



JRC SCIENCE FOR POLICY REPORT

# Scientific, Technical and Economic Committee for Fisheries (STECF)

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## Economic report of the EU fish processing sector 2017 (STECF-17-16)

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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 provides data and analysis applying the available DCF data up to 2015. In 2015 the fish processing sector in the EU comprised approximately 3,600 enterprises with fish processing as main activity, 2% more than in 2008. The number of workers employed in the European fish processing industry in 2015 was 124,242, a decrease of 2% compared to 2014. The trend shows a comparably stable situation since 2008. Similar to the total number of employees, the total number of FTEs decreased from 2014 to 2015 by also 2%. Despite the increase of production costs, the industry was still profitable, accounting for about €1.4 billion of profit and more than €6.1 billion of Gross Added Value (GVA).

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## **SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF) - Economic report of the EU fish processing sector 2017 (STECF-17-16)**

### **Background provided by the Commission**

Following the 2017 DCF call for economic data on the EU fish processing sector, EWG 17-16 is requested to analyse and comment on the economic performance of the EU and national fish processing sectors between 2008 and 2015 (2016 if available).

The fish processing report is one of the main sources of economic and social data for scientific advice on the performance of the EU fish processing industry. It is also increasingly used by scientific bodies, national administrations and international institutions.

In view of the above, the 2017 should provide a more in-depth look at the different factors driving the economic performance of the EU fish processing industry with a special focus on the major drivers and issues affecting this sector.

Building on the successful experience of the 2017 economic report of the fishing fleet, the 2017 report on the economic performance of the EU fish processing sector will follow a more analytical approach. It will contain qualitative information and analysis on the drivers and trends in the fish processing performance and other aspects of policy relevance based largely on the scientists' expert knowledge.

Experts will be asked to analyse the sector, e.g. by markets and trade determinants by main segments of processing activities, competitiveness, market prices and consumption, certification, innovation, links with the local fishing fleet and aquaculture sector, the role of European Maritime Fisheries Fund support, contribution to the local communities and the Blue Economy, strengths, weaknesses, opportunities and threats.

Given the social importance of this activity in many communities, particular emphasis should be paid to the social aspects of the analysis including trends on employment, salaries, labour productivity and female/male breakdown of the fish processing employment.

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

The two main objectives for the 2017 exercise are to increase qualitative interpretation of all data outputs and to increase the usefulness of the report for DG MARE's policy development as well as for member states and the industry.

The final draft EWG report will be reviewed by the STECF during its spring plenary meeting in 2018.

### **Specific objectives**

EWG 17-16 is requested to work on and comment, at least, on the following items:

The 2016 report on the economic performance of the EU fish processing sector shall include, at least, the following sections:

- A summary containing key findings.
- EU fish processing sector economic overview including drivers and main trends based on expert knowledge. It must include specific sections on:

- o employment (e.g. female/male employment and average salaries),
  - o economic performance contrasting SMEs and non-SMEs (when data is available),
  - o productivity/employee at EU level,
  - o brief summary for each national chapter,
  - o the indicator Future Expectations of the Industry and other relevant indicators may be added.
- National chapters on the economic performance of the fish processing sector providing:
    - o National fish processing sector overview (including recent developments)
    - o Economic performance indicators
    - o Performance by size category (e.g. contrasting SMEs and non-SMEs when possible)
    - o Employment (Female/male employment, labour productivity and average salaries)
    - o Description of trends and drivers based on expert knowledge.
    - o Outlook
    - o Data coverage and quality
- Special Chapter Comparison of the data and indicators of the DCF and Eurostat's Structural Business Statistics.
    - o Propose recommendations to build future fish processing reports using Eurostat data as the main source of data and complemented by DCF data if available.
    - o Discuss the main differences across both datasets.
    - o Discuss feasibility of potential improvements to the report (e.g. use of PRODCOM data, reporting and analysis by products/segments).

## **Request to the STECF**

STECF is requested to review the report of the STECF Expert Working Group meetings, evaluate the findings and make any appropriate comments and recommendations.

## **STECF observations**

The Expert Working Group, STECF EWG 17-16, on the Economic report of the EU fish processing sector 2017, was convened in Ispra, Italy 15-19 January 2018.

STECF reviewed the report and notes that the EWG adequately addressed all the ToRs. In addition, the EWG provided a very well developed section on trends and drivers of changes in economic

indicators and an outlook of the future of the fish processing industry. STECF observes that EWG 17-16 was able also to answer a specific request arrived from DG-MARE during the meeting about the effects of the structural funds on the fish processing sector. Considering the time limit and the lack of preparation for this request, experts were only able to carry out a limited analysis of data provided.

The report is the sixth report of its kind and provides a comprehensive overview of the latest information available on the structure, social, economic and competitive performance of the fish processing industry at the national and EU levels.

The results of the 2017 EU fish processing sector analysis show that in 2015 the sector consisted of around 3,600 enterprises (with fish processing as main activity), of which 57% were micro-enterprises with less than 10 employees. The sector employs around 124 thousand persons of which 45% are female. Most of the EU employment is to be found in enterprises with less than 10 employees (55%) and only 14% of it in companies with more than 50 employees. In 2015 the sector produced a total income of €30.3 billion. In general, 2015 data show a deterioration of the economic performance if compared to 2014 (e.g. GVA and net profit were respectively 14% and 21% lower than in 2014) even if the sector still remain profitable.

STECF observes that landings of European vessels cover only approximately 40% of the total raw material requirements of the EU fish processing industry (according to external data or expertise for some MS available in the EWG). The EU fish processing industry is therefore still influenced by the developments in the global fish markets. Whether the dependency will be reduced as more stocks in European waters are fished at MSY level remains to be seen. Latest information on the EU aquaculture production seems to indicate that there will be a growing supply from this sector (e.g. see Danish national chapter).

STECF observes that several Member States especially around the Eastern Baltic Sea were and are still negatively affected by the Russian embargo, being affected by a substantial reduction in exports to Russia.

STECF observes that the data coverage and quality continues to improve compared to the previous reports, as all MS who were legally obliged to deliver data have now done so and the EWG was able to produce a national chapter for all those countries. There were though missing data for some years for some countries, e.g. Greece, delivering only data from 2011 to 2015, Romania, not delivering 2008 data and Netherlands, not delivering data for 2015 because for this year data were not collated, as stated in their National Programme (2017-2019).

STECF observes that the coverage section highlights some missing data in relation to the collection and delivering of data disaggregated by size categories (employment classes). The data collection of disaggregated data is not mandatory but, according to the last data call, in case a MS included a data collection for disaggregated data in the national plan there is an obligation to deliver them. The TORs for the EWG did not include an assessment of the coverage of the data by MS and, therefore, the EWG has not checked the coverage issues arising from the coverage report drafted by JRC and included in the report.

The EWG was requested to produce a "Special Chapter for the Comparison of the data and indicators of the DCF and Eurostat's Structural Business Statistics (SBS)". The aim was to understand whether a future STECF fish processing report could be based on Eurostat data as a main source (complemented by DCF data), considering that under EUMAP data collection for the fish processing sector is no longer mandatory and MS may probably skip the data collection on the fish processing industry under their Work Plans (WP).

The EWG checked the planned data collection at MS level under the new data collection Programme (2017-2019). All the MS WP were downloaded from <https://datacollection.jrc.ec.europa.eu/wp-np-ar> and a template prepared by experts was used to facilitate this check. STECF observes that the future data collection appears not to change so much: on 27 MS presenting a WP, 21 have included

a data collection for the fish processing sector; of these 21 MS only 6 are going to use exclusively Eurostat SBS data. It is also worth noting that there will be a full comparability of future data (collected in 2017-2019) to past data (provided with the last data call) for most MS (16 countries of the 21).

STECF observes that the results of the SECFISH (MARE/2016/22 "Strengthening regional cooperation in the area of fisheries data collection") project as well as the national pilot studies on the possibilities to collect data on raw material will be likely available in advance of the next fish processing report.

## STECF conclusions

STECF concludes that the Report on the Economic performance of the fish processing industry can be continued in the present form in the future. The performed analysis highlights that for most MS DCF data will not have Eurostat SBS data as main source and very negligible changes are foreseen under the WP.

STECF notes that one additional analysis was requested during the working group, which could thus not be completely addressed. STECF underlines the importance of the early planning of the ToRs ahead of the meeting, in order to give the chair and experts the time to adequately prepare the analysis.

The EWG was not requested to carry out an extensive check on coverage of data and concludes that this should be again part of the TOR for the next fish processing report. This would assist DG Mare in assessing the non-delivery of data, which may have legal implications (e.g. in case a MS proposed to collect data in the WP and not delivered).

STECF suggests that the main findings of the SECFISH project as well as of the national pilot project on the collection of raw material are considered in the next reporting period.

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## **REPORT TO THE STECF**

### **EXPERT WORKING GROUP ON Economic report of the EU fish processing sector 2017 (Transition) (EWG-17-16)**

**Ispra, Italy, 15-19 January 2018**

This report does not necessarily reflect the view of the STECF and the European Commission and in no way anticipates the Commission's future policy in this area

## **1 INTRODUCTION**

This report, the 2017 Economic Report on the European Union (EU) Fish Processing Industry, is the six report of its kind produced and provides a comprehensive overview of the latest information available on the structure, social, economic and competitive performance of the fish processing industry at the national and EU level.

This publication includes:

- A short summary overview of the processing sector at the EU level using indicators from the national chapters and including a short summary for each national chapter
- A detailed economic and structural assessment of the processing sector for the EU Member States that are required to deliver data
- An overview of the coverage and quality of the data submitted by Member States
- A special chapter on the comparison of EUROSTAT and DCF data and what it would mean to just rely on EUROSTAT data for the fish processing report.

The report has been produced by fisheries economists from DG JRC and a group of economic experts convened under the Scientific, Technical and Economic Committee for Fisheries (STECF). The group consisted of 31 independent experts. The list of experts can be found in section 8.

The economic data used in this publication for the years 2008 to 2015 were collected under the Data Collection Framework (DCF), Commission Regulation (EC) No. 665/2008 of the 14 July 2008 and Commission Decision (2008/949/EC).

Data presented in this report on the EU fish processing industry relate to enterprises whose main activity is defined according to the EUROSTAT definition under NACE Code 10.20: 'Processing and preserving of fish and fish products'.

The NACE Code 10.20 class includes:

- Preparation and preservation of fish, crustaceans and molluscs: freezing, deep-freezing, drying,
- smoking, salting, immersing in brine, canning, etc.
- Production of fish, crustacean and mollusc products: cooked fish, fish fillets, roes, caviar, caviar
- substitutes, etc.
- Production of prepared fish dishes
- Production of fish-meal for animal feed

This class also includes:

- Activities of vessels only engaged in the processing and preserving of fish

However, this class excludes:

- Activities of vessels engaged both in fishing, processing and preserving of fish
- Production of oils and fats from marine material
- Manufacture of fish soups

## **1.1 Terms of Reference for EWG-17-16**

### **Background and general objectives**

Following the 2017 DCF call for economic data on the EU fish processing sector, EWG 17-16 is requested to analyse and comment on the economic performance of the EU and national fish processing sectors between 2008 and 2015 (2016 if available).

The fish processing report is one of the main sources of economic and social data for scientific advice on the performance of the EU fish processing industry. It is also increasingly used by scientific bodies, national administrations and international institutions.

In view of the above, the 2017 should provide a more in-depth look at the different factors driving the economic performance of the EU fish processing industry with a special focus on the major drivers and issues affecting this sector.

Building on the successful experience of the 2017 economic report of the fishing fleet, the 2017 report on the economic performance of the EU fish processing sector will follow a more analytical approach. It will contain qualitative information and analysis on the drivers and trends in the fish processing performance and other aspects of policy relevance based largely on the scientists' expert knowledge.

Experts will be asked to analyse the sector, e.g. by markets and trade determinants by main segments of processing activities, competitiveness, market prices and consumption, certification, innovation, links with the local fishing fleet and aquaculture sector, the role of European Maritime Fisheries Fund support, contribution to the local communities and the Blue Economy, strengths, weaknesses, opportunities and threats.

Given the social importance of this activity in many communities, particular emphasis should be paid to the social aspects of the analysis including trends on employment, salaries, labour productivity and female/male breakdown of the fish processing employment.

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

The two main objectives for the 2017 exercise are to increase qualitative interpretation of all data outputs and to increase the usefulness of the report for DG MARE's policy development as well as for member states and the industry.

The final draft EWG report will be reviewed by the STECF during its spring plenary meeting in 2018.

### **Specific objectives**

EWG 17-16 is requested to work on and comment, at least, on the following items:

The 2016 report on the economic performance of the EU fish processing sector shall include, at least, the following sections:

- A summary containing key findings.
- EU fish processing sector economic overview including drivers and main trends based on expert knowledge. It must include specific sections on:
  - employment (e.g. female/male employment and average salaries),
  - economic performance contrasting SMEs and non-SMEs (when data is available),
  - productivity/employee at EU level,
  - brief summary for each national chapter,

- the indicator Future Expectations of the Industry and other relevant indicators may be added.
- National chapters on the economic performance of the fish processing sector providing:
  - National fish processing sector overview (including recent developments)
  - Economic performance indicators
  - Performance by size category (e.g. contrasting SMEs and non-SMEs when possible)
  - Employment (Female/male employment, labour productivity and average salaries)
  - Description of trends and drivers based on expert knowledge.
  - Outlook
  - Data coverage and quality
- Special Chapter Comparison of the data and indicators of the DCF and Eurostat's Structural Business Statistics.
  - Propose recommendations to build future fish processing reports using Eurostat data as the main source of data and complemented by DCF data if available.
  - Discuss the main differences across both datasets.
  - Discuss feasibility of potential improvements to the report (e.g. use of PRODCOM data, reporting and analysis by products/segments).

**KEY FINDINGS in 2015****Number of enterprises per countries**

- The total number of enterprises in the European fish processing industry was 3,603 (3,827 including landlocked countries) in 2015, 57% of which have less than 10 employees and 29% within enterprises between 11 and 49 employees and only 14% have more than 50 employees.
- The total number of enterprises increased by 2% over the reporting period. The number of small enterprises employing 10 people or less increased substantially by 13%.
- Spain and Italy possessed the biggest fish processing industry in 2015 in terms of number of enterprises (16% of the total) and the United Kingdom regarding people employed (16% of the total). The United Kingdom followed in terms of number of firms (10% of the total), Spain and Poland in terms of employment (16% and 14% of the total).

**Employment**

- Total employment of the European fish processing industry was reported to amount to 124,242 workers (126,413 including landlocked countries) in 2015 (20% less than direct employment generated by the EU fleet in the same year) and the average annual wage was equal to €30,133 per FTE (almost 60% more than the average annual wage of the EU fisheries catching sector).
- Employment was relatively stable between 2008 and 2015<sup>1</sup> while the average wage increased by 22%. Over the same period, labour productivity has decreased by 8%.
- Most of the EU employment in 2015 is to be found in enterprises with less than 10 employees (55%) and only 14% of it in companies with more than 50 employees.
- The share of employment by gender has remained stable over the years (56% of male vs. 44% of female, in average). In some countries employment is spread almost evenly between men and women in 2015, both in terms of number of employees and FTEs. However, at country level, some significant decrease or increase in female employment can be observed and in several countries more women are employed as men.

**Income generated, production costs and profitability**

- The amount of income generated by the European fish processing industry decreased by 1% in 2015 compared to 2014 (€30.3 billion, of which 98% was made up of turnover).
- However, total production costs increased by 1% in 2015 (were €27.2 billion for 2014 and €27.6 billion for 2015).
- The major cost items are purchase of fish and other raw material for production (in 2015 62% of income and 68% of costs), followed in 2015 by other operational costs (17% of income) and labour costs (12% of income), while energy expenses represent only 3% of income.

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<sup>1</sup> Without data from the landlocked countries.

- Despite the increase in production costs the EU fish processing sector was profitable in 2015 and generated €6.1 billion in Gross Value Added (GVA), and excluding Portugal and Spain<sup>2</sup> €1.46 billion of earnings before interests and taxes and a net profit of €1.40 billion.
- The UK fish processing industry generated the highest GVA in absolute terms in 2015 (21.1% of the EU total), followed by the France (19.7%) and Spain (14.4%).
- Among the countries for which net profit was calculated, the UK industry generated the highest net profit in absolute terms in 2015 (36.3% of the estimated total), followed by the French (19.4%) and Belgium (9.5%).

### **Economic performance**

- Data shows a generally unsatisfactory economic performance in 2015 compared to 2014 (also in relative terms).
- The available data suggest deterioration of the economic performance<sup>3</sup> in 2015. In 2015, GVA and net profit generated by the fish processing industry (for which data was available) were respectively 14% and 21% lower than in 2014.
- Performance indicators as a share of income fell from 2014 to 2015 and GVA also fell in 2015. GVA as a proportion of income decreased to 20% in 2015, while net profit as a share of income also decreased to 5%.
- Economic analysis of national data reveals a very differentiated economic performance by country. The Cypriot, Maltese, Slovenian and Swedish fish processing industries, made net losses in 2015, while all the other MS generated a net profit, ranging from €4.4 million for Italy to more than €500 million for the United Kingdom.
- For 2015 the situation shows overall a mixed picture with countries with decreasing and many other countries with increasing net profits as only a 4 countries reported overall losses.

### **Trends and drivers for change**

- The high percentage of the costs of raw material (compared to the overall costs) is expected to increase in the future.
- These costs are not expected to be offset by the improvements in efficiency (e.g. via innovations).
- The Companies are still very vulnerable to developments on the world markets due to the high dependency on imports from foreign countries. If the improvement in European waters with more stocks fished at MSY level may, however, ease the situation is still not clear. At least prices have not decreased over the last years, which may have been an indication of higher landings.
- The ongoing increasing demand for certified fish may further reduce the availability of raw material and/or increase their price even more.
- For the discard ban it is still unclear how it will influence landings from EU waters. The Total Allowable Catch (TAC) is now a catch quota compared to a landings quota before. The TAC includes now also the expected bycatch (e.g. below minimum conservation reference size) of a species in target and non-target fisheries. The producers of fishmeal and fish oil have reacted on

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<sup>2</sup> Due to missing data.

<sup>3</sup> Gross value added, earnings before interest, operating costs cash flow and net profits



the possible extra supply (e.g. in Germany by organizing transport from the harbours to the fishmeal factory).

#### **Future expectation index<sup>4</sup>**

- Data from 2008 shows a positive expectation of the industry regarding EU-wide figures, while 2009 obviously reflects the economic crises (less positive expectations). In 2011, the FEI shows the highest value (2.6%), going down to 0% in 2013 (its lowest value), up to 2.1% in 2014 and 1.4% in 2015.
- In the STECF report on 2012 data it was stated that a decrease in 2012 may be due to a hold-up phenomenon, with the companies waiting with new investment until the new EMFF regulations are clear. Between 2012 and 2015 the FEI indicator varies with no clear trend.

This chapter provides an overview of the structure and economic performance of the European fish processing industry in 2015 and highlights some key trends between 2008 and 2015 based on data collected under the latest (2017) DCF data call for the fish processing industry. Results are provided at EU and Member State levels.

In order to provide information on the structure of the industry regarding companies fulfilling the SME criteria or not, MS can use their funding to collect data by size category. Not all countries included the collection of data on the segment level in their national programs. Only those countries, which did include the collection of disaggregated data in their national programs were requested to provide them. The segmentation followed the size categories by number of persons employed in the companies (i.e.  $\leq 10$ , 11 - 49, 50 - 249, and  $\geq 250$ ). The data is included in the NC for those countries who provided the data.

### **2.1 Data coverage and quality**

The analysis of the economic performance of the fish processing sector in the EU is based on national statistics and data for the fish processing industry collected under the Data Collection Framework (DCF) of the EU. The data call was issued on the 3rd of October 2017, and the deadline for the submission was the 4th of November 2017.

The 2017 data call for the fish processing industry requested to the 23 countries that are participating in the DCF to provide data on enterprises that carry out fish processing as a main activity for 22 variables and for each year of the period 2008-2015. All 23 countries requested to deliver data on their national fish processing sector submitted the data before the deadline. Not all countries of the EU were requested to deliver data, as not all of them participate in the DCF. These comprise the five countries that do not have access to coastal waters (Austria, Czech Republic, Hungary, Luxembourg and Slovakia).

In addition, the following countries did not submit any data for a particular year: i) Croatia delivered data from 2011 to 2015, as it joined the EU only in 2012; ii) Greece delivered data from 2011 to 2015; iii) Romania delivered data from 2009 to 2015; and iv) The Netherlands delivered data from 2008 to 2014, but not delivered 2015 data because the Netherlands decided not to collect the data under the EU-MAP anymore. This is also stated in the National Programme.

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<sup>4</sup> The Future Expectation Indicator (FEI) has been created in order to give information about the future expectations of the companies in the sector. It is the difference of net investment minus depreciation divided by total assets. Despite a low data coverage (60-80%) more trends could be identified at a EU-level.

There were also identified missing variables at the national total level for the years where data was submitted: i) Estonia did not report extraordinary costs for the whole period 2008-2015; ii) Greece did not report total value of assets for 2011; iii) Poland did not report the unpaid labour for the period 2008-2011; iv) Portugal did not report the depreciation of capital for the whole period 2008-2015 and extraordinary costs for the period 2010-2015; v) Spain did not report total value of assets and depreciation of capital for the whole period 2008-2015, debt for the period 2008-2012 while for the period 2013-2015 debt was reported 0; vi) The Netherlands did not report data on subsidies for the period 2012-2014, extraordinary costs for 2008, 2011 and 2014, and employment and FTE by gender (this last one is optional); and viii) Germany and Sweden did not report FTE by gender, which is the only fully optional variable for fish processing under the DCF.

There were also identified some variables reported 0 systematically at the national total level for the years where data was submitted: i) Belgium reported imputed value of unpaid labour to be 0 for the whole period 2008-2015; ii) Croatia reported imputed value of unpaid labour to be 0 for the period 2011-2014; iii) Cyprus reported imputed value of unpaid labour to be 0 for the whole period 2008-2015, and extraordinary cost to be 0 for the period 2008-2014; iv) Denmark reported extraordinary costs to be 0 for the 2014 and 2015; subsidies to be 0 for the whole period 2008-2015; v) Germany reported imputed value of unpaid labour to be 0 for the whole period 2008-2015, and extraordinary costs for the periods 2008-2009 and 2011-2015; vi) Greece reported other income to be 0 in 2011 and 2012; vii) Italy reported other income to be 0 for the whole period 2008-2015; viii) Latvia reported imputed value of unpaid labour to be 0 for the period 2010-2015; ix) Lithuania reported imputed value of unpaid labour to be 0 for the period 2008-2014; x) Malta reported other income to be 0 for the whole period 2008-2015, and subsidies to be 0 for the period 2010-2015; xi) Romania reported extraordinary costs to be 0 for the whole period 2008-2015; xii) Spain reported extraordinary costs and financial costs to be 0 for 2015; xiii) Sweden reported extraordinary costs to be 0 for the whole period 2008-2015; and xiv) The United Kingdom reported imputed value of unpaid labour to be 0 for the period 2011-2014, extraordinary costs and subsidies to be 0 for the period 2008-2011.

Furthermore, they were also asked to provide numbers of enterprises and the turnover attributed to fish processing for enterprises that carry out fish processing but not as a main activity. Data on enterprises that carry out fish processing not as a main activity were also requested for each year of the period 2008-2015, even if, according to the legislation, the collection of these data is mandatory only in the first year of each programming period (i.e. 2008, 2011 and 2014). Member states delivered data on fish processing for enterprises that carry out fish processing but not as a main activity for the period 2008-2015, with the following exceptions: i) Belgium reported the number of enterprises for all years, but not the turnover; ii) Croatia delivered data from 2011 to 2015, as it joined the EU only in 2012; iii) Greece delivered data from 2012 to 2015; iv) Portugal delivered data for 2008, 2010 and 2015; v) The Netherlands delivered data from 2009 to 2014; vi) The United Kingdom delivered data from 2008 to 2012; vii) France delivered data for 2009, 2010, 2014 and 2015; viii) Germany delivered data for 2009 and 2011; ix) Poland delivered the turnover for all years, but not the number of enterprises; and x) Romania delivered all the data but the turnover in 2013. In addition, i) Bulgaria reported that for the whole period 2008-2015 no companies carried out fish processing without being the main activity; ii) Latvia did not provide turnover because of the low number of companies carrying out fish processing without being the main activity; iii) Denmark reported as 0 the turnover from fish processing of companies carrying out fish processing without being the main activity because of confidentiality issues; and iv) Spain reported that only 1 company in 2008 carried out fish processing without being the main activity and from 2009 to 2015 reported that no companies carried out fish processing without being the main activity.

The Member States were also requested to provide economic data by size categories. The segmentation followed the size categories by number of persons employed in the companies (i.e. ≤10, 11-49, 50-249 and >250). The delivery of data disaggregated by size categories was mandatory for those MS which have to collect them according to their National Programs, i.e., are involved in the extended program of the data collection. The intent was to use disaggregated data in order to analyse and compare the profitability of the different categories of firms. The analysis of the economic performance of the various categories of fish processing firms was part of the Terms of Reference for this Economic Report. Member states delivered data segmented by size category for the period 2008-2015, with the following exceptions: i) Cyprus, Estonia, Germany did not provide data segmented by size category; ii) Romania delivered data segmented by size category from 2009 to 2015; iii) Croatia delivered data segmented by size category from 2011 to 2015, as it joined the EU only in 2012; iv) Greece delivered data segmented by size category from 2012 to 2015; v) Finland delivered data segmented by size category from 2012 to 2015; vi) Italy delivered data segmented by size category from 2013 to 2015; vii) The Netherlands delivered data segmented by size category from 2008 to 2014, not for 2015; viii) France delivered data segmented by size category from 2008 to 2013, not for 2014 and 2015.

There were also identified missing variables at the segment level for the years where data was submitted: i) France did not report employment total and by gender, and FTE total and by gender (this last one being optional) for any segment for 2008; ii) Lithuania did not report net investments for segment 1 (less than or equal to 10 employees) for 2010; iii) The Netherlands did not report data for any segment on subsidies for the period 2012-2014, extraordinary costs for 2008, 2011 and 2014, and employment and FTE by gender (this last one is optional); iv) Poland did not report the unpaid labour for any segment for the period 2008-2011; v) Portugal did not report for any segment the depreciation of capital for the whole period 2008-2015 and extraordinary costs for any segment for the period 2010-2015; vi) Spain did not report for any segment total value of assets, debt and depreciation of capital for the whole period 2008-2015, while extraordinary costs and financial costs were not reported for 2015; and vii) Sweden did not report for any segment FTE by gender (which is optional) for the whole period 2008-2015, did not report for any segment employment in totals and by gender for the period 2008-12, reported extraordinary costs to be 0 for all segments for the period 2008-2013 and were not reported for any segment for 2014 and 2015; did not report imputed value of unpaid labour for 2014 for segment 1, did not report imputed value of unpaid labour for the period 2013-15 and reported to be 0 for the period 2010-12 for segment 2, did not report imputed value of unpaid labour for the period 2013-15 and reported to be 0 for the period 2008-12 for segment 3<sup>5</sup>.

In terms of data quality, some 'abnormal' estimates for various parameters were detected by the JRC before the expert working group during the quality and coverage checking procedures undertaken on the data submitted, or by the experts during the data analysis phase. However, Member States actively participated to the process of data quality improvement by promptly rectifying or explaining inconsistencies before and during the meeting. Main remaining issues in terms of data quality are: i) French data quality seems to have deteriorated; ii) Romanian data also needs to be improved; and iii) Other minor issues in the national data coverage and quality are detailed in each national chapter.

Some of the main potential shortcomings of this EU level analysis include: Data from Romania, Greece, the Netherlands and Croatia do not cover all the period of the analysis 2008-2015; Portugal:

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<sup>5</sup> Extraordinary costs and imputed value of unpaid labour were not reported (in blank) in 2014 and 2015 when they were 0 due to a misunderstanding

the non-submission of data on depreciation of capital prevents the calculation of several economic indicators (i.e. Earnings before interest and tax, Net Profit, Return on Investment and Future Industry Expectations); Spain: the non-submission of data on Depreciation of Capital and Total Value of Assets by prevents from the calculation of several economic indicators (i.e. Earnings before interest and tax, Net Profit, Return on Investment, Future Industry Expectations, Capital Productivity and Financial Position); France: data quality has deteriorated in recent years, including the lack of segmented data for 2014 and 2015; Potential underestimation of the EU total income and subsidies, due to the non-submission of data on subsidies for some MS; Potential underestimation of the percentage of unpaid labour and average salary , due to the non-availability of data on imputed value of unpaid labour for some MS; In any case, where relevant, other data related issues are highlighted throughout the text.

Overall, data coverage has improved from previous report with the availability of extended time series for all countries, in particular for Croatia and Greece with data covering from 2011 and 2012, respectively. Moreover, Finland from 2012 and Italy from 2013 started to report data segmented by size categories; while only France discontinued reporting segmented data since 2014. Missing depreciation of capital for Portugal and depreciation of capital and total value of assets continues to be an issue. Data quality has also significantly improved, in particular data from Belgium and Bulgaria that allow their inclusion in the EU overview. However, data quality of the French data seems to have deteriorated and Romanian data also needs to be improved. Other minor issues in the national data coverage and quality are detailed in each national chapter.

## 2.2 Total enterprises and employment of the European fish processing industry

According to the data submitted by MS, the number of workers employed in the European fish processing industry in 2015 was 124,713, excluding including land lock countries (Austria, Czech Republic, Hungary and Slovakia). The total number of employees in those countries was 790 in the year 2015. The total number of people employed in the sector remains relative stable from 2011 to 2015, while it decreased from 2014 to 2015 by 2%.

**Table 2.2.1: EU fish processing industry sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ to 2014	Develop. trend
<b>Structure (number)</b>											
Total enterprises	3,535	3,496	3,529	3,618	3,538	3,744	3,603	3,603		0%	2%
<=10 employees	1,829	1,807	1,854	1,858	1,891	2,102	1,970	2,064		5%	13%
11-49 employees	1,146	1,186	1,162	1,087	1,114	1,124	1,106	1,033		-7%	-10%
50-249 employees	475	435	432	440	451	438	443	427		-4%	-10%
>=250 employees	80	75	76	76	78	77	81	77		-5%	-4%
<b>Employment (number)</b>											
Total employees	123,846	121,065	120,435	124,170	123,841	124,734	126,631	124,242		-2%	0%
FTE	113,613	110,901	111,499	115,193	113,781	114,145	115,353	112,609		-2%	-1%
<b>Indicators</b>											
FTE per enterprise	32.1	31.7	31.6	31.8	32.2	30.5	32.0	31.3		-2%	-3%
Average wage (thousand €)	24.5	26.1	27.0	27.3	28.7	29.0	30.0	30.1		0%	22%
Labour productivity (thousand €)	57.4	48.1	54.5	49.3	51.6	57.3	59.3	52.5		-11%	-8%
Unpaid work (%)	0.9	1.8	2.0	0.9	0.9	1.3	1.6	0.9		-41%	6%

Note: Employment figures not available for all MS (refer to Table 2.2.3 for details)

Contrarily to the total number of employees, the total FTEs decreased from 2011 to 2015 by more than 2%. This can be explained by an increase of the part-time employment (the higher the ratio of FTE to total employed, the higher the full-time employment) or an increased use of seasonal work.

The average number of FTEs per enterprise showed a slight decrease over the period 2011 and 2015. The average wage, measured as cost of labour per FTE shows a decrease by 6% from 2014 to 2015 and increase of 4% over the period 2011-2015. Labour productivity, measured as gross value added per FTE, declined 2% from 2011 to 2015.

**Table 2.2.2: Number of enterprises with fish processing as main activity in the EU, 2008-2015**

Country	2008	2009	2010	2011	2012	2013	2014	2015	% of EU total in 2015
Austria	6	5	6	5	5	6	9	10	0%
Belgium	53	58	56	56	59	60	66	66	2%
Bulgaria	45	45	48	43	43	46	44	45	1%
Croatia	0	0	0	35	35	37	38	35	1%
Cyprus	5	3	5	5	4	3	3	2	0%
Czech Republic	20	24	22	22	24	22	20	20	1%
Denmark	117	123	115	107	106	103	100	108	3%
Estonia	50	51	53	55	61	53	62	64	2%
Finland	143	137	143	143	143	147	137	136	4%
France	327	311	305	300	295	302	302	291	8%
Germany	281	263	265	265	250	253	258	248	7%
Greece	0	0	0	152	147	144	133	145	4%
Hungary	13	10	11	10	11	10	9	9	0%
Ireland	172	169	169	168	164	165	162	161	4%
Italy	376	414	547	530	537	587	574	577	16%
Latvia	95	91	104	101	101	116	106	114	3%
Lithuania	37	33	32	32	31	30	34	51	1%
Malta	7	10	8	8	6	6	6	5	0%
Netherlands	101	85	89	88	84	83	81		0%
Poland	190	191	188	185	184	183	180	185	5%
Portugal	213	202	180	169	166	154	153	157	4%
Romania	0	13	18	22	14	7	10	8	0%
Slovakia	8	10	13	10	8	10			0%
Slovenia	12	13	13	14	15	14	13	12	0%
Spain	572	585	552	513	487	640	542	598	16%
Sweden	214	217	219	219	223	222	224	224	6%
United Kingdom	525	482	420	408	383	389	375	371	10%
<b>EU Total</b>	<b>3,582</b>	<b>3,545</b>	<b>3,581</b>	<b>3,665</b>	<b>3,586</b>	<b>3,792</b>	<b>3,641</b>	<b>3,642</b>	<b>100%</b>

Table 2.2.3 shows the EU employment trend, by country and gender. Only for two countries (Greece and Italy) of those that submitted data, employment is spread almost evenly between men and women in 2015, both in terms of number of employees and FTEs. For all the others, there is a clear preponderance of either male or female employees. For example, in Cyprus, Ireland and Malta, male employment is much higher than female employment, while in Portugal, Lithuania and Poland men are less than 35% of the total number of workers.

At EU level, the share of employment by gender has remained stable over the years (45% of male vs. 55% of female, in average). However, at country level, some specific trend can be observed. For example, in Spain, the percentage of male employees increased every year over the reporting period (from 43% to 47% in 2012), except in 2010. In France, the employment by gender followed a similar pattern and male employees represent now the majority since 2015.

In the same year, 17% of all the sector's FTE's were employed in the UK. Spain and Italy followed in terms of number of firms (both contributed 16% of the total), Spain, France, Poland and UK in terms of employment (Spain and UK 16%, France and Poland 14% of the total).

Employment in the fish processing industry increased for several countries (e.g. Poland and Finland); it decreased for others (e.g. Latvia and Romania). In general terms, changes in number of enterprises fluctuated between -27% for the UK and +25% for Slovenia (-5% at EU level) and in the number of employees between -22% for Denmark and +75% for Malta (-3% for the EU total).

As already mentioned, the ratio FTE/total employees provides an indication of the main type of employment (the lower the ratio, the higher the share of part-time employment). The Swedish fish processing industry appears to have the highest level of part-time employment (FTE/total employees = 76%), followed by the Lithuanian and Irish ones. On the other hand, several countries, such as Estonia and Slovenia, employ mostly full-time workers.

There is no direct coupling between the total number of firms and employment. An increase in the number of firms does not automatically imply an increase in employment and vice versa. In some countries the number of small companies increased during the reporting period and the number of large companies decreased, while in other MS the opposite happened. For example, in Malta, Finland and The Netherlands, the total number of employees increased over the period 2008-2015 (for The Netherlands 2014), even if the total number of enterprises shrank. According to the table, there was a decrease in 2015 but the decrease can be explained by missing data from the Netherlands, decreased turnover in Estonia and Romania (from very low values) and Poland.

In Estonia, for example, the number of companies increased while at the same time the number of employees decreased.

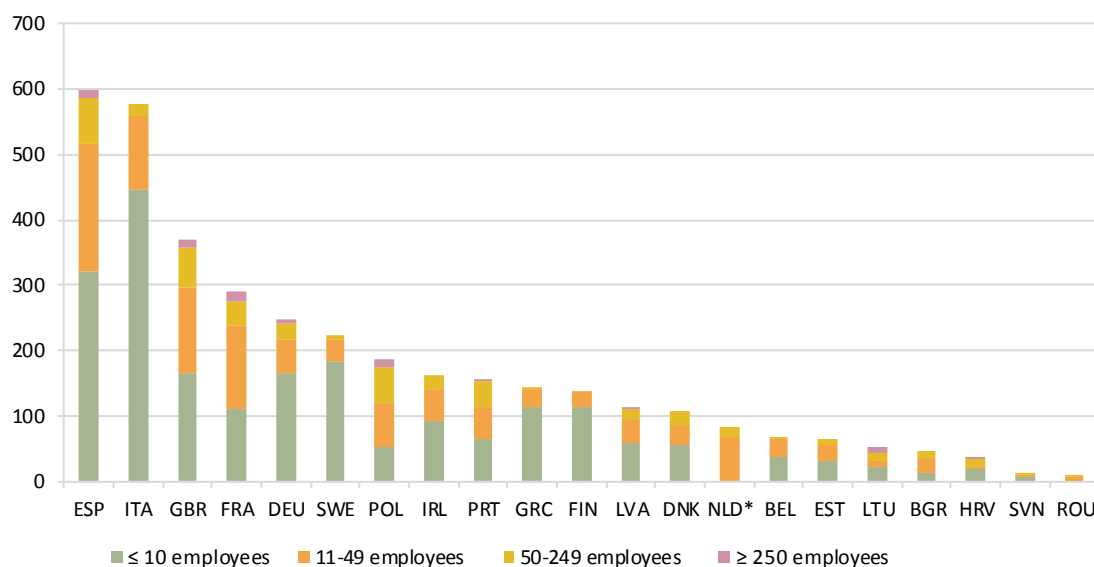
**Table 2.2.3: Employment in the EU fish processing industry, by country and gender, 2008-2015**

	2008			2009			2010			2011			2012			2013			2014			2015		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Belgium	1,298	59%	41%	1,441	56%	44%	1,546	59%	41%	1,522	60%	40%	1,497	59%	41%	1,489	59%	41%	1,487	60%	40%	1,529	61%	39%
Bulgaria	1,704	41%	59%	1,538	42%	58%	1,917	40%	60%	1,749	39%	61%	1,650	40%	60%	1,725	41%	59%	1,879	38%	62%	1,907	37%	63%
Croatia										1,635	42%	58%	1,565	42%	58%	1,953	37%	63%	1,815	42%	58%	1,800	39%	61%
Cyprus	56	43%	57%	43	60%	40%	66	56%	44%	72	57%	43%	56	64%	36%	27	74%	26%	36	78%	22%	14	71%	29%
Denmark	4,379	49%	51%	4,227	50%	50%	3,791	52%	48%	3,704	53%	47%	3,409	53%	47%	3,453	55%	45%	3,613	53%	47%	3,614	53%	47%
Estonia	1,936	35%	65%	1,847	35%	65%	1,887	35%	65%	1,847	40%	60%	1,861	35%	65%	1,879	36%	64%	1,914	36%	64%	1,879	36%	64%
Finland	961	56%	44%	880	58%	42%	885	61%	39%	870	60%	40%	962	61%	39%	1,012	61%	39%	1,237	62%	38%	1,004	64%	36%
France	15,672	44%	56%	15,590	44%	56%	15,633	45%	55%	15,963	45%	55%	16,184	45%	55%	16,465	49%	51%	16,824	48%	52%	17,523	56%	44%
Germany	8,441	50%	50%	7,566	52%	48%	7,031	51%	49%	6,780	54%	46%	7,010	55%	45%	6,751	52%	48%	6,561	52%	48%	6,665	53%	47%
Greece										2,505	49%	51%	2,330	50%	50%	2,183	52%	48%	1,964	51%	49%	2,062	52%	48%
Ireland	2,867	70%	30%	3,020	70%	30%	3,064	70%	30%	3,200	70%	30%	3,342	67%	33%	3,534	67%	33%	3,688	66%	34%	3,797	68%	32%
Italy	5,425	52%	48%	5,285	52%	48%	5,950	52%	48%	6,109	52%	48%	6,197	52%	48%	6,292	52%	48%	5,628	52%	48%	5,926	52%	48%
Latvia	5,792	37%	63%	4,684	38%	62%	5,015	36%	64%	5,399	34%	66%	5,781	34%	66%	6,223	34%	66%	5,558	34%	66%	4,169	38%	62%
Lithuania	5,013	32%	68%	4,489	29%	71%	4,351	33%	67%	4,445	35%	65%	4,451	33%	67%	4,471	33%	67%	5,165	33%	67%	5,373	34%	66%
Malta	56	95%	5%	131	90%	10%	19	68%	32%	32	50%	50%	56	73%	27%	114	66%	34%	114	66%	34%	82	70%	30%
Netherlands	2,953			3,453			3,218			3,253			3,567			3,677			3,935					
Poland	15,489	34%	66%	15,357	32%	68%	15,176	32%	68%	14,809	33%	67%	15,090	34%	66%	14,783	33%	67%	16,775	35%	65%	17,743	35%	65%
Portugal	6,664	36%	64%	6,815	36%	64%	7,376	35%	65%	7,447	34%	66%	7,167	33%	67%	6,726	33%	67%	7,068	40%	60%	7,148	33%	67%
Romania				572	40%	60%	1,598	43%	57%	1,181	52%	48%	780	50%	50%	438	57%	43%	510	55%	45%	483	57%	43%
Slovenia	250	42%	58%	223	42%	58%	266	41%	59%	379	42%	58%	354	42%	58%	351	41%	59%	221	42%	58%	209	45%	55%
Spain	19,737	37%	63%	19,331	45%	55%	18,581	39%	61%	18,390	43%	57%	18,324	47%	53%	18,448	39%	61%	18,340	38%	62%	19,033	39%	61%
Sweden	2,165	55%	45%	1,991	56%	44%	2,007	55%	45%	2,126	57%	43%	2,135	57%	43%	2,199	57%	43%	2,174	58%	42%	2,171	59%	41%
United Kingdom	22,988	57%	43%	22,583	57%	43%	21,057	58%	42%	20,754	57%	43%	20,073	56%	44%	20,541	56%	44%	20,126	55%	45%	20,111	55%	45%
Total	123,846	45%	55%	121,065	46%	54%	120,435	45%	55%	124,170	46%	54%	123,841	46%	54%	124,734	45%	55%	126,631	45%	55%	124,242	46%	54%

**Table 2.2.4: FTE in the EU fish processing industry, by country and gender, 2008-2015**

	2008			2009			2010			2011			2012			2013			2014			2015		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Belgium	1,221	60%	40%	1,373	58%	42%	1,439	61%	39%	1,442	61%	39%	1,417	61%	39%	1,385	61%	39%	1,377	62%	38%	1,423	62%	38%
Bulgaria	1,651	40%	60%	1,419	42%	58%	1,821	40%	60%	1,667	39%	61%	1,565	39%	61%	1,653	41%	59%	1,744	40%	60%	1,671	39%	61%
Croatia										1,443	45%	55%	1,367	44%	56%	1,572	41%	59%	1,819	42%	58%	1,466	41%	59%
Cyprus	43	40%	60%	43	60%	40%	66	56%	44%	72	57%	43%	56	64%	36%	27	74%	26%	36	78%	22%	14	71%	29%
Denmark	4,147	49%	51%	3,596	53%	47%	3,235	54%	46%	3,043	53%	47%	2,999	54%	46%	3,039	55%	45%	3,028	55%	45%	3,054	55%	45%
Estonia	1,864	35%	65%	1,746	35%	65%	1,861	35%	65%	1,813	40%	60%	1,816	35%	65%	1,845	37%	63%	1,880	36%	64%	1,842	37%	63%
Finland	682	57%	43%	742	58%	42%	742	61%	39%	777	60%	40%	775	61%	39%	1,012	61%	39%	1,072	62%	38%	803	64%	36%
France	15,202	46%	54%	14,983	46%	54%	15,158	45%	54%	15,662	46%	54%	15,971	46%	54%	16,104	49%	51%	16,014	50%	50%	15,716	54%	46%
Germany	7,995			7,212			6,786			6,544			6,664			6,476			6,251			6,373		
Greece										2,265	52%	48%	2,055	52%	48%	1,763	53%	47%	1,606	52%	48%	1,690	53%	47%
Ireland	2,596	70%	30%	2,633	71%	29%	2,677	71%	29%	2,761	70%	30%	2,678	67%	33%	2,789	67%	33%	2,874	66%	34%	2,963	68%	32%
Italy	4,573	52%	48%	4,454	52%	48%	5,015	52%	48%	5,148	52%	48%	5,223	52%	48%	5,426	52%	48%	4,422	52%	48%	4,778	52%	48%
Latvia	5,592	37%	63%	4,174	38%	62%	4,681	38%	62%	4,992	34%	66%	5,357	34%	66%	5,285	34%	66%	5,132	34%	66%	3,580	38%	62%
Lithuania	2,912	29%	71%	2,948	27%	73%	3,240	32%	68%	3,615	42%	58%	3,536	34%	66%	3,502	35%	65%	3,868	34%	66%	4,132	35%	65%
Malta	40	90%	10%	116	88%	12%	15	80%	20%	28	54%	46%	53	74%	26%	109	91%	9%	109	91%	9%	71	73%	27%
Netherlands	2,335			2,775			2,506			2,537			2,469			2,649			2,815					
Poland	14,509	35%	65%	14,359	32%	68%	14,392	32%	68%	13,848	33%	67%	13,940	34%	66%	13,974	34%	66%	16,042	35%	65%	16,937	35%	65%
Portugal	6,561	36%	64%	6,738	36%	64%	7,037	35%	65%	7,065	34%	66%	6,666	33%	67%	6,380	33%	67%	6,774	40%	60%	6,913	33%	67%
Romania				564	40%	60%	1,591	43%	57%	1,178	52%	48%	780	50%	50%	438	57%	43%	510	55%	45%	483	57%	43%
Slovenia	211	42%	58%	210	41%	59%	234	42%	58%	351	42%	58%	306	42%	58%	325	41%	59%	211	42%	58%	209	45%	55%
Spain	19,095	39%	61%	18,449	46%	54%	17,590	41%	59%	17,701	43%	57%	17,398	47%	53%	17,592	40%	60%	17,564	39%	61%	18,052	39%	61%
Sweden	1,773			1,736			1,807			1,837			1,831			1,658			1,587			1,662		
United Kingdom	20,612	60%	40%	20,631	59%	41%	19,606	59%	41%	19,405	58%	42%	18,858	57%	43%	19,142	57%	43%	18,618	57%	43%	18,778	56%	44%
Total	113,613	45%	55%	110,901	46%	54%	111,499	45%	55%	115,193	46%	54%	113,781	46%	54%	114,145	45%	55%	115,353	46%	54%	112,609	46%	54%





**Figure 2.2.1: Number of firms by country, 2015**

Data on staff costs and employment suggest that the average wage per FTE varies substantially by MS (Figure 3.2.2), with the Danish fish processing industry paying the highest salaries on average (€65.6 thousand), followed by the French the Swedish industries (respectively, €57.8 thousand and €45 thousand).

Labour productivity in 2015 ranged from €11.7 thousand for Latvia to €145.5 thousand for Belgium. However, for almost all countries (with the exception of three countries) it was smaller than €80 thousand.



**Figure 2.2.2: Average salary and labour productivity by country, 2015**

A major difference between the EU Data Collection Framework (DCF) and the Structural Business Statistics (SBS) of EUROSTAT (as industry sector companies have to deliver data under the SBS (NACE code 10.20) if they have fish processing as main activity) is the collection of information under the DCF for basic variables for companies which have fish processing not as main activity

(these companies deliver data under a different NACE code). MS are requested to provide the number of enterprises and the turnover attributed to fish processing.

Table 2.2.5 gives an overview by country of the number of enterprises which carry out fish processing but not as the main activity, based on the 2017 DCF data delivery. The table also shows how much these firms contribute to the total number of firms processing fish (firms processing fish as their main activity plus those processing fish not as their main activity).

**Table 2.2.5: Number of enterprises carrying out fish processing not as a main activity by country, 2018-2015**

Country	2008	2009	2010	2011	2012	2013	2014	2015	% of total enterprises
Belgium	193	205	204	197	193	194	195	193	24%
Bulgaria									
Croatia				19	21	21	21	24	3%
Cyprus	13	12	10	14	9	5	7	2	0%
Denmark	3	6	5	5	5	5	4	5	1%
Estonia	12	13	13	12	11	11	15	12	1%
Finland	22	49	56	13	13	21	21	20	2%
France		115	111				120	112	14%
Germany		95		80					
Greece					7	10	9	10	1%
Ireland		16	25	22	29	20	20	22	3%
Italy	162	177	233	227	231	185	205	208	26%
Latvia	4	4	2	2	2	2	2	2	0%
Lithuania	2	2	2	3	3	6	6	21	3%
Malta	0	0	0	0	2	0	2	2	0%
Netherlands		398	451	97	99	97	101		
Poland									
Portugal	29		38					17	2%
Romania	30	30	43	29	24	24	14	18	2%
Slovenia	8	8	9	8	7	6	6	4	0%
Spain	1	0	0	0	0	0	0	0	0%
Sweden	87	98	95	108	120	125	126	132	16%
United Kingdom	647	423	353	353	247				
EU Total	1,213	1,651	1,650	1,189	1,023	732	874	804	100%

In 2015, 804 companies were reported to carry out fish processing not as their main activity. However, taking into account that only 18 out of the 23 country participating in the DCF framework reported data on this type of enterprises (2015 figures were not available for Bulgaria, Germany, the Netherlands, Poland and the UK), as well as the inherent difficulties in collecting the information, this number can be expected to be much higher. Nonetheless, there has been a progressive increase in reporting this data from 2001 (some countries report numbers not every year), when only 8 countries reported information on companies processing fish not as main activity.

It can be also observed that there is a high variability across MS in terms of the contribution of the firms processing fish as a secondary activity to the total number of enterprises. For example, while for Finland or Denmark they represent only 2% of the total, for France with 28% and Italy with 26% and Belgium with 24% they represent more than a quarter of all companies.

### 2.3 Economic performance of the European fish processing industry sector

Total income has increased for the European fish processing industry between 2008 and 2015 and amounted to €30.2 billion in 2015, which was a small decrease compared to 2014. Notable is that other income contributed to 2% and income subsidies<sup>6</sup> to approximately 0.2% of the total income during the entire reporting period. The sector received relatively small amounts of income subsidies during the period and Table 2.3.1 show an increase from €60.7 million in 2008 to €84.4 million in 2015.

**Table 2.3.1: Economic performance of the EU fish processing industry sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	% of total income	Δ to 2014
<b>Income (million €)</b>										
Turnover	26,701.2	24,460.1	27,025.9	27,562.5	28,605.0	28,772.9	29,402.1	29,726.0	98% ▲	1%
Other income	382.7	298.9	511.8	578.9	593.7	1,007.9	1,445.4	666.8	2% ▼	-54%
Subsidies	60.7	57.2	58.7	77.3	89.5	72.5	59.4	84.4	0% ▲	42%
<b>Total Income</b>	<b>26,934.9</b>	<b>24,639.5</b>	<b>27,417.8</b>	<b>28,027.2</b>	<b>29,070.7</b>	<b>29,545.3</b>	<b>30,695.6</b>	<b>30,255.0</b>	<b>100% ▼</b>	<b>-1%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	14,920.6	14,169.3	15,718.6	16,729.5	17,549.6	17,748.7	18,175.2	18,620.2	62% ▲	2%
Wages and salaries of staff	2,764.0	2,846.4	2,949.8	3,112.9	3,240.8	3,270.7	3,400.9	3,354.0	11% ▼	-1%
Imputed value of unpaid labour	25.0	51.9	60.3	28.1	28.5	44.3	55.1	32.1	0% ▼	-42%
Energy costs	657.9	607.8	704.3	702.7	753.5	788.1	893.1	760.5	3% ▼	-15%
Other operational costs	4,777.6	4,470.4	4,860.0	4,834.8	4,807.4	4,393.3	4,723.2	4,874.0	16% ▲	3%
<b>Total production costs</b>	<b>23,145.0</b>	<b>22,145.8</b>	<b>24,293.0</b>	<b>25,408.1</b>	<b>26,379.7</b>	<b>26,245.1</b>	<b>27,247.6</b>	<b>27,640.8</b>	<b>91% ▲</b>	<b>1%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	591.3	394.8	469.1	473.3	464.1	627.3	397.7	393.5	1% ▼	-1%
Financial costs, net	351.8	333.1	378.3	290.2	246.5	265.0	257.0	88.3	0% ▼	-66%
Extraordinary costs, net	18.3	17.3	17.0	2.3	7.2	63.5	40.2	33.3	0% ▼	-17%
<b>Capital Value (million €)</b>										
Total value of assets	11,912.4	11,937.9	13,617.0	13,645.5	14,915.4	14,905.4	15,592.1	15,148.2	50% ▼	-3%
Net Investments	781.5	493.3	705.6	821.4	576.1	634.0	725.0	608.5	2% ▼	-16%
Debt	7,177.4	6,746.0	7,233.2	7,007.1	7,309.0	8,962.4	8,051.8	7,492.2	25% ▼	-7%
<b>Economic performance (million €)</b>										
Gross Value Added	6,518.2	5,334.9	6,076.2	5,682.9	5,870.8	6,542.8	6,844.6	5,915.8	20% ▼	-14%
Operating Cash Flow	3,789.9	2,493.7	3,124.8	2,619.2	2,691.0	3,300.3	3,448.0	2,614.2	9% ▼	-24%
Earning before interest and tax	1,993.6	851.7	1,520.7	878.8	1,022.1	1,395.7	1,907.9	1,437.6	5% ▼	-25%
Net Profit	1,791.4	641.1	1,214.4	699.5	853.1	1,227.4	1,738.8	1,367.5	5% ▼	-21%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity	57.4	48.1	54.5	49.3	51.6	57.3	59.3	52.5		
Capital productivity (%)	54.7	44.7	44.6	41.6	39.4	43.9	43.9	39.1		
GVA margin	24.2	21.7	22.2	20.3	20.2	22.1	22.3	19.6		
EBIT margin	14.1	10.1	11.4	9.3	9.3	11.2	11.2	8.6		
Net profit margin	7.4	3.5	5.5	3.1	3.5	4.7	6.2	4.8		
Return on Investment (%)	15.0	5.4	8.9	5.1	5.7	8.2	11.2	9.0		
Future Expectation Indicator (%)	1.6	0.8	1.7	2.6	0.8	0.0	2.1	1.4		

<sup>6</sup> DCF data on subsidies include only direct income subsidies (i.e. subsidies which have a direct impact on the income), for example subsidies on products (subsidies payable to producers in respect of their production) and import subsidies. Investment subsidies are excluded. More information is available in the 2012 final report of the Planning Group on Economic Issues (PGECON), available at [http://datacollection.jrc.ec.europa.eu/documents/10213/488770/PGECON\\_2012\\_final\\_report.pdf?version=1.0](http://datacollection.jrc.ec.europa.eu/documents/10213/488770/PGECON_2012_final_report.pdf?version=1.0).

