the German fleet increased by 5% in 2022. Thus, the slight increase in value of landings in 2022 was partly offset by higher costs. Gross value added increased 18%, while gross profit increased even further (42%) from a very low level (EUR 11 million in 2020), while net profit remained negative (-EUR 7 million).

Projection results, suggesting that the German fleet operated at a loss in 2022, are in line with recent statements from the industry. Negative economic circumstances can also be seen in performance indicators GVA to revenue (43% in 2022, after 53% in 2020 and 39% in 2021) and gross profit margin (9% in 2022, after 17% in 2020 and 7% in 2021).

One main driver for an ongoing low profitability in 2022 was the continuing low level of both catch and revenues, combined with considerable increase in fuel cost. This is due to an overall decrease in quota for important stocks, e.g. saithe, mackerel and redfish while the North Sea herring quota was substantially increased. The high seas fishery suffered from consequences of the Brexit which consist not only of quota cuts, but also of difficulties in renewing fisheries agreements especially with Norway and to a lesser extent with Greenland. In contrast to preceding years revenues from the brown shrimp fishery were improved. Brown shrimp is a species without TAC and the most important species for the cutter fleet.

Fuel prices increased sharply in 2022 as consequence of the Russian invasion to the Ukraine after a year 2021 with already increasing, but still average fuel prices.

In 2022, the impact of the COVID-19 pandemic on fisheries has decreased as most lockdown measures or other restrictions which might have an impact on fisheries have been cancelled.

Parts of the fleet were suffering from uncertain fishing opportunities in British, Norwegian and Greenland waters as the fishing agreements were signed only in the second quarter of 2022. Some fisheries highly depend on quota exchange with the United Kingdom. The industry welcomed this option becoming effective in 2022 again.

- **High seas fleet**

Overall, 2022 was regarded negative by the high seas sector for high seas fisheries. Total landings further dropped about 7% from 2021. While the demersal sector could improve with respect to value of landings (+47% from a very low level in 2021), due to substantially improved catches in weight and especially value of cod and Greenland halibut. The pelagic sectors faced a 9% decrease in landings and 1% decrease in value, mainly due to fisheries in Moroccan waters. Consequences of Brexit on quota played an important role for the pelagic fishery.

The four German high seas demersal trawlers achieved positive results in the demersal fisheries in Norwegian waters, Svalbard and the Barents Sea. Catches increased 12%, compared to 2021 when catches had dropped 36% from 2019. Targeted species were saithe, cod and haddock. In contrast to preceding years, a directed fishery on saithe took place in the North Sea, however, success was limited. Again, Greenland halibut fisheries in Eastern and Western Greenland waters were highly efficient, but as in 2021, due to poor weather conditions and the delayed start the Eastern Greenland quota could not be fully exploited. The Greenland quota on cod, redfish and Western Greenland halibut were fully exploited.

Three German high seas pelagic fisheries in European waters targeted herring, mackerel, horse mackerel and blue whiting in European waters as well as sardine and mackerel in Moroccan waters. In some years, jack mackerel in the South Pacific is targeted by one vessel, but not in 2022. Quota for the important North Sea herring increased by +22%, mackerel quota was decreased by -9%.

As in previous years the LO was not a limiting factor for the high seas fleet.

In 2022, MSC certificates on Atlanto-Scandian herring and blue whiting were suspended, due to the unilateral claim of extra quota by Norway and Faroe. Hence, the only herring fishery with certificate was the one on North Sea herring. All demersal whitefish fisheries (cod, haddock, saithe) in Norwegian and

Svalbard waters as well as the Greenland halibut fishery were certified, as well as the North Sea saithe fishery. All annual audits were finalized successfully in 2022.

- **Cutter and small-scale fleet**

After three subsequent challenging years the cutter and small-scale fleet was again facing economically severe circumstances in 2022. A steep increase in fuel price as consequence of the Russian war in the Ukraine kept many fishers from going fishing at all. Due to increased inflation, the private consumption of fish decreased slightly. Consequences of the Covid 19 pandemic on the fish market have further deceased in 2022.

The brown shrimp fishery, backbone of the cutter fleet, managed to keep the weight of landings stable while prices increased considerable, so the value of landings increased 38%, but from a very low level.

The North Sea flat fish fishery is affected by the ban of pulse fishing, as fishing with traditional gear is very fuel-intensive. Only 20% of the sole quota was exploited. As the German Nephrops quota is very low, the fishery has been based grossly on quota exchanges with the United Kingdom. This mechanism could be applied again in 2022, and this fishery was regarded satisfactory.

Baltic fisheries suffered from another year with severe quota cuts for all relevant species. In 2022, quotas were reduced by 50% for Western herring (after -60% in 2020 and -50% in 2021) while the Eastern cod quota remained at a very low level (after -92% in 2020 and -88% in 2021), which is used only as bycatch quota. Western cod quota was lowered substantially again (-88%). A moratorium was set on targeted cod fisheries, and the quota was used for bycatch only. Plaice quota was increased 25% and sprat quota +6%. Payments for temporary and permanent cessation have been carried out by the German authorities.

*Model results and outlook for 2023*

In general, the major factors influencing the profitability of the German fisheries are fuel price and revenues. With few exceptions (e.g. brown shrimp) fish prices do not fluctuate considerably. Thus, the volume of catches is the main factor which determines the revenues. Most important species targeted by the German fleet are managed under a TAC regime. The fuel prices showed a substantial increase in 2022 as a consequence of the Russian invasion in the Ukraine and have dropped since, but not to the initial level. Unfavourable quota development affects the performance of the German fisheries also in 2023. Mainly the pelagic fleet is suffering from quota reductions as a consequence of the Brexit.

The quota exchange opportunities with the United Kingdom have been an issue for the German fleet in 2021 as these exchanges have been to mutual benefit for both parties. However, these opportunities were effective in 2023 again.

As far as the model results as indicated in Figure 4.10 are concerned, they might be partly biased by some changes in the underlying data. Mainly the introduction of a complete dataset for the German pelagic fleet may cause some inconsistency in time series as well as in model results. Therefore, the figures for 2021 and the model results for 2022 and 2023 should be used with caution.

- **High seas fisheries**

For 2023, North Sea herring quota decreased 9% after a 22% increase in 2022. Mackerel in the North-Eastern Atlantic further decreased 5%, while Arctic cod and Greenland halibut are not yet finally fixed.

One demersal high seas vessel is under construction and expected to enter the fleet in late 2023, replacing an older vessel of the same kind.

- **Cutter and small-scale fleet**

The quotas for North Sea stocks relevant for the German cutter fishery underwent some changes in 2023. The main demersal roundfish quotas in the North Sea were increased by 17% (saithe), 60% (cod) and 25% (haddock) while the plaice quota remained almost unchanged (-2%). Brown shrimp being the most important species for the German cutter fishery is not managed by TAC. As there is no stock assessment the abundance and thus the catches of brown shrimp cannot be properly forecasted. Almost all enterprises managed to survive three detrimental years in a row (2019-2021) and, concerning catch and revenues, an average year 2022.

All Baltic cod and herring quota remained unchanged in 2023 at a very low level which is barely sufficient for bycatch in flatfish fisheries. A directed fishery on these stocks has been ceased. Plaice (+25%) quota increased, but this cannot compensate for the ongoing losses for the main species herring and cod. Overall, the German fishery in the Baltic remains at stake.

Payments for temporary and permanent cessation by the German authorities are likely to be continued, but can only compensate for a fraction of the loss due to the quota cuts.

- *Methodological considerations and data issues*

*General remarks*

Capacity, logbook and landings data are derived from sources which are covered by different legislations. All these data are available exhaustively. That means that all capacity, landings and effort data are represented at 100%.

The only exception is the group of vessels below 8 metres without logbook obligation. These vessels are sampled for effort data. The remaining variables (cost, employment, fuel consumption) are estimated based on results from an accountants' network and from surveys with questionnaires.

All data on the high seas fleet were collected exhaustively (100%).

The data basis for fleet segment level estimations has become broad over the years. All fleet segments with major contribution to the total catches of the German fleet have been sampled with satisfactory response rates. As segments are not necessarily homogeneous, the results can be quite variable which is reflected in higher coefficients of variation.

The German fishing fleet contains a small number of pelagic vessels which are owned mainly by one company and are hence subject to confidentiality. In 2023, the related company gave permission to publish the data for 2021 onwards. Therefore, the data for recent years are comprehensive, but the time series is interrupted.

As up to 2020 most data for the pelagic fleet are excluded from the dataset, the regional analysis for that time is affected as well. The pelagic fleet mainly operates in the North Sea and North Atlantic (herring, mackerel, blue whiting). Data on pelagic fisheries in the Baltic are hardly affected, as they are performed on a seasonal basis, and vessels are assigned to the DTS segment, which reflects their major activity during the year.

Vessels which targeted blue mussels were excluded from the analysis because they are defined as operating in the aquaculture sector. Not all of the participating vessels can be identified by the first gear entry in the fleet register as some vessels are using beam trawls. Instead, the relative catch of blue mussel was used, thus allowing an unambiguous identification of aquaculture vessels. Usually, the only catch of these vessels are blue mussels.

For the year 2020 and beyond the total number of jobs will be available exhaustively (see below under "Changes…"). On this basis, fulltime equivalents are estimated with reference to the days-at-sea and the crew size. This information is also used to estimate the figures by fleet segment.

It has to be pointed out that German employment data follow the approach of minimum requirement of activity, i.e., a person that goes fishing for twenty days or less during the year is not accounted for one employed person. If one day at sea would qualify for counting a "person employed" figures would exceed official statistics by at least 50%.

*Changes in respect to previous years*

From 2020 onwards, employment and demographic data are exhaustively available from the totals from the Employer's Liability Insurance Association. This results in a break in the time series as data from former years were estimated with reference to days at sea and crew size, thus resulting in some cases in an over-estimation. Insurance Association data are not resolved at fleet segment level. Therefore, the figures are assigned proportional to effort and vessel information.

For 2021, all data could be provided for the segment of pelagic trawlers due to permission from the company owner. This will result in a completed picture for the national fleet. However, consistency in time series could not be achieved for all data. Therefore, some figures and data should be taken with care.

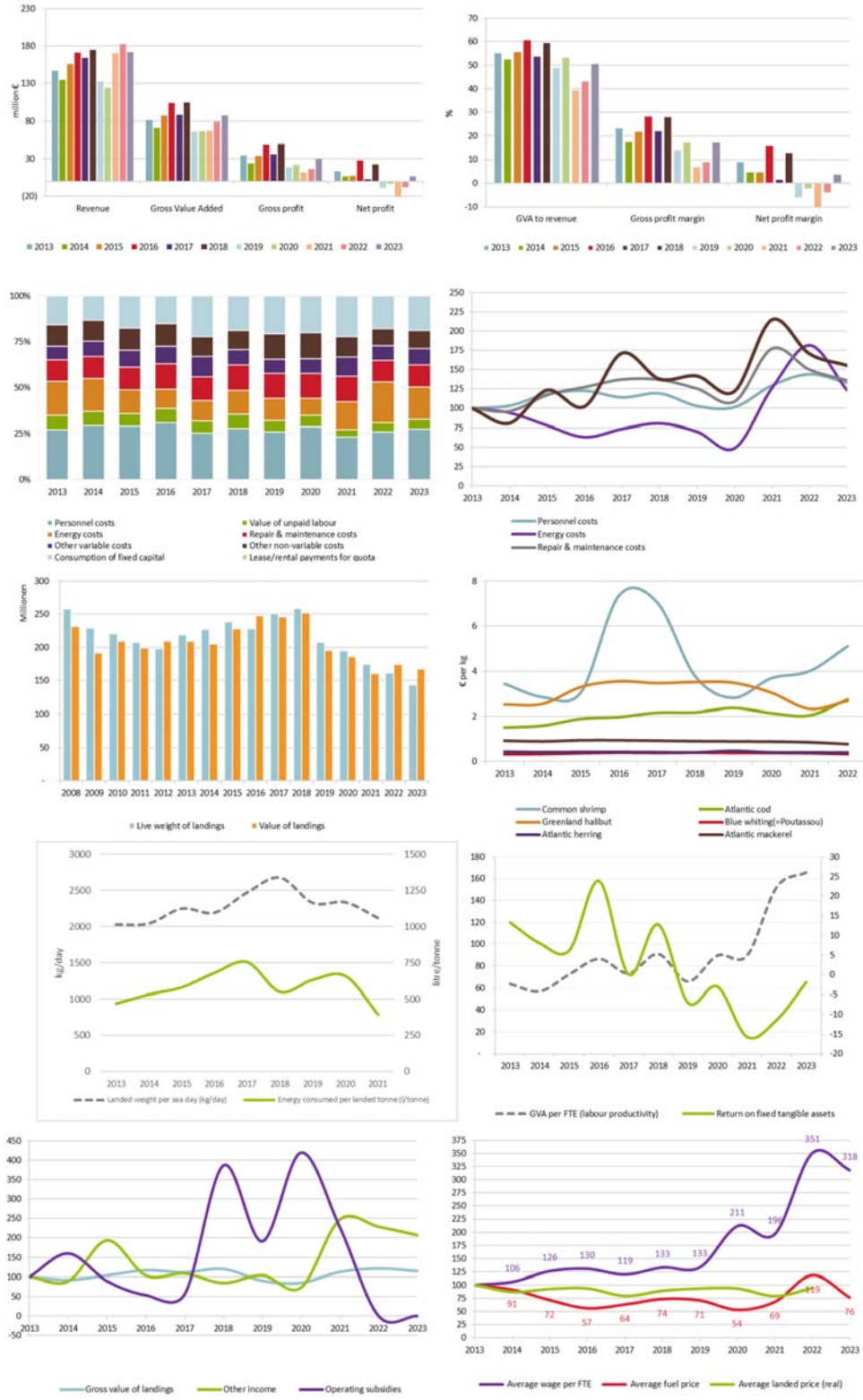
*Improvements achieved within data collection for 2021*

The aforementioned change in data availability for employment and demographic data is a step forward in quality. Moreover, the inclusion of the pelagic fleet results in a complete overview for the German fishing fleet from 2021 onwards.

*Problems identified*

An increasing reluctance of responding to questionnaires had to be observed. This applies in particular to vessels with foreign ownership, forming segments with few vessels only. In these cases, estimation and raising procedures are based on few or even no response at all and are thus limited in robustness.

**Figure 4.10** Germany: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.10 Greece

- *Short description of the national fleet*

*Fleet capacity*

In 2021, the Greek fishing fleet consisted of 12 247 registered vessels with a combined gross tonnage of 62 535 GT and total power of 360 931 kW. The average vessel age is 32 years, and the mean LOA of vessels is 8 metres. The overall capacity of the Greek fleet has a falling trend between the previous decade and 2021. The size of the Greek fishing fleet decreased, with the number of vessels falling by 12%, while total tonnage and power also reduced by 6% and 5%, respectively. The decreasing number of vessels stemmed from the reduction in large scale vessels (-12%) and small-scale vessels (-19%). A significant reason is the ageing of the population without any attractive motive for successors to stay in business. Furthermore, in 2020, the Greek fishing fleet significantly decreased due to EMFF Measure 6.1.10 under the Union Priority 1 for permanent cessation (751 vessels decided to be excluded from the registry). Finally, it has to be mentioned the high inactivity (19%) that the Greek fleet faces, the severe problems from phytoplankton in the Thracian Sea, and the problems caused due to the COVID-19 pandemic.

*Fleet structure*

In 2021, the Greek fleet had 9 970 active vessels. The majority of the active vessels (9 329) were part of the SSCF with a combined gross tonnage of 20 135 GT and total power of 184 260 kW. Additionally, there were 641 vessels belonging to the LSF with a combined GT of 36 053 and total power of 128 982 kW.

*Employment and average salaries*

Employment was estimated at 16 370 jobs, corresponding to 12 665 FTEs with a very low average annual wage per FTE and total employed (EUR 8 526 and EUR 6 596, respectively) in 2021. As a result, employment in the sector faces a significant decreasing trend. Total jobs decreased by 12% and FTE by 13% in 2021 compared to 2020.

*Fishing activity and production*

In 2021, the Greek fleet spent 1.5 million days at sea (DaS), continuing the decreasing trend (-3%), of which 6.5% refers to the LSF and 93.5% to the SSCF. The amount of energy consumed was estimated at 69 million litres and thus was lower than in 2020 (-12%). The average amount of energy consumption was 6 956 litres per vessel. Energy costs were increased, increasing from about EUR 50.8 million in 2020 to EUR 52 million in 2021. This increase is due to the fuel price increment despite the lower activity level due to the reduction of the total number of vessels, related restrictive measures on the activity due to the COVID-19 pandemic, and severe problems from phytoplankton in the Thracian Sea. The fishing effort is concentrated mainly in the Aegean (GSA 22), approximately 70%, and the remaining effort is deployed in the Ionian (GSA 20) 25% and Crete (GSA 23) 5%.

The Greek fishing fleet targets a variety of species. The leading Greek species regarding the landing weight are European pilchard (7.4 million kg), European anchovy (7.1 million kg), European hake (2.7 million kg), deep water rose shrimp (2.3 million kg), red mullet (2 million kg), common octopus (1.4 million kg), caramote prawn (0.99 million kg), surmullet (0.92 million kg), and red porgy (0.52 million kg). Therefore, the core Greek species regarding landings value are European hake (EUR 26.9 million), red mullet (EUR 19.5 million), European anchovy (EUR 18.4 million), European pilchard (EUR 18.1 million), surmullet (EUR 14.4 million), caramote prawn (EUR 14.2 million), red porgy (EUR 11.1 million), common octopus (EUR 10.4 million), and deep water rose shrimp (EUR 10.9 million).

- *Economic performance for 2021 and recent trends*

*National fleet performance*

Total revenue (income from landings and other income) earned by the Greek fleet in 2021 was estimated at EUR 283 million, following a significant reduction of 18% compared to 2020. This reduction happened due to the lower activity of vessels at sea (-3%), with decreased landings in weight (-13%) and value (-23%). The reasons for the decreasing trend of fishing activity could be the COVID-19 pandemic, the problems with phytoplankton in the Thracian Sea, and the high levels of inactivity in the sector. The total revenue of the Greek fleet was generated 49.9% (EUR 141 million) by the LSF and 50.1% (EUR 142 million) by the SSCF. Greek fishing vessels' primary source of income is the income from landings, while some segments also receive direct subsidies stemming from duties refunds. Recently, fishing tourism

activities gained importance with the appearance of income streams increasing. However, there were no income sources from fishing rights or recreational fishing.

Moreover, for 2021, it is essential to mention that the Greek Ministry of Rural Development provided support to alleviate the fishing sector from the financial consequences of COVID-19. More specifically, under Measure 3.1.9, "Temporary cessation of fishing activities as a consequence of the pandemic outbreak of COVID-19", of the Greek Operational Program 2014-2020, 638 vessels received the aid of approximately EUR 15.5 million. More specifically, 170 SSCF vessels were supported with roughly EUR 1.2 million, while the remaining 468 were LSF vessels supported with approximately EUR 14.3 million.

Regarding the unusual situation for 2021, the income generated from landings covered the expenses for the Greek fleet. Therefore, the amount of GVA, gross profit, and net profit generated by the fleet in 2021 were EUR 150 million, EUR 42 million, and EUR -321 thousand. Overall, the Greek fleet made a loss without including the operating subsidies for COVID-19. Once we have the amount of aid for COVID-19, the subsidised net profit will be EUR 21 million for the sector.

Moreover, including the imputed value of unpaid labour provides the activity with a high positive income for fishers in 2021. As most Greek fishing vessels are mainly based on family labour, this figure clarifies the sector's economic sustainability improvement. It is also important to emphasize that this figure is estimated as the opportunity cost of labour, using the average daily wage per fisher. However, in many cases, due to the lack of labour demand in local economies, which is even more intense due to the on-going financial recession, the opportunity cost of labour is lower or even zero.

The total expenses of the Greek fleet are EUR 283 million, which decreased compared to 2020. The main expenses of the fishing vessels are personnel costs (38%), more precisely, wage and salaries (16%), and the imputed value of unpaid labour (22%). Energy costs and other variable costs follow with an 18% share, respectively. Energy costs exceed a total of EUR 52 million, which means an increase (2.5%) compared to 2020. Specifically, wages and salaries were equivalent to EUR 45.7 million, derived mainly from LSF. Imputed labour costs were estimated at EUR 62 million and derived mainly from small-scale vessels.

Other variable costs, including commercial and other operating costs, are also significant and present a decrease compared to the previous year. These costs were estimated at EUR 52 million. On the other hand, the non-variable costs were EUR 8 million, representing only 3% of total expenses, while repairs and maintenance costs reached around EUR 21 million, revealing lower levels compared to 2020. Finally, the annual depreciation costs accounted for 15% of total costs (EUR 42 million).

As far as the value of physical capital (depreciated replacement value) is concerned, it was equal to EUR 143 million. Moreover, the total investments in physical capital in 2020 were around EUR 27 million.

Overall, the operational cost has had a decreasing trend. Only the energy costs increased mainly due to higher fuel prices in 2021. Wages and unpaid labour followed a decreasing trend, mainly due to the limited activity due to COVID-19 or phytoplankton problems met in some fishing areas.

*Resource productivity and efficiency*

The fleet average gross profit margin in 2021 was 15%, indicating a reasonable operating efficiency for the sector. The Net profit was negative, following a significant reduction due to the COVID-19 effect, but the Subsidised Net profit was positive with the assistance provided to Greek fishers.

Labour productivity (GVA/FTE) for 2021 was estimated at EUR 11 867 per FTE, following a significant decrease in contrast to the period before COVID-19, when the trend had started to follow an increasing trend. The average wage per FTE was estimated at EUR 8 526, following a slight decrease from the previous five years.

Fuel consumption per landed tonne was estimated at 1 345 litres/tonne of landed fish in 2021, and it has followed a slightly increasing trend since 2017. The landed weight per sea day was estimated at 33 kg/day, presenting a decrease of 11% compared to the previous year.

The short Break-even Fuel price and long-term Break-even Fuel price indicators indicate that the average fuel prices for LSF are acceptable. However, the SCF and mainly segments like DFN0612, DFN0006, and FPO0006, which comprise most of the Greek fleet, severely affected economic performance and financial sustainability due to high fuel prices. DTS1824 and DTS2440 had high fuel intensity compared to HOK or DFN segments. However, the DTS2440 segment indicated high energy efficiency (22%) above the

national average (11%) compared with PS1824, which had the lowest among all the Greek fleet segments.

**Table 4.12** Greece: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| GRC MBS DFN0612 NGI | 1.02 | 0.97 | 0.05 | 20% | 1,568 |
| GRC MBS DTS2440 NGI | 0.57 | 1.61 | 1.26 | 22% | 2,146 |
| GRC MBS HOK0612 NGI | 1.06 | 1.11 | 0.40 | 19% | 1,752 |
| GRC MBS PS 1824 NGI | 0.55 | 2.02 | 1.53 | 10% | 446 |
| GRC MBS DTS1824 NGI | 0.59 | 0.93 | 0.72 | 31% | 3,189 |
| National average | 0.94 | 1.51 | 0.65 | 11% | 1,347 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020)

- *Performance by fishing activity*

  *Small-scale coastal fleet*

In Greece, 93% of the vessels were SSCF. Specifically, there were 9 329 SSCF vessels with a combined 20 135 GT and total power of 184 260 kW in 2021. The number of SSCF vessels decreased significantly by 12% from 2021 to the previous year, following the general trend of the Greek fishing fleet. In 2021, the value of landings of the SSCF was estimated at EUR 122 million, accounting for 46% of the Greek landings value. However, the value of landings (-21%) and the revenue (-8%) faced a significant reduction compared to 2020 due to the related restrictive measures on the activity for the COVID-19 pandemic and severe problems from phytoplankton in the Thracian Sea.

In 2021, SSCF spent 93.5% of the Greek days at sea and consumed 24 million litters of fuel, 16% less than in 2020. Nevertheless, the corresponding energy costs continue to be significant for Greek fishers. This is because the SSCF fishers, due to their limited access to credit, do not have the flexibility to buy their fuel in advance; instead, they buy a limited amount to cover only their very short-term needs. This is the main factor for increases in energy costs because they do not take full advantage of the reduced fuel prices.

The income generated from landings was significantly less than the expenses for the SSCF fleet. Therefore, the Greek SSCF made losses despite the economic performance improvement before COVID-19 (AGRERI, 2023). The amount of GVA and the gross profit generated by the SSCF fleet in 2021 were EUR 74 million and -EUR 822 000, respectively. The resource productivity and efficiency indicators are low compared to the same indicators calculated for all the Greek fleets. The labour productivity indicator (GVA/FTE) was EUR 7 017, lower than the national average labour productivity (EUR 11 867), and the revenue per vessel was EUR 15 259, indicating an improvement compared to 2020.

The SSCF employs a total of 12 521 engaged crew, thus contributing to 76% of the total national employment of the sector. Most of the engaged crew is unpaid labour, mainly members of the captain's family. This result refers to the significant contribution of the SSCF to local employment.

The SSCF mainly exploits the extensive Greek coastline, using polyvalent passive gears (specifically nets, longlines, pots, and traps). The vessels are primarily family-owned and characterized by low invested capital. Moreover, their landings are sold at higher prices than the LSF and are mainly directed to the market through very short supply chains. Although the vessels of this segment are small, they are vital for the local economies regarding job opportunities and have strong ties to them. They usually offer income and employment to poor and isolated areas with few alternative economic activities. Therefore, this segment highly contributes to the social and economic sustainability of the coastal communities.

*Large-scale fleet*

The LSF contained 641 active vessels with a combined 36 399 GT and total power of 125 311 kW. Larger vessels with higher engine power levels can conduct more fishing operations in deeper fishing grounds. However, these vessels mainly use active gears (bottom trawlers and purse seiners) and are characterized by high operating costs.

The LSF employs a total of 3 849 engaged crew, thus contributing to 23.5% of the total national employment of the sector with 2 025 FTE. However, in 2021, LSF employment significantly reduced (32% in FTE terms and 12% in total jobs).

In 2021 LSF spent 6.5% of the Greek days at sea and consumed 44 million litres of fuel. The income generated from landings was high enough to cover expenses for the LSF fleet. The amount of GVA, the gross profit, and the net profit generated by the LSF fleet in 2021 were EUR 75 million, EUR 43 million, and EUR 25 million, respectively, presenting a significant decrease. Overall, the Greek LSF made a positive profit. Still, economic performance has been affected by COVID-19 with a considerable reduction unless an improvement was explored before the pandemic (AGRERI, 2023). Nevertheless, the resource productivity and efficiency indicators are positive. The labour productivity indicator (GVA/FTE) for LSF was EUR 37 348, presenting a decrease (-13%). The profitability measured in terms of net margin is higher for the fleet segments DTS24-40m, PS24-40m, and HOK12-18, with positive profitability also for PS18-24m, PS12-18m, and DTS18-24.

- *Performance of selected fleet segments*

The Greek fleet is highly diversified, with a broad range of vessel types targeting different species. The national fleet comprised 14 (DCF) segments and 9 970 active vessels in 2021. Overall, the Greek fleet had positive profitability. More specifically, four fleet segments had high profitability, one reasonable, and nine had weak profitability. The performance results of selected fleet segments are presented below.

*Netters 6-12m*

This is the largest fleet segment of the Greek fishing fleet, containing 4 721 vessels. The total value of landings was EUR 67 million, having the first position with a 26% share of the Greek total landings value. DFN06-12m segment employed 6 680 FTEs, having the first rank in terms of employed persons, representing 53% of the Greek fishing fleet. In recent years, DFN0612m faced a decreasing trend in the number of vessels (-5%). Furthermore, in 2021, the DFN 06-12m segment faced significant effects due to COVID-19.

It is also important to mention that this segment produces the highest GVA among fleet segments, which is equal to EUR 40 million, which reveals its substantial importance. Taking into consideration that the majority of these vessels operate in poor and isolated areas, with very few alternative economic activities, the importance of this sector to the local economies is even more apparent. The imputed value of unpaid labour is the main cost item (40% of total expenses) and represents the family contribution to labour. In 2021, the fleet segment of DFN0612 had weak profitability with losses. This segment spends, on average, 164 DaS per year. The average wage per FTE is EUR 6 193, per employed at EUR 6 297, and the labour productivity at EUR 6 078. Moreover, the profit and the imputed value of labour provide a substantial income to the families of many coastal areas.

*Netters <6m*

It is Greece's second most crucial fish segment regarding the number of vessels employed in 2 001 small vessels. These vessels target multi-species *(*e.g. *Mullus barbatus*, *Mullus surmuletus*, *Merluccius merluccius* and others*).* The total value of landings is EUR 11 million, following a significant reduction (-35%) compared to 2020. This fleet segment employed 1 273 FTEs, referring to an average FTE of 0.63. They spend, on average, 134 fishing days at sea, with a landed weight per fishing day of 5.6 kg/day and a landed value of EUR 44 per day. Most of these vessels are family-owned and usually utilize only family labour. Therefore, the segment's share in the total national value of landings and the national contribution to employment indicates its high importance (4% and 10%, respectively).

Unlike large-scale fisheries, the main cost element is the imputed value of unpaid labour (50%), followed by labour cost (14%) and energy costs (15% of total expenses). Finally, it is worth noticing that although this segment includes very small vessels, it highly contributes to the national economy (GVA of about EUR 8.6 million) and provides livelihood and income for fishers with limited alternative employment. Admittedly, the economic performance is weak, and the net profit is negative, but it also has a social

contribution to providing labour to the families of many coastal areas. The average wage per employed is EUR 5 072, and labour productivity EUR 6 805.

*Longliners 6-12m*

Longliner's total fleet is made up mostly of small vessels less than 12 metres, around 2 379 vessels. This segment has a substantial contribution either to landings or employment. In total, it contributes with 2 694 FTEs representing 21% of the Greek fishing fleet, unless the significant reduction in 2021 from the related restrictive measures on the activity due to COVID-19 pandemic. This figure highlights the major importance to the local rural economies. The imputed cost of labour is the primary type of cost, representing the family contribution to the labour. This has a significant effect due to limiting job alternatives in some specific coastal areas.

HOK06-12m is the third largest fleet segment of the Greek fishing fleet, with 1 552 vessels. The total value of landings was EUR 27.9 million, and the total FTEs employed in this fleet segment were 1 994, representing 16% of the Greek fishing fleet. These figures highlight the importance of this segment to the local and rural economies. The imputed value of unpaid labour was the primary type of cost (32% of total expenses), and as in the previous segment, it represents the family contribution to the labour. This segment spends, on average, 167 DaS per year. Energy costs are also important, contributing to 16% of total costs. It is essential to mention that this segment is a GVA of EUR 14 million, revealing its high importance to rural economies. However, the economic results are weak and made losses in 2021. The labour productivity was only EUR 7 354.

*Bottom trawlers 24-40m*

The bottom trawlers' fleet segment included 218 active vessels with a total value of landings of EUR 74 million, improved compared to 2020 (EUR 60 million) and total employment that corresponds to 823 FTEs. Bottom trawlers have multi-species characteristics and capture numerous fish species, such as *Penaecus kerathurus*, European hake, deep-water rose shrimp, red mullet, surmullet, *Pagellus erythrinus*, picarel, common octopus, bogue, and many others. This segment spends, on average, 202 DaS per year. Management regulations include seasonal (June 1-September 30) and spatial closures, net size changes, and a minimum landing size. Overall, bottom trawlers had positive profitability and followed an improved economic development trend.

DTS 24-40m segment had 135 vessels, with 17 983 GT and total power of 43 131 kW. The average age of these vessels is low (27 years), indicating increased welfare. They spend, on average, 215 DaS per year with a total value of landings of EUR 54 million. The total FTEs is 500, representing around 4% of the FTEs in the sector. The main expenses are energy costs (30%), wages and salaries (18%), and other variable costs (19%). Regarding the value of physical capital, it represents 17% of the total national value of physical capital, while it represents 8.8% of the total national investment for 2021. Finally, it should be noted that this segment appears to have the highest economic performance in the sector. It has a high net profit margin (26.9%) and returns on fixed tangible assets (50.3%), which provide high profitability for this fleet segment. The landings contributed 21% of this segment to the national economy and 19% to the total revenue. The labour productivity is very high (EUR 62 572) and increased (23%) compared to 2020. Overall, the DTS24-40m had a high profitability development.

*Purse seiners 18-24m*

This segment includes 204 vessels operating predominately in areas Aegean (GSA 22) and Ionian GSA 20. Aegean has 85% of the fishing effort and Ionian 15%. Purse seiners fishery is the main fishing gear for small pelagic species, mainly European anchovy and European pilchard, which consist of about 75% of the weight and volume of the landing. The purse seiners conduct daily trips, and each vessel is responsible for fish searching, catching, and transporting its catches to port. Fishing operations are carried out exclusively during night hours, with each vessel carrying around 8–10 persons. Each per seiner spends, on average, 151 DaS per year. Management regulations currently in force for the purse seine fishery include mesh size regulations (14 mm), technical measures such as time closure (December–February), area closure, and fishing prohibitions within specific distances from the coast (100 m).

PS18-24m segment included 117 vessels with a value of landings equal to EUR 29 million (11% of the total national landings), followed by a significant decrease (50%) compared to 2020 due to COVID-19 and phytoplankton effects. Each vessel spends, on average, 145 DaS per year. The segment employs a total of 322 FTEs, and thus it contributes to 2.5% of the national total. Variable costs, wages, and salaries are the largest cost elements in this segment, representing 73% of the total cost. This year's economic

performance was reasonable; it belongs to the Greek fleet segments with a high net profit margin. Moreover, it also presented high labour productivity (EUR 5 0791) and a high average wage/FTE, equal to EUR 27 405.

*Pots and Traps*

This fleet included 286 vessels, with the majority (267 vessels) to be categorized in the 6-12m class. It offers 270 FTEs representing 2.1% of the total FTEs of the Greek fishing sector. Pots and Traps have multi-species characteristics, but almost 90% of landings stem from the capture of common octopus. Other species that these fishing gear targets are the common cuttlefish, Norway lobster, black seabream, and picarel. The main characteristics of this segment are the high average vessel age (more than 30 years); the main cost element is the imputed value of unpaid labour, which mainly represents the family contribution to the labour. Therefore, in 2021, the FPO0612m segment faced high profitability.

- *Drivers affecting the economic performance trends*

The main drivers affecting the Greek fishing sector's economic performance involve COVID-19 shock, the general economic environment and specific sector characteristics. Results show that the overall economic performance of the Greek fleet has a significant impact due to COVID-19 pandemic. The previous economic improvement coincides with overall reductions in fleet capacity, mainly SSCF, the high rate of inactivity, and low consumption and fuel use intensity which means that the Greek fleet has become more efficient. In addition, a recent scientific publication documented that the presence of women has a positive outcome on several social and economic indicators that reflect the wealth of fishing households and employees (Liontakis et al., 2020).

There are many challenges ahead, like the cash flow shortage, limited access to credit, increasing social-security contributions, taxation, and high value of inputs, which creates unfavourable conditions for fishers and their activities. In addition, low prices of the main target species and inflation are also linked to the low spending power of Greek households.

Furthermore, one of the main problems fishers' reports is the fishing gear damage caused by protected species like dolphins, seals, sea turtles, and seabirds. These damages increase the repair and maintenance costs of the vessels and negatively affect their overall economic performance, keeping in mind that fishers do not receive any compensation for their losses. Moreover, the invasion of alien species, such as *Lagocephalus sceleratus*, can cause damage to the fishing gears but, more importantly, can negatively affect the biodiversity of Greek seas and contribute to significantly lower catches and income for fishers.

Additionally, the reduction of fishing stocks in the Mediterranean Sea affects the economic performance of the Greek fishing sector. Pressure on stocks is increased due to the competition of the Greek fishing vessels with vessels from other countries that do not have to follow EU legislation and restrictions, like Turkey. Various vessels also operate in the same fishing areas, which can lead to conflicts. In particular, there is an intense conflict between the small-scale and large-scale fleets, highlighted by fishers as a significant factor impacting their financial performance. There is also a conflict between professional and recreational fishers who usually fish in coastal areas and illegally sell their catch at low prices.

*Markets and Trade*

Regarding the market structure, fishers reported that, on average, 35% of their catch is channelled to wholesalers and fish auctions, while 34% involves direct sales to consumers. Direct sales refer mainly to small-scale vessels. However, if only large-scale vessels (bottom trawlers and purse seiners) are considered, fishers report that about 93% of the catch is channelled to wholesalers and fish auctions.

Analysing from the consumer's point of view, and specifically consumer preferences on purchasing channels, Greek consumers prefer to buy mainly from fishmongers or specialist shop (68%) and secondary from the grocery store, super, or hypermarket (56%), while at the EU level, consumers prefer to buy mainly from the grocery store, super, or hypermarket (79%) and secondary from fishmongers or specialist shop (43%) (EUMOFA, 2023). Regular consumers, namely those who eat fishery and aquaculture products at least once a month, mainly belong to age groups 40-54 and over 55 (EUMOFA, 2022). Young people (15-24) are less inclined to consume fish in Greece and at the EU level (EUMOFA, 2023). However, regular consumers in this category cover 70% of the total, which is higher than at the EU level (67%) (EUMOFA, 2023). Furthermore, Greeks consume mainly fresh products; loose fish is much more frequently consumed (92%) than at the EU level (68%) (EUMOFA, 2023). Regarding the purchasing factors of fish, Greek consumers place more emphasis than other EU consumers on the

factors: product's appearance (73% vs. 58%), cost of the product (68% vs. 54%), and origin of the product (67% vs. 49%) (EUMOFA, 2023). However, compared to other EU consumers, they place less emphasis on factors such as: brand or quality labels (19% vs. 26%), how easy and quick it is to prepare (11% vs. 24%), and environmental, social, or ethical impact (10% vs. 16%) (EUMOFA, 2023). In addition, Greek consumers reveal a greater preference for wild products over farmed products (53% vs. 4%), while a significant percentage of consumers (22%) are indifferent between wild products and farmed products (EUMOFA, 2023).

*Operational costs (external factors)*

In 2021, the overall economic performance of the Greek fleet revealed a deterioration. This refers to the result of the COVID-19 pandemic effects, problems caused by phytoplankton in the Thracian Sea which caused further limitations to fishing activity. The sector had lower operating costs, particularly the low wages and the reduced value for the variable and non-variable costs. However, the energy cost increased by 2.5% due to the fuel price increase. Notably, the number of inactive vessels continues to grow with a significant reduction in the fishing effort and landings.

As already discussed above, the main costs of the Greek fishing vessels are the energy cost and wages and salaries of the crew. According to the data collected, energy costs increased (2.5%) compared to 2020. On the other hand, the average fuel price increased even the small-scale vessels have a higher fuel price than LSF. Wages and salaries of the crew, which is also an important cost element, reduced (-21%) compared to the previous year. The same direction we had with the unpaid labour, which decreased (-18%). This was mainly due to limited activity of the fishers, either from COVID-19 effects or problems with phytoplankton.

Another external factor affecting fishing activity costs is damage caused to fishing gear, especially nets, from mammals like dolphins, sea turtles, crabs, and sea birds. These damages are frequent and reported by most fishers, although currently, no compensation is received.

*Innovation and development*

The Greek fleet consists mainly of small-scale, family-owned vessels that use traditional fishing gears. Furthermore, investments are limited due to the economic crisis, while the average age of the vessels is increasing. This environment leaves little room for new and innovative techniques for small-scale fisheries and large vessels since the latter also face high running costs. However, as mentioned above, the Greek Operational Programme for 2014-2020 aimed at the modernization of the fisheries sector and its sustainability mainly through supporting the use of more selective fishing gear as well as other on-board investments and equipment, the modernization of infrastructures, and the improvement of fisheries monitoring and control.

As part of the Greek Operational Program for the period 2014-2020, 187 fishing vessels are funded for modernization through supportive investments, which will ensure a higher level of hygiene, safety, and energy efficiency of ships (Measures 3.1.8 and 4.1.20). The funding budget is around EUR 5.5 million.

Also, 158 fishing vessels are funded to enhance the added value and quality of fish products but also to rationally manage waste disposal through eligible investments on board, such as refrigeration equipment, fish waste, and waste disposal equipment, quality management, etc. (Measure 3.1.22). The funding budget is around EUR 4.5 million.

At this point, it should be noted that in the framework of the National Fisheries Data Collection Program for the reference year 2020, most fishing enterprises in the sample expressed a willingness to participate in measures related to the modernization of the vessels and fishing gears. Also, the majority of fishing enterprises showed significant interest in fishing education, stating that they would be interested in education through seminars such as sustainable fishing, sustainable fish stocks management, and new fishing technologies.

Furthermore, for successful management instruments and policies that can promote sustainability and the development of the fisheries sector, the Greek Fisheries Institute, the Hellenic Centre for Marine Research, and the Greek Agricultural Economics Research Institute are providing the necessary scientific knowledge.

- *Nowcasts for 2022-23 and beyond*

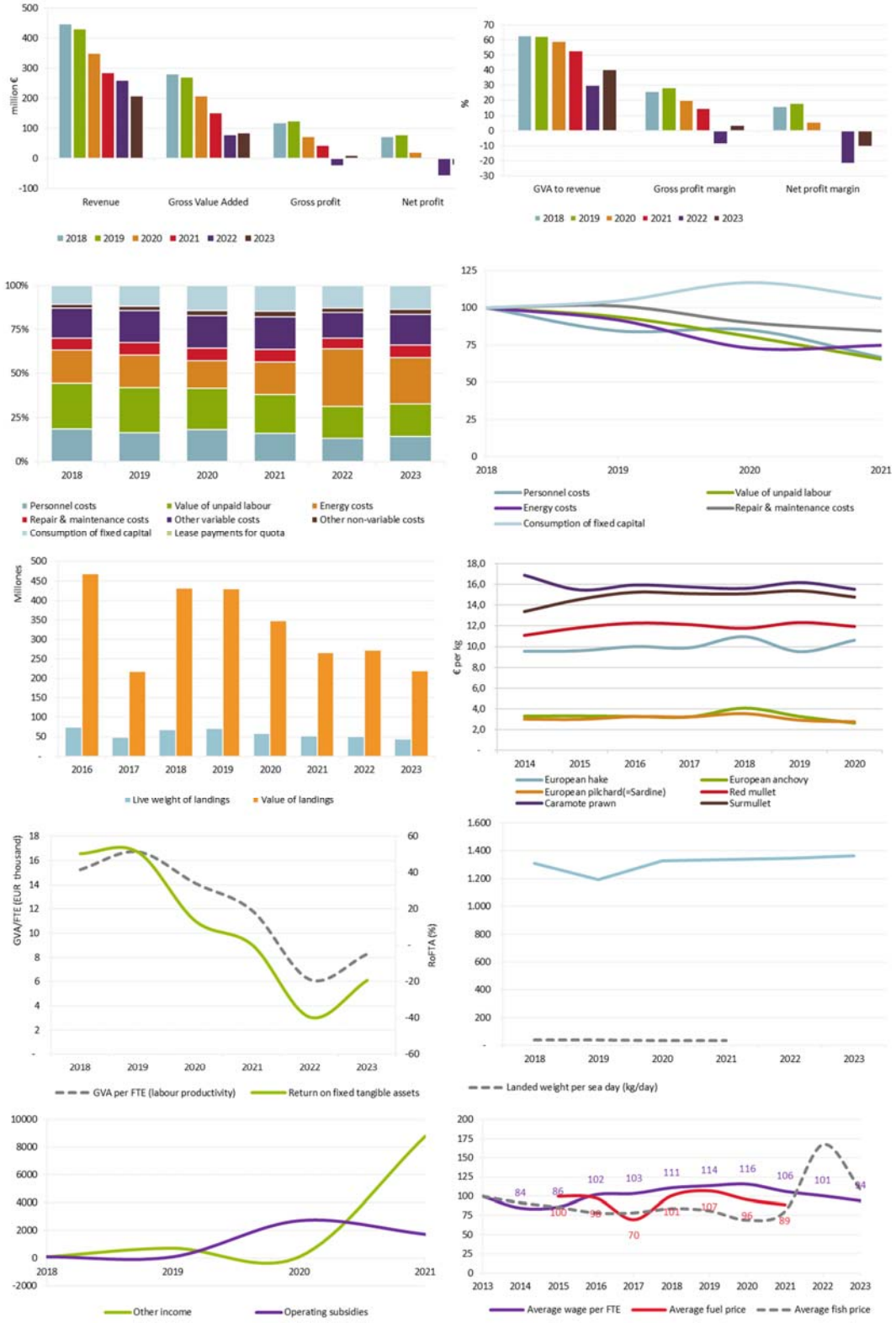
  *Model results*

Nowcasts suggest a decrease in 2022 and 2023 results compared to 2020, driven by increased fuel prices. However, the landings are expected to be improved because Greek fishers did not face extra problems with the phytoplankton in 2022, so the economic performance would be improved.

- *Methodological considerations and data issues*

There have not been significant data issues in producing this chapter. The implementation of the DCF National Work Plan has not faced difficulties for 2021 like the previous years, which resulted in an interrupted time series on the economic data. The figures for costs come from a survey based on probability sampling, and the response rate was satisfactory for 2021.

**Figure 4.11** Greece: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2018=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.11 Ireland

- *Short description of the national fleet*

The capacity of the national fleet has remained relatively stable since 2013. In 2021, there were 1 963 registered vessels (excluding those registered in the aquaculture segment), with a total capacity of 63 652 GT and 184 473 kW. The estimated total number of inactive vessels in 2021 was 612, the majority of which (81%) are in the less than 10 metres segments. While inactivity for vessels over 10m LOA is known from logbook data, inactivity in the less than 10 metres LOA fleet has been estimated using data from equivalent (i.e., gear, target species etc.) fleets in the 10-12m segment and information from sales notes.

#### Fleet structure

National segmentation of the Irish fishing fleet does not match DCF segmentation in every case. For example, the polyvalent segment (see below) includes a variety of vessel lengths and fishing techniques. Nationally, the fishing fleet is divided into five segments:

1. Refrigerated Seawater (RSW) Pelagic segment: This segment is engaged predominantly in fishing for pelagic species (i.e., herring, mackerel, horse mackerel, blue whiting, and boarfish).
2. Beam Trawler segment: This contains vessels dedicated to beam trawling, a simple trawling method used predominantly in Irish inshore waters except in the southeast, where it is used to catch flatfish such as megrim, sole and plaice as well as species such as monkfish and rays.
3. Polyvalent segment: This segment contains the vast majority of the fleet. These vessels are multi-purpose and include small inshore vessels (netters and potters), along with medium and large offshore trawlers and gillnetters targeting whitefish (e.g., haddock, hake, monkfish, whiting) and prawns, pelagic fish such as mackerel, herring, and albacore tuna on a seasonal basis.
4. Specific segment: This segment contains vessels which are permitted to fish for bivalve molluscs and aquaculture species.
5. Aquaculture segment: These vessels are used exclusively in the management, development, and servicing of aquaculture areas. They collect spat from wild mussel stocks as part of a service to aquaculture installations. The aquaculture segment, while on the fleet register, is excluded from analysis in this report.

#### Employment and average salaries

In 2021, 2 776 jobs were supported by the Irish fleet. This represents an increase of 3% on 2020 employment figures (2 688) but remains below pre-COVID levels of 2 944 in 2019. The fleet FTE is estimated to be 1 911, with an average of four and one FTE per vessel for the LSF and SSCF, respectively (excluding inactive vessels).

FTE estimations for 2020 and 2021 are notably lower than previous figures recorded. This is likely driven, in part, by a reduction of working hours due to COVID restrictions but also reflects a change in methodology in the estimation process. Previously, a self-reported indicator of full-time, part-time, or casual status was requested in the economic survey to calculate FTE. However, for 2020 and 2021, FTE was calculated based on the number of average daily hours worked and total annual sea days. Therefore, 2020 and 2021 FTE figures represent a break in the time series.

Average crew wage for the entire fleet remains consistent and was EUR 31 287 per job and EUR 47 353 per FTE in 2021 which is higher than the average national annual earnings of EUR 44 912. However, there are considerable variations in the average wage depending on the size and gear of the vessel and the systems of crew share.

#### Fishing activity and production

The Irish fishing fleet operates primarily in the North Atlantic, Celtic and Irish Seas. Due to the continuing impact of COVID-19 restrictions particularly in early 2021, figures for total days at sea (DaS) mirrors trends seen in 2020 with reported days remaining significantly lower than those reported pre-COVID.

Between 2015 and 2019, the national fleet reported 77 000 total DaS on average each year[20]. In 2021, DaS fell to 52 763, this represents a 34% reduction on pre-COVID figures (79 908) from 2019.

Landings by weight in 2021 decreased by 5% to 207 362 tonnes (valued at EUR 294 million reflecting an increase in fish prices) from 218 618 tonnes (valued at EUR 264 million) in 2020. Adjusting for price errors in the landings data and including improved estimates for income for the less than 10m segments, landing income for 2021 is estimated as EUR 313 million. Provisional figures for 2022 indicate that total landings will be close to 175 000 tonnes (with an associated value of approximately EUR 240 million) reflecting the downward trend in landings by weight since 2020.

Production trends are highly influenced by quota changes for pelagic species, particularly mackerel. Indeed, many of the historical fluctuations in the value and weight of landings have been driven by mackerel, as mackerel quota accounted for approximately 34.4% of the total Irish quota from 2015 to 2021. Quota reductions of 26% for mackerel as a result of the Brexit from 2021 onwards will influence production trends in Ireland.

The 2016 mackerel quota, 76 000 tonnes, included an increase of 46 560 tonnes worth an estimated EUR 59 million. The 2017 mackerel quota, 86 000 tonnes, resulted in landings of 87 000 tonnes worth an estimated EUR 58 million. In 2018, the quota decreased to 69 000 tonnes worth an estimated EUR 47 million and was reduced again in 2019 to 55 000 tonnes but increased again to over 78 000 tonnes in 2020. In 2021, the quota decreased to over 60 000 tonnes in line with the quota reductions as a result of Brexit. Mackerel has again topped the landed species by value in 2021 with estimated values of EUR 61 million.

## Economic results for 2021 and recent trends

### National fleet performance

In 2021, the Irish fleet recorded a gross profit. GVA was estimated at EUR 176.9 million, gross profit at EUR 86.5 million and a net profit of EUR 62.5 million. These represent significant decreases in GVA (-15%), gross profit (-36%) and net profit (-39%) from 2020. It should be noted that these figures are strongly influenced by the larger pelagic vessels (TM VL40XX). The value assigned to its cost structures and capital values along with fish prices can greatly affect their total landings revenue and profit due to the large volumes of their catches on an annual basis.

Total landed values for the SSCF and LSF have increased by 102% and 4% with values of EUR 41.7 million and EUR 251.4 million, respectively.

Overall, the cost structure of the fleet in 2021 has increased across all costs. Operating costs totalled EUR 226 million in 2021, an increase of 21% from 2020. Energy costs increased by approximately 15%. When capital costs are included, the total cost of operating the national fleet rose by 22% since 2020 to EUR 262.8 million. While landings were down on previous years, there was very strong price growth for many species which resulted in profitabilty at a national fleet level despite these increasing costs.

### Resource productivity and efficiency

The fleet average gross profit margin in 2021 was 28% representing a decrease of 34% from 2020. The Net profit margin decreased from 32% in 2020 to 20% in 2021, and the RoFTA at 9%, was a decrease from 15% in 2020.