The income structure is quite homogeneous among countries. In 2015, the turnover was higher than 94% of the total income in all member states, except Croatia, Lithuania, Romania and Slovenia (their turnover respectively contributed to 66%, 85%, 61%, and 10% of the total income). In Slovenia, other income contributed to 90% of the total income.

According to member states DCF data submissions, total production costs amounted to almost €26.8 and €27.6 billion respectively in 2015 and 2014. This means that 3% less was spent in 2015 to generate a total amount of income 1% lower than 2014. The fact that the decrease in total costs were higher than the decrease in total income has resulted in an increase in all performance indicators in 2015. Purchase of fish and other raw material for production is the dominant cost item, accounting for 64-69% of the total costs (55-62% of total income) during the period 2008-2015 (Table 2.3.2). Most of the remaining costs consist of other operational costs (13-18% of income) and labour costs (10-12% of income), while energy expenses represent only 2-3% of the total income.

For most member states the production costs ranged from 80% to 100% of the total income in 2015 (Table 2.3.1). However, for some countries the cost/income ratio was quite far from the average (11% in Slovenia and 18% in Romania).

**Table 2.3.2: Cost structure of the EU fish processing industry sector by country, 2015**

	Tot. Costs (million €)	Tot. costs/tot. Income (%)	Cost items as a share of total costs (%)				
			Raw material	Wages and salaries	Other operational costs	Energy costs	Unpaid labour
<b>Belgium</b>	576	80%	79%	11%	0%	10%	0%
<b>Bulgaria</b>	53	59%	72%	13%	12%	3%	0%
<b>Croatia</b>	76	67%	56%	21%	19%	5%	0%
<b>Cyprus</b>	3	93%	91%	5%	1%	3%	0%
<b>Denmark</b>	2,411	94%	67%	8%	23%	2%	0%
<b>Estonia</b>	167	94%	69%	14%	15%	2%	0%
<b>Finland</b>	289	96%	76%	10%	12%	1%	1%
<b>France</b>	5,265	94%	45%	17%	32%	6%	0%
<b>Germany</b>	2,000	95%	62%	12%	24%	2%	0%
<b>Greece</b>	216	90%	73%	12%	9%	6%	1%
<b>Ireland</b>	735	97%	71%	13%	14%	2%	0%
<b>Italy</b>	2,165	96%	74%	9%	12%	4%	1%
<b>Latvia</b>	161	90%	60%	17%	20%	4%	0%
<b>Lithuania</b>	471	90%	72%	8%	18%	2%	0%
<b>Malta</b>	24	104%	86%	10%	4%	1%	0%
<b>Netherlands*</b>	814	95%	73%	15%	11%	1%	0%
<b>Poland</b>	2,372	94%	75%	9%	15%	1%	0%
<b>Portugal</b>	862	72%	84%	9%	2%	4%	0%
<b>Romania</b>	4	18%	45%	45%	3%	6%	1%
<b>Slovenia</b>	28	11%	31%	18%	46%	4%	0%
<b>Spain</b>	4,537	91%	76%	10%	12%	2%	0%
<b>Sweden</b>	508	98%	61%	15%	23%	1%	0%
<b>United Kingdom</b>	4,716	88%	74%	14%	11%	1%	0%
<b>EU Total</b>	<b>28,455</b>	<b>93%</b>	<b>68%</b>	<b>12%</b>	<b>17%</b>	<b>3%</b>	<b>0%</b>

Note: The percentage value reported for Slovenia refers to total production cost as a share of turnover (instead of income) because costs reported by Slovenia are attributable to fish processing only while total income includes also income from processing activities other than fish processing.

Along with the income structure, Table 2.3.2 shows the structure of costs of the fish processing industry by country and gives an overview of the contribution of the main cost items to the total production costs. As shown in the table, the cost structure is quite similar across member states in 2015. However, for France, Croatia and Slovenia the shares are relatively far from the average. According to the table, purchase of fish and other raw materials for production is by far the most important component of the total costs for most MS (70% of the total in average), followed by other operational costs (15%) and labour costs (13). Energy costs play a minor role (3% of the total in average).

Table 2.3.3 gives an overview by country of the contribution of the turnover generated by the firms undertaking fish processing not as a main activity to the total turnover generated by fish processing (turnover generated by the firms processing fish as their main activity plus the turnover generated by the firms processing fish not as their main activity).

**Table 2.3.3: Percentage of turnover of enterprises with fish processing not as main activity, 2008-2015**

Country	2008	2009	2010	2011	2012	2013	2014	2015	% of total turnover	Δ to 2014
Belgium										
Bulgaria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%
Croatia				5.5	9.3	11.5	18.6	20.3	21%	9%
Cyprus	9.8	8.7	7.6	8.1	5.7	3.1	3.3	2.8	46%	-15%
Denmark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%
Estonia	1.1	1.2	1.1	2.0	4.7	1.7	1.2	0.6	0%	-54%
Finland	10.3	128.8	147.1	49.9	49.9	93.8	93.8	102.6	26%	9%
France		694.2	694.2				520.0	1014.0	16%	95%
Germany		30.0		50.0						
Greece					1.1	0.7	0.7	0.7	0%	2%
Ireland		52.9	27.5	11.5	22.2	50.5	52.6	80.6	11%	53%
Italy	252.7	191.4	228.1	198.4	222.3	383.8	501.8	550.6	20%	10%
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%
Lithuania	0.0	0.0	0.0	3.7	3.1	5.3	7.2	9.7	2%	35%
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	50%
Netherlands		2338.3	2670.9	2879.8	2548.3	3172.3	2959.6		78%	
Poland	52.2	62.6	64.8	72.5	82.1	100.5	93.4	70.3	3%	-25%
Portugal	194.9		134.9					50.8	4%	
Romania	93.4	103.8	6.9	2.9	4.3		3.6	0.5	3%	-86%
Slovenia	14.4	12.9	16.0	9.8	8.0	7.0	6.8	7.0	21%	2%
Spain	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%
Sweden	73.4	80.1	96.6	97.1	111.9	238.2	237.7	223.3	30%	-6%
United Kingdom	622.3	506.5	511.3	566.7	654.5				11%	
EU Total	1327.4	4211.2	4607.1	3958.0	3727.7	4068.4	4500.3	2133.9	16%	-53%

For the countries for which data are available (data for Denmark are not presented for confidentiality reasons), the analysis reveals a mixed picture. For some countries, for example The Netherlands, Cyprus and Sweden, firms processing fish not as a main activity make a large contribution to the overall turnover of the industry coming from fish processing. For others, such

as Lithuania, Ireland and Estonia, total turnover is almost entirely generated by firms undertaking fish processing as a main activity. According to the table, there was a decrease in 2015 but the decrease can be explained by missing data from the Netherlands, decreased turnover in Estonia and Romania (from very low values) and Poland.

The sector accounted for approximately €6.74 billion of Gross Value Added (GVA) in 2015 (excluding Netherlands) (Table 2.3.4). This shows the importance of the fish processing industry in Europe compared to the fishing fleet (€3.49 billion of GVA<sup>7</sup>).

The amount of operating cash flow generated by the EU fish processing sector in 2015 was €3.44 billion (excluding Netherlands). Earnings before interest and tax and Net Profit were respectively €2.27 billion and €2.20 billion (excluding Spain, Portugal and Netherlands).

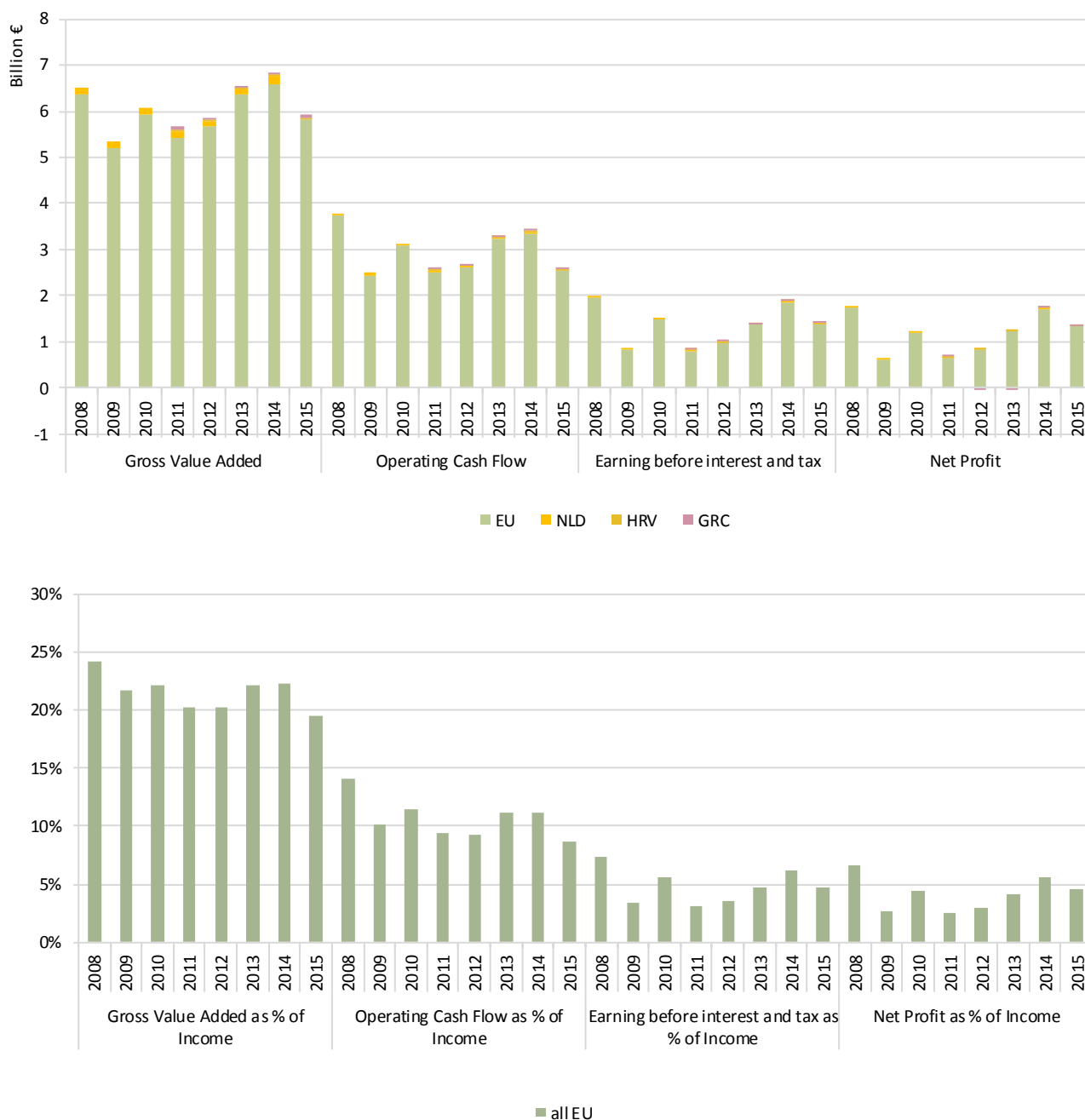
DCF data suggest a clear improvement of the economic performance from 2014 to 2015. In 2015, GVA and Operating Cash Flow increased by 5.8% (excluding Netherlands), whereas Earnings before interest and tax and Net Profit improved by 43.86% and 56.7% respectively (excluding Spain, Portugal and Netherlands). With respect to 2008, GVA increased by 3.85%, whereas Operating Cash Flow decreased by 10% (excluding Croatia, Greece, Romania and Netherlands).

**Table 2.3.4: Economic performance of the EU fish processing industry sector by country, 2015**

Country	Gross Value Added (million €)	% of EU total	Operating Cash Flow (million €)	% of EU total	Earning before int. and tax (million €)	% of EU total	Net Profit (million €)	% of EU total
Belgium	207.1	3.4%	147.7	5.6%	135.3	9.3%	133.1	9.5%
Bulgaria	41.1	0.7%	37.2	1.4%	31.2	2.1%	30.4	2.2%
Croatia	50.4	0.8%	38.5	1.4%	33.7	2.3%	33.0	2.4%
Cyprus	0.4	0.0%	0.3	0.0%	0.0	0.0%	-0.1	0.0%
Denmark	356.7	5.9%	156.2	5.9%	124.1	8.5%	125.6	9.0%
Estonia	34.7	0.6%	11.6	0.4%	6.0	0.4%	5.4	0.4%
Finland	44.4	0.7%	12.7	0.5%	6.8	0.5%	5.7	0.4%
France	1,200.3	19.7%	309.1	11.6%	273.8	18.7%	270.8	19.4%
Germany	346.7	5.7%	107.4	4.0%	70.0	4.8%	61.9	4.4%
Greece	51.2	0.8%	24.9	0.9%	19.0	1.3%	6.7	0.5%
Ireland	120.6	2.0%	25.8	1.0%	10.2	0.7%	7.4	0.5%
Italy	283.5	4.7%	83.9	3.2%	30.5	2.1%	4.4	0.3%
Latvia	42.0	0.7%	18.4	0.7%	9.4	0.6%	6.5	0.5%
Lithuania	87.3	1.4%	50.7	1.9%	40.6	2.8%	37.5	2.7%
Malta	1.2	0.0%	-1.0	0.0%	-1.3	-0.1%	-1.3	-0.1%
Netherlands*	162.2	2.7%	41.4	1.6%	24.1	1.6%	28.8	2.1%
Poland	365.1	6.0%	161.2	6.1%	106.6	7.3%	123.8	8.9%
Portugal	414.4	6.8%	334.9	12.6%				
Romania	21.7	0.4%	19.8	0.7%	19.4	1.3%	19.1	1.4%
Slovenia	2.5	0.0%	-2.3	-0.1%	-3.3	-0.2%	-3.5	-0.3%
Spain	877.3	14.4%	448.0	16.9%				
Sweden	83.8	1.4%	9.3	0.4%	-0.4	0.0%	-5.9	-0.4%
United Kingdom	1,283.3	21.1%	619.8	23.3%	526.1	36.0%	507.0	36.3%
<b>EU Total</b>	<b>6,077.9</b>	<b>100%</b>	<b>2,655.5</b>	<b>100%</b>	<b>1,461.7</b>	<b>100%</b>	<b>1,396.4</b>	<b>100%</b>

<sup>7</sup> Estimate based on DCF data

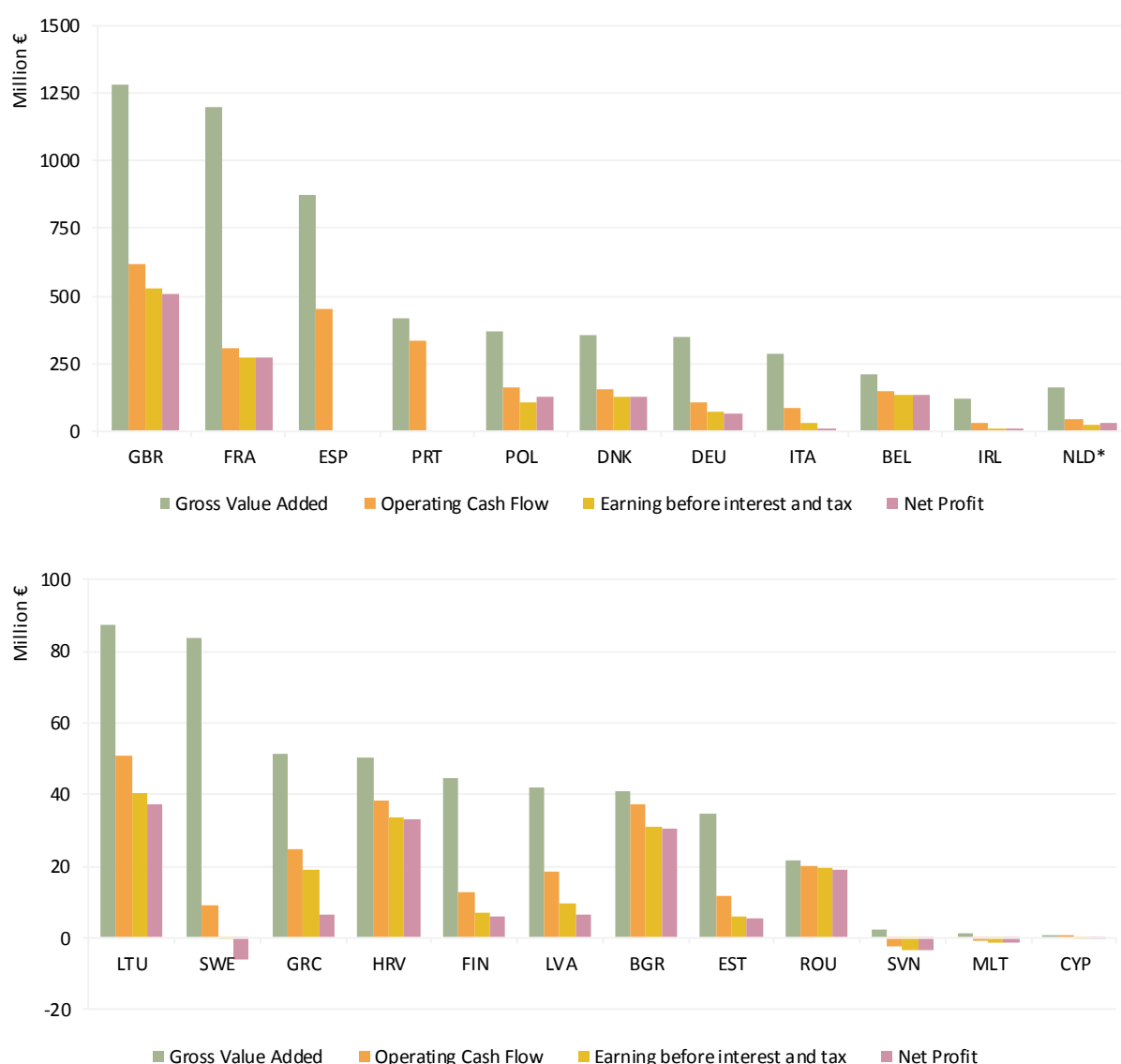
Figure 2.3.1 presents trends in performance indicators from 2008 to 2015. In general, economic performance of EU fish processing industry showed a declining trend from 2008 to 2011 and recovered to steadily increasing from 2011 to 2015. The period of decline was related to the economic crisis after 2008. For example, from 2008 to 2011 net profit decreased by 63% from €1.7 billion to €0.6 billion following by constant increase to 2015 and reached record high net profit €2.1 billion. Similar trends were observed in other indicators as GVA, Operating Cash Flow and Earnings before interest and tax.



**Figure 2.3.1: Economic performance of the EU fish processing industry sector, in absolute terms (top figure) and in relation to income (bottom figure), 2015**

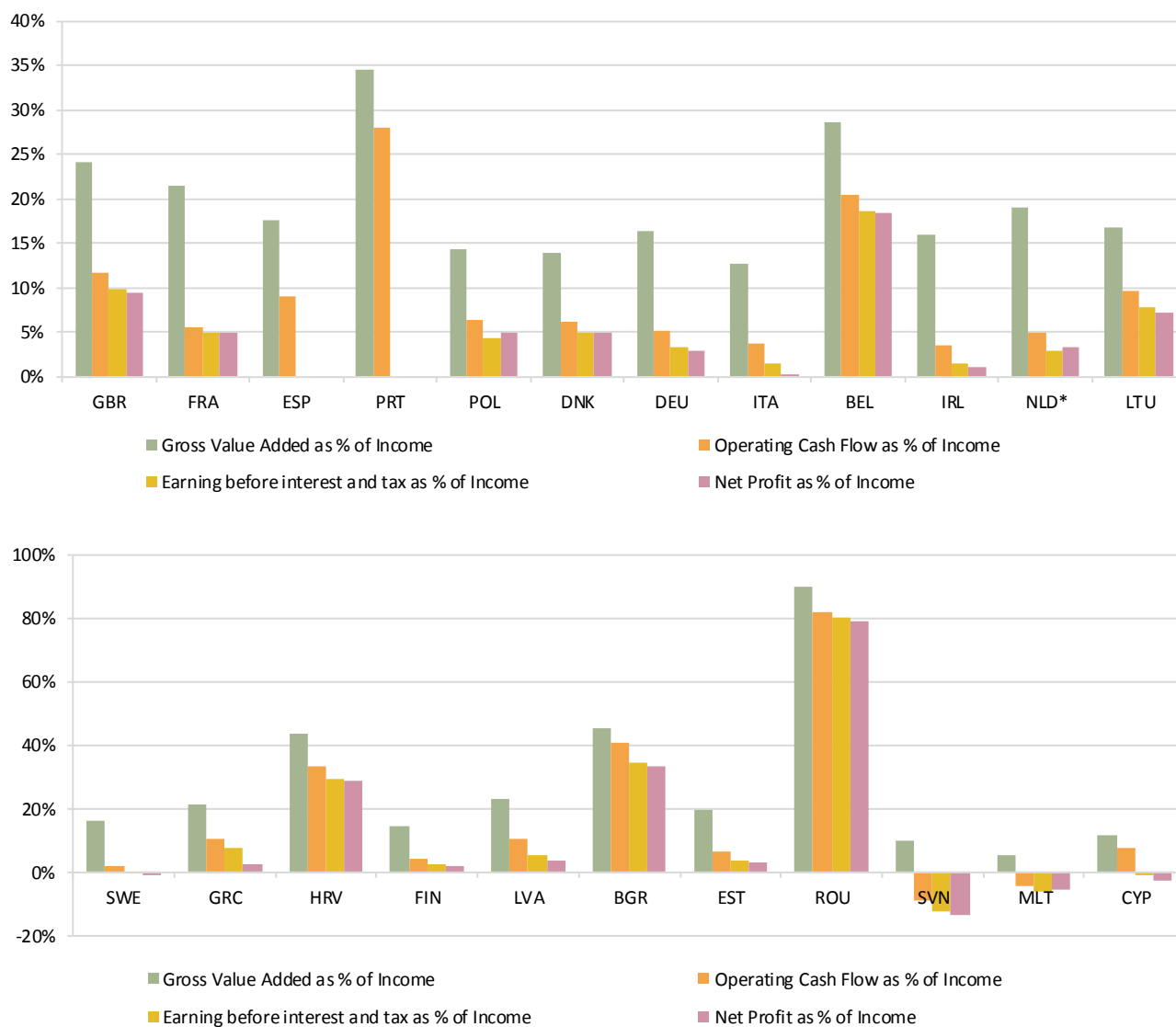
Variation of the net profit margin during 2008-2015 was in correlation with total income. As it can be seen in Figure 2.3.2 the net profit margin (Net profit as proportion of income) in 2008 was 7% and till 2011 it decreased to the lowest value and accounted for 2%. From, 2011 the net profit margin constantly increased and in 2015 reached 7%. However, compare to other fishery sectors such profitability level is not considered as sufficient, for instance net profit margin of EU fishing fleet was 11% in 2015, whereas according to 2014 data (2015 is currently not available) EU aquaculture net profit margin was approximately 19%.

Analysis of DCF data at national level reveals a very different economic performance across Member States (Table 2.3.4) in terms of generated net profit. However, in 2015 almost all MS generated net profit, only for Sweden, Slovenia, Malta and Cyprus net loss was observed. The highest net profit was achieved in France €1,100 million, followed by UK €507 million and Belgium €133 million (net profit was not available for Spain, Portugal and Netherlands). French fish processing industry generated the highest GVA in absolute terms in 2015 (30.1% of the EU total), followed by the UK (19.0%) and Spain (13.0%). Net profit margin was very different among MS. In 2015, relatively high net profit margin was achieved in Bulgaria (34%), Croatia (29%) and Belgium (18%).



**Figure 2.3.2: Economic performance of the EU fish processing industry sector by country, 2015**





**Figure 2.3.3: Economic performance of the EU fish processing industry sector by country (indicators in relation to income), 2015**

## **2.4 Trends and drivers for change, outlook for the industry**

In the following chapter we analyse some of the main drivers for change for the EU fish processing industry. This will be especially the dependency on raw material and the increasing demand for certified products. In two subsections we give, firstly, an overview on the EFF, the past structural fund for the fishing and aquaculture sector, with some analysis on possible effects on the industry. Secondly, we give an overview on the effects of tariffs and possible effects on the EU processing sector.

### **General aspects**

#### **1) Dependency on raw materials and imports**

As already stated in the previous report (STECF 14-21, p. 30) one of the main drivers for the industry is the high percentage of the costs of raw material compared to the overall costs. The sector is highly dependent on imports as landings of European vessels cover only approximately 40% of the total raw material for the EU fish processing industry. This leaves the companies very vulnerable to changes and developments in the world markets. Several countries report an increase in costs for raw material (e.g. Germany and Latvia) and although the overall situation remains positive for the sector it may mean increasing pressure for the industry to stay profitable.

The effects of the improvement of the stock status of many stocks in EU waters are so far not really visible with respect to influences on availability of raw material and price developments. In some countries parts of the industry are dependent totally on EU fish stocks (e.g. fish meal and –oil industry in Denmark). As aquaculture production is not increasing in the EU there is no improvement in availability of fish for the industry. However, the latest information on the EU aquaculture production seems to indicate that there will be a growing supply (e.g. see Danish NC).

#### **2) Effects of regulation for the fishing and fish processing sector**

Especially small and medium sized companies are dependent on local or regional fish supply. Stricter regulation to achieve MSY in Northern waters and the increasing pressure to reduce fishing effort in the Mediterranean and Black Sea may reduce the availability of raw material for parts of the sector. In the Northern waters many stocks increase and, therefore, landings may increase over the next years. In the Mediterranean and Black Sea, however, the stock situation is very negative and it is to expect that landings will decrease (e.g. in Croatia). This influences or will influence the ability of some of the fish processing companies to purchase raw material at the local or regional level and may increase the pressure on outside markets with respective price developments.

For the fish processing industry also stricter direct regulation of the sector, e.g. regarding traceability, food safety or environmental effects, influences the competitiveness on the world market (e.g. Belgium reported stricter norms, Poland the necessity to implement certain regulation). Non-EU member states are facing fewer regulations, and are therefore more competitive compared to fish processors in the EU (e.g. reported by the Netherlands).

#### **3) Increased consumer demand for certified products**

Current research shows that there is an on-going increase in demand for certified fish products within the EU (Feucht et al., 2018). Certification is, therefore, an important factor for the fish processing industry. Nearly all countries within the EU report an increasing pressure on the fish processing industry to provide more certified products to the retail sector.

Certifications affect the fish processing industry in two ways. Certification of industrial processes has been undertaken since at least two decades ago when the ISO certifications started to be implemented. Companies have engaged in this certification and the forthcoming extensions covering also environmental and CSR issues. Certification of raw materials is a totally different issue since it is not the responsibility of the processors.

Retail chains are increasing the demand of certified fish products, whether processed or not. Although differences with regard to retailers' requirements vary across Member States, standards,

whether for quality or other aspects such as environment or ethics, are common in the B2B relations on EU food markets.

From the point of view of the value chain dynamics, processors will supply certified products to their customers only at their request. In general, beyond backward integrated companies, processors do not get involved in producers' decisions on certifications.

In general, processors source certified fish when customers request this. When a raw material with a given certification is not available in the domestic market it is faster and more efficient to source it in the international market than requesting producers to get into a certification process.

Standards and certifications may result in economic benefits and assurances for the companies operating with such products. Beyond potential premium prices, if any, sustainability certifications, for instance, assure continuity in supply, prevent criticism from environmental groups and improve company's public perceptions. Certifications of origin are not only related to quality, but also to the company's commitment to the community. However, despite the benefits for processors and traders, the decision of certifying raw materials in the fishing industry relays in the hands of fishermen and farmers.

Beyond the potential benefits for large processors suggested in the previous point, SME's can also take profit from different certification categories such as organic, geographical origin or specific quality standards. Small processors, in general, are less likely to have full access to the international markets and their dependence on domestic fish is stronger. In order to enjoy the potential benefits of processing certified products these companies have to secure their access to certified local fish on a regular basis. This is achieved in some cases by setting strategic alliances with producers and participating in the certification processes specifying standards or even participating in the costs of certification. Certifications also become a significant element of differentiation for the products delivered by such companies and alliances. The synergies from such cooperation not only result in economic benefits for the involved companies but also in social improvements for their communities.

An increasing demand for certified products is still identifiable mostly in the Northern part of the EU. However, also in countries around the Mediterranean certification plays an increasing role especially in cases of companies, which export fish to e.g. Germany. The economic crisis led to a decrease in purchasing power in many countries and consumers in Greece or Portugal moved from high-valued to low-valued products. Additionally, in many countries there has been a shift to processed products compared to fresh fish in the past. In Spain the fish processing industry increased their exports to substitute for lower domestic demand. In other countries around the Mediterranean Sea countries increase also exports but also exported more processed products.

#### **4) Exchange rate**

For many countries, especially the ones not member of the Euro zone, report that the exchange rate between their currency and the Euro is still a big driver for the performance of the industry. This is especially reported by Poland (Polish Zloty to the Euro), Sweden (Swedish krona to the Euro), and the UK (British Pound to the Euro). The availability and prices of raw material is influenced by the exchange rate as companies may decide to source their fish somewhere else if prices increase due to an unfavourable exchange rate.

#### **5) Economic crisis**

In many countries of the European Union the fish processing sector suffered from the economic crisis in 2008. Many MS reported a strong decrease in income and profits. Then from 2010 onwards the situation improved in many countries compared to the previous years and in fact the overall net profit generated by the European fish processing industry increased from €0.6 billion in 2011 to €2.1 billion in 2015. This seems to indicate that the companies in general overcome the economic crisis.

However, especially in the southern European countries Cyprus, Greece, Italy, Portugal and Spain the economic crises, now especially the ongoing debt crises, led to decreasing purchasing power and, therefore, in a change in consumer behaviour. Consumers buy e.g. more processed products instead of high value fresh fish. For many companies this meant a decrease in total income and deterioration in economic performance (e.g. Cyprus, Greece).

There are, however, also positive signs as, for example, in Greece an increasing demand from the tourist sector is expected due to a steady increase in tourists.

## **6) Outsourcing to other MS**

Several countries still reported ongoing outsourcing of activities to other member states (e.g. Germany with investments in Poland) which leads to increasing investments there (also e.g. Baltic States). For these member states, e.g. in the case of Poland, this means that they increased their exports substantially. For Germany, however, this may be negative as there may be not enough net investment to modernize the industry and the facilities may be outdated in the future.

Other countries, like Bulgaria, report also advantages of their processing industry due to relatively low wages. However, it may not be a longer term effects as wages increase to keep the workforce or as minimum wages increase.

## **7) Market power of retailers and supermarket chains**

Several countries report changes in the value chain of seafood products (e.g. Spain) with an increasing competition. There is a growing concentration of distribution in large retailers and the big retailers accumulate a greater bargain power with the previous agents of the chain of value. the fish processors. Large retail chains demand large volumes of product and boost white brands. In addition, imports of seafood products grow. Large retailers often buy the product directly at source, without any other intermediary. All of this means that fish processing companies need to produce large volumes and reduce their average production costs in order to be competitive. Small processing companies have problems competing in a mass market with an undifferentiated product. Therefore, there is a growing trend in this segment towards diversification, product differentiation, the commitment to own brands, the search for alternative distribution channels, shortening them and product innovation with a higher level of processing. In recent years, there are an increasing number of collaborations between producers and processors. There is also a tendency for fish and aquaculture producers to integrate fish processing among their tasks as a strategy to obtain a greater proportion of the value added to the final product.

Several countries report that the change in consumer behaviour due to the economic crisis increased the market power of the large supermarket chains (e.g. Romania) as consumers buy more fish in those supermarkets.

## **8) Russian embargo**

The embargo of Russia for European fish products had (commenting on 2015) and has still substantial negative influences especially for the countries around the Eastern Baltic Sea. Estonia, Finland and Lithuania report a substantial reduction in exports to Russia. However, also other countries like Italy or the UK are facing negative impacts of the ban e.g. negative price effects for pelagic species for UK and a decrease of exports of fish products toward Russia for Italy.

## **9) Outlook**

The fish processing is under price pressure from wholesalers, as well as increasing prices for raw material. There is so far no clear detectable effect of the improvement in fish stocks within European waters. An increasing supply may have a price effect on the industry on one side, on the other side the demand for certified products increases and more fisheries seek certification. This is costly and, therefore, prices for raw material from certified fisheries may further increase. As the wholesalers demand more and more certified fish from the industry, the industry needs to source more certified fish. Therefore, change in consumer behaviour, the demand of more and more certified products, may put further pressure on the industry in the future.

Another main factor of the future performance of the industry are tariffs (see chapter XX). In case the quota under ATGs is not large enough the industry may have to import the raw material at full duty. This would have negative effects on their economic performance.

For the processing industry in several countries Brexit plays a significant role for the processing industry. In 2015, Germany, for example, has exported over 51,000 tonnes to the UK while importing nearly 25,000 tonnes (Doering et al., 2017). The Exports were processed products while imports comprised of raw material. Another example: More than 30% of Irish fishing quotas are caught in English waters and the UK is one of Ireland's main export (14%) destinations valued at

€78 million. Conversely Ireland's imports an estimated €186m of seafood for direct retail and raw material, particularly salmon and whitefish. It will depend on the trade relations after the Brexit if there will be substantial changes in the trade balance between the UK and the EU member states. Also Lithuania and Sweden report that Brexit may lead to substantial changes in the availability of raw material and effects trade relations with the UK.

There will be efforts to assess the flow of raw material to and within the processing industry over the next years. With some basic data the link between the fisheries and the fish processing sector could be drawn and the dependency of the European processing sector on landings from EU waters can be assessed.

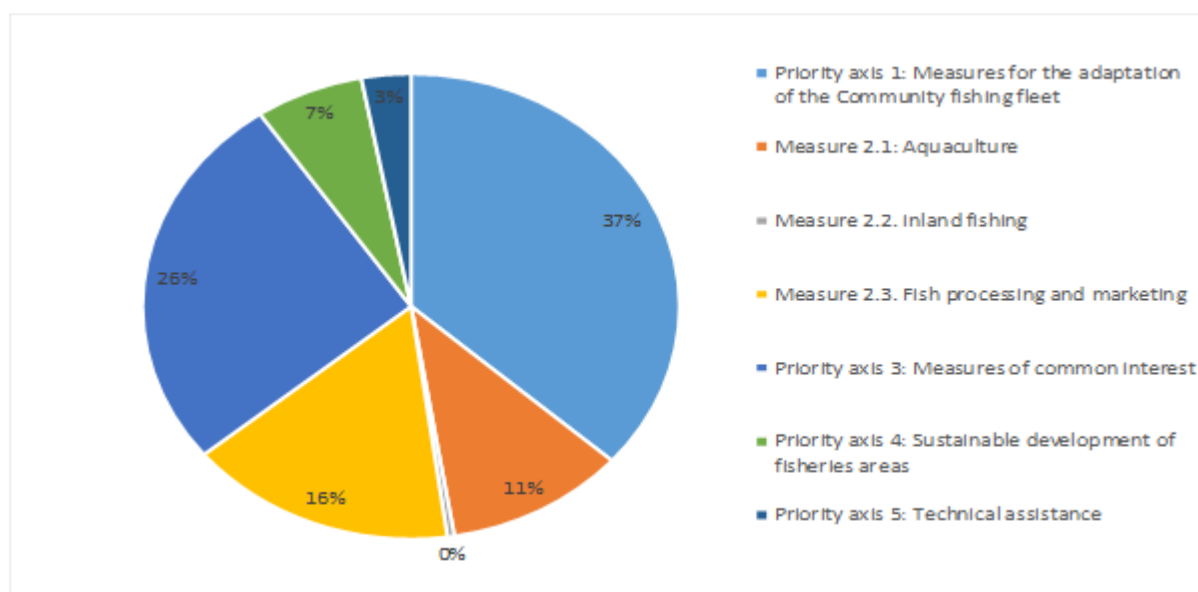
## Specific aspects

### 1) Assessing the impact of the E(M)FF on the fish processing industry

The Operational Program (OP) "Fisheries and Maritime 2014 - 2020" for support from the European Maritime and Fisheries Fund (EMFF) covers different topics which directly concern the fish processing industry or the development of new processing activities in the fishing and aquaculture industries. Funding is intended to improve the livelihood of fishing communities by increasing employment diversifying activities and creating value added products. The development and empowerment of local processing industries provides a potential option for securing such goals.

The previous structural fund, the European Fisheries Fund (EFF 2007-2013), included a special funding scheme for support of the fish processing industry - Measure 2.3. Fish processing and marketing. Many projects of the EFF run several years after the termination of the fund. The following figures and tables include data up to the 31st of May 2015 that the member states reported to DG Mare. At the end of the chapter detailed information on some MS are listed which include more recent data on the EFF funding.

Overall the fish processing sector received 16% of the total budget.



**Figure 2.4.1: Distribution of EFF funding between the main Priorities and Measures**

For the MS the fish processing industry is of different importance and that is reflected in the percentage the MS spent under the EFF for Measure 2.3.

Austria and Slovakia have the highest and the third highest percentage of EFF funding for the fish processing industry. These countries have no fishing fleet and there is no or very little investments for the infrastructure for inland fisheries. Therefore, the fish processing sector seems to form a relative important part.

**Table 2.4.1: Percentage of EFF funding for Measure 2.3**

Country	Measure 2.3. Fish processing and marketing	Total support (EFF + national contribution)	Share devoted to fish processing and marketing
AT	4176360	10082902	41.4
BE	488141	38997846	1.3
BG	3104142	35739167	8.7
CY	2156975	34673610	6.2
CZ	2469476	27238541	9.1
DE	24510484	140873948	17.4
DK	11655927	189048457	6.2
EE	13976932	94481127	14.8
ES	387791428	1900833470	20.4
FI	18410757	77992170	23.6
FR	23153923	484453086	4.8
GR	17523955	235395403	7.4
HR	0	0	0.0
HU	1967607	36411544	5.4
IE	0	84695324	0.0
IT	86327672	460194856	18.8
LT	18834450	55104507	34.2
LV	30273150	147542932	20.5
MT	563657	8178139	6.9
NL	1656145	92593015	1.8
PL	99245900	695016690	14.3
PT	63369322	209270118	30.3
RO	10148265	95291733	10.6
SE	20512448	135104892	15.2
SI	3999328	22578206	17.7
SK	6717983	20663603	32.5
UK	37523895	172964209	21.7
Total	890558323	5505419496	16.2

From the countries with a fishing sector Lithuania and Portugal had the highest percentage of funding with 34.2% and 30.3%. Also Finland, the UK, Latvia and Spain with 23.6%, 21.7%, 20.5% and 20.4% had paid a substantial part of their EFF for the fish processing sector.

The following Table 2.4.2 lists in the first two columns the EFF funding with direct aid and national contribution. The EU structural funds have different rules regarding the percentage of funding for projects. The following column lists the percentage of EFF contribution by MS. This varies between 39.3% in Spain and 75% for e.g. Bulgaria.

The last two columns include the eligible expenditures (including the own contribution by the recipients of the funding) and the percentage of the total funding (EFF and national). Here the variety is quite substantial from 20% in Belgium to 100% in e.g. Bulgaria (excluding countries with no EFF funding).

**Table 2.4.2: Total support for 2.3 from EFF and national budget**

Country	EFF aid paid to beneficiaries (€)	National contribution (€)	% EFF contribution	Total support	Eligible expenditure certified and actually paid by beneficiaries (€)	% expenditure supported
AT	2088645	2087715	50.0%	4176360	13924986	30.0%
BE	244070	244070	50.0%	488141	2443938	20.0%
BG	2328106	776036	75.0%	3104142	3104142	100.0%
CY	1078488	1078488	50.0%	2156975	5399319	39.9%
CZ	1852107	617370	75.0%	2469476	2469476	100.0%
DE	13958094	10552390	56.9%	24510484	95084779	25.8%
DK	5053624	6602303	43.4%	11655927	37421591	31.1%
EE	10482698	3494234	75.0%	13976932	32763078	42.7%
ES	152258188	235533239	39.3%	387791428	552141749	70.2%
FI	7931685	10479073	43.1%	18410757	61645028	29.9%
FR	10131691	13022232	43.8%	23153923	69368387	33.4%
GR	7507509	10016447	42.8%	17523955	23145952	75.7%
HR	0	0	0.0%	0	0	0.0%
HU	1462833	504775	74.3%	1967607	3322255	59.2%
IE	0	0	0.0%	0	0	0.0%
IT	54826104	31501568	63.5%	86327672	86327672	100.0%
LT	14125837	4708612	75.0%	18834450	37744260	49.9%
LV	22704862	7568288	75.0%	30273150	51016047	59.3%
MT	422743	140914	75.0%	563657	1455062	38.7%
NL	931206	724939	56.2%	1656145	5301296	31.2%
PL	74434425	24811475	75.0%	99245900	180435472	55.0%
PT	44742214	18627108	70.6%	63369322	133905920	47.3%
RO	7611199	2537066	75.0%	10148265	10148265	100.0%
SE	7673590	12838858	37.4%	20512448	49050553	41.8%
SI	2999496	999832	75.0%	3999328	6665547	60.0%
SK	2848835	3869148	42.4%	6717983	7890277	85.1%
UK	20592877	16931019	54.9%	37523895	107701461	34.8%
Total	470291125	420267199	52.8%	890558323	1579876511	56.4%

Table 2.4.3 shows that the financial support via the EFF formed a substantial part of turnover (TO) and turnover+other income (TOI). For Cyprus the EFF formed 26% of TO and still 24% of TOI. For many countries funding is only a very small part of TO and TOI. Belgium, France, Hungary, Ireland, and The Netherlands are at 0 or very near to 0%.

Supporting the fish processing industry, in special small and medium scale companies, not only secures demand for local fishermen and farmers, but also contributes to implement standards in food quality and safety. Increasing added value of fish products also results in improved incomes along the value chain. Further, successful examples of the application of EU funding on integrating processing and marketing into the activities of fishermen and farmers have shown important improvements in revenues and incomes of primary producers.

Current available information does not allow for an exhaustive analysis of the impact of the structural funding dedicated to fish processing neither on a social or economic scale. Since the funds are granted according to the specific proposal and certain criteria of eligibility, an analysis of such relation should be undertaken at the company level. According to the particular application of

funds the variables of interest may be different across companies, and generalist methodologies of analysis may not be adequate for all the observed companies. The differences across companies and implemented projects may compensate the benefits of successful histories with the costs and losses of those failed when aggregating data for macroeconomic analyses. As a consequence, the impact of the structural funds resulting from analysis of this kind may result neutral or negative for an aggregated industry when it could be significantly positive if the appropriate segment is selected. The fact that it is impossible to isolate the granted companies from the rest in the available data of industry performance increases the likelihood of biased results. Further, the economic and social impact of the structural funds does not only depend on the nature of the funded project or the company's managerial ability but also on external factors such as the economic cycle, political framework or market dynamics.

**Table 2.4.3: EFF per average of selected variables**

Country	FTE	Number of companies	Employment	Turnover	Turnover + Other income
BE	354	8564	333	0%	0%
BG	1905	68981	1811	5%	5%
CY	42156	517674	40443	26%	24%
DE	3529	93255	3375	1%	1%
DK	3486	104226	3046	1%	1%
ES	21579	694759	20625	9%	9%
EE	7662	259633	7450	11%	11%
FI	23354	129047	19832	7%	7%
FR	1493	75502	1455	0%	0%
UK	1904	86361	1759	1%	1%
GR	8642	118672	7491	8%	8%
HR	0	0	0	0%	0%
IE	0	0	0	0%	0%
IT	17359	173175	14691	3%	3%
LT	5721	579522	4152	7%	6%
LV	6038	298748	5522	15%	15%
MT	9368	75154	8289	2%	2%
NL	651	18749	494	0%	0%
PL	7004	531200	6565	6%	6%
PT	9400	350753	9011	6%	6%
RO	11149	685694	11106	5%	5%
SI	14657	296247	13163	13%	2%
SE	11565	93664	9750	4%	4%
Total	7868	248991	7239	3%	3%

Currently, a better ex post evaluation of the impact of EFF subsidies could be achieved if each country had indications with respect to the NACE code of activities linked to beneficiaries under Measure 2.3 and in EMFF under Mis.5.69. Using aggregated data at EU level, it is not possible to estimate an indicator that can provide indications directly related to the fish processing industry. It would be interesting to analyze the share of the EFF expenditure for each employee, or to link the propensity of the fish processing sector to future investments, compared to what it received from the EFF or the EMFF. Also check whether the processing companies that received the EFF and EMFF grants have been more performing in terms of profitability. Last but not least, it is an important indicator for the estimation of social data: all EFF and EMFF Measures reward beneficiary



organizations that hire new employees and a percentage of women. Screening could be carried out starting from the EMFF Operational Programs and verifying each MS who has included among the beneficiaries of the Measures to support the fish processing sector. In addition, for each measure the MS has declared the reward evaluation criteria (for example new jobs, increase female employment, etc.).

Despite the difficulties for an overall analysis, it is possible to estimate the performance of a given action funded with structural funds at the case study level. The SUCCESS project ([www.success-h2020.eu](http://www.success-h2020.eu)) covered different cases, which included companies and projects which have received structural funds for processing and marketing activities as examples of successful technical improvements and value added experiences. The case studies included processing companies and primary producers which have integrated processing into their activities. In the Spanish shellfish processing industry, the analysed granted companies had achieved a significant level of differentiation with regard their competitors by investing in new processing and preservation technologies. Improved processing, packaging and labelling techniques improved market position and final price of high quality processed scallops from the local fishery contributing to an improvement in fishermen's incomes. Case studies in Italy illustrate integration of processing in primary producer companies. In this case, producers' incomes were improved by increasing final product price and accessing new markets in other Member States.

During the SUCCESS Project, fish farms and shellfish companies in Italy were investigated. It was noted that the Structural Funds (FIFG, EFF and EMFF) were used among the main financial supports. The analysis allowed to see the evolution and maturity of an organization benefiting from subsidies in the context of the FIFG and the EFF and ultimately the EMFF. The organizations under FIFG funds, were oriented towards improving production techniques, with EFF funds the objective was to improve quality, add value mainly to fresh products, with EMFF (Measure 5.69), investments were made in infrastructure and innovative technologies for processed products. Industry 4.0 is also underway in the primary sector, which implements vertical integration downstream of the value chain. This aspect underlines a dynamic approach of the modern organization of the primary sector, which becomes the actor in the value chain: reacting to B2B, and is aimed at local and national markets, managing to reach the important goal of the international market.

The EMFF was implemented in 2015, the first projects are now funded but there is no experience regarding success or failure of the funding schemes so far. However, there is now some information on the percentage of funds spent under the EFF or will be spent under the EMFF for the fish processing industry. In the following we list some experience in MS.

### ***EFF – Experiences of effects of funding within the EU***

#### **Belgium**

Only €250,000 or 1.2% of the Belgian EFF aid paid to beneficiaries between 2007 and 2015 went to "measure 2.3. Fish processing and marketing". This amount was 68% of EFF aid granted to the operation. Therefore, it is unlikely that the EFF had an impact on the status of fish processing industry.

#### **Bulgaria**

Undoubtedly, EFF has a positive influence on the increase of the interest in this sector. During the period of the Operational Program, under the Measure 2.6. "Investments in processing and marketing of fisheries and aquaculture products", 17 projects were funded - 60% of them were newly built enterprises and 40% were modernized. The expected processing capacity from these 17 enterprises is 9,899 tonnes. The certified funds for these 17 enterprises amounted 9.2% of the whole EFF funding, in particular, €7.7 million (€5.75 million from EFF and €1.95 million from the National budget).

#### **Denmark**

Under the EMFF the Danish processors can apply for support under EMFF priority axis 2.3: "Processing and marketing of fishing and aquaculture products". A total amount of EFF and national support of nearly €26 million has been paid out to support initiatives under this priority. However, according to the account statistics for the fish processing industry in Denmark there has been no

reporting of public funds. An explanation of the missing registration of these funds can be that it is paid to supporting industries and not to enterprises that is registered as having fish processing as their main activity, such as, marketing firms or firm engaged in producing equipment for the processing industry. All in all, the funding corresponds to less than 1% of the industries total income and can therefore be seen as rather insignificant to the Danish processing industry.

#### Greece

According to the final figures of the European Fisheries Fund (EFF) Greek operational programme, 51 operations were funded under Measure 2.3. Fish processing and marketing. Thirty-two operations were related to seafood processing and nine operations were related to seafood trade. The total cost of the 32 seafood processing operations was €31.2 million which approximately equals the amount of the net investment estimated for the sector during the period 2011-2015 in Table 4.10.2. It is evident that during the debt crisis in Greece, investment in the processing sector relied heavily on EU funding.

The public spending for Measure 2.3 previewed at the initial budget of the operational programme was €33.3 million or 12% of the total public spending of the programme. In the final implementation report, the public spending actually allocated to Measure 2.3 amounted for €18 million or 7% of the total public spending. The vast majority of the public spending (€15.6 million) under measure 2.3 was allocated to seafood processing operations; mainly for the construction of new or the extension of existing processing facilities.

The European Maritime and Fisheries Fund (EMFF) Greek operational programme for the period 2014-2020 has launched the first calls for proposals during 2017 and the first projects are expected to be granted funding during 2018. The amount of the public contribution previewed for processing of fisheries and aquaculture products is €50 million or 9.5% of the total public spending.

#### Italy

Analyzing the subsidies provided under the EFF Measure 2.3 in Italy it can be estimated that, in some Regions, about 50% of beneficiaries have been fish and mussel breeders, and cooperatives and consortia of fishermen. These beneficiaries of the primary sector (aquaculture and catch sectors) are investing for a better integration of the value chain, in fact they have the objective of a downstream vertical integration, processing part of the fish they produce or catch.

#### Lithuania

According to data of National Paying Agency under the Ministry of Agriculture, around 25% of total paid EFF aid in Lithuania was appointed for action under measure 2.3 "Fish processing and marketing". During the whole EFF period, under measure 2.3. Fish processing and marketing, €14.12 million was paid to beneficiaries. The last EFF payments for measure 2.3 were made in 2015. During programming period based on the available 2008-2015 data, turnover in fish processing increased by 127% from €194.9 million to €443.1 million, employment in terms of FTE increased by 42% from 2912 FTE to 4132 FTE.

During the EMFF period Lithuanian Operational program foresees to support fish processing under Union Priority 5 "Fostering marketing and processing". Under this priority, applicants can be aquaculture and fisheries enterprises which are seeking to process their own production to increase value. According to the projections in Operational programme, 5 projects are foreseen until 2023 which will amount €6.1 million. In 2017, already €0.66 million of EMFF fund was already paid for investments in processing of aquaculture production.

#### Slovenia

Under the EFF processors applied for support under EFF priority axis 2.3: "Processing and marketing of fishing and aquaculture products". A total amount of EFF and national support of €4 million, between 2007 and 2015 (18% of the total), has been paid out to support initiatives under this priority.

#### Sweden

The Swedish processing industry has mainly received subsidies under Article 34 (investments in processing and marketing) during the studied period. The total OP budget for the Swedish fisheries

program is approximately €105 million (of which 50 is national co-financing). Between 2007 and 2013 around 10% can be related to actions under measure 2.3 (Fish processing and marketing).

## **2) Tariffs**

Fish is one of the most traded commodities worldwide. Most of the main exporters are developing countries and most of these exports are imported by developed countries. Dependency on imported fish plays a significant role in almost all segments of the fisheries industries and in the case of processing frequently consists in the provision of raw materials from developing countries to be processed in developed countries.

### **Tariff peaks and escalation**

In aggregated terms, average tariffs for fish products are not too high. However, when regarding processed products there are significant peaks which can even double the rates within products of the same species. Tariff peaks are more common in developed countries than in developing. These tariff peaks can be used in some cases for protecting local value added production.

A simple average of EU bound tariff levels shows that the tariffs for fish and fishery products amount to 11.4%. The corresponding single average duty amounts to 11.9% for agricultural products and 5.0% for all customs lines. The highest duty for fish and fishery products is 26%, which is low compared with other product groups, such as dairy (105%), animal products (104%) and fruit and vegetables (157%). Smoked seafood has a duty of 26%, and bluefin tuna, sardines and cod have also tariffs over 20%. There are reduced rate preferential quotas for certain species of tuna, dried cod, herring and hake. There are also autonomous tariff quotas to improve raw material availability for the EU processing industry. This is done by the EU lowering customs duties on specific products that are lacking in the EU (WTO, 2017).

Tariff escalation is designed to protect domestic processors based on the social and employment benefits derived from the industry. This policy keeps raw material costs low for domestic processors and improves their ability for sourcing inputs at better conditions on the international markets (Campling, 2015). Further, by increasing the costs of processed products, tariff escalation impacts location of the industry and the ability of developing countries for exporting value added products (Schmidt, 2003). Exporters are more likely to sell raw material for further processing rather than exporting processed products. Consequently, processing activities are mainly undertaken in developed countries.

### **Trade agreements**

Trade agreements become critical for developing countries in order to avoid the issues of tariff escalation and improve value addition of their exports (UNCTAD, 2016). Trade agreements have contributed to reduce the tariffs applied on fish products traded with countries under preferential market access.

Beyond bilateral and Regional Trade Agreements, different kinds of preferential systems are in action across the EU and third countries (WTO, 2017). The General System of Preferences (GSP) in the EU is aimed to facilitate access to the EU market to certain developing countries. There are three different kinds of agreements. The general GSP arrangement provides import tariff reductions to a given number of countries. The GSP+ with a special incentive for developing countries implementing sustainable development and good governance. The Everything But Arms (EBA) arrangement for least developed countries which provides complete tariff-free and quota-free for all commodities with exception of arms.

Additionally, third countries can also benefit of eventual tariff suspensions or cuts through the Autonomous Tariff Quota (ATQ). ATQ's are not preferential and granted only for products to be used as raw materials in processing activities undertaken into the EU and is aimed to secure activity to the processing plants. Tariff and quotas are specific to each product. An import quota is fixed and assigned under a first-come-first-serve basis until completion. Once the quota has been reached, the tariff returns to the ordinary level. The present council regulation (EU) 2015/2265, of 7 December 2015 opening and providing for the management of autonomous Union tariff quotas for certain fishery products for the period 2016-2018, will be renegotiated during 2018 and the outcome is of vital importance for some countries and species since the in-quota tariff is lower than

the so called MFN tariff (most favoured nation). If the quota is not large enough the industry has to import the raw material at full duty, which of course has a negative effect on their economic performance. As a consequence, the processing industry has had to store their raw materials in order to ensure a stable supply throughout the year. This increases their production costs.

Despite of the potential benefits for exporting countries under preferential systems, many of these agreements in fish products with the EU are affected by special Rules of Origin. The Rules of Origin are based on "wholly obtained" criteria. This means that either the fish is caught within the territorial waters of the preferred country or if caught in international waters the boat, or at least 50% of the company, belongs to any of the countries involved in the preferential agreement. This implies that the preferential countries can only export fish caught by their own domestic vessels or those owned by EU companies. As a result, the main beneficiaries of the preferential agreement result, in some cases, the European companies operating in fisheries of preferential countries (Campling, 2008). However, the EU tuna companies justify the Rules of Origin in order to off-set comparative disadvantages with regard third countries in which the regulation with regard social and environmental conditions are less strict than in the EU (FITAG-Anfaco, 2011: 2).

The economic benefits of preferential agreements have been decreasing along time. Beyond the Rules of Origin constrains, fish trade under preferential agreements is also affected by non-tariff measures including sanitary and environmental standards and technical barriers. Tariff preferences may become useless if the liberalization of fish products included in the Doha Round takes place.

### **Negotiations and liberalization of fish trade**

Fish products are not included in the negotiations for agricultural trade in the World Trade Organisation (WTO). Instead, they have the consideration of industrial goods in the WTO negotiations. Current negotiations on non-agricultural market access (NAMA) under the Doha Development Agenda focus in promoting trade liberalization of industrial goods including fish products. The goal is to reduce or eliminate tariffs, tariff peaks and tariff escalation beyond the limits set by a maximum rate which is computed using different coefficients for developing and developed countries.

Notable is also the WTO-negotiations of fisheries subsidy, whose aim is to prohibit certain forms of fisheries subsidies that contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU-fishing that contribute to illegal, unreported, unregulated fisheries. This ambition is in line with the UN sustainable goal 14.6.

It is argued that liberalization of fish trade and the elimination of tariff peaks will result in opportunities for developing countries and facilitate market access (OECD, 2010). However, other barriers remain and non-tariff measures are increasing their importance in preventing market access as tariffs decline.

### **Effects of fish trade liberalization**

Effects on environment. Warnings about potential increased pressure on fish stocks have been raised from several different sources. The effects on fish stocks will depend on the elasticity of supply, which in last term relays in several different factors which include the implementation of fisheries management policies (OECD, 2012; Schmidt, 2003). There is no conclusive evidence that changes in the tariff structure may have had any effect at all on the evolution of fish stocks.

Regarding economic effects, liberalization may result in a decrease of fish prices in the importing country which benefits consumers, but may negatively affect the incomes of the less efficient and undifferentiated domestic producers.

Effects on development. Contribution to food security is a controversial discussion point with regard liberalization of fish trade. Developing countries may improve food security as a consequence of increasing the revenues of exports, but also could be put in risk by reducing local availability of fish and increasing prices. As previously mentioned tariff reductions could undermine preferential access worsening the position of the exporting country. Reducing tariff escalation, may also affect the location of the processing industry.

### **Estimating the impact of tariff policies and trade liberalization**

While tariff information is available for most developed countries, lack of transparency, the aggregation levels and the complexity of some fisheries tariff systems make tariff analysis and assessment a difficult task to undertake (Schmidt, 2003).

Not much research has been undertaken on regard the effects of trade liberalization of fish trade and most of it regard to developing countries. Estimating the implications of the different tariff policies and their impact of the performance of the European fish processing industry has several difficulties starting with the availability of accurate disaggregated data series. Seafood markets are highly segmented and the application of the same policy may have radically different outcomes across species and markets (Roheim, 2004). Results of a general study based on aggregated data may be far from the reality of the different segments in the fish markets. Bene et al. (2010) analysed the effects of an increase of fish trade in sub Saharan Africa. In a literature review of previous research, they found no evidences of neither positive nor negative outcomes with regard food security or National development.

Analysis can be performed for certain species for which the tariffs are well disaggregated. Most of the works done on this field regard to the tuna processing industry in which different levels of processing are well identified in a variety of harmonized codes.

#### *Examples for effects of tariffs*

##### Portugal

As practically all MS of the EU Portugal is to a large extent depending on imports of raw material for the processing industry. The EU has set tariff reduction quotas but they are seen as too low for the demand of the fish processing sector (in Portugal especially drying and canning industry). The codfish quotas and fillets denominated as "loins" of tunas are under special attention of Portugal to get a higher quota for 0% tax. Also for Alaska Pollack, mainly used in the salting industry, a higher contingent for 0% tax is seen as necessary. At the moment a tax of 12% needs to be paid.

The tuna "loin" quota is exhausted very quickly each year (first days of January) and, therefore, a higher quota with more flexibility over the year (not exhausted that quickly) would help the industry to decrease costs.

##### Sweden

Sweden imports most of its raw material at reduced tariffs (e.g. within the autonomous tariff quotas (ATQs)). Therefore, the amount of quotas is very important for the processing sector. In case the industry needs to import more raw material via the so called MFN tariff (most favoured nation) or with full duty this will negatively influence the economic performance. For example, the autonomous tariff quota for cooked and peeled prawns for processing has been too small during some of the years in the studied period. It has frequently been exhausted as early as during the summer. As a consequence, the processing industry has had to store their raw materials in order to ensure a stable supply throughout the year. This increases their production costs.

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## 2.5 Summary of National Chapters

### *Belgium*

In 2015, there were 259 companies conducting fish processing activities in Belgium. It was estimated that for 66 of these companies, fish processing was an important activity, an increase in number compared to 2008. The activity of the Belgian fish processing industry includes the production of fresh and frozen fillets, smoked fish (salmon, halibut, herring, trout and others), prepared shrimp, pickled seafood and prepared dishes. The total turnover for these companies was estimated at around €710 million with a total employment of 1,529 people (1,423 full-time equivalents).

The sector is dominated by small and middle-sized enterprises. The majority of these companies have less than 11 employees (56% in 2015), followed by companies employing less than 50 employees (39% in 2015). However, these enterprises only account for a fraction of the total turnover and employment. Total turnover represented 98% of total income while subsidies represented less than 1%. The GVA reached €207 million in 2015 - 29% of total income - a decrease of 6% compared to 2014, but a large increase compared to 2012 and 2013. Employees are mostly male (estimated at 61% in 2015). The number of employees seems to have increased between 2008 and 2010, remaining stable thereafter. Labour productivity saw a drop in 2012 and 2013, but recovered in 2014. In 2012, Europe was confronted with an economic crisis which had an impact on employment opportunities.

The sector seems to have remained profitable since 2008, despite the economic crisis. The data show that economic performance indicators decreased between 2008 and 2015: GVA -6%, operating cash flow -8%, EBIT -8% and net profit -10%. Notwithstanding these decreases, the economic performance of the sector remained positive. The financial position of the industry remained relatively stable. In 2015, the purchase of fish and other raw material represented 63% of the total income. All production costs seem to have increased over the time series with the exception of other operational costs. In the period 2008-2015, production costs showed a stronger increase than income (45% vs. 32%). Therefore, the industry is vulnerable to changes in the prices of raw material, for example, as a consequence of changes in catch quotas. The Belgian fish processing industry is highly dependent on imports for its raw material as many processed species are not caught by the fishing fleet which may have led to a shift from processing activities towards more trading activities, such as to the retail or specialising as importers or exporters."

### *Bulgaria*

The total number of fish processing enterprises in Bulgaria remain stable in the last 10 years – approximately 45. The distribution of the enterprises in the size categories was also stable from year to year. The largest sector is the one with enterprises with 11-49 employees. There are no enterprises with more than 250 employees.

The number of total employees increased by 1% from 2014 to 2015, but the number of FTEs decreased by 4%. The average wage in the sector was increased during the period and reached €4.2 thousand in 2015. The ratio between female and male employees is relatively consistent during the years – female employees are 65%.

The total income was growing gradually during the whole period 2008-2015 with a small decrease in 2012.

Seven general types of processing enterprises can be distinguished: Units which are using as raw material fish caught from the Black sea (sprat and other small pelagic fish); Units processing crustacean, Units processing molluscs; Units processing fish from aquaculture farms in Bulgaria (mainly rainbow trout, carp, catfish); processing enterprises for caviar and enterprises for fisheries delicacies, enterprises producing canned fish. The main products of this sector are cooled, frozen, dried, salted or marinated fish, crustaceans and molluscs, fish delicacies, caviar.



The import was mainly from the Netherlands, Spain, Romania, Poland, the Czech Republic, Vietnam, Canada, China, Morocco and Argentina, while the export was to Romania, Greece, Sweden, Spain, Hungary, Republic of Korea, Japan and Serbia.

In the last years, the interest in catching and processing rapa whelk and baby clam is growing rapidly. While rapa whelk consumption is relatively popular in Bulgaria, the consumption of baby clam is really negligible (if any). Since both species are demanded on the international market, expectations are for an increase in the number of enterprises specialized in the processing of these two species.

### *Croatia*

The Republic of Croatia had 35 companies in 2011 and the same number of companies in the year 2015 with the main activity in fish processing industry. Most of these companies have a multitude of other activities in which they are involved outside of fish processing but the main source of revenue and traffic comes from processing. Most of the enterprises belong to the category of 50-249 employees and that segment has the most significant impact on overall fish processing industry in Croatia.

Total number of employees in the fish processing industry was 1,635 in 2011 and 1,800 employees in 2015 which is trend indicator of processing intensity. Except the number of employees, increased was FTE and average salary, however these indicators placed in a worse position because labour productivity.

Economic indicators are mostly negative from 2011 to 2014 when a certain recovery could be noticed. If we compare years 2011-2014 it is easy to see that almost all the indicators decreased. Starting from 2014, income, turnover, so as costs increased which is a result of investments in new processing plants and production technology.

Fish processing market started to experiencing a lot of changes since 2013 after joining the EU. Still, there is a lot space for improvement. Exports were higher than imports in the economic sense in all reference years. On the other hand, export of fish processing products declined from 2011 to 2015. Trends show that fish processing is going through a recovery. Certain adjustments will be needed in terms of supply of raw material due to management measures so as in more integrated approach with aquaculture sector.

### *Cyprus*

The processing fishing industry in Cyprus is at its early stages. It is a very small sector. In 2014, it was comprised of 3 enterprises that had seafood processing as their main activities and only 2 companies in 2015. There are also a few enterprises that deal with fish processing but not as their main activities. All the companies are small-sized. There was a decrease in the number of the companies of 60% in 2015 relative to the period 2008-2014. As a result, the total employment has also decreased during 2015.

The economic performance of the industry for 2015 is shown deterioration. In 2015, it recorded zero EBIT and small net losses. The main factor behind this poor economic performance was the financial crisis where the purchase power of the customers was significantly reduced and there was a significant reduction in turnover of around 40% compared to 2014. Total income generated by the Cypriot seafood processing sector in 2015 was €3.4 million.

Production costs amounted to €3.2 million and accounted for 94% of the total income of the sector in 2015. The cost of raw materials is the most important part of the production cost, accounted for 85% of the total income. Wages and salaries and energy costs accounted for 6% and 3% of the total income respectively. Cyprus has a negative trade balance in fresh fishery products both in value and volume. All the products used for processing purposes are imported, due to the small production and the high quality of the fresh local fish, where all the quantities produced are consumed as fresh at high prices.

The performance indicators for the 2014-2015 period also suggest deterioration of economic performance of the sector since the main indicators have decreased significantly; €0.4 million of



GVA generated in 2015 are deteriorated by the relatively high depreciation of capital resulting in zero EBIT and small net losses for the sector.

## *Denmark*

### *Profitability of the national sector and main trends*

The profitability of the Danish processing sector has been increasing from 2008 to 2015. The number of enterprises and the number of employees has been reduced over the period to increase the competitiveness and profitability of the sector. This has resulted in a more competitive sector increasing income, reducing costs especially on wages and thereby increasing the economic viability of the sector. Overall, the Danish industry has decreased in terms of numbers of enterprises (8%) and full time employees (26%). The overall income has increased by 51% resulting in an increasing GVA of 39% and a net profit increasing from a negative value of €27.7 to positive value of €125.6 from 2008 to 2015.

In Denmark, the most important segment is the fish meal and -oil industry. The fish meal and fish oil factories are important to the Danish industry and are closely linked to the fleet fishing fish for reduction. The salmon processing industry is the most important segment processing fish for human consumption in terms of value. This industry is dependent on the Norwegian aquaculture industry and most of the import are processed and exported to other EU countries.

The segmentation on numbers of employees shows that the segment with 50-249 employees dominates the overall results covering 75% of the income even though it only comprises 21% of the number of enterprises. The segment with less than 10 employees cover 50% of the enterprises but only cover 4% of the income.

### *New developments, trends and outlook*

It is expected that BREXIT can have a negative effect on the Danish fishing fleet and thereby on the processing industry. This is especially true for the fishers and fishing industry relying on pelagic species for reduction, herring and mackerel.

A new regulation on aquaculture was introduced in 2012. In 2016/7, an additional plan for growth in the aquaculture sector was implemented, which can positively affect the aquaculture production. This could increase the raw material base for the processing industry especially for the segment producing trout and salmon.

### *Companies with fish processing not as main activity*

The Danish industry is very "pure". Only very few companies are processing fish outside the NACE group 10.20. Statistics Denmark have identified between 3 and 6 companies from 2008 to 2015 that are registered under other NACE codes but have some activities registered as fish processing but not as main activity. Unfortunately, the total income cannot be presented due to confidentiality reasons.

## *Estonia*

In 2015 there were 64 enterprises whose main activity was fish processing in Estonia, of which 84% were rather small having up to 49 employees per enterprise. The sector earned a net profit €5.4 million. The turnover of production was €176 million in 2015 and increased by 2% compared to 2014. The total amount of production costs by the Estonian fish processing industry in 2015 was €166.9 million. Compared to 2014, the total operational costs decreased 3% in 2015. The decline in production costs was mainly caused by the decrease in the first-sale prices of two local key species - herring and sprat. The main driver for this change was the loss of the Russian market.

The total number of employees in the Estonian fish processing industry was 1,879 (1,842 FTE) in 2015, of which 36% were male and 64% female. The average wage continued a rising trend in 2015 and reached to €12,526, the increase was 5% compared to 2014.

The fish processing sector in Estonia is largely dependent on export. The share of exported fish products was around 70% in 2015. There were two main product types in the Estonian fish

processing industry in 2015: frozen fish and salted, spiced, dried, deep-frozen and breaded fish. But also fish fillets, fish conserves, smoked fish and ready-made products were represented in assortment. The main Estonian export countries for fish and fisheries products in value were Finland, Germany, Sweden, Ukraine and France, and import countries Norway, Lithuania, Finland, Denmark and Sweden in 2015. Due to its small size, the fish markets and processing enterprises do not depend on domestic aquaculture production.

### *Finland*

There were 136 fish processing enterprises operating in Finland in 2015 that recorded total turnover of €302 million; a marked 24% drop from the previous year. This resulted from the Russian embargo for EU food stuff that was the main market for the Baltic herring in autumn 2014.

The processing industry employed 803 FTEs or 1004 persons. The sector is highly concentrated: majority of the enterprises (113 out of 136) were micro companies while largest 10 companies accounted for 83% of the total revenue generated by the industry in 2015.

In 2015, Fish processing enterprises used 80 thousand tonnes of fish as raw material, of which 46 thousand tonnes were domestic fish and 34 thousand tonnes were imported. The main species used in Finnish processing were salmon (32 million kg.) and rainbow trout (23 million kg.) followed by Baltic herring (21 million kg.), in 2015. The main products were fresh fillets and smoked fish of different species and deep frozen Baltic herring.

The Finnish seafood trade balance is significantly negative. Finland imported seafood with value of €412 million and exported seafood worth of €41 million in 2016, creating a negative trade balance of €371 million.

The economic performance deteriorated with the declined turnover. Gross Value Added dropped in 2015 by 30% down to €44.4 million and net profit was halved down to €5.7 million.

### *France*

The size and structure of the French seafood processing industry have remained relatively stable between 2008 and 2015. Although the number of enterprises was slightly reduced from 327 to 291 during this period, the industry created 1,851 jobs and employs now 17,523 persons. The total turnover of the industry is estimated to €5.52 billion in 2015. According to the French data collection office FranceAgriMer, the turnover of these companies for seafood production was only €4.39 billion (80% of total turnover). The French fish processing industry is highly concentrated: in 2015, the 17 companies (6%) which employ more than 250 persons cumulated 54% of total seafood turnover. The sector still includes numerous very small enterprises (in 2015, 38% of the enterprises employ less than 10 persons), but since 2015 the small enterprises (between 11 and 49 employees) are the most numerous and represent 44% of the total. The most important sub-sectors of the French fish processing industry are the canned products (valued at €1022 million in 2014), the smoked salmon (€804 million in 2014), the delicatessen (€765 million), the preparations (€751 million), the prepared dishes (€532 million) and the shrimps (€174 million). The French seafood processing industry is heavily reliant on imported raw material, especially salmon, shrimp and white fish (cod and pollock). The cost of raw material has continuously increased since 2008, and raw material alone explains 76% of the increase of total production costs at the end of the period.

The economic performances of the French fish processing sector are improving. While the turnover had remained stable between 2011 and 2012, the net profit had already increased from €89.4 million to €204.9 million, which seemed to be mainly due to the decrease of other operational costs. In 2015, when the turnover increased by 13% compared to 2012, the net profit increased by 32% and reached €270.8 million. The net profit represents 4.9% of the total income in 2015, its higher level over the recorded period with the exception of 2013 and 2014 which seem unreliable. Net investments have also increased between 2008 and 2011, and then again between 2013 and 2015. They still represent a significant level of turnover (2.8% of the turnover in 2015) and denote positive expectations from the future of the industry. The average salary has increased by 44% since 2008. Male employees represent the majority of the workers (55.6%) since 2015. The improvement of the economic performances of the French fish processing industry is reflected in

the positive future expectations of the industry. However, these trends are mainly observable for the big companies which explain most of the performances of the whole industry.

The data from the survey of the French fish processing companies, which were of very good quality until 2010, are deteriorating since then. It should be therefore recommended that the submission process for French data would be revised in order to ensure the quality of the information provided to the European bodies, especially for the purpose of comparisons between countries.

### *Germany*

The fish processing sector in Germany is dominated by large companies. Around 80% of all employees and more than 93% of total turnover belong to companies with 50 and more employees.

In 2015 the net profit of the German fish processing sector reached around €62 million. However, raw material prices (as the main part of the production costs) put pressure on the profitability and are affecting the entire sector. In particular, higher raw material prices are not resulting in higher retail prices as the big supermarket chains have an enormous market power and long-term contracts making it difficult to adjust prices of fish products.

In 2015, domestic and foreign landings of the German fleet (including fresh water fishery) covered only 13% of the total German fish market and 87% of the total volume of fish on the German market was imported.

In 2015, it is the first time that prepared and preserved products (29% of total per capita consumption) are more important product types than frozen products (26% of total per capita consumption). This is mainly due to the fact that consumer increasingly prefer already prepared fish meals or convenience food, either frozen or preserved.

The future outlook for the German fish processing industry seems currently not to be too optimistically. The FEI shows stable negative expectations (resulting in disinvestment in the fish processing sector), at the same time investments are made by German companies into new facilities abroad. This disinvestment decreases the German FEI, but it increases the FEI of the country into which the investment was made.

### *Greece*

The Greek fishery processing sector in 2015 is comprised of 145 small and medium enterprises, 5% less than in 2011. This decrease is recorded only for the enterprises with more than 10 employees; on the contrary the number of the micro enterprises has increased. The activity of the sector was negatively affected by the debt crisis, which has begun slowly to change. Thus, the turnover of production in 2015 (€238.8 million) shows 11% increase relative to 2014 and 39% decrease in relation to 2011.

For the year 2015, 2,062 persons (corresponding to 1,690 FTE jobs) are employed in the sector, 5% more than in the previous year. Male employment has increased by 7% (75 persons) and female employment has also increased but on a lower rate of 2% (23 persons) in 2015 compared to 2014. For the period 2011-2015 the total employment has decreased by 18% (or 25% in terms of FTE). Female employment has been negatively affected to a greater extend (28%) than male employment (12%).

The 2015 economic performance of the Greek sector reflects to an increase of the net profit (6.7%), although total production costs had shown 20% increase as well. Purchase of fish and other raw material for production has been increased by 9% and 13% for 2014-2015 and 2011-2015 time periods respectively. From 2011 to 2015, the total income was dropped by 10% and the total production cost was decreased by 1%. It is also notable that the total value of staff salaries at 2015 compared to 2014 had also increased, almost 26%, but it remains reduced of about 10% in relation to 2011. Debt, in the time interval from 2014-2015, had drastically reduced (-39%), which is correlate positive with the drastic reduction of the financial costs (-53%). However, the continuing severe impact of the financial crisis on the Greek processing sector led to significant decrease of some performance indicators compared to previous years: Gross Value Added decreased 11% and

36% from 2015 to 2014 and from 2015 to 2011, respectively, Operating Cash Flow 35% and 51%, Earning before interest and tax 30% and 49%.

The market for processed seafood products in Greece is expected to expand from 2016 onwards mainly owing to the expected rise of the demand from the hotel, restaurant and catering sector. As the arrivals and the expenditure of tourists is steadily increasing in Greece since 2016, a positive effect on the seafood processing sector is expected.

### *Ireland*

In 2015, there were 161 companies conducting fish processing activities in Ireland. The total number of fish processing enterprises has decreased by 6% since 2008 but this has not affected total turnover which in 2015 was estimated at €685.8 million an increase of 5% from 2014.

Total employment and FTE in the Irish processing industry amounted to nearly 3,800 and 3,000 respectively in 2015. Total jobs and FTE in 2016 were 3,949 and 3,029, respectively. Employment in the small size companies has remained stable since 2012. Employment in the mediums sized and larger sized companies have shown opposite trends with employment dropping for medium businesses and increasing for the larger enterprises. Average wage across the industry is around €32,000.

The sector is dominated by small and middle-sized enterprises. The majority of these companies have less than or equal to 10 employees (57% in 2015), followed by companies employing less than 50 employees (29% in 2015). Total turnover represented 98% of total income while subsidies represented less than 1%. GVA, operating cash flow, earnings before interest and net profit decreased from 2014 to 2015. Notwithstanding these decreases, the economic performance of the sector remained positive. The financial position (17.6%) of the industry remained relatively stable.

In 2015, the purchase of fish and other raw material represented 69% of the total income. All production costs have remained stable or increased over the time series with the exception of energy cost and other operational costs. Turnover across the industry has demonstrated a growth of 20% since 2012 with a predicted turnover for 2016 of €694 million. Total income including other income and subsidies amounts to a predicted value of €790 million.

### *Italy*

The Italian processing industries in 2015 has been characterised by total number of enterprises registered in Italy was 785 producing a turnover of about €2.2 billion. This number include enterprises processing fish products as "main" and as "non-main" activities. The "main" segment was equal, in 2015, to 577, representing a little over 74% in number and 80% in terms of contribution to the total turnover of the sector. The 77% of enterprises is represented by micro-enterprises, with less than 10 employees. The number of employees per company, the Lombardia Region has over 21.6 employed for each company active in 2015. The number of people employed in the sector was equal to 5,926 people consisting in 4,656 FTE. In 2015 the processing sector recorded an increase of 5% on the employment side, while a decrease of 1% was reported for wages and salaries. One of the justification is linked to national policies concerning the labour market: Jobs Act. The turnover of the sector amounted to €2,243 million in 2015, while the total income (turnover + subsidies + other income) amounted to €2,249 million. In 2015, the canned sector represented around 54% of total turnover of processing industry. In particular, the production of canned tuna was equal to 67.3 thousand tonnes in volume and less than €1.1 billion in value. Italy is thus confirmed as one of the most important markets in the world for the consumption of this food and as the second European producer after Spain. Main income items appear to have increased, compared to 2014: +0.4% for turnover and +55% for subsidies. The growth in subsidies is a collection of companies that, in previous years, had begun modernization activities, integration of their production processes, thanks to EFF structural funds. The increase is linked to many financial flows received from companies on completion and closure of projects funded in previous years. Total production costs were equal to €2,165 million in 2015, representing about 96% of total income and showing an imperceptible decrease (-1%) compared to the previous year, and over the whole period considered, confirms a downward trend (-25% on the value of

2008). The purchase of raw materials has a greater impact on total operating costs (+ 74%), although in 2015 this cost is reduced by 1% and by more than 24% from 2008. The countries from which fish is imported to be used for processing are Spain, the Netherlands and Poland among the European countries, while more and more quantities are imported from Ecuador. During 2015, GVA increased +11% compared to previous year.

### *Latvia*

There were 114 registered economic active fish processing enterprises in 2015 with a total turnover of €172.3 million. The total turnover decreased by 22% from 2014 to 2015. There were only 4 big enterprises which have more than 250 employees in 2015. The small size enterprises are dominated in Latvia and its total share was 52% from the all companies' size in 2015.

Total number of employment was 4,169 in 2015 consisting of 3,580 FTE. Number of FTE's decreased significantly by 30% from 2014 to 2015 and in average was 31 FTE per enterprise in 2015.

Investments to the new technologies, equipment and improvement of the working conditions for employees between 2008 and 2015 assisted in increase of the labour productivity by 21% during the same period.

The total production costs share was 90% from the total fish processing income in 2015. The share of purchase of fish and other raw material for production made up of 53% of the total income. It can be observed that Gross Value Added decreased by 17% from 2014 to 2015 but Operating Cash Flow have increased by 4% during the same period. The Operating Cash Flow growth could be explained by the sharp increase in subsidies by 36% from 2014 to 2015. In its turn the Net Profit increased by 26% from 2014 to 2015 and was €6.5 million in 2015. The most profitable segment in 2015 was the segment with 11-49 employees contributing €3.5 million to the total fish processing Net profit. However, the Net profit decline between 2008 and 2015 by 48%.

### *Lithuania*

In 2015, Lithuanian fish processing industry consisted of 51 enterprises with the main activity of fish processing. Total income in 2015 increased by 7.5% to €522.1. Turnover, attributed to non-main activity fish processing enterprises in 2015 improved by 34% to €9.7 million. Companies with main activity of fish processing produced around 120 thousand tonnes of production and compare to 2014 it increased by 18%. For the whole period till 2015 the largest part of production was surimi products, whereas in 2015 smoked fish including fillets were dominant in Lithuanian fish processing industry. Important commodity in terms of value was frozen fish fillets, which accounted for 14.2% of total volume.

Around 51% of production from processing industry was exported in 2015, amounting 62.8 thousand tonnes and €302.7 million. Exports consisted from 95% in EU, 1.3% in CIS countries and 4% other countries. In comparison to exports, internal market sales generated €175.9 million. In 2015 the structure of sales in the internal market in terms of volume consisted from 79% to wholesale, 7% to retail market and 13.7% as other destinations (public sector, charity and etc.).

In 2015, Lithuanian processing industry employed 5373 people and compare to 2014 increased by 4%. In terms of FTE, fish processing sector employed 1461 male employees and 2670 female. Approximately 60% of total employees belonged to 25-49 age group and 27.7% to the 50-64 age group. Young employees from 15-24 age group contributed 11% to the total employment. Compare to 2014 annual average wage decreased by 16% to €9 thousand. In general, average wages were constantly growing from 2011 to 2014. Furthermore, in 2015 average wage paid by fish processing industry was 3.6% higher compare to average national gross salary. In long term period wages in fish processing industry were relatively stable, fluctuating around €9.1 thousand per FTE.

Estimated Gross Value Added (GVA) in 2015 reached €87.3 million and was 39% higher compare to 2014. Net profit margin was 7.2%. The growth of GVA was influenced by significant decline in other operational costs. The production cost structure remained almost unchanged compare to average of previous years. Purchase of raw material accounted for 70% in total cost structure, 17% other operational costs, 8% wages and salaries of staff and 5% for the rest of costs.



Fish consumption in the internal market is mostly based on processed fish products, as consumption of freshwater aquaculture has more or less seasonal pattern. According to 2015 data, consumption of fish production was around 19 kg per capita. Fish consumption recently has an increasing trend.

### *Malta*

In 2015, the number of enterprises in the Maltese fish processing industry was reduced to five from six in 2014. This has been the year with the least number of enterprises within the sector in a period of 8 years (2008 to 2015). Due to the decrease in the number of enterprises in the sector, turnover for 2015 diminished by 36% from 2014, to €22.7 million. This result is the lowest turnover amount the sector has shown since 2010.

It should be emphasised that 60% of the enterprises in Malta's fish processing industry belong to the smallest enterprise segment ( $\leq 10$  employees).

In the year 2015, FTE dropped by 35% from 2014. An interesting fact to note is that although FTE in 2015 dropped from 2014, it was only male FTE that has shown a decline, decreasing by 47%, on the other hand female FTE has increased by 90%. Overall since 2008 total FTE has increased, as FTE in 2015 was 78% higher than in 2008.

In 2015, €1.3 million was recorded as net loss, resulting in an increase in net loss by 86% from the one recorded in 2014. Net investment has been declining since the increase recorded in 2012 as in 2013, 2014 and 2015 net investment has decreased by 85%, 31% and 71% respectively when compared to their previous years.

During 2015, 3 enterprises were categorised under segment 1 (enterprises employing less than 10 employees) while the remaining 2 enterprises were under segment 2 (enterprises employing between 11 and 49 employees). Segment 2 in 2015 generated 61% (€13.9 million) of the sector's total turnover while the remaining 39% (€8.8 million) was generated by Segment 1.

The Maltese fish processing sector is mostly represented by enterprises, whose main products are preserving and processing of tuna, herring, sardines, and other marine fish and other products.

### *The Netherlands*

In 2014 there were 81 fish processing companies in the Netherlands with a turnover of €846 million. The main product segments are flatfish (e.g. sole and plaice), shrimp and mussels, for which the raw material is sourced from the North Sea and Wadden Sea. The Netherlands is an important trading hub for the transport of fish to other EU countries. The reliance of the Dutch processing industry on domestic catches has become less important, but will still determine the profitability of a relevant part of the Dutch enterprises. Most enterprises in the Dutch fish processing industry are relatively small and have less than 50 employees. In total around 4,000 people were employed in 2014. The total income showed an increase of 4% compared to 2013, even as the production cost. The cost for the purchase of raw material is the main contributor to the growth in the total production cost, which was 2% higher in 2014 compared to 2013. Compared to 2008, there is a 17% increase in the cost of raw material. Important drivers for the Dutch processing industry are sustainability certification, and the reform of the Common Fisheries Policy and Common Market Organisation. The fish processing industry is getting more familiar with the trading business and it is expected that trading will grow further in the coming years.

### *Poland*

Fish processing industry in Poland is strong and still developing. It has the ability of generating profits for the companies and jobs and incomes for the involved workers. In 2015, the turnover increased to €2.5 billion, by 11% compared to the previous year and 71% compared to 2008. Turnover created nearly the whole total income (99%). As a result of increase in turnover and reduction of financial costs net profit increased to €123.8 million, by 52% compared to the previous year. The level of other economic and financial indicators of fish processing (GVA €365.1 million;

OCF €161.2 million, EBIT -€106.6 million) shows that the sector in 2015 was in a safe financial and economic situation.

The average number of employees was 17,743, representing an increase of 6% compared to the previous year. As in previous years the majority of the employed (65%) were women and the number of female employees increased by 6% compared to the previous year and by 14% compared to 2008. Most employees worked full-time and FTE amounted to 16,937.

In terms of the number of enterprises, fish processing was dominated by small sized firms with the number of employees between 11 and 49 (37%) and further 29% with medium-sized enterprises (between 50 and 249 employers). On the other hand, most of the employed (52%) worked in the largest plants (with more than 250 persons) and further 39% in medium-sized enterprises.

Production was also concentrated in the largest companies and 62% of total income were generated in plants with more than 250 people employed and further 29% in medium-sized.

In 2015 fish processing industry achieved good financial and economic performance for all segments by size category compared to the previous year.

In 2015 as in previous years a key driver of fish processing sector development was of foreign trade of raw material and final products. Imports played a dominant role in the supply of raw materials because of limited ability to harvest fish from the Baltic Sea and limited production of aquaculture. In 2015 import of fish and fish products amounted to 533.3 thousand tonnes with a value of €1.7 billion, mainly intended for further processing. Exports of fish and fish products amounted to 440.7 thousand tonnes with a value of €1.6 billion. The negative balance of foreign trade recorded amounted to €61.4 million.

In the period 2007-2015 most of projects which modernized fish processing technologies and manufacturing process were funded from the European Fisheries Fund (EFF) on the basis of the Operational Programme "Sustainable development of fisheries sector and coastal fishing areas 2007-2013". From the beginning of operational program 446 agreements were signed to support investments in fish processing and marketing and payments to beneficiaries amounted to €125.7 million.

Further development of the fish processing industry in Poland is expected and the future industry expectations indicator (FEI) was estimated at 1.3%. Exports and investment will be the factor that accelerates the pace of development.

## *Portugal*

Portuguese domestic market is a large final consumer for fish and fish products, the biggest within the EU in per capita consumption, with 53.8 Kg/person/year (FAO, Food Balance Sheets 2016).

In 2015, Portuguese Fish Processing Industry counts 157 enterprises, 63 of which were small enterprises with less than 11 employees. Most enterprises are located in the north (33) and in the centre (71) of the country. The outermost regions (Azores and Madeira) gather 9 and 6 companies. All together these enterprises employed 7,148 people (about 750 in Azores, and 100 in Madeira) and global production is 234 thousand tonnes, and total income of €1,197 million (+ 3%).

Small companies with less than 11 employees gather 40% of total and only 2% have more than 250 employees. Female employees represent two thirds of total employees (67%).

Production in 2015: Frozen industry – 130.1 thousand tonnes (€388 million sales value); Salting and drying – 59 thousand tonnes (€270 million sales value); Cannery and preparation – 45 thousand tonnes (€237 million sales value).

The Portuguese fish processing industry still has an enormous dependency on imports in order to fulfil the demand for their huge per capita consumption. This dependency is expected to continue grow in the near future, due to restrictions on catches, as well as from the new trend with a major demand from the tourism-gastronomic sector.

Canning sector is still dependent on domestic production (mainly for sardine and mackerel). The dependency in imports is growing as the sardine catches reduce substantially (from 71 thousand tonnes in 2008 to 33 thousand ton in 2012 and to 13 thousand tonnes in 2015). The cannery

industry still remains profitable although the expected increase in fish prices will put pressure in its profitability.

The salting and drying sector depends almost exclusively on imports from frozen and wet salted raw material (cod, Alaska pollack).

The Portuguese Trade Balance for fish and fisheries products is typically negative.

In 2015, this deficit was of about 199 thousand tonnes or €718 million. Frozen products gives the biggest share to this reality (-89 thousand tonnes / -€238 million). Dried and salted products also get big responsibility on the negative result (-51 thousand tonnes / -€254 million).

In general, some stability on structure and economic results is expected in the future.

## Romania

The Romania fish processing industry evolution shows a decreased number of units, as main activity processing, from 13 in 2009, to 8 in 2015, out of which 1 company had less than 10 employees, 4 companies with 11-49 employees and 3 companies with 50-249 employees, amounting 483 people, as FTE, male – 276 and 206 - female. The generated turnover is €14.7 million, from €31.9 million. Between 2009 and 2015 the turnover of this fish processing industry decreased by €17.2 million, more than 46%. The raw material purchase has drastically decreased to the value of €1.9 million.

Between the years the comparability of economic data series is not relevant for analysing the sector using even a guide of a SWOT analyses; figures are helping more to have a year status picture - 2015, member state has to improve the quality of collected data series.

The main segments 11-49 and 50-249 employees generated 99% of total income, and, as a consequence the national authorities are to deploy specific management policies to consolidate its, targeting the reduction of fish processing industry dependency to the imported raw materials.

The sector is negatively influenced by the strong competition of the supermarket chains, imports of fish products, despite to a constant decrease from around more than 100 thousand tonnes in the years 2008, 2009 till around 80 thousand tonnes in the year 2015, the industry is still dependent on imports. Due to the offer of raw material from domestic fishery (inland and marine waters, including aquaculture), which is not covering the new demand of the market, the imports are 3/4 times higher than total production of national fishery sector. The ocean fish species (not caught by the national fleet) have a high of consumption on the national market, e.g.: tuna fish, salmon, cod, mackerel, seafood, etc., versus carp species – dominating the national production, and significant quantities of trout, and catfish, as well as perch. The structure of products offered by the processing companies is more or less the same during analysed periods, namely: marinated products, smoked fish and fish eggs salad, as most important. Canned fish counts less than 5% in total production.

Also the use of EFF is at a low level of utilisation, as it was stated in the dedicated chapter, respectively around 33% of the total planned expenditure.

The shortages between collected and submitted data and Eurostat data is a very important issue that should be addressed by member state in the future. As it is mentioned in each component of the chapter, there is a strongly need that member state has to improve the actual system used to collect and compile data, especially considering the relative low number of companies having main activity processing. Romania has to include in collected data, the correct figures for companies whose main activity is not fish processing, to conduct to a better overview/analysis of the whole sector.

## Slovenia

In 2015 there were 12 companies in the Slovenian fish processing sector. Between 2008 and 2015, the number of companies remains relatively stable. In 2015, Slovenia had 7 companies with less than 10 employees, three companies with 11-49 employees and two companies with 50-249 employees. Among them are 4 companies with fish processing as not main activity. These companies generate €6.98 million of turnover from fish processing, which representing 27% of all turnover from fish processing activities. The main products in Slovenian fish processing industry



are various fish cans, Tuna pate, dried cod spread, and products from cephalopods, Atlantic salmon and hake filet. Turnover from the Fish cans and tuna pate represents more than 77% of all turnovers from Slovenian fish processing sector.

In 2015, the turnover was €25.7 million. Between 2008 and 2015 the turnover of Slovenian fish processing industry decreased by 12%.

The value of raw material decreased by 46% from 2008 to 2015 and amounted €8.8 million in 2015.

In the Slovenian fish processing sector was 209 employees in 2015. With respect to the gender of those in employment, women are predominated with 115 employees. According to the FTE there were 209 FTE employees in 2015. Among them were 115 women and 94 men. The level of employment decreased between 2008 and 2015, with total employed decreasing by 16% while the number of FTEs decreased by 1% over the period.

The Slovenian seafood trade balance is relatively stable over the years and it is significantly negative. Slovenia is a net importer of fish and fish products. In 2015, imports were approximately four times larger than export and amounted to 15,724 tonnes (€75.2 million) of fish and other fish product. On the other hand, export amounted to 3,871 tonnes (€22.3 million) in the same year.

Slovenia consumes around 11 kg of fish per year per capita, which is well below the European average of around 25.5kg. However, fish consumption per capita in Slovenia is growing due to increasing awareness of healthy lifestyles. So in the future we can expect further development of the fisheries processing industry in Slovenia and therefore higher revenues from this sector.

## *Spain*

The Spanish fish processing industry has followed a positive trend in recent years (2013-2015) due to the positive evolution of the number of enterprises, employment, total incomes and value of the production. The performance indicators remained positive. The most negative aspect to highlight in recent years is that, despite the increase in the value of production in the sector, production costs grew more proportionally, reducing the profitability of the sector.

Medium-sized companies continue to be the main engine of the industry, being the segment that contributes the most to incomes. However, the importance of large companies has continued to grow, although to a lesser extent than in the previous stage, thus consolidating the tendency to concentrate activity in large companies, to the detriment of small companies. The segments that have grown the most in recent years are those that have opted well for the differentiation of small productions, or for the improvement of efficiency through the economies of scale.

Employment in the fish processing industry has resumed the path of growth since 2012, although it has not yet recovered the levels of 2008. During 2015, there has been a slight increase in part-time work. Traditionally, the fish-processing sector in Spain has employed more women than men. Since 2012, the male employment figure has stabilized, while the number of employed women has grown again.

The total amount of subsidies received by the Spanish fish processing industry in 2015 was €26.8 million. Although it is a relevant amount in absolute terms, subsidies represented less than the 1% of the total income. In relative terms, the importance of subsidies is greater in small enterprises.

The future outlook for the Spanish fish processing industry is conditioned by the increase in competition in the value chain of seafood products. It is expected that in the next few years will continue the trend towards the mass production at large and medium-sized companies to reduce the cost of production, and the search for product differentiation by small businesses. Fish processing industry imports and exports grew in 2016, consolidating the increasing dependency of imported raw materials and the relevance of high value added product exports.

## *Sweden*

The fish processing industry sector in Sweden is very heterogeneous with small family businesses processing their own landings as well as larger enterprises with large scale industrial production.

Total income as well as turnover has decreased slightly during the period, and at the same time total production cost (especially purchase of raw material) has increased. The decrease can be explained by the fact that one of Sweden's largest fish processing industries merged in 2013 and their activity changed from main to non-main fish processing.

The purchase of raw material for production accounts to 60 per cent of the total production costs and the industry imports approximately 70 per cent of all of its raw material. This makes the industry dependent on prices of raw material, tariff quotas and changes in exchange rates. Most of the indicators show a decrease for the industry as a whole since gross value added (GVA), return on investment (ROI) and EBIT (earnings before interest and taxes) all were lower in 2015 compared to 2008. The decrease can most likely be explained by the merge in 2013.

To a large extent, the Swedish processing industry uses different certifications like the MSC, ASC and the Swedish KRAV certification. Non-certified products are hard to place on the market since consumer awareness has increased. In recent years, demand has increased for highly processed products that are almost ready to eat, easy to cook and healthy at the same time.

Changes in the exchange rate of the Swedish krona (SEK) are of great importance for the processing industries economic performance. If the data had been converted into SEK a different development (percentage change) would have been shown, especially for 2009 when the Swedish krona was weak.

### *United Kingdom*

It is estimated that in 2015 there were 371 UK companies deriving the majority of their income from fish processing, a reduction of 29% compared with 2008 figures. Underlying the continued contraction in industry size since 2008 was a pronounced decline in the number of businesses with 10 or fewer FTEs (a 34% decrease since 2008) and businesses with 11-49 FTEs (a 31% decrease since 2008). Majority-processing companies in the UK employed a total of 18.8 thousand Full Time Equivalent workers (FTEs) in 2015, which is 9% lower than 2008. In 2015 the number of FTEs per enterprise was approximately 51, which is 29% higher than in 2008. The most recent data suggests that in 2015 the largest 13 fish processing enterprises accounted for 4% of total enterprises and 43% of industry employment.

The combined turnover of the 371 processing companies (turnover from all activities, not just processing activity) was approximately €5.3 billion in 2015, roughly the same as 2014 (in nominal terms), but 4% lower than in 2008. Production costs in 2015 were 6% lower than in 2014, driven largely by a 6% reduction in industry spending on purchasing fish and other raw materials for production between years. In 2015, key economic indicators including labour productivity and net profit were at their highest since 2008. Currently the industry is faced with challenges related to uncertainty about future international trade opportunities, compounded by political uncertainty.

### **3 COMPARISON OF THE DATA AND INDICATORS OF THE DCF AND EUROSTAT'S STRUCTURAL BUSINESS STATISTICS**

#### **3.1 Introduction**

The TORs for EWG 17-16 included the following:

- Propose recommendations to build future fish processing reports using Eurostat data as the main source of data and complemented by DCF data if available.
- Discuss the main differences across both datasets.
- Discuss feasibility of potential improvements to the report (e.g. use of PRODCOM data, reporting and analysis by products/segments).

#### **3.2 Propose recommendations to build future fish processing reports using Eurostat data as the main source of data and complemented by DCF data if available.**

With the introduction of the EUMAP the economic data collection of the fish-processing sector is no longer mandatory. Therefore, the data collection of EUROSTAT may become the main source of information for the economic situation of the EU fish-processing sector. MS can, however, still collect the data within the EUMAP. In line with the general approach of EU policies to avoid duplication in data collection at EU level, the EUMAP (specifically the COMMISSION IMPLEMENTING DECISION (EU) 2016/1701 of 19 August 2016 laying down rules on the format for the submission of work plans for data collection in the fisheries and aquaculture sectors) sets, in the comments to Table 3C, to "specify data collection for variables not covered by the EUROSTAT or for which additional sampling is required. Economic data shall be collected on fish processing companies below 10 employees as well as for companies which have fish processing as a secondary activity, as well as for unpaid labour and raw material. Employment data, by gender, shall be collected for all companies' sizes".

With this comment EUMAP allows to MS to carry out specific surveys, if needed (e.g. or for which additional sampling is required) hence producing data for the fish processing not completely matching with SBS data (next section for details on the match between the two datasets).

In order to reply to this TOR and so to understand if a future STECF fish processing report could be based on Eurostat data as the main source of data and complemented by DCF data if available, experts attending the EWG decided to make a check of the planned data collection for the fish processing sector at MS level under the new data collection Programme (2017-2019).

All the MS WP were downloaded from <https://datacollection.jrc.ec.europa.eu/wp-np-ar> and a template prepared by experts was used to facilitate this check.

The template was aimed to obtain the following information:

1. If the MS has planned a data collection for the fish processing sector (now being on a voluntary basis)
2. If this data collection is based on the use of ESTAT (SBS) data
3. If using SBS data, complementary data are collected to reply to EUMAP requirements
4. If MS plan to collect social variables
5. If MS plan to collect data on raw material
6. If there are important issues arising from the WP or according to the experts of people attending the EWG

In the light of the general objectives of EUMAP in terms of avoiding overlapping in data collection, experts attending the EWG were expecting a higher number of MS using SBS data as the main reference for data collection over the period 2017-2019. Indeed, and considering that EUMAP allows to carry out specific surveys, the situation is the following:

- On 27 MS presenting a WP, 21 have included a data collection for the fish processing sector. The 6 countries not presenting a plan for this sector (Estonia, Portugal, Cyprus, Austria, Netherlands and Czech Republic) have different reasons. For Cyprus there is no interest because of the small size of the sector and because of evident confidentiality problems behind. Estonia and Portugal did not present a plan because they were already using SBS data and so they don't deem necessary to plan a specific data collection under EUMAP).
- On the 21 MS planning a data collection for the fish processing sector, only 6 are going to use exclusively SBS (e.g. Sweden, Finland, Denmark, Latvia, Croatia and Spain), as the National Institutes in charge of data collection under DCF are the same or provide data to those institutes replying to the data calls. In 2 cases (Italy and Germany), SBS will be used partly and complemented for data not covered by SBS (including social data) or for some segments (>20 employees and <10 employees for Germany and Italy, respectively). In all the reminder MS (13), specific survey will be carried out to collect data for the fish processing sector.
- Of 21 MS planning a data collection it is interest to note that a full comparability of future data (collected in 2017-2019) to past data (provided with the last data call) is reported by experts for most MS (16 countries). A partial comparability is reported for Italy (changing the data collection system to comply with the use of Eurostat data recommended by EUMAP). For 2 MS this is not an issues because they are landlocked countries (Hungary and Slovakia) and they are going to collect data on the fish processing sector for the first time. For the remaining MS (France and Spain) it is not clear if the data collection will provide data completely in line with past data.
- As far as social data, of 21 MS planning a data collection for the fish processing sector, all of them are planning to collect social data.
- As far as raw material, of 21 MS planning a data collection for the fish processing sector, 16 MS are planning to collect raw material data in terms of weight and species.
- Of MS not planning a data collection under their WP there are some (e.g. Portugal) that are, anyway, willing to reply to future data calls (in a voluntary basis), when and if planned.

This check clarifies what will be the situation of data collected under the DCF frame. According to this frame it is clear that DCF data will not have Eurostat data as the main source and very negligible changes are foreseen for a future report based on DCF data, as the data will be collect according to the same methodology as in the past National Programmes for almost all the MS.

In the light of this and replying to the request of the TOR (asking to reply if it would be possible to build future fish processing reports using Eurostat data as the main source of data and complemented by DCF data if available) experts of EWG 17-16 consider that this request can be replied only if considering a future report not completely based on DCF data.

If just replying to the possibility of building a report on the fish processing sector based on Eurostat data (and eventually complemented by DCF) it is important to look in details which are the data available in the Eurostat database (Table 3.2.1).

**Table 3.2.1: List of variables for the fish processing sector (NACE code 10.20) available under EUROSTAT Structural Business Statistics (grouped per major item)**

Structure	Number of enterprises	number
	Number of persons employed	
	Number of unpaid persons employed	
Employment	Number of employees	number
	Number of employees in full time equivalent units	
	Number of hours worked by employees	
	Production value	
Production value and turnover	Change in stocks of finished products and work in progress manufactured by the unit	million €
	Turnover or gross premiums written	
	Turnover from the principal activity at 3-digit level NACE Rev. 2	
	Personnel costs	
	Wages and Salaries	
	Social security costs	
	Payments for agency workers	
Costs	Payments for long term rental and operational and financial leasing of goods	million €
	Purchases of energy products (in value)	
	Purchases of goods and services purchased for resale in the same condition as received	
	Total purchases of goods and services	
	Gross investment in land	
	Gross investment in machinery and equipment	
	Gross investment in construction and alteration of buildings	
Investments	Gross investment in existing buildings and structures	million €
	Gross investment in tangible goods	
	Net investment in tangible goods	
	Sales of tangible investment goods	

The deadlines for MS in delivering data to Eurostat are the following:

- Provisional data: data from MS have to be transmitted within 10 months, starting from the end of the reference period (October of N+1);
- Final data: data from MS have to be transmitted within 18 months, starting from the end of the reference period (July of N+2).

The timing for Eurostat in publishing data are the following:

- Preliminary data are published by Eurostat about one year after the end of the reference year (around December of N+1);
- Final data are published by Eurostat about two years after the end of the reference year (between October-December N+2).

Deadlines of publication are important for MS using and SBS as this impact really on the possibility to use from MS and in the complete matching between data present on the Eurostat database and data delivered by MS during the data call (because of the timing of DCF data calls

and those of Eurostat, some MS use provisional SBS in order to be compliant with the DCF data call).

### **3.3 Discuss the main differences across both datasets.**

As far as the comparability of the two datasets, experts were looking at data updated to 2015, for both datasets. The two data sets do not completely match. The reason why MS are using a different approach (specific survey for DCF) is a different definition in the reference population. In some MS SBA data cover not the entire fish processing sector but only a portion of it, most of the time defined by a threshold base on the number of employees, e.g. >20. Within the EUMAP also companies with fewer employees shall be sampled.

For sake of clarity, it is interesting to look into the differences between the two datasets for the main variables (number of enterprises, number of employees and turnover) reported in Tables 3.3.1, 3.3.2 and 3.3.3. These tables have been prepared by JRC as preparatory work. Actually, it was not so clear how many MS would carry out data collection for fish processing under EUMAP (see Annex).

As far as the number of enterprises, considering the total at EU level there are not big differences between the two datasets: in 2015 3,641 for EUROSTAT and 3,603 for DCF (DCF figures being 1% lower than EUROSTAT ones). The difference is decreasing over the period 2008-2015 but different situations appear when looking at data by MS – Table 3.3.1 MS for which the difference between EUROSTAT and DCF is within +/- 10% are: Bulgaria, Denmark, Estonia, Finland, Latvia, Portugal, Spain and Sweden.

As far as employment, considering the total at EU the differences between the two datasets, at EU level, is around 23% (EUROSTAT-DCF), largely variable over the period 2008-2015. Again, very different situations appear when looking at data by MS – Table 3.3.2 MS for which the difference between EUROSTAT and DCF is within +/- 10% are: Estonia, Finland, Latvia, Lithuania, Poland, Portugal, Spain and Sweden.

As far as turnover, the difference at EU level is less than 10% (DCF data higher than EUROSTAT), decreasing in the last period under analysis. Again, very different situations appear when looking at data by MS – Table 3.3.3 MS for which the difference between EUROSTAT and DCF is within +/- 10% are: Denmark, Estonia, Finland, Germany, Italy, Latvia, Poland, Portugal and Spain.