In 2021, fuel consumption was estimated to be 365 litres per tonne landed; the corresponding figure for 2020 was 324 litres, representing a 13% increase. In terms of a time series trend, the data demonstrates a sharp increase in fuel consumption each year from 2014 until 2019 (141%) from 245 litres to 591 litres before decreasing by 45% in 2020 and then increasing again in 2021.

Energy consumption for the fleet fell from 123 million litres consumed pre-COVID in 2019 to 75.6 million litres in 2021, a reduction of 39%. Whilst fuel prices fell for a period in 2020 due to the reduction in

[20] Note: Prior to 2015, effort was estimated using only data for the over 10m segment. In the absence of a regulatory requirement, the lack of logbook data for vessels under 10m has meant that the reporting of transversal, landings, activity, and true economic performance of this segment (which makes up a large proportion of the Irish fleet) is based solely on limited results from the inshore Sentinel Vessel Programme that collects daily effort and economic data from a small sample of the SSCF and sales notes data.

demand as a result of the COVID-19 crisis, overall there has been an increase of approximately 18% in the cost of fuel in between 2018 and 2021 from 0.39 euro/litre to 0.46 euro/litre which may have been a factor in the decreased effort in 2021.

Total average fleet Landings Per Unit of Effort (LPUE) (i.e., DaS) have fluctuated since 2013. In 2020, the fleet LPUE was estimated at around 0.2 tonnes /day; in 2021 the corresponding figure increased to 3.9 tonnes/day. This average fleet figure may mask performance in specific segments.

Based on an average price of 0.46 cent per litre fuel in 2021, energy efficiency and energy intensity of the national fleet were estimated as 11.7% and 2.74% respectively. The following table presents data on the fuel prices, short-term and long-term break-even revenues, as well as energy efficiency and intensity across several segments that make up a representative sample of the Irish fleet.

**Table 4.13** Ireland: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| IRL NAO TM40XX | 0.53 | 2.75 | 1.66 | 7.9% | 119 |
| IRL NAO DTS 2440 | 0.47 | 0.77 | 0.50 | 19.1% | 1,323 |
| IRL NAO DTS1824 | 0.36 | 0.46 | 0.28 | 21.6% | 2,065 |
| IRL NAO FPO0010 | 0.81 | 3.43 | 1.17 | 6.5% | 275 |
| **National average** | **0.46** | **1.61** | **1.16** | **11.7%** | **365** |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

## Performance by fishing activity

### Small-scale coastal fleet

There were an estimated 900 active vessels registered in the SSCF in 2021. The number of active vessels in this fleet has seen an increase of approximately 13% from 2020 and 4% on average since 2013. There are a number of vessels using active gears below 12 metres that are not included in the definition of SSCF. This results in discrepancies between the data presented in this report and how the fleet would be examined at a national level which examines all vessel under 12 metres irrespective of gear being active or passive.

In 2021, the SSCF activity recorded a GVA of EUR 31.9 million, gross profit of EUR 18.6 million and net profit of EUR 10 million, demonstrating an increase in these economic indicators since 2020. While the SSCF makes up 14% of the total revenue of the Irish fleet in 2021, its importance to local coastal communities should not be underestimated.

SSCF offer employment in often deprived, peripheral areas and bring much needed money to local communities and their hinterlands. Despite national fleet employment trends showing a fall in employment in 2020 and signs of recovery in 2021, total employment in the SSCF increased annually between 2019 and 2021. FTE and total hours worked of SSCF, in contrast, show a significant decrease in 2021 with signs of recovery in 2021. FTE fell in 2020 to 581, recovering in 2021 to 826 although this figure remains below pre-COVID levels (978 in 2019). Total hours worked recovered by 140% in 2021, increasing from 450 hours per active vessel in 2020 to 964 hours per active vessel in 2021. The estimation process of employment figures for the Irish fleet was revised for 2020 and 2021 which may partially explain the change in SSCF employment numbers. Further data and analysis will be needed to robustly establish if the increase in employment numbers is a true trend.

### Large scale fleet

There were an estimated 451 active vessels registered in the LSF in 2021. The number of active vessels in this fleet has seen a decrease of approximately 3% from 2020 and -7% on average since 2013. Landings by weight decreased significantly by 10% since 2021 to 186, 900 tonnes reflecting the reduction in quotas arising from Brexit.

In 2021, the LSF recorded a GVA of EUR 145 million, gross profit close to EUR 67.9 million and net profit of EUR 49.6 million, demonstrating an increase in these economic indicators overall since 2013 but a decrease from 2020. This fleet category contributed 86% of the total revenue of the Irish fleet in 2021.

In 2021, employment in the LSF fleet continued to fall albeit at a decreasing rate. FTE, employment and total hours worked remain below pre-COVID levels reflecting challenges reported by industry in terms of crew shortages. In 2021, employment by LSF fell by 7% from 1 615 in 2020 to 1 503 in 2021. This contrasts to the 14% decline observed in 2020. FTE in the LSF fleet similarly fell in 2021 from 1 323 to 1 086. This may be driven by some lasting effects of stringent COVID restrictions in place during 2021. However, hours worked in the industry seem to have remained relatively stable between 2020 and 2021 at 2.3 million total annual hours each year on average. This suggests that part-time and casual employees in the LSF fleet were most likely to have been negatively impacted by changes in employment over this time. However, as mentioned previously, changes in LSF employment figures may also be driven in part by a change of estimation methodology employed for 2020 and 2021.

### Performance of selected fleet segments

The Irish national fishing fleet is highly diversified with a broad range of vessel types targeting different species or species groups often in mixed fisheries. The fleet operates from as far north as Norway and Iceland, south to the coast of Africa but carries out the bulk of its operations in area 27.6 (i.e., Rockall, Northwest Coast of Scotland, and North Ireland) and 27.7 (Irish Sea, West of Ireland, Porcupine Bank, Eastern and Western English Channel).

In 2021, the national fleet consisted of 20 (DCF) fleet segments, there were 18 segments (both clustered and un-clustered) that had sufficient data to calculate profitability. Of these, 12 demonstrated high profitability and six, weak profitability. Overall, this shows an improving economic development trend for the industry in 2021.

The fleet is dominated by the polyvalent segment (nationally defined), a diverse group including small inshore vessels (netters and potters), medium and large offshore vessels targeting Norway lobster (*Nephrops)*, mixed whitefish, some pelagic species (including mackerel, herring, and tuna) as well as a range of vessels, from small to large-scale, targeting bivalve molluscs and crustaceans.

The Refrigerated Seawater (RSW) pelagic segment targets exclusively pelagic species (i.e., mackerel, horse mackerel, herring, blue whiting, and boarfish) and equated to the TM VL40XX segmentation.

#### Pelagic Trawl over 40m

Pelagic Trawlers over 40 metres (TM VL40XX) are part of the, nationally defined, RSW segment. In 2021, there were 21 vessels classified as TM VL40XX and these are generally considered to be amongst the best performing components of the national fleet. These vessels land large quantities of pelagic fish (e.g., Atlantic mackerel, horse mackerel, herring, blue whiting, albacore tuna and boarfish) and operate mainly in ICES areas 6a and 7b,c,j,k. Mackerel and horse mackerel constitute 25% and 4%, respectively of the total value of landings and 30% and 9% of the total landings by weight in 2021. Ireland's pelagic fleet tends to operate seasonally (i.e., January to early April and in the autumn months), reflecting both the annual distribution patterns of the target species as well as quota limitations.

In 2021, landings (all species) by pelagic trawlers over 40m amounted to just under 97 500 tonnes (live weight), down 16% from 2020 and valued at EUR 78.7 million, representing a sharp increase of 29% from 2020. This is linked to reduced quota available to Irish vessels coupled with price increases for certain species (e.g., mackerel prices have increased by 69% from 2020). GVA by the segment in 2021 was EUR 51 million generating a gross profit of EUR 25.7 million (up 62%). Total revenue for the 21 vessels in this segment was EUR 83 million accounting for 27% of the total revenue of the fleet. On-board employment is estimated to be comprised of 49 FTE in 2020 or 2.6% of total fleet employment nationally.

#### Demersal Trawl 18m-24m

Currently there are 57 polyvalent vessels classified as Demersal Trawlers 18-24m. They target a wide variety of species including Norway lobster (*Nephrops)*, whiting, and monkfish. In 2021, the total value of landings for this segment was EUR 39.2 million (down from EUR 39.4 million in 2020) contributing 13% of the total income from landings (down from 15% in 2020) . Landings by weight were down 11%

to 11, 430 tonnes in 2021. With 272 FTEs employed, this fleet segment contributes 14% of total FTE generated by the Irish fishing fleet.

This fleet segment recorded a gross profit of EUR 2.3 million (down from EUR 16.8 million) and net profit of EUR 537 000 (down from EUR 13 million) in 2021 representing a significant decrease in profitability since 2020.

### Demersal Trawl 24m-40m

Currently there are 50 polyvalent vessels classified as Demersal Trawlers 24-40 metres. They target a wide variety of species including Norway lobster (*Nephrops)*, Atlantic herring, whiting, European sprat. In 2021, landings by weight were down by 3% on the previous year to 14 600 tonnes. The total value of landings was EUR 47.2 million (down by 10%) with 261 FTEs employed, contributing 15% and 10% of the total income from landings and FTEs generated by the Irish fishing fleet, respectively.

In 2021, this fleet segment generated a gross profit of over EUR 5.8 million a decrease of -86% and net profit of EUR 2.3 million (down from EUR 9.7 million). This indicates a significant decrease in profitability for 2021 compared to 2020.

### Potters 0m-10m

There are currently an estimated 532 active polyvalent and polyvalent potting vessels classified as Potters 0-10 metres. They make up a large and important segment within the SSCF and target a wide variety of species including brown crab, lobster, and whelk. Collectively these species constitute 72% of the total landed value. In 2021, the total value of landings was over EUR 11.4 million contributing 27% of the the total value of the SSCF. With an estimated 442 FTEs employed, this fleet segment generated a gross profit of over EUR 2.5 million in 2021 compared to EUR 10 million in 2020.

## Drivers affecting the economic performance trends

Quota reductions as a result of Brexit and the impacts of COVID-19 were the main driving forces behind an overall deterioration in the economic performance of the Irish fleet since 2020. This deterioration was offset by higher average fish prices for some species.

The EU/UK Trade & Cooperation Agreement (TCA) deal agreed at the end of 2020 brought a sudden and dramatic shift in the landscape for the entire Irish seafood sector from 2021 onwards. The deal saw quota transfers across EU Member States to the UK, totalling almost EUR 200 million. The Irish fleet lost access to 15% of its annual quota with the largest impact on two key fisheries – Atlantic mackerel and *Nephrops*- which saw quota reductions of 26% and 14% respectively.

The impact on the fishing fleet of reduced quotas and on the processing sector as a result of less raw material being available is evident and will continue to be a factor for the foreseeable future. Vital seafood trade routes, primarily through the 'land-bridge' via the UK, have been curtailed, particularly since the beginning of 2021. By the end of 2021, a new trading pattern for seafood had emerged with altogether less reliance on the UK markets and a shift to European and further afield market opportunities.

In February 2021, the Irish Government set up a Task Force to examine the implications of the TCA for the fishing industry and coastal communities and to consider initiatives to address those implications. The Task Force delivered its report[21] in October 2021. It recommended a suite of initiatives including 16 funding schemes, with a proposed overall funding requirement of EUR 423 million. Amongst the recommendations were longer-term fleet re-structuring measures in the forms of voluntary decommissioning scheme with the aim of restoring balance between fishing capacity and available fishing opportunities. As a result, a total of 43 vessels from the LSF will be decommissioned in 2023.

Another significant recommendation was a temporary voluntary fleet cessation scheme to counter the impact of the reduction in quotas on the whitefish sector. This scheme paid out different monthly payments, for approved applicants, according to the size of the vessel. Subsequently, such a scheme was put in place for the last three months of 2021 for polyvalent and beam trawl vessels most impacted

[21] Report of the Seafood Task Force. Navigating Change The way forward for our Seafood Sector and Coastal Communities in the wake of the EU/UK Trade & Cooperation Agreement October 2021. https://bim.ie/wp-content/uploads/2022/01/Report-of-the-Seafood-Taskforce.pdf

by loss of quota because of the TCA. The objective of the scheme was to manage quotas for the final months of 2021 while keeping continuity of supply to fish processors. 182 applications were approved for the 2021 tie-up at a cost of just under EUR 10 million with 70% of the vessels opting to tie-up for the month of December. An additional Brexit Temporary Fleet Tie Up Scheme was introduced from June to November 2022.

COVID-19 restrictions and the impact of the pandemic continued to affect the industry, both locally and globally during 2021. National lockdowns and restrictions on hospitality businesses had an ongoing impact, particularly in the early part of the year, with exports at low levels with most markets recovering by the second half of the year.

### Markets and Trade (including fish price)

During 2021, average prices increased for many species with exception of monkfish reducing by 6% from 3.32 euro/kg in 2020 to 3.12 euro/kg in 2021. *Nephrops* (17% of total value of landings) increased from 6.21 euro/kg in 2020 to 7.83 euro/kg in 2021. Prices for pelagic species tend to have a dramatic effect on the total income given the scale of the pelagic TAC. The average prices indicated from the national regulatory authority (SFPA) responsible for landings declarations indicate that the average prices of Atlantic mackerel (25% of total value of landings in 2021) were maintained at 0.6 euro/kg between 2016 and 2017. The prices rose to 0.7 euro/kg in 2018 and to 0.9 euro/kg in 2019 which helped offset the reduced income because of the decrease in TAC. The average price for Atlantic mackerel decreased again in 2020 back to 0.71 euro/kg and then increased sharply by 69% to 1.20 euro/kg in 2021.

Compared to 2020 prices, non-quota species of European lobster and edible crab increased by 33% and 28% in 2021 from 13.62 euro/kg to 18.15 euro/kg and from 2.29 euro/kg to 2.93 euro/kg, respectively.

### Operating costs (external factors)

In 2021 total operating costs incurred by Irish fleet were EUR 226 million an increase of an increase of 21% compared to 2020. Energy costs accounted for the 15% of total operating cost and other variable costs were 18%. Energy costs increased by 15% from 2020 despite a reduction in fleet effort reflecting an increase in fuel costs. The average fuel cost from 2013-2021 was 0.49 euro/litre and has ranged from a price of 0.73 euro/litre in 2013 and 2014 to 0.38 euro/litre in 2019 and increased to 0.46 euro/litre in 2021.

Personnel costs increased by 18% to EUR 86 million in 2021 from EUR 71 million in 2020 reflecting the easing of COVID-19 restrictions especially in the latter half of 2021 and an overall trend of increased average wages per FTE from 2013 to 2021. Other variable costs increased in 2021 by 23% and non-variable costs by 27%.

### Status of some key stocks ,TACs and quotas

The Irish Marine Institute's 2022 stock book advises on 63 stocks. Several of the stocks of interest to Ireland are, or have been, managed under long term management plans. The number of sustainably fished stocks has increased from 33 (in 2020) to 35 (in 2021) out of 74 (47%). The number of stocks with biomasses higher than sustainable trigger reference levels has increased from 25 (in 2020) to 27 (in 2021) out of 74 (36%). The percentage (15%) and number of stocks (11) overfished has continued to decrease. There is a gradual progress towards long-term sustainable use of the resource since 2012.

### Management instruments

Under the remit of Ireland's Department of Agriculture, Food and the Marine, fishery management policy is developed through a transparent system that includes a quota management regime agreed with the Producer Organisations and other key stakeholders. Monthly allocation arrangements are designed to be responsive to criteria such as stock availability, remaining quota, market demand and other marketing initiatives.

The strengths of the fleet management system include a strict entry/exit regime that ensures the fleet remains within its prescribed reference levels. It also delivers a practical segmentation of the fleet along traditional fishing line and ensures that monthly vessel catch limits are respected.

BIM, Ireland's state agency for seafood development, in partnership with other marine-focused state agencies, the Marine Institute and the Sea Fisheries Protection Authority has developed an online Fisheries Management Platform for different species to accommodate the significant amount of

legislation, which a paper chart in terms of space, is limited. The development of this online platform overcomes this and allows the presentation of technical measures at a fishery and area level. This permits users to access the information they require easily and efficiently. The chart is a user-friendly guide which informs users about options available to reduce unwanted catches and promotes sustainable exploitation of fisheries resources. A pdf version of the chart is also available.

### Innovation and development (role of EMFAF)

In 2021, Government investment in the seafood sector continued to grow, amounting to EUR 232 million, an increase of 11% from 2020. Support from the European Maritime and Fisheries Fund (EMFF) along with a national investment programme contributed to a wide range of projects including the improvement of infrastructure in fishing ports and harbours, grant aid for fishers, R&D and innovation projects, as well as direct supports to the sector to offset the impacts of COVID-19.

In terms of R&D into gear technology and conservation, BIM on behalf of Ireland, have worked closely with the Irish fishing industry to develop technical solutions that reduce unwanted catches. This helps address challenges posed by the EU landing obligation and boost fisheries sustainability and marine biodiversity by decreasing landings of small (juvenile), over-quota and non-target species. A guide to Fisheries Conservation solutions to reduce unwanted catches has been published to disseminate the findings of various trials to industry and policy makers. The work was funded by the Irish Government and part-financed by the EU through the EMFF Operational Programme 2014–2020 under the BIM Sustainable Fisheries Scheme.

### Nowcasts for 2022-23 and beyond

It is important to note that the preliminary effort data for the less than 10m fleets were not complete with only partial effort data available for some under 10m segments, (FPO and DRB). As such, the results provided should be interpreted with caution.

### Model results

Estimations for 2022 demonstrate an overall significant decreasing revenue and profitability driven primarily by the Ukrainian war, rising energy costs, inflation, and quota reductions linked to Brexit. There is a decrease in live weight of landings from 2021 to 2022 (-17%) and a decrease in value of -20%. Data projections for 2022 indicate a deteriorating outcome with decreasing revenue (-19%) to EUR 257.7 million and decreasing GVA (-38%) to EUR 120 million. In addition, gross profit in 2022 is predicted to decrease significantly (-42%) to EUR 45 million combined with a decreasing net profit (-42%) to EUR 40.7 million.

Nowcast for 2023 suggest an overall higher economic performance compared to 2022 driven by a slight increase in landings weight combined with an increase in value of landings. In terms of economic indicators, revenue is predicted to decrease (-6%) with increases in gross profit (23%), net profit (11%) and GVA (6%), driven primarily by fish prices and a reduction in energy costs compared to 2022. It is important to note that 43 vessels from the LSF will be decommissoned at different stages in 2023 and the potential effects from 2023 onwards are as yet unknown.

- *Methodological considerations and data issues*

### Identify changes in respect to previous years

Values and figures may differ somewhat from those in previous annual economic reports. A considerable number of survey returns, received after last year's AER meeting, in addition to higher response rates this year have improved the precisions of many of the variables and indicators. In addition, there has been a change in methodology in the estimation process for FTEs based on the number of average daily hours worked and total annual sea days. Another driver of the change in the absolute value of landings figure for 2020 and 2021 may also be attributed to changes in price estimation methodologies.

### Improvements achieved

In 2022, a condition of payment of EMFF grant aid to vessel owners was the completion of an economic survey with 2021 data. This resulted in more data for some segments. As a result, 18 segments (both clustered and un-clustered) had sufficient data to calculate profitability compared to 13 last year.

Efforts are ongoing to improve data availability for the data poor SSCF segments through engagement with industry. In 2022, all vessels under 12m were contacted to complete an economic survey to augment the usual data collection through an inshore Sentinel Vessel Programme. This resulted in more data for a number of key variables in the under 10m and 10-12m segments than previous years (i.e., FPO0010, DFN0010, DRB0010 HOK1012, DFN1012, TM1012).

### Remaining and novel issues

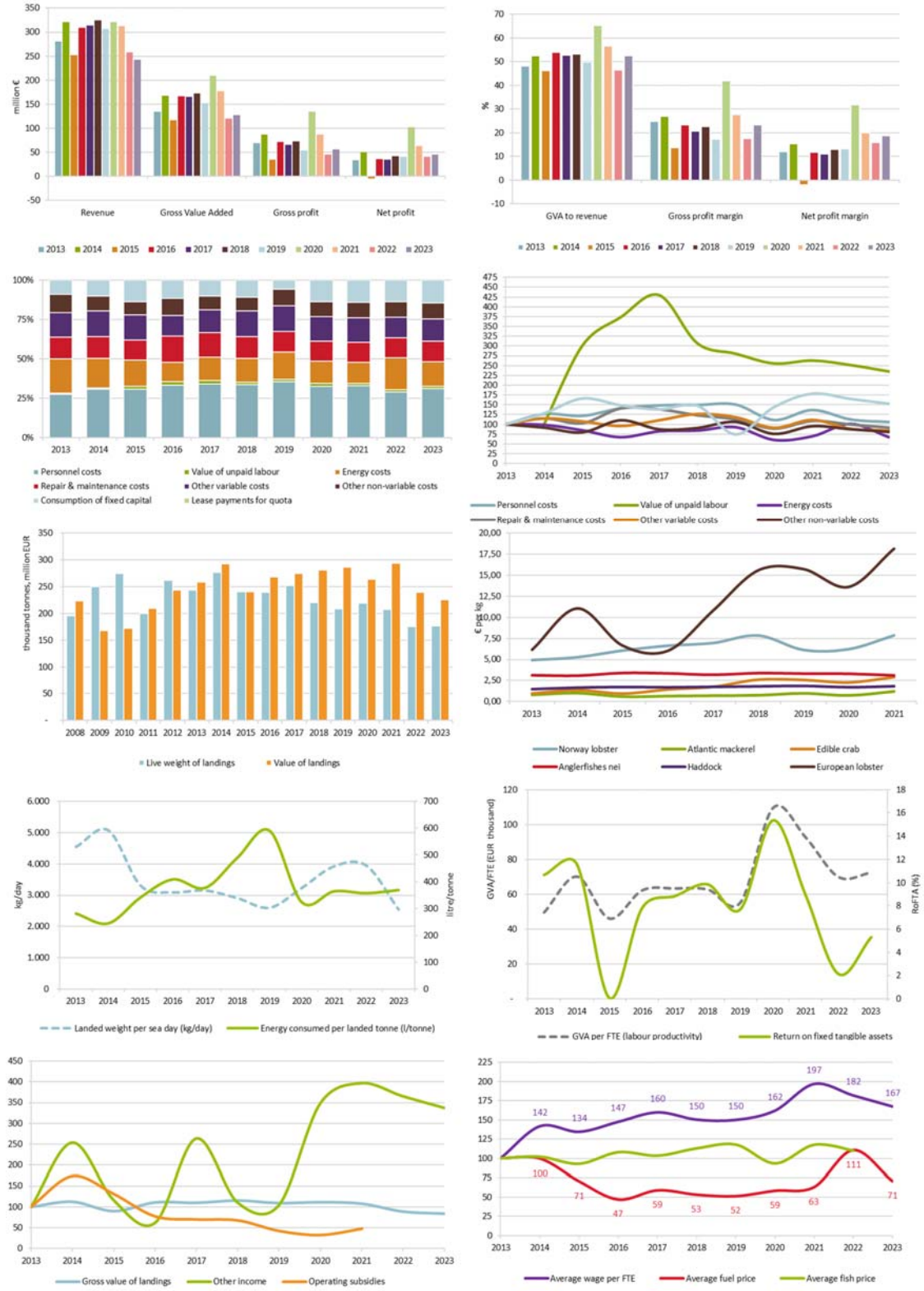
For some segments (e.g., FPO1012, HOK0010), survey returns continue to be low. In these cases, data submission is not possible for some, or all variables, which must be imputed based on known data for similar segmentations.

The effort data in the tables and graphs is not complete for some segments less than 10m due to the lack of logbook data for these segments (i.e., no mandatory requirement for under 10m vessels to fill in logbooks (Article 18 of (EC) No 1224/2009 (Control Regulation)). Specifically, from 2015 onwards, effort is only reported for less than 10m for the segments DRB and FPO. To report effort for these segments, several assumptions had to be made mainly that a sales note for a vessel represents a day of fishing. Effort data for the remaining segments is not possible to estimate given the lack of logbook data for the less than 10m fleet.

Subsidies data includes EMFF funding programmes administered by the Irish Seafood Development Agency (BIM) including programmes on sustainability, safety grants and assistance to young fishermen. Fishers may also be receiving subsidies from other state agencies such as Enterprise Ireland or Údarás na Gaeltachta but these are unknown and not reported.

The operational division of the fleet into 'small-scale' and 'large-scale' fisheries is not a satisfactory aggregation for the Irish Fleet. The exclusion of active gears from the small-scale fishery definition means that many segments for which there is data, for <10m vessels, are eschewed from this fishing activity and added to the large-scale fishery instead. Therefore, the definition of SSCF used in this report excludes a large part of the Irish fleet in vessel numbers (around 202 in 2021) as they are below 12m in length and use active gears and thereby excludes important economic data for the small-scale fishery which instead are added to the large-scale fishery.

**Figure 4.12** Ireland: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

## 4.12 Italy

- *Short description of the national fleet*

### Fleet structure

In 2021, the Italian fishing fleet consisted of 11 996 vessels of which 10 316 were active. Compared to 2020, a reduction of 1% was registered for the active vessels. Compared to the average values 2013-2021, a reduction by 3% and 7% was registered in the number of total vessels and active vessels respectively. Over the same period, GT and kW of the total fleet have been reduced by 8% and 6% respectively.

Inactive vessels represented 14% of the total fleet registered in 2021, quite stable compared to the previous year. In 2020 due to COVID-19 crisis, a huge reduction in the number of active vessels occurred; in 2021, even if the situation has improved in terms of restrictions and closure of the HORECA sector, the active fleet has not returned at the pre-crisis level.

The Italian fishing fleet is nationally divided into:

- A small-scale coastal fleet (67% of total active vessels, but 8% of the whole active gross tonnage).
- A large-scale fleet (32% of total active vessels), which was mainly made up of vessels using active gears, especially demersal trawlers.
- A distant water fleet of five active vessels: four trawlers operating in the Eastern Central Atlantic and one vessel operating as a purse seiner in the Indian Ocean.

### Fleet activity and production

In 2021, the fleet spent a total of around 1.2 million days-at-sea. Effort, in DaS, decreased by 10% between 2013 and 2020. The reduction over the last 8 years is linked to the entry into force of several national and European regulation enforcing an effort regime which aims to reduce the fishing days for certain fleet segments in different fishing area (DTS in Adriatic and Tyrrhenian Sea, PS and TM in Adriatic Sea).

In 2021, the average days-at-sea per vessel has been 118, on the same level of 2019, recovering the huge reduction of 2020.

In 2021, the total volume of landings increased by 7% compared to the previous year. The improvement in the productive performance was almost due to the LSF, which increased by 5% compared to 2020. The total value of landings slightly increased by 15% thanks to the positive trend in fish prices.

European anchovy, common cuttlefish, deep-water rose shrimp, giant red shrimp, European hake and striped venus contributed more than a third to the total production, both in volume and value.

### Employment and average salaries

In 2021, Italian fishing sector employed 20 862 fishers, corresponding to 14 875 FTEs. 47% of the total jobs were employed in small-scale fishing operations. The total employment and the FTE decreased by 18% and 23%, respectively between 2013 and 2020, while the GVA per FTE increased by 7%.

- *Economic performance for 2021 and recent trends*

### National fleet performance

The economic performance of the Italian fleet improved in 2021 and it is expected to worsen in 2022 because of the fuel price crisis. The positive trend in 2021 only partially recovered the strong reduction of economic indicators registered in 2020. In fact, the economic performance in 2021 shows a strong decrease if compared with the pre-COVID-19 years.

The total amount of income generated by the national fleet in 2021 was EUR 721.0 million (income, expenditure and economic indicators for 2021 don't include MBS PS40XX and OFR DTS 40XX). This consisted of income from landing value and for a small portion (around EUR 24.9 million in 2021) in non-fishing income. Some vessels, mainly small-scale vessels, are involved in non-fishing activities, like "pescaturismo", in tourism-oriented coastal areas or in supporting the traditional aquaculture and capture fishing activities.

Total income increased between 2020 and 2021 due to the recovery in fishing effort in terms of days at sea and number of active vessels.

The two major variable costs are labour and energy. In 2021, the costs for labour were EUR 201.7 million, while energy costs accounted for EUR 151.3 million. The energy costs increased by 23%, as a result of higher effort in terms of days at sea.

In terms of economic fleet performance, GVA, gross profit, and net profit generated by the national fleet in 2021 were EUR 443 million, EUR 242 million and EUR 106 million, respectively. This corresponded to increases of 5%, 15% and 91%, compared to 2020.

In 2021, the Italian fleet had an estimated (depreciated) replacement value of EUR 548 million; 76% of the capital value belongs to LSF.

The positive trend in economic indicators affect mostly the SSCF, while LSF retained a stable trend in gross value added. The LSF has been characterized by an increasing trend in income and profitability until 2018, while a slowdown in economic performance was registered in the last three years.

### Resource productivity and efficiency

The gross profit margin in 2021 was 34.0%, indicating an operating efficiency of the sector. This percentage increased yearly from 2013 (gross profit margin of 23%) till 2021. Net profit margin was estimated at 15% and the Rate of Return on Fixed Tangible Assets (RoFTA) was at 19%.

Labour productivity (GVA/FTE) increased in 2021: EUR 30 000 per FTE. The increase in FTE (+13%) has been proportionally greater than the increase in GVA (+5%).

The Italian fleet becomes more fuel efficient when compared to the period 2013 to 2020; in 2021, fuel costs as a proportion of revenue, were estimated at 21% (28% in 2013); improvement in the fleet performance can largely be attributed to lower fuel prices over the period; fuel prices decreased by an average of 0.73 euro/litre in the period 2013-2014 to an average of 0.57 euro/litre in the period 2019-2021.

Fuel consumption per landed tonne was estimated at 1 335 litres/tonne of landed fish in 2021, and it has followed a slightly increasing trend since 2017. The landed weight per sea day was estimated at 33 kg/day, presenting a decrease of 11% compared to the previous year.

The short and long term break-even fuel prices indicate that the average fuel prices for LSF are acceptable. However, the SSCF and mainly segments like DFN0612, DFN0006, and FPO0006, which comprise most of the Greek fleet, severely affected economic performance and financial sustainability due to high fuel prices. PS1824 had high fuel intensity compared to HOK or DFN segments. However, the DTS2440 segment indicated high energy efficiency (22.2%) above the national average (18.7%) compared with PS1824, which had the lowest among all the Greek fleet segments.

**Table 4.14** Italy: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term BER fuel price | Long-term BER fuel price | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| ITA MBS DRB1218 NGI * | 0.61 | 4.08 | 3.22 | 6.8% | 345 |
| ITA MBS PGP0006 NGI | 0.89 | 4.62 | 3.76 | 10.1% | 970 |
| ITA MBS TM 1218 NGI | 0.80 | 5.38 | 5.27 | 9.1% | 421 |
| ITA MBS TM 2440 NGI | 0.67 | 1.97 | 1.54 | 19.6% | 519 |
| National average | 0.61 | 1.59 | 1.08 | 21.7% | 1,847 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

Based on an average price of 0.69 cent per litre fuel in 2021, energy efficiency was estimated as 21.7%. The following table presents data on the fuel prices, short-term and long-term break-even revenues, as well as energy efficiency and intensity for more energy-intensive segments of the Italian fleet. All the selected segments had high fuel intensity compared to national average; fuel consumption is estimated

at around 1.85 litres per kilo of landings for the national average to exceed 6.24 for the DTS2440; fuel consumption is directly related to the size of the vessel, the duration of the trips and the use of the gear.

Differences are also highlighted in terms of energy efficiency. The DTS2440 fleet segment includes the fleet dedicated to deep-sea shrimp fishing characterized by a high fish price and, therefore, high revenues. For this segment there is an energy efficiency (30.4%) among the highest at national level. The incidence of the fuel cost on revenues is above 33% for the trawlers in the length classes 1218 and 1824.

### Drivers affecting the economic performance

Almost all economic indicator improved in 2021; the fishing sector was significantly affected by the COVID-19 crisis during 2020; the lockdown measures led to a reduction in fishing effort with a direct impact on the profitability. During 2021, the easing of restrictions positively affected the overall economic situation and domestic seafood demand has been rising again. Despite this, the recovery of the fishery sector in 2021 was less than expected. Gross and net profit improved compared 2020 but remain well below the 2019 levels.

### Markets and Trade (including first sale prices)

In 2021, a slight increase in the average price is detected (5%); the first sale prices of two of the most important target species (European hake and swordfish) showed a negative trend, while the average prices of striped venus, Norway lobster and common sole increased compared to 2020. Blue and red shrimp and Norway lobster were the two species with the highest prices (20 euro/kg and 22.80 euro/kg, respectively).

The increase in the average fish price has been recorded since 2018; highly fragmented sales channels, dominated by regional wholesalers and traditional fishmongers were still characterizing the fresh seafood distribution, but some best practices are emerging in some fishing harbors in Northern Adriatic Sea and Central Tyrrhenian Sea for the marketing of the landings of certain fishing fleets (e.g. DTS, TBB and TM). In addition, the role of Producers Organizations in supply concentration and marketing is increasing, especially in dredges and hook fleet segments.

Regarding foreign trade, Italy is a net importer of fish and seafood; due to increased imports, the trade balance deficit in 2021 worsened (EUR 250 million, 13% higher than in 2020). According to EUMOFA (EUMOFA, 2022), Italy, which historically is the country with the highest level of total seafood expenditure in EU, recorded the highest increase of total expenditure in absolute terms, as expenditure grew by more than EUR 880 million from 2020 to 2021. The per capita consumption of fishery and aquaculture products in Italy in value, reach EUR 223 in 2021, +8% compared to 2020.

### Operating costs (external factors)

The most important operational costs are the wages and salaries of the crew members and the fuel costs. The operational cost structure changed slightly between 2013 and 2021. The incidence of labour costs on total operational costs decreased from 34% to 33% while the incidence of fuel costs decreased from 25% to 24%.

Average crew wage per FTE was EUR 13 563 in 2021; a slightly increased trend has been observed in the period 2013-2020; the crew share is strongly linked with fishing income and as the latter increased, the labour costs increased consequently until 2019. On the contrary, in 2020 the increase in the average crew wage per FTE was due to the huge reduction in the FTE. In 2021, the average crew wage per FTE decreased; the increased in FTE was not compensated by the labour costs.

### Status of Key Stocks, changes in TACs and quotas

Most stocks for which validated assessments are available, continue to be fished outside biologically sustainable limits. Nevertheless, the recent trend shows some little improvements; there are indications that fishing pressure has decreased since 2013 while biomass has shown a slight improvement since 2011, being above the 2003 reference level in the last two years (2019-2020) (STECF-adhoc-23-01).There are large differences between GSAs in the overexploitation status of species; for some species, an improvement in exploitation rates and biomass is observed (STECF, 2020-09 and 22-09). Biomass is increasing for red mullet in all the GSAs, deep-water rose shrimp in GSA 17, GSA 18 and GSA 19for

Norway lobster in GSA 9 and GSA 17-18. A decreasing trend in biomass for deep-water rose shrimp in GSA 9-10-11 and giant red shrimp in GSA 18-19.

In 2021, three fisheries are managed through TACs and quotas in Italy:

- Bluefin tuna: quota is allocated among purse seines, longlines, cages, a quota set aside for compensations (slightly less than 5%), and recreational fishing (0.5%). A TAC of 4 745 tonnes was set in 2021.
- Swordfish: in line with the ICCAT recommendations, the Italian Administration established the national list of vessels authorised to fish for swordfish and regulated the use of fishing gears.
- Small pelagic species in Adriatic Sea: the catch limit for the EU concerning small pelagic species in the Adriatic Sea was set on 2021 (96 625 tonnes of anchovy plus sardine - Council Regulation 2021/90). Except the indication that the catch for Slovenia should not exceed 300 tonnes, the Council did not, however, define the share (quotas) of the total fishing opportunities between Croatia and Italy.
- In 2022, a maximum catch level was set for blue and red shrimp and giant red shrimp in Ligurian Sea, Tyrrhenian Sea and Sardinia Island (GSAs 8-9-10-11 - Council Regulation 2022/110).

### Management instruments

2021 was the second year of implementation of the Multiannual Plan for the fisheries exploiting demersal stocks in the western Mediterranean Sea established by Regulation (EU) 2019/1022 entered into force on 16 July 2019. The maximum allowable fishing effort was reduced by 30% compared to the baseline. In addition to the limitation of fishing effort, national administration established closure areas to protect juveniles of European hake. 10 Fishery Restricted Areas (FRAs) were implemented in the Ligurian and the Tyrrhenian Seas in order to reduce the catch of undersized hake (Ministerial Decree on Identification of areas prohibited for professional fishing pursuant to art. 11, paragraph 2 of Reg. (EU) No. 1022/2019). These new FRAs add to other fishing areas closed in the previous years (the Pomo/Jabuka Pit in the Adriatic Sea and the three fisheries restricted areas in the Strait of Sicily (Reg. (UE) 2019/982).

In order to address issues related to the Adriatic Sea's multispecies demersal fishery, in 2021, GFCM adopted the Recommendation GFCM/44/2021/1 foreseeing a progressive linear annual reduction in fishing mortality (F) towards the maximum sustainable yield (FMSY) target in 2026. This management plan was the first to include a detailed effort regime in the Mediterranean Sea; after an initial transitional fishing effort regime in 2020–2021, a yearly fishing effort quota have been set in 2022.

The new management measures introduced in the last two years (in particular, the restrictions of the fishing effort introduced with the West Med MAP and spatial closures) had socioeconomic impact on fishers in so far as they need technical and behaviour adaptations. Fishers are concerned that these measures will have a negative impact on their profits in the future.

### Innovation and Development (role of the EMFF)

In 2021, investments decreased by 13% compared to 2020. The level of investment is very low (an average of 1.5 thousand euros per vessel in 2021) despite the large part of the fleet would need vessel modernisation (the average age of the vessels is 36 years). Large scale accounts for 64% of total investments; small scale fleet has few or no investments because of the low financial resources and low propensity to risk-taking and innovation.

EMFF funds foresee measures for investments to the fishing fleet to improve selectivity of the gears or for technical adjustments. EMFF financial support to small scale vessels, partly contributed to the improvement and diversification of activities, the enhancement of the competitiveness and viability of fisheries, whilst funding provided to larger trawl vessels was limited to compensating for the exit from the sector or for the temporary cessation (Gambino et al., 2022).

- *Assessment the economic performance for 2022 and 2023 (nowcasts)*

  *Model results*

Overall, it is expected that 2022 will be less profitable than in 2021 as a consequence of the increase in energy costs and the reduction of the fishing effort. For 2022, the model forecasts a 30% decrease in gross value added and an 50% decrease in gross profit compared to 2021. It is estimated GVA will reach EUR 311 million, gross profit EUR 110 million; a net profit at EUR 4 million for 2021.

Nowcast for 2023 suggest an overall higher economic performance compared to 2022 driven by increases in both landings weight and value. In terms of economic indicators, revenue GVA and gross profit are predicted to increase; the rising inflation will have an impact on net profit, as a conseguence of the huge increase in the opportunity cost of capital; despite this, the fleet will report a net profit of EUR 106 million.

Another important factor that will impact the performances of the Italian fisheries will be the reduction in the fishing days for demersal trawlers in Tyrrhenian Sea and Adriatic Sea imposed by the current effort regimes. The enter in force in 2023 of a new regime of TAC for blue and red shrimp and giant red shrimp in Ligurian Sea, Tyrrhenian Sea and Sardinia Island (GSAs 8-9-10-11) will have economic impact for the fleet segments targeting these species and new concerns may arise among fishermen.

*Impact of fuel prices/indicators on energy efficiency by fleet segments*

The Italian fishing fleet is facing a serious economic crisis caused by the increase in fuel price since the beginning of 2022. Energy costs represents a significant component of the operational costs of the fishing fleets and, as a result, the profitability of the fishing fleets is very sensitive to fuel price variations. The crisis has affected all fleet segments, although the pelagic fleet and trawlers are the most vulnerable fleet segments. During the first six month of 2022, fishers have reacted by reducing the days spent at sea or stopping activity. To mitigate fuel cost impact, financial compensations have been provided to the owners of the fishing vessels (a one-off contribution in relation to vessel size). The crew is facing a huge social and economic crisis. The long periods of inactivity have a direct impact on the wages. Fishers complain about the absence of social safety measures able to compensate the loss.

## Economic performance by fishing activity

### Small-scale coastal fleet

The Italian SSCF with 6 963 active vessels covers almost 67% of active vessels. In 2021, the SSCF production was EUR 172 million accounting for 23% of the Italian landings value.

The Italian SSCF is mainly concentrated in length class 06-12m (70% of SSCF). SSCF is spread along the Italian coasts, mainly in Sicily (more than 1 000 vessels), Sardinia and Campania region. The main gears are set gillnets, trammel nets, pots and traps, set longlines. The main target species are common cuttlefish, common octopus, swordfish, European hake, mullets, blotched picarel, surmullet and spottail mantis squillid; these species are among the most commercially valuable species and the average prices are very high consequently; products are mostly sold on the local market directly to consumers or restaurants.

The SSCF employs a total of 9 870 engaged crew, thus contributing to 47% of the total national employment of the sector. Around 2 000 of the engaged crew is unpaid labour; several employees in the small-scale fishing are the owners themselves with no paid crew.

In 2021, the SSCF reported the best economic performance since 2018. In 2021, total activity expressed in sea days grew by 36%; landings in volume and value increased (+3% and +14%, respectively). These positive trends had an impact on the labour costs that increased by 12%; the crew-share system, in which the labour cost is a fixed share of the gross profits, is used in the great part of the local fishing harbours to calculate the remuneration for the crew. Most of the fishers are also the owners' vessel and their remuneration is given by the revenue minus the operational costs.

Overall, the SSCF is profitable, generating a profit of EUR 47 million in 2021 but the resource productivity and efficiency indicators are very low if compared with the same indicators calculated for all the Italian fleet. The labour productivity indicator (GVA/FTE) was EUR 21 000 in 2021 (the national average labour productivity was estimated at EUR 30 000) and the revenue per vessel about EUR 19 000.

### Large-scale fleet

Large-scale fleet segments, with 3 348 active vessels cover almost 32% of active vessels in 2021. They represent a major part of the active fleet regarding the gross tonnage (77%) and the engine power (67%). The LSF is mainly made up of vessels using active gears, especially demersal trawlers and beam trawlers.

Demersal trawlers operate mainly in the Adriatic Sea and in the Strait of Sicily (about 60%), while the pelagic fleet is prevalent in the Northern Adriatic (pelagic trawlers) and in the Tyrrhenian Sea (purse

seiners). Employment was stable in 2021 (10 992 jobs); almost 6% of the employed persons were estimated as being unpaid labour (vessel owner's own labour, considered to be self-employed). In the period 2013-2021, the number of vessels belonging to LSF decreased by 13%.; over the same period, a huge reduction in activity has been reported (-21% fishing days); TBB1218, DTS1218 and DTS1824 were the two fleet segments with the greatest reduction of fishing days; this trend can be linked with the limitation imposed on the fishing effort by regulations in force.

As a consequence of the effort reduction, both volume and value of landings decreased by 24% and 19%, respectively compared to the average 2013-2020. At the same time, energy costs which accounted for 28% of total LSF costs, decreased by 24% and this mitigated the impact of the reduction of income on the main economic performance indicators; the fleet remains profitable with gross and net profit margins of 31% and 14%, respectively.

- *Economic performance of selected fleet segments*

In 2021, the Italian fleet consisted of 23 fleet segments. The economic performance for three segments has not been estimated: OFRPS40XX for confidentiality (one vessel in the fishing segment), OFRDTS40XX and MBSPS40XX due to missing economic data.

Based on the net profit margin, seven fleet segments showed high profitability, three a reasonable profitability and ten a weak profitability (a fleet segment with a single vessel is not evaluated for confidentiality reasons). Net losses are registered for five segments (DTS1824m, TBB1218m, TBB1824m, DTS0612m, and DTS40XXm in OFR).

Both in terms of number of vessels and production value, the fleet is dominated by polyvalent passive segments, large demersal trawlers, and dredgers. The performance of the polyvalent passive vessels is described in the section on the SSCF, which includes the fleet segments PGP0006m and PGP0612m.

*Demersal trawlers 12-18m*

In 2021, this fleet segment included 1 022 active vessels producing a total value of landings of EUR 105 million and employing a total of 2 543 FTEs. Demersal trawlers have a multi-species landings composition, capturing several species, such as deep-water rose shrimp, European hake, common cuttlefish, spottail mantis squillid, blue and red shrimp, red mullet, caramote prawn and Norway lobster.

In 2021, this fleet contributed to the total national landings in weight and value by 12% and 14%, respectively. Compared to 2020, the value of landings decreased by 6%, mainly because of the reduction in the number of active vessels.

The fleet segment registered a gross profit of EUR 29 million and a net profit of EUR 13 million. Even though the economic performance was lower than the previous year, the profitability of this fleet segment remained reasonable.

*Demersal trawlers 18-24m*

In 2021, this fleet segment consisted of 550 active vessels, which contributed to the total value of landings for EUR 124 million. The fleet segment employed 2 038 people, equivalent to a total of 1 987 FTEs. Demersal trawlers have a multi-species landings composition. The species contributing the most to the total landings value of this fleet segment are deep-water rose shrimp, European hake, Norway lobster, red mullet, giant red shrimp, common cuttlefish, blue and red shrimp and caramote prawn.

Compared to 2020, because of the increased number of days at sea, the value of landings in 2021 increased by 10%.

In 2021, the fleet segment registered a gross value added of EUR 63 million, a gross profit of EUR 31 million, 10% higher than the value registered in 2020 and a positive net profit of EUR 4 million.

*Hooks 12-18m*

149 vessels made up this segment in 2021 which operates predominantly in GSA 10 (Southern and Central Tyrrhenian Sea) and GSA 19 (Western Ionian Sea). This segment employed 528 jobs equivalent to 313 FTE during the same period. The fleet targets a variety of species; surface long-liners target mainly large pelagic species such as Atlantic bluefin tuna, swordfish and albacore, while bottom long-liners target demersal species such as hake and Atlantic chub mackerel.

The most important target species is the swordfish with a value of landing of EUR 3.3 million and average landed price of about 9.40 euro/kg, stable in the last 3 years. Swordfishes are sold for domestic

consumption and exported in other EU countries, mainly Spain. Mediterranean swordfish is subject to a multiannual recovery plan aimed at rebuilding the stock, adopted by ICCAT. The plan provides for a closure period (from 1 January to 31 March of each year), MCRS and technical characteristics of the fishing gear; a list of authorized vessels is updated every year.

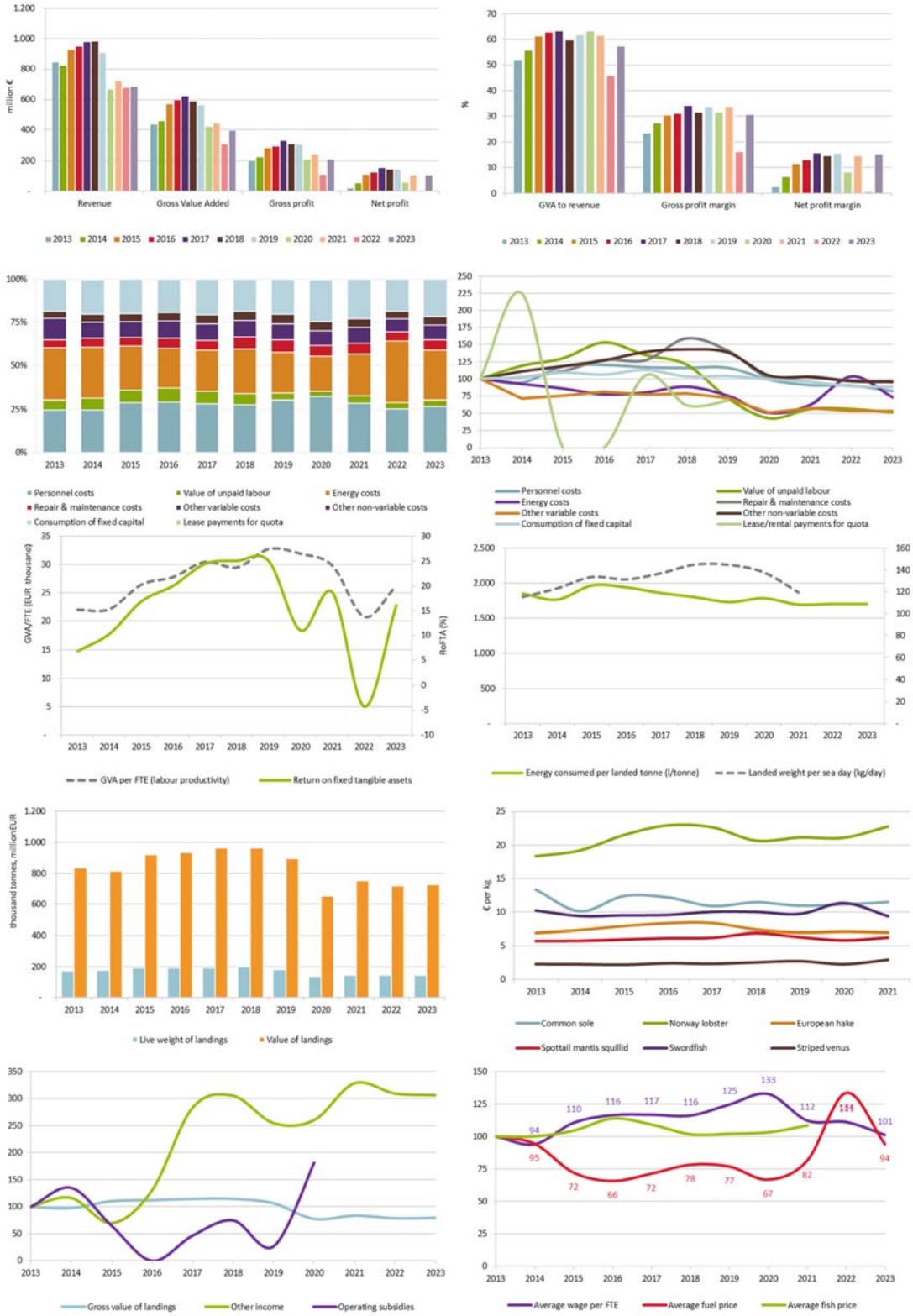
Atlantic bluefin tuna is subject to quota; the value of landings for this species for the HOK1218, was EUR 1.3 million with an average landed price of 8.70 euro/kg. The greatest part of the landed tuna is sold on domestic market.

In 2021, the total value of landings was about EUR 9.0 million. The main expenses are wages and salaries (30%), energy cost (16%) and other variable costs (19%, mainly composed by hook and baits). In 2021, this segment recorded a net profit of EUR 446 013; 2021 profitability was deemed relatively weak with a deteriorated economic trend.

- *Methodological considerations and data issues*

Variables related to income, capital costs and expenditure have not been reported for the year 2021 for the following three segments: MBSPS40XX, OFRDTS40XX and OFRPS40XX. In consideration of their low relevance on the national fleet (respectively 11, 4 and 1 vessels on a total of 11 996 vessels), the missing data have not affected the analysis on the overall performance of the Italian fishing fleet.