Generally, differences are lower for countries that, according to their Work Plans, declare to use EUROSTAT data as the main reference for producing DCF data. It would be interesting to go deeper in the analysis of this (mis)match: indeed, also for countries using EUROSTAT data some differences remain. Generally, it should be helpful to understand why these differences exist, clarifying if they are due to differences in the reference population or in definition of variables under EUROSTAT and DCF. Considering that experts attending EWG 17-16 were not all involved in the data collection at MS level, **it could be helpful to postpone this discussion to the next PGECON, where people attending are delegates of MS.**

**Table 3.3.1: Number of enterprises reported by MS to Eurostat and DCF**

Number of enterprises	ESTAT								DCF								DIFFERENCE (ESTAT - DCF)	DIFFERENCE (ESTAT - DCF)							
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015		2008	2009	2010	2011	2012	2013	2014	2015
Austria	6	5	6	5	5	6	9	10										6	5	6	5	5	6	9	10
Belgium	56	37	35	41	33	38	33	40	53	58	56	56	59	60	66	66		3	- 21	- 21	- 15	- 26	- 22	- 33	- 26
Bulgaria	31	33	34	33	33	40	42	43	45	45	48	43	43	46	44	45		- 14	- 12	- 14	- 10	- 10	- 6	- 2	- 2
Croatia	46	46	47	46	52	50	50	43	-	-	-	35	35	37	38	35		46	46	47	11	17	13	12	8
Cyprus									5	3	5	5	4	3	3	2		- 5	- 3	- 5	- 5	- 4	- 3	- 3	- 2
Czech Republic	20	24	22	22	24	22	20	20										20	24	22	22	24	22	20	20
Denmark	119	117	110	103	101	98	96	103	117	123	115	107	106	103	100	108		2	- 6	- 5	- 4	- 5	- 5	- 4	- 5
Estonia	59	56	58	69	64	55	57	70	50	51	53	55	61	53	62	64		9	5	5	14	3	2	- 5	6
Finland	147	142	146	146	149	149	140	147	143	137	143	143	143	147	137	136		4	5	3	3	6	2	3	11
France	348	314	310	318	317	351	327	380	327	311	305	300	295	302	302	291		21	3	5	18	22	49	25	89
Germany	233	233	183	193	197	204	252	201	281	263	265	265	250	253	258	248		- 48	- 30	- 82	- 72	- 53	- 49	- 6	- 47
Greece	81	84	85	78	84	92	83	93	-	-	-	152	147	144	133	145		81	84	85	- 74	- 63	- 52	- 50	- 52
Hungary	13	10	11	10	11	10	9	9										13	10	11	10	11	10	9	9
Ireland	101	100	100	98	98	105	101	108	172	169	169	168	164	165	162	161		- 71	- 69	- 69	- 70	- 66	- 60	- 61	- 53
Italy	442	419	397	391	387	395	402	402	376	414	547	530	537	587	574	577		66	5	- 150	- 139	- 150	- 192	- 172	- 175
Latvia	108	96	111	102	118	111	111	112	95	91	104	101	101	116	106	114		13	5	7	1	17	- 5	5	- 2
Lithuania	66	63	69	80	82	88	89	85	37	33	32	32	31	30	34	51		29	30	37	48	51	58	55	34
Malta	-	-	-	-	-	-	-	-	7	10	8	8	6	6	6	5		- 7	- 10	- 8	- 8	- 6	- 6	- 6	- 5
Netherlands	115	121	126	122	134	147	141	144	101	85	89	88	84	83	81	-		14	36	37	34	50	64	60	144
Poland	410	337	333	290	311	280	281	301	190	191	188	185	184	183	180	185		220	146	145	105	127	97	101	116
Portugal	203	192	180	169	166	154	153	157	213	202	180	169	166	154	153	157		- 10	- 10	-	-	-	-	-	-
Romania	41	35	31	32	34	31	27	35	-	13	18	22	14	7	10	8		41	22	13	10	20	24	17	27
Slovakia	8	10	13	10	8	10	-	-										8	10	13	10	8	10	-	-
Slovenia	5	3	4	4	4	4	5	6	12	13	13	14	15	14	13	12		- 7	- 10	- 9	- 10	- 11	- 10	- 8	- 6
Spain	689	709	685	649	619	640	542	598	572	585	552	513	487	640	542	598		117	124	133	136	132	-	-	-
Sweden	214	217	219	219	223	223	225	222	214	217	219	219	223	222	224	224		-	-	-	-	-	1	1	- 2
United Kingdom	343	337	337	348	333	323	319	312	525	482	420	408	383	389	375	371		- 182	- 145	- 83	- 60	- 50	- 66	- 56	- 59
Total	3,904	3,740	3,652	3,578	3,587	3,626	3,514	3,641	3,535	3,496	3,529	3,618	3,538	3,744	3,603	3,603		369	244	123	- 40	49	- 118	- 89	38

**Table 3.3.2: Employment reported by MS to Eurostat and DCF**

Number of persons employed	ESTAT								DCF								DIFFERENCE (ESTAT - DCF)	DIFFERENCE (ESTAT - DCF)							
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015		2008	2009	2010	2011	2012	2013	2014	2015
Austria	143	130	125	139	134	134	130	-										143	130	125	139	134	134	130	-
Belgium	1,112	1,040	788	876	1,287	1,174	1,131	1,087	1,298	1,441	1,546	1,522	1,497	1,489	1,487	1,529		- 186	- 401	- 758	- 646	- 210	- 315	- 356	- 442
Bulgaria	1,390	1,475	1,470	1,353	1,390	1,570	1,484	1,539	1,704	1,538	1,917	1,749	1,650	1,725	1,879	1,907		- 314	- 63	- 447	- 396	- 260	- 155	- 395	- 368
Croatia	-	1,778	1,484	1,459	-	1,888	1,745	1,485	-	-	-	1,512	1,442	1,826	1,818	1,805		-	1,778	1,484	- 53	1,442	62	- 73	- 320
Cyprus									56	43	66	72	56	27	36	14		- 56	- 43	- 66	- 72	- 56	- 27	- 36	- 14
Czech Republic	-	367	866	853	736	700	743	780										-	367	866	853	736	700	743	780
Denmark	4,985	4,175	3,714	4,124	4,080	4,146	4,147	4,211	4,379	4,227	3,791	3,704	3,409	3,453	3,613	3,614		606	- 52	- 77	420	671	693	534	597
Estonia	2,106	1,831	1,772	1,916	1,961	1,899	1,841	1,895	1,936	1,847	1,887	1,847	1,861	1,879	1,914	1,879		170	- 16	- 115	69	100	20	- 73	16
Finland	839	907	941	982	971	-	1,254	1,006	961	880	885	870	962	1,012	1,237	1,004		- 122	27	56	112	9	1,012	17	2
France	-	-	12,814	11,819	12,023	13,324	12,542	12,122	15,672	15,590	15,633	15,963	15,672	16,465	17,326	17,523		#####	#####	-2,819	- 4,144	- 3,649	- 3,141	- 4,784	- 5,401
Germany	9,523	8,389	8,233	7,635	8,070	7,836	7,876	7,714	8,441	7,566	7,031	6,780	7,010	6,751	6,561	6,665		1,082	823	1,202	855	1,060	1,085	1,315	1,049
Greece	1,471	1,193	2,131	2,010	1,900	1,881	1,078	962	-	-	-	2,505	2,330	2,183	1,964	2,062		1,471	1,193	2,131	- 495	- 430	- 302	- 886	- 1,100
Hungary	61	78	69	62	54	18	52	10										61	78	69	62	54	18	52	10
Ireland	1,869	1,907	1,989	2,026	2,187	2,241	2,373	2,299	2,867	3,020	3,064	3,200	3,342	3,534	3,688	3,797		- 998	- 1,113	-1,075	- 1,174	- 1,155	- 1,293	- 1,315	- 1,498
Italy	5,962	5,343	5,615	5,544	5,492	5,592	5,423	5,408	5,425	5,285	5,950	6,109	6,197	6,292	5,628	5,926		537	58	- 335	- 565	- 705	- 700	- 205	- 518
Latvia	6,003	4,728	5,028	5,412	5,825	6,225	5,756	4,258	5,792	4,684	5,015	5,399	5,781	6,223	5,558	4,169		211	44	13	13	44	2	198	89
Lithuania	4,559	4,244	4,521	4,370	4,573	4,762	4,888	5,389	5,013	4,489	4,351	4,445	4,451	4,471	5,165	5,373		- 454	- 245	170	- 75	122	291	- 277	16
Malta	-	-	-	-	-	-	-	-	56	131	19	32	56	114	114	82		- 56	- 131	- 19	- 32	- 56	- 114	- 114	- 82
Netherlands	3,824	3,335	3,241	3,239	3,210	3,262	3,197	3,162	2,953	3,453	3,218	3,253	3,567	3,677	3,935	-		871	- 118	23	- 14	- 357	- 415	- 738	3,162
Poland	16,366	17,205	16,134	15,231	15,309	16,057	16,944	17,591	15,489	15,357	15,176	14,809	15,090	14,783	16,775	17,743		877	1,848	958	422	219	1,274	169	- 152
Portugal	6,996	7,097	7,376	7,447	7,167	6,726	7,068	7,148	6,664	6,815	7,376	7,447	7,167	6,726	7,068	7,148		332	282	-	-	-	-	-	-
Romania	1,588	1,370	1,387	1,130	1,108	1,172	1,205	1,288	-	572	1,598	1,181	780	438	510	483		1,588	798	- 211	- 51	328	734	695	805
Slovakia	790	697	711	656	597	577	-	-										790	697	711	656	597	577	-	-
Slovenia	295	-	-	-	-	-	-	-	250	223	266	379	354	351	221	209		45	- 223	- 266	- 379	- 354	- 351	- 221	- 209
Spain	19,839	19,430	18,764	18,576	18,457	18,445	18,372	19,034	19,737	19,331	18,581	18,390	18,324	18,448	18,340	19,033		102	99	183	186	133	- 3	32	1
Sweden	-	2,042	-	-	-	-	2,336	2,417	2,165	1,991	2,007	2,126	2,135	2,199	2,174	2,171		- 2,165	51	-2,007	- 2,126	- 2,135	- 2,199	162	246
United Kingdom	16,176	-	15,499	14,365	13,648	13,484	14,172	-	22,988	22,583	21,057	20,754	20,073	20,541	20,126	20,111		- 6,812	#####	-5,558	- 6,389	- 6,425	- 7,057	- 5,954	-20,111
Total	#####	88,761	#####	#####	#####	#####	#####	#####	123,846	121,066	120,435	124,047	123,206	124,607	127,136	124,247		#####	#####	-5,763	#####	-13,027	-11,494	-11,379	-23,442



**Table 3.3.3: Turnover reported by MS to Eurostat and DCF**

Turnover or gross premiums written	ESTAT								DCF								DIFFERENCE (ESTAT - DCF)	DIFFERENCE (ESTAT - DCF)							
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015		2008	2009	2010	2011	2012	2013	2014	2015
Austria	32	34	38	39	40	39	42	-										32	34	38	39	40	39	42	-
Belgium	482	443	345	410	557	568	568	600	541	587	658	688	644	660	701	710		- 59	- 144	- 313	- 278	- 87	- 92	- 133	- 110
Bulgaria	30	30	31	29	34	39	40	56	53.9	53.4	59.3	55.7	52.2	64.4	68.7	85.3		- 24	- 23	- 29	- 27	- 18	- 25	- 29	- 30
Croatia	-	87	79	91	-	85	97	102	-	-	-	67.2	62.6	57.9	71.5	75.9		-	87	79	24	- 63	27	25	26
Cyprus									3.9	4.8	13.7	8.4	7.4	11.6	5.5	3.3		- 4	- 5	- 14	- 8	- 7	- 12	- 5	- 3
Czech Republic	34	41	102	93	84	84	83	85										34	41	102	93	84	84	83	85
Denmark	1,761	1,668	1,797	1,801	1,955	2,180	2,228	2,444	1,702.6	1,693.2	1,828.8	1,858.7	2,010.0	2,229.8	2,269.4	2,488.9		59	- 25	- 32	- 58	- 55	- 50	- 41	- 45
Estonia	124	110	125	149	151	164	168	172	116.5	99.9	110.9	129.2	143.2	160.8	172.4	175.8		7	10	14	19	8	3	- 4	- 4
Finland	160	196	237	264	265	-	397	300	160.0	195.4	236.1	262.8	264.7	356.0	396.8	299.8		0	0	1	1	0	356	- 0	0
France	3,140	3,029	3,149	3,412	3,516	3,646	3,512	3,677	4,315.2	4,334.5	4,507.3	4,802.3	4,315.2	5,095.0	5,263.5	5,516.1		- 1,175	- 1,306	- 1,359	- 1,390	- 799	- 1,449	- 1,752	- 1,839
Germany	2,533	2,180	2,127	2,080	2,286	2,156	2,090	2,183	2,366.5	2,034.0	1,972.7	1,966.5	2,040.4	2,059.7	1,982.9	2,091.4		166	146	154	114	246	96	107	91
Greece	188	158	368	353	344	338	169	170	-	-	-	268.3	232.9	195.2	214.3	238.8		188	158	368	85	111	143	- 45	- 69
Hungary	3	5	4	4	1	1	1	1										3	5	4	4	1	1	1	1
Ireland	468	472	470	531	536	577	517	563	571.5	537.9	544.8	558.7	656.5	613.3	655.3	685.8		- 104	- 66	- 75	- 28	- 121	- 37	- 138	- 123
Italy	2,114	2,211	2,319	2,410	2,188	2,377	2,417	2,465	2,906.1	2,201.2	2,623.4	2,281.2	2,557.0	2,287.3	2,234.9	2,243.0		- 792	10	- 304	129	- 369	90	182	222
Latvia	218	153	152	171	230	255	228	169	214.9	152.8	153.8	170.8	226.7	255.1	221.6	172.3		3	0	- 1	- 0	4	- 0	7	- 3
Lithuania	232	233	294	314	345	394	478	525	194.9	231.0	283.5	305.1	290.8	318.7	419.2	443.1		37	2	10	9	54	75	59	82
Malta	-	-	-	-	-	-	-	-	37.0	37.4	23.0	37.7	29.6	46.2	35.6	22.7		- 37	- 37	- 23	- 38	- 30	- 46	- 36	- 23
Netherlands	-	677	798	857	827	880	935	915	712.3	689.0	704.4	803.7	775.4	814.9	846.3	-		- 712	- 12	94	53	52	65	89	915
Poland	1,442	1,422	1,494	1,681	1,772	2,025	2,167	2,362	1,462.5	1,438.6	1,634.4	1,749.1	1,883.0	2,127.7	2,251.8	2,503.3		- 21	- 17	- 141	- 68	- 111	- 103	- 84	- 141
Portugal	1,159	1,065	1,075	1,145	1,133	1,129	1,131	1,168	1,090.8	1,015.0	1,075.2	1,145.0	1,132.8	1,129.3	1,130.5	1,167.6		68	50	- 0	0	0	0	0	0
Romania	68	74	73	78	85	77	83	94	-	31.9	816.6	44.5	30.4	19.6	15.8	14.7		68	42	- 744	34	55	58	67	80
Slovakia	56	58	66	65	67	72	-	-										56	58	66	65	67	72	-	-
Slovenia	15	-	-	-	11	12	-	-	29.0	26.1	28.6	35.4	32.3	30.0	24.4	25.7		- 14	- 26	- 29	- 35	- 21	- 18	- 24	- 26
Spain	4,160	4,118	4,274	4,667	4,521	4,605	4,607	4,944	4,148.2	4,112.1	4,256.1	4,646.4	4,533.2	4,633.7	4,604.9	4,944.4		11	6	18	21	- 12	- 29	2	0
Sweden	-	467	-	-	-	-	614	619	519.8	467.2	567.5	599.4	613.2	542.0	499.8	512.5		- 520	0	- 568	- 599	- 613	- 542	114	106
United Kingdom	2,981	3,101	3,277	3,021	3,096	3,294	3,887	4,022	5,554.1	4,517.6	4,927.7	5,078.0	5,525.2	5,064.5	5,315.5	5,305.7		- 2,573	- 1,417	- 1,651	- 2,058	- 2,430	- 1,770	- 1,429	- 1,284
Total	21,399	22,031	22,692	23,664	24,044	24,997	26,457	27,632	26,701.2	24,460.1	27,025.9	27,562.3	28,058.4	28,772.7	29,401.9	29,726.0		- 5,302	- 2,429	- 4,334	- 3,899	- 4,014	- 3,776	- 2,945	- 2,094

Beside the match between EUROSTAT and DCF data over the period 2008-2015, experts of EWG 17-16 considered it important also to look at the list of DCF variables requested (on a voluntary basis) under EUMAP and if (and how) they match with EUROSTAT variables. The result of this analysis is reported in Table 3.3.4, where the last column also reports if there is a possibility for MS to derive DCF data from EUROSTAT data. This could be useful both for MS using EUROSTAT data to reply to DCF as well as for comparability, in the future, of DCF data and EUROSTAT data for countries not collecting data under DCF in the future (as it would be good to include also these countries, if they are not going or willing to reply to data calls).

Details are reported in Table 3.3.4 below:

**Table 3.3.4: Matching table between DCF and Eurostat SBS variables**

DCF variables according to EUMAP		Match DCF - Eurostat	Eurostat (SBS) variables	How to estimate DCF variables from Eurostat data
Structure	Number of enterprises	Full	Number of enterprises (SBS code 11 11 0)	
	Number of enterprises (non main activities)			
Income	Turnover	Full	Turnover from the principal activity at 3-digit level NACE Rev. 2 (SBS code 18 11 0)	
	Other income			Turnover or gross premiums written (12 11 0) - Turnover from the principal activity at 3-digit level NACE Rev. 2 (SBS code 18 11 0) <sup>8</sup>
Personnel costs	Personnel costs	Full	Personnel costs (SBS code 13 31 0)	
	Value of unpaid labour			Number of unpaid persons employed*(Personnel costs/Number of employees)
	Payments for external agency workers (optional)	Full	Payments for agency workers (SBS code 13 13 1)	
Energy costs	Energy costs	Full	Purchases of energy products (in value) (SBS code 20 11 0)	
Raw material costs	Purchase of fish and other raw material for production			Total purchase of goods and services (13 11 0) - Payments for agency workers - Payments for long term rental and operational and financial leasing of goods - Purchases of energy products (in value) - Purchases of goods and services purchased for resale in the same condition as received
Other operational costs	Other operational costs			Payments for long term rental and operational and financial leasing of goods + Purchases of goods and services purchased for resale in the same condition as received

<sup>8</sup> Calculating other income in this way only other income deriving from secondary activity are estimated. Other income deriving from other type of operations (not generating turnover) are not considered. A possible approach to have the entire value of "other income" could be, once estimated the value of subsidies, to calculate as: Production value (12 12 0) -Turnover from the principal activity at 3-digit level NACE Rev. 2-Change in stocks (13 21 3)-Subsidies (once estimated, not from SBS)

DCF variables according to EUMAP		Match DCF - Eurostat	Eurostat (SBS) variables	How to estimate DCF variables from Eurostat data
Subsidies	Operating subsidies			
	Subsidies on investments			
Capital Costs	Consumption of fixed capital			
Capital value	Total value of assets			
Financial results	Financial income			
	Financial expenditures			
Investment	Net Investments	Full	Net investment in tangible goods (SBS 15 11 0 / 15 21 0)	Gross investments in tangible goods (15 11 0)-Sales of tangible investment goods (15 21 0)
Debt	Debt			
Employment	Total employees	Full	Number of employees (SBS code 16 13 0)	
	FTE national	Full	Number of employees in full time equivalent units (SBS code 16 14 0)	
	Unpaid labour (number)	Full	Number of unpaid persons employed (SBS code 16 12 0) <sup>9</sup>	
	Number of hours worked by employees and unpaid workers	Partly	Number of hours worked by employees (SBS code 16 15 0)	Missing hours worked by unpaid persons
Social variables	Employment by gender			Applying % for female and male employment derived from the Labour Force Survey, LFS, (Eurostat) to Number of employees (Eurostat).
	Employment by age			Applying % for employment by age derived from the Labour force survey to Number of employees (Eurostat)
	Employment by education level			Applying % for employment by educational level derived from the Labour force survey to Number of employees (Eurostat)
	Employment by nationality			
	FTE national	Full	Number of employees in full time equivalent units (SBS code 16 14 0)	

Considering that experts attending EWG 17-16 were not all involved in the data collection at MS level, it could be helpful to go deeper in this discussion and on the correct definition of DCF variable as well as on the correspondence with EUROSTAT variables in the next PGECON, where people attending are delegates of MS.

<sup>9</sup> According to SBS the number of unpaid persons could be available at MSs level. The SBS regulation indeed states: “Characteristic 16 12 0 Number of unpaid persons employed can be transmitted by the reporting Authorities. If not provided, it will be calculated as the difference between the values provided for the variables 16 11 0 and 16 13 0. The data will be considered confidential if either 16 11 0 or 16 13 0 or both are confidential.”

### 3.4 Discuss feasibility of potential improvements to the report (e.g. use of PRODCOM data, reporting and analysis by products/segments).

Data can be used to incorporate more details both at national and at EU level in terms of products (species and main typology of processing).

PRODCOM data available in the Eurostat database give information, by commodities, for:

- the physical volume of production sold during the survey period;
- the value of production sold during the survey period;
- for some products, the volume of total production during the survey period.

As far as the fish products, it's possible to derive information on the following commodities (to be in line with the requirements of the DCF on the definition of the population, being composed only of enterprises registered under NACE code 10.20, Prepared meals and dishes based on fish, crustaceans and molluscs 10851200 are not included in the list):

**Table 3.4.1: List of fish commodities in PRODCOM**

<b>PRODCOM Code</b>	<b>Description of commodities</b>
100000Z2	Fish, crustaceans, molluscs and other aquatic invertebrates, otherwise prepared or preserved, including prepared meals and dishes
10201100	Fresh or chilled fish fillets and other fish meat without bones
10201200	Fresh or chilled fish livers and roes
10201330	Frozen whole salt water fish
10201360	Frozen whole fresh water fish
10201400	Frozen fish fillets
10201500	Frozen fish meat without bones (excluding fillets)
10201600	Frozen fish livers and roes
10202100	Fish fillets, dried, salted or in brine, but not smoked
10202200	Flours, meals and pellets of fish, fit for human consumption; fish livers and roes, dried, smoked, salted or in brine
10202350	Dried fish, whether or not salted; fish, salted but not dried; fish in brine (excluding fillets, smoked, heads, tails and maws)
10202425	Smoked Pacific, Atlantic and Danube salmon (including fillets, excluding heads, tails and maws)
10202455	Smoked herrings (including fillets, excluding heads, tails and maws)
10202485	Smoked fish (excluding herrings, Pacific, Atlantic and Danube salmon), including fillets, excluding head, tails and maws
10202510	Prepared or preserved salmon, whole or in pieces (excluding minced products and prepared meals and dishes)
10202520	Prepared or preserved herrings, whole or in pieces (excluding minced products and prepared meals and dishes)
10202530	Prepared or preserved sardines, sardinella, brisling and sprats, whole or in pieces (excluding minced products and prepared meals and dishes)
10202540	Prepared or preserved tuna, skipjack and Atlantic bonito, whole or in pieces (excluding minced products and prepared meals and dishes)
10202550	Prepared or preserved mackerel, whole or in pieces (excluding minced products and prepared meals and dishes)
10202560	Prepared or preserved anchovies, whole or in pieces (excluding minced products and prepared meals and dishes)
10202570	Fish fillets in batter or breadcrumbs including fish fingers (excluding prepared meals and dishes)

10202580	Other fish, prepared or preserved, whole or in pieces (excluding minced products and prepared meals and dishes)
10202590	Prepared or preserved fish (excluding whole or in pieces and prepared meals and dishes)
10202630	Caviar (sturgeon roe)
10202660	Caviar substitutes
10203100	Frozen crustaceans, frozen flours, meals and pellets of crustaceans, fit for human consumption
10203200	Molluscs (scallops, mussels, cuttle fish, squid and octopus), frozen, dried, smoked, salted or in brine
10203300	Other aquatic invertebrates (striped venus, jellyfish, etc.), frozen, dried, smoked, salted or in brine; flours, meals and pellets of aquatic invertebrates other than crustaceans, fit for human consumption, frozen, dried, smoked, salted or in brine
10203400	Prepared or preserved crustaceans, molluscs and other aquatic invertebrates (excluding chilled, frozen, dried, salted or in brine, crustaceans, in shell, cooked by steaming or boiling) (excluding prepared meals and dishes)
10204100	Flours, meals and pellets of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption
10204250	Fish heads, tails and maws, other edible fish offal: dried, salted or in brine, smoked
10411200	Fats and oils and their fractions of fish or marine mammals (excluding chemically modified)

Statistics are available at MS level even if there are different approach in relation to the coverage of the sector. Checking on the metadata by MS, it is interesting to note that the PRODCOM data are sometime aligned with SBS sometime not (e.g. Finland). Moreover, there are some countries for which PRODCOM have a wider coverage (enterprise with employees  $\geq 3$ , e.g. Italy) while for other MS it is lower (enterprise with employees  $\geq 20$ , Germany, Spain). Hence, if using PRODCOM data in a future report, it is important to check, MS by MS which is the coverage of the PRODCOM survey at MS level and the potential alignment with SBS (for MS using SBS for producing DCF data).

It is important to note also that some PRODCOM data are not published for some commodities for confidentiality reasons (different by MS). Just to give an idea of the size of the confidentiality issue (identified in the dataset with ":C"), a table below is reported with 2015 data in terms of value for all the countries.

Table 3.4.2: Example of 2015 PRODCOM data

Commodities	PRODCOM Code	Unit	flag	Value EU28	Base EU28	EU																				The United Kingdom									
						Belgium	Bulgaria	Czech Republic	Denmark	Germany	Estonia	Ireland	Greece	Spain	France	Italy	Cyprus	Latvia	Lithuania	Luxembourg	Hungary	Malta	The Netherlands	Austria	Poland	Portugal	Romania	Slovenia	Slovakia	Finland	Sweden				
Fish, crustaceans, molluscs and other aquatic invertebrates	1000022	EUR	11062520			7997449	C	32159	29590	538735	1235181	37625	C		2467973	1907332	C		89333	127534	0	C	0	100706	C	721289	343221	40365	C	26460	45751	231711	C	22484	
Fresh or chilled fish fillets and other fish meat without bones	1020110	EUR	2580834			2562830	C	124054	3444	4009	160605	158716	13799	198051	9873	99660	525209	C	40948	0	C	0	0	125788	C	193835	10110	0	0	0	74402	71003	747544	38	
Fresh or chilled fish livers and roes	1020120	EUR	5735			3099	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0	1379	0	0	0	
Frozen whole salt water fish	10201330	EUR	1353626			1242374	C	2725	C	8635	C	12069	173871	11354	262169	14344	165747	0	9322	2038	0	0	0	85475	C	0	0	0	0	265420	5831	0	10075	8032	
Frozen whole fresh water fish	10201360	EUR	22145			17176	0	3469	C	0	0	68	0	0	0	2941	221	0	C	229	0	C	0	0	0	0	0	0	0	0	3369	6722	0	0	0
Frozen fish fillets	10201400	EUR	1053440			1038883	C	375	16518	66080	144986	52213	37508	4190	151557	70307	21708	0	C	82319	0	47	0	119142	C	0	0	0	0	132842	15029	0	0	117263	
Frozen fish meat without bones (excluding fillets)	10201500	EUR	175978			163801	C	0	0	3661	17459	1967	C	0	67224	5877	4540	0	C	2788	0	216	0	0	0	0	0	0	0	28336	31160	0	0	153	
Frozen fish livers and roes	10201600	EUR	8182			6659	0	0	0	3549	2779	3194	C	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	791	0	0	1293	0	
Fish fillets, dried, salted or in brine, but not smoked	10202100	EUR	210000	30000		134459	C	0	0	15634	2779	3194	C	0	22434	C	15857	0	463	18343	0	0	0	0	0	0	0	0	0	42812	C	0	0	2083	
Flours, meals and pellets of fish, fit for human consumption	10202200	EUR	21499			20434	C	0	0	3164	C	1033	0	0	6352	7710	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Dried fish, whether or not salted; fish, salted but not dried; fr	10202350	EUR	446248			426769	C	992	C	0	4447	CE	2865	0	C	129945	C	35075	0	2962	4812	0	0	0	0	0	0	0	0	5533	230873	C	0	0	
Smoked Pacific, Atlantic and Danube salmon (including file	10202425	EUR	2641029			2503821	C	0	0	4530	208223	4530	24970	0	161452	524478	52551	0	C	168271	0	0	0	0	0	0	0	0	0	0	775930	0	0	20449	
Smoked herrings (including fillets, excluding heads, tails an	10202455	EUR	80000	10000		39700	C	0	338	500	6108	131	C	1693	102	10036	C	0	0	0	0	0	0	0	0	0	0	0	0	0	2746	0	0	1283	
Smoked fish (excluding herrings, Pacific, Atlantic and Danu	10202485	EUR	737768			606100	13076	577	5432	71646	77280	14244	4405	1259	25567	40375	5045	0	3936	14711	0	0	0	0	0	0	0	0	0	127571	0	7094	0	0	
Prepared or preserved salmon, whole or in pieces (excludin	10202510	EUR	192000	6000		163515	7232	393	0	E	18575	3451	661	0	932	12930	16327	0	2955	18195	0	0	0	0	0	0	0	0	0	60752	4993	0	0	111	
Prepared or preserved herrings, whole or in pieces (excludi	10202520	EUR	748965			622895	12782	2180	C	E	281950	3407	C	0	0	6098	0	0	8595	22213	0	0	0	0	0	0	0	0	0	0	273374	0	6034	0	
Prepared or preserved sardines, sardinella, brisling and spr	10202530	EUR	450232			380963	C	1558	0	E	0	4028	C	7875	90592	75711	11198	0	54157	893	0	0	0	0	0	0	0	0	0	61174	58220	0	0	0	
Prepared or preserved tuna, skipjack and Atlantic bonito, w	10202540	EUR	2467202			2353641	16068	C	0	E	0	0	0	6180	1523048	104786	586459	0	C	3	0	0	0	0	0	0	0	0	0	0	114370	0	0	0	
Prepared or preserved mackerel, whole or in pieces (exclud	10202550	EUR	341207			247770	C	7782	0	E	0	29	C	2300	29324	109980	C	0	C	3721	0	0	0	0	0	0	0	0	0	0	47241	45396	0	0	0
Prepared or preserved anchovies, whole or in pieces (excluc	10202560	EUR	198000	6000		171335	C	0	0	E	0	5873	0	4248	123220	3152	33089	0	C	0	0	0	0	0	0	0	0	0	0	0	151	C	0	0	
Fish fillets in batter or breadcrumbs including fish fingers (e	10202570	EUR	1578440			1457301	18746	0	0	E	482239	12551	C	0	68125	243158	74986	0	C	12	0	0	0	0	0	0	0	0	0	0	0	154	0	0	
Other fish, prepared or preserved, whole or in pieces (exclud	10202580	EUR	475634			395344	24158	704	C	E	42044	1598	C	0	97246	32237	56293	0	1218	3086	0	C	0	0	0	0	0	0	0	0	82032	5560	C	0	
Prepared or preserved fish (excluding whole or in pieces anc	10202590	EUR	1095346			995053	30493	C	C	E	203877	964	912	C	49496	277889	20450	0	3184	71515	0	0	0	0	0	0	0	0	0	0	142350	8182	21130	C	
Caviar (sturgeon roe)	10202630	EUR	18183			13562	0	0	0	0	0	0	0	0	0	13419	0	0	C	143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Caviar substitutes	10202660	EUR	92931			25736	C	352	0	5900	13915	0	0	0	0	0	4971	CE	0	C	598	0	0	0	0	0	0	0	0	0	0	0	0	0	
Frozen crustaceans, frozen flours, meals and pellets of crus	10203100	EUR	700000	50000		675777	C	0	0	4651	C	5851	66620	10982	261888	73986	3673	0	C	1053	0	0	0	0	0	0	0	0	0	0	15992	C	0	0	
Molluscs (scallops, mussels, cuttle fish, squid and octopus	10203200	EUR	738000	6000		714262	3002	3473	0	15	C	0	0	0	0	20787	42064	459134	35085	56551	0	0	0	0	0	0	0	0	0	0	34594	0	0	0	
Other aquatic invertebrates (striped venus, jellyfish, etc.), fr	10203300	EUR	32865			4448	C	0	0	0	0	0	0	0	0	0	1562	C	0	0	0	0	0	0	0	0	0	0	0	0	2886	0	0	0	
Prepared or preserved crustaceans, molluscs and other aqu	10203400	EUR	1764685			1629096	78561	16632	C	E	62878	5243	38160	9635	369388	512539	131381	0	C	1307	0	184	0	0	0	0	0	0	0	0	93036	11450	0	0	
Flours, meals and pellets of fish or of crustaceans, molluscs	10204100	EUR	623901			491915	0	0	0	C	331784	C	2253	C	0	0	42589	C	0	0	13892	0	0	0	0	0	0	0	0	0	5085	6099	0	0	
Fish heads, tails and maws, other edible fish offal; dried, sa	10204250	EUR	18689			8859	0	0	0	0	389	CE	0	0	0	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	325	C	0		
Fats and oils and their fractions of fish or marine mammals	10411200	EUR	162577			133571	0	0	0	82188	18974	0	C	0	0	0	27843	C	0	0	0	0	0	0	0	0	0	0	0	0	0	3038	1429	0	0

## 4 NATIONAL CHAPTERS

### 4.1 BELGIUM

#### 4.1.1 General overview of the Belgian fish processing sector

In 2015, there were 259 companies conducting fish processing activities in Belgium. It was estimated that for 66 of these companies, fish processing was an important activity, an increase in number compared to 2008. The total turnover for these companies was estimated at around €710 million with a total employment of 1,529 people (1,423 full-time equivalents). Table 4.1.1 gives an overview, including size of enterprise and level of employment. The sector is dominated by small and middle-sized enterprises. The majority of these companies have less than 11 employees (56% in 2015), followed by companies employing less than 50 employees (39% in 2015). There is only one company with more than 249 employees. For confidentiality reasons, this company was added to the segment of 50-249 employees.

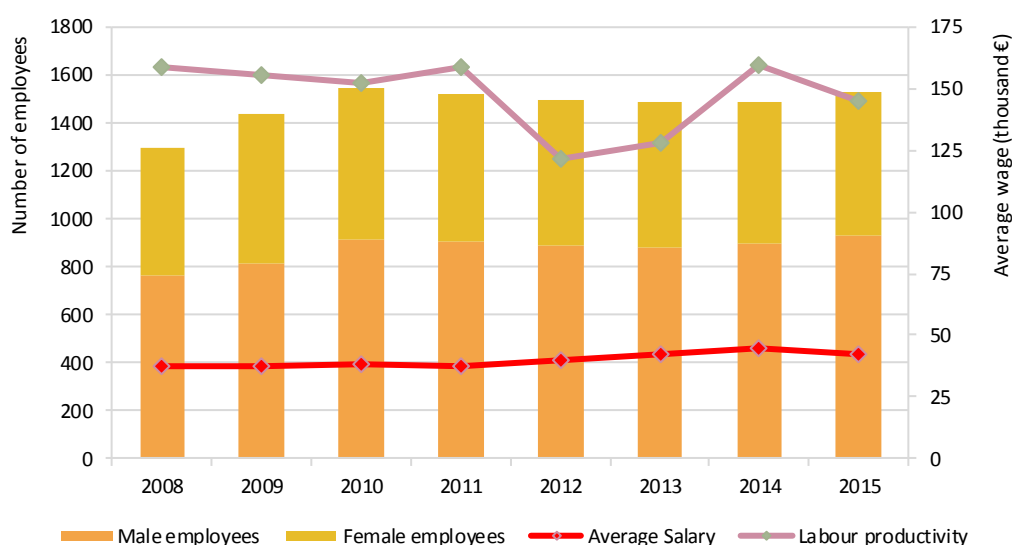
**Table 4.1.1: Belgian fish processing industry sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>											
Total enterprises	53	58	56	56	59	60	66	66		0%	25%
≤ 10 employees	29	33	32	34	37	37	38	37		-3%	28%
11-49 employees	20	21	20	18	18	19	24	26		8%	30%
50-249 employees	4	4	4	4	4	4	4	3		-25%	-25%
≥ 250 employees											
<b>Employment (number)</b>											
Total employees	1,298	1,441	1,546	1,522	1,497	1,489	1,487	1,529		3%	18%
Male employees	766	810	914	907	891	879	895	934		4%	22%
Female employees	532	631	632	615	607	611	592	595		1%	12%
FTE	1,221	1,373	1,439	1,442	1,417	1,385	1,377	1,423		3%	17%
Male FTE	736	792	876	878	864	842	850	886		4%	20%
Female FTE	484	581	563	564	554	542	527	537		2%	11%
<b>Indicators</b>											
FTE per enterprise	23.0	23.7	25.7	25.8	24.0	23.1	20.9	21.6		3%	-6%
Average wage (thousand €)	37.2	37.3	38.0	37.5	40.1	42.3	44.4	42.7		-4%	15%
Unpaid work (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0%	0%

The number of employees increased between 2008 and 2010, remaining stable thereafter (Table 4.1.1 and Figure 4.1.1). Employees are mostly male (estimated at 60% in 2014 and at 61% in 2015). Average salary increased slightly over the years, which can most likely be attributed to inflation. Average employment per enterprise remained relatively stable, fluctuating between 20 and 26 FTE. Only limited data was available on the amount of unpaid work, on the other hand it is likely to be insignificant. Labour productivity saw a drop in 2012 and 2013, but recovered in 2014 (Fig. 4.1.1). The fixed number of personnel is complemented by seasonal work forces when more

labour is needed (around 10% yearly). For example, during the spring more skilled people are needed to produce filets of soused herring (matjes). However, data on seasonal employment is only publicly available for larger companies. Therefore, total employment may be slightly underestimated unless the data is obtained through surveys.

Activity of the Belgian fish processing industry includes the production of fresh and frozen fillets, smoked fish (salmon, halibut, haring, trout and others), prepared shrimp, pickled seafood and prepared dishes. Smoking is a traditional method to preserve fatty fish and has long been practiced in Belgium. Smoked herring was long popular amongst factory workers and the number of smoking enterprises significantly increased after World War II. Today, it remains an important fish processing activity. In 2014, it was estimated that there were 27 enterprises producing smoked fish mainly in West Flanders (Verlé et al., 2016).



**Figure 4.1.1: Belgian fish processing employment trends, 2008-2015**

#### 4.1.2 Economic performance of the Belgian fish processing industry sector

Table 4.1.2 shows detailed income, detailed costs and the overall economic performance for the Belgian processing industry for the period from 2008 to 2015. Figure 4.1.2 focuses on 2015, while Figure 4.1.3 visualises total income and total costs over the period 2008-2015.

For 2015, the total income of the Belgian fish processing industry was estimated at around €723.5 million. The total income consists of turnover, other income and subsidies, of which turnover and other income accounted for 98% and almost 1.7%, respectively. Turnover increased by 31% between 2008 and 2015. Subsidies represented less than 1% of the total income in 2014 and 2015. This is comparable to other Members States such as the Netherlands, Germany and Denmark. Data on subsidies for 2008, 2009 and 2010 were not available separately for the smaller enterprises (they are included in other income). However, it can be assumed that values were low. It can be observed that the income increased between 2008 and 2011, decreased again slightly in 2012-2013 and increased again since 2014.

The Gross Value Added (GVA) is calculated as the total income minus energy costs, fish and other raw material costs and other operational costs. The GVA reached €207 million in 2015 (29% of total income), which was a decrease of 6% compared to 2014, but a large increase compared to 2012 and 2013. This is a result of both increases in total income as well as total costs over this period. The GVA was on an increase from 2008-2011, but saw a dip in 2012 and 2013. Total income increased more than the GVA in the period 2008-2015 meaning that productivity of the production factors did not increase. A similar trend is seen in labour productivity over this time period which



supports this assumption. Capital productivity remained relatively stable, but also saw a dip in 2012 and 2013 (Table 4.1.2).

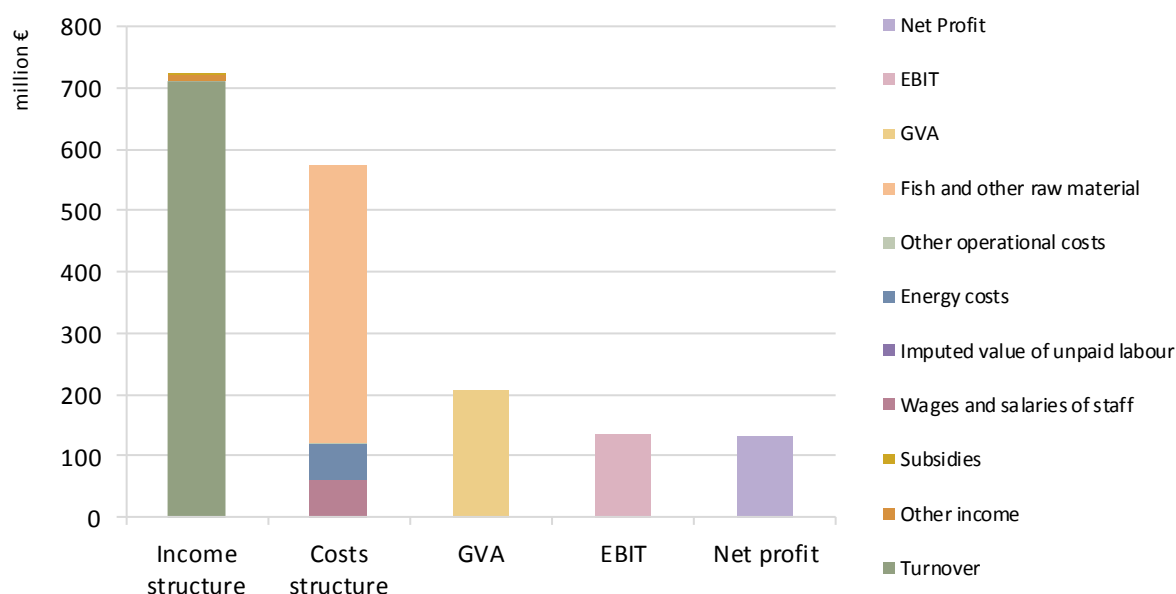
**Table 4.1.2: Economic performance of the Belgian fish processing industry sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	541.4	587.1	658.0	688.1	643.9	659.8	701.1	709.9	▲ 1%	▲ 31%
Other income	4.9	4.9	9.8	6.6	8.4	4.2	14.7	12.3	▼ -16%	▲ 151%
Subsidies	1.8	1.7	1.8	1.3	1.2	1.4	1.5	1.3	▼ -13%	▼ -29%
<b>Total Income</b>	<b>548.1</b>	<b>593.7</b>	<b>669.6</b>	<b>695.9</b>	<b>653.5</b>	<b>665.4</b>	<b>717.2</b>	<b>723.5</b>	<b>▲ 1%</b>	<b>▲ 32%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	312.1	332.0	393.4	406.2	416.0	428.8	435.9	454.2	▲ 4%	▲ 46%
Wages and salaries of staff	45.4	51.2	54.7	54.1	56.8	58.5	61.1	60.7	▼ -1%	▲ 34%
Imputed value of unpaid labour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	■ 0%
Energy costs	37.4	44.5	52.1	52.9	58.9	54.8	57.8	58.7	▲ 1%	▲ 57%
Other operational costs	3.1	2.3	2.7	6.2	5.1	3.2	2.5	2.2	▼ -10%	▼ -30%
<b>Total production costs</b>	<b>398.1</b>	<b>429.9</b>	<b>503.0</b>	<b>519.5</b>	<b>536.8</b>	<b>545.4</b>	<b>557.2</b>	<b>575.8</b>	<b>▲ 3%</b>	<b>▲ 45%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	10.4	13.0	11.5	12.2	12.2	13.2	11.0	12.4	▲ 13%	▲ 20%
Financial costs, net	4.6	4.1	2.5	3.1	1.6	2.8	1.4	2.2	▲ 49%	▼ -53%
Extraordinary costs, net	-3.6	-0.3	-1.6	-0.4	0.5	28.0	1.4	-1.7	▼ -219%	▲ 54%
<b>Capital Value (million €)</b>										
Total value of assets	318.8	335.4	369.5	357.0	368.2	319.5	330.1	334.9	▲ 1%	▲ 5%
Net Investments	14.8	14.5	12.9	6.7	8.9	9.7	8.3	9.7	▲ 17%	▼ -34%
Debt	200.8	201.4	234.5	220.1	221.7	207.3	195.2	200.2	▲ 3%	■ 0%
<b>Economic performance (million €)</b>										
Gross Value Added	193.6	213.3	219.6	229.3	172.2	177.1	219.6	207.1	▼ -6%	▲ 7%
Operating Cash Flow	150.0	163.8	166.6	176.5	116.6	120.0	160.0	147.7	▼ -8%	▼ -2%
Earning before interest and tax	139.6	150.8	155.1	164.3	104.4	106.8	149.0	135.3	▼ -9%	▼ -3%
Net Profit	135.1	146.8	152.6	161.2	102.8	104.0	147.5	133.1	▼ -10%	▼ -1%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity	158.6	155.3	152.6	159.0	121.5	127.9	159.5	145.6		
Capital productivity	60.7	63.6	59.4	64.2	46.8	55.4	66.5	61.9		
GVA margin	35.4	36.0	32.9	33.0	26.4	26.7	30.7	28.7		
EBIT margin	25.6	25.5	23.2	23.7	16.0	16.1	20.8	18.7		
Net profit margin	24.7	24.8	22.9	23.2	15.8	15.7	20.6	18.4		
Return on Investment	43.8	45.0	42.0	46.0	28.4	33.4	45.1	40.4		
Financial Position	63.0	60.0	63.5	61.7	60.2	64.9	59.1	59.8		
Future Expectation Indicator	1.4	0.5	0.4	-1.5	-0.9	-1.1	-0.8	-0.8		

The increase in production costs since 2008 resulted in a decrease in operating cash flow of the sector. The running cost to turnover ratio was relatively high. Production costs represented 82%, 78% and 80% of total income in 2013, 2014 and 2015, respectively (Table 4.1.2). The total production costs seem to follow a more steadily increasing pattern. In the period 2008-2015, production costs showed a stronger increase than income (45% vs. 32%). The purchase of fish and

other raw material appears to be the most important expenditure and made up for 63% of the total income in 2015 (Figure 4.1.2 and Table 4.1.2). Wages and salaries accounted for 8% and energy cost made up 8% of the total income in the same year. This is not unexpected, however, it must be mentioned that it was not always possible to split costs related to raw materials and energy costs for the smaller enterprises due to the structure of the national balance sheet accounts. In such cases, it was assumed that raw materials represented a larger part of the variable and was allocated as such. This leads to a slightly over-estimation of raw material costs and an underestimation for energy costs for smaller enterprises. However, this does not affect the total costs. All production costs seem to have increased over the time series with the exception of other operational costs.

Despite the economic crisis in 2012, the profitability has been positive since 2008 and the economic performance of the sector seems relatively positive. The data show that economic performance decreased for the indicators gross value added (-6%), operating cash flow (-8%), EBIT (-8%) and net profit (-10%) during the period 2008-2015. The financial position of the industry seems to have remained relatively stable between 2008 and 2015. Furthermore, since 2010, the amount of debt seems to have decreased, while investments decreased substantially since 2008 (-34%). Expectations for the future of the industry are not very certain. The Future Expectation Indicator (FEI) has remained around -1% since 2012. It is calculated as net investment minus depreciation divided by the total asset value. If the indicator is positive, it means that the capital formation in the sector increases. A negative FEI points towards a decline of capital in the sector, i.e. over consumption of capital goods which will result in lower production capacities in the future. An FEI close to zero can indicate that the sector is only wishing to maintain its production capacity in the future and that it is not planning to expand.



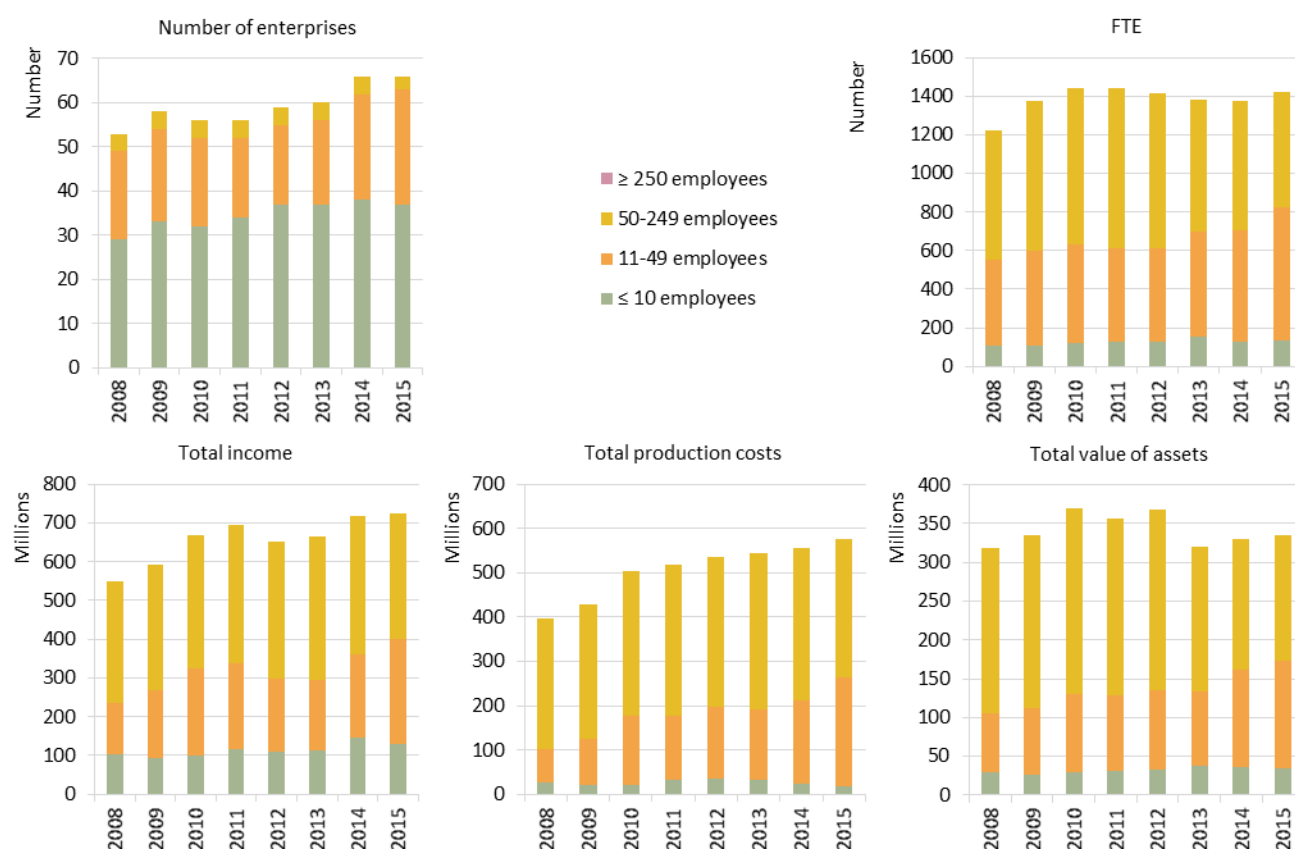
**Figure 4.1.2: Economic performance of the Belgian fish processing industry sector, 2015**

#### 4.1.3 Overview of the Belgian fish processing industry sector by size categories

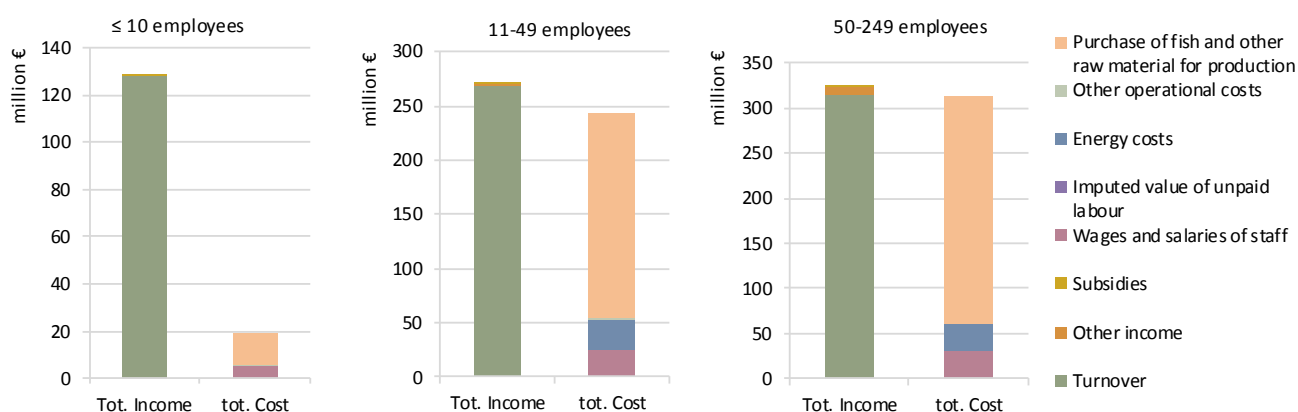
Figure 4.1.3, Figure 4.1.4, Figure 4.1.5 and Table 4.1.3 give an overview of the economic situation of the fish processing industry by size categories.

As stated in section 4.1.1, most enterprises are small. However, these enterprises only account for a fraction of the total turnover and employment. About 50% of total income and total FTE's was attributed to four large enterprises of more than 50 employees in 2014. This proportion decreased slightly in 2015 as one of these four enterprises stopped their activities (45% of total income, 42% of total FTE's). Purchase of raw materials represented the most important cost in 2015 for all

employment categories (Figure 4.1.4). Energy costs for enterprises with  $\leq 10$  employees were proportionally lower than in the other segments, but as stated before, it was not always possible to split energy costs from raw materials for the smaller enterprises. Data for the smaller enterprises was more limited in 2015 compared to previous years as there were complications with regards to the survey. However, the contributions of these companies to total values is relatively small.



**Figure 4.1.3: Belgian main structural and economic variables trends by size category, 2008-2015**



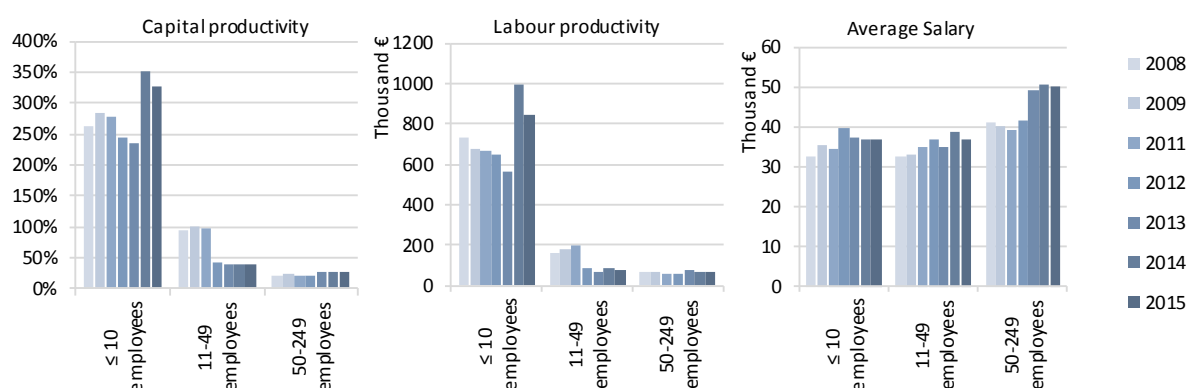
**Figure 4.1.4: Belgian income and cost structure, by size category, 2015**

Average salary was higher for enterprises with more than 50 employees. On the other hand, capital and labour productivity were estimated to be higher for enterprises with  $\leq 10$  employees. When looking at relative trends, the increase in total income was highest for the employment category with 11-49 employees, where it increased with 63% between 2008 and 2014. However, since 2011, GVA, OPC, EBIT and Net profit decreased the most for this employment category over the same

period (-30%, -51%, 56% and 58% respectively). Total income and GVA remained relatively stable for the segment with more than 50 employees between 2008 and 2015. However, OPC, EBT and Net profit decreased by -47%, -61%, and -51%, respectively. These indicators showed an increasing trend for the segment  $\leq 10$  employees.

**Table 4.1.3: Economic performance of the Belgian fish processing industry sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	$\Delta$ (2014-15)		$\Delta$ (2008-15)
less than or equal to 10 employees											
Total Income	102.7	92.3	100.9	115.4	110.8	113.8	146.8	128.7	▼	-12%	▲ 25%
Total production costs	27.4	22.3	21.8	33.6	34.1	31.5	24.0	19.4	▼	-19%	▼ -29%
Gross Value Added	78.6	73.6	83.2	86.1	81.5	88.0	127.3	114.0	▼	-10%	▲ 45%
Operating Cash Flow	75.3	69.9	79.1	81.7	76.7	82.3	122.7	109.3	▼	-11%	▲ 45%
Earning before interest and tax	73.8	68.3	77.5	80.1	74.7	80.5	120.7	107.5	▼	-11%	▲ 46%
Net Profit	73.1	68.2	77.4	80.0	74.7	80.4	120.5	107.4	▼	-34%	▲ 47%
between 11 and 49 employees											
Total Income	131.7	174.8	224.3	221.9	187.9	181.4	214.7	271.1	▲	26%	▲ 106%
Total production costs	74.9	102.5	154.9	143.8	162.5	160.8	187.0	243.2	▲	30%	▲ 225%
Gross Value Added	70.4	87.6	86.7	94.3	42.6	38.6	49.1	52.6	▲	7%	▼ -25%
Operating Cash Flow	56.8	72.3	69.3	78.1	25.4	20.6	27.7	27.8	▬	0%	▼ -51%
Earning before interest and tax	52.1	66.9	63.2	72.7	19.9	15.6	22.9	21.9	▼	-4%	▼ -58%
Net Profit	51.1	64.9	61.6	70.8	18.1	14.6	21.6	20.6	▼	-5%	▼ -60%
between 50 and 249 employees											
Total Income	313.7	326.7	344.4	358.7	354.8	370.2	355.7	323.8	▼	-9%	▲ 3%
Total production costs	295.8	305.1	326.2	342.1	340.3	353.1	346.2	313.2	▼	-10%	▲ 6%
Gross Value Added	44.6	52.1	49.7	48.9	48.1	50.4	43.2	40.6	▼	-6%	▼ -9%
Operating Cash Flow	17.9	21.6	18.2	16.6	14.5	17.0	9.5	10.6	▲	11%	▼ -41%
Earning before interest and tax	13.7	15.6	14.4	11.6	9.8	10.8	5.4	5.8	▲	7%	▼ -58%
Net Profit	10.9	13.7	13.7	10.4	10.0	9.0	5.4	5.1	▼	-5%	▼ -53%



**Figure 4.1.5: Capital productivity, labour productivity and salary trends of Belgian fish processing industry (2008-2015)**

#### 4.1.4 Trends and drivers for change

Until the 1950's, the Belgian processing industry was mainly dependant on landings from Belgian ports, only importing fish to complement these landings. In that sense fishery and processing industry were strongly linked. Herring and sprat were then important species that were smoked or pickled. The situation today has changed immensely, the important processed fish species are no longer landed in the Belgian ports. Most fish processing enterprises now focus on salmon species. Other species include cod, herring, trout, halibut, sole, brown shrimp, tuna species and tropical shrimp. The Belgian fishing fleet is specialised in catching demersal species (that live close to the bottom) meaning that some important species processed by the industry are not caught by the fleet. Furthermore, pelagic species still used by the processing industry, such as herring and mackerel are present along the Belgian coast, but are no longer supplied by the fleet. The available quota for these species is traded yearly for more quota for demersal species.