**Figure 4.13** Italy: Main trends in (from top to bottom, left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (EUR/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.13 Latvia

- *A short description of the national fleet*

In 2021, the Latvian Baltic Sea fishing fleet consisted of 325 registered vessels including 77 inactive vessels, with a combined 5 078 GT, a total engine power of 16 436 kW and an average age of 34 years. The size of the fleet followed a decreasing trend between 2013 and 2021. The gross tonnage declined by 25% whiles the total engine power of the fleet declined by 17% during the analysed period from 2013 to 2021. The reason for the changes was related to the vessels scrapping according to the multi-annual management plan aimed at achieving a better balance between fishing capacity and the available resources. The fishing vessels were "reassigned for activities outside fishing (by scrapping or selling)".

*Fleet structure*

The Latvian fleet is divided into several segments by length, fishing gear and operating area: the Baltic Sea fleet (segment trawlers VL2440 m), fleet operating predominantly in the Gulf of Riga (trawlers VL1218 m), the small coastal fleet operating in the coastal zone (segment with polyvalent fishing gears VL0010 m) and a distant water fleet (segment trawlers VL40XX m) operating in the Atlantic NEAFC Barents Sea (FAO fishing area 27) and CECAF Morocco and Mauritania (FAO fishing area 34) areas.

Starting from 2011 a part of small coastal vessels less than 10 metres are excluded from the economic analysis. The excluded vessels (319 small vessels in 2021) have licenses and obligation to fill the coastal logbooks but fish only for self-consumption and are not involved in a commercial fishery. The excluded volume corresponds to 1% to gross tonnage and 2% to engine power of Latvian Baltic Sea fleet in 2021. The exclusion of recreational vessels does not affect the total engine power and gross tonnage of the fishing fleet.

*Fishing activity and production*

The Baltic fleet spent a total of around 13 479 days-at-sea (DaS) in 2021 but total number of fishing days calculated for each gear were 10 843. The number of DaS decreased by 8%, and the number of fishing days decreased by 25%, respectively between 2020 and 2021 while the live weight per sea day increased by 5%. The quantity of fuel consumed per landed tonne has a sharp decrease by 42% mainly connected with the changes in large scale fleet structure and was 46 litres per tonne in 2021. The trawlers VL1218 operating in the Gulf of Riga and trawlers VL2440 operating in the Baltic Sea used 75% and 59% respectively of their capacity in 2021, while the coastal segment VL0010 used only 23% from their gross tonnage in 2021.

The total weight landed by the Baltic Sea fleet in 2021 was 58 755 tonnes of fish with a landed value of EUR 16.4 million. The total weight of landings decreased by 3% between 2020 and 2021 while the landed value decreased by 6% during the same period. The changes have occurred due to the decrease of Central Baltic herring quota and the decrease of average first market price for the Atlantic herring by 0.01 euro/kg or 4%, respectively from 2020 to 2021. Even such seemingly insignificant changes in a price as decrease by 0.01 euro/kg can affect the changes in total landing value due to the large catch volume of the Atlantic herring.

In 2021, in terms of landings composition, European sprat and Atlantic herring were the most common species landed in weight (29 091 tonnes and 25 872 tonnes, respectively). The European sprat also achieved the highest landed value EUR 8.4 million for the national fleet followed by Atlantic herring EUR 6.4 million in 2021. European sprat and Atlantic herring accounted for 50% and 38%, respectively of the total landings value in 2021 and contributed to 50% and 44% to the total landed weight, respectively.

*Employment and average salaries*

Fishers in the Baltic Sea vessels are usually local Latvia inhabitants. For the crew on board on distant water vessels there may also be invited residents of the developing countries.

The employment of the Baltic Sea fleet was estimated around 586 jobs; corresponding to 267 FTEs in 2021. The total employment and the FTE decreased by 8% and 17%, respectively between 2013 and 2021 while the GVA per FTE increased by 20%. Compared to other Member States, Latvia has a low wage per fisher. However, the average salary in the fishery sector was 12% higher than the average salary in Latvia in 2021. The average salary per FTE has increased by 23% between 2013 and 2021.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The economic performance for the Latvian fleet in 2021 regressed compared to 2020. The amount of revenue generated by the Latvian national fleet in 2021 was EUR 18.1 million including EUR 16.4 million of income from fish sales and EUR 1.5 million of non-fishing income. The revenue regressed by 17% compared to 2020.

The total operating costs decreased by 8% between 2020 and 2021, due to the sharp decrease in the items for repair and maintenance costs by 37%, other non-variable costs by 10%, energy costs by 8% and personnel costs by 7%. In its turn, the increase in other variable costs by 11% and value of unpaid labour by 5% was observed in 2021.

In terms of profitability the total amount of GVA, gross profit and net profit generated by the Latvian national fleet in 2021 were around EUR 10.9 million, EUR 5.6 million and EUR 5.3 million, respectively. The GVA and gross profit decreased by 22% and 32%, respectively while net profit decreased by 32% between 2020 and 2021.

The profitability of the fishery enterprises of the Baltic Sea fleet in overall remained on the profit-making positions between 2013 and 2021.

*Resource productivity and efficiency indicators*

The gross profit margin decreased by 18% in 2021 and was 31% indicating high operating efficiency of the sector. Net profit margin was estimated at 30% in 2021 (decrease by 18%) and the share of GVA to revenue 57% (decrease by 6%) in the same year. The labour productivity (GVA/FTE) decreased by 28% between 2020 and 2021 while the numbers of FTE increased by 8%.

The tangible assets (replacement) had low values in 2021 and was around EUR 3.8 million (including inactive vessels). The major factors were a long service life of vessels (around 34 years) and obsolete equipment. The total assets value was aroundEUR 12 million in 2021.

The following RoFTA values are indicated in 2021: 175.8 (decrease by 30%), 297.8 (decrease by 26%) and 118.1 (decrease by 13%) for the segment Baltic Sea trawlers VL2440, trawlers VL1218 operating in the Gulf of Riga and coastal zone segment VL0010, respectively. The RoFTA positive and greater than low risk long term interest rate indicates the profitable fishery in the long-term for all segments.

The potential fleet capacity could be 20–30% higher than the current one for some vessels in segments such as VL1218 and VL2440. If intensity of fishing for some vessels in segments VL1218 and VL2440 increases, these segments could obtain a greater amount of catch and a higher revenue from sales which in turn can facilitate the profit growth. However, the main impact on the productivity of the Latvian fleet is exerted by the available fish stocks for the two main target species: European sprat and Atlantic herring.

**Table 4.15** Latvia: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| LVA NAO TM 2440 NGI | 0.51 | 2.35 | 2.23 | 8.1% | 42.4 |
| LVA NAO TM 1218 NGI | 0.51 | 1.62 | 1.58 | 13.3% | 72.1 |
| LVA NAO PGP0010 NGI | 0.51 | 25.17 | 22.94 | 1.8% | 1.7 |
| National average | 0.51 | 2.60 | 2.46 | 8.4% | 46.0 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

From 2013 to 2021, the total number of vessels and total engine power decreased by 2% and 17%, respectively while the average engine power per vessel increased by 66%. The number of the DaS decreased by 22% between 2013 and 2021. The landings and weight per unit of effort (in DaS) has had a sharp increase by 28% since 2013. The landed weight per vessel increased by 4% between 2013 and 2021 while the landed value per vessel decreased by 21% during the same period. A sharp increase is observed in average wage per FTE by 69% between 2013 and 2021. The main factor which caused the

increase in profitability of the Baltic Sea fleet was the decommissioning of the vessels in the period from 2008 to 2017 and the increase of fishing intensity per vessel.

- *Performance by fishing activity*

*Small-scale coastal fleet*

The number of the SSCF vessels increased by 11% between 2020 and 2021. The vessels are included in the segment VL0010 m which use polyvalent or passive gears and target at Atlantic herring, round goby, European flounder, European smelt and other coastal freshwater species. The SSCF production is oriented to the local market. The usual fishing trip is less than 24 hours and the weather conditions as cold winters may highly influence the turnover of the segment. The coastal species achieved the highest average price (2.84 euro/kg). Despite the high prices for coastal species, the amount in the total landing composition had negligible values. 5% and 9%, respectively from the total weight and value of landings in 2021 and did not have remarkable influence for total fishing fleet economic performance. The changes in landings weight and the value of landing for the SSCF was negligible and was around 3 128 tonnes and EUR 1.4 million, respectively in 2021. The SSCF is important for employment in coastal regions which was estimated at 338 jobs, corresponding to 143 FTEs. The GVA and gross profit had a decrease by 25% and 10%, respectively. Despite of decrease the profit of the SSCF segment was around EUR 1.3 million in 2021.

*Large-scale fleet*

A decreasing trend was observed for the LSF operating in the Baltic Sea and the Gulf of Riga. The LSF targets at European sprat and Atlantic herring and composed by 38 vessels included in two segments VL2440 and VL1218 metres. The segments contributed 92% to total revenue and 78% to Net profit in 2021. Employment was estimated at 248 jobs in 2021, corresponding to 124 FTEs. The total employment and FTEs decreased by 8% and 12%, respectively over the observed period from 2020 to 2021 followed by the decrease in vessel number and capacity by 7% both. The income from landings decreased by 6% between 2020 and 2021 while the net profit had a sharp decrease during the same period by 36% due to the decrease in other income by 55% and decline in total operational costs by 8%.

*Distant water fleet*

There were five active distant water vessels which made up the segment of vessels over 40m with a combined 14 418 GT, a total engine power of 17 604 kW and an average age of 32 years owned by four Latvian companies in 2021. Three vessels with the average length of 64 metres were based predominantly in NEAFC area targeting Northern prawn and Atlantic cod. Two other vessels with an average length of 105 metres operated in the CECAF area and targeted Atlantic horse mackerel, Mackerel, Sardine, Atlantic bonito and Atlantic pomfret. In 2021, the main landing ports for these vessels were Cuxhaven, Tromsø, Dakhla and Nouadhibou. In 2021 the total weight for the Atlantic catches was 39 140 tonnes of fish with an estimated value of landing of EUR 28.9 million.

- *Performance of selected fleet segments*

The Baltic Sea fleet consisted of three active fleet segments in 2021. A short description for the segments is provided below.

*Pelagic trawl 24-40 metres*

29 vessels made up this segment in 2021 and vessels operated predominantly in the Baltic Sea. These vessels target species such as European sprat and Atlantic herring. The total value of landings was EUR 12.3 million and around 90 FTEs were employed in the fleet segment in 2021 contributing 75% and 34% to the total income from landings generated and FTEs in the national fleet, respectively. The fleet segment was profitable with a reported gross profit of around EUR 3.6 million and a net profit of around EUR 3.4 million in 2021.

*Pelagic trawl 12-18 metres*

Nine vessels made up this segment in 2021 and the vessels were operating predominantly in the Gulf of Riga. These vessels targeted at Atlantic herring and European sprat. The total value of landings was EUR 2.7 million and only 34 FTEs were supported in 2021 contributing 13% and 16% of the total income from landings generated and FTEs in the national fleet, respectively. The segment make profit in 2021, thus gross profit and net profit in 2021 were estimated at EUR 0.8 million both.

*Polyvalent or passive gears <10 metres*

210 vessels made up this segment in 2021 and the vessels were operating predominantly in the Baltic Sea and the coastal zone of the Gulf of Riga. These vessels targeted a variety of Atlantic herring, round goby, European flounder, European smelt and other coastal freshwater species. The total value of landings was EUR 1.5 million and 143 FTEs were supported in 2021 contributing to 9% and 54% of the total income from landings generated and FTEs in the national fleet, respectively. The segment make profit in 2021; thus gross profit and net profit in 2021 were estimated at EUR 1.3 and EUR 1.2 million, respectively.

- *Drivers affecting the trends of the economic performance*

### Markets and Trade

The average price obtained for European sprat was stable while the Atlantic herring price decreased by 4%, between 2020 and 2021.

The fishery sector in Latvia depends on the economic situation of external markets as well as on the turnover of the fish processing enterprises. The most important buyers of fresh fish are fish processing enterprises in Latvia and in neighbouring countries. The main produced product types are fresh or frozen fish and prepared or canned fish. The total exported value of the production to the EU countries increased by 11% and was EUR 142.9 million in 2021 while exported volume of the production increased by 5% or around 2.5 tonnes between 2020 and 2021. The decrease in exports to the non-EU countries was observed by 5% or EUR 3.6 million from 2020 to 2021.

The Lithuania ranked in the first place in terms of the total exported Latvian production value (17%). followed by Denmark, Germany, Estonia and Ukraine with the share of 12%, 10%, 9% and 7%, respectively in 2021. In terms of total exported Latvian production volume, the Ukraine, Lithuania, Estonia, Germany and Poland were important with the share of 23%, 13%, 8%, 8% and 7%, respectively for the same observed period.

### Operational costs including fuel prices

The operating costs for the Latvian fleet in 2021 were EUR 12.9 million amounting to 71% of revenue. Overall, the operational cost structure stayed relatively stable between 2013 and 2021. The sharpest decrease by 37% was observed for the other repair and maintenance costs between 2020 and 2021. The other positions in operating costs such as other non-variable costs, energy costs and personnel costs decreased by 10%, 8% and 7%, respectively during the same period. The item with the largest cost in 2021 was personal costs contributed 36% to the total operational costs. The average fuel price per vessel in 2021 was 0.51 euro/litre, which increased by 34% from 2020 to 2021 while the average landed fish price decreased by 2%.

### Status of key stocks. TACs and quotas

The economic effectiveness of the Latvian fishing fleet is fully dependent on the quota received for the two main target species. The fishing quota for the European sprat decrease by 11% between 2022 and 2023 and was 31 005 tonnes. The quota for the Atlantic herring in the Gulf of Riga decreased by 4% while in the central region of the Baltic Sea increased by 32% compared to 2022. The fishing quota of the Atlantic herring in the Gulf of Riga and the central region of the Baltic Sea are 24 565 and 1 964 tonnes, respectively in 2023. Latvia fulfils the fishing quotas of the European sprat and Atlantic herring assigned thereto almost completely.

### Management instruments

Due to come into force a reg. 2021/1888 setting out the fishing opportunities in the Baltic Sea for 2023 and which also provides a total ban on cod fishing in the eastern Baltic Sea, several measures continued to be applied for the cod fishery limitation. However, EU Regulations 2021/1888 allows a small by-catch of cod which is necessary in order not to endanger fishing opportunities for herring, sprat, flounder and other species in the Baltic Sea. In order to ensure bycatch quota (51 tonnes for Latvia) is not exceeded and does not have to suspend all fishing for Latvia, the Ministry of Agriculture in cooperation with the fishing industry has developed a number of additional fisheries regulation measures. Some measures provide that commercial fisher fishing on the sea are required to submit data for cod by-catches every ten days from the beginning of the month. In addition to the measures mentioned above, those

commercial fishers who fish in the coastal waters of Rucava, Nīca, Grobiņa and Pāvilosta counties and the city of Liepāja must carefully monitor the amount of cod caught as a by-catch in the catch of other species. If the bycatch of cod reaches 10% or more when the gear is removed, the next time the fisher shall deploy the gear no closer than two nautical miles from the location where the by-catch of cod was found or resume fishing at the same location no earlier than 72 hours after fishing operation. Additional requirements also set for fishing of herring and sprat in the Baltic Sea (except the Gulf of Riga) offshore. If the bycatches of cod exceed one percent of the total catch, next time the fishing operation should be made no closer than 10 nautical miles north of the point where the by-catch of cod occurs. or restart fishing activities in that place not earlier than 72 hours after the fishing operation. Taking into consideration that offshore and coastal fishery may have a cod bycatch and if cod by-catch quota (51 tonnes) be fully utilized before the end of 2023 Latvia will have to close all fisheries in the Baltic Sea and the Gulf of Riga in both offshore and in coastal zones.

Latvia has one multilateral agreement for data sampling in CECAF area. Starting in 2012 the sampling of pelagic fishery has been performed on the basis of multi-lateral agreement between Germany, Latvia, Lithuania, the Netherlands and Poland by local observers.

- *Nowcasts for 2022 and 2023 and beyond*

### Model results

Preliminary results for 2022 and 2023 project that all the main macroeconomic indicators for the fishing fleet will be reduced.

Results indicate that the Latvian fleet operated at a profit in 2022: with an estimated gross and net profit of EUR 4.0 million and EUR 4.0 million, respectively. The decrease of economic developments can be seen in performance indicators GVA to FTE (-8%).Gross profit margin and net profit margin will decrease compared to 2021 (+2%). However, projections further suggests that Latvian fleet will keep the profit-making position in 2022 and 2023.

Due to the damage caused by seals to coastal fishing gears and catches, the compensation was received in 2021 by 60 fishers of total amount EUR 168 000.

As a result of the implementation of 17 projects (total amount of EUR 57 million), both specialized transport and special equipment, technological lines, treatment plants, extension of piers and other works that significantly improve the work of fishers have been purchased. Industry management hopes that there will be more applications in the future to produce competitive products.

- *Methodological considerations and data issues*

### Identify changes in respect to previous years

The estimated values for the costs were used for 2015 and 2021. Restructuring of the costs between segments of the fleet was implemented for 2015 and 2021 in a relative proportion to the value of landings. The main reason for restructuring the costs is that the data collected from the companies which own vessels included in different segments. In some of such cases value and volume of landings precisely correspond to the segment but expenditures are attributed to the biggest segment.

### Improvements achieved

The new R script was developed in 2020 for the more precise procedure of days-at-sea and fishing days calculation for the coastal fishery. The new approach does not allow to the values for fishing days be higher than the values for days-at-sea. The algorithm is based on the following formulas:

- Day at Sea = 1/maxGears;

Days-at-sea are counted per each boat (one day is divided proportionally between all fishing gear used).

- Fishing day = 1/maxVessels.

Fishing Days are counted per each fishing gear (one day is divided proportionally among all boats).

For the elaboration of the national Fisheries Policy the Integrated Control and Information System (ICIS) was developed and improved during 2021. ICIS is used for general management of fishing licences, control and enforcement of fishing activities. The database contains information from the vessel electronic logbooks as well as information from the coastal logbooks for the SSCF. The improvements

were applied for the ICIS coastal logbooks section in 2021. The changes include the obligation for the fishers to submit the coastal logbooks to the ICIS database electronically. Development of the ICIS provides better collaboration between Latvian fishing fleet management institutions and improves work of the staff with the data base as well as simplifies the process of data validation and allows to make cross checks and reports automatically.

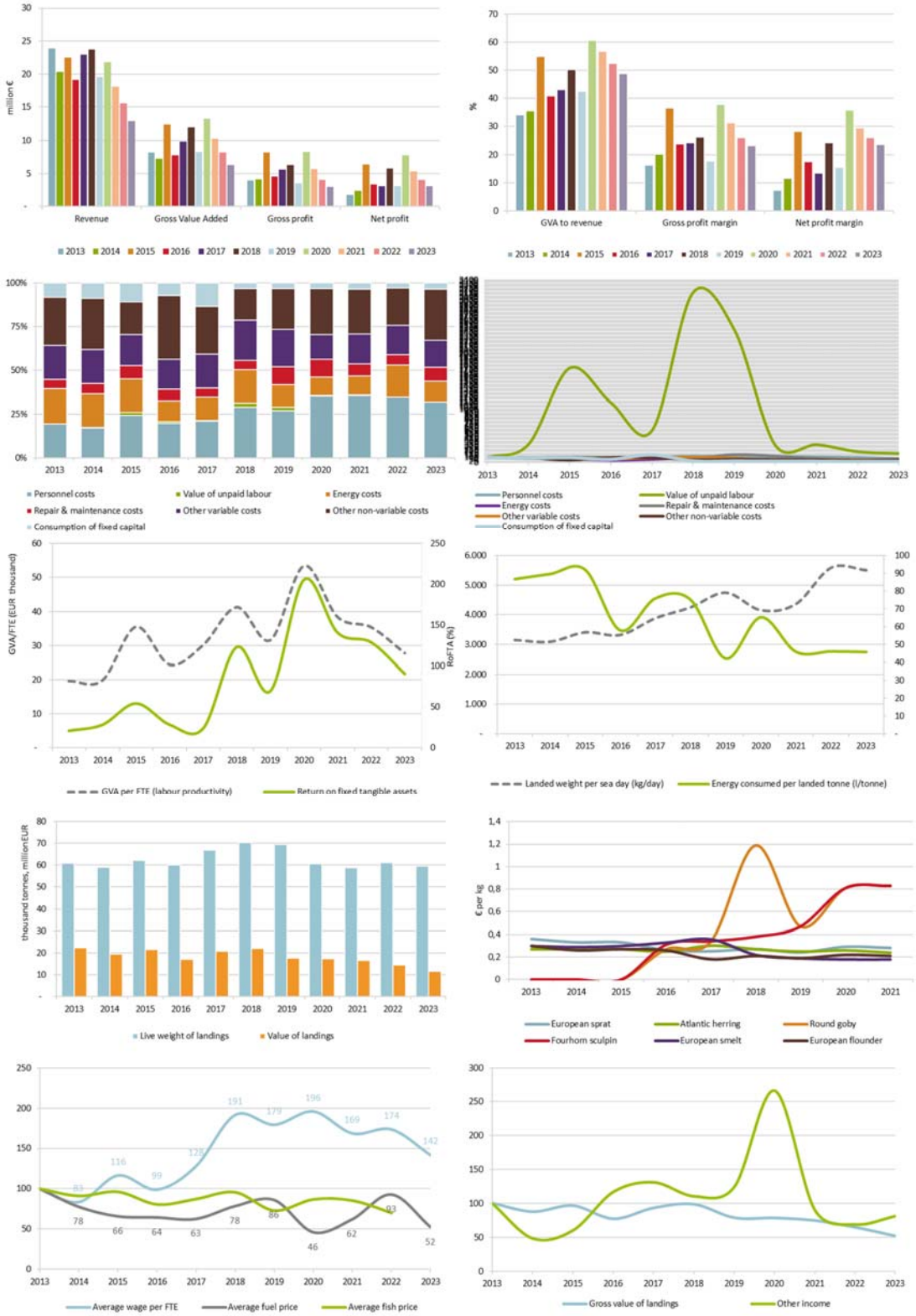
### Problems identified

Data for the depreciated replacement value was obtained by the questionnaire for 2011-2017. For the variables. Consumption of fixed capital and Value of physical capital PIM method is applied from 2018.

### Remaining issues

The data for the distant water fleet (segment VL40XX) operating in the Atlantic area 27 (NEAFC) and area 34 (CECAF) was collected but have not been submitted to ensure data confidentiality. In requested format, the data should be separated by supra regions and fishing technique. There were two segments which operated in the Atlantic in 2021: VL40XX TBS NEAFC AREA 27 (three vessel) and VL40XX TM CECAF AREA 34 (two vessels). The economic data cannot be provided for an individual vessel or for the vessels belonging to different companies (four companies in 2022).

**Figure 4.14** Latvia: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2021).

### 4.14 Lithuania

- *Short description of the national fleet*

In 2021, Lithuanian fishing fleet consisted of 140 vessels and compared to 2020 it decreased by 1%. National fleet used around 54% of the capacity corresponding to 75 active vessels. Total GT and kW remained unchanged from 2020, but compared to the 2013-2020 multiannual average, total number of vessels and GT decreased by 6% and 20%, respectively.

*Fleet structure*

Lithuanian fishing fleet includes SSCF segments operating in the coastal area of the Baltic Sea (75% of active vessels and 0.5% of total GT), LSF operating in the Baltic Sea (17% of active vessels and 8% of total GT) and LDF (8% of active vessels and 91% of total GT). SSCF have three segments: coastal vessels under 10 metres length (52 vessels) fishing with passive gears, vessels 10-12 metres (3 vessels) operating in coastal area and 24-40 metres netters fishing in Baltic Sea (1 vessel). Due to confidentiality, two netters 24 metres in length are clustered with coastal fleet segments. In 2021 LSF consisted of 13 pelagic trawlers operating in Baltic Sea. Due to the closure of cod fisheries in Baltic Sea, demersal trawler segment was not present in the fleet structure. LDF was dominant in terms of landings and capacity. It consisted in demersal trawlers and/or demersal seiners over 40 metres (2 vessels) and pelagic trawlers over 40 metres (4 vessels).

*Fishing activity and production*

In 2021, fleet spent 6 545 days at sea increasing 10% from 2020 after decline in effort due to the COVID-19. However, considering long term trend of fishing effort, number of days at sea in 2021 was 23% lower than 2013-2020 multiannual average indicating a substantial decline of fishing opportunities mostly in the Baltic Sea.

In 2021, the Lithuanian fishing fleet landed 97 000 tonnes of seafood production, corresponding to EUR 79.6 million value. Compared to 2021, weight of landings increased by 2%, whereas value declined by 2%. Horse mackerel and chub mackerel were the top species in value of landings, together contributing 47% of total value, followed by Northern prawn with 14%. In terms of weight of landings, blue whiting represented 21% of total landings, followed by chub mackerel and horse mackerel with 19% and 16% of total weight of landings respectively. In 2021 weight of landings in LDF increased by 12% to the highest level since 2017. Concerning large scale fisheries in the Baltic Sea, weight and value of landings in 2021 decreased by 6% and 7%, respectively, corresponding to 15 600 tonnes and EUR 3.7 million. This decrease was mostly influenced by significant decline in herring quota. The largest share of the LSF production value in 2021 came from the Baltic sprat, corresponding to 71% (EUR 2.77 million) of the total value from Baltic Sea, followed by Baltic herring with 28% (EUR 1.08 million). In 2021 the SSCF landed 376 tonnes of seafood production, corresponding to EUR 0.56 million and compared to 2020, weight of landings decreased by 4%, whereas value improved by 30%. Increase in value was resulted from the growth of average prices for European smelt, which was a dominant species in terms of landings value representing 65% of the total value of production in the SSCF. Compare to 2020 weight and value of European smelt increased by 6% and 43%, respectively. Herring and Round gobby together accounted for 22% of value of landings in SSCF.

*Employment and average salaries*

In 2021, the total number of employees in fishing fleet increased by 3% to 465. Number of FTE, compared to 2013-2020 multiannual average decreased by 4% indicating the recent trend of stabilization after long term decrease since 2008. During recent years increasing trend in the growth of wages and salaries in Lithuanian fisheries have paused in 2021 and compare to 2020 it decreased by 1%. However, the situation was different depending on fisheries. For example, in 2021 average wage per FTE in SSCF declined by 18% to EUR 6 402 per FTE and per year, in LDF segments declined by 2% to EUR 23 168 per FTE and per year, whereas 19% increase to EUR 23 233 per FTE and per year was observed in LSF segments.

- *Economic results for 2021 and recent trends*

*National fleet performance*

Economic indicators of the national fleet are highly dependent on the activity of the LDF segments, factors that affect the performance of other fleet segments have a minor impact at national level. Around 95% of total national revenues were generated from LDF in 2021. Total revenue (adjusted for CPI)

decreased by 2% compared to 2020. The total amount of revenues in 2021, generated by the Lithuanian national fleet was EUR 89.2 million and compared to 2020 it increased by 2%. GVA generated by the Lithuanian national fleet in 2021 was EUR 30.2 million, remained at the same level compared to 2020. In 2021 gross profit increased by 3% to EUR 21.9 million, whereas 2013-2020 multiannual average of gross profit, was around EUR 4.6 million. Value of physical capital of active fleet decreased by 5% to EUR 98.4 million compared to 2020. In 2021 national fleet generated EUR 17.2 million net profit (including opportunity cost of capital) and was 36% higher compared to 2020.

*Resource productivity and efficiency*

In 2021, labour productivity of national fleet increased by 7% to the EUR 78 713 per FTE and reached the highest level since 2008. National fleet efficiency indicators are highly dependent on LDF economic performance and has a volatile pattern as well as huge difference between fisheries. For example, in 2021 GVA/FTE in LDF increased by 5% to EUR 95 240. In LSF operating in Baltic Sea labour productivity increased by 28% to EUR 28 708, in SSCF by 81% to EUR 7 911.

Capital productivity in terms of Return on fixed tangible assets (ROFTA) in Lithuanian fleet increased by 17% compared to 2020, mainly driven by LDF segments which generated 14% returns on fixed tangible assets. In 2021 SSCF and LSF fleets has a negative return on capital corresponding to -4%.

In 2021 fishing efficiency in terms of landing weight per fishing day (CPUE) increased by 8% and was 46% higher compared to 2013-2020 multiannual average. Long distance fleet CPUE, in 2021 compared to 2020 improved by 21% to 65 400 kg/day, LSF increased CPUE by 9% to 19 800 kg/day, whereas SSCF decreased by 11% to 127 kg/day.

Energy consumption per landed tonne decreased by 32% in 2021. Decline in fuel usage was observed only in LDF segments, whereas LSF and SSCF increased energy consumption per landed tonne by 21% and 32%, respectively.

**Table 4.16** Lithuania: Average fuel price, short- and long-term break-even prices for fuel. Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term BER fuel price | Long-term BER fuel price | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| LTU OFR TM 40XX NEU * | 0.43 | 1.20 | 0.91 | 15.7% | 347 |
| LTU NAO TM 2440 NGI * | 0.38 | 0.51 | 0.27 | 18.8% | 119 |
| LTU NAO PG 0010 NGI | 1.00 | 3.32 | 2.72 | 7.2% | 101 |
| LTU NAO DFN1012 NGI * | 0.52 | -1.45 | -3.56 | 38.6% | 1,604 |
| National average | 0.43 | 1.16 | 0.87 | 15.8% | 310 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

National average of short term break even fuel price (STBEFP) in 2021 was 1.16 euro/litre, whereas average fuel price in 2021 was in 0.43 euro/litre. Difference between average fuel price and STBEFP indicates that to make total costs equal to revenues, average fuel price must increase 2.7 times. However, in 2021 average fuel price in the segment of pelagic trawlers, operating in Baltic Sea was only 25% lower than LTBEFP for that segment, indicating that relatively small increase in fuel price could lead to the losses from fisheries. The highest difference between STEBEFP indicator and average fuel price was observed in SSCF segment NAO PG 0010, indicating higher tolerance to growth of fuel prices.

- *Performance by fishing activity*

*Small-scale coastal fleet*

SSCF consists of two fleet segments – NAO PG 0-10 and NAO DFN 10-12 which due to confidentiality reasons are clustered with one netter 24-40 m, operating in the Baltic Sea. In 2021, SSCF consisted of 56 active vessels with 5% decrease compared to 2020. Fishing effort increased by 19% to 4 007 DaS in 2021 after sharp decline in 2020, which was related to the short term COVID-19 impact on small-scale fleet. After the recovery of fishing efforts and landings in 2021, profitability and productivity indicators returned to level of 2019. In 2021, GVA increased by 91% to EUR 298 000, but compared to 2013-2020 multiannual average, it was 13% lower. SSCF fleet employed 119 fishers (crew and people on shore,

related to fisheries) corresponding to 38 FTE. Compared to 2020, FTE increased by 6%, but was 12% lower than 2013-2020 multiannual average.

*Large-scale fleets*

In 2021, Lithuanian LSF fleet consisted of pelagic trawler segment only, as demersal fisheries were closed due to insufficient cod stocks in Baltic Sea. LSF consisted of 13 active vessels with 2 839 GT and compared to 2020, the number of vessels and GT decreased by 7% and 4%, respectively. The total number of DaS decreased by 7% compared to 2020, resulting 6% decline in weight of landings and 7% decline in value. Concerning economic performance in 2021, LSF generated EUR 1.3 million GVA and compared to 2020 gross profit increased by 52%. After generating net losses in 2020, LSF resulted in modest net profit including estimated opportunity cost of capital. Differently from SSCF and LDF fleets, Baltic Sea trawlers did not show the full recovery after losses obtained in 2020 because the major drivers of decreasing economic performance in Baltic Sea trawler segment is decline of fishing opportunities for pelagic species, closure of cod fisheries and increasing the operating costs. Deterioration of economic performance led to constant decrease of employment. In 2021 LSF employed 72 fishers corresponding to 46 FTE and compare to 2020 number of employees and FTE declined by 11% and 23%, respectively to the lowest level since 2008.

*Distant water fleet*

In 2021, LDF consisted of six active vessels corresponding to 31 524 GT and 30 191 kW, the same as in 2020. Fishing effort also remained almost unchanged from 2020 with 1 525 DaS. Lithuanian LDF segments are predominantly operating in CECAF (area 34) with less effort in NAFO and NEAFC. Fleet targets mostly small pelagic species such as Atlantic horse mackerel and chub mackerel, whereas from demersal fisheries the largest landings were for blue whiting and northern prawns. 2021 weight of landings increased by 12%, whereas value (CPI adjusted) declined by 2%. Following the steady effort and landings from 2020, GVA and gross profit of LDF remained almost unchanged, whereas net profit increased by 32% due to decline in depreciation cost of capital and estimated negative opportunity cost of capital. Total number employees in 2021 increased by 20%, whereas FTE decreased 4%. However, FTE was 10% higher compared to 2013-2020 multiannual average. Due to LDF segment specificity, number of FTE is always higher than average number of employees.

- *Performance of selected fleet segments*

In 2021 national fleet consisted of four main fleet segments, representing four type of fisheries, SSCF, LSF pelagic trawlers operating in the Baltic Sea and the LDF.

*Passive Gears (PG) <10m*

In 2021, 52 active vessels represented NAO PG 00-10 segment and it operated entirely in coastal area of Baltic Sea with the passive gears. This segment represents 70% of total active vessels and 0.2% of total GT in national fleet. Compared to 2020, total vessel tonnage decreased by 8% and was 4% lower than multiannual 2013-2020 average. The main species for this segment was European smelt corresponding to 58% of total share in value of landings. In 2021 total revenue increased by 23% to EUR 0.52 million and was 12% higher than multiannual 2013-2020 average. After decreased economic performance in pandemic period, GVA recovered by 69% to EUR 0.32 million. In 2021 gross profit margin increased to 18% but was 22% lower than multiannual 2013-2020 average. Total number of FTE increased by 9% to the pre-pandemic level.

*Pelagic Trawlers (TM) 24-40*

In 2021, pelagic trawler segment consisted in 13 active vessels and compared to 2020 it decreased by 7%. This segment represents large-scale fleet operating in Baltic Sea and main economic indicators are presented under the section "Performance by fishing activity" under Large-scale fleet section.

*Pelagic Trawlers (TM) 40XX, distant water fleet*

This fleet segment represents Lithuanian long-distance fisheries and main economic indicators are presented under the section "Performance by fishing activity" under Distant water fleet section.

- *Drivers affecting the economic performance trends*

*Markets and trade*

All production, from long distance fleet, which operates in CECAF, NAFO and SPRFMO areas, is sold for export. In 2021 around 45% of LDF catches, mainly small pelagic species, were landed in West African

ports (Mauritania and Morocco). Compared to 2020 share of landings in West African ports declined by 19 percentage points, whereas landings in Netherlands jumped from 18 000 tonnes in 2020 to 34 000 tonnes in 2021. After a break in 2019-2020 period, long distance fleet started fishing in SPRFMO area and landed 9 000 tonnes of seafood production in 2021. Part of pelagic trawlers capacity moved to South Pacific waters due to the uncertainty with fishing opportunities in Morrocco territories as bilateral agreement terminates in 2023. In 2021 the average price for the main pelagic species in CECAF slightly decreased but remained at higher level reached in 2020. Prices of Horse mackerel increased by 20% compared to 2020. COVID-19 pandemic has increased the demand for long-lasting seafood products which supported the higher prices in 2021. Growth of global fishmeal production for aquaculture industry and livestock farming increase the demand for small pelagic species. The average price of blue whiting, which had the largest share in the weight of landings in 2021 decreased by 3%. In 2021 the price of Northern prawn declined by 20% compared to 2020. Norway and Iceland are the main markets for Northern prawn landed by Lithuanian fleet.

In 2021 total weight of landings from LSF consisted of 73% of sprat (11 369 tonnes), 27% Baltic herring (4 263 tonnes) and minor part of other species. Around 85% of total landings from Baltic Sea were exported. The main export market for sprat was Denmark, accounted for 68% of total sprat export. Since 2021 the main market for Baltic herring was Denmark, for example, 62% of total herring export in 2019 was landed in Danish ports, in 2020 – 37% and only 2% in 2021. Baltic herring export quantities to Denmark decreased from 1 830 tonnes in 2020 to 81 tonne in 2021. Around 48% of Baltic herring catches were landed in national port and 40% exported to Latvian fish processing plants. In 2021 average prices for Baltic sprat increased by 6% and herring by 2%.

Main species supplied by SSCF are European smelt with 65% of total coastal value of landings, Gobies, Baltic herring and European flounder together contributing 23% of landings. All SSCF seafood production are landed to local ports and distributed with large share to Latvia and internal market for fresh production. In 2021 supply of fresh seafood production from SSCF decreased by 4% in volume compared to 2020. In the SSCF segments average prices for European smelt increased by 35% compared to 2020, price for Gobies and Baltic herring improved by 77% and 9%, respectively. Remarkable increase in the price of round gobby gives an opportunity to coastal fishermen diversify their activities and increase profitability, which recently was generated mainly from European smelt fisheries. Coastal fisheries still lack logistics facilities and infrastructure to store landed production which could be distributed to local markets and supply fresh seafood production to internal market. Investments to the infrastructure of landing sites are foreseen.

*Operational costs (external factors)*

In 2021, operating costs of Lithuanian fishing fleet increased by 1% to EUR 67.3 million, compared to 2020. Energy costs and other variable costs accounted for the 19% and 21% of total operating cost respectively. Compared to 2020, energy product prices rebounded by 58% after the record low fuel prices in 2020. Labour costs declined by 1% in 2021 and was 3% lower compared to 2013-2020 multiannual average. Structure of operating costs depends on the type of fisheries.

In SSCF fleet wages and salaries had the largest share of operational costs contributing by 47%, following by non-variable costs (including fishing right costs) – 31% and energy costs of 9% in total cost structure. Compared to 2020, SSCF personnel costs and other non-variable costs decreased by 14%, whereas total energy costs after lows in 2020 increased by 26%. In 2021 LSF non-variable costs (including fishing right costs) and personnel costs took the largest share in operational cost structure with 29% and 26% respectively. Energy costs contributed by 18% in total operation cost structure and increased by 7% compared to 2020. In LDF fleet other non-variable costs including expenditures on quota and other fishing rights were predominant in total operating costs with 38% of total share. Other variable costs and energy costs contributed by 22% and 19% of total share respectively. In 2021 non-variable cost increased by 3% and energy costs by 17%, compared to 2020. Other variable costs and personnel costs decreased in 2021 resulting only 2% increase in total operating costs of LDF.

*Status of Key Stocks, changes in TACs and quotas*

In the Baltic Sea, Lithuanian fleet has quotas for cod, herring, sprat and salmon. In 2021 large scale fishing fleet targeted sprat and herring as cod fisheries are closed since 2020, leaving only bycatch option. Cod bycatch limits in 2021 were decreased by 37% to 127 tonnes and then to 44 tonnes in 2022 and 2023. Remarkable cut in bycatch and landing obligations could lead to choke effect for commercial fisheries, but in 2021 such case was not observed. Recent declines in Baltic herring quota impacts a balance of fishing opportunities and fleet capacity in Baltic Sea. Baltic herring quota in 2021 decreased

by 36% to 2 848 tonnes and then down by 45% in 2022. Small pelagic species in the Baltic Sea is the main source of income to LSF fleet after cod fisheries were closed. As Baltic hearing landings had a decreasing trend, the economic performance was based on sprat fishing opportunities. Sprat quota in 2021 increased by 6% to 11 100 tonnes and by 13% in 2022. However, TAC for sprat, the main pelagic species for large scale fleet in Baltic Sea is reduced by11% to 11 200 tonnes in 2023. In Mauritania and Morocco, the Lithuanian fleet operates under EU fishery partnership agreements. In 2021 quota for pelagic species in Mauritania and Morocco increased by 18% and 4%, respectively to altogether 87 255 tonnes. Quota for small pelagic species in SPRFMO region in 2021 increased by 15% to 8 359 tonnes. In 2022 long distance fleet quotas remained unchanged, whereas SFPA agreement between EU and Morocco is expiring in July 2023.

*Management instruments*

In 2020 fishing rights to individual transferable quota (ITQ) were allocated to fishing companies, operating in coastal area of Baltic Sea, open Baltic Sea and long-distance fisheries. Duration of fishing rights is for 2020-2034 period. For coastal fleet, fishing rights were allocated to use certain commercial fishing gear in each coastal fishing bar. For Baltic large scale fleet fishing rights were allocated as opportunities to use ITQ during 2020-2034 for sprat, Baltic herring, Baltic cod (bycatch) and salmon.

Due to the disbalance between fishing opportunities and fleet capacity for cod dependent fleet segments, from 2021 vessel scraping program was started and number of unprofitable 24-40 m vessels terminated fishing business.

- *Nowcasts for 2022-23 and beyond*

*Model results and outlook*

In 2022, fishing effort of national fleet declined 12% compared to 2021 to 5 735 DaS. Weight and value of landings increased by 10% to 107 000 tonnes and EUR 87.4 million. A decrease in DaS was observed in SSCF and LSF fleets by 18% and 21%, respectively, whereas DWF had a 9% increase compared to 2021. Decline in the fishing effort for Baltic Sea fishing fleet resulted in the 28% drop of landings value in LSF segments and 19% in SSCF segments to the lowest level since 2013. Decline in fishing effort and significant increase in energy and fuel prices during 2022 due to the war in Ukraine, had an impact on the fleet profitability. Based on model results, in 2022 GVA in LSF and SSCF is expected to decrease by 40% to EUR 0.8 million and EUR 0.2 million, respectively. GVA for long distance fleet based on preliminary LAFPMIS data is expected to decline by 20% to EUR 22.0 million. Gross profit for Baltic and coastal fleet is expected to turn negative in 2022, whereas long distance fleet is likely to generate EUR 12 million. In 2023, the decrease of sprat quota in Baltic Sea will likely have pressure on the already declining large scale fisheries in this region. However, the reduction on fuel prices in after surge in 2022 is expected to increase GVA in LSF fleet, whereas SSCF is likely will decline to the lowest level since 2013. LDF in 2023 is foreseen a decline in volume and value of landings due to the expiration of SFPA agreement with Morocco. As for now, the European Commission has confirmed that there are no negotiations planned to renew the fisheries agreement with Morocco. For example, in 2022 around 30% of total LDF catches were from Morocco economic zone.

- *Methodological considerations and data issues*

*Improvements achieved*

Variable "value of quota and other fishing rights" for 2017-2020 was estimated according to the established and tested applicable methodology. For estimation of variable modified Discounted Cash Flow method was used, using LAFPMIS, FDIS, Fleet register and other data sources. New methodology is prepared in accordance with PGECON 2019 Recommendations 1.1 and 1.4 as well as conclusions on TOR 4 from PGECON WS on Capital value estimations (Salerno, 2019).

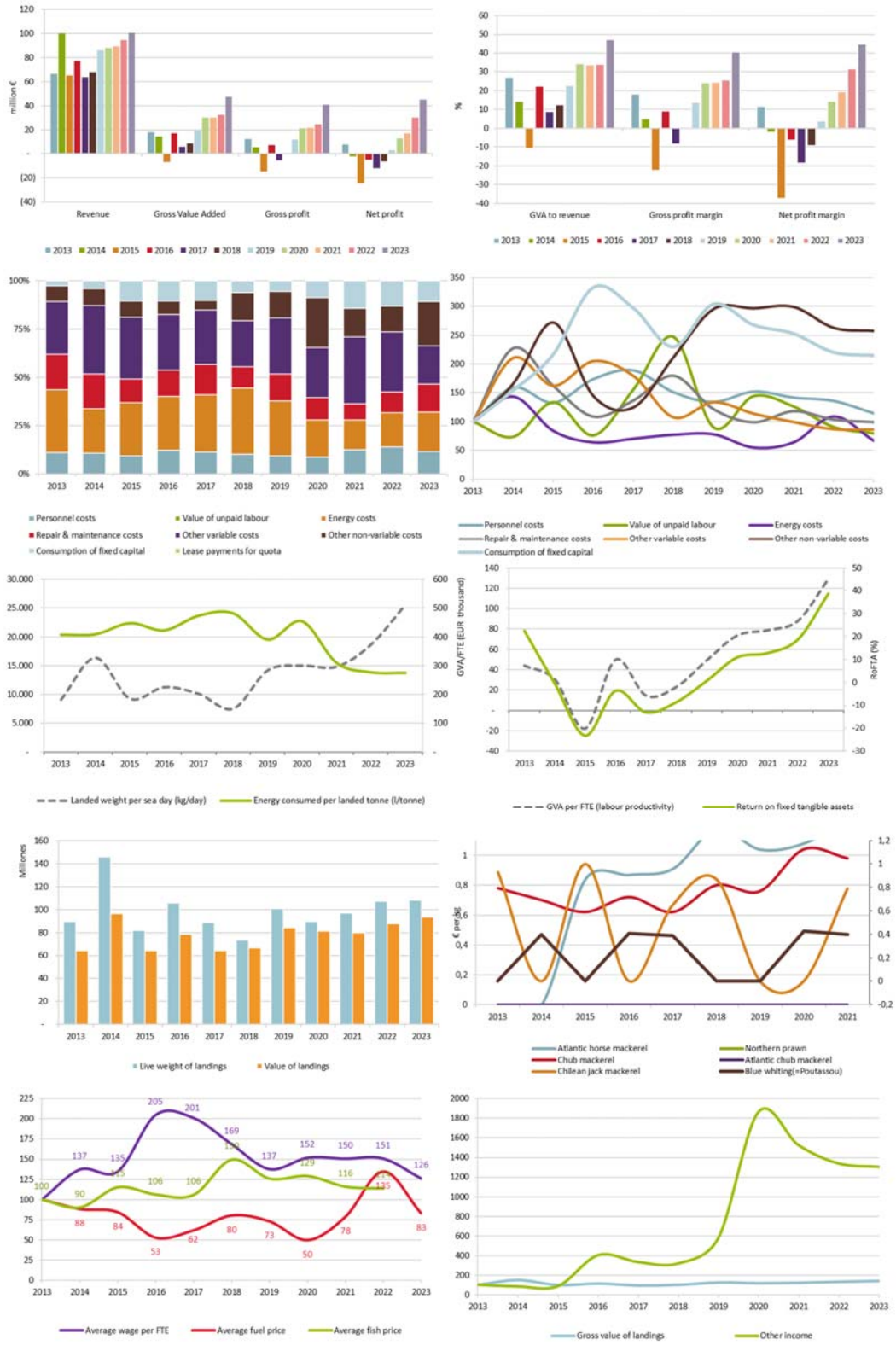
*Methodological considerations*

Revenues and value of landings reported from two separate data sources. Value of landings is estimated as the weight of landings from logbooks multiplied by the average price, whereas income from landings is collected from fishing enterprise accountancy. In Lithuania income from landings together with other socio-economic indicators, such as expenditure, employment and capital value are collected through census survey with a one-year lag whereas estimated value of landings is available one year prior to economic data.

Depreciation costs of capital and capital value at Member State level is recalculated for the total data set 2008-2017 after PIM method was revised and updated, whereas at fleet segment level data for capital depreciation costs and capital value from 2008 to 2016 left unchanged. The reason to leave previous data is because historic data were used for the fleet management with respectively, addressed management measures.

For long distance fleet, FTE is always higher than the number of employees and it is sector specific deviation. According to national law, one person can be employed for 1.5 FTE and conversion to 1 FTE per employed person in the case it exceeds would misrepresent the employment statistics for national fleet.

**Figure 4.15** Lithuania: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2021).

### 4.15 Malta

- *Short description of the national fleet*

The Maltese fishing sector is relatively small and is comprised mostly of typical Mediterranean artisanal or small-scale fishing operations. It is generally described as a multi-species and multi-gear fishery, where the majority of the fishers switch from one gear to another several times throughout the year. Most of the Maltese active fishing fleet is composed of SSCF vessels (91% of total active fleet) with an engine power of 37 785 kW and a combined 1 511 GT (31% of the total active gross tonnage).

*Fleet structure*

In 2021, the Maltese fishing fleet consisted of 859 vessels, having a combined gross tonnage of 6 421 GT and an engine power of 71 100 kW. The average age of the fleet is 31 years. Out of the total vessels in the fleet 624 were active, a 2% increase over 2020, though the number of vessels continues its declining trend, as the number of vessels decreased by 5% over 2020. Both total number of vessels and active vessels in the fleet in 2021 remain lower than the 2013-2021 average by 12% and 11%, respectively. This continues to evidence the declining trend in the Maltese fishing fleet's overall capacity. The same trend also occurs when considering the fishing capacity in terms of GT and kW, being 8% and 4% lower than in 2020, respectively.

The Maltese Fishing Vessel Register (FVR) did not open for new registrations during 2021, though registrations were accepted for recreational vessels, 27% of the fleet was inactive in 2021, with most of the inactive vessels being below 12 metres. Out of the vessel power and tonnage registered in the fleet, 25% (1 621 GT) and 27% (18 857 Kw) pertained to the inactive vessels.

Figures shows that the COVID-19 pandemic did not significantly affect the fleet composition though the number of active vessels has not returned to pre-2019 levels before the severe storm that had occurred, potentially indicating that a number of vessels are either still onshore being repaired or in the process of being replaced.

*Fishing activity and production*

The Maltese fleet spent a total of around 23 919 days-at-sea (DaS) in 2021. 21 598 of which were fishing days. Effort, in Das increased by 21% between 2020 and 2021, similarly fishing days increased by 22% over the same period. Both the SSCF and LSF saw increments in effort, 23% and 15%, respectively.

DaS appears to have returned to pre-2018 levels so much so that the change from the 2013-2020 average was less than 1%. If the previously mentioned shocks that occurred in 2019 and 2020 are excluded, it can be assumed that whilst the number of active vessels has been decreasing effort has instead increased. Most of this effort derives primarily from the SSCF, as the LSF only recorded relatively small changes across this period.

On average each vessel spent 38 DaS in 2021, a 19% improved on 2020 and 13% higher than the 2013-2020 average.

The total weight landed by the Maltese fleet in 2021 was 2 494 tonnes, with a landed value of EUR 13.7 million, a 34% increase on 2020. Such increment, both in terms of weight and value was mostly contributed by the LSF. Though it should be noted that whilst the total weight landed for the SSCF decreased by 10% the income from these landings were 15% higher than the value recorded in 2020. In fact, on average, landed weight and income per vessel for the LSF increased by 12% and 39% respectively whereas for the SSCF average landed weight decreased by 12% whilst landed income increased by 93%. This indicates a recovery in average prices per kilo of top landed species by the SSCF.

The main exploited species, in terms of weight, include Atlantic chub mackerel, swordfish, Atlantic bluefin tuna, common dolphinfish, albacore and silver scabbard fish. These species contributed to more than three-quarters of total production. It should be noted that the fleet also targets several demersal and small pelagic species, and a number of additional species some of which although caught in smaller quantities, have a high commercial value such as the giant red shrimps and red scorpion fish.

*Employment and average salaries*

The Maltese fishing sector employed 973 fishers in 2021, a relatively small decrease over 2020 (1%) yet still a record low in employment since 2008. Its FTE corresponds to 529 full-time fishers, 81% of the fishers are employed in the small-scale enterprises, implying this sector's fundamental importance to the social and economic environment of the Maltese fishing fleet. It should be noted that the decrease

in total employment and its FTE equivalent derived from the SSCF as the LSF recorded a 3% increase in both indicators over 2020. Employment continues to decline following the pandemic's recorded decrease, overall total employment in 2021 is 19% lower than the 2013-2020 average. Given that the number of active vessels in the SSCF has increased in 2021, it may indicate that most operations are possibly transitioning to one-man operations and are not engaging any other crew members. On average, each vessel within the SSCF and LSF employs circa 1 and 4 fishers, respectively.

Data shows that the average wage across all wage indicators (including per vessel, per FTE, etc.) increased over 2020, GVA per FTE also increased, a 61% improvement over 2020.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The total amount of revenue generated by the Maltese national fleet through fishing activity in 2021 totalled EUR 13.6 million, a 33% increase from 2020. When considering also other revenue streams generated by the sector through non-fishing activities (such as fish tourism by SSCF; towing/auxiliary support operations during the BFT season etc), the amount tallies to EUR 15.2 million. Other income increased by 70% over 2020. It should also be noted that in 2021 the Maltese fleet received EUR 0.8 million in operating subsidies and generated EUR 1.6 million from leasing out fishing rights.

There are many contributing factors to the increase in revenue, mostly that of recorded increases in effort (DaS), potentially higher prices for top landed species, and a potential improvement in efficiency in the relationship between landings weight/value per unit of effort with respect to cost elements consumed for the same units of effort (ex. Energy consumption).

The operating costs in 2021 amounted to EUR 10.5 million. In terms of total costs, labour (personnel costs and value of unpaid labour), energy and repair & maintenance costs were the three major expenditure items (EUR 5.2 million, EUR 2.2 million, and EUR 1.5 million, respectively). However, EUR 2.7 million of crew costs were estimated for unpaid labour which remained in the hands of the fishers as working capital. Between 2020 and 2021 operating costs increased by 24%.

Economic performance indicators such as GVA, gross profit and net profit significantly increased in 2021 in relation to 2020. The total amount for these indicators were estimated at EUR 9.9 million, EUR 4.6 million and EUR 2.1 million, respectively. This indicates that the resilience shown during the COVID-19 served as a basis for the significant improvement in the economic position of the Maltese fishing fleet.

In 2021, the Maltese fishing fleet had an estimated (depreciated) replacement value of EUR 39.6 million, with 68% of this capital belonging to the LSF. The fleet also invested EUR 1.6 million worth of capital in 2021, showing a quasi-constant level of investment since 2019.

The improvement in economic performance of the overall fleet derives mostly from the LSF, as it recorded significant increases across all indicators. The SSCF only recording increases in GVA for 2021.

*Resource productivity and efficiency*

In 2021, the Maltese fleet's gross profit margin was recorded at 31%, a 27% improvement in the operating efficiency levels for the sector from the 24% recorded in the previous year. Overall, the Maltese fleet has been recorded a positive and rather growing trend in this indicator since 2017. Net profit margin was estimated at 14% and the RoFTA was at 5%.

Labour productivity (GVA/FTE) increased (+61%) in the period analysed to EUR 18 700 per FTE. The increase in GVA (+63%) has been proportionally much greater than the increase in FTE (+1%).

Fuel Efficiency, overall, has been on a declining trend since 2013. It is fair to consider that the fleet's fuel efficiency is being affected by several factors. The first one being the fleet's age. A 31-year average vessel age is considered to be high; it may be the case that the engines on these vessels are less efficient, require more maintenance and potentially cause inconsistency in the fleet's consumption output. Looking further in depth, when dissecting fuel efficiency between the SSCF and LSF and taking into consideration days at sea it can be observed that for the SSCF fuel efficiency remains rather stable across the days at sea recorded between 2013-2021. On the other hand, for the LSF fuel efficiency fluctuates much more, even though the days at sea have remain relatively stables over the same period. This could be because the distance travelled between these two categories varies. Often SSCF vessels go out at sea on shorter trips and within small distances (either near the coast or within the Maltese 25NM) conversely LSF vessels generally have longer trips and at larger distances. It should also be noted that within the SSCF the

vessel type is often similar whereas in the LSF one finds more differentiation as within the category there exist trawlers, purse seiners and longliners.

Fuel consumption per landed tonne was estimated 1 251 litres/tonne further continuing this indicator's decreasing trend. Also, fuel cost increased by 27% over 2020. The landed weight per sea day was estimated at 104 kg/day, a 4% decrease from the previous year.

At a national level, both the short-term and long-term breakeven fuel price (BER) indicators indicate that the sector's gross and operational profit respectively are significantly larger than the energy costs incurred. This shows that overall, the fleet is less sensitive to changes in fuel prices. When dissected at the SSCF and LSF level, the indicator indicates that their respective average fuel prices the LSF's has positive results implying less sensitivities to shocks in fuel prices. The SSCF's results vary, excluding the PGP0612 cluster which recorded positive results given its average fuel price, the remaining segments/clusters in the SSCF either indicates that energy costs are a significant portion of the gross/operational profit, indicating that the business is sensitive to changes in fuel prices. Or even worse, the operation is not generating enough revenue to cover its energy expenses (loss-making).

Whilst all segments all recorded a positive indicator, 4 out the 10 segments/clusters within the Maltese fleet had energy efficiency scores lower than the industry average, suggesting a relatively low indicator.

With respect to energy intensity, the Maltese registered an estimate of 1.25 kg of fish landed per litre of fuel consumed. The majority of the segments/clusters, excluding PS1824, have an energy intensity between 1 and 2. It should also be noted that the majority of these segments have an estimated energy intensity value that is below the national average.

**Table 4.17** Malta: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term BER fuel price | Long-term BER fuel price | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| MLT MBS PS 1824 NGI * | 0.68 | 12.75 | 12.30 | 4.0% | 195 |
| MLT MBS PGP0612 NGI * | 0.71 | 1.59 | 1.21 | 17.8% | 1,437 |
| MLT MBS PMP0612 NGI | 0.71 | -0.52 | -0.89 | 23.9% | 2,313 |
| MLT MBS HOK1824 NGI * | 0.65 | 4.43 | 3.27 | 11.9% | 1,253 |
| National average | 0.73 | 2.22 | 1.62 | 16.8% | 1,251 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020)

- *Drivers affecting the economic performance trends*

Post COVID-19, thanks to the resilience shown in the economic indicators during 2020. 2021 economic performance indicators signal a positive development over the previous year as indicators such as gross profit margin, net profit margin, GVA, and RoFTA all showed signs of growth. Thanks to the latter, potential diversification of non-fishing activities (generating growth in other income), the recovery in average fish prices, and through the COVID-19 scheme launched by the Maltese Government, 2021 recorded figures comparable to 2019.

Between 2021 and 2020, there was a 17% and 34% increase in the weight and value of landings respectively. Expenditure amongst the fleet has increased by 25%, mainly due to increases in labour costs and depreciation. At the same time all revenue streams recorded growth with total income (excl. quota rental income) increasing by 35% over 2020. The main drivers of these two factors being an increase in fishing activity and possible other marine activity not related to fishing.

*Markets and trade (including fish price)*

Fishing in Malta is mainly a traditional artisanal activity which operates on a small-scale. The majority of the fish landed is sold in the local market as only a selective number of species are exported. In recent years, the status of the fish stock may have potentially reduced, consequently leading to responses and fluctuations in the prices for some of the key species.

Giant red shrimp (ARS), red porgy (RPG), John Dory (JOD), red scorpionfish (RSE), seabream (SBR and SBA) attained the highest first sale prices amongst all species landed by the Maltese fishing fleet. This is

due to the fact that these species are characterised by a high demand across both local and international markets yet they are caught in much small quantities than other key species such as the ones below.

In 2021 the real landed prices of key species such as swordfish, Atlantic bluefin tuna, common dolphinfish, and silver scabbard fish saw increases over 2020, by 3%, 45%, 80%, and 12%, respectively. The high value species also registered relative increases in their first sale prices. On the other hand, key species such as Giant red shrimp, recorded a 4% decrease.

In 2021, swordfish produced the highest landed real value (EUR 3.2 million), followed by Atlantic bluefin tuna (EUR 1.9 million), Atlantic chub mackerel (EUR 1.9 million) and common dolphinfish (EUR 1.5 million). The total revenue of landings for a previous key specie such as silver scabbardfish dropped due to decrease in the landings recorded for the year.

These aforementioned species contribute to 68% of the total value of landings for the fleet. In terms of landings weight for these species. Atlantic chub mackerel amounted to 587 tonnes, swordfish to 391 tonnes, Atlantic bluefin tuna to 380 tonnes and common dolphinfish to 220 tonnes. Compared to 2020, these species, excluding common dolphinfish, recorded increases in their landed weight.

It should be noted that Atlantic chub mackerel is generally sold in other areas of the value chain, mostly to aquaculture operators as feed, hence the relatively low first sale value for this species. Most quantities are also landed from the PS segment/cluster.

According to EUMOFA, in 2021 Malta recorded a per capita household expenditure on fishery and aquaculture products of EUR 116 (7% more than the previous year), overall, this is equivalent to EUR 60 million. Malta remains a net importer of fish and seafood. It is reasonable to say that Malta's market generally offers fish all year round and efforts are made from the authorities to promote sustainable fish consumption through local publicity campaigns which aim at educating consumers, increasing consumer awareness, and diversifying national consumption patterns. Building on previous operational programmes (EFF 2007-2013 and the EMFF 2014-2020) through EMFAF, it is being expected that further interventions to increase consumer awareness of local fish species, their diversity and seasonality to shift local consumer purchases of fish species through increased knowledge awareness shall be undertaken over the course of this programmes period.

*Operational costs (external factors)*

In 2021, both the small and large-scale fishing vessels in Malta experienced an overall increase in their operating costs, by 37% and 9%, respectively over 2020. Most significant increases were recorded particularly in crew costs (both paid and unpaid labour) and capital costs, though overall the overall operational cost structure remain unchanged.

Looking further into personnel costs, specifically the average crew wage per FTE, in 2021 this variable increased by 43% over 2020 to EUR 4 782, further emphasising a possible increasing trend registered in 2018. Given the nature of the operation and often how engaged crew are paid, the trend moves quite closely to fluctuations and trends in landings income.

*Status of key socks. TACs and quotas*

The status of some of the fish stocks in the Mediterranean are overexploited with 90% of the fish stocks being overfished, F and $F_{MSY}$ or $F_{0.1}$ are unavailable for most of the fish stocks for Malta. In 2022, the following stocks were validated at the GFCM meetings (WGSAD and WGSASP):

**Table 4.18** Stock status of key fish stocks for Maltese fishing fleet

| Species | GSAs | Assessment Status |
|---|---|---|
| *Aristaeomorpha foliacea* | 12-16. 21W | Overexploited and in overexploitation |
| *Merluccius merluccius* | 12-16 | Overexploited and in overexploitation |
| *Mullus barbatus* | 15 | In overexploitation with relatively low biomass |
| *Coryphaena Hippurus* | 50, 10, 12-16, 19 | Sustainably exploited |

The bluefin tuna fishery in Malta has been managed under an Individual quota (IQ) system. In 2009, the transferability of quotas was allowed and the system changed from IQ to ITQ.

In 2021, bluefin tuna represented the third most landed species for Maltese fleets in terms of landings (379 tonnes), just after swordfish and Atlantic chub mackerel and the second most important species in terms of income generated from landings (EUR 1.9 million). In 2021, bluefin tuna recorded an average first-sale price of 5 euro/kg, a 45% increase from 2020. Whilst the price appears to have recovered from the shock incurred due to COVID-19, first-sale prices are still far off pre COVID-19 prices.

With respect to the bluefin tuna quota distribution, the Maltese government is committed to implement a robust distribution plan each year with the aim of securing the sustainability of the resource, and the resilience and the regeneration of the fishing sector. The vision of the Government is to distribute new fishing opportunities across the fishing sector to incentivise further investment by existing fishers as well as providing new opportunities to fishers who have to date been unable to benefit from this fishery. Such avenues are entrenched in the principles of equity to resource access and the rewarding of hard work amongst the artisanal fishing fleets, in line with the UN Sustainable Development Goals.

In 2021, out of the 390 tonnes allocated to Malta, approximately 295 tonnes were allocated to vessels fishing with longlines, which were allocated a quota from the first year of quotas introduction by ICCAT, 46 tonnes to 'Sectoral' fishers (fishers with vessels of a length less than 12 metres, and others who had swordfish or albacore catches either in 2019), 20 tonnes to applicants of the young fishers scheme, and 11 tonnes were allocated to full-time commercial fishers which opt to fish for BFT. The remaining quota refers to contingency, by-catch and recreational fishers' allocation. It should be noted that the vast majority of the quota allocated to those fishers that were allocated a quota from the first year of quotas introduction by ICCAT, often rent out their quota to commercial vessels which eventually shift the 'catches' of bluefin tuna into the tuna-fattening operation.

The established quota on swordfish has been in place since 2017. This catch limit has impacted the landings of swordfish immediately after the quota came into effect, as Malta recorded drop in landings at the time, though it appears that landings post 2018 (excluding 2020 due to COVID-19), landings in terms of weight have increased once more. It should be remarked that the total allowable catch for 2022 across the Mediterranean is expected to decrease further. This could potentially impact the Maltese fishery, though this expectation may be alleviated when factoring in the fact that revenue earned from targeting this specie has remained above pre-TAC levels consistently following its implementation.

*Management instruments*

Currently there are three management plans in place within the 25nM FMZ. These were developed in line with Article 19 of Council Regulation 1967/2006 and include: lampara purse seine fishery, bottom otter trawler fishery and lampuki FAD fisheries. The main objectives of management plans are to ensure the sustainability of stocks through better monitoring and to ensure financial stability for fishers.

Lampara fishery targets mainly small pelagic species, including chub mackerel (*Scomber japonicus*) and round sardinella (*Sardinella aurita*). The objectives of the lampara fishery management plan are to ensure that stocks are fished at sustainable levels, ensuring financial stability for fishers and safeguarding artisanal fishing activity. Following this management plan, the lampara vessel activities are monitored by a tracking system and catch logbooks and the fishing capacity in terms of GT and dimensions of the gear is frozen. In addition, the lampara management plans established that an implementation of a 20% reduction in line with the precautionary approach on the current lampara capacity in terms of number of vessels was implemented. Malta has continued its monitoring activities and launched a Lampara sampling plan, acting as a monitoring programme to scientifically assess the catch composition of the lampara fishery to revise the reporting of the lampara catches. This measure is targeting an increase in biomass.

The bottom otter trawl fishery main targets are shared stocks including red shrimps (*Aristaeomorpha foliacea*), red mullets (*Mullus s*pp.) and deep water rose shrimp (*Parapenaeus longirostris*). The status of the latter stock together with that of European hake (*Merluccius merluccius*) is monitored annually at a regional level. The statuses of both stocks are in overexploitation. This management plan target to aid in the recovery of the stocks whilst at the same time ensuring economic returns and financial stability of fishers. The plan implemented a 20% capacity reduction together with a temporal reduction in effort of 10% via a one month cessation (closed season).

The lampuki fish aggregating device (FAD) fishery targets juvenile species of *Coryphaena hippurus*. Lampuki is a highly migratory species and stocks are shared between diverse Mediterranean countries. The management plan for this fishery affects Maltese fishing fleet licensed to fish for the lampuki using FADs inside and outside the 25nM FMZ. The number of fishing vessels authorised to fish in the FAD fishery are frozen at 130 vessels. Following this management plan, the activities of all these vessels are

monitored by means of tracking system and catch logbook. Moreover, the management plan stated that the Department of Fisheries and Aquaculture will continue to enhance data collection and research on the stock.

The multiannual management plan for the fisheries exploiting European hake and deep-water rose shrimp in the Strait of Sicily (GSA12 to 16) targets:

- Exploitation at MSY;
- protection of nursery areas and essential fish habitats important for the stocks of species in discussion in the strait of Sicily;
- gradual elimination of discards. by avoiding and reducing unwanted catches and ensuring that catches are landed;
- implementation of measures to adjust fishing capacity of fleets to levels of fishing mortalities consistent with the MSY. whilst maintaining economic sustainability of fleets without overexploiting marine biological resources.

The plan establishes that up until three years; target fishing mortality rates to be achieved and maintained by 2020 and onwards, fisheries restricted areas in three areas if the Strait of Sicily. temporary cessation of fishing effort that the contracting and co-operating non-contracting parties (CPCs) are to implement monitoring and management procedures that CPCs have to establish designated ports in which landings of European hake and deep-water rose shrimp from the Strait of Sicily may take place and implement an observation and inspection programme to ensure compliance with the measures in the management plan. The plan also states that the CPCs are to carry out scientific monitoring, and ongoing adaptation and revision of the plan.

*Innovation and development (role of EMFAF)*

Investment levels in 2021 decreased slightly from the previous year (5%). Whilst investment in the SSCF increased by 35% over the previous year, the LSF recorded a 14% decrease over the same period. Given the larger number of vessels, the majority of the investment in absolute terms comes from the SSCF (EUR 1 million), though on average whilst a small-scale vessel invested approximately EUR 1 900 in 2021, a large-scale vessel invested circa EUR 10 900. This gap is obviously due to differences in access levels to financing and capital resources. Generally small-scale vessel owners are much more reluctant to invest/modernise intensively their operation, especially if the owner of the enterprise is an individual that is nearing his retirement age (the Maltese sector also has an aging population).

Due to limitations and capping in the capacity of fleet major investment in innovation that would change a vessel's capacity in anyway is rather challenging as it is either difficult or expensive to obtain additional capacity. With an average vessel age of 28 years, signs show that the fleet does require modernisation and investment in innovation.

Through EMFAF the sector is expected to benefit from different initiatives to promote innovation and modernisation. An extract from the Maltese EMFAF Operational Programme (OP) reads '*Support for investments on board fishing vessels remains critical to ensure that the fishing fleet is kept up to the date with modern technologies, supporting decarbonisation efforts through energy efficiency (EE) measures and fostering enhanced sustainability and resilience. Support will be directed at fleet modernisation, innovation and the use of the latest equipment and technology, to increase EE and/or, product quality. These actions aim to support conservation measures and add value across the value chain to improve fishing gear selectivity, eliminate discards and bycatch linked to the implementation of the landing obligation, and improve the sustainability of fishing activity, marine biodiversity and the regeneration of fish stocks. Actions will support inter alia hull and propeller improvements, improved fuel performance, LED lighting and alternative refrigerants, fishing gear reducing fuel consumption and improving catch efficiency, on board fuel control and monitoring.'* (pg. 84 – EMFAF Programme[22]).

The EMFAF OP also makes reference to actions that will target:

- The enhancement of skills, knowledge, innovation, capacity building, targeting areas such as food handling and on-board hygiene, entrepreneurship. but also pilot projects targeting the blue economy and improving fishing techniques and practices.

[22] https://fondi.eu/wp-content/uploads/2023/01/EMFAF-Programme.pdf.

- Diversification which is not related to commercial fishing activities i.e. investments to enable tourism activities. the provision of environmental services related to fishing and educational activities, and the potential 'retrofitting of SSCF vessels for activities complementary to commercial fishing'.
- Improving fishing ports infrastructure to increase efficiency and improve health, safety and product quality.
- The replacement or modernisation of fishing vessel engines to help the transition of the sector towards decarbonisation and better energy efficiency.

Such actions are expected to increase the number of fishers benefitting from support, modernise the fleet and improve the resilience and adaptive capacities of the fisheries sector.

- *Performance by fishing activity*

*Small-scale coastal fleet*

Fisheries in Malta is a relatively small industry where its social significance and impact on the coastal communities and blue economy outweigh its overall macro-economic contribution in terms of GDP and GVA. It can be described as an artisanal or traditional activity which operates on a small-scale, producing small volumes of a valuable primary products. The industry is mainly artisanal, and it is considered as a typical fishery found in many Mediterranean countries. The majority of the small-scale fishing vessels conduct their coastal activities on a seasonal basis. The most common gears for the SSCF are trammel and gillnets, pots and traps, bottom longlines and Fishing Aggregation Devices (FADs). In 2021, there were 569 active vessels categorised under SSCF. This quantity includes both full-time and part-time registered fishers. The SSCF represents 91% of the active fishing fleet. The SSCF is almost evenly distributed amongst vessel under 6m (52%) and those between 6-12m (47%). Most vessels are in the majority of cases clustered either in the PGP or PMP segments.

In 2021. 77% (748 employees) of the total 973 employed in the Maltese fishing industry worked on small-scale fishing vessels, which corresponds to 313 FTEs. In 2021, there was 2% decrease in the total jobs of the small-scale fishing vessels compared to 2020, FTE indicator is rather low compared to the total jobs potentially due to seasonal employment in several fisheries, in particular the common dolphinfish season, where additional crew members are recruited specifically for this fishery alone. Data on the labour force in the sector shows that there have been constant fluctuations in the crew costs across the years due to unpaid labour and due to the fact that crew in this sector may also be paid a share of revenues/profits. In 2021, crew expenditure amounted to EUR 822 180 while the unpaid labour cost was estimated at EUR 3.1 million. The majority of the personnel in the small-scale fishing are the owners themselves with no employees. Others have their families and friends who voluntarily help them during a fishing trip working in certain fishing seasons or on a casual basis.

The landings value of the small-scale fishery increased by 15%. In terms of profitability, in 2020. the economic performance of the small-scale fishery deteriorated and registered a bigger net loss. Similar movements were observed in gross profits decreasing by 218% and become negative once again. In 2019, the SSCF contributed to 27% of the GVA of the fishing industry.

*Large-scale fleet*

The large-scale fishing vessels that were active during 2021 amounted to 55. These vessels include the fleet's trawlers and purse seiners, and a number of vessels whose main used gear were hooks and lines or mobile gears. All large-scale fishing vessels work on a full-time basis in the fishing industry.

In 2021, 23% of the total jobs, 225 employees equivalent to 216 FTEs worked with the large-scale fishing vessels. The LSF recorded a 3% increase in the total jobs of the LSF compared to 2020.

The landings value of the large-scale fishing vessels increased significantly by 85% over 2020. The COVID-19 pandemic had significantly impacted the activity of the LSF, either due to close borders affecting their sales channels and fishing activity but also because it affected their recruitment capability for crew members (which in the majority of cases the engaged crew are extra-EU nationals). 2021 figures shows that the LSF in terms of economic performance returns to pre-pandemic levels.

In 2021, this fleet category contributed to 60% to total income from fishing activity. The LSF reported a net profit of EUR 3.9 million. In terms of profitability, GVA, gross profit, and net profit increased by 88%. 121% and 188%, over 2020, respectively.

- *Performance of selected fleet segments*

The Maltese fishing fleet is highly diversified with a broad range of vessel types targeting different species in the Mediterranean. The Maltese national fleet consisted of 19 active (DCF) fleet segments in 2021, which were clustered into 10 fleet segments and five inactive fleet segments.

Out of the 10 clusters. 6 clusters had positive profitability indicators. This being PGP0612, HOK1218. PS1824, HOK1824, MGO1824, and DTS2440. With respect the economic development trends, all segments which could have the trend calculated, excluding PGP0006 and PMP0006, showed improvements in their respective economic development trends.

Below are overviews of the performance of key segments. Their importance is based either due to the number of vessels present in the segment or their contribution to the sector overall.

*Vessels using polyvalent passive gears only 00-06m*

This segment contains the 43% of the fleet's vessels and is in such terms the largest segment. Though when considering other factors such as revenue and GVA, this segment only contributes to 5% of the revenue of the fleet and EUR 157 800 out of the EUR 9.9 million generated by the entire fleet. The majority of these vessels operate within the Maltese coastal waters and use different metiers based on the fishing season throughout the year. This segment employed 73 FTEs during 2021. This segment's profitability is weak overall, and its economic development trend has deteriorated. It may be deduced based on the low contribution to the fleet's total landings that within this segment one finds the largest density of those fishing operations that are considered as 'low activity'.

*Vessels using polyvalent passive gears only 06-12m*

148 vessels made up this clustered segment in 2021, similarly to its smaller counterpart most vessels operate within the Maltese 25 nm and generally switch gears throughout the year depending on the fishing season. This segment employed 139 FTEs and contributed 22% of the fleet's total generated revenue. Conversely to the 0-6m equivalent this segment shows reasonable levels of profitability and overall improved economic development trend. The gross profit, net profit and GVA amounted to EUR 0.7 million. EUR 0.3 million and EUR 1.9 million, respectively.

*Vessels using active and passive gears 06-12m*

121 vessels were part of this segment in 2021. Like other SSCF segments, most of these vessels operate within Malta's 25 nm. This fleet segment targets several species, mainly common dolphinfish, common octopus, Atlantic Bluefin tuna and swordfish by using fish aggregating devices (FADs), and drifting long-lines (LLD), respectively. Throughout 2021 86 FTEs were employed in the segment. The activity of this segment generated a total landings value of EUR 1.6 million and generated a net loss of -EUR 0.8 million. Although recording significant losses, the net profit margin for this segment is still 37% over the 2008-2019 average and continues to show improvements in the economic development trends. The segment remained in a weak position in terms of profitability.

#### 1.1.1.1 Vessels using hooks 12–18m

14 vessels made up this segment in 2021. They operate predominantly in the Mediterranean. This segment employed 50 FTEs throughout 2021. The fleet targets a variety of species mainly by using surface and bottom longliners. Surface long-liners target mainly large pelagic species such as Atlantic bluefin tuna, swordfish and common dolphinfish while bottom long-liners target demersal species such as bluntnose sixgill shark, red scorpion fish, and silver scabbardfish among others. In 2021, the total value of landings was about EUR 1.5 million. This segment recorded a net profit of EUR 0.6 million and a relatively high net profit margin, signalling high profitability. Furthermore, the segment's economic development trend continued to improve.

*Demersal trawlers 24-40m*

Twelve vessels made up this clustered segment in 2021. Operating in Mediterranean waters, this segment employed 49 FTEs in 2021. The fleet targets a variety of species but in particular demersal and deep-water species, such as deep water rose shrimp, giant red shrimp and red mullets. In 2021, the total value of landings was approximately EUR 1.3 million. The segment reported a gross profit of around EUR 2.3 million and recorded a net profit of EUR 2.2 million. This indicates a strong recovery of 2020's weak profitability indicator and a continuing improving trend both in terms of profitability and economic development.

- *Nowcasts for 2022-23 and beyond*

  *Model results*

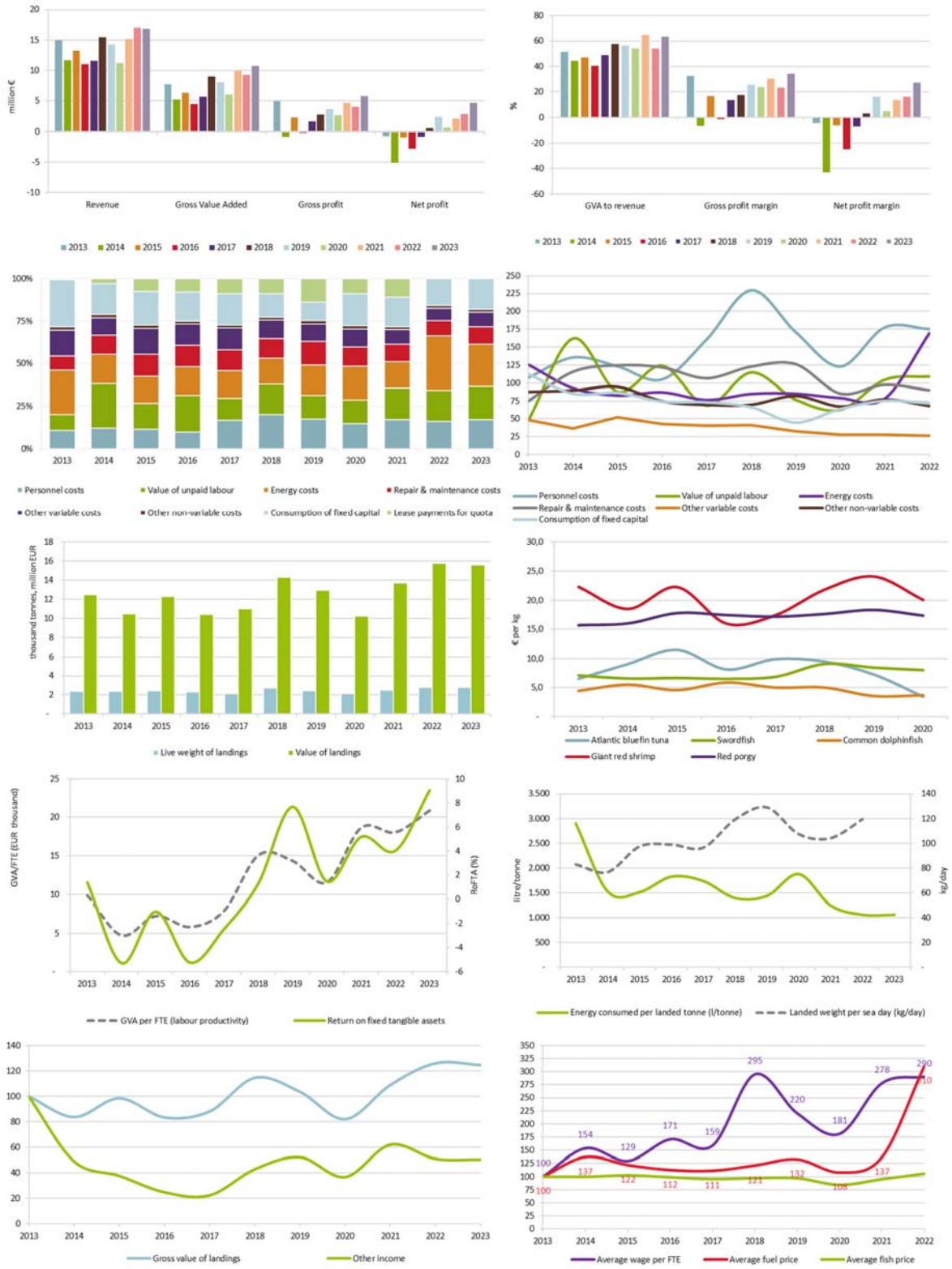
Malta is expected to continue to build on 2021 positive economic performance, with similar results in all the main economic indicators being projected for 2022. Notably, increases are expected in net profit and respective margins even though energy costs are expected to spike significantly (116%) in 2022 due to the geopolitical conflict in Ukraine. This major increase obviously will impact expected figures for GVA and gross profits, though indicators as already maintained similar or improved positive results due to the fact that landings income increase by 15%. Forecasts for 2023 are indicating further improvements and significant increases across all economic indicators. This is derived by the fact that revenue streams are expected to remain relatively stable whilst energy costs are expected to begin stabilising in 2023. It should be noted that for both 2022 and 2023 other expenditure is expected to remain relatively stable.

The source of the expected positive outcome is mostly derived from the LSF. The expected increases in energy costs will exert further pressure on the economic performance of the SSCF, with forecasts showing that in 2022 gross/net loss is expected to continue increasing.

- *Methodological considerations and data issues*

Although no major issues were detected given that the Maltese fishing fleet is mainly composed of small-scale fisheries, it is very challenging to collect precise and complete data from the fishers. The reason being that the majority of small-scale fishery do not engage an accountant and thus they do not have professional bookkeeping. Having said this, Malta does its best to enhance the quality of the data at data collection and analysis level.

**Figure 4.16** Malta: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.16 Netherlands

- *Short description of the national fleet*

In 2021, the Dutch fishing fleet consisted of 720 registered vessels, the same number as in 2020. Since 2013 the size of the fishing fleet fluctuated between 740 and 710 vessels. The mean age per vessel has slightly increased by the years from around 30 years (2013) to 34 years (2021) old. Of all registered vessels 74% (524) were active same as in 2020. However, employment decreased with 1% (to 1 878 total number of jobs) and +5% in FTE (1 586) between 2020-2021. The total vessel power of the fleet increased with 1% to a total of 248 400 kW) and total tonnage increased with 1% (to 101 000 GT) last year.

*Fleet structure*

In 2021, the number of fishing enterprises totalled 564, with the vast majority (82%), owning a single vessel. Around 18% of the enterprises owned two to five fishing vessels and only a single enterprise owned more than five vessels.

In 2021 the division in small- and large-scale activity for the active fleet was only slightly different from 2020, SSCF 38% (198 vessels) and 62% LSF (326 vessels). The number of vessels in the SSCF decreased (-12%) compared to the 2013-2020 period, but the share in total of the fleet is slowly growing the last few years. The number of pelagic freezer trawlers (TM40XX) is slightly higher than in 2020, eight vessels are left among the Dutch flag, one more than in 2020.

The mean length of SSCF was around 8 metres, where this was 28 metres for the LSF between the period 2013 to 2021. The largest share of the LSF consists of cutters targeting Common shrimp (max, 221 kW) and cutters targeting flat fish (max, 1 468 kW). Both cutter segments fish often with beam trawl (TBB). New building orders have stopped last year after some new building orders in the previous 5 years, which were modern vessels often combining demersal trawl and Danish/Scottish seines (DTS2440), so called fly shoot or purse seine. No orders were given for conventional beam trawl (TBB40XX) vessels which target species like plaice and/or common sole). Due to challenges for the fishing fleet most demersal trawling enterprises are not capable to invest into new, smaller, innovative and more sustainable fishing vessels. High fuel prices (due to the Russia-Ukraine war), decrease in landing volumes, spatial planning at the North Sea and lack of sufficient crew are the most important issues, but also lack of opportunities to innovate and funding of capital (to invest) frustrate the process and progress to renew the fleet.

*Fishing activity and production*

In 2021, the Dutch fleet spent a total of 49 365 days-at-sea (DaS), an increase of 1% from 2020. This minor increase of DaS can be clarified by the higher fishing effort from shrimp cutters. Average of effort (DaS) by the Dutch fleet fluctuates but is generally decreasing all over the years since 2013. The number of fishing days increased with 1% to a total of 43 211 from 2020-2021. The quantity of fuel consumption was estimated around 181 million litres, an increase of 2% from 2020. Total consumption of fuel increased by 8% in the last 2 years and the major factor causing this is the ban on pulse technique. This technique saved 40-50% fuel per day at sea per vessel (Oostenbrugge et al. 2018[23]) compared to the conventional beam trawl technique. Fuel consumption per day at sea will increase further in the next few years due to this ban which became finally effective 1st July 2021. Vessels have switched from pulse to the traditional beam trawl technique again (with tickler chains) because of lack of other alternatives to catch sole in economic viable quantities.

Compared to 2020, the total live weight of landings decreased by 2% while landed value increased by 5% in 2021. The total live weight of fish and shellfish landed by the Dutch fleet in 2021 was 299 104 tonnes, with a value of EUR 360 million. The decrease in weight was caused by less landed volumes for multiple top species in 2021 compared to the previous year, of which the most important are:

- Mackerel (-21%) for the pelagic freezer trawlers.
- European plaice (-9%). Last year the volume for this specie was also lower than the year before (-12%) and it is still not clear for what reason(s) the landed volume was lower. According to ICES the biomass of plaice should be very safe and far above sustainable levels.

[23] Oostenbrugge et al, 2018. Economic aspects of pulse fisheries. *Wageningen Economic Research*, https://www.wur.nl/upload_mm/b/f/8/c5e084a5-250e-4f90-8bf1-2e92edb16030_Economische%20aspecten%20pulsvisserij.pdf

The average weight of landings per day at sea for the Dutch LSF was estimated around 5.8 tonne in 2021 and is on average decreasing the last five years. The main species of which landings dropped are European plaice and pelagic species (like herring and mackerel).

The demersal fleet targets mainly flatfish and common shrimp. In terms of economic value, the top landed flatfish species were in 2021:

1. Common sole (EUR 66 million).
2. Common shrimp (EUR 52 million).
3. European plaice (EUR 38 million).
4. Turbot (EUR 18 million).

The pelagic freezer trawler fleet (TM40XX) has landed the following pelagic species in 2021, ranked as most important in terms of economic value:

1. Atlantic herring (EUR 29 million).
2. Atlantic mackerel (EUR 20 million).
3. Blue whiting (=*Poutassou*) (EUR 19 million).
4. Atlantic horse mackerel (EUR 15 million).

*Employment and average salaries*

Around 67% of the jobs came from the LSF, the demersal cutter fleet, and only 18% from the SSCF and 15% from the pelagic trawler fleet. Expressed in FTE, the contribution of the small coastal fleet is very low: around 3% of total. The trend from 2013-2021 was downward for employment mainly due to decreasing number of vessels. In the demersal fleet segment net economic results were between -EUR 36 million up to +EUR 30 million. In 2016 there was a kind of renewed hope because of healthy profits at that time which resulted into new investments (e.g., some new vessels and fishing methods) and therefore (re)entering of crew into the fleet. From that year 2016 on the number of pelagic freezer trawlers was decreasing which clarifies again the drop of engaged crew in the fleet. The last few years there are increasingly concerns about the availability of qualified crew. Due to the ongoing decrease of economic performance by lower landing volumes more and more crew transfer to other maritime jobs such as offshore, inland shipping or even outside the maritime sector. The average labour costs (salary is different) for a crew member on a Dutch fishing vessel in 2021 was around EUR 67 000.

- *Economic performance for 2021 and recent trends*

*National fleet performance*

The economic performance of the Dutch national fleet decreased in 2021 compared to 2013-2020. In 2021 the net economic result (profit) was still positive (EUR 24 million) but decreased by 8% compared to 2020. In 2016 the net profit of the Dutch fleet was the highest of the last decade with EUR 97 million.

Between the years 2014 and 2016 profit started to increase mainly by relatively high landing prices and high landings for an important part of the Dutch fleet, which is demersal (mainly shrimp and flat fish). From 2017 onwards, volume of landings decreased year by year.

In 2021, the total amount of revenue generated by the Dutch national fleet increased with 8%. This consisted of EUR 360 million landings value and around EUR 7 million in non-fishing income.

Total costs in 2021 were EUR 343 million. An increase of 7% from 2020. Particularly labour costs (crew wages) increased by 5% due to some better gross revenues, but energy costs raised by 37%. The sum of labour and energy costs, the two major operational expenses, amounted to EUR 93 million in 2021 which was EUR 11 million more compared to 2020 (EUR 82 million).

In 2021 GVA, gross profit and net profit decreased for the Dutch national fleet. Respectively -3%. -11% and -8% compared to previous year 2020. In similar order, these parameters were estimated at EUR 162 million, EUR 50 million and EUR 24 million.

For 2021, the (depreciated) replacement value of the Dutch fleet reached EUR 240 million, which was about the same the year before. The value of fishing rights was unknown, but just like last year it was expected to decrease. The main cause is again an annually lower uptake of quota for the major species: plaice and common sole. Fishing rights and quota are transferable in the Netherlands. Selling/buying and leasing these rights are quite common and prices fluctuate substantially from year to year, depending on market availability (e.g. quota for sole or plaice available or not). Since the introduction of the pulse fishing technique (high selectivity for sole) sole prices grew substantially (average lease prices of around

3.35 euro/kg in 2015) but dropped again in 2016 due to a higher TAC and a lower uptake in 2017-2021. In 2021 prices for plaice and sole quota were very low because of lack of demand. Only a few transactions have been taken place. On the other hand, prices for cod quota have been very high because of the Netherlands has a very small share of total EU quota while some vessel owners like to target this specie during summertime. Total investments (in assets in general) by the Dutch fleet amounted only to around EUR 10 million in 2021, EUR 2 million more than the year before.

Dutch vessels are becoming older, and the average age was 34 years old in 2021, despite some new build vessels which has been introduced in previous years. The pessimistic outlook for economic performance in the future does not stimulate further fleet renewal in the cutter fleet nor in the pelagic fleet. As an exemption just a single flyshoot (purse seiner) or twinrig (DTS) vessel (TBB) is build or ordered and it seems like investment in new building will stagnate. Uncertainties like more negative effects of Brexit, plans for much more spatial multi-use of the North Sea (offshore wind parks for instance), the landing obligation, the ban on pulse fishery (while energy costs are rising to an extremely high level) and a shortage of qualified crew have stopped fleet renewal. Beside that finance of investment (even in more sustainable and fuel saving fishery) is hard. Confidence and trust in the fishing industry is at a low level.

#### 1.1.1.2 Resource productivity and efficiency

The gross profit margin in 2021 was 14%, 11% lower than in 2020. This percentage fluctuated the last few years although from 2011 yearly an increase was noticed. A gross profit margin of 6% till 2016 (27%). From 2017 this annually decreased, mainly by lower value of landings of the demersal fleet. Net profit margin decreased and was estimated at 8%. The RoFTA decreased in comparison with 2020 (11%) to 10%, the lowest in the last 5 years.

Labour productivity (GVA/FTE) decreased in 2021 to a total of EUR 103 400 per FTE (-3% compared to 2020). Fuel consumption per landed tonne of fish increased with 9% compared to 2020 and amounted 631 litres per tonne landed in 2021.

**Table 4.19** The Netherlands: Average fuel price, short- and long-term break-even prices for fuel. Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term BER fuel price | Long-term BER fuel price | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| NLD NAO TM 40XX NGI * | 0.45 | 1.02 | 0.77 | 15.4% | 159 |
| NLD NAO TBB40XX NGI * | 0.43 | 0.54 | 0.51 | 35.1% | 3,494 |
| NLD NAO TBB1824 NGI * | 0.46 | 0.54 | 0.31 | 18.5% | 1,291 |
| NLD NAO DTS2440 NGI * | 0.43 | 0.62 | 0.38 | 19.9% | 1,506 |
| NLD NAO TBB1218 NGI * | 0.50 | 2.10 | 1.90 | 11.9% | 326 |
| National average | 0.44 | 0.69 | 0.56 | 22.7% | 604 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Drivers affecting the economic performance trends*

Economic performance of the Dutch fisheries was in 2021 still positive but decreasing. Unless some positive developments like 1% more volume of landings of fish, 6% higher revenues and some subsidies, the most important drivers behind the decrease in results (relative to 2020) were the much higher costs for fuel and for wages. COVID-19 outbreak hit the Dutch fisheries fleet in 2021 as well. The average fuel price (0.45 euro/litre) increased compared to 2020 (0.34 euro/litre). Regarding energy consumption and fuel prices there are great concerns for further decrease in performances because of the effects of the ban on pulse fishing technique in mid-2021. Back to the conventional beam trawl technique means rising energy consumption by 40-50% and it is feared that prices of fuel will raise in the future which means an enormous increase in energy costs. Pulse fishing technique was available under scientific observation via exemption but that has stopped now. The Dutch demersal fishing fleet is dominated by beam trawlers and demersal trawlers so typically fuel intensive. Fluctuations in fuel consumption and fuel prices therefore are key drivers of the fleet's profitability. Beside that development in fish stocks, mainly of sole, plaice and the pelagic species herring, mackerel, horse mackerel and blue whiting are important.

If quantities (so quota and landings) will go down, it is not sure that prices will compensate loss in revenues.

*Markets and trade (including first sale prices)*

The overall challenge for the Dutch fisheries in 2017-2021 was to meet the demand of raw materials (in volume) from market. More specific, due to decreasing landed weight for flatfish species after the year 2016, it was difficult for the processing and trade industry to keep their customers satisfied. They were hardly able to meet the demanded volumes during specific seasons. European plaice for instance generally competes with other (non-) European flatfish species e.g., Pacific plaice, European plaice products also compete with whitefish species on the similar international market in and outside Europe. Competition on price in the whitefish market is heavy and just relatively high import prices for fish outside the EU can give Dutch fishers some relief to obtain a good price for the plaice. On the other hand, the total availability of (non-) European flatfish species and substitutes for these species dropped also in previous years while volume was needed by the industry. Due to pending contracts from last year rather high prices were paid to fulfil the contracted volumes. The plaice processing companies were willing to pay these higher prices to a certain extend for this scarcer raw material so they could fulfil the supply contracts with their customers (wholesale and retail, etc.).

More and more plaice processors from origin are speeding up diversification to other species like salmon, often imported from aquaculture in Norway and Scotland. Many Dutch processors introduced new salmon processing machinery (e.g. filleting and packaging) to remain profitable and to optimize utilisation of production and labour capacity. Due to the growing international market demand of salmon for many Dutch fish processors this species has become more important now in sales value and production volume than plaice. Processing and trade of North Sea fish species is still the core business for many Dutch processing and wholesale companies, but this is changing very quick.

Most flatfish like common sole and plaice, caught by the Dutch fishing fleet is consumed in countries like Italy, Spain and France, so in southern European countries. In northern Europe, Germany is an important country for the consumption of flat fish fillets and Belgium for the peeled common shrimp (*Crangon crangon*).

In 2021 prices went up again after lower prices in 2020. For the total volume of fresh landed North Sea fish, the prices increased by 14% (excluding the species *ensis* and *spisula*). Common sole price increased (+11%) from 9.91 euro/kilo (2020) to 10.64 euro/kilo in 2021. For plaice the price raised (+6%) from 2.08 euro/kilo (2020) to 2.21 euro/kilo (2021). Regarding turbot, an increase in price (+34%) was registered as in 2020 the price was 7.68 euro/kilo, in 2021 the price rose to 10.29 euro/kg, Common shrimp (*Crangon crangon*) raised in price (+17%) from 2.73 euro/kilo to 3.23 euro/kilo from 2020-2021.

Because of COVID-19 pandemic the fish processing and trade companies were negatively impacted as the food service and restaurants cancelled many orders by the lockdowns in EU, also in 2021. The demand for frozen and canned fish products increased by the EU retail but this was not compensating the lacking product orders by the out-of-home (fresh) market. Prices for transport (containers) were still high which started in 2020 with even five times higher prices due to scarcity.

*Operating costs (external factors)*

A very impactful external factor is global fuel prices (24% of total costs in 2021). Another relevant external factor for the operating cost is steel prices, in case of renovation or newly built vessels. Most of the Dutch fleet consist of vessels with hulls older than 30 years. These vessels are vulnerable for necessarily repairment or renewing costs for broken engine or parts of that or replacing of the entire vessel by new to build one.

Another external factor is quota prices which hardly can be influenced by an individual company in a market with many actors. Lease prices have decreased for many target species (e.g. sole and plaice) in the last 6 years, however before that time it was verry hard to lease or purchase quota because of scarcity and therefore high market prices.

*Status of key stocks. TACs and quotas*

Most of the imported stocks fished by the Dutch fleet such as sole and plaice in the North Sea are fished at sustainable levels, far below or at MSY. Some other stocks (like cod) are still vulnerable in terms of a biomass below sustainable yields. These species (like cod) are only caught as bycatch or are targeted by only a couple of Dutch fishing vessels with substantial quota for these species.

The Netherlands conducts quota swaps with other Member States. This, together with the transferable quota from previous year, allowed for enough quota for all important commercial interesting fish species like sole, plaice and Norwegian lobster (nephrops) in 2021.

The quota for sole is very important for the Dutch fleet and a valuable target species. However, the uptake of quota for this specie is far from 100%. Catches were rather poor, and the uptake was around only 40% in 2021 (15 800 tonnes), ICES suggested an increased catch volume in 2021 based on scientific measurements due to further improvement of the fish biomass stock for sole but the fleet is not able to catch and land the fish. The Dutch quota for European plaice from ICES area 4, union waters of areas 2a and 3 (including Skagerrak and Kattegat) decreased to almost 41 000 tonnes but also the quota for this specie could not been caught properly. Around only 40% of the quota volume for plaice was landed which was leading to questions from the fishing sector and the industry why this was happening. There must be a reason for the discrepancy between the advised volumes by ICES and the experiences of fishers at sea.

In 2021 there are no data about lease prices for sole (2020 on average 0.25 euro/kg). Because of sole and plaice quota were not fully utilised in 2021 there were no (or just a few) transactions. Within 8 years (since the year 2015) the lease quota prices for sole dropped from more than 3.00 euro/kg to less than 0.25 euro/kg in 2021.

For pelagic species, just like other species, quotas are going up and down every year. Sometimes, for some species, the quota differs a lot from year to year. For the Dutch fleet herring, mackerel, horse mackerel and blue whiting are the most important species. These quotas are subject to negotiations of EU with other non-EU countries and management of the stocks in the right and scientific responsible way is not quite easy to do. To reach to a solid agreement is very difficult every year. Uncertainty about quota, especially at the beginning of the year, is businesswise not quite preferrable.

*Management instruments*

The Dutch fleet is mainly managed through ITQs for the most important species, together with a range of input controls.

In the context of the recovery of cod stocks, several effort measures (including real time closures) were implemented depending on the fishing gear in the North Sea, the Irish Sea, Skagerrak and west of Scotland. Many additional yearly restrictions exist, depending on the fleet segment, the species and area. In 2015, the North Sea cod management plan was discontinued and limits on days-at-sea in the North Sea stopped.

Due to Natura 2000, demersal and pelagic trawl fisheries are facing many closed areas. Third countries such as Norway and United Kingdom (UK) can decide to implement certain restrictions for their waters, For instance, Norway and the UK are planning closed areas for beam bottom trawl as indicated as marine protected areas (MPA). Besides that, other activities in the North Sea such as windmill parks claim more and more space. As a result, fisheries are forced to change their fishing areas or even techniques. It is suggested now to do experiments with passive gear in windmill parcs and to allow fisherman to be a co-user of windmill areas.

The EU (Green Deal) plans closure for fishing activity to 30% of EU waters, to safeguard the biodiversity of these envisaged marine protected area. This ambition is valid for the entire EU fisheries fleet. Among the Biodiversity Strategy plan there is legislation named Fit-for-55 which means EU shipping industry (including fisheries) must reduce their emission with 55% relatively to 1990.

Specifically for the Dutch coastal fleet (e.g. shrimp and mussel cutters) there is a strict nitrogen emission regulation in place. The fisheries vessels operate in Natura 2000 areas where a nature protection permit is required. These permits are only (bi)annually obtained if nitrogen emissions are not exceeding a certain level. In 2021, the current permits were still valid. But the permits will not be given in 2023 because of expected too high emission levels. The government decided in January 2023 to give a temporary permit (for 9 months) so to give the sector time to invest in so called scrubbers (to filter the $CO_2$). A subsidy of 50% will be given up to 50% (EUR 51 000) on an investment of EUR 102 000. Time to invest in this is very limited and availability of the equipment for the fleet is scares. If fishing companies cannot fulfil the law in this respect (because of financial issues or else) and no other solution is found, it could result into no extension of the nature protection permits which means no allowance to fish in the Dutch Natura 2000 waters.

#### 1.1.1.3 Innovation and development (role of the EMFAF)

For 2021 the new programme EMFAF has started as the successor of EMFF. In 2021 the EMFF was still utilized as support scheme for Dutch demersal fisheries, again mainly due to the COVID-19 outbreak. Fishing vessels were forced to stay in port. In 2021, (just like in 2020), a temporary aid scheme[24] was used from the EMFF by Dutch demersal fisheries to mitigate the impact of the COVID-19 outbreak in the fishery. This was financial compensation for temporarily staying in the harbour.

After the ban on pulse mid-2021, some Dutch fishers started testing alternative fishing techniques to put in place for the pulse gear. An alternative technique which currently is tested, is the so-called water spray technique. With limited water sprays to the bottom of the seabed, flatfish is stimulated to swim upwards into the fishing net. This technique needs more technical and scientific validation to evaluate the ecological impact and economic feasibility.