Therefore, for the purchase of fish and other raw material Belgium is almost completely reliant on other countries and is a net importer of fish products. In 2014, 290 thousand tonnes of fish, crustaceans and molluscs were imported for a value of €1,770 million (Eurostat Comext). Of this volume, 58% originated from EU Member States, mainly the Netherlands, France, Germany, Denmark and to a lesser extent from the UK. Tariffs for raw materials are usually lower when importing from within the EU as a way of stimulating economic activity of the Union and creating employment (Autonomous Tariff Quota). However, import from Asian countries such as China, Vietnam and Bangladesh has increased over the years, perhaps as a consequence of diverting to substitute species. For example, a scarcity of cod accompanied by a high price led to a switch to other whitefish such as saithe and pangasius. The price of fresh fish fluctuates considerably due to the yearly altering quota, the weather conditions and unpredictability of the catch. This can cause the price of certain species to be very high during certain time periods and can lead to adopting alternatives. Belgian aquaculture is restricted to fresh water species, such as trout.

Salmon and cod are the most important species consumed in Belgium. In 2014, 32 thousand tonnes of salmon were imported while 9 thousand tonnes were exported. Cod is mainly imported from Iceland, the Netherlands and Denmark. Herring and mackerel are also popular on the Belgian market and are imported and processed by the Belgian industry. Main trade countries for these species are the Netherlands, Denmark, Germany and to a lesser extent the UK for mackerel.

The demand for a number of species caught by the Belgian fleet, such as plaice, is limited on the national market. In 2014, 10.8 thousand tonnes were landed by the Belgian fleet while 8.6 thousand tonnes were exported (for a value of €12.5 million) and only 1.5 thousand tonnes were imported. Plaice is mainly exported to the Netherlands. Sole is also exported, but is also a beloved species on the Belgian market and is landed by the national fleet. In 2014, the fleet landed 3.5 thousand tonnes for a value of €32.6 million. Furthermore, 2.4 thousand tonnes were exported and 1.7 thousand tonnes imported.

Shrimp are also important for the fish processing industry. Brown shrimp (*Crangon crangon*) is a consumer favourite and occurs along the Belgian coast. The Belgian fleet landed about 1.2 thousand tonnes in 2014, however this was not sufficient to satisfy the demand. In that same year, at least 1.8 thousand tonnes were imported, mainly from the Netherlands, and 1.2 thousand tonnes were exported (based on commodity codes only including *Crangon crangon*, HS-03062631 and 03062639). Belgians are also the largest consumers of mussels, mainly imported from the Netherlands.

Over the years, stricter norms with regard to food safety and traceability have been implemented. Furthermore, the demand for sustainable products has risen in recent years. This was translated into eco-labels and certification which give a guarantee to the consumer that the products meet certain requirements with regards to the production method and composition. This increases pressure on the fishing fleet to adapt to these requirements. The idea is that the market should play the role of stimulator to promote sustainable fishing. The Belgian fleet, has had difficulties achieving certifications as they could not meet some of the eco-label requirements. During a survey with the industry in 2014, the Marine Stewardship Council (MSC) followed by the Aquaculture Stewardship Council (ASC) were reported as most widely used.

Only €250,000 or 1.2% of the Belgian EFF aid paid to beneficiaries between 2007 and 2015 went to “measure 2.3. Fish processing and marketing”. This amount was 68% of EFF aid granted to the operation. Therefore, it is unlikely that the EFF had an impact on the status of fish processing industry.

#### *4.1.5 Outlook*

In 2012, Europe was confronted with an economic crisis and the Belgian GDP decreased by 0.1%. The effect on the general employment opportunities was felt in 2013 (NBB, 2015). This trend was also seen in the fish processing industry. Since then, economic activities within the industry showed a positive evolution and expectations for the near future are rather bright. Important factors that have an influence are the high share of raw material costs and with it the high dependency on imports. The enterprises are vulnerable to yearly quota changes of marine species that can have an influence on fish prices. The Belgian fleet, with annual landings of around 20 thousand tonnes only represents 15% of the demand of seafood products on the Belgian market. Still, not all landed fish is consumed on the Belgian market and the link between national fleet and fish processing industry is not as strong as it was in the past.

Due to the large dependency, many enterprises have switched to resale. It has been hypothesised that practices are gradually changing and that enterprises are moving away from processing towards more trading activities, such as to the retail or specialising as importers or exporters. This switch to wholesale was also observed in the Netherlands. Therefore, it could be that primary processing will decrease in the future reducing investments in gut and filet machinery as well as personnel conducting these tasks. This would be a logical trend considering that most enterprises in the sector consist of small businesses with less than 11 employees. More enterprises are therefore choosing to buy raw material that has already been sliced to fillets. However, this needs to be further followed.

It is still unclear how Brexit will effect tariffs and trade. It is certain, however, that at least half of the Belgian fleet is dependent on fishing areas in UK waters. Since the fish processing industry is mainly reliant on imported raw materials, it may not have such a large impact. The landing obligation is another challenge faced by the fishing industry. An increase in low value and unmarketable fish will be landed, but it remains unclear who will process this extra fish. There are very few enterprises producing fish meal in Belgium and it is likely that the Dutch market for this product will be saturated.

New initiatives are being developed to bring together the production chain. For example, a project was launched to process fish locally and strengthen the link with the fleet. However, one of the challenges in this regards, is that fish processors cannot be expected to partake in new initiatives if a sale is not guaranteed and are bound to a number of challenges including: constant volume, constant quality, certification, traceability, amount of labour, yield and the demand of the consumer.

#### *4.1.6 Data coverage and quality*

The identification of the population of companies involved in fish processing is based on information obtained by the Federal Agency for the Safety of the Food Chain (FASFC). These companies were sent a survey to gather social and economic data and to determine their fish processing activities. Data from the national balance accounts was used to complement survey information.

The enterprises have been classified by category according to the number of employees ( $\leq 10$ ; 11-49; 50-249;  $\geq 250$  employees) and balance sheet type. When data was missing, the mean per category was calculated in the sample and imputed to estimate totals. Compared to the report in 2014, the method of collecting and combining data was adapted leading to more information and a better understanding of the sector.

Data for the smaller enterprises was generally more limited and this especially in 2015 as there were complications with regards to the survey. On the other hand, the contributions of these companies to total values is relatively small.

#### *4.1.7 References*

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Verlé, K., Blondeel, L., Vanderperren, E. & Torreele, E. (2016). De Belgische industrie voor de verwerking van vis, schaal- en weekdieren - Status en uitdagingen - ILVO mededeling nr 212.

## 4.2 BULGARIA

### 4.2.1 General overview of the Bulgarian fish processing sector

In 2015, the Bulgarian processing sector showed a small decrease in the number of registered enterprises from 44 in 2014, but in general, the number of enterprises is stable and the same compared to 2008 - 45 units. All of the enterprises are processing fish as their main activity. Based on the number of employees the units from the Bulgarian fish processing sector are in the three categories – less than 10 employees, 11-49 employees and 50-249 employees. For the period 2008-2015, there were no enterprises with more than 250 employees.

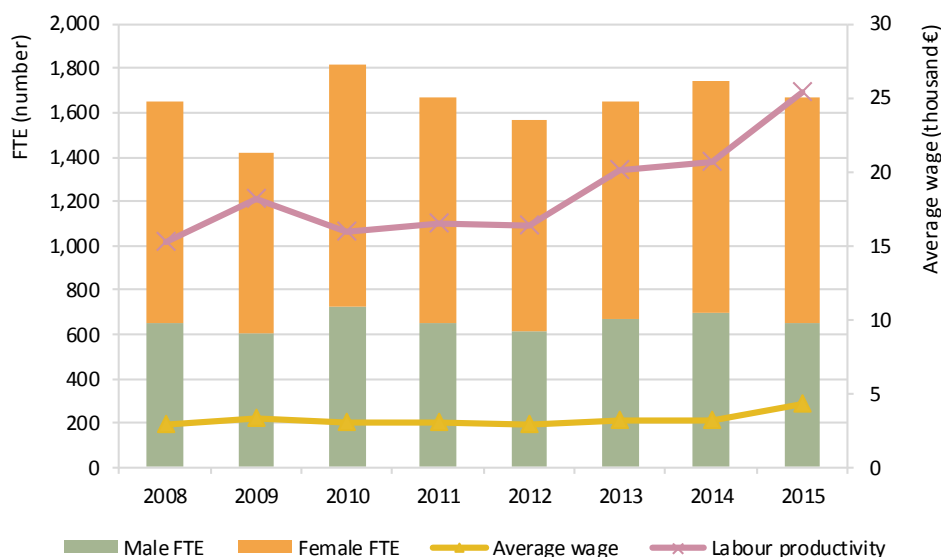
The total number of employees increased by 1% compared to 2014 and 12% compared to 2008, but the FTEs decreased by 4%, probably because of the seasonality of the work of some of the enterprises. The proportion of female/male employees is consistent over the years. Female employees represent 65% of the staff. Regarding the employment by gender female employees increased by 4%, while the male employees decreased by 3%. The average wage remains stable for the period 2008-2014. The average wage in the sector was gradually increased during the period and reached €4,2 thousand in 2015. There is a visible increase in the wages in 2015 – by 35% compared to 2014 and by 44% compared to 2008.

The turnover and total income respectively marked a significant growth in 2015. The structure of the costs remains the same for all year – the largest proportion is for the purchase of fish and other raw materials, followed by other operational costs and wages and salaries of staff. The fluctuations in the future expectation indicator are probably due to the different quantity of the processed products because of the variability of the demand or because of the passage of part of processors from one size category to another.

**Table 4.2.1: Bulgarian fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	45	45	48	43	43	46	44	45	▲ 2%	■ 0%
≤10 employees	13	12	14	12	14	12	10	11	▲ 10%	▼ -15%
11-49 employees	20	22	21	19	18	22	22	24	▲ 9%	▲ 20%
50-249 employees	12	11	13	12	11	12	12	10	▼ -17%	▼ -17%
≥250 employees	0	0	0	0	0	0	0	0	■ 0%	■ 0%
<b>Employment (number)</b>										
Total employees	1,704	1,538	1,917	1,749	1,650	1,725	1,879	1,907	▲ 1%	▲ 12%
Male employees	693	641	775	690	656	702	722	700	▼ -3%	▲ 1%
Female employees	1,011	897	1,142	1,059	994	1,023	1,157	1,207	▲ 4%	▲ 19%
FTE	1,651	1,419	1,821	1,667	1,565	1,653	1,744	1,671	▼ -4%	▲ 1%
Male FTE	656	601	721	647	611	673	697	648	▼ -7%	▼ -1%
Female FTE	995	819	1,100	1,020	954	980	1,047	1,023	▼ -2%	▲ 3%
<b>Indicators</b>										
FTE per enterprise	36.7	31.5	37.9	38.8	36.4	35.9	39.6	37.1	▼ -6%	▲ 1%
Average wage (thousand €)	2.9	3.3	3.0	3.0	2.9	3.1	3.1	4.2	▲ 35%	▲ 44%
Unpaid work (%)	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.0	▼ -90%	▼ -95%





**Figure 4.2.1: Bulgarian employment trends, 2008-2015**

#### 4.2.2 Economic performance of the Bulgarian fish processing sector

The total income of the Bulgarian fish processing industry is growing gradually during the last 3 years. For the whole period 2008-2015, there was a small decrease in the income in 2012, but the general situation is improving. The highest peak of the total income was in 2015 – €90.4 million, which is 24% increase compared to 2014 and 56% higher than 2008. The main part of the Total income is the Turnover - approximately 93%. The Other income is decreasing in the last six years – in 2009 it was €4.6 million and in 2015 it is €1.9 million. There is 49% decrease compared to 2014 and 51% compared to 2008. Regarding the subsidies, the highest value was in 2015.

The total production costs were growing proportionally to the income. With 27% increase compared to 2014, the total costs in 2015 were €53.2 million, which is also 42% more than in 2008. The largest share of the costs is the purchase of fish and other raw material for production – it is between 68% and 76%. The wages and salaries of stuff represent approximately 13% of the costs, while the other operational costs are between 9% and 14% during the years. From all the costs which consist the total production costs, the energy costs are the most stable ones – for all the year between 2008 and 2015 it is between €1.4 and €1.7 million. The value of unpaid labour is really negligible for the whole period. The largest value of this indicator was €21 thousand for the whole sector in 2008. It is gradually decreasing and in 2015 it is 94% smaller.

The main part of capital costs (between 79% in 2014 and 97% in 2008) is the depreciation of the capital. In 2015, it increased by 20% from 2014 and it decreased 24% compared to 2008. The financial costs and extraordinary costs are stable for the whole time series.

It is interesting that the number of enterprises is the almost the same for every year, but the total value of assets is quite different. This deviation can be explained by the fact that during the years some of the old enterprises were modernized or have ceased activity, while new ones were constructed and started working. In 2015 the total value of assets increased by 21% compared to 2014 and 90% compared to 2008.

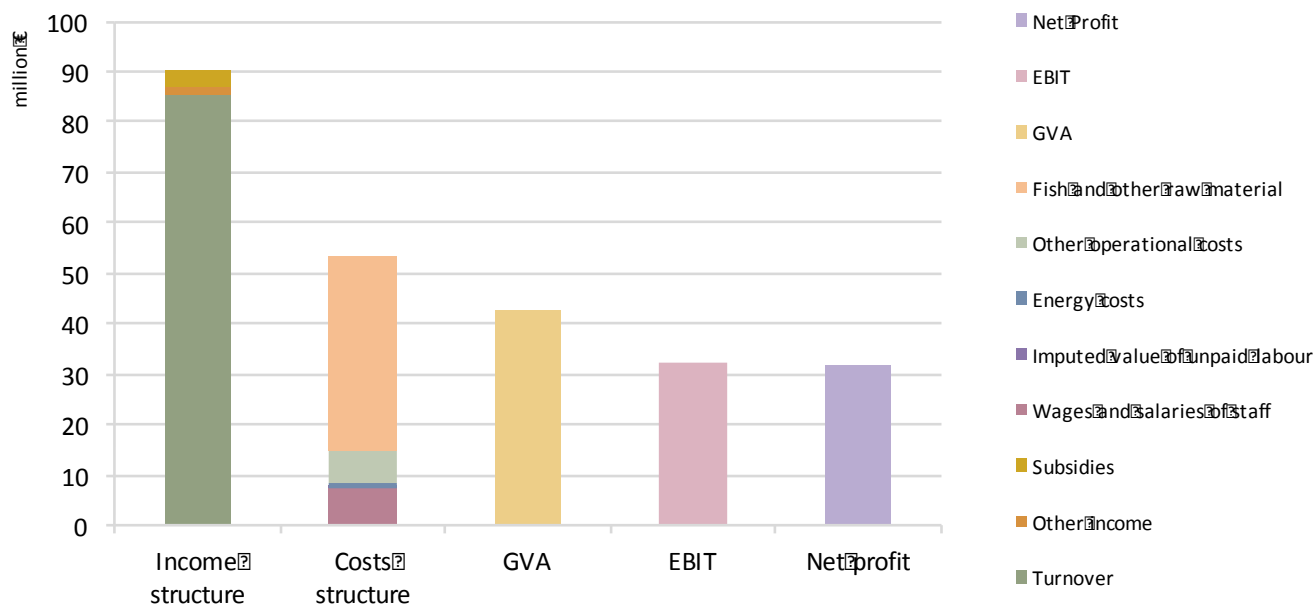
The economic performance is also growing gradually. The Gross Value Added is increasing each year, with only a negligible decrease in 2012. For the period 2008-2015, it increases by 69%. Similar is the situation with the operating cash flow and net profit. The net profit increased compared to 2008 and 2014 by 26% and 157%, respectively.

The labour productivity is growing while the capital productivity is decreasing. There are no major differences in the GVA margin which fluctuated around 46% during the period. The growing EBIT margin indicates profitability from the enterprises, it is a positive trend that it grows from 21.6%

in 2008 to 36.7% in 2015. The net profit margin and RoI were also increased over the years. Unfortunately, the Future Expectation Indicator is unstable for the fish processing sector in Bulgaria – starting from -24% in 2008, it improves gradually until 2014, when gained 42.1% and drops fast to 8.8% in 2015.

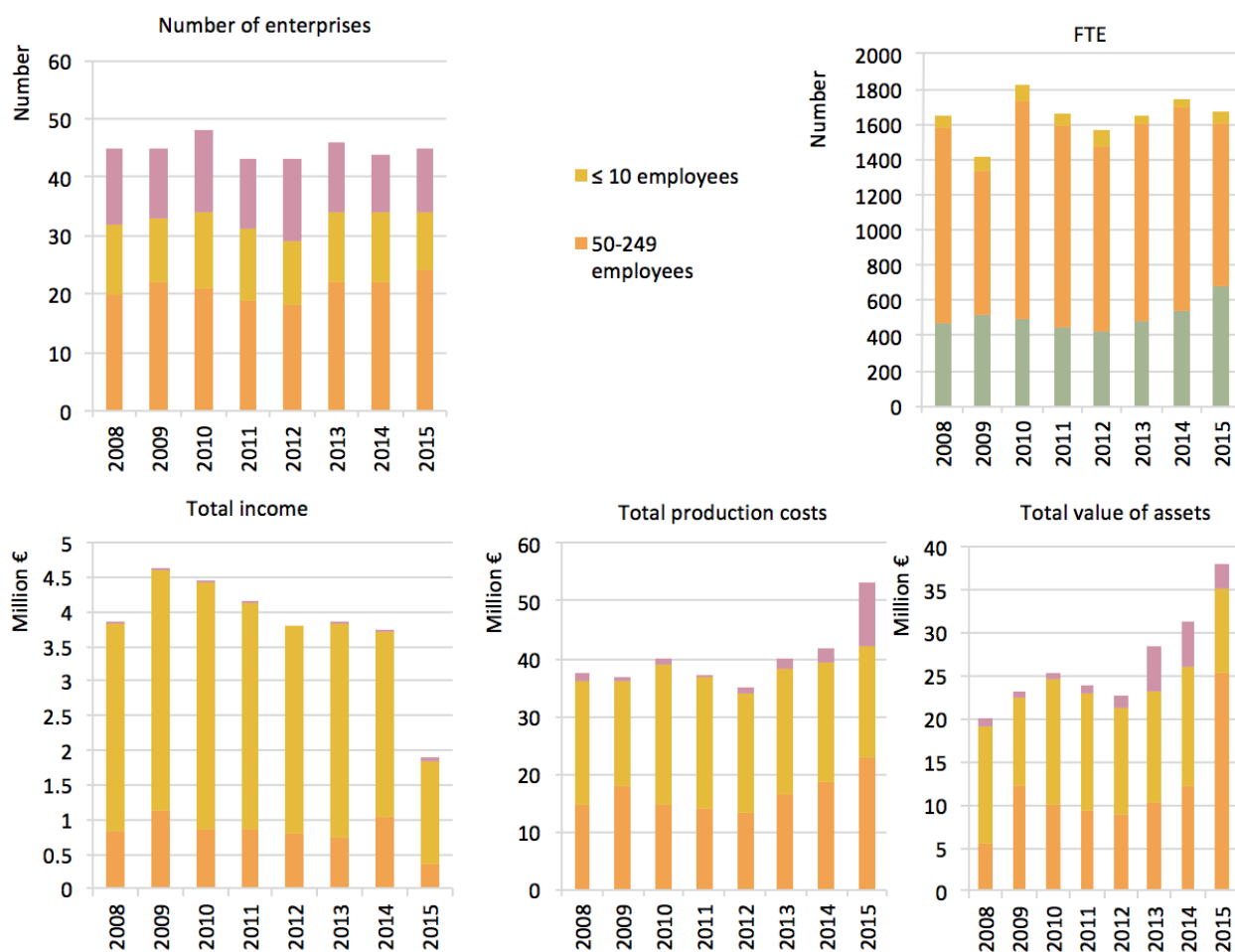
**Table 4.2.2: Economic performance of the Bulgarian fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<i>Income (million €)</i>										
Turnover	53,9	53,4	59,3	55,7	52,2	64,4	68,7	85,3	▲ 24%	▲ 58%
Other income	3,8	4,6	4,4	4,1	3,8	3,8	3,7	1,9	▼ -49%	▼ -51%
Subsidies	0,2	0,1	0,2	0,3	0,1	0,9	0,6	3,2	▲ 461%	▲ 1539%
<i>Total Income</i>	57,9	58,1	63,9	60,1	56,1	69,1	73,0	90,4	▲ 24%	▲ 56%
<i>Expenditure (million €)</i>										
Purchase of fish and other raw material for production	26,1	27,3	27,4	25,7	24,1	28,7	31,9	38,2	▲ 20%	▲ 47%
Wages and salaries of staff	4,8	4,7	5,4	4,9	4,6	5,1	5,5	7,1	▲ 30%	▲ 47%
Imputed value of unpaid labour	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	▼ -89%	▼ -94%
Energy costs	1,5	1,4	1,7	1,6	1,5	1,6	1,4	1,4	▼ -2%	▼ -9%
Other operational costs	5,0	3,4	5,6	5,2	4,9	4,7	3,0	6,5	▲ 112%	▲ 29%
<i>Total production costs</i>	37,5	36,8	40,1	37,3	35,0	40,2	41,9	53,2	▲ 27%	▲ 42%
<i>Capital Costs (million €)</i>										
Depreciation of capital	7,9	7,1	7,5	6,8	6,4	5,4	5,0	6,0	▲ 20%	▼ -24%
Financial costs, net	0,2	0,1	0,2	0,2	0,2	0,9	1,0	0,8	▼ -21%	▲ 362%
Extraordinary costs, net	0,1	0,0	0,1	0,1	0,1	0,2	0,3	0,2	▼ -32%	▲ 187%
<i>Capital Value (million €)</i>										
Total value of assets	20,0	23,1	25,3	23,9	22,7	28,5	31,4	38,0	▲ 21%	▲ 90%
Net Investments	3,0	2,8	3,6	3,8	3,5	14,4	18,2	9,4	▼ -49%	▲ 216%
Debt	1,1	2,6	5,1	4,8	4,5	5,6	5,6	9,8	▲ 73%	▲ 757%
<i>Economic performance (million €)</i>										
Gross Value Added	25,1	25,9	29,0	27,5	25,6	33,2	36,1	42,5	▲ 18%	▲ 69%
Operating Cash Flow	20,4	21,3	23,8	22,8	21,1	28,9	31,2	38,5	▲ 24%	▲ 89%
Earning before interest and tax	12,5	14,1	16,3	16,0	14,7	23,5	26,1	32,5	▲ 24%	▲ 160%
Net Profit	12,3	14,0	16,1	15,8	14,5	22,6	25,2	31,7	▲ 26%	▲ 157%
<i>Productivity and performance Indicators (%)</i>										
Labour productivity	3 841,6	4 599,4	4 417,7	4 120,8	3 799,2	3 830,6	3 735,9	1 901,3		
Capital productivity	125,4	111,8	114,9	115,0	113,0	116,5	114,9	111,7		
GVA margin	43,5	44,6	45,6	45,9	45,7	48,7	49,8	48,7		
EBIT margin	21,6	24,4	25,6	26,8	26,2	34,4	36,1	37,3		
Net profit margin	21,4	24,1	25,3	26,4	25,9	33,1	34,7	36,4		
Return on Investment	62,4	61,0	64,6	67,0	64,8	82,4	83,3	85,5		
Financial Position	5,7	11,2	20,1	20,1	19,7	19,5	18,0	25,7		
Future Expectation Indicator	-24,9	-18,8	-15,5	-12,6	-12,9	31,4	42,1	8,8		



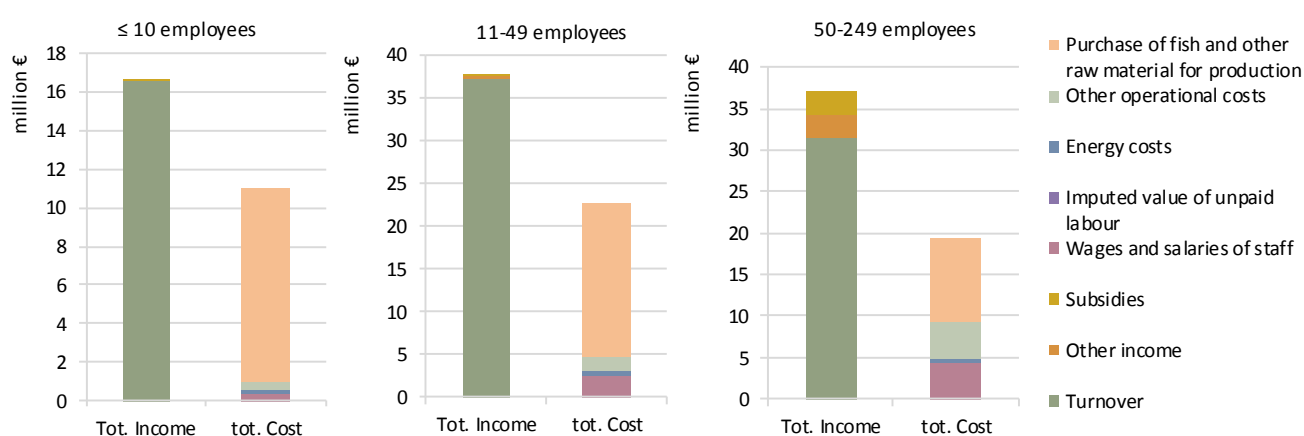
**Figure 4.2.2: Economic performance of the Bulgarian fish processing sector, 2015**

#### 4.2.3 Overview of the Bulgarian fish processing industry sector by size categories



**Figure 4.2.3: Bulgarian main structural and economic variables trends by size category, 2008-2015**

The structure of Bulgarian processing sector is quite consistent during the period 2008-2015. The number of enterprises varies between 43 and 48. There are no enterprises with more than 250 employees. From the other three categories, the largest (around 50%) is the size category with 11-49 employees. The fish processing units with less than 10 employees and between 50-250 represent 25% per category. The main differences in the economic variables during the years are due to the movement of enterprises from one category to another category based on the reduction or hiring of employees. This is one of the reasons for the small decrease in the number of enterprises with 11-49 employees, compensated with the increased number of units in the category with less than 10 employees. Employment by gender is not very consistent over the years. The number of male employees is decreasing for the enterprises with less than 10 employees, while the female employees for the same size category are fluctuating during the whole period. In the largest for Bulgaria sector – 11-49 employees both female and male employees are increasing gradually, but still the number of female employees remain higher and represents around 65% of total employees. For the sector with 50-249 employees, the number of total male employees shows high fluctuations, while the number of female employees is increasing.



**Figure 4.2.4: Bulgarian income and cost structure, by size category, 2015**

In all size categories, the distribution of the turnover, other income and subsidies in the total income is similar to their distribution for the whole processing sector. The largest part of the income in 2015 was delivered by the turnover and only for the size category 3 the subsidies and other income represent together 12% of the total income, for the other 2 sectors their value is negligible, compared to the turnover.

Regarding the distribution of the total costs – the main costs were for the purchase of fish and other raw material for production and for the size category with 50-249 employees the other operational costs are 23%.

Economic performance of each size category of the Bulgarian fish processing sector can be described as fluctuating. The total income for enterprises with less than 10 employees has risen steadily between 2008 and 2014 and it increased significantly between 2014 and 2015. The reason for this remarkable change is that a new enterprise started working. It should be also noted, that the enterprise generates a large income, but it also has very large total production costs. The gross value added for this size category increased by 99% between 2014 and 2015 and 869% compared to 2008.

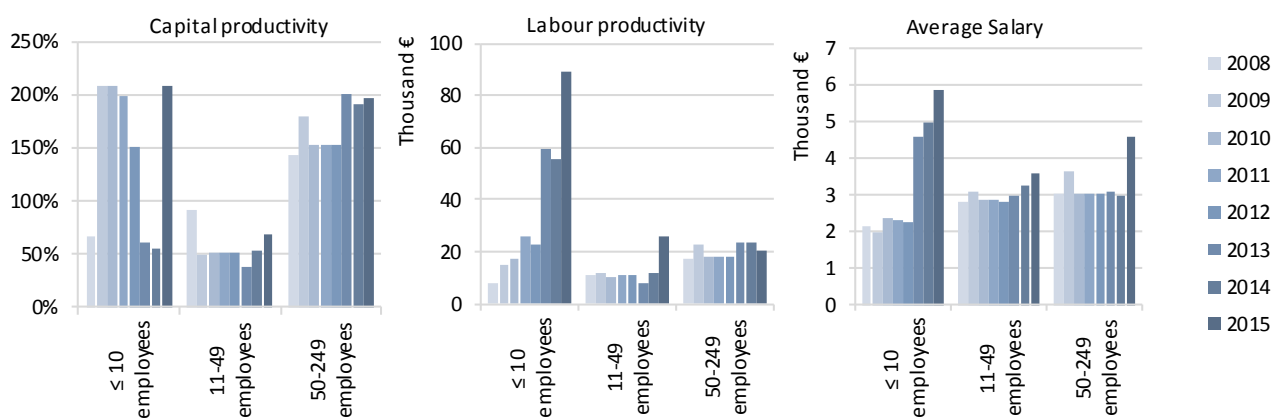
The largest and the most stable Bulgarian sector is with enterprises employed between 11-49 people. There is a visible positive trend related to the increase of the total income, but it's also started to generate larger costs.

Enterprises with 50-249 employees were prosperous in the period 2008-2013, but there was a significant decrease in 2015. The total income dropped down from €44,6 million in 2013 to €35,8 million in 2015. The same happened with earnings before interest and tax, GVA and net profit. Only the total production costs remain almost the same for the whole period.

**Table 4.2.3: Economic performance of the Bulgarian fish processing sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)		Δ (2008-15)
<b>less than or equal to 10 employees</b>												
Total Income	1.7	2.0	2.3	2.5	2.8	5.4	5.8	16.6	▲	186%	▲	891%
Total production costs	1.2	0.9	1.0	0.7	1.0	2.0	2.7	11.1	▲	305%	▲	804%
Gross Value Added	0.6	1.3	1.5	2.0	2.1	3.2	3.0	5.9	▲	99%	▲	869%
Operating Cash Flow	0.4	1.1	1.3	1.9	1.9	3.4	3.1	5.5	▲	80%	▲	1127%
Earning before interest and tax	0.1	0.9	1.1	1.9	1.7	2.9	2.5	4.9	▲	98%	▲	4174%
Net Profit	0.1	0.9	1.0	1.9	1.6	2.6	2.1	4.8	▲	134%	▲	4222%
<b>between 11 and 49 employees</b>												
Total Income	18.4	22.2	18.3	17.7	16.7	19.1	23.5	38.0	▲	62%	▲	107%
Total production costs	14.7	17.8	14.6	14.1	13.4	16.4	18.6	22.7	▲	22%	▲	55%
Gross Value Added	5.0	6.0	5.1	4.8	4.6	3.9	6.5	17.3	▲	167%	▲	244%
Operating Cash Flow	3.7	4.4	3.7	3.6	3.4	2.7	4.9	15.2	▲	213%	▲	311%
Earning before interest and tax	2.7	3.1	2.7	2.5	2.4	1.8	1.9	11.7	▲	512%	▲	336%
Net Profit	2.7	3.0	2.7	2.5	2.4	1.6	1.9	11.0	▲	491%	▲	316%
<b>between 50 and 249 employees</b>												
Total Income	37.9	33.8	43.3	39.9	36.6	44.6	43.7	37.2	▼	-15%	▼	-2%
Total production costs	21.6	18.1	24.4	22.6	20.7	21.8	20.5	19.4	▼	-6%	▼	-10%
Gross Value Added	19.5	18.6	22.4	20.7	19.0	26.1	26.6	19.3	▼	-28%	▼	-1%
Operating Cash Flow	16.3	15.7	18.8	17.4	15.9	22.9	23.2	17.8	▼	-23%	▲	9%
Earning before interest and tax	9.7	10.1	12.6	11.6	10.6	18.8	21.8	15.9	▼	-27%	▲	64%
Net Profit	9.6	10.0	12.4	11.5	10.5	18.3	21.2	15.8	▼	-25%	▲	66%

The increase in size category 2 and the decrease in size category 3 can be explained by the movement of two of the largest enterprises from size category 3 to size category 2, due to the reduction of their employees.



**Figure 4.2.5: Capital productivity, labour productivity and salary trends of Bulgarian fish processing industry (2008-2015)**

The capital productivity for size category 1 had large fluctuations, while for the other 2 size categories it was more stable. Similar is the situation with labour productivity and the average salary – they are stable for the size categories with 11-49 and 50-249 employees. Both parameters increased for the size category with less than 10 employees.

#### *4.2.4 Trends and drivers for change*

As a general comment on the trends in Bulgaria fish processing industry could be the aspect of a stabilization and increasing of the production limits (as volume and value). The number of enterprises in each size category during the period 2008-2015 is consistent or with minor changes. Most of the enterprises have between 11-49 employees, the majority of enterprises with less than 10 people staff are family businesses, processing around 10% of whole products in the sector. The largest sector in Bulgaria, with 50-249 employees is the most stable one in regards to activity, processed fish or aquatic products and profitability. The bigger part of the enterprises with more than 11 employees has sufficient experience on the Bulgarian and international markets. In the whole sector, female employees are dominating, probably because of the relatively low salary compared to other sectors. It should be noted the average salary increased in the last years, but it is due to the rising of the minimum salary at the national level.

Undoubtedly, EFF has a positive influence on the increase of the interest in this sector. During the period of the Operational Program, under the Measure 2.6. "Investments in processing and marketing of fisheries and aquaculture products", 17 projects were funded - 60% of them were newly built enterprises and 40% were modernized. The expected processing capacity from these 17 enterprises is 9,899 tonnes. The certified funds for these 17 enterprises amounted 9.2% of the whole EFF funding, in particular, €7.7 million (€5.75 million from EFF and €1.95 million from the National budget).

In regards to the raw materials, the processing enterprises can be separate into 7 general types: units which are using as raw material fish caught from the Black sea (sprat and other small pelagic fish); units processing crustacean, units processing molluscs; units processing fish from aquaculture farms in Bulgaria (mainly rainbow trout, carp, catfish); processing enterprises for caviar and enterprises for fisheries delicacies, enterprises producing canned fish. A lot of the enterprises are processing fish from catch, but also from import.

The National Statistical Institute collects detailed data regarding the import and export of fishery products in the country, which is publicly available in the Annual agricultural report. Based on the data provided in the document, in 2015, totally 34,872 tonnes of fish and fish products have been imported, including 30,976 tonnes of fish, fillets, crab and molluscs (alive, fresh, cooled, frozen or dried and etc.) and 3,896 tonnes of processed fish products.

53% of the imported fishery products in 2015 were in the group frozen fish without fillets, followed by 11% of fresh or cooled fish, with the exception of fillets and 9% Fillets and other fish meat - fresh or cooled, frozen. The other import of fishery products consists mainly from Prepared and preserved fish or caviar, Crustaceans, Aquatic invertebrates other than crustaceans and molluscs. Approximately 70% of the imported products are from the EU member states. During the year the most significant import was from the Netherlands, Spain, Romania, Poland and the Czech Republic. The import from third parties was mainly from Vietnam, Canada, China, Morocco and Argentina. The largest imported quantities were from the species salmon, European pilchard, herring, hake (*Merluccius*), sharks and mackerels.

Around 80% of the export in 2015 was to the EU member states – mainly to Romania, Greece, Sweden, Spain and Hungary. The export to third countries was to Republic of Korea, Japan and Serbia. Regarding the types of exported products in 2015 – 24% of the export was canned crustaceans and molluscs, followed by 20% frozen fish without fillets, 14% prepared and preserved fish and caviar and 13% of livefish. The rest of the export consists of mainly fresh or cooled fish without fillets, dried, salted, smoked or fish in marinade.

#### 4.2.5 Outlook

The number of enterprises during the last 10 years is stable. The starting of new enterprises compensates the cessation of the old ones. If there is any change, it is expected to be in favour of increasing their number due to the opportunities provided by the EMFF. Regarding the size categories, it is not expected that there will be enterprises with more than 250 employees because even in the sector between 50 and 249 employees the average FTEs per firm is 92. Based on the available preliminary data for 2016, there will be no major changes in the size categories with <10 and 11-49 employees. 10% increase in the number of total employees in the enterprises with 11-49 employees is expected, but only 3% increase in the FTEs, due to the seasonality of work of some processors. For the same sector, 5% increase is expected for the costs for wages and salaries.

In recent years, there is a visible growth of the interest in catching and processing rapa whelk and baby clam. While rapa whelk consumption is relatively popular in Bulgaria, the consumption of baby clam is really negligible (if any). Both species are of interest mainly because of the possibility of exporting. The increase in the total income and total employees and FTEs, together with the GVA and EBID margins indicates a positive trend for the future improvement of the situation in the whole sector. The consumption of fish and seafood per capita is approximately 6 kg, which is very low compared to the average fish consumption in the other member states. The processors are seeking to expand the variability mid and high-value products on the local market and also for export. An increase is expected for processing plants importing raw materials, repackaging them and sold as value-added goods throughout the European Union.

After almost two years of negotiations at an administrative level, 12 Bulgarian companies received permissions to export to China. The exports started in 2015 and is expected to grow in the coming years.

#### 4.2.6 Data coverage and quality

Registration and control of processing plants are carried out by Bulgarian Food Safety Agency, so the fish processing plants were not required to provide information to the Executive Agency for Fisheries and Aquaculture. The submission of information before December 2016 was voluntary, so the achieved sample rate was approximately 50%. Due to an amendment in the Fisheries and Aquaculture Act in December 2016, the questionnaires became mandatory for every fish processing enterprise. To ensure the collection of all questionnaires from active processing units, EAFA required detailed registers from the BFSA. All the owners were contacted by phone or visited by employees of the agency and they were informed of the changes in the legislation. This led to the collection of a higher percentage (approximately 90%) of the questionnaires including previous years, so all the data for the whole period 2008-2015 was resubmitted. For the calculation of all the variables was used only the data provided in the questionnaires.

Memorandum of cooperation was signed for implementation of the national plan for fisheries control between EAFA, BFSA, Executive Agency Maritime Administration and Border Police at the Ministry of Interior of the Republic of Bulgaria. Under this memorandum interaction between EAFA and BFSA is performed in regards to:

1. The implementation of fisheries control, production and processing of fish and other aquatic organisms and trade of the Republic of Bulgaria;
2. Supervision of the fisheries and aquaculture throughout the process of the "net and farm - to table";
3. The performance of precise control regarding health and welfare of the animal, feed control, food control, and border control.
4. Control activities of EAFA regarding management, monitoring and control of fisheries, aquaculture, processing and trade of fish and other aquatic organisms.

## 4.3 CROATIA

### 4.3.1 General overview of the Croatian fish processing sector

The Croatian fish processing industry was traditionally located along the coastline and on the islands close to important fishing areas in order to ensure a stable source of fresh raw material and expedite the process of production. At the same time, processing plants offered job opportunities and a stable source of income to the local communities which gradually developed a strong interdependence between demographics and processing plants. Since the turn of the century, the number of major processing plants on islands has declined due to changed market conditions, expenses and lack of the labour force. On the other hand, in recent years a sound process of moving fish processing plants to hinterlands of major fishing harbours has occurred. At the same time, access to pre-accession instruments, EU market opening after 2013 and later to EU funds (EMFF) brought a new momentum to the fish processing and provided the opportunity for the revival and further growth of the fish processing industry in Croatia.

The most important areas in terms of value and volume of landings are the north and middle parts of Dalmatia, especially Zadar and surroundings and most of the processing industries are located in these areas. The Croatian processing industry produces a variety of products that is based on its multispecies. Although the Adriatic Sea is rather scarce in fish, it has a high diversity of species that inhabit it. The share of small pelagic fish in total catch of marine fish and other marine organisms is the largest (mostly more than 80%) with the main destination being the fish processing industry.

Croatian fish processing factories are mostly dependent on domestic catches, but the raw material for the industry is also purchased on the global market for fish and fish products. According to EUROSTAT, the largest volumes of fish and fish products imported in 2015 and 2016 come from Spain and Italy and exported to Italy, Japan and Slovenia.

While traditional fish processing factories mostly carried out one activity in the past, today most companies, in order to be more competitive and less dependent on the inflow of domestic raw material, also integrate trade and distribution besides processing, and therefore are difficult to distinguish them from companies with the predominant activity of the fish processing industry. Croatia is one of the member states which exports fish more than it imports. According to EUROSTAT, the import increased from 32 thousand tonnes in 2014 to 36 thousand tonnes in 2015 while export increased from 53 thousand tonnes in 2014 to 60 thousand tonnes in 2015 and it is expected to continue this trend in the incoming period.

Table 4.3.1 and figure 4.3.1 provide an overview of Croatian fish processing industry from 2011 to 2015. In 2015, Croatian fish processing industry consisted of 35 enterprises with fish processing as the main activity, employing 1,800 employees in total. A total number of enterprises varied during the period but ended with the same number of companies as in 2011. Nevertheless, some changes have been noticed in the structure of segments. Although small enterprises with 1-10 employees dominate in a total number of enterprises, in terms of number of employees and turnover, the most important segment is 50-249 employees, covering around 75% of total number of employees.

The average size of the enterprises measured by the number of full-time employees in 2015 was 42 employees, same as in 2011, but less than in 2014 (48). On the other hand, the average salary per FTE increased from €9.2 thousand per year to €10.7 thousand per year over the same period. The labour productivity in terms of gross value added per FTE has increased from €23.8 thousand to €44.4 thousand in 2015.

The value of unpaid labour in the Croatian fish processing industry is insignificant. In the years from 2011 to 2015, the value has been estimated to 0-0.1% of total amount of wages and salaries paid, since none of the enterprises confirmed that some of the employees are working on a volunteer basis.

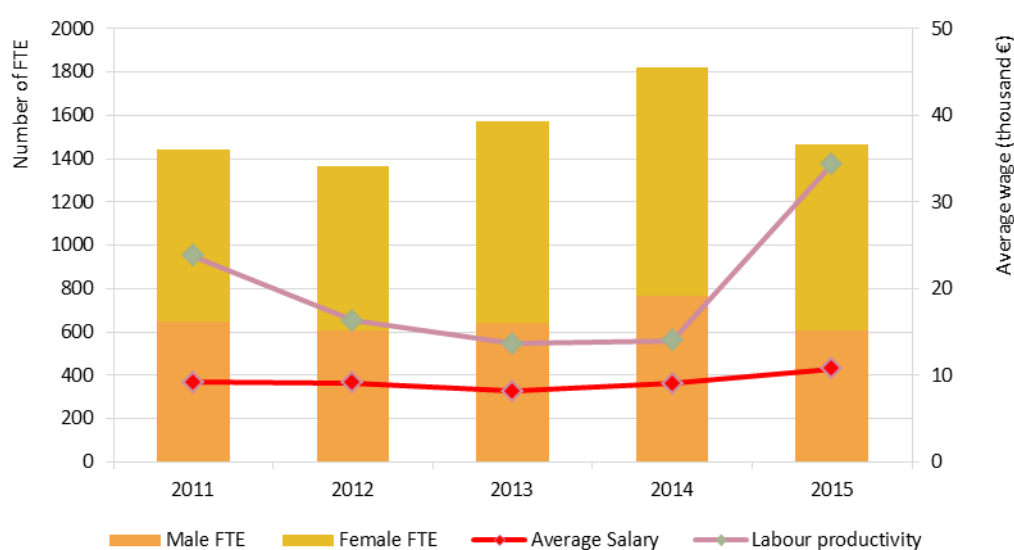
The sector is dominated by the female labour force, in total so as in FTE. Woman labour force is often present at assembly line jobs which are often prone to seasonality and on the other hand



unpredictable amount of work in a short period since most major processing plants still depend on the domestic catch. Considering that in some areas the number of available workers is limited due to depopulation and strong development of tourism, it could be expected that a certain number of overtime hours occurs, expressed through increased FTE compared with the total number of workers.

**Table 4.3.1: Croatian fish processing sector overview, 2011-2015**

Variable	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2011-15)
<b>Structure (number)</b>								
Total enterprises	35	35	37	38	35	▼	-8%	0%
≤ 10 employees	17	18	20	20	18	▼	-10%	6%
11-49 employees	6	4	4	6	3	▼	-50%	-50%
50-249 employees	11	11	10	11	13	▲	18%	18%
≥ 250 employees	1	2	3	1	1	■	0%	0%
<b>Employment (number)</b>								
Total employees	1,635	1,565	1,953	1,815	1,800	▼	-1%	10%
Male employees	685	651	719	764	694	▼	-9%	1%
Female employees	950	914	1,234	1,051	1,106	▲	5%	16%
FTE	1,443	1,367	1,572	1,819	1,466	▼	-19%	2%
Male FTE	647	606	644	766	608	▼	-21%	-6%
Female FTE	796	761	928	1,053	858	▼	-19%	8%
<b>Indicators</b>								
FTE per enterprise	41.2	39.1	42.5	47.9	41.9	▼	-13%	2%
Average wage (thousand €)	9.2	9.2	8.2	9.0	10.7	▲	19%	17%
Unpaid work (%)	0.0	0.0	0.0	0.0	0.1	■	0%	0%



**Figure 4.3.1: Croatian employment trends, 2011-2015**

Increased employment indicators in 2014 could be related to the large volume of landing in 2014, which decreased in 2015, due to implemented management measures. Overall, both the number of employees and FTE, so as wages and salaries showed an increase between 2011 and 2015.

Management measures in terms of limited effort are already affecting fish processing industry. In order to maintain a business on a daily basis, processing factories are forced to import raw material, improve processes and organization of transport and diverse production with different species and products with added value.

#### 4.3.2 Economic performance of the Croatian fish processing sector

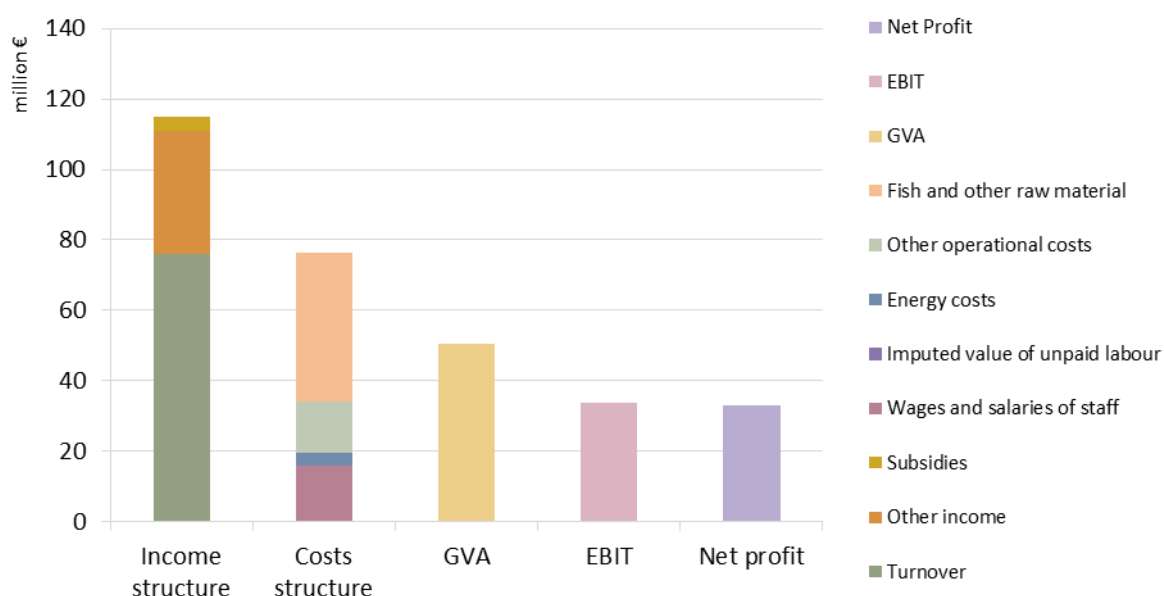
Turnover in 2015 was more than €76 million, which is an increase of €8,4 million more than in 2011, which corresponds to a 13% rise. The total income consists of turnover (64% in 2011, 66% in 2015), other income (31% in 2011, same in 2015) and subsidies (5% in 2011, 3% in 2015). While subsidies did not play the main role in total income, they were important as one of the factors of the economic growth, modernization and setting up new processing facilities, especially for the enterprises from 11 to 49 and from 50 to 249 employees. Subsidies combined with foreign investments - important for trading and market know-how and for developing market network - along with opening of business zones with favourable conditions for buying land properties, caused major changes in the fish processing sector in recent years.

The most important cost component is the purchase of fish and other raw materials, which make up for 41% of the total cost in 2011 and 55% of total cost in 2015. Other operational costs gradually declined from 37% in 2011 to 19% in 2015, while wages and salaries increased from 17% in 2011 to 21% in 2015 due to the process of movement and enlargement as well as opening of new processing facilities. Energy cost makes up for 5% of the total production cost in 2011 so as in 2015.

The amount of Gross Value Added (GVA) in 2011 was 34.3% of total income, and it increased to 50.4% in 2015. The lowest amount of GVA was 21.5% in 2013, which is connected with other income reduction of €11.8 million. At the same time net investments were the highest in reference period, so as the debt of €114.1 million.

From 2011 to 2014, net profit of Croatian fish processing industry gradually declined from €14.4 million to €2.8 million. However, in 2015 net profit increased to €33 million.

The total income has declined 21% from 2011 to 2013 but then increased 37% from 2013 to 2015.



**Figure 4.3.2: Economic performance of the Croatian fish processing sector, 2015**

A period between 2011 and 2013 was remarked with declining economic performance indicators along with declining costs and productivity and performance indicators. At the same time, capital value increased in total value of assets (41% from 2011 to 2013), net investments (almost four times from 2011 to 2013) and debt (14% from 2011 to 2013).

**Table 4.3.2: Economic performance of the Croatian fish processing sector, 2011-2015**

Variable	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2011-15)
<b>Income (million €)</b>							
Turnover	67.5	62.8	58.1	71.7	75.9	▲ 6%	▲ 13%
Other income	33.3	23.2	21.5	29.5	35.2	▲ 19%	▲ 6%
Subsidies	5.4	5.6	4.2	2.0	3.8	▲ 91%	▼ -30%
<b>Total Income</b>	<b>106.1</b>	<b>91.6</b>	<b>83.8</b>	<b>103.2</b>	<b>114.9</b>	<b>▲ 11%</b>	<b>▲ 8%</b>
<b>Expenditure (million €)</b>							
Purchase of fish and other raw material for production	32.5	29.8	28.6	43.7	42.4	▼ -3%	▲ 30%
Wages and salaries of staff	13.3	12.5	12.8	16.4	15.7	▼ -4%	▲ 18%
Imputed value of unpaid labour	0.0	0.0	0.0	0.0	0.0	■ 0%	■ 0%
Energy costs	3.9	4.1	3.9	3.7	3.9	▲ 5%	■ 0%
Other operational costs	30.0	29.7	25.6	28.2	14.4	▼ -49%	▼ -52%
<b>Total production costs</b>	<b>79.7</b>	<b>76.2</b>	<b>71.0</b>	<b>92.1</b>	<b>76.4</b>	<b>▼ -17%</b>	<b>▼ -4%</b>
<b>Capital Costs (million €)</b>							
Depreciation of capital	7.5	4.6	4.3	5.3	4.8	▼ -9%	▼ -36%
Financial costs, net	4.4	4.8	3.4	3.0	0.7	▼ -77%	▼ -84%
Extraordinary costs, net	0.2	0.1	0.8	0.2	14.2	▲ 7614%	▲ 6011%
<b>Capital Value (million €)</b>							
Total value of assets	98.2	116.6	138.9	148.4	129.4	▼ -13%	▲ 32%
Net Investments	6.4	10.6	24.9	5.8	2.1	▼ -64%	▼ -67%
Debt	100.3	103.4	114.1	111.6	74.9	▼ -33%	▼ -25%
<b>Economic performance (million €)</b>							
Gross Value Added	34.3	22.4	21.5	25.6	50.4	▲ 97%	▲ 47%
Operating Cash Flow	26.4	15.5	12.9	11.1	38.5	▲ 247%	▲ 46%
Earning before interest and tax	18.9	10.9	8.6	5.8	33.7	▲ 482%	▲ 78%
Net Profit	14.4	6.1	5.2	2.8	33.0	▲ 1090%	▲ 128%
<b>Productivity and performance Indicators (%)</b>							
Labour productivity (thousand €)	25.4	17.1	14.9	14.3	34.9		
Capital productivity	34.9	19.2	15.4	17.2	39.0		
GVA margin	34.1	26.0	27.0	25.2	45.4		
EBIT margin	18.7	12.7	10.8	5.7	30.3		
Net profit margin	14.3	7.1	6.5	2.7	29.7		
Return on Investment	19.2	9.4	6.2	3.9	26.0		
Financial Position	102.1	88.7	82.1	75.3	57.9		
Future Expectation Indicator	-1.2	5.2	14.9	0.4	-2.1		

On the other hand, the expenditures for the purchase of fish and raw material and other operational costs slightly declined. During this period, some larger companies invested in their own fishing vessels which resulted in a decline of the cost of raw material.

However, in 2014 the sector has become more profitable, especially in 2015 with the increase of all economic profitability indicators.

#### 4.3.3 Overview of the Croatian fish processing sector by size categories

In Croatia, the fish processing industry was divided into four segments in 2011 so as in 2015. However, due to confidentiality reasons, the segment with >250 employees has not been analysed in this report. In the reference period the segment with the most enterprises is the one with 1-10 employees represented with 17 enterprises in 2011 and 18 enterprises in 2015.

**Table 4.3.3: Economic performance of the Croatian fish processing sector by size category (indicators in million €), 2011-2015**

Variable	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2011-15)
<b>less than or equal to 10 employees</b>								
Total Income	4.1	4.7	5.5	9.5	15.5	▲	63%	▲ 283%
Total production costs	4.5	4.6	5.4	8.7	10.4	▲	19%	▲ 131%
Gross Value Added	0.1	0.9	0.8	1.5	5.9	▲	281%	▲ 9853%
Operating Cash Flow	-0.4	0.1	0.1	0.8	5.2	▲	549%	▲ 1262%
Earning before interest and tax	-0.8	-0.2	-0.4	0.4	4.9	▲	1036%	▲ 709%
Net Profit	-0.9	-0.4	-0.6	0.3	4.7	▲	1302%	▲ 596%
<b>between 11 and 49 employees</b>								
Total Income	10.5	3.8	4.1	11.0	1.9	▼	-82%	▼ -82%
Total production costs	7.7	3.4	3.0	6.7	1.5	▼	-77%	▼ -80%
Gross Value Added	3.0	0.7	1.4	5.5	0.9	▼	-84%	▼ -71%
Operating Cash Flow	2.9	0.5	1.1	4.3	0.4	▼	-90%	▼ -85%
Earning before interest and tax	2.5	0.3	1.0	4.1	0.4	▼	-91%	▼ -85%
Net Profit	2.2	0.1	0.9	4.0	0.4	▼	-91%	▼ -83%
<b>between 50 and 249 employees</b>								
Total Income	79.6	58.8	53.3	60.6	70.8	▲	17%	▼ -11%
Total production costs	55.8	44.9	41.6	55.7	51.7	▼	-7%	▼ -7%
Gross Value Added	29.2	16.6	16.8	13.8	27.4	▲	99%	▼ -6%
Operating Cash Flow	23.8	13.8	11.7	4.8	19.1	▲	297%	▼ -20%
Earning before interest and tax	17.6	11.7	9.6	1.6	15.7	▲	902%	▼ -11%
Net Profit	15.3	10.4	8.8	-0.5	15.2	▲	3249%	▼ -1%
<b>greater than or equal to 250 employees</b>								
Total Income			20.9					
Total production costs			20.9					
Gross Value Added			2.4					
Operating Cash Flow			0.1					
Earning before interest and tax			-1.6					
Net Profit			-3.9					

While small enterprises with 1-10 employees do not have a big economic influence in the Croatian fish processing industry, they are very important in local communities from a social standpoint and in preserving the tradition in fish processing. Also, small family businesses are often a platform for innovations and apart from mass production they have a tendency to create unique products with added value, such as smoked fish - local or imported.

Fish consumption in Croatia accounts for 18.4 kg per capita in 2015. This number does not include fish that goes to tuna farms or is sold during tourist season, but it does indicate that demand for local products is increasing. In addition, some small enterprises kept their traditional procedures of basic fish processing with the main products such as frozen and packed fish, branded as domestic product. In both cases, one of the main challenges in fish processing could be to ensure a sustainable source of domestic raw material during the year.

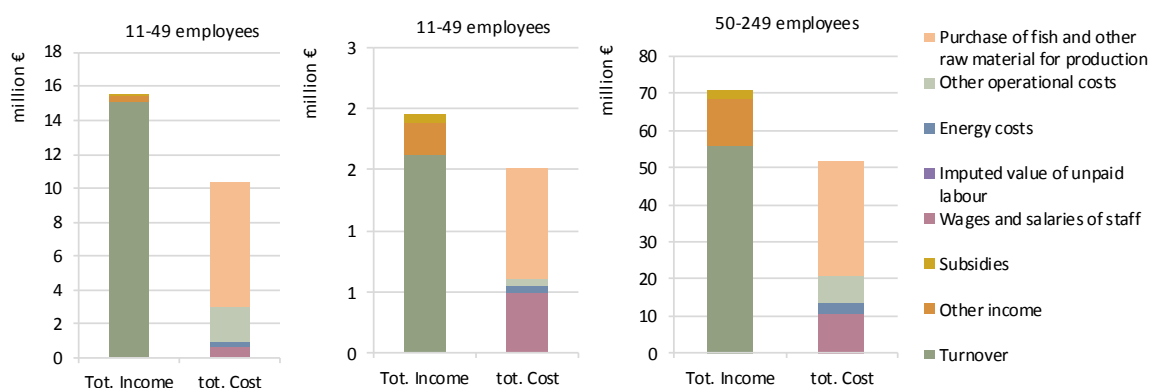
Although total income for these enterprises increased from €3.7 million in 2011 to €15.5 million in 2015, some enterprises did not succeed in overcoming the economic crisis as they started businesses as middle-sized companies at the beginning of the 2000s and continued with minimal business activity and number of employees over the period. Although some of them recovered by the end of the period, some had closed the company. Due to the new investments, some new enterprises started their businesses in the meantime which positively affected the change in the net profit since 2014.



Figure 4.3.3: Croatian main structural and economic variables trends by size category, 2011-2015

Most enterprises in the size category between 11 and 49 employees are located in Istria peninsula and Zadar area, with frozen fish, mostly sardine and anchovy, and in smaller part salted anchovy as the main products. In this category, it is obvious that total income is based on turnover and in smaller percentage on subsidies. The number of enterprises in this segment decreased from 6 in 2011 to 3 enterprises in 2015. Hence, the total income decreased from €10.9 million in 2011 to €1.9 million in 2015. The segment is rather small and inconsistent in terms of economic indicators; however, it has a great potential for growth. The period was characterized with fast growth of some small companies followed by large investments in processing technology and the opening of new processing plants.

The most important segment in Croatian fish industry is certainly the size category with 50-249 employees. The category contains the largest income, number of total value of assets, full-time employment and FTE. In 2011 there were 11 enterprises with main activity in this category and 13 in 2015. Also, 1,512 employees were employed in this category corresponding to 71% of total in 2011 and 1,805 (75% of total) in 2015. The main products of this segment were frozen sardine and anchovy and canned sardine. Very good quality of anchovy (spawning is 2-3 times a year) and catch restrictions on anchovy in some Mediterranean countries attracted investors from Spain and Italy. By the beginning of the period the situation on anchovy market stabilized and sardine took place as a main fish processing product. Nevertheless, fish processors are getting more focused on developing diverse products with added value including anchovy. Because of the modernized business processes, in case of the lack of raw material, there is still a possibility of import and transport of fresh fish in less than 24 hours, but with higher operational costs. Existence of fish processing plants on islands could not be possible for most of the producers, because of, as mentioned before, high expenses and lack of the labour force. Only the two processors kept their processing plants on islands, while others shut it down or moved their facilities to industrial zones or abroad.

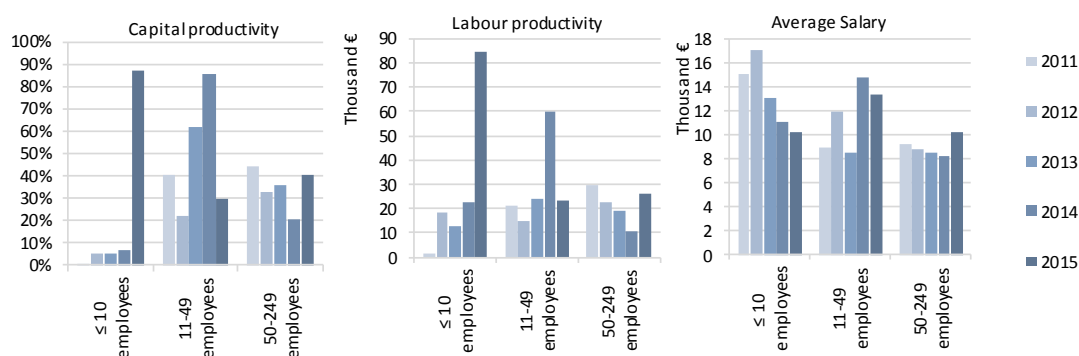


**Figure 4.3.4: Croatian income and cost structure, by size category, 2015**

Enterprises of size category between 50 and 249 employees are mainly located in Zadar area and partly in Istria while few enterprises are placed in Southern Dalmatia and in the continental parts of Croatia. As previously mentioned, some of these companies started in recent years and built their facilities in a business and industrial zones in hinterlands.

For this segment, the last period was intensive in sense of investments, modernization and creating business models for using the potential of new markets. It is important to stress that some companies in this segment employed more than 300 employees in the past, however they entered the period with a lot of structural problems. In the recent period, most of them managed to reorganize, modernize their facilities which is apparent in their economic performance in 2015.

Net profit has declined over the years from 15.3 in 2011 to -0.5 in 2014 but then increased in 2015 to 15.2. The average number of employees is the same over the period (106 employees), corresponding to 89 FTE in 2011 and 80 FTE in 2015.

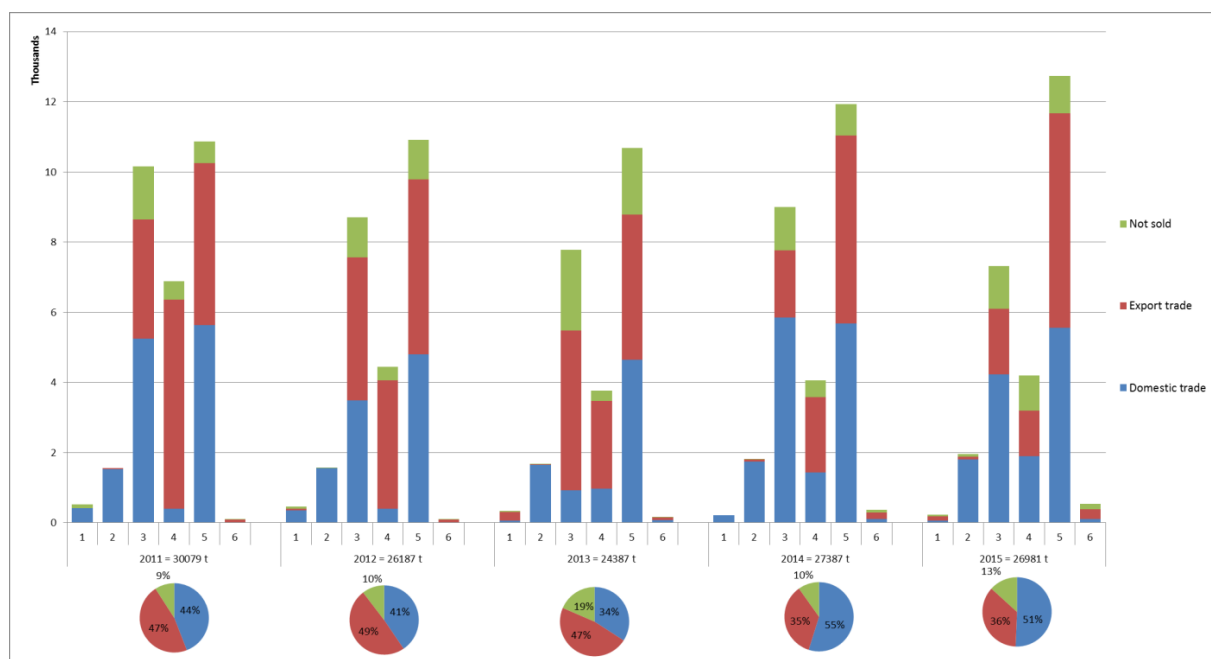


**Figure 4.3.5: Croatian capital productivity, labour productivity and average salary trends, by size category, 2011-2015**

#### 4.3.4 Trends and drivers for change

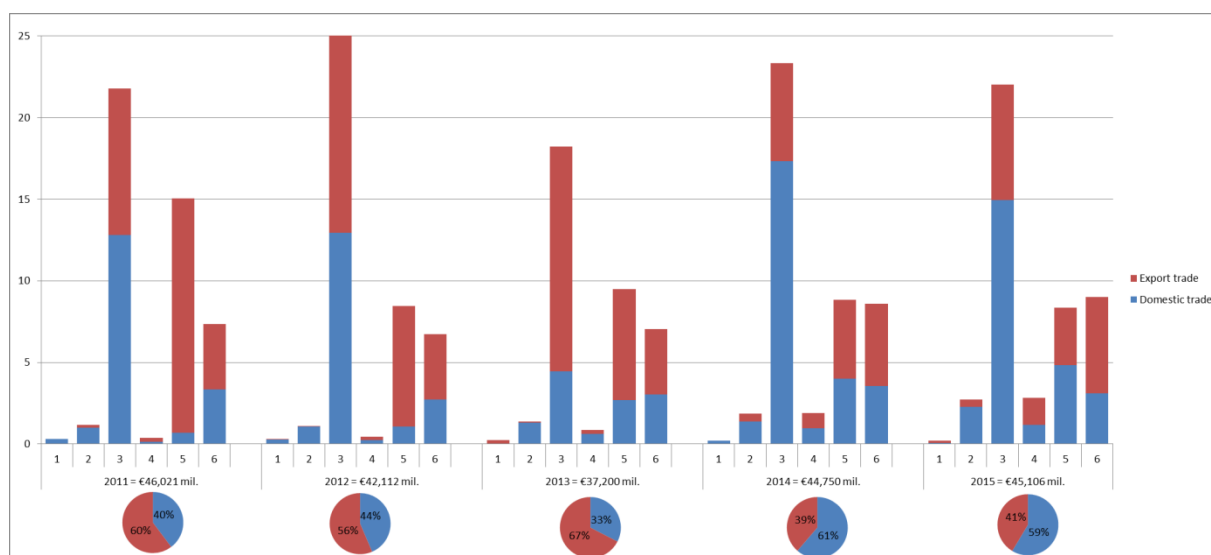
After many initial problems related to the adjustment of new conditions of business and establishing markets, a significant improvement could be noticed in all areas. New markets, EU and national support and the modernization of the entire business brought some advantages compared to the previous period. Small enterprises invested significant funds into building new processing plants, relocating from islands and coastline to the hinterlands which reflected in the decrease of the number of enterprises in segment with 11-49 employees and an increase in the number of enterprises in the segment with 50-249 employees. The main reason was low-cost land properties in business zones and availability of labour force and raw material. In addition, business zones have good connection with main roads and highways which influence the distribution of the products as well as input of the raw material. Also, major companies with a long tradition in fish processing invested in modernization and new technologies in order to improve technical standards and adapt production for EU market. These changes caused an increase in the total number of employees. The sector is characterized by the dominance of female workers especially in large companies with assembly line jobs which started some positive demographic new trends in depopulated rural areas.

The new conditions of work reflected prominently to the production in terms of volume and value. The most important product in terms of volume is frozen fish, predominantly whole fish, but in terms of value, the most important product is canned fish. While production of frozen fish is steadily rising from 2011 to 2015, production of canned sardine, anchovy and tuna decreased in the period. Overall, except in the category of frozen fish, fish production decreased from 2011 to 2015 with lowest total production in 2013. After 2013, there are some signs of recovery in all categories, followed by growth in all categories except canned fish in 2015 (which resulted in a total decrease from 2014).



**Figure 4.3.6: Volume of Croatian fish processing by categories 2011-2015 (in tonnes)**

- 1 – Fish flour, products not for human consumption
- 2 – Molluscs, shellfish
- 3 – Canned fish (sardine, anchovy, tuna, mackerel)
- 4 – Dried and smoked fish
- 5 – Frozen fish
- 6 – Fish fillets – fresh or cooled



**Figure 4.3.7: Value of Croatian fish processing by categories 2011-2015 (in million €)**

- 1 – Fish flour, products not for human consumption
- 2 – Molluscs, shellfish
- 3 – Canned fish (sardine, anchovy, tuna, mackerel)
- 4 – Dried fish
- 5 – Frozen fish
- 6 – Fish fillets – fresh or cooled



Value of fish products decreased along with the volume but with visible recovery in 2014-2015. Regarding the increase of export in total, the trend from 2014-2015 is expected to continue. EFF funds were not available for fish processing, so the major investments were mostly financed through the IPARD funds. Approximately 8% of total EMFF funds are allocated to the processing sector. So far, under the Measure IV.4. "Processing of fishery and aquaculture products", one tender has been held in 2016 (while other is in the process), through which 25 small and middle-sized companies have requested support for the investment, which should improve their businesses in the next period. Moreover, for the significant number of these companies fish processing was not considered as the main activity. In previous years they were mostly involved in aquaculture or trade and distribution of fish products. Therefore, major funds go into construction investments and additional facilities for improvements of production processes.

Management measures already affected fish processing industry as most of the middle sized and large companies depend on the domestic raw material. It is important to say that in the future, connecting aquaculture and fish processing industry is one of the main tasks for fisheries development. Merging these two sectors is leading to increasing domestic raw material for production in processing industry as well as decreasing cost of production.

During the next period, it is expected to agree on the project of certification of sardine through the FIP. This project is the first step to the certification of small pelagic fish which could improve cooperation between fishery cooperatives and fish processing enterprises.

The new Act on Aquaculture promotes an increase of production in aquaculture while respecting the principles of economic, social and ecological sustainability, which could have some positive effects on the collaboration of these sectors.

Future expectation indicator (FEI) started as negative in 2011, peaked in 2013 during the IPARD investments and then slowed down and appeared as negative in 2015. FEI should be interpreted as a proxy for the industry's wish to remain in the market in medium/long term. It is given by the difference between net investments and depreciation compared to the total value of assets. An FEI close to zero can indicate that the sector is only wishing to maintain its production capacity in the future and that it is not planning to expand. Although major processing companies in Croatia made some large investments in the previous period, diversity in companies' activities should be taken into account in order to assess the future expansion. Some investments of companies with processing as non-main activity are expected which could affect this indicator in the future.

#### *4.3.5 Outlook*

According to statistics of production (Annual PRODCOM results from 2011-2015), although fish export in total in recent years increased, the amount of sold exported processed fish products declined from 14 thousand tonnes (about 50% of total production) in 2011 to 10 thousand (about 37% of total production). Still, the sector shows signs of recovery in terms of volume and value of production 2014-2015. Due to new investments, especially for companies which were in previous period engaged mostly in aquaculture and trading and distribution of fish products, it is expected to increase volume and value of fish processing products and develop new products with added value which are especially intended for export to the EU market, but also attractive for domestic market during a tourist season as a part of catering offer. Additionally, according to preliminary results for 2016, investments in modernization of processing plants and foreign investments should increase labour productivity. The project of sardine certification through FIP is expected to improve business processes, primarily in fisheries and provide additional opportunities for collaboration of fishery cooperatives and production organizations with fish processing companies to ensure a stable supply of raw material. Constraints in fisheries, especially for small pelagic fish are certainly going to affect the supply of raw material for processors and increase the import of fresh and frozen fish.

#### *4.3.6 Data coverage and quality*

Data collection covered enterprises with fish processing as the main activity so as enterprises with processing as an additional activity. Since there are few companies in Croatia entirely committed to processing industry, the target population was determined through multiple approaches. Companies that according to Veterinary Directorate have a license for the processing of marine organisms, were sent a questionnaire with the additional statement in case they did none of the processing activity in a reference year or considered processing as an additional activity. In cooperation with Central Bureau of Statistics, the target population was compared with the population of Structural Business Statistics for a reference year. If some differences occurred, statement of the enterprise was taken into account. This approach resulted in a smaller population compared to EUROSTAT data. Additionally, after checking questionnaires, balance sheets were used to cross-check data.

It has to be pointed out that in a few cases, processing activity was stated as the main activity in terms of employment and production at national level although other activities, for example aquaculture, brought larger income. In that case, a company was included in target population as its share in total production and economic performance was of extraordinary importance for the sector.

## 4.4 CYPRUS

### 4.4.1 General overview of the Cypriot fish processing sector

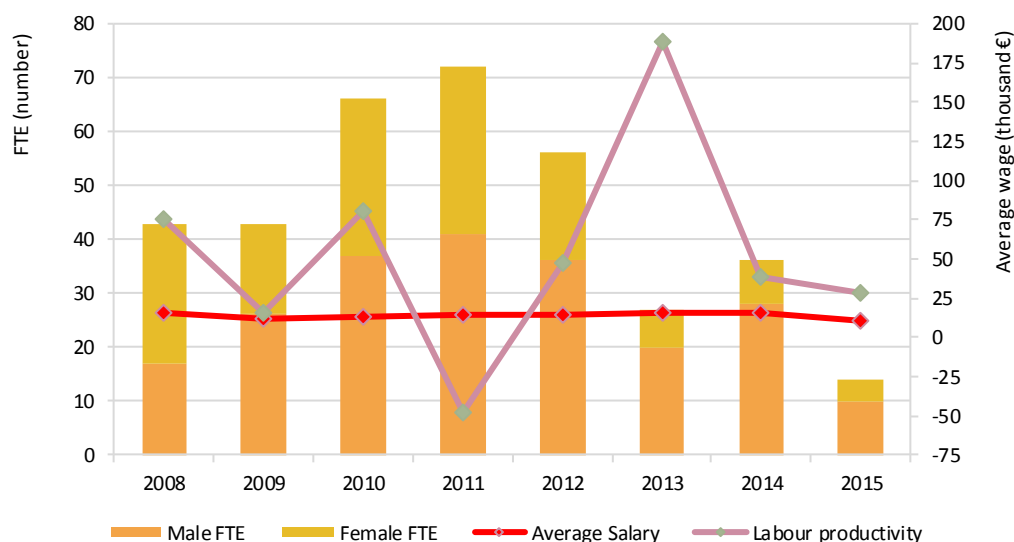
In Cyprus the level of knowledge related to processing activities is limited, because the sector is relatively new. Some important processing activities are smoking, salting and filleting. Only a very few firms were engaged in the ready-made food business during the period 2008-2015, due to the fact that it is a capital intensive business.

The Cypriot processed seafood sector is very small since it is comprised of 2 small-sized enterprises in 2015. There are also some enterprises of processed seafood products not included in the sector (i.e. seafood processing is not the main activity). The number of enterprises has decreased in 2015 relative to 2014. Actually, from 2008 to 2015 there was a decrease in the number of the companies of 60% as shown in the table 4.4.1 below. As a result, the total employment has also decreased during 2015. For the same year, fourteen persons are employed full time in the sector as indicated by the number of employees which coincides to the full time equivalent value. Female employment has decreased by 50% (4 persons) and male employment has also decreased but on an even higher rate of 64% (18 people) in 2015. Employment in terms of full time equivalent per enterprise has also decreased by 42% (at 5 FTE persons) and consequently, average wage decreased by 32% (at €10.9 thousands) in 2015 compared to the previous year.

From 2015 there is a decreasing trend in the number of enterprises in the sector and consequently, employment. Data presented in the table 4.4.1 below suggest that during the period 2008-2011, enterprises in the sector were becoming larger in terms of employment but female employment was decreasing both in terms of persons employed and in terms of full time equivalent. During the period 2012-2015 there is a decreasing trend in both the total number of employees and in the FTE. However, according to Figure 4.4.1 an increasing trend is shown for the Average wage for the period 2009-2014; nevertheless, it still remains at the same level as in 2008. This is not the case for 2015 where the average wage reduces by 32% compared to 2014. Labour productivity in terms of gross value added per FTE shows a great variation during the period 2008-2015. The variation should probably be attributed to change in stocks each year.

**Table 4.4.1: Cypriot fish processing sector overview, 2008-2015**

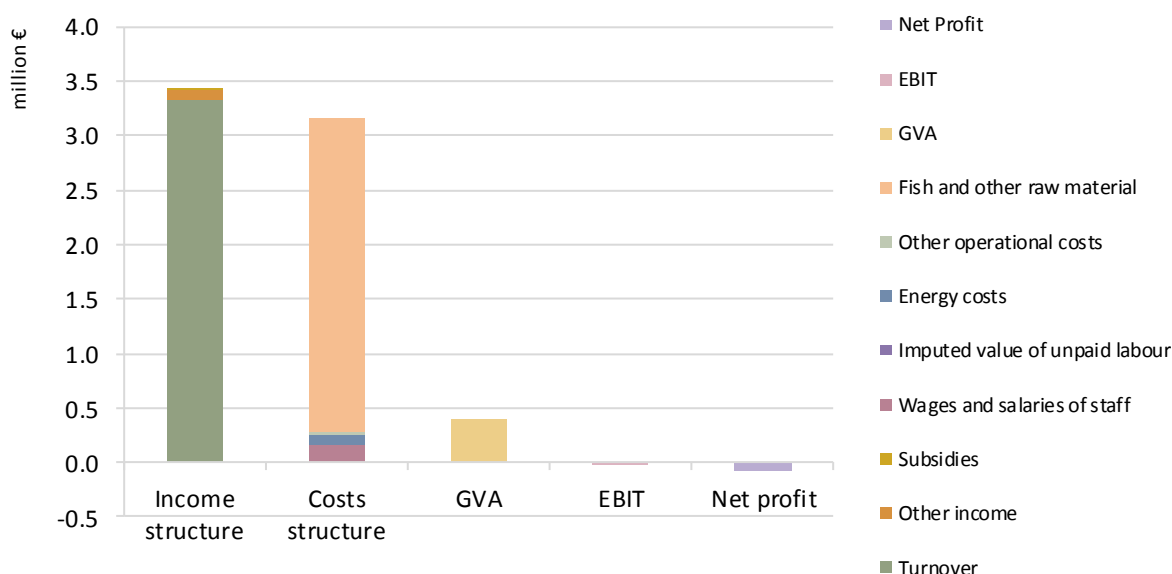
Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	5	3	5	5	4	3	3	2	▼ -33%	▼ -60%
<b>Employment (number)</b>										
Total employees	56	43	66	72	56	27	36	14	▼ -61%	▼ -75%
Male employees	24	26	37	41	36	20	28	10	▼ -64%	▼ -58%
Female employees	32	17	29	31	20	7	8	4	▼ -50%	▼ -88%
FTE	43	43	66	72	56	27	36	14	▼ -61%	▼ -67%
Male FTE	17	26	37	41	36	20	28	10	▼ -12%	▲ 112%
Female FTE	26	17	29	31	20	7	8	4	▼ -35%	▼ -23%
<b>Indicators</b>										
FTE per enterprise	8.6	14.3	13.2	14.4	14.0	9.0	12.0	7.0	▼ -42%	▼ -19%
Average wage (thousand €)	16.2	12.0	13.4	14.0	14.5	16.2	16.0	10.9	▼ -32%	▼ -33%
Unpaid work (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	■ 0%



**Figure 4.4.1: Cypriot employment trends, 2008-2015**

#### 4.4.2 Economic performance of the Cypriot fish processing sector

The economic performance of the Cyprus fish processing industry is shown in Figure 4.4.2 and Table 4.4.2. Most of the income of the sector is attributed to the processing activities. The economic crisis in Cyprus had a great effect on the economic results of the Cypriot fish processing sector. For the period 2012-2013, the sector was shown an improvement of the economic performance with a clear improvement in EBIT and Net profit; nevertheless, it seems that the sector was recovering from high losses during 2011. However, the next two years 2014-2015 the economic performance is shown deterioration. In 2015, it recorded zero EBIT and small net losses (€0.1 millions). The depreciation of capital follows a steady trend the last three years 2013-2015 at around €0.2-€0.3 million. The magnitude of the depreciation of capital, relative to the total value of assets of the sector, suggests that probably some quality issues in the data exist.



**Figure 4.4.2: Economic performance of the Cypriot fish processing sector, 2015**

In the figure 4.4.2, the importance of the various operating costs is presented; as expected the cost of raw materials is the most important one followed by the wages and salaries. All the products used for processing purposes are imported, due to the small production and the high quality of the fresh local fish, where all the quantities produced are consumed as fresh at high prices. Thus, as the companies are greatly depended on the imported raw materials, any price change affects them to a great extent. Some products coming from the local aquaculture sector, like trout, are also used for processing but it concerns very small quantities.

**Table 4.4.2: Economic performance of the Cypriot fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	3.9	4.8	13.7	8.4	7.4	11.6	5.5	3.3	▼ -39%	▼ -15%
Other income	0.0	0.0	2.8	0.3	1.2	0.1	0.0	0.1	▲ 172%	▲ 86%
Subsidies	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	▼ -68%	▼ -88%
<b>Total Income</b>	<b>4.1</b>	<b>4.8</b>	<b>16.6</b>	<b>8.7</b>	<b>8.7</b>	<b>11.7</b>	<b>5.5</b>	<b>3.4</b>	▼ -38%	▼ -16%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	0.4	3.8	10.6	11.5	5.2	6.0	3.5	2.9	▼ -18%	▲ 582%
Wages and salaries of staff	0.7	0.5	0.9	1.0	0.8	0.4	0.6	0.2	▼ -73%	▼ -78%
Imputed value of unpaid labour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%
Energy costs	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.1	▼ -47%	▼ -56%
Other operational costs	0.1	0.1	0.3	0.4	0.4	0.4	0.4	0.0	▼ -92%	▼ -64%
<b>Total production costs</b>	<b>1.4</b>	<b>4.6</b>	<b>12.1</b>	<b>13.2</b>	<b>6.8</b>	<b>7.1</b>	<b>4.7</b>	<b>3.2</b>	▼ -32%	▲ 121%
<b>Capital Costs (million €)</b>										
Depreciation of capital	0.4	0.7	1.3	1.5	2.3	0.3	0.2	0.3	▲ 16%	▼ -29%
Financial costs, net	0.1	0.2	0.7	1.0	0.3	0.1	0.4	0.1	▼ -85%	▼ -14%
Extraordinary costs, net	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%
<b>Capital Value (million €)</b>										
Total value of assets	7.5	5.6	6.5	5.2	5.5	4.7	1.8	1.5	▼ -17%	▼ -81%
Net Investments	0.3	0.0	0.3	0.3	0.4	0.7	0.1	0.0	▼ -149%	▼ -113%
Debt	2.9	4.7	3.9	3.6	3.6	4.4	0.4	1.5	▲ 321%	▼ -48%
<b>Economic performance (million €)</b>										
Gross Value Added	3.2	0.7	5.3	-3.5	2.7	5.1	1.4	0.4	▼ -72%	▼ -88%
Operating Cash Flow	2.6	0.2	4.5	-4.5	1.9	4.7	0.9	0.3	▼ -71%	▼ -90%
Earning before interest and tax	2.3	-0.5	3.2	-6.0	-0.4	4.3	0.6	0.0	▼ -104%	▼ -101%
Net Profit	2.2	-0.7	2.5	-7.0	-0.6	4.2	0.3	-0.1	▼ -133%	▼ -104%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	75.5	15.8	80.0	-48.5	47.5	189.0	39.1	28.3		
Capital productivity	43.2	12.0	81.4	-66.9	48.1	108.1	80.4	27.3		
GVA margin	81.5	14.2	32.0	-40.1	30.8	43.5	25.6	11.6		
EBIT margin	56.6	-10.7	19.4	-69.1	-4.1	37.0	11.4	-0.8		
Net profit margin	54.9	-15.1	15.4	-80.9	-7.4	36.0	4.6	-2.5		
Return on Investment	30.0	-9.0	49.4	-115.2	-6.4	91.9	35.8	-1.8		
Financial Position	38.8	84.0	60.7	68.3	64.2	93.3	20.6	104.7		
Future Expectation Indicator	-0.9	-11.3	-15.4	-23.9	-33.2	7.3	-8.7	-22.4		

Total income generated by the Cypriot seafood processing sector in 2015 is €3.4 million corresponding to a reduction of around 40% compared to 2014 and a reduction of 15% compared to the previous period 2008-2014. The main reasons behind this reduction are the decrease in the number of enterprises whose seafood processing is their main activity and the financial crisis. Nevertheless, income generated by seafood processing activities during 2015 represents a share of 97% of the total income while income generated by other activities reached a share of 3% of the total income. As in the previous years, subsidies represent a small part (maximum 1%) of the total income. In 2015 there were not any subsidies since there was no project for funding through the European Maritime Fisheries Fund (EMFF 2014-2020) related to the fish processing industry.

Based on the above and the results according to the table 4.4.2, it can be concluded that seafood processing activities in Cyprus have diminished during 2015.

Production costs amounted to €3.2 million and accounted for 94% of the total income of the sector in 2015. As discussed earlier, the cost of raw materials being the most important part of the production cost, accounted for 85% of the total income. Wages and salaries and energy costs accounted for 6% and 3% of the total income, respectively. From 2008 to 2015 the value of unpaid labour in Cyprus fish processing sector seems insignificant.

Capital costs of the sector amounted to €0.4 million, have increased by 16% in 2015. As financial costs have decreased during 2015, depreciation of capital represents the vast majority of the capital costs. The Total Value of Assets at €1.5 million continued its decreasing trend resulting in a reduction of 81% in 2015 if compared to the previous years (2008-2014). This is mainly due to the big reduction in the number of enterprises. Despite the big increase in debt in 2015 relative to 2014 there were not any Net investments for the year. Yet, the amount of debt in 2015 is still reduced by 48% if compared to the period 2008-2014. It is noted that it is not easy to get funding for business or for other purposes due to the financial crisis in Cyprus. There was not any funding from European Maritime Fisheries Fund 2014-2020 (EMFF) for 2015 and thus, there was no rise in net investment as identified from the DCF data. Some funding took place for the enterprises of the sector within the period 2008-2014 through the European Fisheries Fund (EFF) but it did not concern significant amounts.

The performance indicators for the period 2014-2015 suggest deterioration of economic performance of the sector since the main indicators have decreased significantly; €0.4 million of GVA generated in 2015, a reduction of 72% compared to 2014. Actually, it is deteriorated by the relatively high depreciation of capital resulting in zero EBIT and small net losses (€0.1 million) for the sector.

For the six-year period (2008/2013) the sector has expanded both in terms of turnover generated by seafood processing activities and in terms of total income. But, this was not the case for the last two years (2014-2015) where there was a significant reduction in the total income.

#### *4.4.3 Trends and drivers for change*

The overall economic environment in Cyprus of the last years with the severe financial crisis and the bankruptcy of many companies, certainly, has negatively affected seafood processing industry. The first impact was the reduction in the number of both the companies that had fish processing as their main activities and those that did not. The reduction in the purchasing power of the Cypriot customers had a negative impact on the turnover of the fish processing sector. As a result, there was a deterioration of the economic performance of the sector mainly due to the decrease in total income.

In Cyprus, there is a significant trade deficit in fisheries products and thus, the whole local fisheries production is consumed fresh at high prices. Consequently, the fish processing sector is greatly depended on the imported raw materials and thus, any price change affects the companies to a great extent.

The fact that there was no funding for the fish processing sector through EMFF is another negative factor for the economic performance of the sector in 2015.

#### *4.4.4 Outlook*

In 2015, the fish processing sector in Cyprus was at stake mainly due to the economic crisis. In 2016, Cyprus was still in the Rescue by EU programme due to the financial crisis but the country managed to finish it by the end of year. In 2017, the country left the recession behind. Thus, the end of the recession is expected to positively affect the fish processing sector as the purchasing power of the Cypriots is expected to rise and the trust by Cypriots and foreigners for the Cyprus economy after the bail-in in 2013 has recovered significantly.

The sector, as explained above, is dependent on imports for raw materials and thus, since the purchase of raw materials is by far the highest expenditure for the companies any differentiation in their prices is going to affect greatly the economic performance of the sector.

The BREXIT is not expected to have any economic consequences on the sector because only a small part of imported raw materials have their origin in the UK.

#### *4.4.5 Data coverage and quality*

There is full data coverage. As for the quality of the data there seems to be problem with the depreciation of capital.

## 4.5 DENMARK

### 4.5.1 General overview of the Danish fish processing sector

The Danish fish processing industry is mainly located around the most important fishing harbours in Denmark. The most important areas in terms of value and volume of landings are the north and western parts of Jutland and most of the processing industry are located in these areas. Denmark is one of the world largest importers and exporter of fish and fish products and the Danish processing industry produces a large variety of products based on many different species. As such, the raw materials for the industry are purchased on the global market for fish and fish products and the dependency on domestic landing is rather limited. Nevertheless, the catches of cod, herring and mackerel are of some importance. The Danish fishmeal and -oil factories are also dependent on domestic catches, but they are also receiving raw material from countries like Norway, Iceland, UK and Sweden. Furthermore, some Danish regions and islands are depending on the local fisheries and processing industry, because alternative job opportunities in these areas are low.

The Danish import is dominated by salmon from Norway. A huge amount of salmon is passing through Denmark destined for the European market, especially the market for fresh salmon in France and Germany. The industry processing salmon using fresh raw materials are for most part dependent on the aquaculture production in Norway and the UK, but frozen raw material for production are imported from all over the world, mostly Chile.

The net profit of the Danish processing industry was positive in 2015 and the turnover increased from 2014 to 2015 from €2.3 to €2.6 billion, corresponding to an increase of 12%. However, the total amount of raw material used in the industry, measured as output in terms of commodities from the industry (processed raw material) decreased 1% from 452 thousand tonnes to 449 thousand tonnes. The production for human consumption decreased by 2%, whereas; the production of fishmeal and -oil remained the same.

In Table 4.5.1, an overview of the development in the number of fish processing enterprises and the numbers of employees and full time employees are shown. In 2015 there were 108 enterprises in the Danish fish processing industry sector. The overall structural development in the sector can be characterized by a decline in the number of enterprise. From 2008 to 2015 the number of enterprises decreased from 117 to 108, corresponding to an 8% decrease.

In Figure 4.5.1, the size distribution of the Danish fish processing enterprises is shown for 2015. The sector is dominated by small and middle sized enterprises. In Denmark, 54 enterprises have less than 10 full time employees, corresponding to 50% of the total number of enterprises. Furthermore, 31 enterprises have between 11 to 49 employees and 23 have between 50 to 249 employees, corresponding to 29% and 21%, respectively. In Denmark there is no large fish processing company with more than 250 employees.

In total, the Danish fish processing sector employed 3,614 people in 2015, which was the same as the year before. From 2008 to 2015 the numbers employed decreased by 17%. The number of full-time employees also decreased from 4,147 in 2008 to 3,054 in 2015, corresponding to a decrease of 26%.

The average size of the enterprises measured by the number of full-time employees fell from 35 to 28 employees from 2008 to 2015. On the other hand, the average salary per FTE increased from €49 thousand to €66 thousand per year, corresponding to an increase of 35%. The labour productivity in terms of gross value added per FTE has also been increasing from €62 thousand to €117 thousand.

The value of unpaid labour in the Danish fish processing industry is rather insignificant. In the years from 2008 to 2015, the value has been estimated to be less than 1% of total amount of wages and salaries paid.

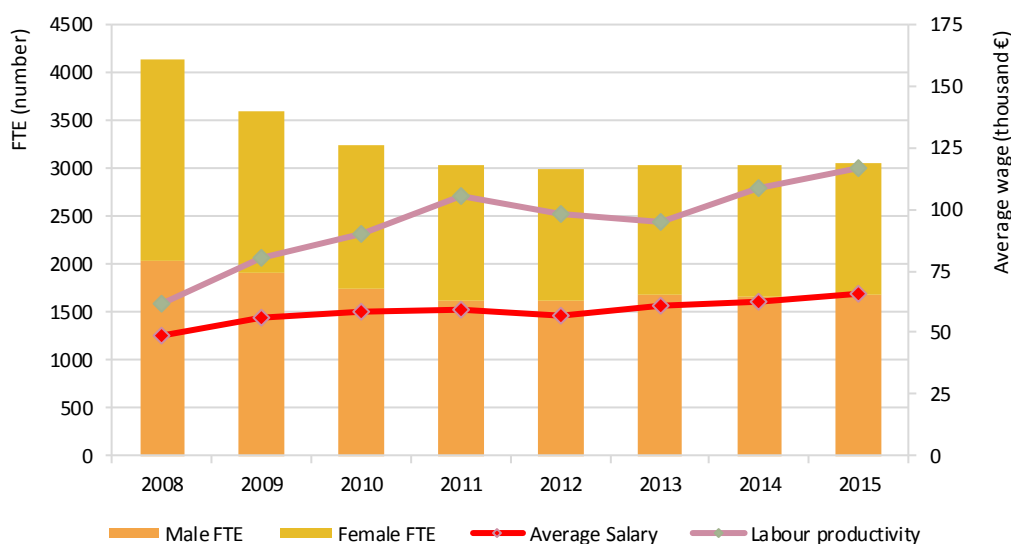
In Figure 4.5.1, the development of male and female FTE and the average wages are shown from 2008 to 2015. The number of male and female employees and FTEs has been decreasing from 2008 to 2015. The number of females has decreased more than numbers of male employees and FTEs.



From 2008 to 2015 the male and female employment decreased by 10% and 24%, respectively. Measured as FTE the decrease for male and female has been 21% and 34%, respectively.

**Table 4.5.1: Danish fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	117	123	115	107	106	103	100	108	▲ 8%	▼ -8%
≤10 employees	56	63	56	54	57	53	47	54	▲ 15%	▼ -4%
11-49 employees	31	37	37	33	30	29	28	31	▲ 11%	■ 0%
50-249 employees	30	23	22	20	19	21	25	23	▼ -8%	▼ -23%
≥250 employees	0	0	0	0	0	0	0	0	■ 0%	■ 0%
<b>Employment (number)</b>										
Total employees	4,379	4,227	3,791	3,704	3,409	3,453	3,613	3,614	■ 0%	▼ -17%
Male employees	2,146	2,121	1,989	1,952	1,811	1,889	1,914	1,928	▲ 1%	▼ -10%
Female employees	2,233	2,106	1,802	1,752	1,598	1,564	1,699	1,686	▼ -1%	▼ -24%
FTE	4,147	3,596	3,235	3,043	2,999	3,039	3,028	3,054	▲ 1%	▼ -26%
Male FTE	2,040	1,917	1,741	1,623	1,611	1,684	1,668	1,686	▼ -1%	▼ -21%
Female FTE	2,107	1,679	1,494	1,420	1,388	1,355	1,360	1,368	▼ -2%	▼ -34%
<b>Indicators</b>										
FTE per enterprise	35.4	29.2	28.1	28.4	28.3	29.5	30.3	28.3	▼ -7%	▼ -20%
Average wage (thousand €)	48.8	55.8	58.6	59.4	57.0	61.3	62.9	65.6	▲ 4%	▲ 35%
Unpaid work (%)	0.7	0.8	0.8	0.7	0.8	0.6	0.5	0.5	▼ -6%	▼ -30%



**Figure 4.5.1: Danish employment trends, 2008-2015**

The average salary has been increasing from 2008 to 2015 with 35%, and the average salary also increased from 2014 to 2015 with 4%.

In Figure 4.5.1, the average salary and labour productivity is shown for the Danish fish processing industry. In Table 4.5.2, it can be seen that the total income is increasing relative to total cost over the period from 2008 to 2015. As a result, the GVA has been increasing. The increased GVA and the lower employment have resulted in increasing labour productivity in the sector, even though, the average cost of labour has also increased from 2008 to 2015.

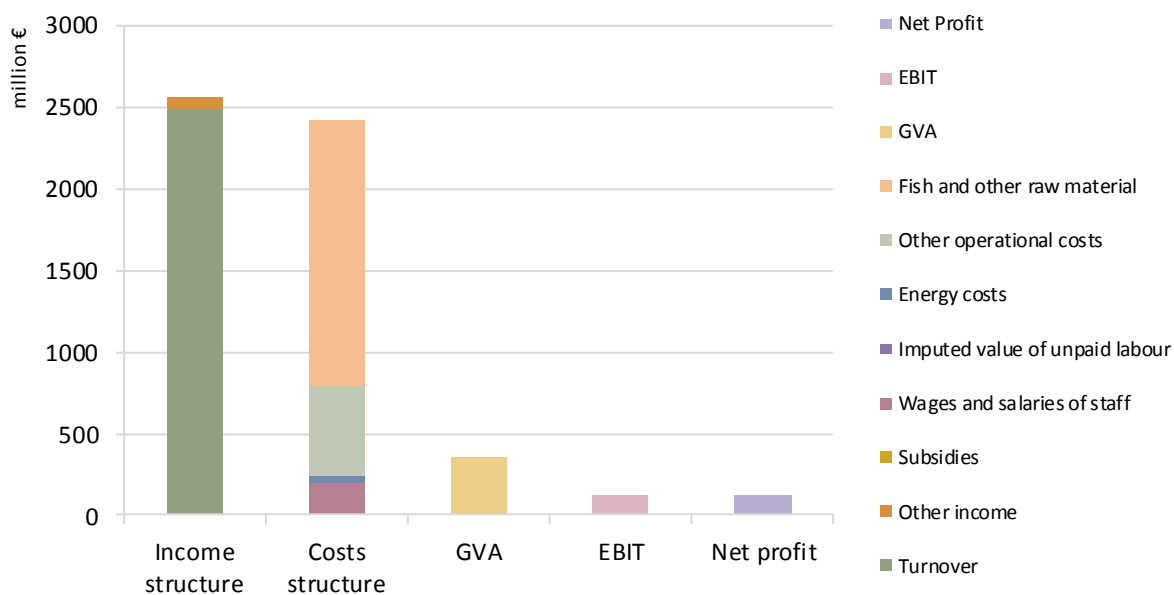
#### 4.5.2 Economic performance of the Danish fish processing sector

In Figure 4.5.2 and Table 4.5.2, the economic performance for the Danish processing industry is shown for 2015 and for the period 2008 to 2015.

In 2015, the total income for the Danish fish processing industry reached €2.6 billion, which was an increase of 12% compared to 2014. The total income consists of turnover, other income and subsidies of which turnover and other income make up for 97% and 3%, respectively. There are no registered subsidies in the Danish fish processing industry.

The most important cost component is the purchase of fish and other raw materials, which make up for 67% of the total cost. Other operational costs covers 23%, whereas wages and salaries and imputed value of unpaid labour cover 8% and 0%, respectively. Energy cost make up for 2% of the total production cost.

The Gross Value Added (GVA) is calculated as the total income deducted by energy cost, fish and other raw material cost and other operational cost. The GVA reached €357 million in 2015, which was an increase of 8% from 2014.



**Figure 4.5.2: Economic performance of the Danish fish processing sector, 2015**

In 2008, the Danish fish processing industry experienced a negative net profit, but since then the net profit has been positive. The net profit increased until 2011 reaching €95 million, however in 2012 and 2013 the net profit decreased to €57 million corresponding to a decrease of 60%. In 2014 and 2015 the net profit started to increase again reaching €126 in 2015. The total income has increased over the years from 2008 to 2015 with 51%. The cost has almost increased at the same pace and has been growing with 47% over the same period. The expenditures for wages and salaries have remained the same from 2008 to 2015 owing to a reduction in the workforce. On the other hand, the expenditures for purchase of fish and raw material and other operational cost

increased by 16% and 4%, respectively over this period. Energy cost increased by 12%. All in all, the sector has become more profitable and is performing better after the global economic crisis.

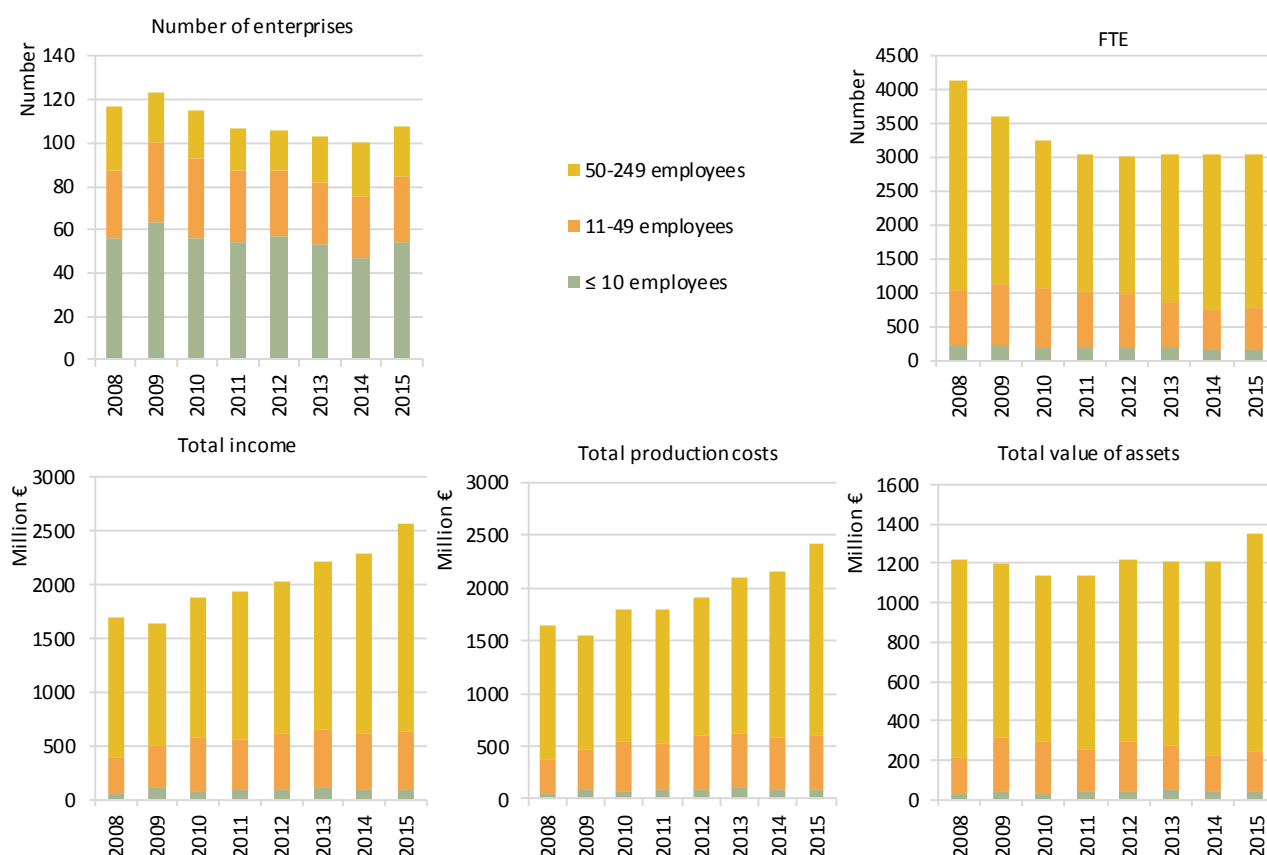
Most of the productivity and capital productivity indicators increased from 2008 to 2015. The return on investments increased from 1.1% in 2008 to 9.2% in 2015 and the future expectation indicator reached its highest positive level being 0.9 in 2015. Furthermore, the future expectation indicator has been positive from 2013 to 2015.

**Table 4.5.2: Economic performance of the Danish fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	1,702.6	1,693.2	1,828.8	1,858.7	2,010.0	2,229.8	2,269.4	2,488.9	▲ 10%	▲ 46%
Other income	-5.3	-49.2	60.1	68.4	19.7	-22.0	23.3	78.2	▲ 235%	▲ 1566%
Subsidies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	■ 0%
<b>Total Income</b>	<b>1,697.3</b>	<b>1,644.0</b>	<b>1,888.9</b>	<b>1,927.1</b>	<b>2,029.7</b>	<b>2,207.8</b>	<b>2,292.7</b>	<b>2,567.2</b>	▲ 12%	▲ 51%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	990.9	953.2	1,041.0	1,146.9	1,177.1	1,361.1	1,397.7	1,616.7	▲ 16%	▲ 63%
Wages and salaries of staff	200.8	199.2	188.0	179.5	169.7	185.2	189.5	199.4	▲ 5%	▼ -1%
Imputed value of unpaid labour	1.5	1.5	1.5	1.2	1.3	1.0	1.0	1.0	■ 0%	▼ -31%
Energy costs	33.2	30.0	35.3	36.0	30.5	33.8	34.7	38.9	▲ 12%	▲ 17%
Other operational costs	416.6	370.5	521.9	422.7	528.2	525.0	531.0	554.9	▲ 4%	▲ 33%
<b>Total production costs</b>	<b>1,643.0</b>	<b>1,554.4</b>	<b>1,787.7</b>	<b>1,786.4</b>	<b>1,906.7</b>	<b>2,106.1</b>	<b>2,153.9</b>	<b>2,410.9</b>	▲ 12%	▲ 47%
<b>Capital Costs (million €)</b>										
Depreciation of capital	41.0	40.1	35.7	33.6	35.5	33.4	31.0	32.1	▲ 4%	▼ -22%
Financial costs, net	41.1	35.9	9.5	12.4	9.3	11.0	-11.2	-1.5	▲ 86%	▼ -104%
Extraordinary costs, net	-2.3	-2.7	0.9	-2.7	0.1	-0.9	0.0	0.0	■ 0%	▲ 100%
<b>Capital Value (million €)</b>										
Total value of assets	1,218.4	1,195.0	1,142.9	1,134.3	1,221.6	1,209.1	1,206.1	1,355.4	▲ 12%	▲ 11%
Net Investments	42.0	37.9	7.9	39.2	31.2	40.5	37.2	44.4	▲ 20%	▲ 6%
Debt	915.6	870.0	813.6	628.5	700.7	715.9	668.0	706.5	▲ 6%	▼ -23%
<b>Economic performance (million €)</b>										
Gross Value Added	256.6	290.3	290.8	321.5	293.9	287.9	329.3	356.7	▲ 8%	▲ 39%
Operating Cash Flow	54.3	89.6	101.2	140.8	123.0	101.7	138.8	156.2	▲ 13%	▲ 188%
Earning before interest and tax	13.3	49.5	65.5	107.2	87.5	68.2	107.8	124.1	▲ 15%	▲ 830%
Net Profit	-27.7	13.6	56.0	94.8	78.2	57.2	119.0	125.6	▲ 6%	▲ 553%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	61.9	80.7	89.9	105.7	98.0	94.7	108.8	116.8		
Capital productivity	21.1	24.3	25.4	28.4	24.1	23.8	27.3	26.3		
GVA margin	15.1	17.7	15.4	16.7	14.5	13.0	14.4	13.9		
EBIT margin	0.8	3.0	3.5	5.6	4.3	3.1	4.7	4.8		
Net profit margin	-1.6	0.8	3.0	4.9	3.9	2.6	5.2	4.9		
Return on Investment	1.1	4.1	5.7	9.5	7.2	5.6	8.9	9.2		
Financial Position	75.2	72.8	71.2	55.4	57.4	59.2	55.4	52.1		
Future Expectation Indicator	0.1	-0.2	-2.4	0.5	-0.4	0.6	0.5	0.9		

### 4.5.3 Overview of the Danish fish processing sector by size categories

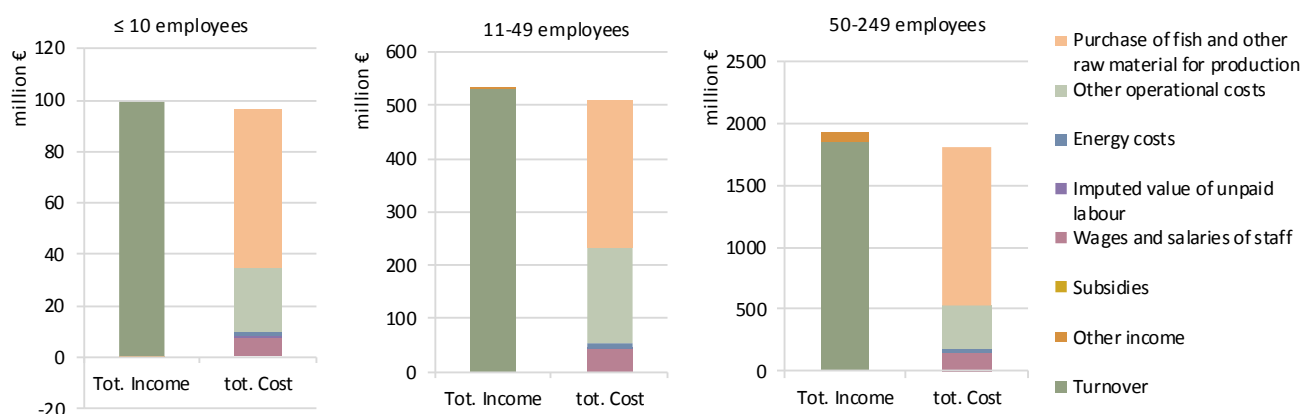
In Figure 4.5.4, the numbers of enterprises distributed on size categories are shown. The segment containing enterprises with 10 or less employees is the largest covering 50% of the total number of enterprises. 31 enterprises have between 11 to 49 employees and 23 have between 50 to 249 employees, corresponding to 29% and 21%, respectively. The segment with 50-249 is the most important in terms of employment covering 75% of the total numbers of FTE. The largest segment is also the segment that have experienced the largest reduction in the labour force from 2008 to 2015 with 27%, where the two smaller segments with less than 10 and between 11-49 employees only have reduced the labour force with 20% and 25%, respectively.