Another development is new types of vessels that use less fuel or alternative energy. Within the innovation programme 'Master plan sustainable fisheries' (in Dutch MDV) multiple vessels were built[25]. Subsequently, several French fishers have ordered similar Dutch designed vessels as well.

New projects focus more on the fisheries' selectivity approach of the landing obligation and innovative fishing gear (less energy consumption). The Dutch fisheries and scientific researchers are exploring opportunities for zero emission fisheries vessels. However, this will be a long-term innovation ambition as many technical and economic hurdles need to be overcome before it is marketable.

The government has set up a new instrument and organisation to bring people together who can contribute to fleet innovation. At the end of 2022, this so called 'VIN' (Fishery Innovation Network) started activities and some meetings are organised together with fishers. To be considered necessary innovation options has been identified and in the next few years an innovation stimulation programme will be further developed and implemented.

- *Nowcasts for 2022-23 and beyond*

*Model results*

For 2022 the expectation is that the economic performance will decrease and will result in areduction of gross profit of around 25%, driven by the fuel costs increase. Lower fuel prices from previous year are expected to determine the forecasted economic performance in 2023. The nowcast predicts a similar values in 2023 fro GVA and gross profits as in 2021.

*Expected TACs and quotas 2022 and 2023*

At the start of 2022 for some species TAC's and quota were only partly available. The EU countries and the UK could not agree immediately on quota for some shared stocks. In the first three months of 2022 only preliminary quota (for sole, turbot, brill, langoustine and rays) were available. Later in 2022 final quota for these species were given which were generally lower than the year before. Partly by Brexit at the end of the year 2020 important flatfish quota like sole, plaice and turbot/brill and important pelagic quota like mackerel and horse mackerel have been cut. Quota for herring went up. Quota for many species is managed through ITQs, TAC's for commercial target species developed from 2021-2022:

- Common sole (-31%).
- Plaice (-10%).
- Turbot/brill (-6%).
- Herring (+13%).
- Mackerel (-9%).
- Blue whiting (-20%).
- Horse mackerel (-14%).

Total volume of quota for the most important demersal target species amounted in 2022 around 49 400 tonnes of fish (-14% compared to 2021) while the quota for pelagic target species amounted around 177 500 tonnes of fish (-1% compared to 2021).

[24] Regulation (EU) No 1379/2013 and Regulation (EU) No 508/2014.

[25] Veenstra F (2017) Multicriteria Fishing Vessel Design Methodology. J Fish Aqua Dev: JFAD- 127. DOI:10.29011/JFAD-127/100027.

For 2023 negotiations between EU and Norway had a delay to determine the final TACs. Swapping of quota during the year between Member States, Norway and United Kingdom is not possible now.

The following preliminary TACs are agreed for the Dutch fleet from 2022-2023 based on the nowcast:

- Common sole (-40%).
- Plaice (+6%).
- Herring (-7%).
- Mackerel (-2%).

*Outlook*

There are multiple main drivers that could impact the performances of the Dutch fisheries in the nearby future.

Firstly, more and more areas of the North Sea are closed or to be closed because of marine nature protection or due to offshore wind farms. Most of these closed areas do contain important fishing spots for Dutch vessels. This will limit their operations to a certain extent and therefore, likely their performance (e.g. landings). The Dutch fisheries sector is one of the stakeholders which signed a so called 'North Sea Agreement' about the future spatial planning for the Dutch waters of the North Sea. Together with all other important users of the North Sea, like green energy (offshore wind parks) and oil companies, nature and environmental protection (including animal, like bird protection) organizations, marine navy (defence) and merchant navy. In 2021 the POs of Dutch fisheries signed the agreement under protest due to lacking future perspective (e.g. space to fish at sea). Spatial plans continue and space for other important economic activities is expanding.

Secondly, besides the high impact of Brexit on the performance of the Dutch fleet already had, in 2025 a next round of negotiations will start, and likely impact will be even higher. Fishing area at the North Sea decreased significant because of no allowance of Dutch vessels in British waters anymore while in the recent past, in general, up to 60% of the weight in landings by demersal trawlers and pelagic freezer trawlers (TM40XX) was caught in those waters[26].

Thirdly, the LO (Landing Obligation) will have big impact on the Dutch fishing sector when this regulation will be effective without exemptions anymore. Due to multiple *de minimis* exemptions in certain Member States including the Netherlands, the impact of the LO on social economic performance of the Dutch fleet is still limited. There are several studies conducted to calculate the impact of the LO when there are no exemptions for quota species. Without adaptions the extra costs for demersal trawlers targeting common sole and nephrops will range between EUR 6 and EUR 28 million per year[27].

Fourthly, fuel prices will be essential for the economic performance of beam trawling vessels. Since the EU ban of pulse technique many demersal trawlers had to rely on the conventional beam trawling technique. The pulse technique reduced 40-50% fuel consumption compared to the beam trawling technique. Fuel prices are expected to be double the level compared to 2021.

Fifthly, the Dutch fleet structure will considerably change in the year 2023. Many beam trawl vessels will stop fishing or are already stopped because of lack of future perspective (short and long term). Very high fuel prices, disappointing catches, less space at sea, the landing obligation, no alternatives in use of fishing gear and saving fuel, old vessels and high costs of maintenance, no skilled crew, financial problems and other reasons drive entrepreneurs to scrap their vessel. The government has set up a decommissioning scheme for that. It is estimated that at least 45-50, mostly big beam trawl, vessels will be scrapped in 2023. This will give economic impact on total size of the fleet, catches and landings of fish, total revenues, costs, number of crew and many other parameters in future, as well as social impact for local communities.

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[26] Turenhout et al, 2017. Brexit and the Dutch Fishing industry. Eurochoices 16 (2): p.24-25: https://onlinelibrary.wiley.com/doi/full/10.1111/1746-692X.12159

[27] Buisman et al, 2013. Economic effects of Landing Obligation for Dutch fisheries. LEI Wageningen UR. https://edepot.wur.nl/283011

Exploring economic impact Landing Obligation for Dutch cutter fisheries, 2015. https://www.vissersbond.nl/wp-content/uploads/2014/04/Eindrapportage-Flynth-LEI-Verkenning-economische-impact-aanlandplicht-op-de-Nederlandse-kottervloot.pdf

- *Methodological considerations and data issues*

Most of the segments in the Dutch fishing fleet were well covered. In some of the smaller segments (DRB 0-10 m, DRB 24-40 m, DTS 0-10 m and TBB 12-18 m) variation in activity levels was high resulting in high uncertainty in the economic indicators estimates and large fluctuations from year to year, Moreover, the smaller fleet segments are clusters of vessels using different fishing techniques:

- Drift and/or fixed netters 12-18m include drift and/or fixed netters 12-18m and vessels using pots and/or traps 12-18m;
- Drift and/or fixed netters 18-24m include drift and/or fixed netters 18-24m, vessels using pots and/or traps 18-24m and vessel using other active gears 18-24m;
- Dredgers 24-40m include drift and/or fixed netters 24-40m, dredgers 24-40m and dredgers 40m or larger;
- Beam trawlers 0-10m include demersal trawlers and/or demersal seiners 10-12m, purse seiners 0-10m, beam trawlers 0-10m, beam trawlers 10-12m, pelagic trawlers 0-10m and pelagic trawlers 10-12m;
- Beam trawlers 12-18m include demersal trawlers and/or demersal seiners 12-18m, beam trawlers 12-18m and pelagic trawlers 12-18m.

Because of low response rates for the data collection in the segments above in 2016, clusters were combined to estimate the economic parameters: Demersal trawlers and/or demersal seiners 0-< 10 m, Beam trawlers 0-< 10 m and Beam trawlers 12-< 18 m were combined and Dredgers 24-< 40 m and Drift and/or fixed netters 12-< 18 m were combined. Therefore, these figures should be viewed as indicative for the size of the sector rather than describing the exact trends. Currently, work is being carried out to improve the estimation procedures.

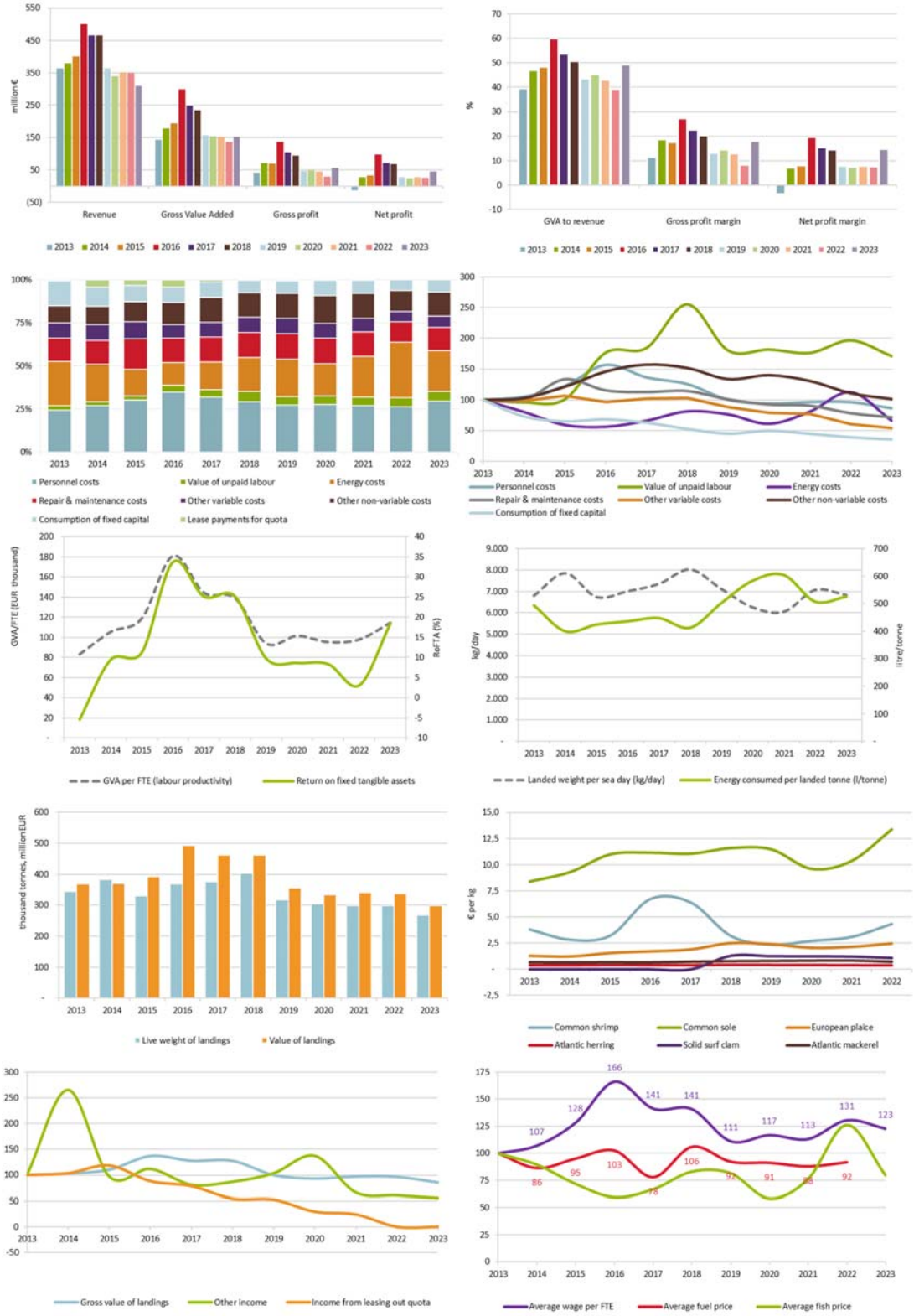
*Prices of pelagic fish*

The prices of pelagic fish used to calculate the fishing revenue of the pelagic trawler fleet are not actual prices. They are internal prices used within the fishing companies to calculate the wage of the fishing crew. The integrated companies cover the whole production chain from fishing to the consumer and there are no real ex-vessel prices available. Those prices probably underestimate the value of landings of pelagic fish.

*Renovation costs of pelagic trawler(s) in 2015*

In 2015, renovation costs for pelagic trawler(s) has been administered as investment (in 2021) instead of costs. Therefore, this modification has reduced the total costs with EUR 12 million in 2015. The net profit of the pelagic fleet segment (TM40XX) changed therefore, from -EUR 24 million (loss given) to -EUR 12 million (less loss given) in 2015.

**Figure 4.17** The Netherlands: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.17 Poland

- *Short description of the national fleet*

In 2021, the number of Polish fishing vessels, 828, remained almost unchanged (825 in 2020); however, engine power and capacity increased by 9% and 16%, respectively following changes in deep-sea segment (VL40XX) capacity. The number of vessels in 2021 compared to total time series (2013-2020) changed slightly (-1% or 2%, respectively for total or active fleet) however engine power and capacity increased by 6% and 8%, respectively, what again can be attributed to changes in the number of distant fleet vessels. The number of inactive vessels decreased from 22 in 2020 to 19 in 2021, which constitutes 2.2% of the total fleet. The majority of inactive vessels belonged to two smallest length classes (<10m. and 10-12m).

*Fleet structure*

The structure of the Polish fleet did not change remarkably in 2021. The LSF fleet (length >12m) consisted of 158 vessels (-4% compared to 2020), whereas 650 vessels (2% increase) were accounted for the SSCF. Relative changes compared to total time series for these two groups of vessels were -12% and +7%. The reduction in LSF and increased capacity for SSCF was caused by conversion of bigger vessels to smaller one (keeping the capacity ceiling constrains).

*Fishing activity and production*

Effort estimated in days-at-sea or fishing days in 2021 recovered after a one-year sharp decline observed in 2020 caused by high subsidies offered to the sector for temporary cessation of activity (including COVID money). The number of days-at-sea increased by 49%, however remained lower than in 2019 (-8%) or compared to long term series 2013-2020 (-6%). The SSCF was solely responsible for the increase (+71%) since the LSF effort decreased by 5%.

Production in 2021 decreased slightly compared to 2020, with a weight of landings of 185 779 tonnes (191 861 tonnes in 2020). SSCF landings volume and value increased by 31% and 40% while LSF production decreased by 20% and 10%, respectively.

European sprat remained the most important in terms of volume landed, followed by Atlantic herring and European flounder. Landings of sprats increased in terms of volume by 10% and value by 12%. Lower 2021 TAC set for Baltic herring caused the volume of landings decreased by 27% or value by 23%. LSF benefited good catches of freshwater species like European perch (+24%), pikeperch (37%) or European eel landings increase (+151%).

Landed value of Baltic fish increased from EUR 34.7 million in 2020 to EUR 35.8 million in 2021 (+3%).

*Employment and average salaries*

Employment increased in 2021 by 5% in terms of total jobs or 8% for FTE. Compared to total time series in number of people employed and FTE decreased by 13% or 12%. Average salary in 2021 was 12% lower compared to 2020.

- *Economic results for 2021 and recent trends*

*National fleet performance*

The economic performance of Polish fleet was affected by Baltic cod crisis which led to the closure of the fishery in mid-2019. In 2020, the cod quota was reduced to the amount available for by-catches only. Restrictions continued in 2021 and 2022.

Revenue, estimated at EUR 35.8 million in 2021 (EUR 34.7 million in 2020), decreased by 2% and compared to the period 2013-2020 by 31%.

Total costs amounted to EUR 35.2 million, a 6% decrease compared to 2020 but not yet exceeding total revenue and generating a gross profit of EUR 1.6 million (EUR 0.8 million in 2020). Personnel costs (-8%) and other variable costs (-14%) reductions contributed the most to the decrease of operating costs, while energy costs increased by 8%.

GVA in 2021 was estimated at EUR 19.3 million (compared to EUR 19.2 million in 2020). It is expected that this indicator will continue deteriorating trend in 2022 as a consequence of landings value decrease.

Gross profit was positive (EUR 1.6 million), twice higher than in 2020, however, 82% lower than long term average (2013-2020).

In 2021, investments increased by 60% and amounted to EUR 1.6 million (EUR 1 million in 2020 or EUR 2.1 million in 2019). Low level of investments can be explained by a difficult economic situation (low profitability) of the fishing sector in Poland (cod crisis and in less extend negative COVID-19 impact) as well as exhausted EFF/EMFF financing possibilities.

Generally, the cost structure has remained relatively constant over the years. In 2021, however, fuel costs contribution (16%) to the total costs increased by 2 percentage points. Personnel costs remained at 2020 level however value of unpaid labour increased to 21%, i.e., 3 percentage points.

*Resource productivity and efficiency indicators*

The gross profit margin slumped in 2020 compared to earlier years (2013-2019), recovered in 2021 however remained lower (-73%) than the average of period 2013-2020.

GVA/revenue indicator slightly improved in 2021 (by 3 percentage point) and was 3 percentage points higher than the total time series average. GVA per FTE indicator deteriorated again 19% in 2020 and 7% in 2021. Return on fixed tangible assets remained negative (-1% compared to 2% in 2020).

The highest energy intensity can be observed for two pelagic segments TM1824 and TM2440. These two segments are directed at low value pelagic species (European sprat and Atlantic herring) catching in bulk (also for reduction to fish meal). At a national level the short-term breakeven fuel price (BER) indicator reveals that the operational profit is slightly larger than the energy costs incurred. In several cases, however, the indicators are negative, reflecting the negative profitability of these segments. One segment (PG0010) has an energy efficiency score much lower than the industry average. The explanation can be that small scale vessels use often gasoline which prices are higher than diesel and are not subsidized.

**Table 4.20** Poland: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term BER fuel price | Long-term BER fuel price | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| POL NAO TM 2440 | 0.53 | 1.17 | 0.96 | 19% | 78.6 |
| POL NAO PG 0010 | 0.93 | -1.55 | -1.89 | 9% | 116.4 |
| POL NAO TM 1824 | 0.55 | 2.15 | 1.96 | 13% | 50.2 |
| POL NAO DTS1218 * | 0.62 | 1.09 | 0.94 | 26% | 130.9 |
| National average | 0.56 | 0.72 | 0.52 | 17% | 82.6 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Performance of selected fleet segments*

*Pelagic trawlers (24-40)*

Pelagic trawlers 24-40 metres length has been the most important segment in terms of economic output (landings volume and value or GVA). The vessels belonging to the segment operate exclusively in the Baltic Sea. In 2021, 43 vessels make up this segment (43 in 2020). Employment (FTE) in the segment increased compared to 2020 by 7% (-13% in 20120). In 2021, the segment contribution to the total value and volume of landings generated by the Polish Baltic fishing fleet amounted to 47% (-3%) and 58% (-2%), respectively. The segment targets pelagic species, such as sprat and herring.

In 2021, the total value of landings of the segment was EUR 15.9 million (11% less compared to 2020). The decrease was caused by herring catches (resulted from reduced TACs).

Available herring quota in 2021 to the segment was 37% smaller than in 2020 on the other hand available sprat quota increased by 8%. Fishing opportunities deteriorated further in 2022 following cuts in the TAC for Baltic herring. Available for 2440 TM segment herring quota was again 46% smaller in 2022 compared to 2021, sprat quota increased by 11%.

The economic performance of the segment, despite decreased landings value remained satisfying. This can be explained by good production efficiency. Regardless productivity and efficiency indicators deteriorated profitability of the segment remained "high". Net profit margin in 2021 compared to long term average deteriorated by 26%.

Gross profit generated by the segment in 2021 decreased by 41%. The reason behind this were lover landing incomes (-8%) and higher operating costs like remuneration (+5%) and fuel (8%).

*Passive gears <10 m*

The passive gears <10 m segment constituted of 525 vessels in 2021 (in 2020, 519 fishing units) operating in the Baltic Sea including lagoon brackish waters. The segment is the most important in Poland from the social point of view. In 2021 there was 950 FTE people employed on board vessels belonged to the segment (47% of the total employment).

The fleet targets a variety of saltwater species: Atlantic herring, European flounder and a variety of freshwater species, such as freshwater bream, pike perch, perch and pike. In 2021 the total volume of landings were 5 505 tonnes (+87% compared to 2020) worth EUR 6.3 million (72% increase compared to 2020).

Herring was the most important species in the segment landings accounted for 29% of the total volume, following by freshwater bream (18%) and roach (14%). Volume of landings of these three species doubled compared to 2020.

The gross result of the segment was again negative (-EUR 1.6 million) however, it improved compared to 2020 (-EUR 4.5 million). Gross profit margin remained negative -24% compared to -112% in 2020. The profitability indicator of the segment was at "weak" level. Gross value added generated by the segment amounted to EUR 4.3 million and thanks to increased landings output was 150% higher than in 2020.

The segment has been affected by the poor stock status of the Eastern Baltic cod which used to be the most important species in terms of landings value before 2012.

Despite of the increased landings value and volume as well as effort total costs of the segment rose only by 2%, including energy costs (+31%), unpaid labour (+5%) and repair and maintenance (+2%). Personnel costs decreased by 9%.

In 2020, the PG0010 received EUR 19.5 million operating subsidies -over twice the amount paid in 2019 (EUR 8.1 million), except for compensation for a temporary cessation of fishing activities in 2020 it was mostly financial aid aimed at mitigating of negative effect of COVID-19 outbreak. In 2021, the subsidies were reduced to EUR 0.5 million only.

- *Performance by fishing activity*

*Small-scale coastal fleet*

650 vessels belonged to the SSCF in 2021, 2% more than in 2020 or 7% increase compared to total time series. The small-scale fleet operates exclusively in the Baltic Sea and two adjacent brackish water lagoons, targeting mainly flounder (27%), herring (29%) and various freshwater species like freshwater bream (14%), roach (10%), perch (6%) and others. In 2020, the fleet landings increased by 31% compared to 2020 however, deteriorated by 26% compared to the 2013-2020 period. Value of landings amounted to EUR 7.7 million, an 40% increase compared to 2020 however, were still much lower (-34%) than two years earlier, which means that the production output did not recover after 2020 collapse.

The SSCF is affected by Baltic cod resources crisis. The fleet redirected its effort on alternative however cheaper species like Atlantic herring, flounder or various freshwater species. In 2021 Atlantic herring volume and value landings increased by 95% and 118%, respectively. The fleet benefited also recovering of freshwater bream, roach, perch and pike perch (high value species).

The SSCF has received high EMFAF subsidies such as temporary cessation of fishing activity (in 2020 related to COVID-19 outbreak), collecting of lost nets as well as bycatch of birds' observations. In 2020 GVA of the fleet slumped by 66% to EUR 2.2 million (mainly as a consequence of landings income collapse). In 2021 GVA partly recovered to amount of EUR 4.4 million (-34% compared to 2019). The SSCF produced negative gross profit of EUR 4.0 million EUR 2.8 million lower than in 2020. The number of people working in the fleet (engaged crew) increased compared to 2020 but was 5% lower compared to 2013-2020 long time average.

*Large-scale fleet*

In 2021, 158 active vessels were assigned to the large-scale fleet -4% less compared to 2020 or 12% less compared to long time average (2013-2020). The vessels operate in the Baltic Sea or in the North Atlantic (no combined activity). The Baltic vessels target mainly sprats and herring. The vessels fishing outside Baltic Sea harvested blue whiting in North-Western Waters Atlantic. In 2021 the vessels landed 115 800 tonnes fish worth EUR 27.7 million (decrease -5% and -7%, respectively compared to 2020). Herring TAC cut was the main reason for lower landings while sprat landings increased 10% following higher TAC.

Profitability of the Baltic LSF deteriorated by 26% (gross profit) or 9% (net profit). Long term changes of profitability were negative for gross profit (-48%). The fleet generated EUR 14.9 million GVA (-12% compared to 2020 or -27% long term change). In 2021 energy costs were as much as 8% higher compared to 2020 (despite lower fuel use – 5%). The vessels belonging to the fleet fishing in the Baltic spent in 2021 5% less days at sea compared to 2020. The economic performance of the LSF may deteriorate again in 2022 following reduction of Central herring TAC.

- *Drivers affecting the economic performance trends*

The Polish Baltic has been mainly affected by the condition of Atlantic cod stocks. Status of Eastern cod (poor recruitment) caused that the European Commission decided to close the fishery at the end of July 2019 and prolonged the constraints to 2020 and onwards. It negatively influenced the performance of the demersal fleet segments targeting cod (i.e. DTS, DFN, HOK as well as PG1012). Additionally, the SSCF is affected by the limited abundance of this stock in coastal waters which is commonly attributed to environmental changes in the Baltic Sea.

Another driver that negatively affected the economic performance of the Polish fleet in 2021 was the Central Baltic herring quota cut (-36%). This resulted in 27% lower herring volume and -19% value of landings.

In 2020 the industry received EUR 34.7 million (EUR 12.4 million in 2019) of operating subsidies paid for mitigating negative COVID-19 effects or for temporary cessation of fishing activity. This contributed to decreased fishing effort mainly for the SSCF vessels. The subsidies were withdrawn in 2021 what resulted in higher fishing effort and landings. So-called 'war aid' to compensate for additional costs incurred due to market disruptions caused by Russia's aggression against Ukraine and its impact on the supply chain was available for fishermen in 2022.

*Markets and Trade*

Fish and fish products consumption in Poland continued in 2021 an upward trend and amounted to 14.18 kg per capita, compared to 13.33 kg per capita (live weight) in 2020. Atlantic herring – 2.82 kg (2.73 kg) following by Alaska Pollock – 2.50 kg (2.04 kg) and Atlantic mackerel – 1.20 (1.16 kg) were three of the most important consumed species (2020 figures in brackets).

The Polish fish processing production value scored a record value of EUR 3.1 billion in 2021 compared to EUR 3.0 billion in 2020. The production volume amounted to 614 600 tonnes (no change compared to 2020). Canned and marinated products kept dominated position in the production (40%). Both product categories are based on species caught by Polish fleet (sprat and herring) as well as imported raw material (herring and mackerel).

The domestic market is strongly dependant on imported products. In 2021 import of fish products scored 1 million tonnes – live weight (968 000 tonnes in 2020) compared to about 900 000 tonnes (estimated value) of national catches placed on domestic market. Atlantic salmon (imported mostly from Norway) dominated in the species structure of imported fish followed by the Atlantic herring, Atlantic cod, Atlantic mackerel and Alaska Pollock.

Retail prices of fish and fish products index in 2021 was 104.5 (104.2 in 2020) year to year compared to 105.1 of the index of consumption goods and services. The producer price index for fish and fish products was 100.4 in 2021 compared to 101.1 in 2020.

*Operating costs (external factors)*

Increase of world oil prices in 2021 was the most important factor negatively influenced energy costs of the fishing fleet. The supplier fuel price in Poland in 2021 was about 70% higher than in 2020 however estimated total energy costs increased by 8% only. The gross minimum wage increased in 2021 in Poland by 8% and average salary by 10% which may cause expectation for pay increase in fishery. The inflation

rate increased to 5.1% in 2021. Producer prices in December 2021 was 14.2% higher than in December 2020. The higher prices may influence repair and maintenance costs of fisheries.

*Status of key socks. TACs and quotas*

The 2021 available quota for Poland on the Baltic Sea (after swaps) amounted to 97 700 tonnes (-10% compared to 2020). Available Atlantic herring quotas decreased by 33%, Atlantic cod by 39% (quota available only for bycatches), Atlantic salmon - 51% increase and sprat 6% increase (changes include swaps). The 2022 TAC allocated to Poland for Baltic species decreased again by 5% compared to 2021. Reductions affected: Central Baltic herring – 38%, Baltic cod – 68% salmon – 73% while sprat TAC increased by 9%. The central herring TAC adopted by the EU Council for 2023 is 32% higher than in 2022. Atlantic cod stocks quotas (Eastern and Western) remained unchanged, however available for bycatch only. TAC for sprat was reduced by 11% despite EU Commission proposal of 20% reduction.

*Management instruments*

The Polish Baltic fleet is managed mainly through TACs and subsequently - individual quotas imposed for all TAC species (sprat, herring, cod, and salmon) except for plaice. In 2021 and 2022 the quota allocation system did change compared to 2020.

Cod, sprat and Central Baltic herring quotas were allocated to users based on the vessel size (there are six vessel's length groups) or based on historical rights (in case of salmon and Western Baltic herring). Small-scale fisheries (vessels under 8 metres length or 12 metre in sprat fisheries) were exempted from the quota system.

LO in the Baltic Sea came into force since 1 January 2015 for salmon, sprat, cod, and herring and, since 1 January 2017 also for plaice. The regulation did not affect the fisheries. Fish below MLS/MCRS are directed mostly for reduction to fishmeal since (they are usually handled with no special care (no chilling on board). No special solutions related to the LO were implemented in Poland.

A multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks was adopted by European Parliament and the council on 6 July 2016. According to this regulation, a target fishing mortality for the stocks concerned shall be achieved as soon as possible and, on a progressive, incremental basis, by 2020. The regulation set up mortality ranges for six Baltic fish stocks while left undefined for two (Eastern Baltic cod and Bothnian Bay herring).

Considering the critical condition of the two cod stocks, the EU Commission announced emergency measures for eastern Baltic cod on 23 July 2019. Emergency measures banned, with immediate effect, commercial fishing for cod in most of the Baltic Sea until 31 December 2019. The decision affected all fishing vessels and applied in all areas of the Baltic Sea where the largest part of the stock is present (i.e. subdivisions 24-26), except for some specific targeted derogations. The measures were extended to 2020 and onwards. In 2021 and 2022 fishing for Atlantic cod in eastern Baltic (ICES 25-32) were limited to bycatches only and strictly prohibited during the summer spawning time (from May to August).

The restrictions imposed in 2020 on Atlantic salmon and sea trout as a response to the high level of misreporting in salmon catches were maintained. Fishing for sea trout beyond four nautical miles measured from the baselines in ICES subdivisions 22-32 was prohibited for fishing vessels from 1 January to 31 December 2020. When fishing for salmon in those waters, by-catches of sea trout shall not exceed 3% of the total catch of salmon and sea trout at any moment on board or landed after each fishing trip.

*Innovation and development (role of EMFAF)*

There were several projects financed from EMFAF aiming at promoting environmentally sustainable, resource–efficient, innovative, competitive and knowledge–based fisheries worth about EUR 5 million. The examples are listed below:

- Experimental stocking with RAS-bred pike as a method of coastal fisheries crisis management;
- Comparative studies of innovative cod-end constructions reducing the amount of undersized fish in trawl fishing for Baltic cod;
- Reduction of energy consumption in terms of reducing the negative impact of inland and sea fishing on the environment;
- Replacing the production of Baltic cod products with alternative species.

In 2021 the projects have not yet been finally completed or implemented.

- *Nowcasts for 2022-23 and beyond TO BE UPDATED*

*Model results*

According to preliminary figures landings volume and value decreased by 13% and 19% respectively in 2022 (value refers to Baltic landings only). Landings from the Baltic Sea decreased by 11% and deep-sea fleet landings by 15%. Atlantic herring (-32%), European flounder (-29% and Small sandeel (-54%) contributed the most to the landings decline. TM2440 (the most important segment from the economic output point of view in the Polish Baltic fleet) revenues decreased by 19% in 2022 which affected profitability of the vessels. Net profit margin of the segment decreased from 23 in 2021 to 14 in 2022. The main negative reason that influenced TM2440 economic results in 2022 was significant cut in available herring quota (-38%) one of the most important species the vessels belonging to the segment catch.

According to model results the economic output of small scale segment PG0010 (the most important from the social point of view) improved, however remained negative. The negative net profit produced by the segment amounted to EUR 0.2 million in 2022 compared to EUR 1.1 million in 2021. According to model the segment effort decreased 39% in 2022 (which may be overestimated). Lower effort deployed as well as employment decline, positively influence operational costs and consequently improved profitability.

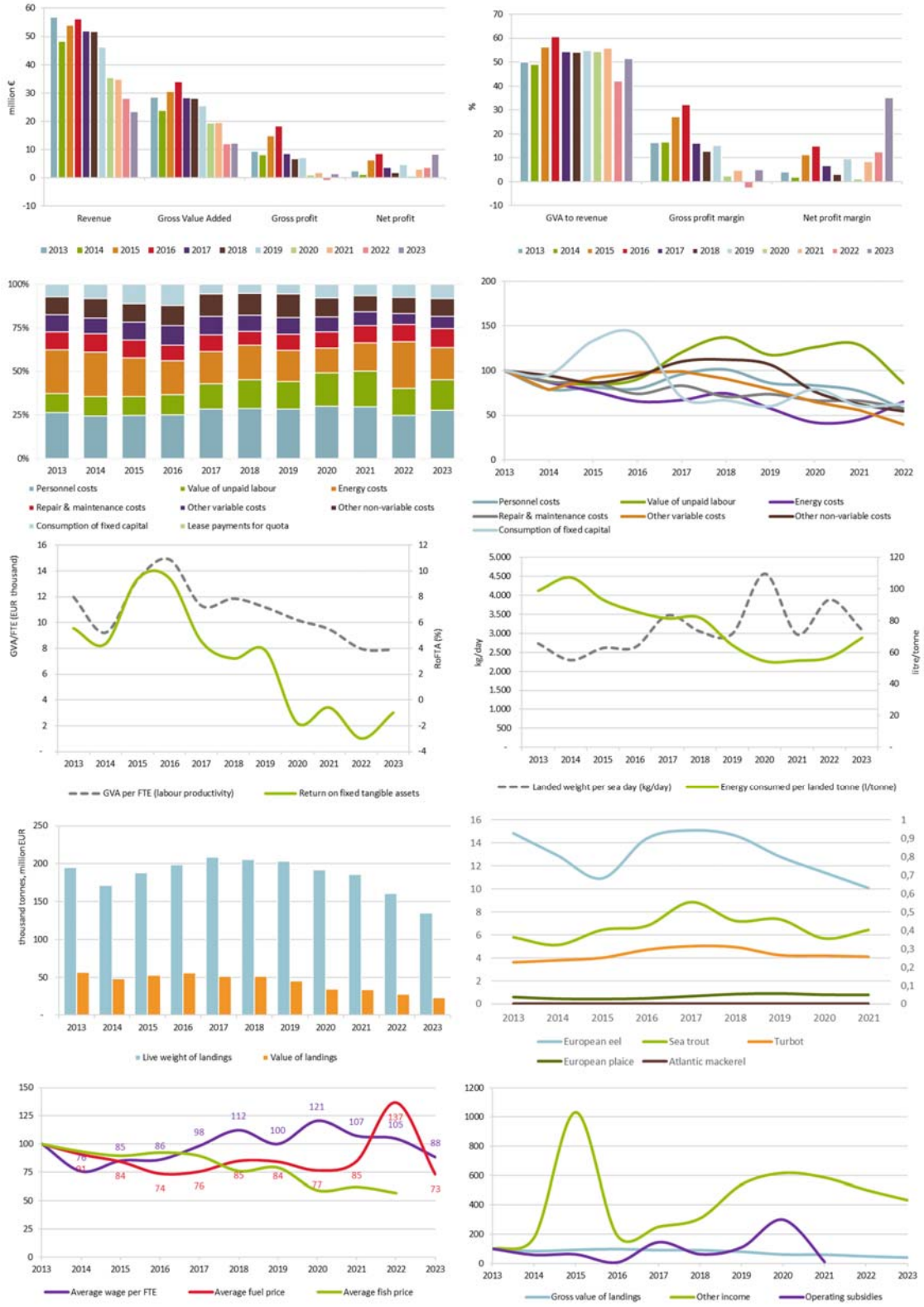
*Outlook*

The available fishing quotas for Poland in 2023 is lower by 12% for sprat and 21% for cod, while it is higher by 9% for herring. The reduction in the sprat quota will have a negative impact on three segments of pelagic vessels. The decreased fishing quota for cod (available only as bycatch) may also negatively affect the fishing results of the pelagic fleet due to the choke species effect. The closure of targeted cod fisheries and the declining fishing quotas for pelagic fish have led to an excess fishing capacity in the Baltic fleet. According to the Polish report on efforts to achieve a balance between fleet capacity and fishing opportunities (2022), it is expected that the number of vessels in permanently inefficient and imbalanced segments will be reduced to a level that ensures increased efficiency in segments operating at a deficit and stabilizes the financial condition of those segments. In the 2023-2027 period it is planned to reduce the number of fishing vessels by 230 (-30%). The reduction will be focused on small scale fleet segments 0010PG and 1012PG where about 30% and 50%, respectively vessels are intended to be withdrawn while 70% reduction is envisaged in the 1218DFN segment. No reduction is expected in pelagic segments unless they are in economically viable condition.

- *Methodological considerations and data issues*

Due to confidentiality reasons, distant water fleet (vessels over 40 metre fishing outside Baltic Sea) were excluded from the economic analysis. However, transversal data (except for value of landings) and employment data were provided for all fleet segments. In order to ensure consistency with data provided for previous years, premiums paid by government for scrapped vessels were taken into account when calculating invested capital (not the PIM method). Because change in methodology of reporting capacity, 2017 onwards figures are not fully comparable with the earlier years.

**Figure 4.18** Poland: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.18 Portugal

- *Short description of the national fleet*

In 2021, the national fleet capacity was composed of 7 678 vessels, having a combined gross tonnage (GT) of 86 777 tonnes and engine power of 347 624 kW, distributed by Mainland Fleet, Azores and Madeira. In 2021, 48 vessels entered the Portuguese fleet, while 101 were withdrawn[28].

The active fleet represents 46% of the national fleet and is characterised by a prevalence of small fishing vessels, with length of less than 12 metres representing 85% of the all fleet in number of vessels and 12% of GT, and 43% of kW. The average length is 9 metres, and the age of the active fleet is 26 years.

Despite the large percentage in the number of inactive vessels (54%), this fleet represents a very low capacity (25% and 22% of the total kW and GT, respectively. and 6 metres average LOA).

*Fleet structure*

The Portuguese fishing fleet includes the mainland fleet, Azores and Madeira, developing the respective fisheries in accordance with the operating areas and gears. The national fleet contains vessels from small-scale, large-scale and vessels which operate in distant waters and are grouped into 11 major segments (DFN, DRB, DTS, FPO, HOK, MGO, MGP, PGP, PMP, PS and TBB). The most important segments in terms of value from landings are NAO DTS2440 NGI, NAO PGP0010 NGI, NAO DTS40XX IWE, NAO PS 1824 NGI and NAO FPO0010 NGI, which together represent 48% in value landings.

*Fishing activity and production*

In the period 2013-2020 there was a slight increase in the effort in terms of fishing days observed (+1%), with an increase of 8% in 2021 compared to 2020 and reaching the highest value of the last four years. The average DaS per vessel shows a downward trend of 1% in the 2013-2020 period, but a large increase occurred from to 2020 to 2021 (+11%). In 2021 the observed value was 96 days/vessel (9 days of activity per vessel more than in 2020). Landed weight per sea day was 544 kg/sea day in 2021, 4% higher than in 2020. The energy consumption increased 6% compared to 2020, approaching 2019 consumption.

Vessels operate, mainly, in the Northeast Atlantic, NAFO and Svalbard/Irminger areas (demersal trawlers), South Atlantic, Indian and Pacific oceans (surface longliners) and in the coastal waters of Madeira.

In 2021 the landings weight increased 12% compared to 2020 and 6% compared to the average (2013-2020), reaching the higher value since 2015. The landings value increased 17% compared to 2020 and 10% if the comparison is made to the period 2013-2020, being the highest of the 2013-2021 timeseries.

The mean price (constant prices 2020) of fish reached the value of 2.73 euro/kg, an increase of 3% compared to 2020.

In terms of landed weight, European pilchard is the most representative species 15.4% of total catches followed by chub mackerel (12.6%), and Atlantic horse mackerel (9.2%).

These three species represent 37.1% and 15.1% of the total Portuguese weight and value of landings, respectively.

It is important to notice the 75% increase in the sardine weight of landings compared to 2020. The higher catch resulted from the scientific acknowledgement of the recovery of this species, which allowed Portugal and Spain to rise fishing opportunities.

The average price of the european pilchard increased from 1.41 euro/kg in 2013 to a value over 2.0 euro/kg in the period 2014-2016 (in 2015 the price reached the maximum value of 2.25 euro/kg). In 2017 a reduction of the European pilchard price was observed (1.66 euro/kg) due to a strong concentration of daily landings that pushed the prices down. In 2018 the price recovered reaching the

[28] In the data files the difference between number of vessels in 2020 and 2021 is higher, given that there is a delay in the register of the withdrawn.

2014-2016 levels with a value of 2.22 euro/kg. Since then, the sardine price has fallen steadily, reaching a minimum of 1.12 euro/kg in 2021, as a result of the increased supply.

In the case of common octopus, both, weight and value of landings have increased 39% and 72%, respectively compared to 2020, reaching an average of landed price of 7.6 euro/kg in 2021 (+24%).

On the other hand, in 2021 Atlantic cod decreased in terms of weight of landings about 50%, but the value of landings only decreased by 20%. The average price increased from 1.8 in 2020 to 2.8 in 2021.

Atlantic redfishes nei also decreased in terms of weight of landings (-52%) and value (-54%) compared to 2020. The average landed price shows a slightly decrease to 1.9 euro/kg in 2021 (in 2020 was 2.0 euro/kg).

*Employment and average salaries*

Employment was estimated at 13 460 jobs (7 903 FTEs) with an average of 2.3 FTE per active vessel. The average wage per FTE reached the maximum value over the 2013-2020 period in 2019 in which it had increased by 10% compared to 2018, reaching 19 500 euros/FTE. The Portuguese official statistics reports three different age-classes to classify the age of the fishers: below 35 (23%), between 35 and 55 (56%) and over 55 (21%).

- *Economic results for 2021 and recent trends*

*National fleet performance*

In 2021, the Portuguese national fleet improved its economic performance compared to 2020 by 35% in gross profit. The reason for that was mainly due to the EUR 61 million increase in revenue, once the costs increased only by EUR 35 million.

After the restrictions imposed by the COVID pandemic in 2020, there was a recovery in fishing activity in 2021 which led to an increase in variable costs. Indeed, all the variable costs have increased, especially the energy costs (27%) and the personal costs (10%) which together represents 74% of the total cost increase (excluding capital cost). Personnel costs represented 40% of the total costs while energy costs signified 16%.

Revenue increased 17% compared with 2020 and 9% from the average of (2013-2020). GVA in 2021 increased 19% and 4%, respectively compared to 2020 and over the 2013 to 2021 period, gross profit increased to EUR 25.3 million, being even lower than the average to the 2013-2020 average.

*Resource productivity and efficiency indicators*

The gross profit margin in 2021 recovered from the drop observed in the previous year rising to 24%.

The reduction in fuel prices from 2013 to 2016 led to an improvement in the economic performance of the fishing fleet. The RoFTA had a significant increase in this period, recording the highest value in 2016 (22.6%).

Due to changes in the estimate of fixed capital consumption in 2018, the RoFTA value decreased to 13.4%. In 2019 this indicator fell to 9.1% and in 2020 it is 4% due to the fall in landing revenues and high energy prices due to the pandemic crisis. In 2021, there is a clear recovery in fleet performance, with this indicator reaching the pre-pandemic level (9.8%).

After the fall in 2020, the labour productivity (GVA/FTE) increased in 2021 to EUR 32 400 (+8.2%) compared to 2020.

Fuel consumption was 457 litres per tonne landed (-5.4% compared to 2020). Landings in weight per unit of effort (in days at sea) were 544 kg/day (+3.8% compared to 2020).

The table above identifies the four most important segments in terms of the value of landings. Although the national average fuel price is 0.71 euro per litre, in 2021, it can be seen that for segment PGP0010NGI, the value is much higher than the average once 85% of this fleet uses gasoline engines. However, the Short and Long-term BER fuel price is really high, which may lead to shipowners not taking the necessary measures to improve fuel efficiency. Energy intensity is considerably higher than the national average. This segment is the largest in terms of number of vessels and operates with several gears using mostly outboard engines, some of which are old and energy intensive.

**Table 4.21** Portugal: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| PRT NAO DTS2440 NGI | 0.67 | 0.93 | 0.69 | 30% | 1,068 |
| PRT NAO PGP0010 NGI | 1.31 | 6.86 | 5.79 | 9% | 315 |
| PRT NAO DTS40XX IWE | 0.67 | 1.19 | 0.70 | 20% | 567 |
| PRT NAO PS 1824 NGI | 0.66 | 1.65 | 1.17 | 10% | 142 |
| National average | 0.71 | 1.88 | 1.39 | 14% | 457 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020)

The PS 1824 NGI (purse seiners) corresponds to a segment where the fuel price is lower than the national average. The short and long-term BER fuel prices are lower than the national average but is a very energy-intensive and energy inefficient fleet segment.

The segments DTS2440 NGI and DTS40XX IWE (demersal trawlers) have fuel price below the national average. The energy intensity is lower than the national average, but energy efficiency is above national average.

With the implementation of the Recovery and Resilience Plan, an improvement in terms of energy efficiency is expected, since most of the supported projects include the change of the engine to a more efficient engine, anticipating a reduction in emissions, and also the use of new materials and more efficient and environmentally friendly formats.

- *Performance by fishing activity*

*Small-scale coastal fleet*

In 2021, SSCF comprised 2 761 vessels, GT of 6 754 and total power of 101 150 kW. Almost all of the SSCF operated along the mainland coast and using several gears (PGP - nets, longlines, pots and traps) catching a diverse number of species. The cephalopods (octopus and cuttlefish) are the major group of catch species, achieving 42% of the SSCF value of landings. The Common edible cockle is the second most caught species in terms of weight (15%) but represents only 4% of the total value of landings. Pelagic species like chub mackerel and skipjack tuna are, in weight, the following species that with cephalopods represents 40% of SSCF landings. FTE corresponds to 36% of the FTE national. The average fleet activity in 2021 reached a value of 79 DaS/vessel.

Landings in weight increased 16% and 30% in value compared to 2020. When compared with the period (2013-2020) the value of landings increased 30%, although the live weight of landings only has increased by 6%, which reflects the improving trend in fish prices in these fleet segments. In 2021, landings from the SSCF represented 11% in weight and 27% in value of the total Portuguese landings, revealing high quality of the fresh product caught by this fleet segment.

In terms of economic performance, the GVA increased 37% and gross profit by 49%, when compared to the year before. The performance in terms of profit of this fleet has improved consistently since 2013 to 2018 but suffered a deterioration in 2019, and especially in 2020. It is important to notice that this part of the national fleet contributes significantly to the economic and social sustainability of local fishing communities.

The cost structure of the fleet remained stable over the period 2013-2020, with wages and salaries of the crew being the major cost and highly linked to the income from landings.

*Large-scale Fleet*

The LSF comprised 721 vessels and it represented 21% of the active Portuguese fleet. Also represented 58% of the total vessel power (152 693 KW) and 83% of GT of the active fleet. Almost 60% of the LSF corresponds to purse seiners, vessels using hooks and demersal trawlers, FTE of LSF is 61% of the FTE national. In 2021, the activity increased 14% in landing weight and 12% in value of landings, compared to the previous year. The economic performance (GVA. gross and net profit) improved when compared

to 2021 (+1%, +17 and +823%, respectively), reflecting a clear recovery after the deterioration observed in 2020.

The European pilchard and chub mackerel are the major caught species, representing together 33% and 14% of weight and value of landings.

*Distant water fleet*

The distant water fleet comprised 14 vessels, GT of 4 994 and total power of 8 371 kW. This segment is composed of longliners and has 223 FTE. The average fleet activity in 2021 reached a value of 274 days at sea/vessel.

Despite the negative trend in terms of economic performance recorded in the period 2013-2020, the GVA increased 159% and gross profit by 85%, when compared to the year before. However, the profitability of this fleet was negative in 2021.

The blue shark are the major caught species, achieving 71% and 50% of the DWF weight and value of landings.

*Outermost region fleets*

**Madeira**

The Madeiran fleet consisted of 86 active vessels in 2021, GT of 1 593 and an engine power of 9 026 kW. Most of this fleet belongs to SSCF (62%). The Madeiran fleet develops its activity mainly in Subarea 2 ZEE-Madeira, with vessels operating in certain seasons of the year in the Azorean subarea and the Canary Islands, under Reciprocity Agreements and international waters of CECAF. Most of the active vessels operated with longliners and the most representative species are black scabbardfish and bigeye tuna, representing together 63% and 67% of weight and value landings, respectively.

**Azores**

In 2021, the fleet of Azores consisted of 493 active vessels, 5 761 GT and an engine power of 35 478 kW. 83% of this fleet belongs to SSCF. The Azorean fleet develops its activity mainly in the Azores EEZ and operates mostly with longliners (84%). Passive gears such as drift and netters and purse seiners are also used in the Azorean fishing activity. The most representative species in terms of value of landings are: blackspot seabream (22%), skipjack tuna (17%), bigeye tuna (12%), veined squid (6%) and alfonsino (5%).

*Other fishing regions*

**NAFO**

The fleet operated in NAFO waters is composed of nine vessels (DTS40XX), with a total capacity of 17 770 GT and 19 222 kW. In 2021 the average effort in this region was 154 fishing days per vessel (26% less than the previous year) and the catches for each fishing day were around 10.8 tonnes. The most representative species are Atlantic redfish (63%), Greenland halibut (17%) and silver hake (12%). It is worth mentioning that the value of landings of Atlantic cod, which is an important fishery for the Portuguese NAFO fleet, fell by 80% as a result of the sharp reduction (-82%) in cod fishing in the 3M zone compared to 2020.

**NEAFC**

In 2021, Portugal had three vessels targeting Atlantic cod and red fish in the NEAFC regulatory area. This fleet belongs to the DTS40XX, being that one of these vessels operates exclusively in this area. The total capacity of this fleet is 5 752 GT and 6 678 kW. The average effort in this region was 63 days per vessel and the catches for each fishing day were around 16.2 tonnes. Atlantic cod represents more than 78% and 72% of the catches in the NEAFC regulatory area in weight and value of landings, respectively. It should be noted that all stocks managed by NEAFC have suffered a decrease in fishing opportunities, compared to 2020.

**ICCAT**

Based on what was decided in the EWG 21-08 EWG, the ICCAT fleet is obtained using the following criteria: vessels over 18 metres in length where the value of ICCAT main species represents at least 20% of the total value of landings. This fleet is composed by 66 vessels (22 from Azores, 37 from mainland and 7 from Madeira) with 10 878 GT and 26 079 kW.

The main gear used by this fleet is the surface long line for the mainland fleet and pole and line for the outermost regions (Azores and Madeira). The total landings for the main species that are fully assessed by ICCAT, represent 11% of the Portuguese landings, 10.0% in landing value. The main species in value caught by this fleet are blue shark (36%), swordfish (31%), skipjack tuna (13%) and bigeye tuna (12%).

**Inter-American Tropical Tuna Commission (IATTC)**

In 2021, Portugal had four vessels targeting big pelagic species in the Pacific Ocean, in the area regulated by the IATTC. The four vessels operated exclusively in this regulatory area. This fleet belongs to the HOK40XX and HOK2440 segments and has a total capacity of 1 718 GT and 2 745 kW. In 2021 the average effort in this region was 261 fishing days per vessel and the catches were around 2.0 tonnes per fishing day. The most representative species are swordfish (58%) and blue shark (22%).

**Indian Ocean Tuna Commission (IOTC)**

In 2021. Portugal had only two vessels targeting big pelagic species in the Pacific Ocean, in the area regulated by the IOTC. This fleet, composed of longliners up to 24 metres, is exclusively affected to the IOTC area and has a total capacity of 770 GT and 987 kW. For confidentiality issues it is not possible to detail the activity in this regulatory area. The most representative species are blue shark (42%) and swordfish (41%).

- *Performance results of selected fleet segments*

The Portuguese fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the Portuguese Exclusive Economic Zone (27.IX.a for the mainland fleet. 27.X for the Azores's fleet and CECAF 34.1.2 for the Madeira's fleet). The national fleet consisted of 53 (DCF) fleet segments in 2021 and 6 inactive length classes. A short description of the most important segments is provided below.

**DTS2440 NGI (mainland fleet)** – 55 vessels made up this segment in 2021, which operates predominantly in area 27 (27.9.a and 27.8c); the fleet targets a variety of species but in particular Atlantic horse mackerel (23.1%), deep-water rose shrimp (14.9%), Atlantic mackerel (14.0%) and neon flying squid (6.2%). In 2021, the value of landings represented 12.1% of the total landings value and the FTE 5.8% of the national value. This fleet segment shows a deteriorated economic performance in 2013-2020 period. Nevertheless, in 2021 the net profit margin increased to 1.3%, in comparison with the previous year (0.4%).

**PGP0010 NGI (mainland fleet)** – This fleet segment represents the major one with 1 352 vessels and operates exclusively in FAO 27.9. The fleet targets a large variety of species, such as common octopus (17.1%), common cuttlefish (14.2%), common edible cockle (11.1%) and European seabass (10.1%). In 2021, the value of landings represented 10.5% of the total landings value and the FTE 15.9% of the national value. Net profit margin reached 32.6% (+3.4% in comparison with the previous year).

**DTS40XX IWE (mainland fleet)** – 10 vessels made up this segment which operates predominantly in Area 21 and 27 (NAFO. Spitzbergen and Bear Island and Norwegian Sea). The fleet targets a variety of species, in particular, Atlantic redfishes nei (30.0%), Atlantic cod (28.2%), golden redfish (16.2%) and Greenland halibut (12.2%) of the total value of landings. In 2021, the value of landings represents 10.4% of the total landing value and the FTE 3.8% of the national value. The fleet segment reported a positive performance in the 2013-2020 period, but in 2021 the net profit margin (1.4%) decreases 4.3%. in comparison with the previous year.

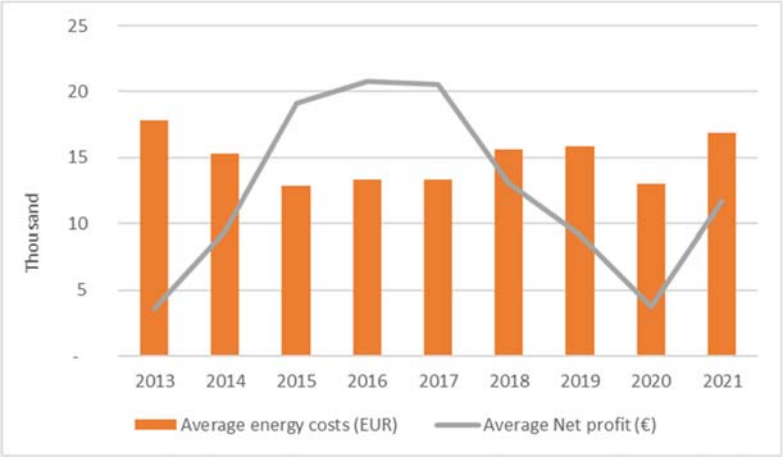
**PS 1824 NGI (mainland fleet)** – 53 vessels made up this segment in 2021. The fleet targets small pelagic fishes, such as European pilchard (45.1%), European anchovy (26.8%), Atlantic horse mackerel (11.4%) and chub mackerel (10.9%). In 2021, the value of landings represented 8.5% of the total landings value and the FTE 7.7% of the national value. The net profit margin (8%) also increased compared with the previous year (-2.5%).

**FPO0010 NGI (mainland fleet)** – 345 vessels made up this segment in 2021. The common octopus is the most representative species in terms of landing value (95.6%). In 2021, the value of landings represented 6.4% of the total landings value and the FTE 4.5% of the national value. Net profit margin reached 51.1% (+7.9% in comparison with the previous year).

- *Drivers affecting the economic performance trends*

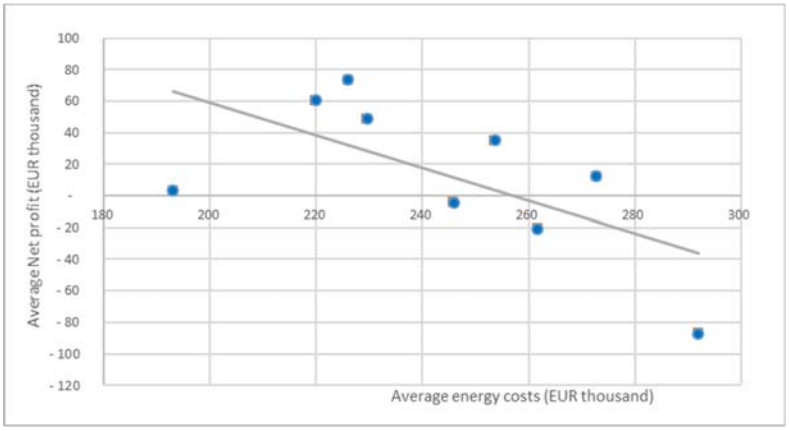
Fish prices, fuel costs and effort are the main driving forces behind the overall fleet performance. Historical correlation between energy costs and net profit can be found, especially in DTS and HOK LLS (surface long lines) segments.

**Figure 4.19** Average energy costs and net profit (2013-2021)




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

**Figure 4.20** Energy costs and net profit relationship in DTS2440 mainland fleet (2013-2021)




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

In general, the decrease in the average prices was a consequence of the higher supply of fish.

For example, in case sardine, there was a large increase in live weight of landings in 2021 as a result of the increase fishing opportunities as mentioned above, which resulted in a decrease in the price.

**Figure 4.21** Landing weight and value relationship for the European pilchard (2013-2021)


Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Markets and trade*

Landings in foreign harbours represent around 16% of the total landings. The most important countries in value of landings are Spain (66.2%), Norway (8.1%) and Panama (6.3%).

According to the Portuguese official statistics, in 2021, 17 Producers Organisation were recognized, in which 14 are based on the mainland. These organisations account for 52.9% of total active vessels. Purse seiners are the most represented segment in those structures and sardine, chub mackerel and horse mackerel the main species landed. Around 99% of sardine, 100% of horse mackerel and 78.6% of chub mackerel landed in Portugal were accounted for by the producers' organisations.

The average annual price of fresh fish landed in 2021 in national harbours decreased 0.8% in relation to 2020, from 2.3 euro/kg to 2.28 euro/kg.

*Operating costs (external factors)*

Operating costs increased by EUR 35 million compared to 2020, reaching a value of EUR 318.8 million in 2021. The personal costs represented the most important operational costs in 2021 (47.3%). increasing 4.3% compared to 2020.

The personal costs represented the most important operational costs in 2021 (47.3%), increasing 4.3% compared to 2020. Although the number of employees in 2021 is very similar to the previous year. FTEs have increased by 10%.

Energy costs represent 18.5% of total operating costs, and have a strong external influence, being strongly affected by the fuel crisis. Compared to 2020, energy costs increased 27%. In 2021 the average of the value of diesel and gasoline and per litre increased 14% and 17%, respectively, when compared to 2020.

Finally, other variable costs, which include consumables, represented 16% of total operating costs.

*Status of key stocks. TACs and quotas*

Fishing quotas for Portugal maintained a similar level in 2021, when compared with the previous year, with a total of just over 160 000 tonnes, consisting of more than 65% of horse mackerel, followed by species such as anchovy, redfish, tuna, mackerel, blue whiting and black scabbardfish. The stock of horse mackerel in ICES area 9.a (Atlantic Iberian waters) continued to be in excellent condition, providing once again very significant fishing opportunities and representing the dominant stock in the Portuguese TACs. This implies that this stock accounts for most of the fluctuations in global opportunities. As it is being managed using the MSY objective, any small fluctuations in the MSY reference level could have large implications to the overall Portuguese fishing opportunities. Thus, for horse mackerel there was an increase of 5% compared to the 2020 TAC.

Considering the overall species under EU capture restrictions in 2021, the relevant increases of national quota were for horse mackerel (5%), rays (8%) and ling (50%), which offset the generalised decrease

in the quotas of other species of which the most significant are plaice (-56%), blue whiting and sole (-20%), anglerfishes (-12%), megrims (-10%) and mackerel (-8%).

For deep sea species, fishing opportunities, which are set biennially (2021-2022), maintained the reduction already established in 2020 for almost all stocks (black scabbardfish 20%. alfonsinos 12% and red seabream in area 27.9 22%) and the increase of 10% of the quota of red seabream caught in area 27.10. This decrease in deep sea species quota is related with the need to protect these vulnerable stocks in order to maintain a sustainable fishing effort.

The state of exploitation of the resources captured by the Portuguese fleet in national waters continues to show a positive evolution, with fluctuations more compatible with the natural evolution of living stocks managed at MSY.

As is commonly done, during 2021, there were several fishing opportunity swaps with other Member States sharing the same management units. The quotas available for undulate ray, megrim, anglerfishes and swordfish (Atlantic Ocean. north of 5° N) were increased through the mechanism of exchange quotas between Member States, as provided for in Article 16(8) of the Regulation (EC) Nº 1380/2013. An additional increase in quotas was also possible for anglerfishes. Herring, horse mackerel (FAO 27.8c and 27.9), megrims, mackerel and blue whiting, from the quantities initially allocated, through the mechanism provided for in Article 4 (2) of Regulation (EC) No 847/96, allowing the transfer to the following year of up to 10% of the allocated and unused quota of units subject to an analytical assessment.

Portugal also has fishing possibilities under the regional fisheries agreements in the field of international waters and the fishing protocols annexed to the partnership agreements of the EU and third countries for exclusive economic zones. In the case of RFMOs, the activity of the national fleet is traditionally carried out in the areas of NAFO, NEAFC, ICCAT, IOTC, and IATTC. Under the Sustainable Fisheries Partnership Agreements (SFPA) between the EU and third countries in 2021, fishing opportunities were used under two fisheries protocols off the West African coast.

As for the stocks managed by ICCAT, in 2021, the majority of the stocks of interest to Portugal, such as the bluefin tuna, the swordfish and the blue shark maintained the TACs agreed for 2020 and consequently the Portuguese quotas.

Swordfish remained the main targeted species for the surface longline segment, while northern albacore tuna, which had its TAC slightly increased for 2021, was the main targeted species for the bait boat segment from Azores and Madeira and considering the flexibility introduced by a recommendation in 2018 the vessels from those Portuguese archipelagos operating with bait boats are allowed to fish bluefin tuna directly in 2021. Due to the COVID-19 pandemic the ICCAT annual meeting did not took place. It was decided to extend all conservation and management measures. There were no changes in the tropical species group, where bigeye and skipjack are the two main species for bait boat and artisanal/small-scale fisheries of Azores and Madeira.

As for IATTC we continue to have four vessels actively operating in the IATTC area in 2021.

In the IOTC Area of Competence, two vessels operated actively in 2021.

In the Northwest Atlantic, the highlight goes to the 3M cod, one of the most important species, for Portugal, caught in the NAFO area, whose TAC suffered a major decrease, having been set at 1 500 tonnes for 2021, which for Portugal resulted in a reduction of 1 379 tonnes. In addition, three technical measures were added to prevent catches of juveniles, namely: a ban on targeted fishing for this stock in the first quarter of the year; the use of selective grids in trawl cod fisheries; and the inspection of all landings from vessels with more than 1 250 kg of 3M cod on board.

For the remaining TACs of interest to the national fishing fleet, Portugal has maintained the same fishing quotas for 2021 as for 2020, with the exception of a slight decrease in the Greenland halibut quota.

Regarding the Northeast Atlantic, the emphasis is on the absence of a TAC for redfish in the Irminger Sea, in view of ICES' advice of a zero TAC. For the other species regulated by NEAFC, there has been a 20% decrease in the TAC for blue whiting and a 24% increase in the TAC for herring, compared to the TACs set for 2020. Concerning the other stocks, there has been a decrease of over 100% for Norwegian cod and also a decrease for Svalbard cod.

As regards partnership agreements with third countries, there was a decrease in applications for these fishing opportunities. With regard to national fleet activity in 2021 under Sustainable Fisheries

Partnership Agreements (SFPAs), one longliner operated in the Seychelles and another longliner operated in São Tomé and Príncipe.

*Management instruments*

The Portuguese Administration applied a variety of tools to manage national fisheries and to respect international fishing agreements and partnerships. The overarching objective of the policies followed is to achieve the MSY in all fisheries where Portugal maintains commercial interests, either within or outside the borders of the EU.

Therefore, year after year, the trend in the number of licenses follows a decreasing trajectory even when momentary pending commitments require the restitution of some fishing permissions that had previously been suspended. This policy, however, is not restrictive, in the sense that under specific circumstances, the administration allows gear transfers between vessels, providing that both economic viability and general health and safety of those aboard the vessels are improved, without any increase in the deployed effort.

In general, the condition of most EU stocks has been improving, much in response to the firm management commitments, which have allowed the improvement in fishing opportunities and the reinforcement of the profitability of the commercial operations.

In 2021, the following measures and management plans/adjustment of fishing effort or capacity control schemes were in force:

- The multiannual plan for stocks caught in Western Atlantic and adjacent waters, which applies to demersal stocks (hake, Norway lobster, seabass, megrims, anglerfish and common sole) and deep-sea stocks (black scabbardfish and red seabream) was followed. The plan, implemented on an ecosystem-approach to fisheries management, aims to maintain these stocks above levels which can produce MSY (or within the MSY ranges).
- Fishing permit limitations were issued for all vessels operating in deep waters (in compliance with the EU Regulation 2016/2336), in different capacities depending on the individual history of recorded catches, resulting in a limitation of the species and quantities allowed, having nonetheless not changed the total number of licenses.
- Several modifications and various tuning decrees were published throughout the year, aiming to adjust the fishing effort to new rules of management and permitting a rapid response management plan to further promote the recovery of the Iberian sardine stock.
- Adjustment of fishing effort for surface longline vessels targeting swordfish in the north Atlantic with the aim to maintain the sustainability of the fishery. A capacity reduction objective still exists, aiming to allow an adequate balance between fishing effort and available quotas, but for the time being the administration was able to secure additional quota swaps with Spain.
- An eel management plan is still being followed, including fishing gear restrictions, limited catching seasons and a complete ban on recreational fishing.

*Innovation and development (role of EMFAF)*

The Portuguese fishing fleet is characterised by small vessels, with wooden hulls, whose average age is around 36 years and, in terms of active fleet, around 26 years.

In 2021, under the EMFF, 77 operations were paid for investments on board and selectivity, aimed at improving the conditions of vessels.

The Portugal's Recovery and Resilience Plan (Next Generation EU), aims to support projects directly related to energy transition and reducing environmental impact for companies in the fisheries sector.

The supported projects focus on the following measures:

1) Modernisation and digitalisation

2) Energy efficiency

3) Emission reduction, safety and habitability on board fishing vessels

4) Use of new materials and more efficient and environmentally friendly formats

5) Circular economy (fisheries and aquaculture sector)

- *Nowcasts for 2022-23 and beyond*

*Model results and outlook*

Projections for 2022 indicate a continued decrease in the number of fishing vessels, although the total power is expected to remain roughly the same. It is also estimated that there will be a decrease in the number of DaS and fishing days of between 9 and 10%, which, according to national statistics data for 2022, has apparently been confirmed.

Preliminary results for 2022 suggest that the increase in energy costs for 2022 will drive down all profitability (gross profit).

The model further estimates that in 2022 live weight of landings will increase by 4%, in contrast to the value of landings which will decrease by 4%. According to the National Statistics of Portugal for the year 2022 (INE), the weight of landings decreased by 10%. On the other hand, the value of the fish sold at auction was practically unchanged in relation to 2021, due to the higher price (as a result of decreasing supply and increase of costs related to the Ukraine war).

The results for 2023 project a recovery in gross value added, gross profit and net profit, painting a situation of profitability for these indicators, although not reaching the values observed in 2021.

- *Methodological considerations and data issues*

*Identify changes in respect to previous years*

The response to the survey to collect socio-economic data on fishing became mandatory by law to renew the fishing licence, since 2021, which led to a higher response rate within the active fleet segments.

From 2020, the landings were calculated in terms of live weight, instead of landed weight.

*Problems identified*

It was planned to implement some improvements in data collection through the cooperation of associations and auction houses, but it still couldn't be done in 2021.

One of the difficulties encountered is linked to the fact that in many cases the surveys are answered by accountants who, in many cases, bias the answers once they have a different view from that of economists.

Since the weight of landings was reported in live weight in 2020 and in landed weight in the years before, this variable, and some species prices and indicators, are not comparable with the time series.

*Fleet structure*

Since 2005 (the year when the public support to new vessel construction stopped) the investment costs with new vessel construction have been very low. However, in 2021 the vessel construction represents 52.1% of the total new entries into the Portuguese fishing fleet (25 vessels), 29.3% GT and 44% in terms of engine power, demonstrating an effort to renew the fleet.

Approximately 44% of the vessels entering and leaving the fleet were vessels in the polyvalent fishing segment (PGP), mostly in the context of renewal of the fishing fleet.

It is observed also that the average age of vessels has increased since 2013 (30 years), presenting an average of 36 years in 2021. The ship-owners tend to keep the vessel to an over age limit, doing only some repairs, as they are mostly small vessels, whose ship-owners doesn't have the economic capacity to invest in fleet replacement.

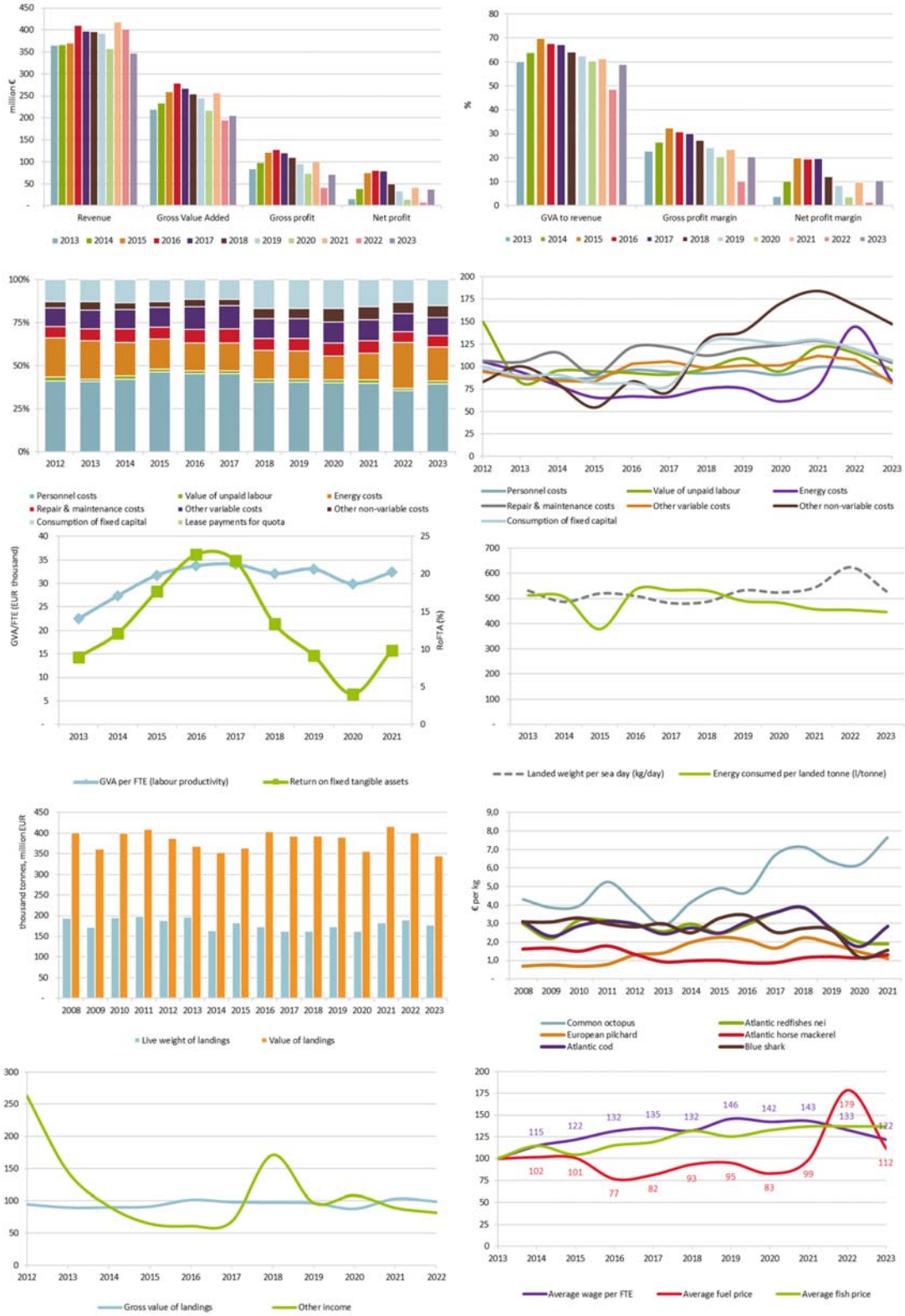
In 2021, Portugal complied with the fishing capacity ceilings laid down in Annex II to the CFP Regulation, in the case of the fleet registered on the mainland (MFL) and the fleets registered in the outermost regions.

*Remaining issues*

It is intended to improve the survey in order to adapt it according to the vessel's fleet segment and thereby obtain better answers.

A project is being implemented to restructure the databases in order to integrate and harmonise all data sources. Data processing and analysis will be performed on a new platform. It is expected that the methodological procedures will be revised and improved when the operationalisation takes place.

**Figure 4.22** Portugal: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.19 Romania

- *Short description of the national fleet*

In 2021, the Romanian fishing fleet consisted of 163 registered vessels, with a combined gross tonnage of 1 575 GT (-45 GT compared to 2020) and a total power of 6 198kW (80 kW less than in 2020), 130 active vessels and 33 inactive vessels, 20% out of the total; 80% of vessels in the fishing fleet register were active. The size of the Romanian fishing fleet continues decreasing between 2013 and 2021, by 33 vessels, a decrease of 1% compared to the average for the period, due to the scraping vessels, mainly. The inactivity of fishing vessels was mainly due to: the COVID-19 pandemic, due to vessels repair activities, refits or transfers of ownership and, to a lesser extent, the purchase of new fishing gear.

The market is facing high competition from supermarket chains, and, on the other hand, because of less concentration of fishers in associations/organizations producers leading to a fable position on the sector and atomization of efforts to achieve real results and positive role on the implementation of the annual and multiannual fishing plan.

Should be underlined the problem of the unsatisfactory fishing infrastructure. There is not a spatialized fishing port in Romania, due to the incapacity of management authority on European fishery fund implementation in the past, nowadays a project for modernization of the existing fable facilities on Midia port. North part of Romanian fishing area in the EEZ waters, is still under the preliminary phase of implementation, hoping to become operational in 2023. The fishery infrastructure on the onshore is defined by landing points located really on the beach, with no geographical advantages allowing proper location for minimum berth construction, in the absence of an enlarged interest of local authorities to develop such activity, not only touristic ones.

*Fleet structure*

The fishing fleet in 2021 is composed of the small-scale fleet segment up to 12 metres in length (small boats with or without engine) 108 active vessels, a number that represents 83%, that can be considered as the main segment of the SSCF fleet. The SSCF capacity in numbers is of 1 772 kW and 32 GT. The remaining 17% is for another fleet segment – large-scale fishery LSF - 12-40m, comprising only 22 vessels but counting for 3 560 kW and 1 031 GT.

The number of fishing vessels has considerably decreased, mainly because a procedure to remove inactive vessels started in 2012. The main reasons for that were: poor technical condition, no annual frequent activities, orientation to other activities, like tourism, commercial fishing in continental waters and even owning some restaurants.

The general objective of Romanian authorities is to have a fishing fleet, at a "minimum Vitalis" level, due to the celling capacity imposed by the CFP Regulation EC no, 1378/2013, annex 2.

A large number of poorly equipped small-scale fishers, inadaptability of large-scale fishers, along with discordance among fishing, producing, and marketing capabilities brought the sector to a dependency observed by the decrease of total landings, both in volume and value.

*Fishing activity and production*

The Romanian fleet spent around 3 637 DaS in 2021, a decrease of 17% compared to the days at sea in 2020, and a decrease of 15% compared to the 2013-2020 period average. The decrease is comparable to the total landings reported by fleet. Also, similarity is encountered analysing the fishing days over the analysed period, namely in 2020. 3 957 total fishing days were reported, versus 3 383 total fishing days in 2021. The trend estimated for 2022 is around 3 847 total fishing days.

The number of fishing days and of DaS have been affected by:

- Bad weather conditions (small number of days favourable to fishing activities, hence of fishing hours);
- The old fishing fleet, which is why technical failures and malfunctions often occur in the fishing operation);
- Fishing activity is seasonal and the number of trips at sea depends on the presence of migratory fish species at different times of the year, large variations being recorded from one year to the next.

There are small catches of pelagic species, compared to Rapa whelk catches, due to the market constant demand of Rapa whelk and limitations of turbot EU TACs, imposed in order to ensure the positive trend

on increased biomass value of the stock in the area of the Romanian Black Sea waters. In the Black Sea area, Romania has the second smallest fleet of all riparian countries, as per GTs and kW totals.

This issue was addressed by the national authority at the regional GFCM-WGBS and EU Commission level, aiming to rebalance the level fleets and fishing effort for all riparian countries for achieving a level playing field in the area.

The total weight of landings of the Romanian fleet in 2021 was 3 127 tonnes of fish and seafood. Compared to 2020 the total weight of landings in 2021 decreased by 30%, a percentage of 22% is presented in the decrease of the value of landings, EUR 2.14 million in 2021 versus EUR 2.77 in 2020. The decrease is explained mainly by the reduced quantities of Rapa whelk landings. The current status of fishing in Romania is similar to 2019 and 2020 and it continues to decrease. Fishing activities are being carried out only in the waters of the Black Sea under Romania's jurisdiction. There are no fishing activities in other regions or catches of other species than in the area of Romania's Black Sea coast. Trends in landings were stable over time, with small pelagic species having a reduction percentage in the total landings' composition. Small pelagic species constituting significant species in terms of volume are represented by sprat and anchovy in total landings, also horse mackerel and other pelagic species in small quantities.

The landings of Rapa whelk, the most important species for the Romanian fleet, decreased and in 2021 represented 87.82% of the total landed volume. In 2017 this species represented 96.77% of the total landed volume during the year. In 2021, the Mediterranean mussels represented 4% of 2021 catches while turbot (which is under approved TACs) 2.38%.

The vessels operate up to 30-35 marine miles out of shore. The climate conditions have a big influence on the presence of living aquatic resources in the area. Fishing activity is seasonal because of the strict dependence on specific conditions and the general poor technical conditions of the fleet. It could be considered that the fishing fleet activity is dependent on the TACs under EU regulation for turbot and sprat, and, also on Rapa whelk and mussels, based on the stock abundance, and annual ministerial order establishing annual national limits, as quotas for all other commercial fish species. As above mentioned, the abundance of stock during the fishing season offers better opportunities for fishers. The other significant conclusion is that the national fleet is 100% dependent on catches in waters under the national jurisdiction of Romania, due to the limited capacity for navigation of the vessels. The quantity of fuel consumed in 2021 was 729 404 litre and decreased by 9% compared to 2020. The major factor causing this decrease includes the scrapping of several vessels in the fleet, including two of the largest vessels.

The average prices for the five key species increased in 2021 compared to 2020.

The turbot registered an increasing trend in price starting from 2016, by achieving the highest value of 11.8 euro/kg. From 2017 the price decreased constantly until 2020, but in 2021 increased to the value of 8.1 euro/kg. Turbot represents the most valuable stock among the five key stocks exploited by the Romanian fleets. While the other four fish species have lower-level prices. Should be mentioned that seafood, like Rapa whelk for which is an increasing demand market fresh have has level of 0.4 euro/kg, as first sale prices.

*Employment and average salaries*

The total engaged crew in 2021 totalized 431 jobs, a smaller number than in 2020 (439), a decrease by 2%. The number of jobs is foreseen to be almost the same in 2022 which could be evaluated as a stability of the fishery. Between 2008 and 2020, the level of employment decreased, from 875 jobs in 2018 to 439 jobs in 2020. Compared to the average for the period 2013-2020 employment in 2021 increased by 16%.

In the SSCF segment, total employment in 2021 was 288 jobs, corresponding to 20 FTEs. The level of employment in SSCF decreased between 2008 and 2020, from 790 jobs in 2008 to 286 jobs in 2020. Compared to the average for the period 2013-2020 employment in 2021 increased by 1%, and FTEs decreased by 9%. The employment in LSF for 2021 was 143 corresponding to 17 FTEs. The employment engaged in LSF in 2021 decreased by 7% compared to 2020 but increase by 69% compared to the average for the period 2013-2020.

In 2021, wages and salaries of crew decreased by 14% compared to 2020 and decreased by 15% compared to the overall period 2013-2020.

The average wage per FTE in 2021 increased by 21% compared to 2020 and by 2% compared to the average for the 2013-2020 period. The negative impact due to less demand encountered an issue on the market, for both species Rapa whelk and Turbot, as in LSF segment, is observed because of COVID-19 pandemic. Also, total landings as volume and value decreased in 2021, compared to 2020.

- *Economic results for 2021 and recent trends*

*National fleet performance*

In 2021, the amount of income from landings generated by the Romanian national fleet was around EUR 2.14 million. The total income of the Romanian fleet in 2021 amounted to EUR 2.39 million and decreased by 17% compared to 2020. Due to the reduced landings, Romanian fishers are looking for the opportunity to generate earnings in other industries, such as tourism. Total expenditure accounted by the fleet in 2021 equated to EUR 1.73 million. Personnel and energy costs were the two major fishing expenses representing 64% of total expenditures. Total operating costs in 2021 decreased by 15% compared to 2020 and also decreased by 17% compared to the average for period 2013-2020. The results of changes in landings are also increasing depreciation costs, personnel costs, repair and maintenance costs.

In terms of economic performance, in 2021 were estimated at: the GVA EUR 1.45 million, gross profit EUR 0.8 million and net profit EUR 0.7 million. The net profit in 2008, 2009 and 2010 was negative, the value for 2016 and 2017 showed improvement but in 2018 the value again decreased. Comparing the 2021 to 2020 the net profit increased by 11%.

In 2021, the Romanian fleet had an estimated value of physical capital of EUR 9.2 million and investments amounted to EUR 0.3 million. The value of physical capital decreased by 6% and the investments decreased by 53%, compared to 2020. The estimated value of total assets in 2021 was EUR 3.7 million, a decrease by 29% compared to 2020.

Should be emphasized that the value of landings caused a significant reduction of average wage by 14% in 2021 compared to 2020.

Total landings, as volume and value decreased in 2021 compared to 2020.

*Resource productivity and efficiency indicators*

The gross profit margin decreased in 2021 compared to 2020 by 3% and by 21% compared to period 2013-2020, and net profit margin increased by 34% and decreased by 15% compared to period 2013-2020.

Labour productivity (GVA/FTE) recorded an increase in 2021 by 18% compared to 2020 but a decrease by 26% compared to the period 2013-2020. The number of FTE decreased by 25% in 2021 compared to the period 2013-2020.

Fuel consumption per landed tonne followed an overall increasing trend since 2017. In 2021, it was estimated at 233 litres per landed tonne which represented 53 litres more per landed tonne compared to 2020 and an increase of 33% compared to the amount of 154 litres per landed tonne during the period 2013-2020. The fuel consumption is explained based on the direct proportionality between total landings in each analysed year of evolution.

Landings in weight per unit of effort (in DaS) followed the decreasing trend starting from 2017 and decreased by 16% in 2021 compared to 2020 and decreased by 30% compared to the average for period 2013-2020. Greater volumes of landings of segments engaged in last few years in Rapa whelk contributed also to the improvement of productivity and efficiency indicators since this type of catch has huge importance in total catches.

Considering the current geopolitical context, fuel prices will most likely continue to rise. As can be seen in the table below, the highest fuel price is in segment PG VL0006 and the lowest in segment PMP VL2440, mainly due to the reductions granted by the state budget for vessels larger than 12m. Also, in terms of efficiency of energy, the highest value can be observed at the PMP VL2440 segment, and the lowest value at the PG VL0006 segment. The energy intensity registers the highest value at the PG VL 0006 segment, and the lowest value at the PMP VL2440 segment.

**Table 4.22** Romania: Average fuel price, short- and long-term break-even prices for fuel, Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| ROU MBS PG 0612 NGI A | | 3.08 | 2.86 | 19% | 199.3 |
| ROU MBS PMP1218 NGI A * | | 1.39 | 1.13 | 25% | 243.8 |
| ROU MBS PG 0006 NGI L * | 0.67 | 7.43 | 7.41 | 9% | 77.9 |
| National average | 0.68 | 1.91 | 1.67 | 22% | 226.4 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Performance by fishing activity*

The fishing fleet totalized a number of 163 vessels in 2021, out of which 130 active and 33 inactive vessels and targeting different species only in the Black Sea EEZ waters of Romania.

*Small-scale coastal fleet*

In 2021, there were 108 active vessels classified in SSCF, representing 66.25% of the total number of active vessels. The amount of income totalized by Romanian SSCF in 2021 was EUR 1.19 million. Landings' income generated in 2021 decreased by 26% compared to 2020 and by 40% on the average level of 2013-2020. In terms of economic performance, the amounts of GVA, gross profit, and net profit generated by the SSCF were EUR 0.76 million, EUR 0.47 million, and EUR 0.43 million, respectively.

Compared to the average of 2013-2020, GVA decreased by 25%, and gross profit decreased by 23%, while net profit decreased by 18%. It should be mentioned that the scuba divers collecting Rapa whelk manually are also included in this fleet segment.

The most important factor with a negative impact on the improvement in economic performance in the period analysed was a decrease in the landing income in 2021 and an increase in some costs.

*Large-scale fleet*

In 2021, the LSF fleet counted 22 active vessels (33.75% of the total active vessels), with a total crew of 143 fishers a decrease from 2020. In 2021, the total revenue, generated was EUR 1.25 million, a decrease of 20% compared to 2020, and by 43% compared to the average for the period 2013-2020. The main explanation is that in 2021 the 2 096 tonnes total landings decreased, from the 2 934 tonnes in 2020. The GVA amounted to EUR 0.68 million in 2021, a substantial decrease in 2019 and 2020, due to the decrease in total catches, as above mentioned. The gross profit in 2021 amounted to EUR 0.3 million, a decrease of 41% compared to 2020, and by 70% compared to period 2013-2020. The net profit was EUR 0.27 million in 2021 which was a significant decrease of 70% for the period 2013-2020 due to the diminished total landings, and the decrease of Rapa whelk especially.

Due to the COVID-19 outbreak, to the decline in Rapa whelk total catches, and since the entire fleet is dependent on this stock species and catches, the profile of the LSF is significantly affected.

- *Performance of selected fleet segments*

Is characterised by six fleet segments grouped in four clusters and all of them made profits in 2021.

*Vessels using passive gears for segment 00-06m*

In 2021, there were 9 active vessels in PG VL0006 fleet segment. The value of landings was 52 tonnes and EUR 0.05 million. These vessels use passive gears (mainly traps), longlines and gillnets for small pelagic fish and include also fishers who catch Rapa whelk and mussels manually – scuba divers. The generated GVA in 2021 was EUR 0.04 million, gross profit and a net profit of EUR 0.02 million; the catches are represented by small pelagic species: sprat, shad, anchovy, horse mackerel, bluefish, Atlantic bonito and golden grey mullet and demersal fish such as turbot and gobies. Divers manually harvest rapa whelk and mussels.

*Vessels using passive and active gears for segment 06-12m*

This includes segments PG VL0612 and PMP VL0612. In these segments there are 99 active vessels. These vessels are using passive gears (traps, gillnets for turbot and for small pelagic fish, longlines) and active gears (beam trawl, pelagic trawl and scuba divers). In 2021 the landings in volume were 977 tonnes and EUR 0.84 million and 18 FTE, counting for 47% of the total fleet FTEs. In 2021 this fleet segment made a gross profit of EUR 0.44 million, a net profit of EUR 0.4 million, around 53% gross profit, and around 57% net profit of the total Romanian fishing fleet.

*Vessels using polyvalent fishing gears PMP 12-18m*

The segments VL1218 PMP and VL1824 PMP were grouped in the cluster PMP1218m due to the reduced number of vessels on the VL1824 PMP segment (only 3 vessels activate). There are 21 vessels on this cluster operating in the Romanian coastal areas of the Black Sea, that are targeting turbot, mainly with gillnets. Rapa whelk using beam trawlers, mussels using hydraulic dredge and small pelagic fish using pelagic trawl and gillnets. In 2021 the landings in the volume represented 1 965 tonnes and EUR 1.17 million and 16 FTE, counting for 42% of the total fleet FTEs. In 2021 this fleet segment made a gross profit of EUR 0.36 million, a net profit of EUR 0.27 million, around 44% gross profit, and around 39% net profit of the total Romanian fishing fleet.

*Vessels PMP gears belonging to the segments 24-40m*

The fourth segment of the Romanian fishing fleet is PMP VL2440, Only one vessel is operating in this segment and produces a total value of landings totalizing 131 tonnes and EUR 0.07 million.

This vessel uses hydraulic dredge for mussels and beam trawl for Rapa whelk. They are not specialized by gear types, switching from one gear to another pending on the abundance of both stocks during the year and the market request.

- *Drivers affecting the economic performance trends*

The Romanian catches in 2021 decreased compared to 2020 (-30%), while compared to the average for the period 2013-2020 the total catches decreased by 44%. Starting with 2013 Rapa whelk became the most important species in total catches. This trend is affecting all performance of the fleet, and the evolution of stocks and market demand for this species, which is leading to a dependency of the whole fleet of Rapa whelk catches. Also, the most valuable fish species caught, turbot, is subject to TACs limitation under EU Regulations, and this is resulting in very limited money amounts earned by fishers.

*Markets and Trade*

The trade balance in Romania for fish and seafood is negative. First of all, due to the small dimensions of the fleet and therefore, total catches, and also, due to the huge quantities imported by the supermarket chains. At the same time should be noted the weaknesses of the processing sector development which is not able to use properly the internal production availabilities. It should be noted the interest of the Romanian consumers for ocean fish species and other fish species that are not available in the Black Sea waters.

*Operating costs (external factors)*

Compared to the average for the analysed period 2013-2020, the total costs of the fleet in 2021 decreased by 19%, due to changes in the fleet structure. Personnel costs and energy costs are the major expenditure items, with a 36% and 28% share of the operating costs, respectively. This could be explained by the almost stable level of salaries during this period and further by a small decrease in the days at sea accompanied by the rising fuel prices.

*Status of Key stocks. TACs and quotas*

Romania has TACs for turbot and sprat, under EU regulations, Additionally, for other commercial fish stocks, at national level limitation of quotas are approved annually based on the scientific advised of the research institute, and under GFCM recommendations implementation decreasing number of days at sea and fishing days are adopted. From the provisional data available in 2021, the weight of landings decreased by 30% in 2021 compared to 2020, as well as the value of landings in Euro. This is a result of limited fishing possibilities and COVID-19 effects.

*Management instruments*

The Electronic Record System (ERS), according to EC Regulation 1224/2009, is to replace the paper logbook and landing declarations and ensure accurate and faster data recording and transmission and exchange. In addition, the sales notes of all buyers registered at the first sale are planned to be recorded electronically, making more accurate, fast registration and transaction data transmissions (first sales points).

There has been significant progress in this process, currently Romania has implemented an integrated solution that has strengthened and implemented the communication mechanisms for synchronizing fleet information with the EU Commission database. This process involved both the automatic transmission of information on fishing activity, online, according to the Commission's requirements regarding vessels with a length greater than 12 m, as well as the monthly import of the catches of the other categories of fishing vessels. This fact allows the planning of the transition towards the automation of the entire process, allowing the verification of the concordance between the information entered in the database with the information on paper and excel, a very important process in the digital transformation of the management of the fishing activity. This process is still ongoing as a result of the still large number of reporting errors determined by the low level of digital skills of the fishing crews.

Having the fleet database that includes the management of licenses, authorizations and fishing quotas of Romania the prerequisites for the transition to the automatic management of the fishing activity can be created. The process is a difficult one both as a result of the cumbersome process of contracting services for the digitization of specific operational processes as well as due to the low degree of adoption of IT support solutions by end users (fishers, economic operators), because the target of the system is represented by people with Extremely low education in IT.

During the reporting period, Romania succeeded in replacing the ERS solution installed on board ships with a length greater than 12m and continued with the implementation of a new ERS application in the back office. This strategy was planned in order to simplify the way of reporting, starting from the fact that the target users frequently complained that the previous solution was quite complicated from their perspective, this having a direct effect on the quality of the reported data.

The newly implemented solution was customized to the specific needs of the Romanian fishing activity management. This action is part of the digitalization strategy of the associated processes with the objective of increasing the quality of the data reported through IT&C tools. The new IT solution managed to simplify the reporting process by entering the "production" regime, the mobility component in mid-September of 2021, and the back-office component in March of the current year. The transition process involved the change of technology on board ships, the training of internal and external personnel so that the system can function in accordance with the requirements defined during the design and in accordance with the requirements of the fishing activity management, resulting from the European Commission regulation.

The new computer solution creates the possibility of a more careful monitoring of fishing vessels as a result of the fact that the new support terminals have dual communication capabilities (GSM and satellite), a solution that was possible given the specifics of the Romanian fleet that operates not far from the Black Sea shore. By adding back-office functionalities and aligning the way of implementing the operational support flows, the conditions for the transmission of information regarding the management of the fishing activity in the FLUX infrastructure of the European Commission were created, an activity planned in the next stage of the acquisition of digitization services.

Although the implementation of the new IT&C solution took into account functionalities in all areas (fleet, fisheries management, ISC) not all implemented functionalities are used due to the lack of alignment between the technological modernization of the infrastructure, on the one hand, and the adoption of the system by the end user, on the other hand. The current situation is still a mixed one in which the operational flows are partially digitized, the system functioning through the coexistence of automated reports with those using paper support. After ensuring the quality of the reporting process and contracting the new services for the development of the application infrastructure, we will move on to the implementation of the automated reporting requirements to the Commission using the FLUX infrastructure.

Romania implemented the interconnection of the flow system and closed the VMS domain, currently Romania exchanges VMS data both with the EU commission and EFCA, but also with a member state (Bulgaria). During the reporting period, as a result of the change in the technological communication

solution, the necessary reconfigurations were made for the transmission of position information through FLUX. The process involved several malfunctions in the transmission of monitoring information, situations that were managed throughout the transition process. During the reporting period, Romania started to work regularly with the solution that ensures the implementation of communication scenarios in the field of the fleet, promptly responding and resolving the requests for checking and aligning the inconsistencies signaled by the European Commission representatives. Romania implements the EC control and inspection plan under the guidance of the EFCA, as mentioned above. Currently, Romania has implemented the control reports in electronic format, both at the level of the back-office application and by introducing mobility through the purchase of mobile devices for each inspector together with the application that enters the inspection report directly into the central system automatically. At the same time, Romania implemented the obligations arising from the transmission of information from the ISC field on the Flux infrastructure, having finalized the aspects related to the validation and transmission of inspection reports at sea. Unfortunately, the digitalization process remains difficult due to the complicated procurement procedures and the extremely long life cycles of contracting the associated services, a fact that would require the identification of a solution that would allow the acceleration of the contracting processes.

*Innovation and development*

In 2020, a procedure was initiated for the conception and procurement of approvals for the project 'Fishing facilities for Midia Port'. Midia Port is multifunctional, serves fisheries and its upgrade has been a constant concern. To this end, an implementation plan has been prepared. Given the risk of extending this implementation period, the project can be completed after 2023 with the support of the Fisheries and Maritime Affairs Operational Programme 2021-2027 (FMAOP). The investments thus made are supplemented by those for the construction or upgrade of landing sites and points of first sale, which are likely to facilitate the landing and preparation for the placing marine fisheries catches on the market, while preserving the quality of the product. The support granted in order to upgrade the fishing infrastructure so that it may serve vessels over 12 m long will enable the provision of adequate berthing, landing and refuelling services. There will also be a possibility of taking away the collected marine litter. Proper health and veterinary conditions will be ensured for the treatment, storage and delivery of fisheries products and a bivalve mollusc purification and a dispatch centre will be set up. Support will be provided to equip fishing vessels to enhance economic performance, safety and security on board and reduce environmental impact. The aim is to purchase and upgrade fishing gear and equipment for the storage and conservation of catches, but without increasing vessel fishing capacity. New fishing gears must be more selective than the old ones. Old fishing gears, which risk being lost and becoming marine litter, can be replaced, provided that they are destroyed and disposed of in an environmentally safe manner.

There are grounds for accessing EU financial support for fishing vessels between 2021 and 2027, which can help increase the profitability of the fleet and reduce the environmental impact of fishing activities. Equipment of fishing vessels and vessels with more selective fishing gear contributes, on the one hand, to reducing unwanted catches, by-catches, discards and stock depletion. On the other hand, new, more environmentally friendly fishing gear to replace old gear helps reduce the risk of lost or abandoned gear and of plastic pollution of the marine environment.

- *Nowcasts for 2022-23 and beyond*

*Model results*

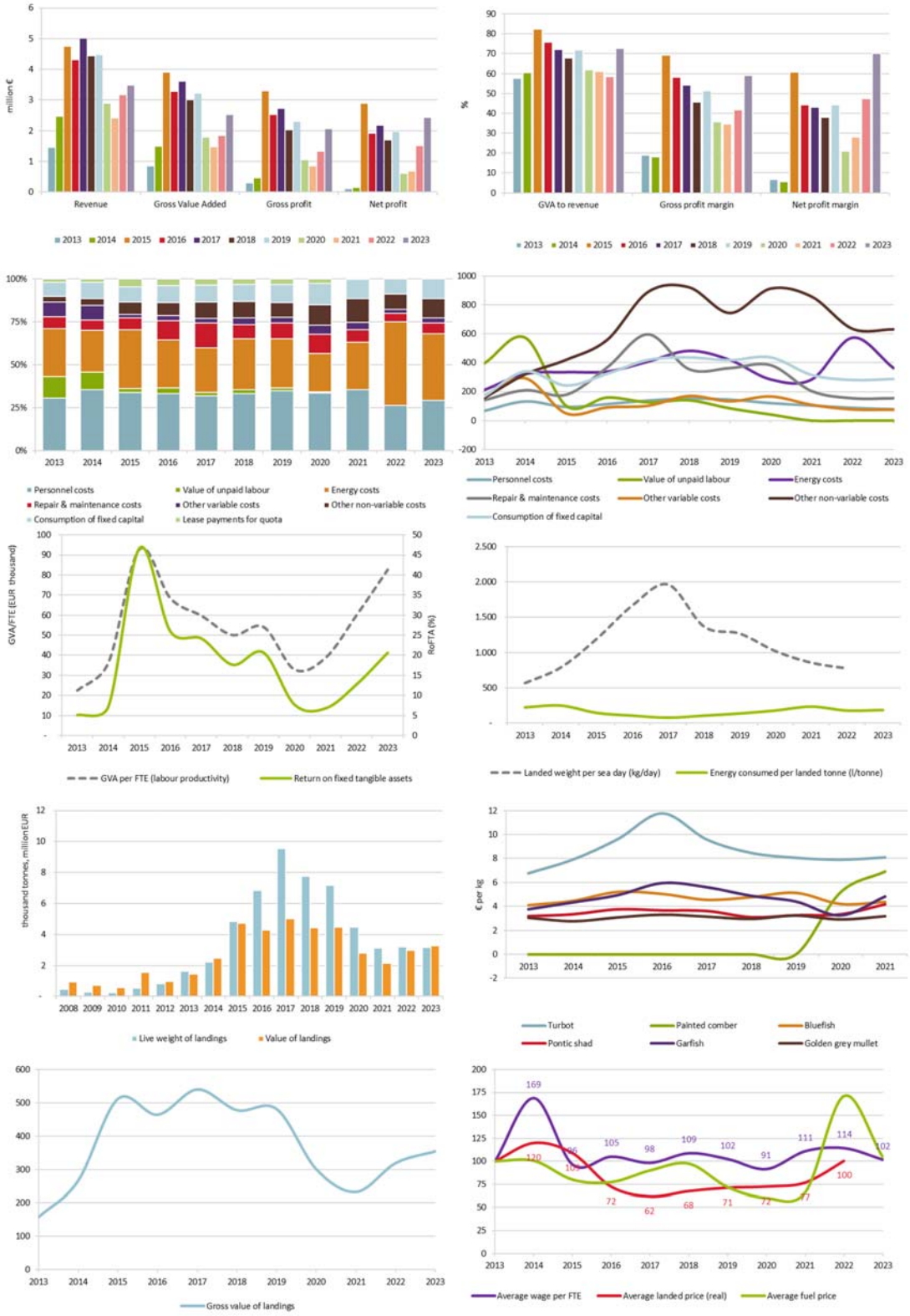
Considering the estimated figures for 2022, the total number of vessels was increased by eight vessels, but no significant increase in total GT and kW are foreseen. These figures would not implicate major changes, in terms of total jobs and FTE. The DaS in 2022 increased by 12% compared to 2021 and this led to an increase in total landings in volume and value by 2% and 38%, respectively. The revenue grew very slightly in 2022 and together with the increase in fuel prices caused low profitability of the Romanian fishing fleet.

The nowcast model for 2023 shows an even bigger improvement compared to 2022. The decrease in fuel prices and the increased revenue could affect the Romanian fleet which regarding the model result would generate a net profit very close to this from 2019 when the profitability of the fleet was much better than in 2020 and 2021.

- *Methodological considerations and data issues*

No specific issues were detected on the data submitted, considering the previous last annual report. It should be noted that the implementation of a centralized database of the national agency for Fisheries and Aquaculture will allow the increase in the process of collection, storage, and cross-checking, and in general in the quality of data. Due to the importance of data validation at the national level, the member state is to improve the methods used in order to get better results and have the capacity to obtain dynamic reports on further data analysis. Moreover, it should be specified that missing values in the tables for the variables. Other income, Operating subsidies, and Income from leasing out quota, are present because these values are reported as zeros. In 2022, on the segment VL0006 PMP activates only vessels without a motor, all using fishers who catch Rapa whelk and mussels manually – scuba divers, Therefore, the total KW on this segment has the value 0.

**Figure 4.23** Romania: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.20 Slovenia

- *Short description of the national fleet*

In 2021, the Slovenian fishing fleet consisted of 137 registered vessels (an increase of 1% compared to 2020), with a combined 668 GT (-0.5% compared to 2020), a total power of 8 693 kW (-2% compared to 2020) and an average age of 44.7 years. The average length of the fishing vessels was 9 metres in the same year. The size of the fleet decreased between 2013 and 2021; the number of vessels by 13% and GT and kW by 1% and 7%, respectively. The major factor causing the fleet to decrease was the scrapping of vessels, including two of the largest vessels in Slovenian fishing fleet. A decrease of 22% in number of vessels is recorded in 2018 regarding 2017. In 2018, Slovenia updated the register of fishing vessels. All inactive vessels, with no fishing license, were, with the permission of the owner, deleted from the registry.