**Figure 4.5.3: Danish main structural and economic variables trends by size category, 2008-2015**

The segment with 50 to 249 employees is also dominating the economic indicators covering 75% of total income and total cost where the segment with less than 10 and between 11-49 employees are covering 4% and 21%, respectively. The total value of assets increased with 11% from 2008 to 2015 even though the numbers of enterprises are falling from 117 to 108. The largest enterprises are covering 82% of the total value of assets where the segment with less than 10 and between 11-49 are covering 3% and 15%, respectively.

In Figure 4.5.5, the total income and the cost composition for the three Danish segments are shown.

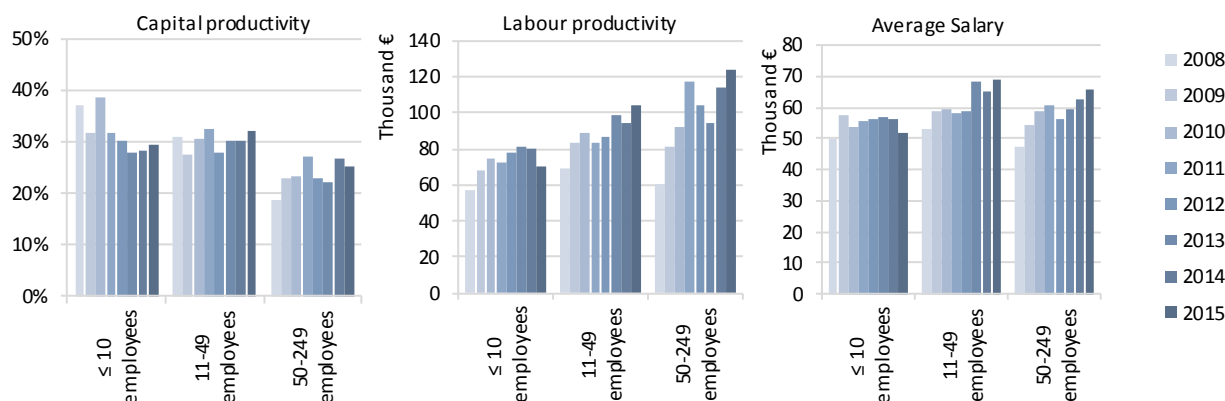


**Figure 4.5.4: Danish income and cost structure, by size category, 2015**

The segment with less than 10 employees experienced falling income but also falling cost from 2014 to 2015. As a result, the GVA and the net profit also decreased in this segment. The segment with between 11-49 employees increased the total income and the total cost, resulting in an improved GVA and net profit from 2014 to 2015. The segment with 50-249 employees also increased the total income and total cost, which lead to an increase in GVA and net profit. For all segment, the economic performance has improved from 2008 to 2015, where the only negative indicator is the GVA for the segment with less than 10 employees, which decreased by 3%.

**Table 4.5.3: Economic performance of the Danish fish processing sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	60.8	104.6	78.3	89.3	93.7	116.6	101.3	99.4	▼	-2%	64%
Total production costs	59.3	102.2	74.6	86.2	89.9	112.5	98.0	96.6	▼	-1%	63%
Gross Value Added	11.4	14.7	13.5	13.0	13.8	13.5	11.2	11.1	▼	-1%	-3%
Operating Cash Flow	1.5	2.4	3.7	3.1	3.8	4.0	3.3	2.8	▼	-14%	86%
Earning before interest and tax	-0.2	0.5	2.4	1.6	2.2	2.1	2.0	1.4	▼	-30%	1001%
Net Profit	-1.3	-0.8	1.8	0.7	1.4	1.4	1.5	1.1	▼	-64%	184%
<b>between 11 and 49 employees</b>											
Total Income	337.5	392.3	499.1	465.5	526.8	540.2	509.1	533.4	▲	5%	58%
Total production costs	324.1	370.5	473.1	444.1	504.7	519.2	491.7	511.1	▲	4%	58%
Gross Value Added	57.5	74.7	79.1	68.9	69.3	67.2	55.7	65.2	▲	17%	13%
Operating Cash Flow	13.4	21.8	26.0	21.4	22.0	21.0	17.4	22.3	▲	29%	67%
Earning before interest and tax	3.7	10.4	16.8	14.5	14.1	12.7	11.4	14.8	▲	30%	301%
Net Profit	-4.1	1.7	11.7	9.8	8.7	9.3	10.8	15.0	▲	38%	462%
<b>between 50 and 249 employees</b>											
Total Income	1,299.1	1,147.1	1,311.5	1,372.4	1,409.2	1,551.0	1,682.3	1,934.3	▲	15%	49%
Total production costs	1,259.6	1,081.7	1,240.1	1,256.1	1,312.1	1,474.4	1,564.2	1,803.3	▲	15%	43%
Gross Value Added	187.8	200.9	198.2	239.6	210.8	207.2	262.4	280.4	▲	7%	49%
Operating Cash Flow	39.4	65.4	71.5	116.3	97.1	76.6	118.2	131.1	▲	11%	232%
Earning before interest and tax	9.8	38.6	46.3	91.1	71.1	53.4	94.4	107.9	▲	14%	1001%
Net Profit	-22.2	12.6	42.4	84.3	68.1	46.6	106.7	109.5	▲	3%	592%



**Figure 4.5.5: Danish capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

The segment with less than 10 employees shows a falling trend in the capital productivity from 2008 to 2015, whereas the segment with 11-49 employees and 50-249 employees increased the capital productivity over the same period.

The labour productivity is increasing for all segments from 2008 to 2015; however, there is a decreasing trend for the segments with less than 10 employees from 2013 to 2015. The average salary also shows a decreasing trend for the segments with less than 10 employees from 2013 to 2015, whereas an increasing trend can be seen for the larger segments over most of the period from 2008 to 2015.

#### 4.5.4 Trends and drivers for change

The industry processing fish for reduction to fishmeal and –oil was the most important segment in the Danish fish processing industry in terms of volume and value in 2015. These enterprises are depending on local catches of pelagic species from the Atlantic Ocean, however, they also importing raw material from other countries like Norway, Iceland and Sweden. For the industry processing fish for consumption the salmon industry was the most important in 2015 in terms of value and volume. This industry is dependent on the Norwegian aquaculture industry and most of the imports of salmon are processed and exported to other EU countries.

Overall, the Danish industry has decreased in terms of number of enterprises and employees from 2008 to 2015. The industry has outsourced some of the labour intensive activities to countries with lower salary costs, where especially the salmon industry has outsourced some of their activities to Poland. Nevertheless, the number of enterprises has been quite stable from 2008 until 2015. In terms of degree of processing, the production of fresh- and frozen fillet and smoked and preserved products has been quite stable over the period. The fresh and frozen fillet production covered 15% and 8%, respectively. Smoke product covered 18%, whereas the prepared product covered 59% in 2015. The filleting is for most part done in countries with lower salary cost than Denmark, whereas a larger part of the smoked and prepared products is done in Denmark.

In general, the industry relies on a steady inflow of raw materials. For industries that are relying on local/EU stocks a change in the availabilities of these materials can heavily affect the industry income, production and employment. This is especially true for the Danish fishmeal and –oil processors that are relying on Danish catches for most of their raw material. For industries that are less dependent on local/EU stocks raw materials are purchased from all over the world. In these segments the cod, herring and mackerel sectors are placed relying on Danish catches as well as raw material from countries fishing in the North Atlantic. The salmon processors are on the other hand almost solely dependent on the production originating from the aquaculture sector, especially

Norway. The shrimp processors are dependent on the shrimp caught in the North Atlantic by Greenland and Canada, however, the processing of warm water shrimp is mostly relying on shrimp produced in aquaculture outside the EU.

Most EU stocks are at the moment fully exploited (FAO) and it is not expected that raw materials from EU fisheries will/or can increase in the near future. However, the EU aquaculture sector can, given the right framework condition, increase production and the EU aquaculture sector has a huge unleashed potential to increase production. Unfortunately, the framework condition for the industry, especially the regulatory settings (Nielsen 2011, 2012) and the industry structure (Nielsen et al. 2014, 2015) are a hindrance for the development of a competitive and sustainable aquaculture sector in EU (STECF 2016).

To further explore the issue on the origin of the raw material going into the fish processing industry in terms of where the products are coming from (e.g. if it is imported or locally produced, or if the product originate from fisheries or aquaculture) a feasibility study will be conducted in Denmark and other EU countries to see if it possible to collect this information from the industry. To test the feasibility of such a data collecting the processing industry will be involved in testing and develop a questionnaire that can be used addressing the issues. The questionnaire should be made in such a way that the data collected will be comparable with other EU countries and the questionnaire will be made available to all countries that want to collect these data in EU.

In terms of certification, most Danish stocks are managed and fished according to the Marine Stewardship Council (MSC) guidelines and labelled accordingly. Processing companies are dependent on selling their product to supermarket chains, which most often demand that the products can be labelled to attract consumers and avoid bad publicity for selling non sustainable products. Thus, the processing industry applies to these demands from the supermarket chains. For the aquaculture sector, the labelling scheme Aquaculture Stewardship Council (ASC) has been adopted in Denmark and more and more producers are following these guidelines. In Denmark, there is furthermore a governmental certification scheme for organic products, which can be applied for aquaculture products coming from both land based farms and marine sea cages farms.

Under the EMFF the Danish processors can apply for support under EMFF priority axis 2.3: "Processing and marketing of fishing and aquaculture products". A total amount of EMFF and national support of nearly €26 million has been paid out to support initiatives under this priority. However, according to the account statistics for the fish processing industry in Denmark there has been no reporting of public funds. An explanation of the missing registration of these funds can be that it is paid to supporting industries and not to enterprises that is registered as having fish processing as their main activity, such as, marketing firms or firm engaged in producing equipment for the processing industry. All in all, the funding corresponds to 1% of the industries total income and can therefore be seen as rather insignificant to the Danish processing industry.

Fish processing as non-main activity is rather limited in Denmark. More than 95% of the fish products that are processed in Denmark can be allocated to the enterprises within the NACE code 10.20, where fish processing is the main activity. There have only been identified between 3-6 companies outside NACE 10.20 over the period 2008 to 2015 that have fish processing but not as their main activity. These companies are identified if they have workplaces/production facilities doing fish processing but the overall enterprise is not registered under the NACE 10.20. Unfortunately, the income from these companies cannot be reported do to confidentially reasons.

#### *4.5.5 Outlook*

One of the major concerns at the moment is the economic consequences for the Danish fishery following the United Kingdom's decision to leave the European Union (BREXIT). Estimation on the economic consequences for the Danish fishing fleet made by the Department of Food and Resource Economics (Andersen et al. 2017) reveals that compared to the initial situation landing value can be reduced with 45-57% and net profit with 66-82% for the vessels fishing in the UK zone depending on how fishers can adapt to the new situation. The vessels affected by BREXIT are primarily targeting species for reduction, herring and mackerel. Thus, the Danish processing industry relying on these catches will be affected. If the same volumes of fish are landed, the

industry will probably be able to buy the fish from British fishers. However, if the British fishers are not able to catch the same amount of fish there will be a lack of raw material and prices will probably increase. It could also be that tariffs are placed on fish from UK, which will increase costs for Danish processing companies. In the end this could prevent the British fishers from landing in Danish harbours and the industry will then have to look for other sources to provide the raw material, which would probably increase costs.

A new regulation on aquaculture production has been implemented in Denmark, in 2012. Furthermore, a new plan for increasing aquaculture production was implemented in 2016/17 allowing for an increase in both land and sea based aquaculture production. Based on this implementation, the production in the Danish aquaculture sector is expected to increase in the coming years, providing more raw materials for the industry. This could potentially have a positive effect on the processing industry in Denmark, especially the sub branches processing trout and salmon.

#### *4.5.6 Data coverage and quality*

Data for the Danish fish processing industry is collected by Statistics Denmark. The data covers all enterprises in the business register covered by NACE 10.20. Data is processed to comply with the DCF and DCR in cooperation with the Department of Food and Resource Economics. The data collected by Statistics Denmark follows the definition of the Structural Business Statistics (SBS) and is, therefore; comparable with Eurostat data and data from other member states that are using the SBS definition, as suggested in the DCR and DCF.

In Statistics Denmark, the Account Statistics are available approximately 20 months after the end of the reference year.

Data can be disaggregated on to the 4 segment on numbers of employees as requested by the DCF. In Statistics Denmark and other statistical offices, the numbers of full time employees are used instead of the number of employees. To avoid problems with confidentiality, segments should in general include more than 10 enterprises. In Denmark there are no enterprises with more than 250 full time employees.

In Denmark, the enterprises covered by NACE 10.20 are in most cases not involved in trading. The enterprises covered by NACE 10.20 cover more than 95% of the fish processing in Denmark and is a very good estimate of the total income and production of Danish processing industry.

The data collected and processed for the DCF and DCR can be slightly different from the data that are being published by Eurostat on the processing industry. This is because the data for the DCF and DCR are combined from two different statistics in Statistics Denmark; the Account Statistics and the Industry Commodities Trade Statistics, where data for Eurostat only covers data from the Account Statistics. The two statistics are combined too get more detailed information on the raw material use in the fish processing industry. Furthermore; combining the two statistics provide information on the species used in the processing industry and information about what kind of product is produced and how much they are processed.

Enterprises with fish processing as non-main activity should be surveyed and the number of enterprises and their income should be reported. In Denmark, the fish processing industry is very "pure" and only 3 to 6 enterprises are having fish processing activities outside 10.20 in the period covered from 2008 to 2015. The number of firms is available, however; the income is not available due to reasons of confidentiality. According the rules of Statistics Denmark, the income can therefore not be shown.

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## 4.6 ESTONIA

### 4.6.1 General overview of the Estonian fish processing sector

In 2015, there were 64 enterprises whose main activity was fish processing in Estonia, of which 84% were rather small having up to 49 employees per enterprise. The number of total employees was 1,879, about 1,842 FTE. The turnover of production was €176 million and the sector earned a net profit €5.4 million in 2015. Additionally, there were also 12 enterprises that carried out fish processing but not as a main activity. Their turnover attributed to fish processing was approximately €0.6 million. The fish processing sector in Estonia is largely dependent on export. The share of exported fish products was around 70% in 2015.

Baltic herring and sprat caught by trawlers from the Baltic Sea are the most important local raw material for the Estonian fish processing enterprises. Fish is sold fresh or frozen (mostly to the eastern markets but also to the western fish meal factories), or processed in Estonia before selling in the local market or abroad. Estonian coastal fishing provides reasonably large volumes of expensive freshwater fish like perch, pikeperch and pike which are used as raw material for fillets. Raw material for ready-made products is import origin mainly (e.g. ocean fish). The main Estonian export countries for fish and fisheries products in value were Finland, Germany, Sweden, Ukraine and France, and import countries Norway, Lithuania, Finland, Denmark and Sweden in 2015. Due to its small size, the fish markets and processing enterprises do not depend on domestic aquaculture production.

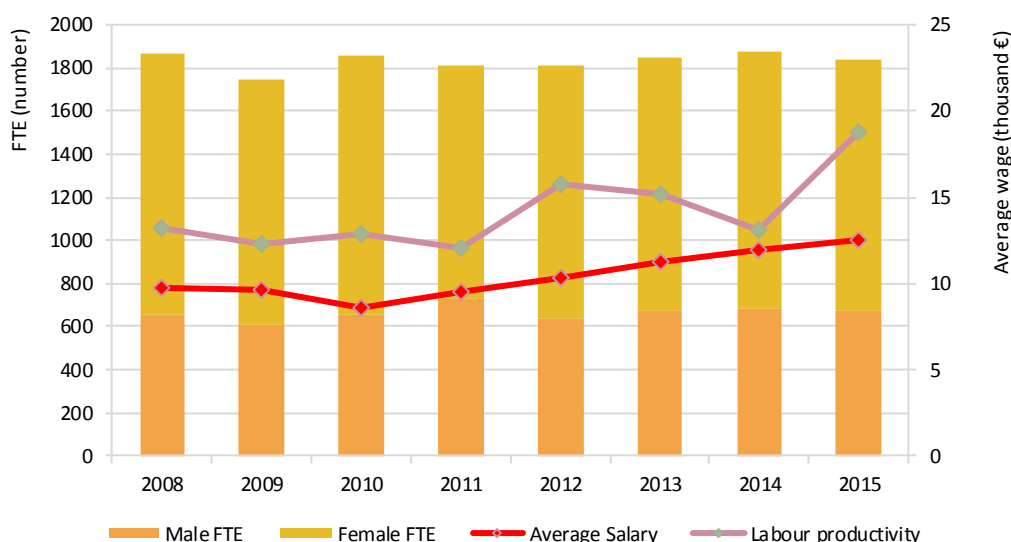
There were two main product types in the Estonian fish processing industry in 2015: frozen fish and salted, spiced, dried, deep-frozen and breaded fish. But also fish fillets, fish conserves, smoked fish and ready-made products were represented in assortment.

**Table 4.6.1: Estonian fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>											
Total enterprises	50	51	53	55	61	53	62	64	▲	3%	▲ 28%
≤10 employees	16	21	21	26	31	22	27	31	▲	15%	▲ 94%
11-49 employees	27	20	24	20	21	21	26	23	▼	-12%	▼ -15%
50-249 employees	5	9	8	9	8	9	9	10	▲	11%	▲ 100%
≥ 250 employees	2	1	0	0	1	1	0	0	■	0%	▼ -100%
<b>Employment (number)</b>											
Total employees	1,936	1,847	1,887	1,847	1,861	1,879	1,914	1,879	▼	-2%	▼ -3%
Male employees	677	646	660	739	651	681	692	684	▼	-1%	▲ 1%
Female employees	1,259	1,201	1,227	1,108	1,210	1,198	1,222	1,195	▼	-2%	▼ -5%
FTE	1,864	1,746	1,861	1,813	1,816	1,845	1,880	1,842	▼	-2%	▼ -1%
Male FTE	652	611	651	725	636	674	683	675	▼	-1%	▲ 4%
Female FTE	1,212	1,135	1,210	1,088	1,180	1,171	1,197	1,167	▼	-3%	▼ -4%
<b>Indicators</b>											
FTE per enterprise	37.3	34.2	35.1	33.0	29.8	34.8	30.3	28.8	▼	-5%	▼ -23%
Average wage (thousand €)	9.8	9.6	8.6	9.5	10.3	11.2	11.9	12.5	▲	5%	▲ 28%
Unpaid work (%)	0.1	0.1	0.2	0.3	0.3	0.2	0.3	0.4	▲	62%	▲ 320%

The distribution of 64 enterprises whose main activity was fish processing was divided as follows by number of employees: around 84% of them accounted for micro- and small enterprises, 31 and 23 enterprises respectively; there were also 10 medium-sized enterprises. Compared to the previous year the total number of enterprises increased 3% in 2015. Some changes took place also in different size classes (Table 4.6.1).

The total number of employees in the Estonian fish processing industry was 1,879 in 2015, of which 36% were male and 64% female. The share of female has been consistently higher from 2008 to 2015 and reached to 60-65%. Compared to 2014, the number of FTEs decreased 2% in 2015. After the fall in 2009 and 2010 the average wage continued a rising trend in 2015 and reached to €12,526, the increase was 5% compared to 2014. However, this figure was lower by 27% than Estonian average wage (€17,100 in 2015). If we follow the trend of labour productivity, we can see a short fall in 2014. The reason for that was the growth in the number of micro- and small enterprises which in turn affected the increase in the number of employees. At the same time the increase in production costs exceeded the increase in income.



**Figure 4.6.1: Estonian employment trends, 2008-2015**

#### 4.6.2 Economic performance of the Estonian fish processing sector

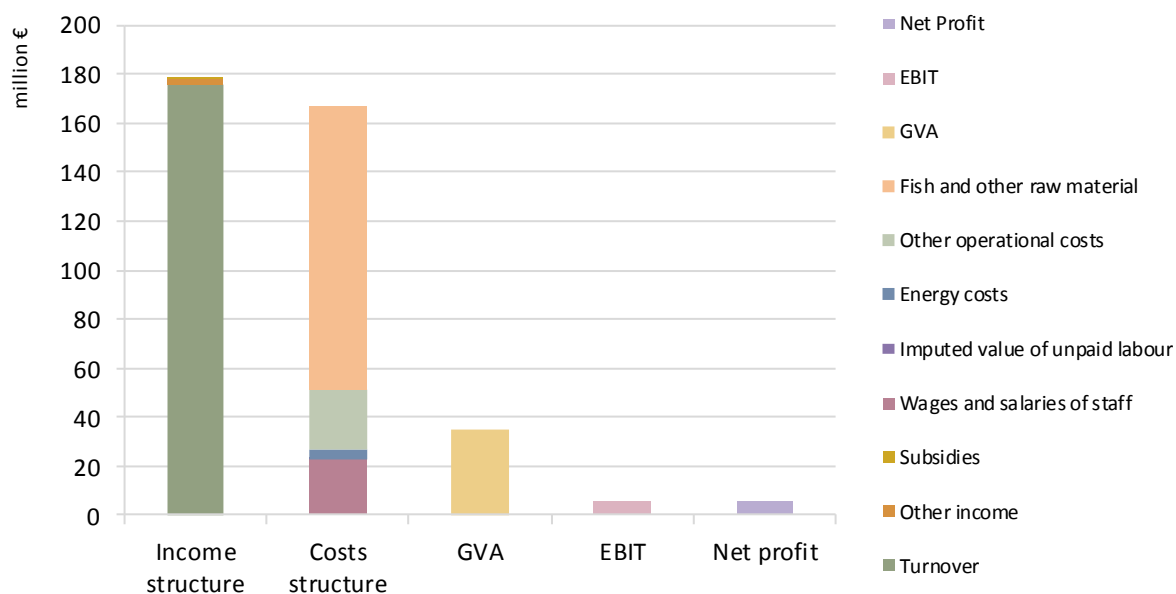
The year 2015 showed continuous recovery in economic activities, as the number of fish processing companies grew somewhat, turnover increased by 2% and was over €176 million in 2015 (Table 4.6.2). Comparing the economic performance indicators between 2014 and 2015, then GVA increased by 41% to €34.7 million in 2015. Also OCF, EBIT and net profit underwent rise. The sector earned a net profit €5.4 million. Return on investment increased from -2.6% in 2014 to 5.8% in 2015. The main factors that influenced those performance indicators were increase in total income and decrease in share of production costs to total income. The decline in production costs was mainly caused by the decrease in the first-sale prices of herring and sprat.

The total amount of production costs by the Estonian fish processing industry in 2015 was €166.9 million. The bulk (69%) of this was formed by costs related purchase of fish and other raw material. The parts of labour and energy costs were 14% and 2%, respectively. Compared to 2014, the total production costs decreased 3% in 2015.

The indicator "Future Expectations of the Industry" have been positive in 2014 and 2015. This means that the sector is allocating resources to increase its production capacity, and therefore it expects to remain in the market to recover the cost of the investments.

**Table 4.6.2: Economic performance of the Estonian fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	116.5	99.9	110.9	129.2	143.2	160.8	172.4	175.8	▲ 2%	▲ 51%
Other income	2.7	2.9	3.1	3.5	4.6	3.7	1.9	2.7	▲ 43%	▼ -2%
Subsidies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	▼ -74%	▼ -73%
<b>Total Income</b>	<b>119.3</b>	<b>102.8</b>	<b>114.0</b>	<b>132.7</b>	<b>147.8</b>	<b>164.6</b>	<b>174.3</b>	<b>178.5</b>	<b>▲ 2%</b>	<b>▲ 50%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	71.8	60.1	64.8	81.9	92.3	109.1	122.0	115.7	▼ -5%	▲ 61%
Wages and salaries of staff	18.2	16.7	16.0	17.2	18.6	20.7	22.4	23.0	▲ 3%	▲ 26%
Imputed value of unpaid labour	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	▲ 67%	▲ 417%
Energy costs	4.1	3.3	3.6	3.4	3.7	4.3	4.0	3.8	▼ -5%	▼ -8%
Other operational costs	18.7	17.9	21.6	25.6	23.2	23.3	23.8	24.4	▲ 3%	▲ 31%
<b>Total production costs</b>	<b>112.8</b>	<b>98.0</b>	<b>106.1</b>	<b>128.1</b>	<b>137.8</b>	<b>157.4</b>	<b>172.2</b>	<b>166.9</b>	<b>▼ -3%</b>	<b>▲ 48%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	3.5	3.6	3.3	4.1	4.5	4.5	5.0	5.5	▲ 11%	▲ 58%
Financial costs, net	1.1	1.2	0.9	0.8	0.8	0.7	0.8	0.6	▼ -26%	▼ -47%
Extraordinary costs, net										
<b>Capital Value (million €)</b>										
Total value of assets	88.1	80.9	76.4	84.8	89.2	89.9	107.9	104.1	▼ -4%	▲ 18%
Net Investments	7.2	4.5	8.7	9.7	3.1	3.4	8.2	8.7	▲ 5%	▲ 20%
Debt	47.2	42.8	37.5	42.5	45.6	48.3	61.4	59.1	▼ -4%	▲ 25%
<b>Economic performance (million €)</b>										
Gross Value Added	24.7	21.4	24.0	21.9	28.6	27.9	24.6	34.7	▲ 41%	▲ 40%
Operating Cash Flow	6.5	4.7	7.9	4.7	9.9	7.2	2.2	11.6	▲ 437%	▲ 79%
Earning before interest and tax	2.9	1.2	4.6	0.6	5.4	2.7	-2.8	6.0	▲ 315%	▲ 105%
Net Profit	1.8	0.0	3.7	-0.2	4.6	2.0	-3.6	5.4	▲ 250%	▲ 202%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	13.2	12.3	12.9	12.1	15.8	15.1	13.1	18.8		
Capital productivity	28.0	26.5	31.4	25.8	32.1	31.0	22.8	33.3		
GVA margin	20.7	20.9	21.0	16.5	19.4	17.0	14.1	19.4		
EBIT margin	2.5	1.1	4.1	0.4	3.7	1.6	-1.6	3.4		
Net profit margin	1.5	0.0	3.3	-0.1	3.1	1.2	-2.1	3.1		
Return on Investment	3.4	1.4	6.1	0.7	6.1	3.0	-2.6	5.8		
Financial Position	53.6	52.9	49.1	50.1	51.2	53.7	56.9	56.8		
Future Expectation Indicator	4.2	1.1	7.1	6.6	-1.6	-1.3	3.0	3.0		



**Figure 4.6.2: Economic performance of the Estonian fish processing sector, 2015**

#### 4.6.3 Trends and drivers for change

If follow some of the trends in the Estonian fish processing industry after 2009, when the activity of enterprises was affected by economic crisis, then we can see the rise in total income. Until 2014 the same trend is also observable in case of total production costs. However, compared to 2014, the total production costs decreased 3% in 2015. The decline in production costs was mainly caused by the decrease in the first-sale prices of herring and sprat. Baltic herring and sprat caught by trawlers from the Baltic Sea are the most important local raw material for the Estonian fish processing enterprises and the main market for frozen sprat and herring had been Russia.

According to the data of Statistics Estonia the quantity of fish and fishery products exported to Russia amounted to 36,844 tonnes in 2013, that figure fell to 28,573 tonnes in 2014 and just 5596 tonnes in 2015. Thus, in 2015 exports to Russia declined by 85% compared to 2013. The decline was due to Russia's import restrictions on fish and fishery products. In response to the EU's sanctions, Russia established an embargo on most food products originating from the EU, including fish and fishery products in August 2014. For some time, the Russian border was open only to fish preserves and spiced sprats, but imports of these products were stopped on 4 June 2015. The loss of the Russian market forced fish processing companies to actively look for new trading partners, including in Asia and Africa. Instead of Russia Ukraine became the important export market for local fish and fishery products in 2015. While 26,050 tonnes of fish and fishery products were exported to Ukraine in 2013, the export volume increased to 29,835 tonnes in 2014 and 40,026 tonnes in 2015. Thus, in 2015 exports to Ukraine grew by 54% compared to 2013.

The loss of the Russian market influenced the first-sale price of sprat and herring. In 2013, the average first-sale prices of herring and sprat had been 23 and 22 cents per kilogram, respectively, but in 2015 an average of 19 cents per kilogram was paid for either species.

In order to make products more attractive and competitive, Estonian companies have begun to apply certification for labelling their products. For example, the following certificates have been obtained:

- Marine Stewardship Council (MSC) – certified sustainable seafood;
- Friend of the Sea (FOS) – certified sustainable seafood from fisheries and aquaculture;
- FSSC 22000 – food safety system certification;
- Hazard Analysis and Critical Control Points (HACCP) – food safety management and product quality;
- Kosher Certificate – product quality.

In 2015, the Estonian fish processing enterprises continued to use the opportunity to get subsidies from the European Fisheries Fund (EFF). The funding has helped Estonian companies to become more modern and find new markets. There have been mainly three areas for use of subsidies:

- To develop and modernize the processing of fishery products – investments into the new production technologies help reduce the cost of production and lead to the increasing in production volumes. The amount paid was €2.2 million in 2015;
- Joint investments for producer organisations – to improve the quality of fishery products and increase year-round stability of supplies through the development of producer organisations. The amount paid was €1.1 million in 2015;
- Development of new markets and promotional campaigns – to promote the consumption of fishery products, create new products and find new market outlets. The amount paid was €0.6 million in 2015.

#### *4.6.4 Outlook*

The figures of the Estonian fish processing sector will be affected by two events in the coming years:

- The loss of the Russian market;
- Bankruptcy of one of Estonia's largest fish processing and export company.

Due to the above mentioned reasons the share of export declines. The turnover of production decreases by 14% in 2016. Also decreases the total number of employees.

In the framework of the EMFF, the reception of applications starts and the first payments will be made in 2016:

- Article 66 Production and marketing plans - budget for the programming period €2,500,000. Five applications are granted for €475,727 and the amount paid is €38,338 in 2016;
- Article 67 Storage aid - budget for the programming period €1,054,076. Three applications are granted for €945,965 and the amount paid is €375,887 in 2016;
- Article 68 Marketing measures - budget for the programming period €5,333,333. Six applications are granted for €425,000 and the amount paid is €298,882 in 2016;
- Article 69 Processing of fisheries and aquaculture products - budget for the programming period €23,646,667. One application is granted for €6,000,000, but no payments in 2016.

#### *4.6.5 Data coverage and quality*

Data for socio-economic and economic performance originate from the financial statements of all fish processing enterprises and are collected by the Estonian Marine Institute. Estonian fish processing industry data refer to enterprises whose main activity is defined according to the Eurostat definition under NACE Code 15.20 as 'Processing and preserving of fish and fish products'. Also survey used to specify some details (e.g. the share of female and male personnel; unpaid labour).

## 4.7 FINLAND

### 4.7.1 General overview of the Finnish fish processing sector

There were 136 fish processing enterprises operating in Finland in 2015 that recorded total turnover of €302 million generating value added of €44 million. The processing industry employed 803 FTEs or 1,004 persons. The fish processing industry in Finland is highly concentrated in the sense that 10 companies with the highest turnover produced around 83% of the total revenue generated by the industry in 2015. Majority of enterprises are micro enterprises that accounted for 10% of the total income of the industry.

In 2015, Fish processing enterprises used 80 thousand tonnes of fish as raw material, 46 thousand tonnes were domestic fish and 34 thousand tonnes were imported. There was a marked drop in use of domestic fish due to Russian embargo for EU foodstuff in autumn 2014 as a counter measure to EU sanctions against Russia over Ukraine crisis. Despite significant increased amounts of domestic rainbow trout and Norwegian salmon processed there was a marked drop in turnover of the sector in 2015.

#### 4.7.1.1 Main products and raw materials

The main species used in Finnish fish processing are salmon, rainbow trout and Baltic herring. The Finnish industry processed also European whitefish, herring and various freshwater fish species. Finnish fish processing statistics are collected every second year: table 4.7.1. presents the raw materials use in processing in 2013 and 2015.

**Table 4.7.1: Raw material use in 2013 and 2015.**

<b>Main raw materials</b>	<b>2013 volume (tonnes)</b>	<b>2015 volume (tonnes)</b>
Baltic herring	31,225	21,366
Salmon	24,048	31,561
Rainbow trout	17,866	22,897
European whitefish	2,282	1,493
Other	4,497	2,577
Total	79,918	79,876

Source Luke: Fish processing 2015

Deep frozen Baltic herring was the most important processed product in volume until the Russian embargo in 2014. Since then imported Norwegian salmon has become the most important fish in terms of volume and evidently in terms of value followed by domestic rainbow trout. Most of the salmon and rainbow trout are processed to fresh fish market as fillets and other product forms. Also smoked products are important.

Production volumes of Norwegian salmon together with rainbow trout reached 54 thousand tonnes in 2015; impressive 30% increase from 2013. Increased imports of Norwegian salmon have raised the share of imported fish of all processed fish up to 42% in terms of volume; evidently comprising more than half in terms of value.

#### 4.7.1.2 Structure and Socio-Economic aspects

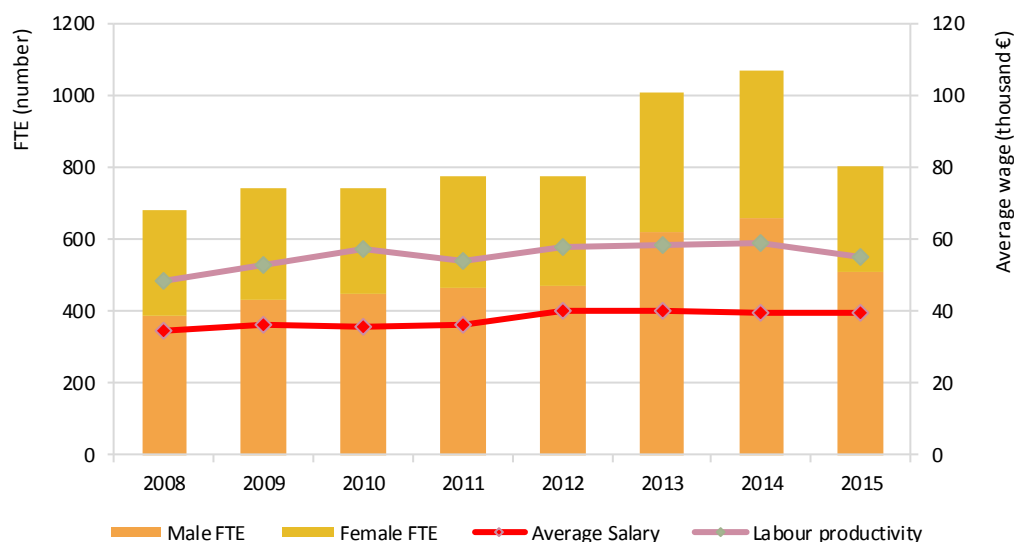
Overview of the Finnish fish processing industry for 2008-2015 is presented in Table 4.7.2. The Finnish fish processing sector is dominated by micro enterprises employing less than 10 persons. There were 113 micro enterprises in the sector in 2015 and they amounted to 83% of all the main activity enterprises in the industry.

In addition to that there were 21 small enterprises employing 10-49 persons and 2 medium-sized enterprises employing 50-249 persons. There were no large processing enterprises in Finland employing more than 250 persons. Before 2015, the employment of the industry was increasing steadily both in numbers of employees and full time equivalent since 2008. In 2015 the employment measured in FTE decreased by 25% from previous year. Male employees are dominant in the sector; almost two thirds of employees are male. An average processing enterprise in 2015 employed 5.9 FTEs with an average wage of €39.6 thousand per employee. Labour productivity was increasing until 2014 but in 2015 the GVA per FTE dropped by 6% to €55.5 thousand.

**Table 4.7.2: Finnish fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	143	137	143	143	143	147	137	136	▼ -1%	▼ -5%
≤10 employees	131	125	131	127	124	128	113	113	▬ 0%	▼ -14%
11-49 employees	9	9	9	13	15	19	19	23	▲ 21%	▲ 156%
50-249 employees	3	3	3	3	4		5			
≥250 employees	0	0	0	0	0				▬ 0%	
<b>Employment (number)</b>										
Total employees	961	880	885	870	962	1,012	1,237	1,004	▼ -19%	▲ 4%
Male employees	539	510	536	522	583	622	762	639	▼ -16%	▲ 19%
Female employees	422	370	349	348	379	390	475	365	▼ -23%	▼ -14%
FTE	682	742	742	777	775	1,012	1,072	803	▼ -25%	▲ 18%
Male FTE	389	430	449	466	470	622	661	511	▲ 1%	▲ 21%
Female FTE	293	312	293	311	305	390	411	292	▼ -2%	▲ 4%
<b>Indicators</b>										
FTE per enterprise	4.8	5.4	5.2	5.4	5.4	6.9	7.8	5.9	▼ -25%	▲ 24%
Average wage (thousand €)	34.8	36.4	35.5	36.1	40.1	40.0	39.4	39.6	▲ 1%	▲ 14%
Unpaid work (%)	3.9	3.2	3.9	3.3	3.1	4.2	3.6	4.8	▲ 33%	▲ 23%



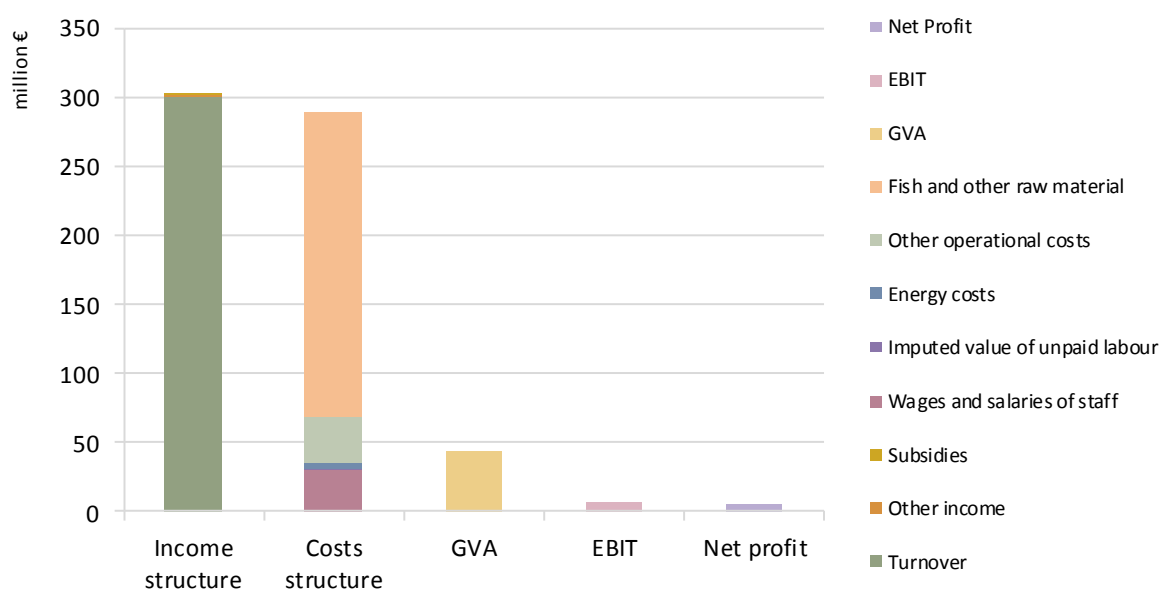


**Figure 4.7.1: Finnish employment trends, 2008-2015**

#### 4.7.2 Economic performance of the Finnish fish processing sector

Finnish processing sector was booming with over 10% annual growth rate from 2010 until 2015 when the turnover dropped by 24%. Total costs follow the total income closely; the main reason is that the raw material makes up majority of the costs, some 75% of the total operating costs. In general, the sector is operating with low and lowering operating profit margin: an average 5% of the total income resulting low but constantly positive EBIT margin around 3%.

Therefore, the economic performance of the sector follows the income. The gross value added of processing industry increased steadily up to €59 million in 2014 but dropped with turnover in 2015 by 30%. The operating profits dropped by 40% and net profit plummet 49% from the previous year down to €5.7 million. Weakened profitability lead to decreased Return on investment down to 5.1%, however, the financial position (debt/assets-ratio) increased a bit to 66%. However, when looking at the long term profitability from 2008 the sector economic performance has improved (Table 4.7.3).



**Figure 4.7.2: Economic performance of the Finnish fish processing sector, 2015**

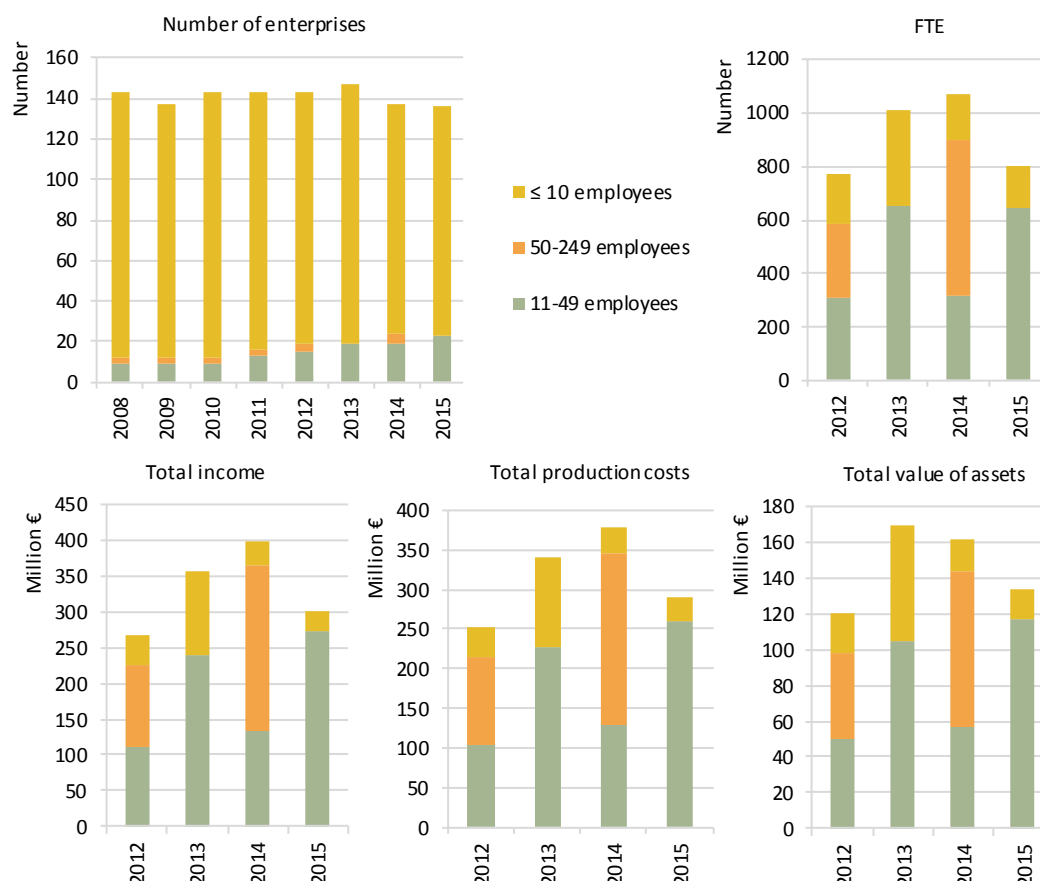
**Table 4.7.3: Economic performance of the Finnish fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	160.0	195.4	236.1	262.8	264.7	356.0	396.8	299.8	▼ -24%	▲ 87%
Other income	1.2	1.0	3.3	1.4	1.7	1.9	1.8	1.9	▲ 3%	▲ 62%
Subsidies	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	▼ -32%	▲ 55%
<b>Total Income</b>	<b>161.3</b>	<b>196.5</b>	<b>239.5</b>	<b>264.2</b>	<b>266.5</b>	<b>358.1</b>	<b>398.9</b>	<b>301.8</b>	<b>▼ -24%</b>	<b>▲ 87%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	107.6	131.7	168.4	189.3	185.8	248.1	278.2	220.0	▼ -21%	▲ 105%
Wages and salaries of staff	22.8	26.1	25.3	27.1	30.1	38.8	40.7	30.3	▼ -26%	▲ 33%
Imputed value of unpaid labour	0.9	0.9	1.0	0.9	1.0	1.7	1.5	1.5	■ 0%	▲ 65%
Energy costs	2.3	2.7	3.3	3.2	3.0	3.7	4.3	3.4	▼ -21%	▲ 47%
Other operational costs	18.3	22.7	25.4	29.7	32.8	47.1	53.0	33.8	▼ -36%	▲ 85%
<b>Total production costs</b>	<b>151.9</b>	<b>184.1</b>	<b>223.4</b>	<b>250.3</b>	<b>252.6</b>	<b>339.4</b>	<b>377.8</b>	<b>289.1</b>	<b>▼ -23%</b>	<b>▲ 90%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	3.5	4.2	5.1	4.8	5.7	7.4	9.7	5.9	▼ -39%	▲ 67%
Financial costs, net	2.2	1.7	1.8	1.8	1.9	1.0	0.0	1.1	▲ 2156%	▼ -51%
Extraordinary costs, net	0.8	0.1	0.4	-0.8	-0.2	-0.6	-0.1	-0.4	▼ -585%	▼ -147%
<b>Capital Value (million €)</b>										
Total value of assets	73.6	86.7	103.5	108.3	120.2	169.9	161.5	134.2	▼ -17%	▲ 82%
Net Investments	3.1	7.6	4.9	5.0	14.2	1.5	3.6	3.5	▼ -3%	▲ 14%
Debt	56.7	67.1	74.3	74.4	85.3	112.9	100.6	89.0	▼ -11%	▲ 57%
<b>Economic performance (million €)</b>										
Gross Value Added	33.0	39.3	42.4	41.9	44.8	59.0	63.1	44.4	▼ -30%	▲ 34%
Operating Cash Flow	9.4	12.4	16.2	13.9	13.9	18.7	21.1	12.7	▼ -40%	▲ 35%
Earning before interest and tax	5.9	8.2	11.0	9.2	8.2	11.3	11.4	6.8	▼ -40%	▲ 17%
Net Profit	3.6	6.4	9.2	7.3	6.3	10.3	11.4	5.7	▼ -49%	▲ 58%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	48.5	53.0	57.1	53.9	57.9	58.3	58.9	55.3		
Capital productivity	44.9	45.3	41.0	38.7	37.3	34.7	39.1	33.1		
GVA margin	20.5	20.0	17.7	15.9	16.8	16.5	15.8	14.7		
EBIT margin	3.6	4.2	4.6	3.5	3.1	3.2	2.9	2.3		
Net profit margin	2.3	3.3	3.8	2.8	2.4	2.9	2.9	1.9		
Return on Investment	8.0	9.4	10.7	8.5	6.8	6.7	7.1	5.1		
Financial Position	77.0	77.4	71.8	68.7	71.0	66.5	62.3	66.3		
Future Expectation Indicator	-0.6	3.9	-0.2	0.2	7.0	-3.4	-3.8	-1.8		

#### 4.7.3 Overview of the Finnish fish processing sector by size categories

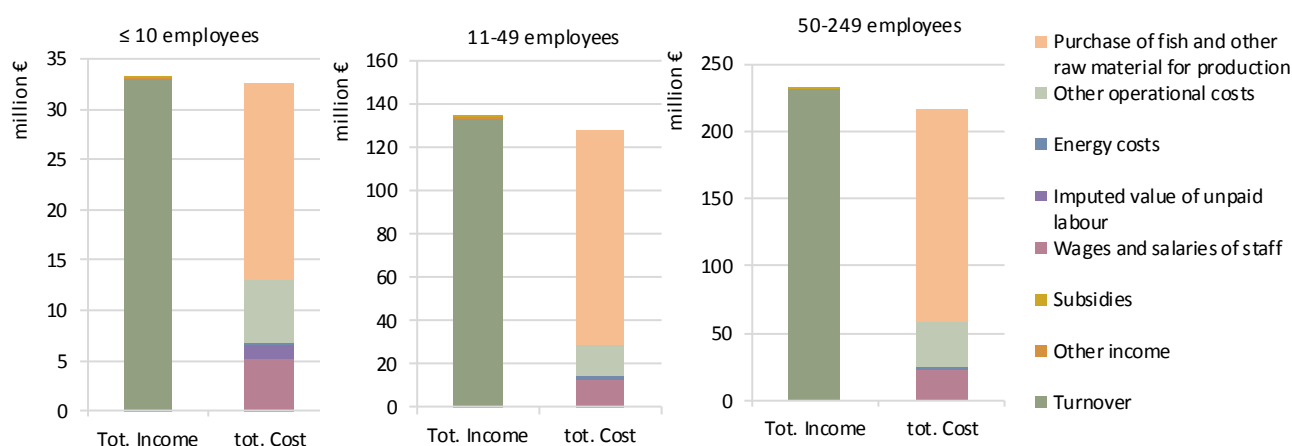
The Finnish fish processing sector is dominated by micro enterprises employing less than 10 persons. There were 113 micro enterprises in the sector in 2015 and they amounted to 83% of all

the main activity enterprises in the industry. In 2015, there were 21 small enterprises employing 10-49 persons and 2 medium-sized enterprises employing 50-249 persons in 2015. Due to the data confidentiality the data for small and medium-sized companies are aggregated in one category (50-249 employees) except for 2012 and 2014 when there were at least 3 enterprises in the medium-sized category.



**Figure 4.7.3: Finnish main structural and economic variables trends by size category, 2008-2015**

While the total number of enterprises remained stable in 2015 total income dropped by 24% as did the employment measured in FTE. Before 2015 the employment of the industry was increasing steadily both in numbers of employees and full time equivalent since 2008.

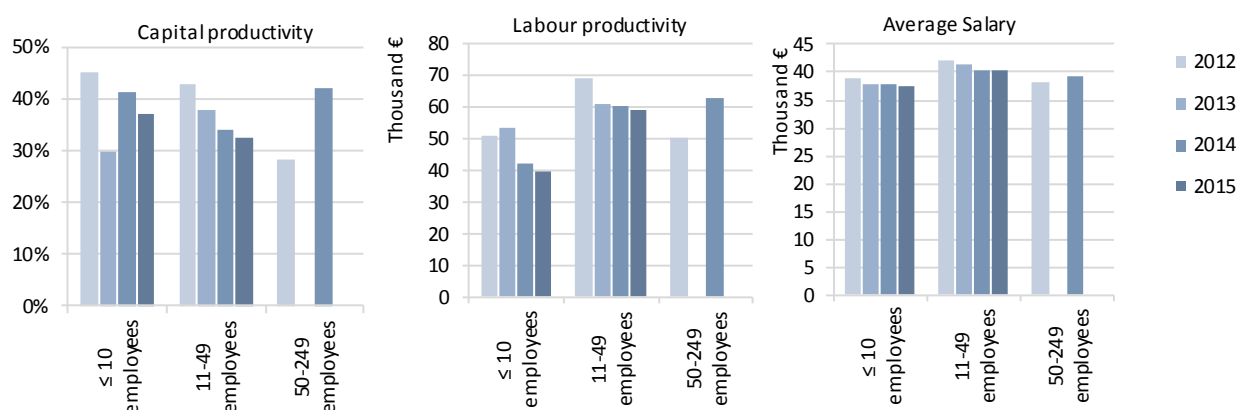


**Figure 4.7.4: Finnish income and cost structure, by size category, 2014**

The income dropped in all size categories affected to all size category enterprises. Also the economic performance deteriorated in all size of enterprises. The income of small and medium-sized enterprises decreased in 2015 by one quarter but the profitability plummeted to half in terms of net profit from the year before. Profitability of micro companies deteriorated also even not as strongly as the bigger ones. In general, the industry is highly concentrated; the 5 medium-sized enterprises account for almost on third of the total production of the sector and hence the economic performance of the sector follows that of the largest companies. Economic performance of these largest enterprises shows an opposite development in productivity in terms capital and labour productivity than the smaller ones: medium-sized companies show increase in productivity while the small and micro companies have deteriorating productivity.

**Table 4.7.4: Economic performance of the Finnish fish processing sector by size category (indicators in million €), 2012-2015**

Variable	2012	2013	2014	2015		Δ (2014-15)	Δ (2001-15)
<b><i>less than or equal to 10 employees</i></b>							
Total Income	41.2	118.5	33.3	28.7	▼	-14%	▼ -30%
Total production costs	38.8	112.9	32.5	28.3	▼	-13%	▼ -27%
Gross Value Added	9.7	19.3	7.2	6.3	▼	-12%	▼ -35%
Operating Cash Flow	2.4	5.7	0.8	0.4	▼	-45%	▼ -82%
Earning before interest and tax	1.0	2.9	-0.4	-0.6	▼	-47%	▼ -160%
Net Profit	0.5	2.2	-0.7	-0.8	▼	-12%	▼ -254%
<b><i>between 11 and 49 employees</i></b>							
Total Income	110.8	239.6	134.1	273.1	▲	104%	▲ 146%
Total production costs	102.5	226.5	127.8	260.8	▲	104%	▲ 154%
Gross Value Added	21.5	39.8	19.0	38.1	▲	100%	▲ 77%
Operating Cash Flow	8.4	13.0	6.3	12.3	▲	94%	▲ 47%
Earning before interest and tax	5.9	8.4	3.4	7.5	▲	118%	▲ 27%
Net Profit	5.2	8.2	3.0	6.6	▲	122%	▲ 26%
<b><i>between 50 and 249 employees</i></b>							
Total Income	114.5		231.4				
Total production costs	111.3		217.4				
Gross Value Added	13.6		36.9				
Operating Cash Flow	3.2		14.0				
Earning before interest and tax	1.3		8.4				
Net Profit	0.5		9.1				



**Figure 4.7.5: Finnish capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

#### 4.7.4 Trends and drivers for change

The processing and fish retail sectors started to grow intensively after the import restrictions of fresh fish were dissolved in the beginning of the 90s. The recent expansion of the processing sector in Finland has mainly been based on imported cultured fish. Due to the stringent environmental regulative the domestic aquaculture production has not been able to satisfy increasing demand of fish and the Norwegian salmon has become the most important source for processing. The price of raw materials (fish) is the most important cost item and therefore the profitability is strongly influenced on the price fluctuations.