In 2021, there were 72 active vessels which represent 52% of all fishing vessels. The number of all active vessel decrease by 13% from 2013-2021. The peak in the number of active vessels was recorded in period 2014 – 2015. One of the reasons for the increased number of active vessels in that period is the scrapping of some large vessels. Many fishers lost their jobs and decided to start fishing on their own. Also, the economic crisis over the past few years had a similar effect on the increased number of active vessels. One of the reasons for the drop from 2016 to 2021 was the crisis in the purse seiners sector where the number of vessels decreased by two thirds in the period 2016 to 2018 while, from 2019 onwards, there were no more vessels in this segment.

The number of inactive vessels is still high. The case is complex and there are several reasons for this situation. One of the reasons is the high age of these vessels. If the fishing vessels in Slovenia are old and no longer efficient or cost-effective to operate, fishers may choose to retire them or leave them inactive. Also, many owners cannot fish anymore because they are retired but they do not have a successor to continue with the fishing activity. In many cases, fishers found a new job outside the fishing sector, because they could no longer earn a living from fishing, but still own the fishing vessel. Furthermore, if the price of fuel or other expenses associated with operating fishing vessels is high, fishers may choose to keep their vessels inactive until market conditions improve.

*Fleet structure*

The Slovenian fishing fleet is divided into SSCF (87% of all active vessels in 2021) with an engine power of 3 544 kW (+4% compared to 2020) and a LSF segment (13% of all active vessels in 2021) with an engine power of 1 692 kW (same value as in 2020). The number of vessels in the SSCF has decreased by 9% from 2013-2021, while the number of LSF vessels has decreased by 25% in the same period. Scrapping is the major factor for the decreased LSF.

The Slovenian national economy is not dependant on the marine fisheries sector. However, the sector has a social impact in terms of employment. The watershed moment for Slovenian marine fisheries began with Slovenian independency in the year 1991. The period after the independency marked a decrease in the extent of fishing regions and a substantial loss of market for fish products. A large number of poorly equipped small-scale fishers, inadaptability of large-scale fisher, along with the discordance among fishers, producing and marketing capabilities brought the sector into crisis. Landings of almost 6 000 tonnes in 1990 decreased to less than 200 tonnes in 2021.

The existence of two sea fishery reserves where all fishing activities are banned (Portorož and Strunjan fishery reserves) further limit the reduced Slovenian fishing area. Moreover, there is an important industrial port in the Gulf of Koper. Due to safety and international rules, a common routing system and traffic separation scheme was established in the Northern Adriatic, which impacted fisheries. For the last few years, this has had a negative impact, particularly on those fishers who are engaged only in small-scale coastal fishing.

*Fishing activity and production*

In 2021, the fleet spent a total of around 4 758 days-at-sea. Effort, in DaS, decreased 36% between 2013 and 2021. One of the main reasons for the decreased fishing effort in Slovenia is the decline in fish populations in the Adriatic Sea. Overfishing, pollution, and other factors have contributed to the decline of several fish species, making it more difficult and less profitable for fishers to operate their vessels. Slovenian fisheries have a negligible effect on fish stocks because the relatively small size of its fishing sector. However, it is affected by the intensive fishing in the area, which results in lower landings and decreased effort. Furthermore, the fisheries sector, particularly the SSCF, is affected by the limited size

of marine fishing area. Most of the fleet is poorly equipped and unable to operate in international waters. Additionally, the reason for the declined fishing days after 2015 can be attributed to the crisis in purse seiners sector and reduced effort in DFN 00-06m segment. Fluctuation in number of vessels and number of fishing days in small-scale sector is manly related with the activity of occasional fishers, i.e., those whom fishing is not the only source of income. During the economic crises, when incomes were lower, they went to the sea more often to earn some additional income. Also, effort increases when the season for fishing of some ''high market price'' species, e.g. sole, turbot, is very good.

The quantity of fuel consumed in 2021 was around 220 000 litres, a decrease of 7% from 2013. The major factor causing this decrease is the scrapping of several vessels in the fleet, including two of the largest vessels.

The system of fuel price subsidies for fishers in Slovenia is quite complex. Tax incentives for the purchase of fuel are claimed only by larger fishing vessels, i.e. those with higher fuel consumption (mainly trawlers). The average final price of diesel fuel in 2021 was 1.27 euro/litre, while the price without excise duty was 0.88 euro/litre the same year. The share of excise duty in the final price of fuel thus amounted to more than 30%.

The total weight of seafood landed in 2021 was around 106 tonnes, with a value of EUR 0.84 million. The total weight and value of landings decreased by 24% and 38%, respectively, over the period 2013-2021. In 2009, the national fleet generated the highest landed value (EUR 2.4 million), followed by 2008 (EUR 2.3 million). In terms of landings weight, in 2009 the fleet landed around 866 tonnes. 2010 (764 tonnes) and 2011 (719 tonnes). The major factor causing the decrease in landed weight and value, especially for European anchovy and sardine, include scrapping of fishing vessels. In the last quarter of 2011. Slovenia sent the two largest vessels to be scrapped (pelagic trawlers 24-40m); those vessels targeted mainly sardine and anchovy and represented around 50% of the Slovenian landed weight. The climate change could be also one of the reasons for the observed reduction in landings. The Northern Adriatic Sea was very warm over the past few years, which could be the reason for the reduced presence of certain fish species, e.g. whiting. The landings volume of whiting decreased from 2012 to 2021 by more than 70% compared to previous years.

In general, first sale prices for marine fish in Slovenia may be influenced by the overall health of the fishing industry, which can be impacted by factors such as changes in regulations, changes in fish populations, and shifts in consumer demand. Other factors that may influence first sale prices include the cost of fuel and other expenses associated with operating fishing vessels, as well as competition from imported fish. Prices obtained for the key species targeted by the fleet generally remained stable between 2013 and 2021. Slight annual variations of the prices are the results of increased or decreased volume of landings over the period, European pilchard and European anchovy, most important species in period 2008 - 2012 (together accounted around 50% of the total landings value obtained by the Slovenian fleet) in 2021 recorded a negligible catch – around 1% in landing value.

*Employment and average salaries*

In 2021, the number of fishing enterprises totalled 101, with the majority (66%) owning a single vessel, 34% of the enterprises owned two to five fishing vessels and none of the enterprises owned six or more vessels. Total employment in 2021 was estimated at 80 jobs, corresponding to 41 FTEs. The level of employment decreased between 2013 and 2021, with total employed decreasing by 25%, while the number of FTEs decreased by 39 %.

In 2021, the average wage per employee was EUR 3 900 (EUR 7 611 per FTE) and it was below the average Slovenian salary in 2021, which amounted to EUR 23 635. Furthermore, the average wage per FTE was also below the Slovenian minimum wage in 2021 (EUR 12 290). The Demersal trawlers and demersal seiners 12-18m segment recorded the highest average mean wage of EUR 8 958 (EUR 14 433 per FTE). This segment also had the second lowest value of other income in total income (EUR 742 782 in 2021). Slovenian fishers earn only part of their wages in fishing and the rest of their salaries with other activities, such as tourism, aquaculture, etc.

The Slovenian fishing fleet consists predominantly of small vessels of less than 12 metre (mainly vessels of 6 metres). Self-employed fishers who own one fishing vessel about six metres long represent a typical Slovenian fishing enterprise.

- *Economic performance for 2021 and recent trends*

*National fleet performance*

The amount of income generated by the Slovenian national fleet in 2021 was EUR 4.34 million. This consisted of EUR 0.84 million in landings value, EUR 3 million in non-fishing income and EUR 0.5 million in subsidies. The Slovenian fleet's landings income decreased for more than 20% between 2013 and 2020, while other income more than doubled in value during the same period. Due to reduced landings, Slovenian fishers are looking for the opportunity to generate earnings in other economic sectors, such as tourism, aquaculture, etc.

Large increase in subsidies was recorded from 2015 onwards. One of the reasons for this were payments to fishers implemented by Slovenia through the ''Socio-economic compensation for the management of the Community fishing fleet in the framework of OP EFF 2007-2013'' measure which was a consequence of Croatia's accession to the EU. Through Croatia's Accession Treaty which entered into force on 1 July 2013, the provision became applicable in EU legal order that Slovenia may finance a scheme of individual premiums for fishers who would benefit from the access regime laid down in Part 11 of Annex I to Regulation (EC) No 2371/2002 (this access regime is now provided for in point 8 of Annex I to Regulation (EU) No 1380/2013) as amended by the Act of Accession of Croatia. The scheme may only apply during the period 2014 to 2015 or, if this occurs earlier, up until the date of the full implementation of the arbitration award resulting from the Arbitration Agreement between the Government of the Republic of Slovenia and the Government of the Republic of Croatia, signed in Stockholm on 4 November 2009.

Total operating costs incurred by the fleet in 2021 equated to EUR 1 million, 23% of total income. Repair and personnel costs, the two major fishing expenses, represented 35% and 31% of total operating costs, respectively. Between 2013 and 2021, total operating costs decreased more than 20%, largely due to scrapping of several vessels. In the last few years, especially in 2012 and 2013. Slovenian fisheries sector has recorded an increased value of direct income subsidies. It has been intended primarily to diversify their activities. The results of these investments are the increased depreciation costs (period 2013-2015) and other income.

Between 2013 and 2020, GVA increased by 58%, while gross profit and net profit increased 113% and 147%, respectively. Although the Slovenian fishing fleet was in a poor economic condition because of old and poorly equipped fleet and reduced catches, still records a positive trend in almost all the economic indicators. The reason for the positive trend is primarily because of higher revenues from other sources.

In 2021, the Slovenian fleet had an estimated (depreciated) replacement value of EUR 3.8 million. Investments by the fleet amounted to EUR 0.01 million in 2021.

*Resource productivity and efficiency indicators*

The gross profit margin and net profit margin also increased from 2013 to 2021 for 42% and 66%, respectively.

Labour productivity (GVA/FTE) also record increase in period 2013- 2021 for 146%: GVA increased for 58% while the number of FTE decreased by 39% in the period analysed.

Labour productivity of the Slovenian fishing fleet was EUR 39 440 in 2021, which is above the GVA per employee average in the entire Slovenian agricultural sector (EUR 28 451) however, under the total Slovenian GVA/employee average, which amounted to EUR 53 712 in 2021 (Source; SiStat Database).

Fuel consumption per landed tonne has followed an overall increasing trend since 2013 and amounted 2 098 litres per tonne landed in 2021 (an increase of more than 70% from 2013). The landed weight per sea day decreased significantly for almost 30% from 2013 to 2021 and amounted 22kg per sea day in 2021. One of the reasons for that is the scrapping of some large vessels with high volume of landings and, subsequently, changed composition of the fleet consisting now in a majority of smaller vessels with lower landed weight per sea day. Lower volume of landings of purse seiners segment in the last few years than in previous ones also affected the productivity and efficiency indicators since this segment has the best ratio between the weight of catches and fuel consumption.

The break-even is the point at which total cost and total revenue are equal, meaning there is no loss or gain. Considering the fuel used by the Slovenian fishing fleet in its activity, the fuel price break-even is the fuel price that makes total revenues and total costs, equal. As it can be seen from the picture, the break-even point for the Slovenian fishing segments is relatively high, which is mainly a result of high other incomes. The DTS VL12-18 achieves the least favourable outcome regarding BER among all

segments in the Slovenian fishing fleet. It exhibits the highest fuel consumption, the worst weight of catches to fuel consumption ratio, and ranks second lowest in terms of other incomes.

**Table 4.23** Slovenia: Average fuel price, short- and long-term break-even prices for fuel. Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| SVN MBS DTS1218 NGI * | 0.86 | 6.18 | 6.03 | 26% | 2,237 |
| SVN MBS DFN0612 NGI * | 1.24 | 33.80 | 33.56 | 31% | 2,364 |
| SVN MBS DFN0006 NGI * | 1.20 | 50.61 | 49.94 | 14% | 905 |
| National average | 0.96 | 14.32 | 14.12 | 26% | 2,098 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

*Social impact*

The marine fishing sector is small but with a strong social impact on the Slovene coastal region in terms of employment. Besides, this activity is also important for maritime identity and tourism. In addition to directly creating employment opportunities, it is linked to the economy of the entire region, especially to tourism and catering. As said before, the value and volume of landings, as key drivers do not have affect only fishers but also the people on shore. Slovenian fish processing industry, on the other hand, less depends on Slovenian fisheries because most of the raw materials are imported from another, mostly EU countries. However, the crisis in purse seiners segment had negative impact on some smaller processors which produce salted fillets of anchovies.

- *Performance by fishing activity*

The Slovenian fleet has a range of vessel types targeting different species predominantly in the Adriatic Sea. The fleet consisted of seven (DCF) fleet segments in 2021, with four inactive length classes consisting of 65 vessels. Two of the active segments (DFN VL00-06 and DFN VL06-12) belongs to SSCF and one (DTS VL12-18) belongs to the LSF.

*Small-scale coastal fleet*

In 2021, there were 72 active vessels of which 87% are classified as small-scale (a decrease of 9% from 2013). The majority of these vessels operate in the coastal waters of Slovenia.

The amount of income generated by the Slovenian SSCF in 2021 was EUR 2.8 million or 65% of all income in 2021. Landings' income decreased 48% between 2013 and 2021, while other income increased more than 100% during the same period. Due to reduced landings, Slovenian fishers are looking for the opportunity to generate earnings in other economic sectors, such as tourism, aquaculture, etc.

Between 2013 and 2021, GVA, gross profit and net profit had a positive trend (although the substantial fall was recorded in 2015). The major factor causing the improvement in economic performance in period analysed include increases income from other sources. Operation costs followed mostly negative trend during the period analysed. In 2021, the SSCF had an estimated (depreciated) replacement value of EUR 1.5 million. Investments by the fleet amounted EUR 0.8 million in 2021.

*Large-scale fleet*

Nine vessels (13% of all active vessels) represent Slovenian large-scale sector in 2021. The majority of these vessels operate in the coastal waters of Slovenia.

The income generated by the Slovenian LSF in 2021 was EUR 1.5 million (35% of all income). Landings' income decreased for just 1% between 2013 and 2021, while a decrease of almost 60% is recorded in period 2008-2012 compared to 2013. The major factor for decreased value of landings income was scrapping of some vessels and in the last few years a crisis in the purse seiner segment, which is deeper from year to year. Moreover, this segment did not operate at all beyond 2018.

Between 2013 and 2021, GVA decreased more than 60%, while gross profit and net profit increased by 160% and 200%, respectively. The major factor causing for decreasing GVA was the crisis in the purse

seine sector and scrapping of some vessels. The major drivers for increased value of gross and net profit are higher values of other income in 2021.

In 2021, the LSF had an estimated (depreciated) replacement value of EUR 1 million. Investments by the fleet amounted to EUR 0.03 million in 2021.

- *Performance of selected fleet segments*

The entire active fleet made an overall profit in 2021. All segments, except for one, also improved their economic performance in 2021.

*Demersal trawlers and demersal seiners 12-18m*

Nine vessels based predominantly in the Adriatic. This fleet targets a variety of species, the most important being whiting, musky octopus and European squid. The value of landings was EUR 0.55 million and 10 FTEs were employed in this fleet segment in 2021, contributing to 65% and 24% of the total income from landings and FTEs generated by the Member State's fishing fleet, respectively. This fleet segment made a profit in 2021.

This segment records improvement in economic performance, which is largely due to higher other incomes in 2021 (+200% compared to 2020).

*Drift and fixed netters <6m*

25 vessels operating in the Slovenian coastal areas of the Adriatic. These vessels target demersal species, such as Sole, Mullets and Sea bream. The total value of landings was EUR 0.10 million and 13 FTEs were employed in this fleet segment in 2021, contributing 12% and 32% of the total income from landings and FTEs generated by the national fleet, respectively. This fleet segment made a profit in 2021.

*Drift and fixed netters 6-12m*

38 vessels operating in the Slovenian coastal areas of the Adriatic. These vessels target demersal species, such as sole, common pandora and sea bream. The total value of landings was EUR 0.19 million and 18 FTEs were employed in this fleet segment in 2021, contributing 23% and 44% of the total income from landings and FTEs generated by the national fleet, respectively. This fleet segment made a profit in 2020.

- *Drivers affecting the economic performance trends*

Several drivers can affect the economic performance trends of the Slovenian fishing fleet. Here are some key factors that may impact the economic performance of the fleet:

- Fish stock health and availability: The health and availability of fish stocks in the Adriatic Sea can have a significant impact on the economic performance of the Slovenian fishing fleet. If fish populations are low or overfished. it can reduce the amount of catch and make it less profitable for fishers to operate their vessels.
- Fishing regulations: Changes in fishing regulations, such as quotas, catch limits, and gear restrictions, can impact the economic performance of the fishing fleet. Regulations can affect the amount of catch that fishermen can harvest, the types of gear they can use, and the areas they can fish in, which can impact their profitability.
- Fuel and operating costs: The cost of fuel and other operating expenses can impact the economic performance of the fishing fleet. If fuel prices rise, it can increase the cost of operating fishing vessels, which can reduce profits for fishers.
- Competition from imports: Competition from imported fish can also impact the economic performance of the Slovenian fishing fleet. If imported fish is cheaper than domestic fish, it can reduce demand for domestic fish and reduce the profitability of the fishing industry.
- Government subsidies and support: Government subsidies and support can play a significant role in the economic performance of the fishing fleet. If the government provides subsidies or support for the fishing industry, it can help to offset some of the costs and improve the profitability of the industry.

Overall, the economic performance of the Slovenian fishing fleet is impacted by a range of drivers, including fish stock health, fishing regulations, operating costs, competition from imports, and government subsidies and support. Understanding these drivers and their impacts can help to identify ways to improve the economic performance of the fleet and ensure the long-term sustainability of the fishing industry in Slovenia.

*Markets and trade*

The Slovenian seafood trade balance is relatively stable over the years and it presents a negative balance. Slovenia is a net importer of fish and fish products. In 2021, imports were approximately five times larger than export and amounted to 13 501 tonnes (EUR 77 million) of fish and other fish product (source; https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/2490101S.px). Exports amounted to 3 682 tonnes (EUR 22 million) in the same year. The majority of the imported fish and fish products come mainly from the EU. The largest Slovenian seafood import partners are Italy, Spain and Croatia. Concerning exports, the largest partners are Austria, Croatia and Hungary.

The Slovenian volume of landings for 2021 amounted around 105 tonnes. In the same year Slovenian aquaculture sector has produced 1 691 (source; https://pxweb.stat.si/SiStatData/pxweb/sl/Data/-/1519102S.px/) tonnes of fish and shellfish. Slovenian market for marine products is fragmented and disorganized. A large number of producers and dealers are unorganized and acting individually. Most of the catches are sold directly to known customers. Part of landed catches are sold also on the fish market in Trieste, Italy.

Prices obtained for the key species targeted by the fleet generally remained stable between 2013 and 2021. Slight annual variations of the prices are the results of increased or decreased volume of landings in the period.

*Operating costs (external factors)*

Between 2013 and 2021, total operating costs decreased more than 20%, largely due to scrapping of several vessels. In the last few years, especially in 2012 and 2013. Slovenian fisheries sector records an increased value of direct income subsidies. It has been intended primarily to diversify their activities. The results of these investments are also increased depreciation costs and other income. In the period 2013-2016, i.e. after the scraping, operating costs remained relatively stable, with slight annual variations as a result of increased or decreased number of active vessels in the fleet. One of the drivers which effect on the economic situation of the fleet are repair & maintenance costs which are relatively high and represented 35% of total operating costs in 2021. In the future an increase in the value of repair & maintenance costs is expected because of old fleet. Energy costs are one of the key drivers only for demersal trawlers and demersal seiner's 12-18m segment. Given the amount of fish caught and fuel consumption, this specific segment has the most unfavourable ratio among all mentioned segments.

*Status of Key Stocks. TACs and quotas*

A session of the Working Group on Stock Assessment of Small Pelagic Species (WGSASP) on the assessment of European anchovy and sardine in the Adriatic Sea was carried out online on 19 May 2022. Based on data provided by relevant contracting parties and cooperating non-contracting parties for 2021 (year n-1), the assessments of European anchovy and sardine were updated with two extra years of data. Anchovy in GSAs 17 and 18 was found to be in overexploitation (Fcurr/FMSY ratio: 1.15) with biomass above reference points (SSBcurr/Bpa ratio: 1.1) while the sardine stock was considered to be overexploited and in overexploitation, on a precautionary basis.

According to the GFCM Working Group on Stock Assessment of Demersal Species (WGSAD) held on January 2022, out of the 51 stock assessments validated by the WGSAD, 10 were found in a state of sustainable exploitation and 41 were assessed as being overexploited.

Slovenia does not have any TACs and/or quotas.

*Management instruments*

In Slovenia, the field of fisheries, together with the relevant legislation and management, is currently the responsibility of the Fisheries Sector at the Ministry of Agriculture, Forestry and Food (MAFF). The ministry developed a new information system (InfoRib) which collects data on marine species, landings, register of fishing vessels and socio-economic data. The data are linked to each fishing vessel and enable assessment of the socio-economic status in marine fisheries. Those data provide the basis for adopting measures in favour of sustainable development and for the CFP.

Fisheries management is regulated mostly by capacity limitations and spatial restrictions. Capacity limitation is related to increase of vessel power and GT in terms of total national fleet capacity. Spatial restrictions are related with the existence of two sea fishery reserves where all fishing activities are banned (Portorož and Strunjan fishery reserves). Moreover, there is an important industrial port in the

Gulf of Koper. Due to the safety and international rules, a common routing system and traffic separation scheme was established in the northern Adriatic, which also has an important impact on fisheries.

From 2014 GFCM management plan for small pelagic fish in GSA 17 has been in force. By the provisions of this plan maximum number of fishing days for targeting sardine and anchovy has been set, as well as temporal closure period.

*Innovation and development (role of EMFAF)*

Slovenia has a derogation regards the minimum distance from coast and the minimum sea depth for the ''volantina'' trawlers; Article 13(1) of Regulation (EC) No 1967/2006 shall not apply in territorial waters of Slovenia, irrespective of the depth, between 1.5 and 3 nautical miles (nm) from the coast, to 'volantina' trawlers which are used by vessels:

(a) bearing the registration number mentioned in the Slovenian management plan;

(b) having a track record in the fishery of more than 5 years and not involving any future increase in the fishing effort deployed;

(c) holding a fishing authorisation and operating under the management plan adopted by Slovenia in accordance with Article 19(2) of Regulation (EC) No 1967/2006.

The derogation shall apply until 27 March 2023.

For this purpose, Slovenia will have to implement a study in order to display the catch composition with ''volantina'' trawlers in the zone between 1.5 and 3 nm from the coast.

- *Nowcasts for 2022-23 and beyond*

*Model results*

Preliminary results for year 2022 and 2023 forecast an increase landed weight and value for Slovenian fishing fleet for both years, while a similar to 2021 number of vessels is expected. Projections suggest total job in general will slightly increase, same as for FTE. Economic performance results in 2022-23: GVA, gross profit and net profit will decrease compared to 2021 although positive gross and net profits are expected for both years, with margins slightly below those in 2021.

*National Fleet*

Due to scrapping, the fleet decreased between 2013 and 2021; the number of vessels by 13% and GT and kW by 1% and 7%, respectively. Because of that, and also due to the poor landings volume of the purse seiners segment, the weight of landings decreased in 2021 for 38% compared to 2013. Landings volume and income, which depends on the status of fish stocks, are the main drivers in Slovenian fishing fleet. They have the effect on all others economic and social indicators. If the fish stocks in the Adriatic Sea will recover in the future, an increased trend in economic and social situation of the sector can be expected.

As the fleet is generally old and poorly equipped, it can be expected that repair and maintenance costs will continue to increase in the future. Furthermore, because of old age of the fleet, an increase in inactive vessels can also be expected.

*Small-scale coastal fleet*

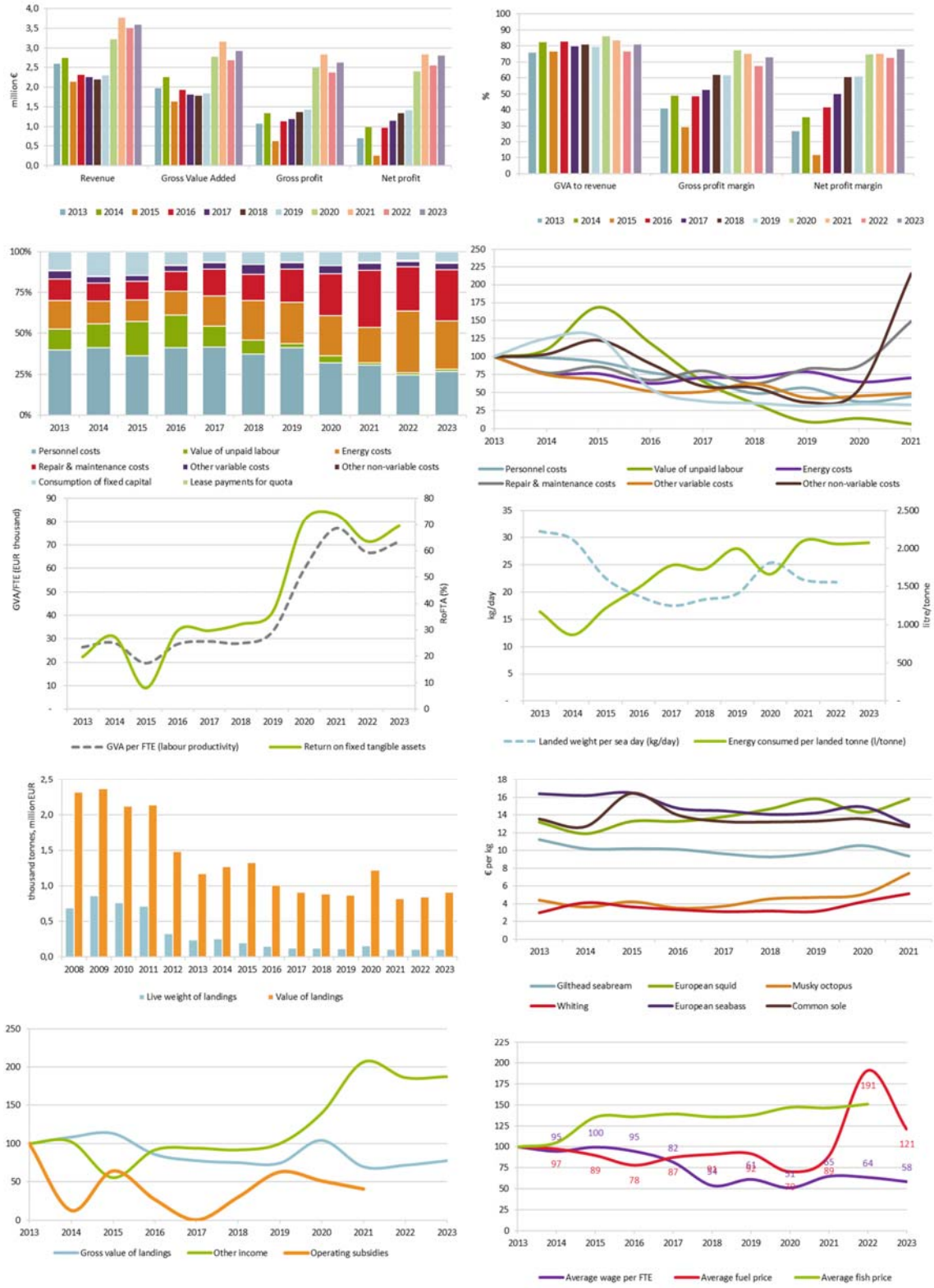
The same issues regarding age and equipment of the fleet apply also to the SSCF. The economic situation of SSCF is largely dependent on the landing volume of species, such as sole, see bream, turbot or European flounder, so it is very difficult to predict the volume of landings. It depends on a variety of factors, such as sea temperature, other climatic factors, condition of the stock, fishing effort in neighbouring countries etc. Based on most recent data, the volume of landings increased in 2022 for 18% regarding 2021, mostly because of increased landings of sea bream and sea bass.

- *Methodological considerations and data issues*

No major issues detected. The economic data on the fishing sector were collected mostly from accounting records – AJPES, from data base 'InfoRib', through questionnaires and sales notes. In the monitoring programme all fishing vessels were included. The data collected from all sources were combined in such a way that a complete set of accounting items is compared for each business enterprise. The target population was all the commercial fishing sector of Slovenia. There were approximately 100 fishing companies. In May 2022 the questionnaires for 2021 were sent to all users of fishing vessels in Slovenia.

The response rate was 100%. Where the data from annual accounts of business enterprises was used the response rate was also 100%, because there are economic reports for all investigated companies or fishers.

**Figure 4.24** Slovenia: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.21 Spain

- *Short description of the national fleet*

In 2021, the Spanish fishing fleet consisted of 8 908 registered vessels, with a combined GT of 333 748 tonnes and an engine power of 783 900 kW.

The Spanish fishing fleet has decreased by 12.4% the number of vessels, 10.3% the engine power and 13.3% the GT from 2013, to bring fishing capacity in balance with fishing opportunities and to remove vessels from those fleet segments that for biological, economical or technical reasons were not in balance.

In 2021, 14.1% of the Spanish fleet was inactive (this marks a departure from the existing trend of the two previous years in which there was about a 6% of the fleet inactive); almost 90% of these inactive vessels are small coastal vessels less than 12 metre LOA.

*Fleet structure*

The Spanish fleet is one of the largest EU fleets and the one that is active in more fishing zones.

More than 71% of the active Spanish fleet are vessels under 12 metre LOA with activity always in national waters, of the Atlantic, Mediterranean, and Canary Islands, waters.

Around 95% of the 7 650 active vessels carried out the fishing activity on Spanish waters (FAO 27.8.c. 27.9.a. 37.1. and the Canary Island waters 34.1.2), with a combined gross tonnage of 36% of the total of the Spanish GTs, and 62% of the total engine power in kW.

The number of fishing enterprises reached 8 094 in 2021. Compared to 2013, small enterprises "oneves" decreased by 16%

*Fishing activity and production*

In 2021, the Spanish fleet spent 820 242 DaS and 829 493 fishing days (-4.2% and -2.4), respectively compared to 2020). In this sense, the quantity of fuel consumed decreased by 18.8%. The value of fuel consumed increased by 26.2% compared to 2020, being the fuel price 0.47 euro/litre. Overall, the fuel expenditure represented in 2021 the 14% of the total expenditures.

Production in 2021 in terms of weight of landings increased by 1.6% compared to 2020, and also the value of landings (9.6%). In terms of live weight and value of landings, the main species for the Spanish fleet were: skipjack, yellowfin tuna, European hake, swordfish, European anchovy and Argentine hake.

*Employment and average salaries*

Total employment in the Spanish fishing fleet for 2021 was estimated at 32 104 jobs, corresponding to 24 209 FTEs, with an average wage per FTE of EUR 27 314, 2.1% higher than in 2020. In addition, the value of unpaid labour increased by 12.6%.

- *Economic performance for 2021 and recent trends*

*National fleet performance*

In 2021, the economic performance of the Spanish fleet improved compared to 2020. Income from landings (total value of landings) increased by 10%. Revenue was estimated at EUR 1 746 billion (+8%).

GVA, gross profit and net profit for the Spanish fleet in 2020 were estimated at EUR 917 million (+7%), EUR 256 million (+28%) and EUR 170 million (+73%), respectively. These figures show an improvement in the economic performance indicators.

In this sense, it is important to highlight that 2021 has shown a good recovery after COVID-19 outbreak.

*Resource productivity and efficiency*

The gross profit margin in 2021 was 14.69%, showing an increase on profitability of 28.4% compared to 2020. Similarly, net profit margin was estimated at 9.76% (+60.7%).

Labour productivity (GVA/FTE) increased in 2021 and it was estimated at EUR 37 914 (8.6% more than 2020).

Fuel intensity was estimated at 596 litres/tonne in 2021 (-20% compared to 2020).

However, fuel efficiency was 13% in 2021, 16% more than 2020. This is due to the increase of the fuel average price, so it is 0.47 euro/litre (55% more than 2020).

It is important to say that in Spain one of the main characteristics is the variety between maritime districts, so the fuel price varies between 1.2 euro/litre in Baleares to 0.4 euro/litre in Galicia, affecting the profitability of the segments.

Table 4.24 displays information on the fuel prices, short-term and long-term break-even revenues, as well as energy efficiency and intensity across several segments that make up a representative sample of the Spanish fleet.

**Table 4.24** Spain: Average fuel price, short- and long-term break-even prices for fuel. Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| ESP NAO DTS2440 NGI | 0.47 | 0.63 | 0.51 | 18.7% | 808 |
| ESP NAO DRB0010 NGI | 0.88 | 0.63 | 0.15 | 5.9% | 786 |
| ESP NAO PGP2440 NGI * | 0.50 | 0.20 | -0.02 | 10.7% | 785 |
| ESP NAO PMP0010 NGI | 0.65 | 1.32 | 1.02 | 8.7% | 973 |
| ESP NAO PS 1824 NGI | 0.49 | 1.83 | 1.38 | 6.3% | 129 |
| ESP MBS DFN0612 NGI | 0.46 | 2.96 | 2.63 | 5.8% | 2,143 |
| ESP MBS DTS1824 NGI | 0.48 | 0.82 | 0.67 | 20.2% | 2,878 |
| ESP MBS PMP0612 NGI | 0.50 | 1.57 | 1.24 | 7.0% | 1,259 |
| ESP MBS PS 1824 NGI | 0.50 | 1.99 | 1.66 | 6.7% | 222 |
| ESP OFR DTS40XX NGI | 0.44 | 0.90 | 0.77 | 17.2% | 434 |
| ESP OFR HOK2440 LLD | 0.50 | 0.67 | 0.52 | 17,2% | 710 |
| ESP NAO PMP0010 IC * | 0.49 | 1.04 | 0.86 | 6.7% | 942 |
| National average | 0.47 | 1.01 | 0.81 | 13.0% | 596 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

- *Performance by fishing activity*

The Spanish fleet is highly diversified, not only in terms of the number of species caught, but also in gears used and fishing areas. This diversity can be seen on the high number of segments that make it up, 84 segments clustered in 58 fleet segments in order to keep the statistical secret.

The SSCF represents the 52% of the total fleet, 45.34% of the fleet belong to the LSF and the remaining 2.5% are covered by the DWF.

Despite this fact, the live weight of landings, are higher for the vessels belonging to the DWF segment (56%) and LSF (43%), than for the SSCF (2.9%) and the incomes from landings follow a similar structure, LSF segment (48%), DWF (44.7%) and SSCF (7.3%).

*Small-scale coastal fleet*

In 2021, 3 983 vessels were covered by the fishing activity SSCF in accordance with the definition used in this report. In this sense, 1 385 Spanish dredges (towed gear which are under 12 metre in length) with coastal activity in Spanish waters should be classified as SSCF and instead of that, they are evaluated at the LSF group, which results as a distortion on the data analysis. These dredges are shellfish catchers who use a small dredger towed by a small vessel for the capture of oyster, prawn, crabs and other species.

Economic data need to be treated with caution, because the 27% of this fleet fish less than 50 days per year and the 30% between 50 and 100 days per year; therefore, this fleet carried out their activity on partial time. In 2021, the number of vessels increased by 1% compared to 2020, however power and capacity barely varied.

The value of landing increased by 2%, however, the weight of landings decreased by 18.8% compared to 2020 and the number of DaS barely varied.

Total jobs decreased by 1.3% generating 8 406 jobs (26% of the total jobs of the Spanish fishing fleet), in the same way personal cost decreased by 5.9%. However, the FTE and unpaid labour increased by 2.4% and 7.4%, respectively compared to 2020. In the SSCF it has to be considered that 32% of the jobs are unpaid labour.

Regarding energy, the energy cost and de consumption increased by 52% and 11%, respectively compared to 2020.

To sum up, SSCF is an economically profitable segment, so GVA and NVA have increased by 1.2% and 3%, respectively however, Gross profit has decreased by 3.6% compared to 2020.

*Large-scale fleet*

In 2021, 3 472 vessels were included in the LSF segment 6.6% less than in 2020.

The number of DaS and the weight of landings decreased by 8% and 4%, respectively. However the value of landing increased by 2% compared to 2020.

Regarding the employment, the number of jobs increased by 2% compared to 2020, however, the personnel costs have remained unchanged.

It should be highlighted the increased of the energy costs by 22.7% due to higher fuel prices, compared to 2020.

According to this, GVA decreased by 4.6%, Gross profit by 25% and Net profit by 28.8% compared to 2020.

*Distant water fleet*

In 2020, 195 vessels were included in the DWF, which has a high participation on the Spanish fleet. The number of vessels has decreased by 2.5% compared to 2020.

Days-at-sea decreased by 1.6% compared to 2020, however, the weight and the value of landings increased by 7.6% and 22.9%, respectively.

In terms of costs, value of unpaid labour dropped compared to 2020, but this variable has been changing over the years, so no comparisons can be made. As in the rest of the Spanish fleet, it is important to highlight the increase in energy costs (27% more than in 2020). It is important to highlight the increase in repair and maintenance costs (37.5% more than in 2020).

As a result, GVA, Gross profit and Net profit have increased by 35%, 125% and 303%, respectively compared to 2020.

*Outermost regions (Canarias)*

Fishing activity in the Canary Islands OMR takes place in FAO area 34.1.2. In 2021 the number of vessels reached to 725 vessels, 571 of them were active during that year. In this sense, 21% of the Canary Islands' fleet is inactive.

This active fleet is composed mainly by small vessels, 501 of them are under 12 metres LOA (88% of this fleet), which means that fisheries are part time and can be considered as a complementary of other source of income. These vessels carry out a polyvalent fishing activity (polyvalent gears, targeting more than one species).

- *Performance of selected fleet segments*

Vessels using active and passive gears in the North Atlantic Ocean, Trawlers of Mediterranean Sea and purse seiners in the context of the SFPA and RFMO's are a representative sample of the most important fleets for each region.

*Vessels using active and passive gears in the North Atlantic Ocean: ESP NAO PMP0010 NGI*

This is the largest segment of the Spanish fleet, comprising 2 128 vessels and 1 888 FTE (15.7% of NAO FTE excluding Canary Islands). This segment is primarily focused on small-scale, traditional fishing methods and is characterized by part-time activity, with an average of 89 days at sea per vessel.

In year 2021 there was a 3.5% increase in the value of landings compared to 2020, however, the economic performance of this segment declined, with gross profit and net profit decreasing by 31.7% and 37.4%, respectively.

*Demersal trawlers in the Mediterranean Sea: ESP MBS DTS1824 NGI*

The 287 trawlers that comprise the segment represent more than one quarter of the value of landing of the Spanish Mediterranean fleet. However, the profitability has lowered since 2020 and they are facing challenges in terms of implementing the different measures required to achieve Maximum Sustainable Yield (MSY) in the Mediterranean Sea.

*Purse seiners in Other Fishing Regions: ESP OFR PS 40XX NGI*

This segment is comprised by 28 active vessels (with an average of 278 days of activity). This segment represents the 22.0% of the total revenue of the Spanish fleet. It also represents the 28.8% of total weight of landings and the 22.5% of total value of landings in Spanish fleet.

This segment shows better economic performance than in 2020. As a result, profitability raised to a high level with a net profit margin of 26.1%.

- *Drivers affecting the economic performance trends*

The average first sales price suffered a decline of 4% in the year 2020, but it recovered in 2021, with an increase of 7%

In terms of species, it should be noted that mackerel, sardines, blue sharks or cod decreased their prices between 20% and 32% in the years 2019 and 2020 and although they have experienced increases in 2021, they are still below the average price obtained observed for 2019.

During 2021, the Spanish fleet had presence in the followings Sustainable Fisheries Partnerships Agreements (SPFA):

Morocco, Mauritania, Gambia, Guinea Bissau, Ivory Coast, Cabo Verde, Senegal, Cook Islands, Sao Tomé y Príncipe, Gabon, Seychelles, and Mauritius.

The most remarkable SFPAs in social and economic terms were:

- In the Atlantic Ocean: Mauritania, the main SFPA and the major receiver of EU funds. It is a key agreement for shellfish species and the demersal species, especially hake. The main fleet fishing there is the trawl fleet, Morocco, with 92 possible licences, was important for the artisanal fleet of Canary Islands and the Gulf of Cádiz, otherwise with very few alternative fisheries accesses. It should be underlined the importance of the artisanal fleet.
- In the Indian Ocean, Seychelles, with 19 active licences in 2020, being the main SFPA in tropical tuna fishing (bigeye, skipjack and yellowfin), it is also fundamental not just for the Spanish fleet, but for the industrial development of that area. It is representative of the purse seiners fleet, which in economic terms is one of the most relevant fleets for Spain. Furthermore, Mauritius was a key agreement in terms of landings, thanks to the important processing plants in the country.
- In the Pacific Ocean, in 2021, there was only one SFPA, Cook Island, with a great role in the landings of the catches for the fleet in the Pacific.

In 2021 there were only two active Northern Agreements (Greenland and Norway), relevant for the demersal species fishing (cod, haddock, redfish among other bottom species).

About the Regional Fisheries Management Organizations /RFMO), Spain participated in 2021 in the following RFMOs:

- Tuna and tuna-like species RFMO's:
    - IOTC. 30 active domestic vessels reported in 2021;
    - WCPFC. 4 vessels were reported to have fished in the area in 2021;
    - IATTC. 90 active vessels in 2021. taking into account not all of them reported catches.
    - ICCAT. 1305 active vessels in 2021. taking into account the gross number of these vessels are small scale vessels;
    - CCSBT. no Spanish vessel reported catches in this area in 2021.

- Demersal RFMO's:
- SIOFA. 1 vessel has presence in SIOFA in 2021;
- SEAFO. 1 vessel fishing in the area in 2021;
- NAFO over 9 vessels reported to have presence in the NAFO area;
- NEAFC just 1 vessels reported presence in this area in 2021.
- CCAMLR. 1 vessel operating in the area in 2021.

Furthermore, 24 vessels were operating in international waters not covered by any demersal RFMO in 2021. Besides, 4 fishing vessels were operating in Svalbard international water as well.

In 2021, 1 818 million tonnes of processed, preserved and seaweed fishery products were imported, with a value of EUR 7 530 million, mainly frozen squid, prawns, salmon, and prepared and preserved tuna, 69% of them came from third countries, mainly, Morocco, Ecuador, Argentina, Peru, China and Norway, and among those from the EU, Portugal, France, The Netherlands, Sweden and Greece. Imports from the United Kingdom were also significant.

Around 1 252 million tonnes were exported, with a value of EUR 4 794 million, mainly frozen skipjack and octopus and tuna preparations and preserves. The main destination was the EU market (68%), with the main demand coming from, Italy, Portugal, France and the Netherlands. Regarding third countries, United States of America, Morocco, Japan, Ecuador and China were the most important.

Foreign trade in fishery products ended with a balance deficit of EUR 2 736 million.

*Operating costs (external factors)*

As in 2020, wages and salaries represented the most important operational costs (35.5% in 2021). The historical trend is maintained, as this item has been the most important operational cost during the last years.

The second most important variable of the operational cost has been Other Variable Costs which represented a 20.9% of the total costs of the Spanish fleet. Finally, energy costs represented a 14.0%.

In 2021, the costs increased by 5.8% compared to 2020. Among all the increases in the different expenditures, energy costs have risen by 26.2%, making it the most significant one.

*Status of Key Stocks. TACs and quotas*

As it has defined previously, the Spanish fleet operates in almost all fishing grounds, under agreements with Third Countries (SFPAS), under the umbrella of RFMOS and of course in EU and national waters.

Each of the above-mentioned fishing grounds have a specific importance. On one hand, the fleet operating far distance is a very well-developed fleet, with important technical investment, able to seek for new fishing grounds and able to incorporate new technologies that help to a more sustainable activity. Also, the collaboration with Third Countries offers a payback in terms of employment, training, etc. to the Third Country, aside to the specific contribution to the development that the EU incorporates in each agreement.

In the case of RFMOS, the fishing possibilities (and allowed fishing effort) are negotiated by the EU in the framework of each organization, having had the advice of the relevant scientific advisory body. This is the case of NAFO, NEAFC, ICCAT, GFCM, IOTC, CIAT, CCSBT, CCAMLR and WCPFC. As for the SFPA, the harvest activity is limited to the surplus in the specific area, which is also under scientific revision, according to the provisions of each agreement signed.

The fleet operating in the nearest fishing grounds is the major in terms of number and in terms of direct impact on coastal populations. We may differentiate the fleet that operates in the Atlantic fishing grounds and within the domestic waters which is the biggest in terms of number. The small-scale fleet is less prepared to face a sudden change, depending mainly on the activity performed targeting the species that traditionally meant their most important catches. As social data shows, educational level, paid work, and the rest of main indicators lead us to conclude that they are in a weaker position than the LSF, and therefore, efforts should be driven to achieve the goal of social sustainability as it is expressed in the EU Regulation 1380/2013, on the CFP.

Regarding the fishing possibilities, in a wide generalization, we have the Mediterranean with no quotas but, as it was previously expressed, given the delicate situation of most important fishing stocks, with

several measures driven to recovery the stock status, such as effort limitation, area closures or size limits.

In the case of the Atlantic, the fishing possibilities are set with the basis of the scientific recommendations made by the ICES and subject to negotiations during the December Council of Ministers, except the ones corresponding to shared stocks with third countries, f.i. UK after Brexit, or at multilateral level, f.i. mackerel or blue whiting, where the Ministers ratify the agreements concluded by the EU. All concludes with the adoption of the fishing possibilities for the following year (the annual "TAC and quotas regulation"). Spanish TACs and quotas are distributed among fishing grounds and, in some cases, among fishing gears. In several segments of this area, TACs and quotas are additionally distributed among individual vessels within a common fishing gear group of vessels.

A recovery plan for the Iberian sardine is being implemented for Portugal and Spain, jointly updated in 2021 following the successful implementation of previous ones in terms of the recovery of the stock. In this new plan management of the Iberian sardine stock is expected to be applied till 2026, according to the stock management measures such as a HCR; fishing activities are limited for a maximum of 9 months.

As it has already been presented and for the sake of clarity and efficiency, it will be reviewed under this chapter the status of the most important stocks in terms of its impact in the fleet.

Spain shares the need of achieving the MSY for all stocks that aren't currently in this biological situation, making ours the commitment to achieve it.

As for the southern stock of hake, one of the most important species in terms of value, social appreciation, and impact on specific fleet segments. In 2021, the status of the stock in relation to candidate reference points was unknown, therefore, the precautionary buffer was applied to the ICES 2021 advice. However, this situation improved with the new advice of ICES in 2022, given that the advice incorporated a change in the assessment model. As a result of the update, 2021 marked the first year with catches within the MSY limits.

Regarding horse mackerel, it is important for purse seiners and trawlers that fish in the Northwest coast (mainly vessels that catch in the ICES division 8c). This quota has decreased during the last years as a consequence of its biological status, which is why a rebuilding plan, prepared by PELAC, is under assessment.

*Management instruments*

The Spanish fleet is managed through several management tools, such as fishing licenses, engine power limitations, time at sea, TACs and quotas related to the area and fishing stock. Under national regulations, there are management plans set down; each plan covers species, gears allowed for the fisheries, technical requirements (such as power, vessel tonnage and length) or even additional technical measures over EU law.

*Innovation and development (role of EMFAF)*

In the field of technological development and innovation in the Spanish fishing sector, new projects are being developed with a specific target.

12 innovation projects were approved during 2021 in the context of the EMFF, 3 of them in Innovation (Art.26) and 9 of them in innovation linked to the conservation of marine biological resources (Art. 39). The funding of EMFF approved for these projects amounted to EUR 1 478 470.

Regarding gender equality matters, the Spanish Network of Women in Fisheries (REMSP) of the General Secretariat of Fisheries should be highlighted. There are many innovative business initiatives led by women in the fishing sector. Outstanding examples can be found in the two books on "Good entrepreneurial practices promoted by women in fisheries and aquaculture" published by the REMSP in recent years.

As these publications show, in recent years, women in fisheries and aquaculture have been promoters and pioneers of business models that are committed to R+D+I and the development of new products and services, and that take advantage of the opportunities offered to the sector by marine tourism, new technologies or the circular economy. That is the reason that the new *Plan for Gender Equality in the Fishing and Aquaculture Sector 2021-2027*, recently published by the General Secretariat for Fisheries, underlines this female capacity to promote innovation and the development of fishing and aquaculture

activity, guaranteeing its sustainability and survival, as evidenced by the testimonies contained in the publication "Women of the sea, inspiring vocations".

Regarding fishing technologies, priorities and specific strategic objectives were established and prioritised. The following can be highlighted:

- Innovation in more selective gear to avoid bycatch, reducing the environmental impact of fishing, reducing the proportion of sensitive species and bycatch, energy audits to promote energy savings, design of energy efficient fishing gear, automation of fishing practices and adaptation of fuel cells for marine use. The use of fuel cells is an energy alternative that should be increased in the medium term.
- Regarding cetacean bycatch, a cetacean excluding device was designed in 2021; the first trials are scheduled in 2022. Also, research projects on the effectivity of "pingers" and other acoustic deterrent devices were designed in 2021 and will be carried out in 2022.
- In 2021 a study on Remote Electronic Monitoring was launched, aimed to gather information of the nature and occurrence of cetacean bycatch. Thirteen commercial fishing vessels volunteered for taking part in this pilot project, which will continue in 2022 almost duplicating the number of fishing vessels involved.
- In the framework of three different agreements signed with scientific institutions and universities, different research projects were launched on genetic characterisation of fisheries, kinship determination, species differentiation, remote electronic monitoring and catch/bycatch remote identification, among others.

- *Nowcasts for 2022-23 and beyond*

*Model results*

Preliminary results for 2022 suggest that the structural policy carried out to reduce the number of vessels will continue, considering the number of vessels but also the tonnage and power. Of the total 8 814 vessels, 7 635 were active during 2022. Most of the inactive vessels (86% of them) belong to vessels below 12 metres LOA.

Estimations for 2022 demonstrate an overall significant decreasing revenue and profitability driven primarily by the increase in energy cost as a consequence of the Ukrainian war and a decrease in landed weight and value of 3.6%. Data projections indicate a deteriored economic performance with a decrease of GVA, gross profit and net profit.

Nowcast model for 2023 suggest an overall higher economic performance compared to 2022 driven by a slight increase in the value of landings because of the fish prices and the decrease in fuel prices.

*Outlook*

Operational costs drive the profitability of the fleet, which is strongly influenced by fuel prices and wages. The distribution of TACs and quotas or the application of Agreements with Third Countries are other aspects that have an important influence on their profitability.

The main factor affecting the competitiveness of the fleet is the high age of the vessels and their small size, which hamper the implementation of innovations to improve their competitiveness.

*Socioeconomic impact*

The entry into force of several agreements that have the main objective of improve the labour conditions of fishers could be one of the challenges for the following years, better conditions is a must if the Spanish fleet wants to maintain their fishery activities, as a lack of professionals is increasing, However, more space for fishers may led to less room for storage, as the EU regulation stablishes limits on capacity, so the improvement on labour conditions could reduce vessels' income, and so the profitability could be worsened.

*Management*

Regarding Mediterranean, the multiannual plan for demersal species established by Regulation 2019/1022 is currently in force. This plan foresees the recovery of some of the main demersal stocks, hake, red mullet, Norway lobster, blue and red shrimp, deep-water rose shrimp and giant red shrimp. Their goal is that in 2025 they can be exploited according to the MSY criteria.

In order to achieve this goal, the reduction of effort (fishing days) could reach a maximum of 40% by the end of 2025 respect reference period 2015-2017, being a first applied automatic reduction of 10% in 2020, and from then additional reductions of 7.5%, 6% and 7% have been adopted by the Council as fishing possibilities, following COM proposals, for 2021, 2022 and 2023, respectively. In addition to this, for 2021 there is the obligation to fix closed areas for the protection of juveniles of all species under the plan, additionally to the ones of hake in 2020, and for spawning areas of all species.

At the internal level, the Order APA/423/2020 was approved, which regulates the internal criteria for the allocation of the days available to Spanish fleet for each year (amended in 2023 through Order APA/241/2023 for this purpose). Also, this Order, with its complements through the Order APA/753/2020, Order APA/1397/2021, Order APA/799/2022 and Order APA/80/2023, have established and updated the closed areas in the different GSAs.

- *Methodological considerations and data issues*

The COVID-19 related supporting measures have not been included neither in the variable "Other incomes" nor in the variable "subsidies".

However, COVID-19 related supporting measures will be included in other subsidies in 2022 as the result of the decisions adopted in the last RCG ECON 2022.

*Improvements achieved within 2021 data collection*

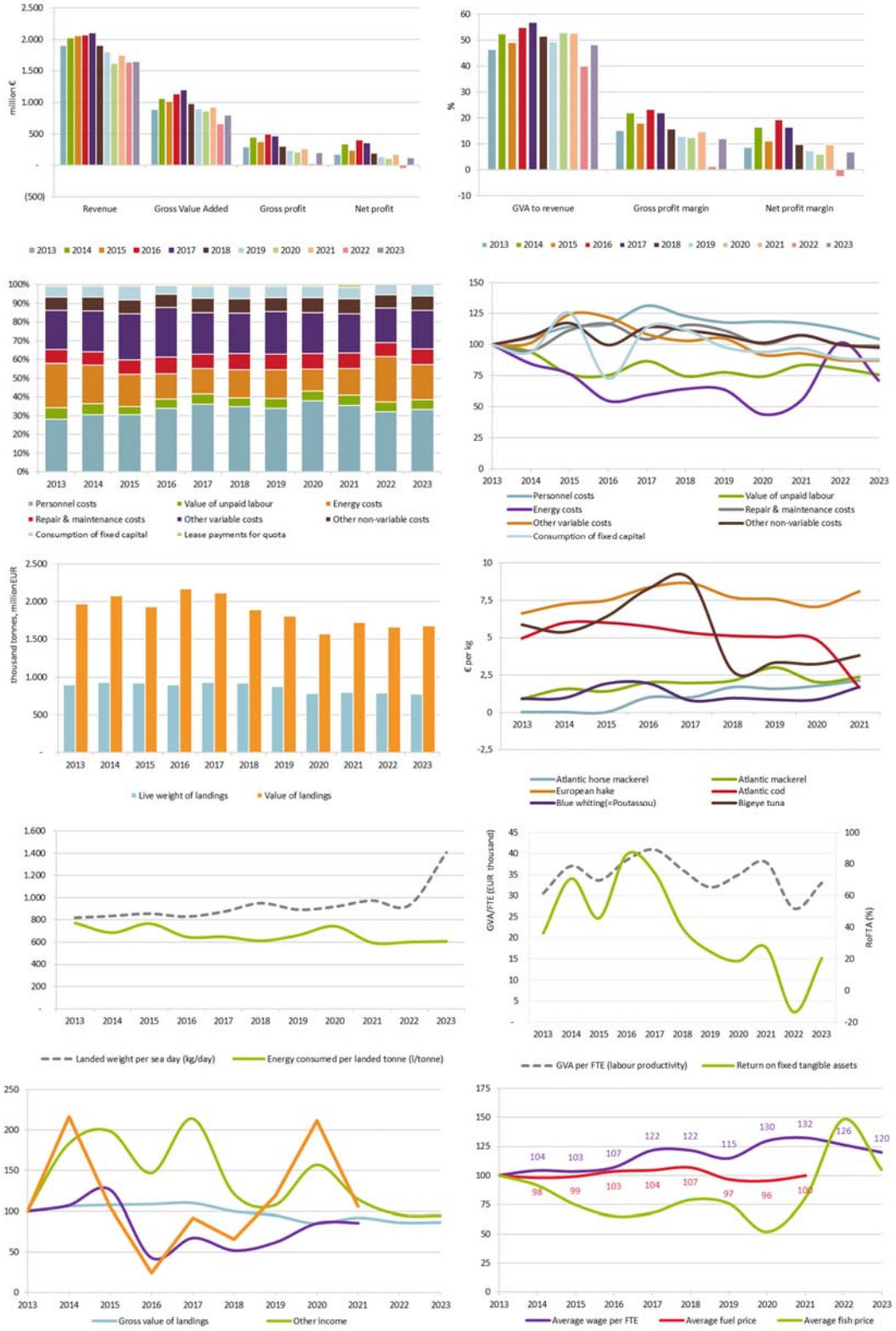
No major improvements were done in 2021.

*Remaining issues*

The economic data collection on the Spanish fleet is carried out by statistical sampling. The main problem is that sampling does not differentiate the fleet according to the days of activity, so the sampling can include vessels with few days of activity. When these results are raised for the total of the fleet segment, the profitability of the segment can be influenced, obtaining worse results than the reality and vice versa. That's why, important differences between the value of landings and gross value of landings in some segments can be observed. The gross value of landed is obtained from statistical sampling, so the result of not many vessels is raised for the total of the fleet segment. However, the value of landings is obtained by the sales notes which have been declared from the vessel's owner.

In some cases, certain fishing segments may show a higher number of fishing days than sea days. The reason for this discrepancy is that some vessels use both active and passive fishing gears, and the calculations of this variable result in a count that exceeds the total number of sea days. This calculation is done according to the fecR effort criteria, which refers to the algorithm that implements the fishing effort calculations that were developed at the 2nd Workshop on Transversal Variables in Nicosia, Cyprus, 22-26 February 2016.

**Figure 4.25** Spain: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

### 4.22 Sweden

- *Short description of the national fleet*

In 2021, there were 1 087 vessels, 296 of these were inactive whereas in 2020 there were 1 117 vessels, 330 were inactive. The capacity decreased by 30 vessels compared to 2020 and the general trend of the Swedish fleet is still that the number of vessels is decreasing. In 2022, the number of vessels were 1 060. The fleet in 2021 had a combined GT of 29 2144 tonnes and engine power of 149 108 kW.

*Fleet structure*

The Swedish fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the Baltic Sea, Skagerrak, and Kattegat regions. The national fleet consisted of twelve fleet segments in 2008-2021 including nine clustered active length classes and three un-clustered inactive length classes.

*Fishing activity and production*

An estimated 56 686 days were spent at sea during 2021, a decrease by 4% compared to 2020. The amount of energy consumed decreased in 2021. The LSF had an increasing trend in fuel consumption up to 2020, in 2021 energy consumption decreased by 15%. Since 2013 it has increased by 1%. Whereas the SSCF saw an increase in energy consumption compared to 2020. by 9% and on the same level as in 2013.

The total weight landed in 2021 was 153 000 tonnes of seafood (138 000 tonnes in 2022), with a landed value of EUR 115 million (EUR 99 million in 2022). The total weight and the value of landings vary over the period analysed due to quotas, prices and exchange rates, especially for the pelagic fleet. The exchange rate between SEK and EUR has continued to be weak even since 2018. This fact together with lower catches in 2022 have a large impact on the landed value in 2022.

The Swedish fishing fleet targets both pelagic and demersal species, with herring remaining the dominant species, generating the highest landed value with EUR 30.5 million, which represented approximately 27% of the total landings value in 2021. Other important species in value in 2021 were Atlantic mackerel (EUR 12.4 million), European sprat (EUR 11.8 million), vendance (EUR 7.7 million) and Norway lobster (EUR 6.3 million). In terms of top five most valuable species vendance is new to the list, vendance is fished by a small part of the Swedish fleet in the northern part of Baltic Sea. Vendance is mainly fished for its roe. The increase in average price in 2021 were due to a significant lower catch limitations.

*Employment and average salaries*

In 2020, the fleet employed a total of 1 421 workers, including owners, which corresponds to approximately 679 FTE or an average of 0.86 FTE per active vessel. The level of employment follows the same decreasing trend as the overall capacity. Although, number of vessels decreases more than engaged crew. One explanation to this is that there are fewer old vessel owners whom instead merge their fishing with another fishers, thus decreasing the number of vessels at a higher rate than engaged crew. Total number of employees has decreased by 17% since 2013 and is projected to continue this negative trend in 2022. FTE follows the same trend but has decreased by 6% compared to 1% decrease in total jobs between 2020 and 2021. The higher decrease in FTE compared to the decrease in total jobs indicate that the share of part-time fishers is increasing in Sweden.

In 2021, there were on average 0.48 FTE per employed. The average wage per employed and per FTE has increased over the period 2013 to 2020, by 1% and 15%, respectively. Compared to 2020, the average wage per employed decreased by 3% meanwhile average wage per FTE increased by 2%.

- *Economic performance for 2021 and recent trends*

*National fleet performance*

The revenue of the Swedish national fleet increased in 2021 by 1% compared to 2020. from EUR 121 million to EUR 122 million, where value of landings decreased by 1% while other income increased by 30% compared to 2020. The revenue for both LSF was almost unchanged compared to 2020 while SSCF saw an increase in revenue of approximately 8%.

GVA, gross profit and net profit in 2021 were estimated to EUR 65.2 million. EUR 38.9 million and EUR 21.5 million, respectively. Compared to 2020, GVA increased with 1% meanwhile gross profit and net profit increased by 4% and 22%, respectively.

The (depreciated) replacement value of the Swedish fleet was estimated at EUR 110 million, an increase by 3% compared to 2020. Investments amounted to almost EUR 5.6 million in 2021, an increase compared to 2020 by 62%. Although, investments were particularly low in 2020 rendering a quite high annual increase for 2021. Compared to 2013 investments have decreased by 27%.

*Resource productivity and efficiency*

The gross profit margin in 2021 was 33%, which is the highest margin since 2011, an increase by 2 percentage unit compared to 2020. Net profit margin was estimated at 18%, an increase by 3 percentage unit compared to 2020. The net profit margin was the highest margin since 2016.

The overall improved development trend for some indicators continued in 2021. Labour productivity (GVA/FTE) increased in 2021 by 7%; GVA increased by 1% while the number of FTE decreased by 6%.

The energy consumption of the Swedish fleet has increased by 16% since 2013, 2020 had the highest consumption dating back to 2008, around 71 million-litre fuel, in 2021 the level of consumption is back to a lower level, in line with previous years. Thus, the energy consumption decreased with 14% from 2020 to 2021.

Landings in weight per unit of effort (in DaS) has been fluctuating since 2013 with an average at around 2.7 tonnes per day. The lowest value at 2.1 tonnes per day in 2014 and highest value in 2017 at 3.2 tonnes per day.

Energy intensity has increased since 2013 and in 2021 it was at 2.7 kg per litre fuel. Energy intensity differs between segments, ranging from 3.9 to 0.08. Energy efficiency, has been stable during the time period of 2013-2021. In 2021 the national average was 20.6%. Energy efficient does vary between segments, although, not as much as energy intensity.

**Table 4.25** Sweden: Average fuel price, short- and long-term break-even prices for fuel. Fuel Use Intensity (FUI) and Fuel Use Efficiency (FUE) for selected fleet segments in 2021.

| Fleet segment | Fuel Price | Short-term Break-even fuel price (€) | Long-term Break-even fuel price (€) | Energy Efficiency | Energy intensity |
|---|---|---|---|---|---|
| SWE NAO DTS2440 NGI * | 0.43 | 1.42 | 1.02 | 21% | 244 |
| SWE NAO DTS1218 NGI * | 0.59 | 1.38 | 1.11 | 20% | 2,134 |
| SWE NAO DTS1824 NGI * | 0.32 | 0.56 | 0.31 | 22% | 1,110 |
| SWE NAO DFN1012 NGI * | 0.39 | 1.21 | 0.72 | 16% | 3,359 |
| SWE NAO DFN0010 NGI * | 0.62 | 0.71 | 0.00 | 19% | 2,599 |
| National average | 0.44 | 1.19 | 0.80 | 21% | 349 |

Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020).

To contextualize the energy efficiency metrics, there are large fluctuations regarding energy consumption when looking at point estimates. When taking into account spread in the estimates, i.e. confidence interval there is no statistical significant changes in consumption in recent years. Thus, one should not give too much emphasis on short term differences between certain years, nor segments.

- *Performance by fishing activity*

*Small-scale coastal fleet*

The number of SSCF vessels decreased from 743 in 2013 to 612 in 2021 (585 in 2022), a decrease by 18%, following the general trend of the Swedish fishing fleet.

The numbers employed and FTE in the SSCF followed the same decreasing trend as overall national fleet, 2% and 8%, respectively. Vessel tonnage as well as engine power has increase compared to 2020, 7% and 5%, respectively.

Overall, the SSCF is not profitable, generating a net loss of EUR 3.5 million in 2021. Tangible assets are, in most cases, probably paid off, these vessels can afford to continue fishing. GVA is positive but relatively low per FTE at EUR 28 200. Low GVA is a signal that there are other reasons for fishing than just profit, such as part-time employment or a way of life. Fishers who do not have profit as the main reason for

fishing, raise the competition on the market, which makes it harder for new firms/individuals to enter the market.

Additionally, increased seal populations along the Swedish coastline are still affecting both income, by taking and eating fish directly from the gears, and costs, by destroying gears as well as creating extra work.

Due to the landing obligation a new management system was introduced in 2017 for demersal fisheries. The individual quotas have now some transferability during the year (not permanent), yet the system for demersal fisheries is still missing transferability like a proper ITQ system.

*Large-scale fleet*

For the LSF, the number of vessels decreased from 207 in 2013 to 179 in 2021 (180 in 2022), a decrease of 14%. Large part of this decrease come for vessels fishing for cod as main source of income. The Swedish authorities have promoted fishing Norway lobster with passive gears as cod populations are in bad conditions, mixed fisheries with cod and lobster are no longer a profitable option.

The number of fishers employed and FTE for the LSF decreased both by 1% in 2021 compared to 2020. In 2021 vessel tonnage and engine power increase by 4% and 10%, respectively.

The weight and value of landings for the LSF vessels from 2013 to 2021 were more dependent on quotas than the SSCF. The landings value follow the same trend but with more variation due to changes in fish prices and the exchange rate EUR/SEK. Despite, the LSF seems to perform well the variation of this performance is large. Vessels fishing pelagic species and those that fish in the north Baltic for vendance roe are performing well while those fishing for cod are performing poorly.

The LSF decreased their operational costs (2%), repair & maintenance costs decreased by 19% since 2020 while energy cost increased by 21%. Maintaining high total income and small decreasing operational costs is the main reason for the LSF to maintain its overall high net profit. Overall, the LSF is profitable and increased its net profit in 2021 by approximately 15% compared to 2020. It generated a net profit of EUR 24.9 million in 2021. GVA per FTE is at EUR 135 000, 6% higher than in 2020.

- *Performance of selected fleet segments*

One of the five fleet segments using active gears made losses in 2021, length segment 10-12 meters. On the other hand, same length segment using passive gear was the only passive segment that had a positive net profit. The other passive segments follow the same trend as previous years, with overall net profit losses.

It can further be observed that the vessels with active gears accounted for the main part of the landed value and weight. During the 2013-2021 period, vessels with active gears annually accounted for 97-98% of the total catch measured in weight, and 85 to 90% of the total catch value. Thus, the vessels with passive gears only accounts for 2-3% of the total catch measured in weight, and 10-15% in value.

*Demersal trawl seine 18-24 meters*

In 2021, 35 vessels made up this clustered segment that uses different types of active fishing gears. It operates predominantly in the Baltic Sea, Skagerrak and Kattegat. The fleet segment targets a variety of species but in particular demersal species such as cod, Norway lobster and Northern prawn and pelagic species such as herring and sprat. In 2021, the total value of landings was EUR 13.5 million and 99 FTEs in this fleet segment, contributing 12% of the total income from landings and 15% of the FTEs in the Swedish fishing fleet. This fleet segment was profitable, with a reported net profit of around EUR 81 000 in 2021, although the net profit has significantly decreased compared to last year, a decreased by almost 96 percent. The decrease in profit is an effect of lower catches of herring, northern prawn and witch.

*Demersal trawl seine 24-40 meters*

Composed by 30 vessels in 2021, the segment contains 17 vessels using pelagic trawlers (ten of the pelagic trawlers are over 40 metres). This segment is operating in the Baltic Sea, Kattegat, Skagerrak, and the North Sea. The fleet targets a variety of species, in particular pelagic species such as herring and sprat but also demersal species such as cod and Northern prawn to a small extent. In 2021, the total value of landings was EUR 67.6 million and around 195 FTEs in this fleet segment, contributing to 59% and 29% of the total income from landings and FTEs in the Swedish fishing fleet, respectively. This segment dominates the Swedish fishing fleet with 89% of the total landings in weight.

This fleet segment is still very profitable, with a reported gross profit of around EUR 33 million and a net profit of EUR 21.4 million in 2021. There is a distinction in performance within the segment. The profit is generated by vessels fishing mainly pelagic species.

- *Drivers affecting the economic performance trends*

Higher quotas for pelagic species than demersal species were still the main driving force behind profitability and the continued trend in 2021, same as previous years. The Swedish fleet's income is dominated by trawlers, both pelagic and demersal. As trawling is typically fuel intensive, fluctuations in fuel prices are a key driver of this fleet's profitability.

*Markets and trade*

Good economic performance for the Swedish fishing fleet is highly dependent on fish prices (first sale prices) for pelagic species as well as a strong national currency. High prices but more importantly, stable prices are key to good economic performance. The Swedish currency is in a declining trend, which is apparent when looking at the total value from landings in EUR. In an international context, this is a vital part of their economic performance. Furthermore, changes in seasonal fishing, e.g. shorter fishing period for certain species, can have an effect on the fish price. The regulation of shortening fishing periods or certain catch limitations can produce a sudden supply shock on the market. One example of this is the vendace fishing in northern Baltic Sea. The access to the resource is limited to a few vessels and the national catch limitation fluctuates between years, which in turn yields a high price elasticity. In recent years the landed weight has been approximately half of what it once was, but the price has double, yielding approximately the same total value.

First sale prices for Atlantic mackerel significantly increased between 2020 and 2021, the average price has increased by 81%, which contributes to mackerel being the second most valuable species when it comes to total value (EUR). As already mentioned, the first sale price for vendance almost doubled between 2020 and 2021, an increase by 96%. Meanwhile, first sale price for Atlantic herring and European sprat decreased by 2% and 4%, respectively.

*Operating costs (external factors)*

Total operating costs decreased between 2020 and 2021. Personnel costs decreased by 4% and unpaid labour decreased by 6% since 2020. Energy cost increased by 23% since 2020 and repair & maintenance costs decreased by 16%. Other variable costs increased by 10% since 2020 meanwhile other non-variable costs decreased by 15%.

Total operational costs amounted to approximately EUR 82.4 million. When including capital costs, total costs amounted to EUR 103.4 million.

External factors that affect the Swedish fishing fleet is mostly quotas. During 2021 there were a significant effect of Brexit, giving Sweden no access to British nor Norwegian economic zone for the first three months. Brexit also had an impact on final TACs, which in turn had an effect on larger vessels.

Lastly, one crucial external factor is the condition of different stocks, this has a big impact on the small scale fisheries along Sweden coast.

*Status of key stocks. TACs and quotas*

Most of the important stocks fished by the Swedish fleet are fished at levels compatibles with producing the MSY. In 2020, Sweden had a total quota of 138 000 tonnes, which is a decrease of 18% since 2020.

Herring and sprat is especially important for the Swedish fleet. The quota for herring decreased by 24% in 2021 compared to 2020 in Skagerrak, Kattegat, and the North Sea, while the quota for sprat increased by 5% between 2020 and 2021. Lastly, the Mackerel quota decreased by 35% in 2021 compared to 2020.

Since mid-2019, it was decided to close the commercial fishing for cod in parts of the Baltic Sea which affected approximately 160 vessels who had to stop fishing for cod. The ban on commercial fishing for cod has continued in 2021 resulting in a decrease of the utilisation of the cod quota.

*Management instruments*

A major challenge regarding fleet management is the adjustment to the LO. It requires a system to allocate fishing opportunities that as far as possible facilitates this requirement and creates the conditions for the Swedish fleet to comply with it. A system that is compatible with the LO must for example consider

the challenge of choke species and allow some flexibility so that it is possible to match catches and fishing opportunities.

With the background of the needs created by the LO, the Swedish Agency for Marine and Water Management (SwAM) introduced a system in 2017 with individual annual fishing opportunities that can be temporarily transferred between fishers with license during the year. The individual allocations are, with some exceptions, based on reported catches during the reference period 2011 to 2014. The design of the system paid particular attention to SSCF for which unallocated quotas are reserved. This system increases the flexibility and improves the possibilities for individual fishers to adjust their fishing opportunities during the year, which probably gives them better possibilities to comply with the LO. The first year with the new system has recently been evaluated by the SwAM. From the evaluation it can be highlighted that the number of quota transfers was high already the first year. At the same time trade frictions existed (e.g. difficulties to find someone who could transfer fishing opportunities). There are also other challenges connected to the system. Even though the system allows for increased flexibility, quotas may still be limiting at the individual level. Given economic incentives to maximise the value of the own fishing opportunities, this may affect compliance as it creates incentives for high-grading and discarding by-catches. Another concern is that since the fishing opportunities are only annual, fishers face uncertainty about what fishing opportunities and income they will have the coming years. A further challenge is that various "lock-in" effects can be observed in the present system. In case the system would be adjusted to allow for longer-term fishing rights, the design of such a system is of critical importance to avoid unwanted effects. The system was further evaluated during 2020 resulting in a suggestion of the implementation of a full ITQ-system also in the demersal fisheries has been suggested but it has not yet been implemented. In 2023, the Swedish government gave SwAM a project to finalize a suggested system for implementation.

*Innovation and development (role of EMFAF)*

Towards the end of 2009, Sweden introduced a tradable fishing right system for pelagic quotas running for a 10-year period. The system made the pelagic fishing more efficient and increased the overall profit for the fleet. During 2019, it was decided to renew the transferable fishing rights for pelagic fishing for another 10 years. The pelagic quotas have been allocated since 2009 between fishing rights, annual pelagic fishing opportunities, regional fishing opportunities and coastal quotas in accordance with a Transferable Fishing Rights Law (2009: 866). In July 2019, it was decided to implement some changes in the pelagic system mainly concerning the size of the coastal quotas, transferable fishing rights for herring and sharp herring in ICES sub-areas 30-31 (the Bothnian Sea and the Gulf of Bothnia) and the introduction of regional allocation in ICES sub-areas 30-31.

In the beginning of 2017, Sweden introduced a tradable fishing right system for non-pelagic fishers, in order for fishers to comply with the landing declaration. Fishers could temporarily trade quotas, which will allow them to be more flexible and efficient, which in turn can have an impact on the profitability in the SSCF. During 2019 and 2020 the system was evaluated and some suggestions for improvements were made, for example to implement a full ITQ-system. Yet, there are no decisions of implement such system, but further projects on this topic is ongoing.

The increasing seal population around the Swedish coastline has caused a growing conflict for inshore fisheries. Seals damage the fisher's catch and fishing gear, which causes significant economic losses to the fishing industry. In some areas, it is even impossible to conduct a profitable fishery because of that. Currently, the development of seal-safe fishing gear is the only long lasting and sustainable solution to this conflict. This development mainly focuses on improving traditional fixed gears, such as push-up traps for salmon and developing new alternatives to the net fisheries, such as cod pots. Parallel to this work there are projects involving protective hunting and management plans for the seal population.

In the Northern prawn and Norway lobster fisheries, research for new and more sustainable fishing techniques is on-going. In general, transition towards the implementation of these new techniques in the sector is slow as fishers are hesitant due to high investments, the uncertainty of the impact of the techniques and the possible market effects.

- *Nowcasts for 2022-23 and beyond*

  *Model results*

Preliminary results for 2022 suggest an annual decrease of 15.3% in landed weight and an increase in value by 38%. Projections for 2022 suggest an increase in personnel costs, energy costs, repair and maintenance costs, variable costs and non-variable costs. Some of these increases of costs suggests to

be associated with the general prices increase in Sweden and increase in fuel prices, which can partly be counter acted by increase in sales prices. However, a larger decrease in income than in costs will make performance in 2021 and 2022 worse than in 2020; with GVA decreasing 19.8% and NVA 25.5%, respectively. The prospects of gross and net profits also decrease for 2021 and for 2022. These projections are also reflected in the performance indicators GVA to revenue, GVA per FTE and gross and net profit margins, which are predicted to decrease in 2021 and 2022.

Outlook

In mid-2019, it was decided to close the commercial fishing for cod in parts of the Baltic Sea which affected approximately 160 vessels. They were offered financial support from the government or encouraged to focus their landing on other species. The ban will have an economic impact on the small-scale fisheries in Baltic Sea where the ban was introduced. During 2020, 2021 and 2022 the ban continued and the economic satiation for these fishers worsened. Due to the bad economic situation for fishers aiming for cod in the south and west Baltic Sea and some overcapacity of the Swedish fleet the government offered some fishers terminate cessation subsidy, resulting in a decrease of vessels in the Baltic Sea aiming for cod.

The general trend since the beginning of the 2000s is a decrease in Swedish fleet capacity, i.e. in the number of vessels that also reflects reduction of total engine power and gross tonnage. This is partly due to management efforts directed at decreasing fleet size in order to bring it in balance with the fishing possibilities. The analysis of economic performance shows that all Swedish segments with vessels using active gear are making positive net profits while one passive segment is showing positive net profits vessels 10-12m.

There is also a crew recruitment problem as working on board fishing vessels is not a particularly attractive job for young people; this is due to low wages and relatively poor working conditions compared to other land-based jobs. Furthermore, there are other reasons than profit to keep a fishery going in small-scale fisheries, e.g. a way of life or a part-time employment. The fact that profit is not the sole driver can have a huge impact on the market in terms of higher competition, due to that fishers don't have to make a profit from their business, thus making it harder for new firms/individuals to enter the market.

*Impact of the fuel prices on energy efficiency by fleet segment*

Higher fuel prices have been a large problem for the Swedish fishing fleet. Early indications were that fishermen tended to not fish due to decreasing or even negative margins. Although, Sweden's largest seafood auction house did a pro bono increase on first sale prices, giving them a premium of 5% on all landings. Later on the Swedish government implemented a similar system with a premium ranging between approximately 6-10%on first sale prices depending on fleet segment.

At a first glance at effort data and overall catches in 2022, there is a clear sign that both effort and landings are significantly lower, which most likely is a direct effect from higher fuel prices, at least partially. Other socioeconomic impacts, such as employment cannot be quantified as it is a lagging factor. This impact will most likely be seen in the future.

There's also an indirect effect of higher fuel prices via higher inflation in Sweden on effort and landings. The central bank of Sweden has, since April 2022 increased the interest rate at several occasions. This combined with an overall high private debt in Sweden has resulted in a lower demand for more luxurious goods, such as fresh seafood. The lower demand for such goods could be a contributing factor to a lower effort and landings in 2022.

- *Methodological considerations and data issues*

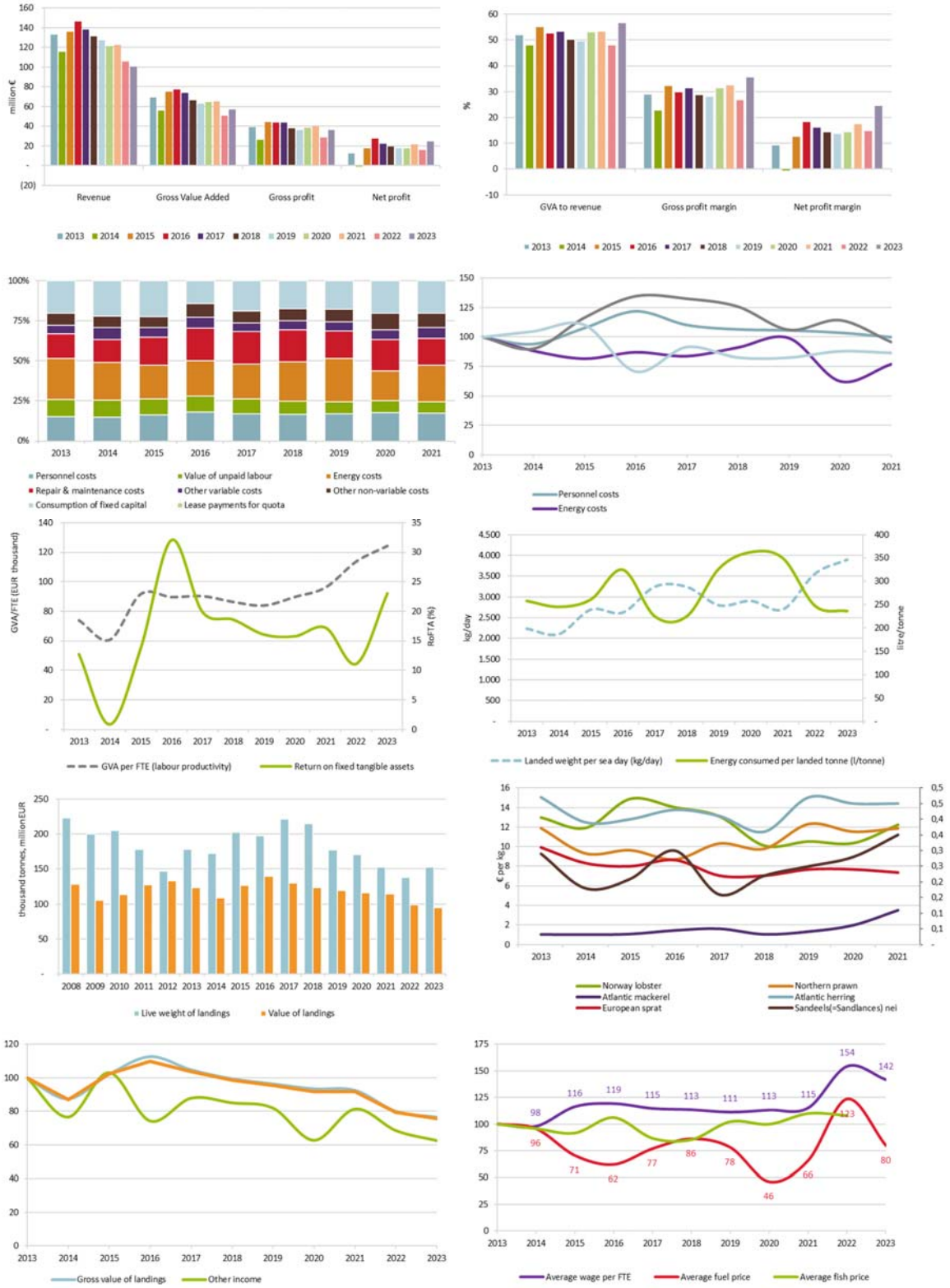
There are no major data issues in the Swedish EU-MAP data. Swedish data come from logbooks. Journals, surveys with a census sample with high response rate (87%) and tax declarations. Previously, Sweden used probability sampling when sending out the questionnaires. Since 2012, the survey had a census approach. With the census approach, the number of data points has increased by the double and the response rate has been stable around 85% since 2012. Information on economic of the fleet were previously assessed at segments level but since 2018 it is assessed on micro level, firm level, by ordering registered from Statistics Sweden. This has improved the quality of the data since it is registered data from the Swedish Tax Agency. Further, in 2019 Swedish Agency for Marine and Water Agency made it possible to fill out the survey on economic cost online instead of by hand. This has and will increase the quality of the survey responses due to missing data and miss writing or miss readings.

Furthermore, in 2021 SwAM initiated a large review of the economic data collection scheme. The review include both a thorough review of methodologies and data sources. The goal of the project is to have a recent review of the full data collection scheme to facilitate future needs in both national and international contexts as well as improve the data collection and/or econometric methods. The project is set to be finalized in 2024. The project will result in more robust models, data collection and thus analysis of the data.

An important issue is clustering. With a small and diminishing fleet, Sweden is forced to cluster all of the economic data and also report cluster definitions. For this year report (and last year) the clustering has changed since previous reports due to confidentiality of economics information. The cluster DFNVL1218 are now included in the cluster DFNVL1012 as a consequence of this cluster only containing four vessels.

Furthermore, some of the point estimates of the data in this report are accompanied by a certain uncertainty, which is not presented. One example of a misinterpretation of the data quality could be regarding energy consumption and energy cost. In some years these two variables do not align, i.e. increased energy consumption yields higher total energy cost (controlled for price). For the record, this is not a matter of bad data quality but instead how it is reported, in this case without confidence interval.

**Figure 4.26** Sweden: Main trends in (from top to bottom. left to right): economic performance indicators (absolute value and relative values); cost structure and variation in main cost items; productivity and efficiency indicators; landings (in weight and value) and average price (euro/kg) of top species; variation in income variables and average prices of key input/outputs (2013=100). Nowcast figures for 2022 and 2023.




Data source: MS data submissions under the DCF 2023 Fleet Economic (MARE/A3/ASC(2023)); All monetary values have been adjusted for inflation; constant prices (2020)

# 5 DATA COVERAGE AND QUALITY

- Data validation – AER Exercise

*Quality and Coverage checking procedures on the data submitted under the 2023 fleet economic data call*

Although the quality and coverage of the fleet economic data reported under the Data Collection Framework are a responsibility of the EU Member States, JRC undertakes systematic quality and coverage checking procedures on the data submitted, some carried out during the data uploading phase and some afterwards. The quality and coverage of the data has also been checked by national experts during the STECF EWG 23-03 virtual meeting on the 2023 Annual Economic Report of the EU fishing fleet, which took place during the week 24-28 April 2023.

*Data issues on the economic variables*

In terms of the completeness of the Member States data submissions, most countries submitted the majority of the parameters requested under the call. Overall, the quality and coverage of this data has been similar in the last 2 years. In many cases missing data relates to fleet segments with low vessel numbers for which data are hard to obtain (detailed account of data coverage issues are provided in the DTMT). For confidentiality reasons, Member States may aggregate fleet segments into clusters to provide sensitive economic data. In several cases, clustering may not be enough to guarantee confidentiality, and hence, parts of Member States fleets are not completely covered. These generally relate to distant-water fleet segments and include Estonia, Germany, Italy, Latvia and Poland.

In terms of data quality, inevitably some unreliable estimates for some variables were detected by the JRC or the EWGs 23-03/23-07 and in most cases rectified by the Member States. However, some quality issues remain outstanding and they are described in the national chapters.

Incomplete time series data due to either the non-submission of data, questionable data and/or changes in the methodologies in the data collection and data processing, make trend analysis at the EU level impossible without excluding the Member State fleets that are incomplete. These discrepancies make an evaluation of the overall economic performance of the EU fishing fleet for the period 2013-2021 impossible. The data submitted for the Greek fishing fleet for the period 2018-2021 was deemed fit for purpose; Greece is therefore included in all EU level analyses for the period 2018-2021.

The main data issues relate to: i) some Member States continue to have problems in collecting comprehensive data sets for the under 10 metres segments; ii) discontinuity in time series for the outermost regions due to changes in methodologies and missing data collection for certain years/segments.

- Member State specific data issues and developments

Although the coverage and quality of the data submitted by Member States has remained stable in the last 2 years, some data issues remain. These include the following:

Belgium: No major data transmission issues to report. However, anomalous trends of some variables (i.e. operating subsidies, investments) are identified due to changes in the questionnaires in 2017 and 2018. Low response rates for some variables (number of unpaid labour, total hours worked, capital value and capital cost variables for inactive vessels) led to unrepresentative estimates.

Bulgaria: No major data transmission issues to report.

Croatia: No major issues detected. Methodologies for estimation of value of unpaid labour, value of physical capital and consumption of fixed capital have been improved to allow more consistent results over time series. As a result of these changes values and figures may differ from previous reports. Regarding the small-scale vessels which were transferred into the commercial SSCF in 2015, all these vessels fall under the polyvalent passive gears segment (PGP), however, these fishers are not full-time engaged in fishery and most had very limited activity in 2015-2021. Therefore, economic indicators for the PGP segment should be taken with caution. For the conversion of values of historical DCF economic data from national currency to euro, the average annual exchange rate for each referent year has been used.

Cyprus: No major data transmission issues to report. Only partial data reported for PS VL2440 due to confidentiality (one vessel).

Denmark: No major issues detected. The calculations of FTE have been adjusted to secure that the number of fishers are not above the number of FTEs.

Estonia: No data transmission issues to report. However, time series are not consistent over time because of a change in the data collection which occurred in 2018. Moreover, for confidentiality reasons, Estonia only provides data for its Baltic Sea fleet, i.e., only capacity data are provided for the distant water fleet; this impacts on the AER as a complete coverage of the EU fleet is not possible.

Finland: No major data transmission issues to report. However, there is a break in the time series of the number of active vessels in small-scale fishing in 2012 when the recording of active vessels was re-specified and then again in 2014 and 2015 due to methodological changes.

France: Data issues are reported for fleet segments operating in outermost regions. Estimation of economic data has been calculated for less than 10 metres in Martinique for only 2010 and 2021 and in Mayotte from 2015 to 2021. Estimation for less than 12 metres fleet in La Reunion Island has been calculated since 2019. Economic data are not complete because data is missing for a fleet segment in French Guiana.

Germany: No major data transmission issues to report. The German fishing fleet contains a small number of pelagic vessels which are owned mainly by one company and are hence subject to confidentiality. In 2023, the related company gave permission to publish the data for 2021 onwards. Therefore, the data for recent years are comprehensive, but the time series is interrupted. In addition, there is a break in the time series of employment data because from 2020 employment and demographic data are no more estimated, but they are exhaustively available from the totals from the Employer's Liability Insurance Association.

Greece: Major data transmission issues continue for previous years. Complete data sets were provided for 2020.

Ireland: Values and figures may differ somewhat from those in previous annual economic reports. A considerable number of survey returns, received after last year's AER meeting, in addition to higher response rates this year have improved the precisions of many of the variables and indicators. In addition, there has been a change in methodology in the estimation process for FTEs based on the number of average daily hours worked and total annual sea days. Another driver of the change in the absolute value of landings figure for 2020 and 2021 may also be attributed to changes in price estimation methodologies. The effort data in the tables and graphs is not complete for some segments less than 10m due to the lack of logbook data for these segments.

Italy: Variables related to income, capital costs and expenditure have not been reported for the year 2021 for the following three segments: MBSPS40XX, OFRDTS40XX and OFRPS40XX.

Latvia: No major data transmission issues to report. Due to methodological improvements in 2010 and 2018, a break in time series is detected for capital value and capital costs. For confidentiality reasons. Latvia does not provide economic data on its distant water fleet; this impacts on the AER as a complete coverage of the EU fleet is not possible.

Lithuania: No major data transmission issues to report.

Malta: No major data transmission issues to report.

The Netherlands: In some of the smaller segments (DRB 0-10 m, DRB 24-40 m, DTS 0-10 m and TBB 12-18 m) variation in activity levels was high resulting in high uncertainty in the economic indicators estimates and large fluctuations from year to year.

Poland: No major data transmission issues to report. Due to confidentiality reasons. Poland only provides partial data on its distant water fleets (NAO DTS 40XX. NAO TM VL40XX and OFR TM40XX). This impacts on the AER as a complete coverage of the EU fleet is not possible. Due to a change in methodology of reporting capacity. 2017 onwards figures are not fully comparable with the earlier years.

Portugal: No major data transmission issues to report. Since the weight of landings was reported in live weight in 2020 and in landed weight in the years before, this variable, and some species prices and indicators, are not comparable with the time series.

Romania: No major data transmission issues to report.

Slovenia: No major data transmission issues to report.

Spain: Data issues are reported for the several fleet segments of the Canaries.

Sweden: No major data transmission issues to report.

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# 7 LIST OF PARTICIPANTS EWG 23-03 AND 23-07

The 2023 AER has been produced by two working groups of economic experts convened under the Scientific. Technical and Economic Committee for Fisheries (STECF), which took place virtually from the 24 to 28 of April (EWG 23-03) and 12 to 16 June (EWG 23-07). The groups consisted of independent experts from within the EU and experts from the European Commission's Research Centre (JRC).

1 - Information on EWG participant's affiliations is displayed for information only. In any case. Members of the STECF, invited experts, and JRC experts shall act independently. In the context of the STECF work, the committee members and other experts do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members and experts also declare at each meeting of the STECF and of its Expert Working Groups any specific interest, which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting's website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: http://stecf.jrc.ec.europa.eu/adm-declarations

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# 8 LIST OF BACKGROUND DOCUMENTS

Background documents are published on the EWG-23-03 meeting's web site on:

https://stecf.jrc.ec.europa.eu/ewg2303

Background documents are published on the EWG-23-07 meeting's web site on:

https://stecf.jrc.ec.europa.eu/ewg2307

EWG-23-03 – Declarations of invited and JRC experts (see also section 6 of this report – List of participants)

EWG-23-07 – Declarations of invited and JRC experts (see also section 6 of this report – List of participants)

Member States Annual Report on the National Data Collection Programmes http://datacollection.jrc.ec.europa.eu/ars

Data-handling procedure for STECF Expert Working Groups

http://datacollection.jrc.ec.europa.eu

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# ABBREVIATIONS

## European Member States

| | | | | | |
|---|---|---|---|---|---|
| BEL | BE | Belgium | IRL | IR | Ireland |
| BGR | BG | Bulgaria | ITA | IT | Italy |
| CYP | CY | Cyprus | LTU | LT | Lithuania |
| DEU | DE | Germany | LVA | LV | Latvia |
| DNK | DK | Denmark | MLT | MT | Malta |
| ESP | ES | Spain | NLD | NL | Netherlands |
| EST | EE | Estonia | POL | PL | Poland |
| EU | EU | European Union | PRT | PT | Portugal |
| FIN | FI | Finland | ROU | RO | Romania |
| FRA | FR | France | SVN | SV | Slovenia |
| GRC | EL | Greece | SWE | SE | Sweden |
| HRV | HR | Croatia | | | |

## Fishing Technologies – DCF categories

| | |
|---|---|
| DFN | Drift and/or fixed netters |
| DRB | Dredgers |
| DTS | Demersal trawlers and/or demersal seiners |
| FPO | Vessels using pots and/or traps |
| HOK | Vessels using hooks |
| MGO | Vessel using other active gears |
| MGP | Vessels using polyvalent active gears only |
| PG | Vessels using passive gears only for vessels < 12m |
| PGO | Vessels using other passive gears |
| PGP | Vessels using polyvalent passive gears only |
| PMP | Vessels using active and passive gears |
| PS | Purse seiners |
| TM | Pelagic trawlers |
| TBB | Beam trawlers |

## Fishing activity – scale of fishing operation

| | |
|---|---|
| SSCF | Small-scale coastal |
| LSF | Large-scale fleet |
| DWF | Distant water fleet |

## Fishing regions

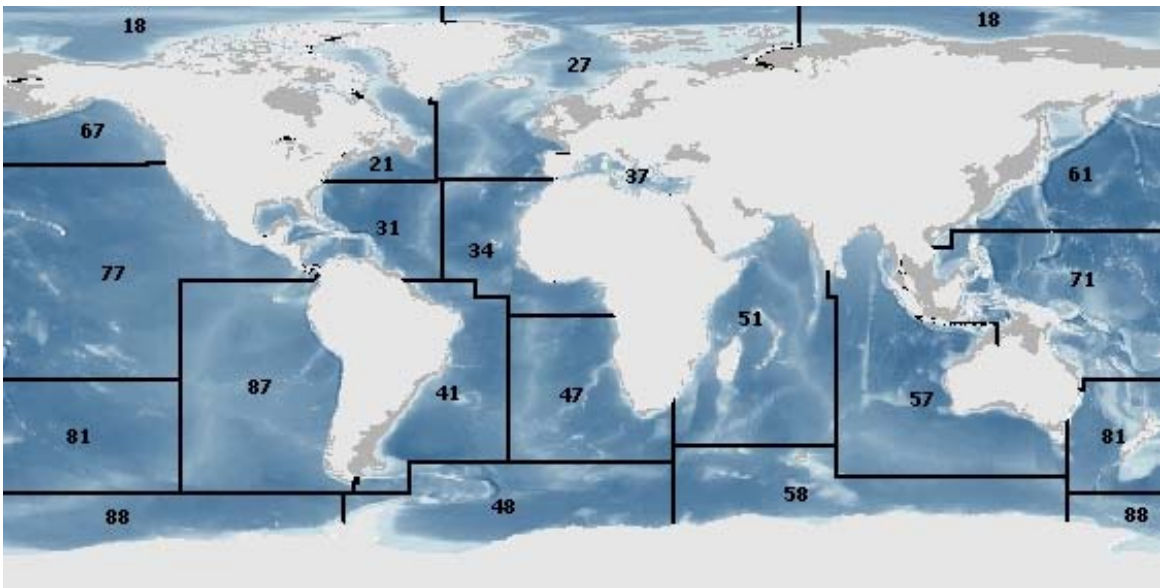
| | |
|---|---|
| BS | Baltic Sea |
| BKS | Black Sea |
| MED | Mediterranean Sea |
| NSEA | North Sea & Eastern Arctic North |
| NWW | North Western Waters |
| OFR | Other fishing regions |
| SWW | South Western Waters |

## Regional fisheries

| | |
|---|---|
| ABNJ | Areas Beyond National Jurisdiction |
| CECAF | Fishery Committee for the Eastern Central Atlantic |
| GFCM | General Fisheries Commission for the Mediterranean |
| ICCAT | International Commission for the Conservation of Atlantic Tunas |
| IOTC | Indian Ocean Tuna Commission |
| LDF | Long Distant Fisheries |
| NAFO | Northwest Atlantic Fisheries Organization |
| NEAFC | North-East Atlantic Fisheries Commission |
| OMR | EU Outermost Regions |
| RFB | Regional Fisheries Bodies |
| RFMO | Regional Fisheries Management Organisations |
| SFPAs | EU Sustainable Fisheries Partnership Agreements |

## Food and Agriculture Organization of the United Nations (FAO) Major Fishing Areas

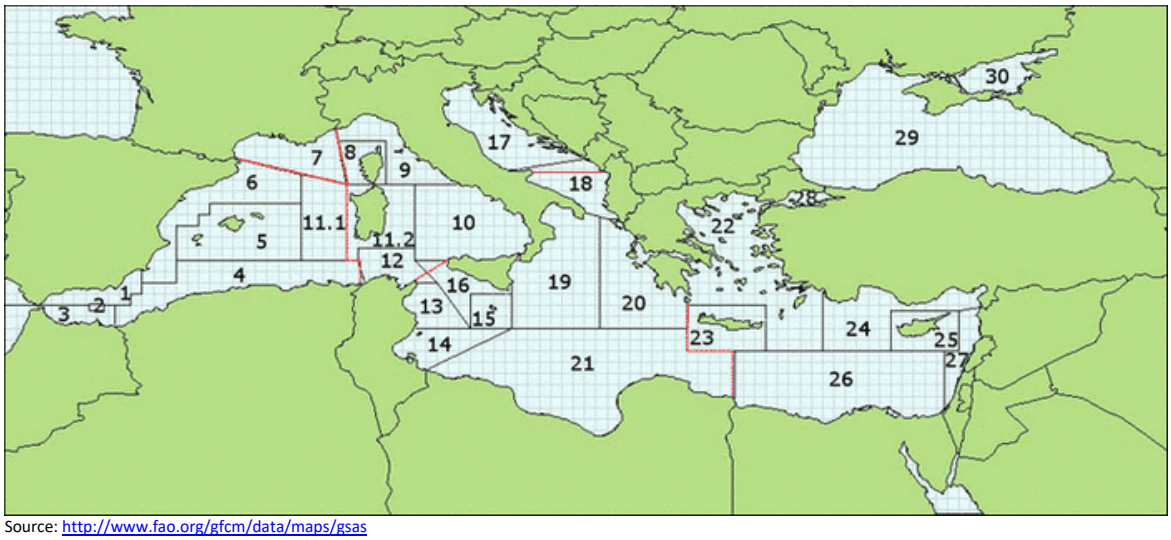
| | | | |
|---|---|---|---|
| FAO area 18 | Arctic Sea | FAO area 57 | Indian Ocean. Eastern |
| FAO area 21 | Atlantic. Northwest | FAO area 58 | Indian Ocean. Antarctic |
| FAO area 27 | Atlantic. Northeast | FAO area 61 | Pacific. Northwest |
| FAO area 31 | Atlantic. Western Central | FAO area 67 | Pacific. Northeast |
| FAO area 34 | Atlantic. Eastern Central | FAO area 71 | Pacific. Western Central |
| FAO area 37 | Mediterranean and Black Sea | FAO area 77 | Pacific. Eastern Central |
| FAO area 41 | Atlantic. Southwest | FAO area 81 | Pacific. Southwest |
| FAO area 47 | Atlantic. Southeast | FAO area 87 | Pacific. Southeast |
| FAO area 48 | Atlantic. Antarctic | FAO area 88 | Pacific. Antarctic |
| FAO area 51 | Indian Ocean. Western | | |




Source: http://www.fao.org/fishery/area/

# General Fisheries Commission for the Mediterranean (GFCM) Geographical subareas (GSAs)

| | | | |
|---|---|---|---|
| GSA 1 | Northern Alboran Sea | GSA 16 | Southern Sicily |
| GSA 2 | Alboran Island | GSA 17 | Northern Adriatic |
| GSA 3 | Southern Alboran Sea | GSA 18 | Southern Adriatic Sea |
| GSA 4 | Algeria | GSA 19 | Western Ionian Sea |
| GSA 5 | Balearic Island | GSA 20 | Eastern Ionian Sea |
| GSA 6 | Northern Spain | GSA 21 | Southern Ionian Sea |
| GSA 7 | Gulf of Lion | GSA 22 | Aegean Sea |
| GSA 8 | Corsica | GSA 23 | Crete |
| GSA 9 | Ligurian Sea and North Tyrrhenian Sea | GSA 24 | Northern Levant Sea |
| GSA 10 | Southern and Central Tyrrhenian Sea | GSA 25 | Cyprus |
| GSA 11.1 | Western Sardinia | GSA 26 | Southern Levant Sea |
| GSA 11.2 | Eastern Sardinia | GSA 27 | Eastern Levant Sea |
| GSA 12 | Northern Tunisia | GSA 28 | Marmara Sea |
| GSA 13 | Gulf of Hammamet | GSA 29 | Black Sea |
| GSA 14 | Gulf of Gabes | GSA 30 | Azov Sea |
| GSA 15 | Malta | | |




Source: http://www.fao.org/gfcm/data/maps/gsas

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STECF

The Scientific, Technical and Economic Committee for Fisheries (STECF) has been established by the European Commission. The STECF is being consulted at regular intervals on matters pertaining to the conservation and management of living aquatic resources, including biological, economic, environmental, social and technical considerations.




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