The cut in salmon supply due to the production problems in the main producers – Norway and Chile – led to a sharp increase in salmon price in 2016. The record high prices led to decrease in processing and competitiveness of the sector.

Russian market was the most important market for Baltic herring and sprat. Therefore, the Russian embargo for EU food stuff as a counter measure to EU sanctions against Russia over the Ukraine crises in 2014 have had a significant impact on the Finnish processing sector.

The Finnish seafood trade balance is significantly negative. Finland imported seafood with value of €412 million and exported seafood worth of €41 million in 2016, creating a negative trade balance of €371 million.

The investments peaked in 2012 during the EFF period facilitating the growth of the sector but slowed down after that resulting negative future expectation index, i.e., the net investments fall below the depreciation of the capital invested. In the EMFF the fish processing sector has a low priority and is targeted to support the strategic objective of strengthening primary production's operating conditions.

#### 4.7.5 Outlook

Salmon prices continued to remain high in 2017 impacting the outlook for the Finnish processing. The Finnish aquaculture strategic plan aims at doubling the domestic production by 2022. This would improve the sourcing the raw material for Finnish processing industry in the future as the current shortage of supply has impacted on the processing industry.

Also the Russian embargo continued to restrict the Baltic herring export even though there is some increase in new export markets in Eastern Europe. There is demand for the domestic wild fish. However, the supply has been limited due to exceptional weather conditions for past years.

In 2016, the first fishmeal plant started operation with estimated annual production of 30-40 thousand tonnes Baltic herring as raw material for fishmeal and oil that will be further processed

as fish feed for fish farming. The investment was supported by EFF funding and has important role in the Finnish blue growth strategy creating demand for domestic fish and providing opportunity for nutrient neutral growth in fish farming.

#### *4.7.6 Data coverage and quality*

The economic data is compiled by combining data from the Structural Business Statistics from Statistics Finland (SF) and survey data from the Natural Resources Institute Finland (Luke). Economic data is based on financial statement statistics and regional and industrial statistics of SF. Financial data covers all enterprises having fish processing as their main activity and with a turnover above €10,595 in 2015. Luke carries out a survey on processed fish production every second year. The latest information available for the report is for 2015. The production survey is carried out as a stratified survey with a target population including all enterprises operating in fish processing, including also enterprises that do not have fish processing as their main activity.

## 4.8 FRANCE

### 4.8.1 General overview of the French fish processing industry sector

The fish processing industry is a small component of the food processing sector in France: its turnover accounts for approximately 2% of the turnover of the whole food processing industry. In 2015, the French fish processing sector encompassed 291 companies which employ 17,523 people (15,716 full-time equivalents) and generated a total turnover of €5.52 billion. According to the French data collection office FranceAgriMer, the turnover of these companies for seafood production was only €4.39 billion (80% of total turnover).

**Table 4.8.1: French fish processing industry sector overview, 2008-2015**

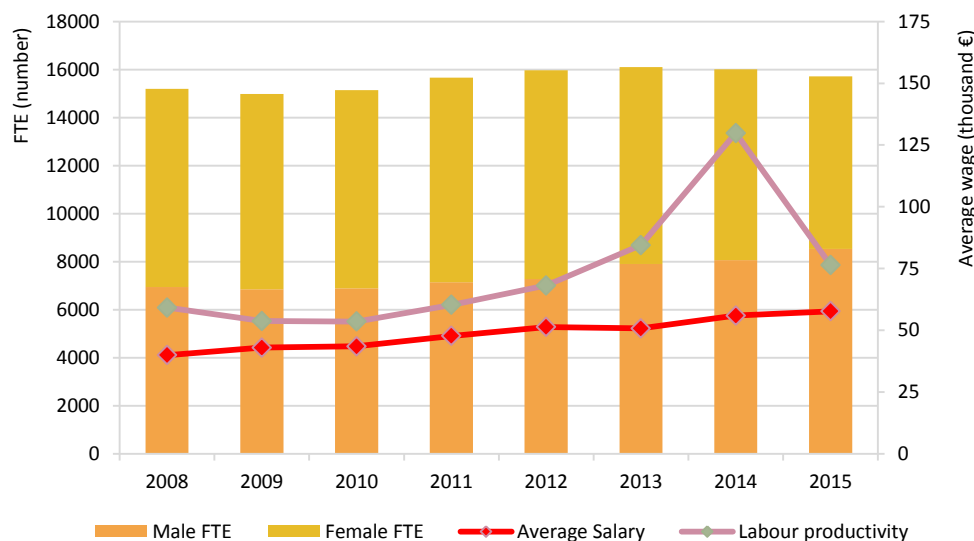
Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	327	311	305	300	295	302	302	291	▼ -4%	▼ -11%
≤ 10 employees	162	155	148	143	133	126	124	111	▼ -10%	▼ -31%
11-49 employees	111	102	105	104	108	122	119	127	▲ 7%	▲ 14%
50-249 employees	37	37	35	37	39	40	42	36	▼ -14%	▼ -3%
≥ 250 employees	17	17	17	16	15	14	17	17	■ 0%	■ 0%
<b>Employment (number)</b>										
Total employees	15,672	15,590	15,633	15,963	16,184	16,465	16,824	17,523	▲ 4%	▲ 12%
Male employees	6,943	6,859	6,980	7,167	7,359	8,023	8,092	9,735	▲ 20%	▲ 40%
Female employees	8,729	8,731	8,633	8,796	8,825	8,442	8,732	7,788	▼ -11%	▼ -11%
FTE	15,202	14,983	15,158	15,662	15,971	16,104	16,014	15,716	▼ -2%	▲ 3%
Male FTE	6,942	6,842	6,890	7,147	7,275	7,906	8,068	8,528	▲ 2%	▲ 5%
Female FTE	8,260	8,140	8,249	8,515	8,696	8,198	7,946	7,188	▲ 2%	▲ 5%
<b>Indicators</b>										
FTE per enterprise	46.5	48.2	49.7	52.2	54.1	53.3	53.0	54.0	▲ 2%	▲ 16%
Average wage (thousand €)	39.9	42.9	43.5	47.7	51.3	50.7	55.9	57.7	▲ 3%	▲ 44%
Unpaid work (%)	0.5	0.5	0.5	0.6	0.4	0.5	0.4	0.1	▼ -72%	▼ -75%

The present chapter focuses on the enterprises whose main activity is the processing of fish products. In France, the share of enterprises for which fish processing is not the main activity has slightly increased: it represented 27% of the total of the enterprises involved in fish processing in 2009-2010 (115 enterprises out of 426 in 2009 and 111 out of 416 in 2010) and is now of 28% for 2014-2015 (120 enterprises out of 422 in 2014 and 112 out of 403 in 2015).

Although the number of enterprises was reduced from 327 to 291 between 2008 and 2015 (-11%), the French fish processing industry created 1,851 jobs (11.8% increasing rate), what contributed to raise by 514 the number of full-time equivalents (3.4% increasing rate). The average salary has increased by 44% since 2008. Male employees represent the majority of the FTE (50.4%) since 2014 and the majority of the workers (55.6%) since 2015. The proportion of part-time jobs, which was marginal and decreasing until 2013, may increase again since 2014. Part-time jobs could concern also male employees now, what was not the case in 2008 (Table 4.8.1).

Labour productivity improved continuously since 2010; it increased by 29% between 2008 and 2013. However, the level of labour productivity which is observed in 2014, and perhaps also the

one of 2013, seems far much too high, what indicates possible estimate errors for some variables these years (Figure 4.8.1).



**Figure 4.8.1: French employment trends, average salary and labour productivity, 2008-2015**

#### 4.8.2 Economic performance of the French fish processing industry sector

The cost structure of the French fish processing industry shows that raw material represents 45% of production costs in 2015 (Figure 4.8.2), a ratio which has continuously increased (it was 40% in 2011 and 36% in 2008). However, this share remains relatively low in comparison with the other European countries. Other operational costs followed an opposite pattern: they represent around 30% of total production costs at the end of the period, although they were as high as 44% in 2008. This suggests that other operating costs may be overestimated in the data, while raw material purchases may be underestimated (in other words, it may be suspected that “other operational costs” still include a significant amount of raw material). On the other hand, the cost of raw material has continuously increased since 2008, and raised up by 62% between 2008 and 2015, while total production costs increased by 29%. Thus, raw material alone explains 76% of the increase of total production costs at the end of the period, what indicates the exposition of the industry to supply sources.

The economic performances of the French fish processing sector are improving. While the turnover had remained stable between 2011 and 2012, the net profit had already increased from €89.4 million to €204.9 million, which seemed to be mainly due to the decrease of other operational costs. In 2015, when the turnover increased by 13% compared to 2012, the net profit increased by 32% and reached €270.8 million. However, estimates of the net profit for 2013 and 2014 are abnormal: they sky rocketed to €525 million in 2013 and €1,155 million in 2014. This would mean that in 2013 and 2014, net profits would have represented 9.6% and 18.8% of total income, although this ratio was 4.9% in 2015, and had never been higher than 4.1% before 2013. Abnormal net profits for 2013 and 2014 could be explained by errors regarding “other income”: the share of “other income” compared to “total income” had never been higher than 3.1%, but the values recorded in 2013 and 2014 (€438.6 million and €891.6 million respectively) would mean that this ratio would have jumped to 8% and 14.5%, respectively. The net profit represents 4.9% of the total income in 2015, its higher level over the period with the exception of the unreliable data of 2013 and 2014. The return on investment followed the same trend: it increased continuously between 2008 and 2012 (from 1.0% to 8.3%), and then again in 2015 (8.8%).

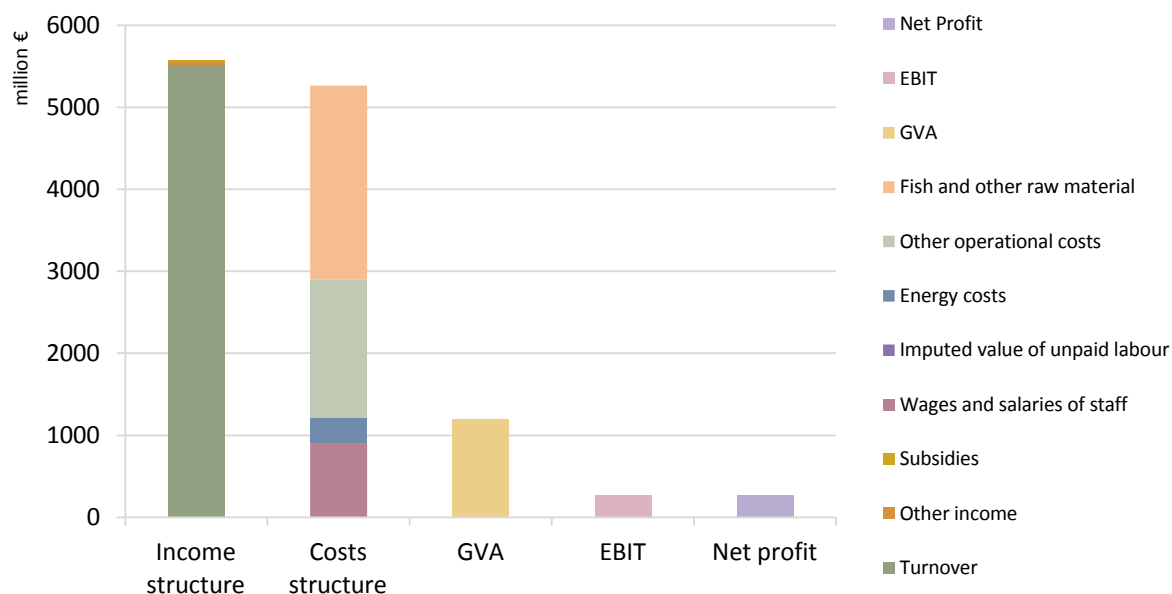
Net investments have increased from €80.3 million to €188.9 million between 2008 and 2011, decreased down to €122.3 million in 2013, but then increased again to reach €154.3 million in



2015. They still represent a significant level of turnover (2.8% of the turnover in 2015) and denote positive expectations from the future of the industry: except for 2008, during the global economic crisis, the FEI indicator of the French fish processing industry is higher than the European average. In 2008, the debt of the French fish processing companies represented a third of their turnover; this ratio decreased then to less than 28% during the period 2009-2013, and it raised again to 30% in 2014 and 31% in 2013. Nevertheless, their financial position is improving, indicating that a more important share of the cash-flow is used to consolidate the value of assets (Table 4.8.2).

**Table 4.8.2: Economic performance of the French fish processing industry sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	4,315.2	4,334.5	4,507.3	4,802.3	4,861.6	5,095.0	5,263.5	5,516.1	▲ 5%	▲ 28%
Other income	49.0	42.1	28.0	153.6	127.7	438.6	891.6	42.0	▼ -95%	▼ -14%
Subsidies	8.9	3.6	5.5	5.5	11.9	13.3	4.0	15.5	▲ 289%	▲ 75%
<b>Total Income</b>	<b>4,373.1</b>	<b>4,380.3</b>	<b>4,540.7</b>	<b>4,956.8</b>	<b>5,001.3</b>	<b>5,449.9</b>	<b>6,159.1</b>	<b>5,573.7</b>	▼ -10%	▲ 27%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	1,464.6	1,578.7	1,754.6	1,902.8	2,066.8	2,187.4	2,219.9	2,369.9	▲ 7%	▲ 62%
Wages and salaries of staff	604.1	640.2	655.7	742.6	817.1	813.4	891.6	905.7	▲ 2%	▲ 50%
Imputed value of unpaid labour	2.9	3.2	3.3	4.3	3.0	3.8	3.8	1.1	▼ -72%	▼ -63%
Energy costs	195.2	198.7	271.2	231.2	269.8	310.6	387.1	304.9	▼ -21%	▲ 56%
Other operational costs	1,805.1	1,794.4	1,697.9	1,874.0	1,565.5	1,578.7	1,469.0	1,683.0	▲ 15%	▼ -7%
<b>Total production costs</b>	<b>4,072.0</b>	<b>4,215.1</b>	<b>4,382.6</b>	<b>4,754.9</b>	<b>4,722.0</b>	<b>4,893.8</b>	<b>4,971.4</b>	<b>5,264.6</b>	▲ 6%	▲ 29%
<b>Capital Costs (million €)</b>										
Depreciation of capital	281.1	58.6	79.8	106.3	67.1	20.1	20.6	35.3	▲ 71%	▼ -87%
Financial costs, net	12.6	7.6	12.0	6.2	7.2	11.0	12.2	3.1	▼ -75%	▼ -76%
Extraordinary costs, net	7.7	8.4	9.7	9.8	5.1	11.9	11.6	14.0	▲ 21%	▲ 83%
<b>Capital Value (million €)</b>										
Total value of assets	2,041.8	1,972.4	2,109.9	2,238.7	2,551.9	2,617.6	2,890.8	3,121.1	▲ 8%	▲ 53%
Net Investments	80.3	141.5	159.2	188.9	170.9	122.3	131.7	154.3	▲ 17%	▲ 92%
Debt	1,421.7	1,140.4	1,211.0	1,312.1	1,366.8	1,398.6	1,594.6	1,716.3	▲ 8%	▲ 21%
<b>Economic performance (million €)</b>										
Gross Value Added	899.3	804.9	811.6	943.3	1,087.4	1,359.9	2,079.2	1,200.3	▼ -42%	▲ 33%
Operating Cash Flow	301.1	165.2	158.1	201.9	279.2	556.1	1,187.7	309.1	▼ -74%	▲ 3%
Earning before interest and tax	20.1	106.6	78.3	95.6	212.1	536.0	1,167.1	273.8	▼ -77%	▲ 1266%
Net Profit	7.5	98.9	66.2	89.4	204.9	525.0	1,154.9	270.8	▼ -77%	▲ 3529%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	59.2	53.7	53.5	60.2	68.1	84.4	129.8	76.4		
Capital productivity	44.1	40.8	38.5	42.1	42.6	52.0	71.9	38.5		
GVA margin	20.6	18.4	17.9	19.0	21.8	24.6	33.8	21.6		
EBIT margin	0.5	2.4	1.7	1.9	4.3	9.7	19.0	4.9		
Net profit margin	0.2	2.3	1.5	1.8	4.1	9.5	18.8	4.9		
Return on Investment	1.0	5.4	3.7	4.3	8.3	20.5	40.4	8.8		
Financial Position	69.6	57.8	57.4	58.6	53.6	53.4	55.2	55.0		
Future Expectation Indicator	-9.8	4.2	3.8	3.7	4.1	3.9	3.8	3.8		



**Figure 4.8.2: Economic performance of the French fish processing industry sector, 2015**

If the certainly abnormal estimates for the year 2013 and 2014 are not taken into account, the positive pattern of the labour productivity since 2010 follows exactly the same as observed for the gross value added (+33%).

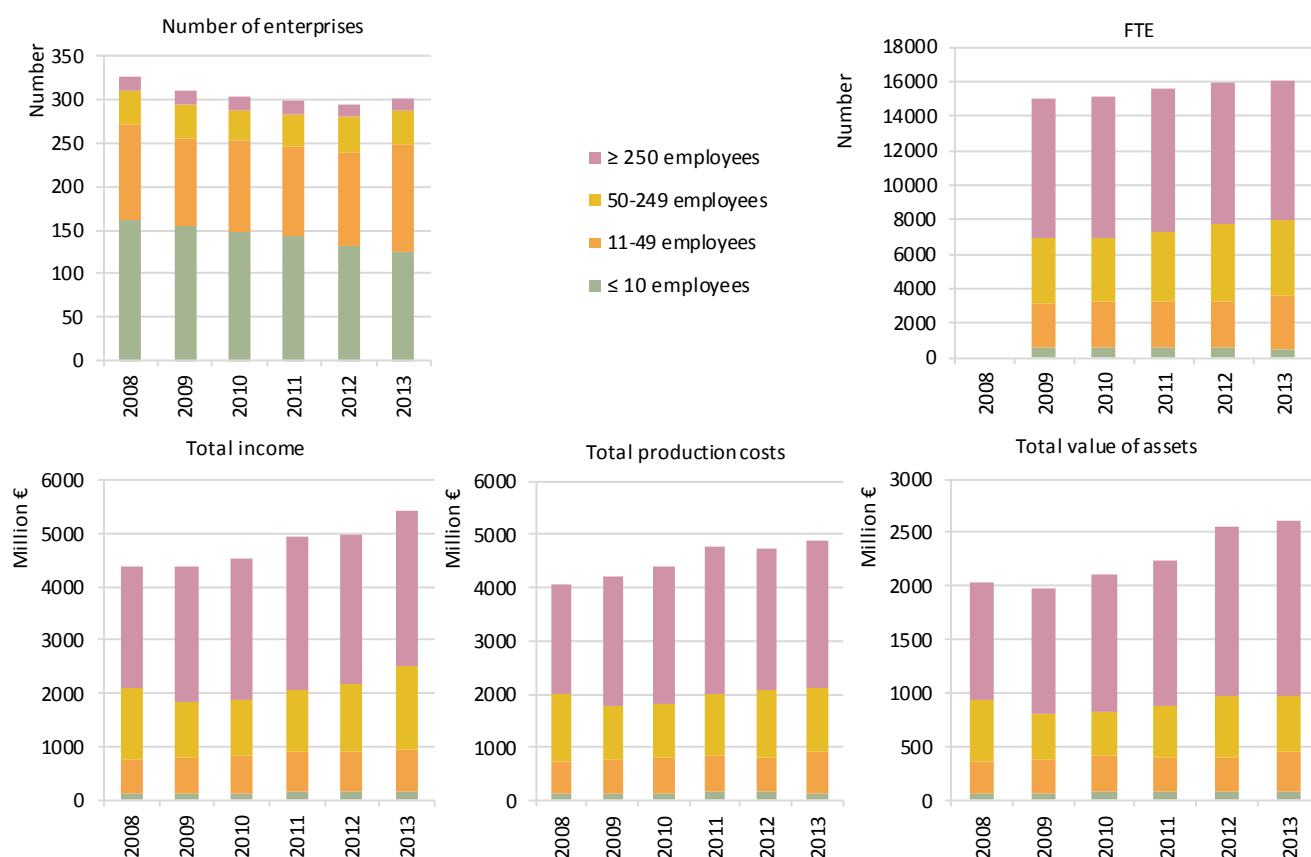
#### 4.8.3 Overview of the French fish processing industry sector by size categories

The number of enterprises in each size category followed different patterns between 2008 and 2015 (see Table 4.8.1): the number of very small enterprises (less than 10 employees) has continuously decreased from 162 to 111 (-31%), the number of small enterprises (from 10 to 49 employees) has fallen from 111 to 102 but then increased up to 127 (+14% over the whole period), the number of medium enterprises (from 50 to 249 employees) has slightly decreased from 37 to 36 (-3%) but had reached a peak of 42 in 2014, and the number of big enterprises (more than 250 employees) is the same in 2015 as in 2008, but had fallen to 16 in 2011, 15 in 2012 and 14 in 2013. The net creation of jobs in the French processing industry during the period 2009-2013 (the number of FTE increased by 7%) is mainly due to small and medium enterprises: indeed, between 2009 and 2013, the number of FTE decreased by 2% for the very small enterprises, increased by 17 and 18% for the small and medium enterprises respectively, and was stable for the big enterprises (Figure 4.8.3). Big companies (6% of the enterprises) provide 58% of the jobs of the French fish processing industry in 2015.

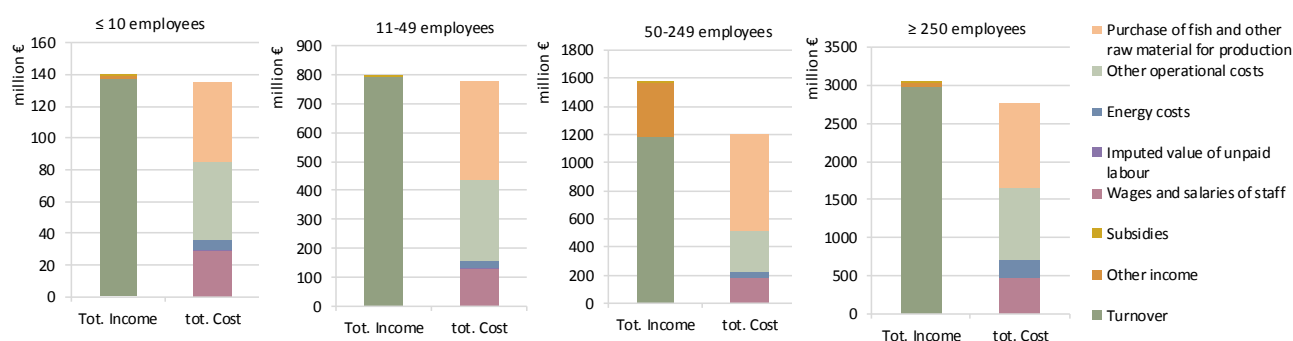
Total income improved for all categories of enterprises: between 2008 and 2013, it increased by 18% for the very small enterprises, by 22% for the small enterprises, by 18% for the medium enterprises and by 30% for the big enterprises. The big company category, which encompassed only 14 enterprises in 2013 against 17 in 2008, cumulated 54% of the total income in 2013: this indicates an increasing concentration as the share of the big company category was only 52% of the total income in 2008. The level of the other incomes and the subsidies is very low for all categories of enterprises: it represents normally less than 2% of total income during the reported period. However, the other income of the medium enterprises (50 to 249 employees) reached 25% of total income and 2013, and this ratio for small enterprises (11 to 49 employees) reached 10% in 2011 and 12% in 2012: those values can be suspected to be wrong.

Between 2008 and 2013, the production costs of the very small enterprises increased by 19% and those of small enterprises increased by 29%, while they decreased by 7% for the medium enterprises. However, the increase of the production costs of the big enterprises by 35% during the period explains most of the pattern of this variable for the whole industry (table 4.8.3).

Similarly, the total value of assets increased by 19% for the very small enterprises and by 26% for the small enterprises, while it decreased by 7% for the medium enterprises. However, the increase of the total value of assets for the big enterprises by 48% during the period explains most of the pattern of this variable for the whole industry (Figure 4.8.3).



**Figure 4.8.3: French main structural and economic variables trends by size category, 2008-2015**



**Figure 4.8.4: French income and cost structure, by size category, 2013**

The cost structures of the French fish processing companies are similar: the first cost-headings are the purchase of fish raw material, the second one are the other operational costs, the third one are the wages and salaries and the fourth one are energy costs. The medium enterprises (between 50 and 249 employees) show the higher share of purchase of fish raw material (57%), and the big enterprises (more than 250 employees) show the higher share of energy costs (9%), which indicates a higher level of mechanization, for instance in canneries. In the case of medium enterprises, the higher share of fish raw material is compensated by a lower share of other operational costs. This deviation is certainly explained by the type of products processed by these

medium enterprises: this size category encompasses mainly enterprises producing prepared fishes and smoked salmon, products for which the share of fish raw material in the production costs is the highest. Products for which the share of raw material in the production costs is the lowest are the prepared dishes and the canned products, which are processed mainly by big enterprises (canned fish) or small enterprises (prepared dishes).

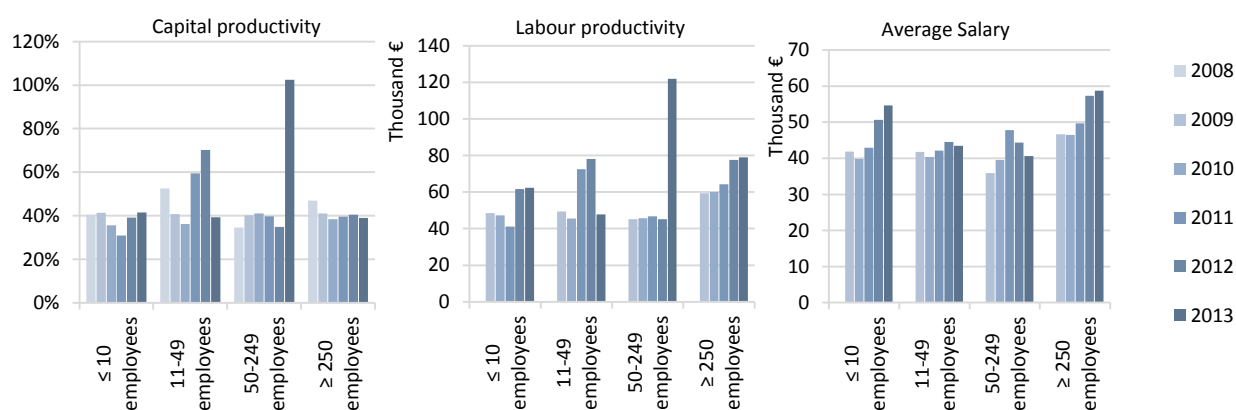
**Table 4.8.3: Economic performance of the French fish processing industry sector by size category (indicators in million €), 2008-2013**

Variable	2008	2009	2010	2011	2012	2013		Δ (2012-13)		Δ (2008-13)
<b>less than or equal to 10 employees</b>										
Total Income	118.5	115.9	136.2	155.3	155.0	140.1	▼	-10%	▲	18%
Total production costs	113.5	112.0	131.4	155.8	148.5	135.2	▼	-9%	▲	19%
Gross Value Added	27.4	26.5	27.2	24.5	34.2	33.4	▼	-3%	▲	22%
Operating Cash Flow	5.0	4.0	4.8	-0.5	6.5	4.9	▼	-25%	▼	-2%
Earning before interest and tax	-5.1	3.1	2.8	-0.5	3.1	0.3	▼	-91%	▲	105%
Net Profit	-6.8	2.8	2.2	-1.0	2.9	-0.2	▼	-108%	▲	97%
<b>between 11 and 49 employees</b>										
Total Income	649.3	680.8	690.2	756.0	743.2	789.8	▲	6%	▲	22%
Total production costs	599.1	659.7	674.8	674.3	651.1	774.6	▲	19%	▲	29%
Gross Value Added	153.8	127.7	120.9	191.0	210.5	144.7	▼	-31%	▼	-6%
Operating Cash Flow	50.1	21.1	15.4	81.7	92.1	15.2	▼	-83%	▼	-70%
Earning before interest and tax	-28.6	16.3	-4.4	65.7	91.9	14.7	▼	-84%	▲	151%
Net Profit	-30.6	15.7	-6.0	63.8	90.6	13.1	▼	-86%	▲	143%
<b>between 50 and 249 employees</b>										
Total Income	1,332.2	1,053.8	1,043.4	1,159.7	1,272.8	1,574.3	▲	24%	▲	18%
Total production costs	1,300.1	1,017.6	1,018.1	1,162.1	1,267.0	1,208.6	▼	-5%	▼	-7%
Gross Value Added	197.8	170.5	169.8	190.1	201.2	543.5	▲	170%	▲	175%
Operating Cash Flow	32.1	36.2	25.3	-2.3	5.8	365.7	▲	6154%	▲	1039%
Earning before interest and tax	-49.9	25.9	-16.8	-60.6	-1.5	365.3	▲	24563%	▲	832%
Net Profit	-54.3	23.3	-19.4	-64.4	-6.1	359.9	▲	5978%	▲	762%
<b>greater than or equal to 250 employees</b>										
Total Income	2,273.2	2,529.7	2,670.9	2,885.8	2,830.2	2,945.7	▲	4%	▲	30%
Total production costs	2,059.3	2,425.8	2,558.3	2,762.8	2,655.5	2,775.4	▲	5%	▲	35%
Gross Value Added	520.3	480.2	493.6	537.7	641.4	638.4	■	0%	▲	23%
Operating Cash Flow	213.9	103.9	112.6	123.0	174.8	170.3	▼	-3%	▼	-20%
Earning before interest and tax	103.7	61.2	96.7	91.0	118.5	155.8	▲	31%	▲	50%
Net Profit	99.2	57.2	89.4	90.9	117.5	152.3	▲	30%	▲	53%

The production costs amount for a very high share (at least 96%) of the total income, except for the big companies in 2008 (91%), 2012 and 2013 (94% for both years) and for the small ones in 2008 (92%), 2011 (89%) in 2012 (88%). This ratio is supposed to be of 77% for the medium enterprises in 2013, but this very low value should be considered abnormal. Indeed, the total income of the medium enterprises have increased by 24% between 2012 and 2013, what is much higher than for any other segment, and this increase is almost entirely explained by the "other incomes", which are more than thirtyfold their average value of the 2008-2012 period. It should thus be suspected that the value of the other income for medium enterprises in 2013 is false, what

causes abnormal results for value added, which would be supposed to have increased by 170% between 2012 and 2013, and other economic indicators. This indicates a possible failure in the data validation process.

The level of operating cash flow is very low for the very small enterprises and still low for small and medium enterprises, with the exception of the abnormal values recorded in 2013 for medium enterprises and in 2011 and 2012 for small enterprises, certainly due to over-estimated “other income” (with comparison to “normal data” recorded for these companies, total income increased much more than production costs during these “abnormal years”, which denotes inaccurate levels of earnings). As a consequence, the net profits are low and even negative, as in 2008, 2011 and 2013 for very small enterprises, in 2008 and 2010 for small enterprises and in 2008, 2010, 2011 and 2012 for medium enterprises. When positive, the net profit of the enterprises with less than 250 employees is always less than 2.5% of turnover. Big enterprises show a higher profit level. At the beginning of the period, the big enterprises generated a net profit to turnover of 4.4%, but their net profit was cut by 42% between 2008 and 2009. Since then, the profit to turnover of the big enterprises oscillated between 2.3% and 3.4%, but it increased again to 4.2% in 2012 and reached a peak of 5.1% in 2013. The net profit earned by big companies explains a large part of the net profit of the whole French seafood industry.



**Figure 4.8.5: French capital productivity, labour productivity and average salary, by size category, 2008-2013.**

Capital and labour productivity shows the same abnormal values as the net profit for small enterprises in 2011 and 2012, and for medium enterprises in 2013 (Figure 4.8.5). Over the period 2008-2013, the lowest rates of capital productivity were observed for very small enterprises and medium enterprises, with value ranging from 31% to 41%. After their peaks of 53% and 47% reached in 2008 respectively, the capital productivity of small and big enterprises decreased until 2010 but then increased again to nearly 40% in 2013. If abnormal records are not taken into account, labour productivity was almost stable for small and medium enterprises, and improved notably at the end of the period for the very small enterprises and the big companies. This pattern is reflected in the higher average salary paid by these two latter categories in 2012 and 2013. The average salary increased also slightly for the small enterprises over the period, and showed an increase followed by a decrease for the medium enterprises.

#### 4.8.4 Trends and drivers for change

##### Industry structure

The concentration level of the French fish processing industry, which is already high, is still increasing. In 2015 as in 2012, 20% of the companies cumulated nearly 85% of the turnover generated by processed seafood production, and the share of the 10 first companies (3.4%) in the total turnover, which was around 45% in 2012, reaches 49% in 2015. On the other hand, the sector

includes numerous small companies: in 2015, 38% of the companies employ less than 10 persons, 82% employ less than 50 persons, and only 17 companies (6%) employ more than 250 persons. However, during the period 2008-2015, the number of very small enterprises (less than 10 employees) decreased by 31%, while the number of small enterprises (between 10 and 49 employees) decreased by 14% and the number of medium and big enterprises (more than 50 employees) decreased by 2%.

The most important sub-sectors of the French fish processing industry are the canned products (valued at €1022 million in 2014), the smoked salmon (€804 million in 2014), the delicatessen (€765 million), the preparations (€751 million), the prepared dishes (€532 million) and the shrimp (€174 million). The canning industry and the delicatessen sub-sector include the company with the highest level of activity: they represent 24% and 18% of the total turnover but only 14% and 11% of the enterprises, respectively. The smoked salmon industry, which provides 29% of the jobs with only 18% of the enterprises, includes the largest companies.

**Table 4.8.4: Sub-sectors of the French processing industry in 2014**

	Enterprises	Total FTE	Turnover (Millions €)
Canned products	42	2 935	1 022
Smoked salmon	53	4 401	804
Delicatessen	32	1 821	765
Preparations	70	2 471	751
Prepared dishes	32	2 289	532
Shrimps	11	466	174
Smoked and salted products	21	505	77
By-products	4	178	41
Frozen preparations	7	117	28
Soups	4	98	8
Others or nd	21	63	8
Algae products	5	30	5
<b>TOTAL</b>	<b>302</b>	<b>15 374</b>	<b>4 214</b>

The French fish processing industry benefitted from 329 operations out of the 5016 (6.6%) which were supported by the EU the EMFF measure 2.3 in support of the processing industry and marketing between 2007 and 2015. However, the financial amount of the aid was lower than the EU average and the French fish processing industry benefitted from only 2.2% of the total EFF fund for this measure. This was partially compensated by the national counterpart, which represented 56% of the total aid in France, against 47% in average for all Member States. No information is available regarding the kind of operations which were aided.

### *Consumption trends*

According to Kantar Worldpanel, whose data are estimated to cover 80% of the consumption of the French households (despite high disparities among products), the consumption of seafood products per inhabitant is almost stable since 15 years and ranges from 34 kg/inhabitant to 36 kg/inhabitant (in live weight equivalent); after a peak at 36.5 kg/inhabitant in 2011, the consumption fell to 33.3 kg/inhabitant in 2012 but reached again 34.0 kg/inhabitant and 34.5 kg/inhabitant in 2014 and 2015. The consumption of shellfishes, crustaceans and cephalopods, which reached a peak of 11.7 kg/inhabitant in 2011, has decreased to 9.7 kg/inhabitant in 2015, mainly because of lower purchases of crustaceans.

Although the household purchases of processed seafood increased by nearly 3% in value between 2010 and 2015, their volume decreased by 9.2% from 473,000 tonnes to 429,000 tonnes. In 2015, the consumption of processed seafood products, worth €4.7 billion, represents 67% of the value of total seafood products consumption, worth €7.1 billion. This share of the processed seafood is similar as in 2010. However, changes occurred as regards the types of processed products. Between 2010 and 2015, the consumption of refrigerated delicatessen decreased by 2.5% in volume but increased by 9.9% in value, the consumption of frozen products decreased by 16.4% in volume

and decreased by 9% in value, the consumption of canned products decreased by 9.8% in volume but increased by 5.9% in value. Among the seafood processed products, refrigerated delicatessen represents now 49% of the 2015 consumption in value and 41% in volume, frozen products 29% in value and 31% in volume and canned products 22% in value and 27% in volume.

Between 2015 and 2014, the refrigerated delicatessens show the better performances with an increase of the consumption by 3% in volume and 1% in value. The three most important products of this segment follow different patterns: smoked fishes are stable, shrimp and gambas increased by 7% in volume and surimi increased by 0.5%. The frozen products consumption decreased by 5% in volume; this trend concerned all products, including fishes, crustaceans, shellfishes, cephalopods and delicatessens. At last, the slow fall of the canned products consumption was still going on, with a decrease of 1.2% in volume and 0.7% in value, following the trend of canned tuna consumption, representing 60% of the segment, which decreased by 1%.

### *External trade*

The deficit of the French trade balance for seafood products grew from 355,000 tonnes (net weight) in 1980 to around 600,000 tonnes at the end of the 1990s and reached a peak of 822,400 tonnes in 2011. The deficit decreased then slightly and was of 770,500 tonnes in 2015, which represented €3.7 billion, its highest value ever. That year, the 1,110,000 tonnes of imports were worth €5.26 billion, and the exports were of 340,000 tonnes, valued at €1.53 billion. French international trade of seafood products concerns mainly EU member States. In 2015, the value of imports is made of 42% frozen products, 36% fresh fish, 18% prepared or preserved products and 4% dried, salted or smoked fish, while the value of exports is made of 47% fresh fish, 33% frozen products, 25% prepared or preserved products and 6% dried, salted or smoked fish. As a result, the French trade deficit in 2015 was explained at 45% by frozen products, 32% by fresh fish, 19% by prepared or preserved products and 3% by dried, salted or smoked fish. The share of prepared and preserved products in the imports has decreased since 2012, when these products represented 25% of the imports and contributed to 27% of the trade deficit.

The French imports of prepared or preserved products are made mainly of canned tuna from Spain (worth €87 million in 2015), Seychelles (€83 million), Côte-d'Ivoire (€70 million), Ghana (€53 million) and Ecuador (€46 million), canned sardines and canned anchovy from Morocco (both valued at €34 million), smoked salmon from Poland (€57 million) and canned mussels from Chile (€30 million). French imports of fresh or frozen fish consist mainly in salmon from Norway (€507 million in 2015), United Kingdom (€176 million), Chile (€43 million), US (€37 million), Ireland (€35 million), and China (€23 million); cod from Iceland (€83 million in 2015), Denmark (€59 million in 2015), Norway (€55 million) and China (€39 million); and pollack from China (€57 million), Germany (€42 million), US (€38 million) and Russia (€33 million). Imports of crustaceans and shellfishes are mainly made of shrimp from Ecuador (€209 million in 2015), India (€110 million), Viet-Nam (€74 million in 2015), Madagascar (€48 million) and Netherlands (€47 million); scallops from United Kingdom (€million 64 in 2015), Peru (€54 million), Argentina (€30 million), Canada (€30 million) and US (€26 million); Norway lobsters from UK (€million 40 in 2015); mussels from Chile (€30 million), Netherlands (€22 million) and Spain, and oysters from Ireland (€20 million in 2015). Imports of aquaculture products are mainly made of seabass and seabream from Greece. Imported species which are the most likely to be used by the French fish processing industry are salmon and shrimp, and to a lesser extent pollack, cod and scallops.

French exports of seafood consist mainly in the following products: fresh oysters (€70 million in 2015) mainly sold to Italy and China; fresh or frozen salmon (€80 million in 2015) mainly sold to Belgium, Ireland and the UK; fresh or frozen cephalopods (€85 million in 2015) mainly sold to Spain and Italy; frozen tuna (127 million in 2015) mainly sold to Spain, Ivory Coast, Ghana, Seychelles and the UK; frozen shrimp (€76 million in 2015) sold to Germany, Spain and the UK; smoked salmon (€61 million in 2015) mainly sold to Italy, Belgium and Switzerland; canned shrimp (€29 million in 2015) mainly sold to Germany and Belgium and canned tuna (€27 million in 2015) mainly sold to the UK, Belgium and Germany.



#### 4.8.5 Outlook

The economic performances of the French fish processing industry have improved during the period 2008-2015, a result which is reflected in the positive future expectations of the industry. However, these trends are mainly observable for the big companies which explain most of the performances of the whole industry. The share of processed products in the whole consumption of seafood products in France is stable, but the consumption is increasing for refrigerated delicatessen including shrimp, stable for smoked salmon and decreasing for canned products. In France, seafood consumption habits are also likely to change because large retailers hold increasing market shares for both fresh products (as "call-products") and almost all processed products.

UK is a major trade partner of France, being its third supplier of seafood products in volume and the second one in value. However, this particular position is relative, as France has a wide range of trade partners and most of its processing industry segments can rely on diversified supply sources as well as outlets. Brexit could have consequences on the supply for the French processing companies mainly as regards imports of salmon, and on their outlets mainly as regards exports of prepared shrimp and canned tuna. However, this will depend on the way future trade agreements between UK and the EU will be negotiated.

Certification for fish products is now implemented all over the supply chains in France. Recent studies have demonstrated that certification of the origin of fish can be very difficult to apply properly because the numerous intermediaries of the supply chains may use mixed sourcing. As regards the processing sector, certification has been implemented increasingly mainly to guarantee a higher quality to the consumer (in particular using the "Label Rouge" certificate). More recently, communicating on the whole production process has become an important issue as well: for instance, 14 French fish canning companies have settled a voluntary agreement to promote the use of products from responsible fishing, including certified products. As regards the fish processing industry products, certification, which was intended to promote the visibility of responsible and quality products, will paradoxically increase the market shares of large companies, be they from the processing or retailing sectors, because it requires more technical capabilities, more ability to negotiate with suppliers and economies of scale, including the ability to "downgrade" certified products on the market to avoid "garbage".

#### 4.8.6 Data coverage and quality

The survey of the French fish processing industry, which encompasses enterprises of the "secondary processing sector", is intended to be exhaustive. This is the reason why the scope of this survey includes mainly (81%) enterprises registered under the NACE code 10.20Z, but also enterprises currently registered under other activity codes such as the 10.85Z (prepared dishes) or the 4638A (gross retailing). It should be mentioned that FranceAgriMer implements a separate survey in order to collect data for the enterprises of the "primary processing sector". These data have never been included in the economic analysis of the French processing industry so far, however they could be of interest as most of these companies undergo fish processing activities.

France data coverage and quality is deteriorating for various reasons.

Global production data by types of products were usually compiled by the Ministry for Food and Agriculture for the PRODCOM database using primary data from professional sources. Products of the fish processing industry are covered by NACE rev 2 code 10.20Z (processing and preserving of fish, crustaceans and molluscs) and part of NACE rev 2 code 10.85Z i.e. NAF code 10.85.12.00 (prepared dishes with fish, crustaceans and molluscs). Unfortunately, no data are available in the PRODCOM database for smoked salmon, the second most important product category of the French fish processing industry (the first one being canned products). The unavailability of these data prevents any comparative analysis of production trends between the main sub-sectors of the French fish processing industry.

The data from the survey operated under the supervision of FranceAgriMer, which were of very good quality and reached a high level of precision until 2010, appeared to suffer from continued degradation since then. In 2013, the income of the medium size enterprises (between 50 and 249



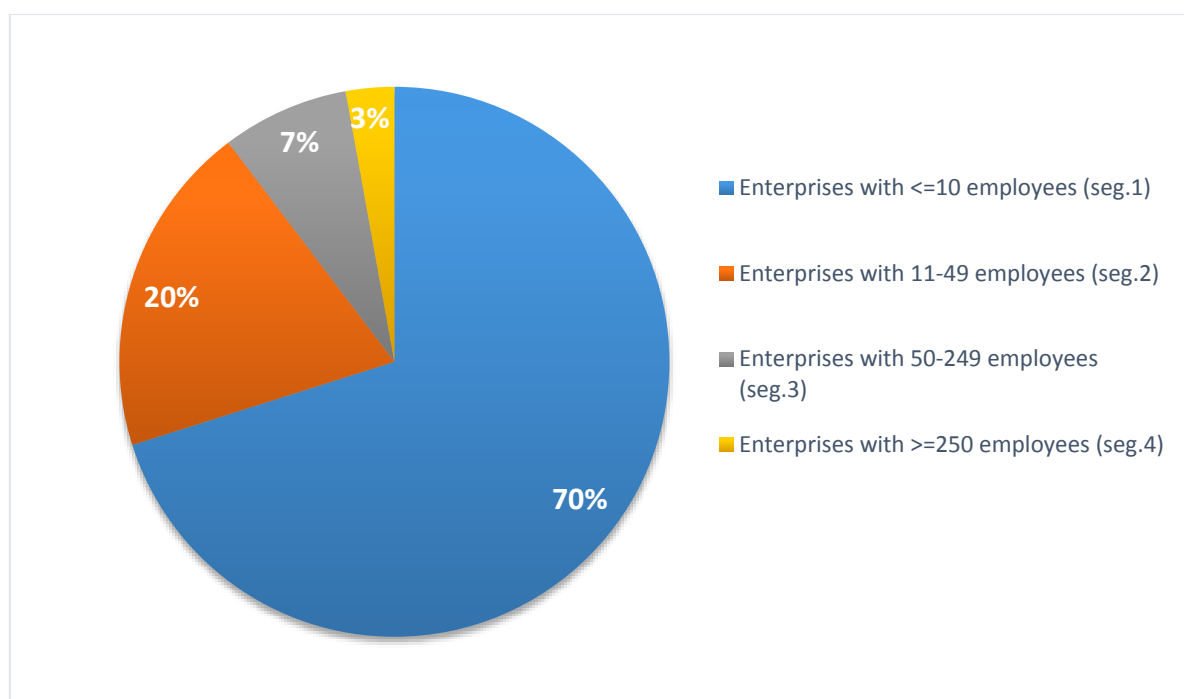
employees) category is supposed to be 24% higher than it was in 2012: this increase is in fact due to a recorded "other income" which is about tenfold the regular level and generates an incredible increase of the value added (170%) and aberrant economic performance indicators. Basically this could be due to a simple typing error. Similar problems appeared with another segment (small enterprises) for the years 2011 and 2012 after the data had been further scrutinized. During the expert meeting in January 2018, "other operating costs" appeared to be wrong for the 2014 and 2015 data, and needed to be corrected twice. Other variables show surprising pattern which may indicate also other problems of data validation, for instance the opposite trend of employment and FTE since 2014.

It appears that validation problems occur regarding French data since at least 2011. It should be therefore recommended that the submission process for French data would be revised in order to ensure the quality of the information provided to the European bodies, especially for the purpose of comparisons between countries.

## 4.9 GERMANY

### 4.9.1 General overview of the German fish processing industry sector

In general, the German fish processing industry is dominated by larger enterprises. In 2015, the German fish processing industry consisted of 248 enterprises (with fish processing as main activity) while 164 enterprises (70%) had 10 or less employees (Figure 4.9.1). However, these enterprises produced less than 5% of the total turnover. There were 30 enterprises with 50 and more employees in 2015 (Figure 4.9.1). They contributed to more than 93% of the German fishing processing sectors turnover and around 80% of all employees are employed in this size segment. Due to the fact that under the Structural Business Statistic Regulation data is already collected for enterprises with 20 and more employees making up more than 90% of the total turnover Germany only presents detailed data for the segment 20 and more employees.



**Figure 4.9.1: Size distribution of the German fish processing enterprises in 2015**

Although the size of the German fishing fleet is relatively low compared to other EU fleets, the German fish processing sector is quite large compared to other EU fish processing sectors. This is due to historical reasons and the size of the German market. In particular, Germany has the world's largest fish finger factory, which is located in Bremerhaven. In terms of employment and turnover Bremerhaven is by far the most important location for the German fish processing sector.

#### Employees and number of enterprises

Figure 4.9.2. and Table 4.9.1 show the number of employees and some indicators of the general structure of the German fish processing industry. It has to be noted that the average wage and labour productivity were calculated only for enterprises with 20 and more employees. The sector is characterized by a more or less continues decline of employees (a decrease of 21% from 2008-2015; Table 4.9.1) and the ongoing outsourcing of activities to other member states (e.g. Poland) which leads to increasing investments there. Moreover, from 2008 to 2015 the total number of enterprises decreased from 281 to 248 and employees declined from 8,441 persons to 6,665 persons. When comparing male (decline by 16% from 2008 to 2015) and female employees (a

decline by 26% from 2008 to 2015) especially female workers seemed to be affected by that general decline. However, from 2014 to 2015 there was a slight increase in the total numbers of employees (Table 4.9.1). In turn, labour productivity varies between years showing an upward trend since 2011 and average wages increased from 2008 to 2015 (Figure 4.9.1).

In terms of employment more than one quarter of the industry is located at Bremerhaven. In the whole fisheries sector including logistics, research etc. about 4,000 persons are working in Bremerhaven, which is one of Europe's leading centres for fish processing and frozen food products. Around one eighth of the sectors employment is located in Cuxhaven.

**Table 4.9.1: German fish processing industry sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	281	263	265	265	250	253	258	248	▼ -4%	▼ -12%
≤10 employees	197	184	186	183	171	176	178	164	▼ -8%	▼ -17%
11-49 employees	55	52	51	58	56	54	56	54	▼ -4%	▼ -2%
50-249 employees	21	20	22	17	15	15	16	22	▲ 38%	▲ 5%
≥250 employees	8	7	6	7	8	8	8	8	0%	0%
<b>Employment (number)</b>										
Total employees	8,441	7,566	7,031	6,780	7,010	6,751	6,561	6,665	▲ 2%	▼ -21%
Male employees	4,244	3,923	3,558	3,667	3,826	3,516	3,439	3,556	▲ 3%	▼ -16%
Female employees	4,197	3,643	3,473	3,113	3,184	3,235	3,122	3,109	▼ 0%	▼ -26%
FTE	7,995	7,212	6,786	6,544	6,664	6,476	6,251	6,373	▲ 2%	▼ -20%
<b>Indicators</b>										
FTE per enterprise	28.5	27.4	25.6	24.7	26.7	25.6	24.2	25.7	▲ 6%	▼ -10%
Average wage (thousand €)	33.9	34.7	35.5	35.6	36.2	36.0	38.4	37.6	▼ -2%	▲ 11%
Unpaid work (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%



**Figure 4.9.2: German employment trends, 2008-2015**

#### 4.9.2 Economic performance of the German fish processing industry sector

##### Profit and costs

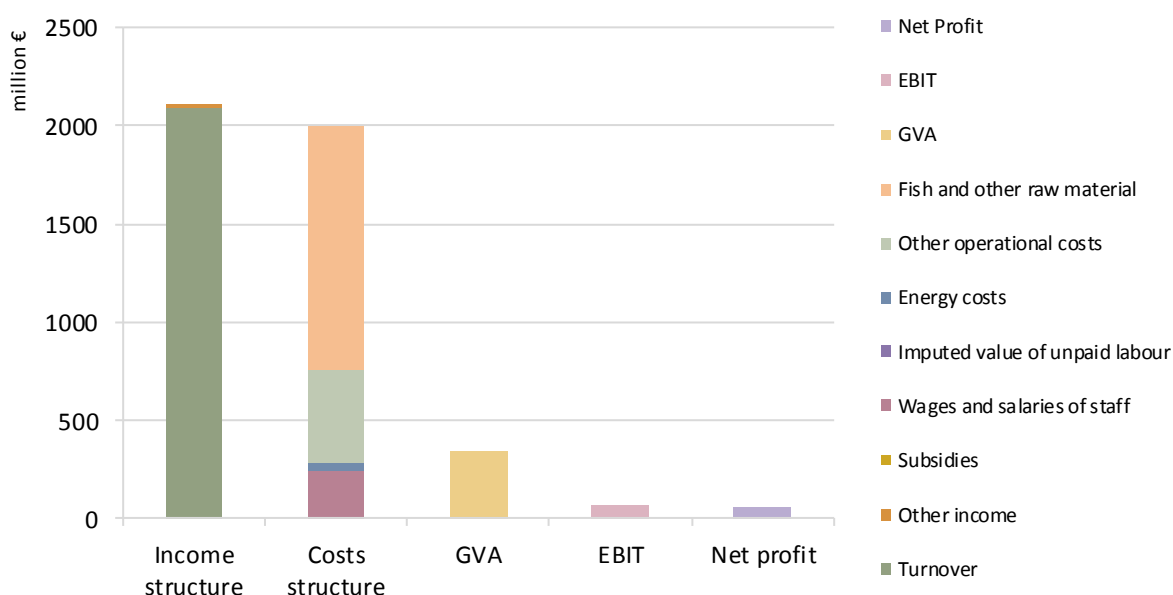
In 2015, the net profit of the German fish processing sector reached around €62 million (Table 4.9.2), indicating that it was a successful year for the sector. However, raw material prices (as the main part of the production costs) put pressure on the profitability and is affecting the entire sector. In particular, higher raw material prices are not resulting in higher retail prices as the big supermarket chains have an enormous market power and long-term contracts making it difficult to adjust prices of fish products. The increase of modern processing capacity in other countries (e.g. Poland) puts further pressure on prices (*Geschäftsbericht des Bundesverbandes der deutschen Fischindustrie und des Fischgroßhandels e.V., 2016*).

When comparing the data of 2008 to 2015 there was a decline in turnover from around €2.36 billion in 2008 to around €2.09 billion in 2015. Although there was an average decline by 12% between 2008 and 2015, there was a 5.4% increase in turnover from 2014 to 2015 (Table 9.4.2.).

##### Economic indicators

The economic indicators of Table 4.9.2 reflect the impact of the economic crises in 2008/2009 with fluctuating figures (see also Figure 4.9.2), but also some decreasing trend resulting in net losses in 2012 (which might be caused by a special effect of one company's performance). From 2008-2015 the declining trend of total income (on average 11% decline between 2008 and 2015) of enterprises with 20 and more employees is proportional to the average decrease of total production costs (on average 12% reduction between 2008 and 2015) (Table 4.9.2).

Between 2008 and 2015 gross value added (-4%) decreased less than total income (-11%), indicating that productivity of the production factors has increased (Table 4.9.2.). This is supported by the higher values for capital productivity (Table 4.9.2) and labour productivity (Figure 4.9.2). However, except for 2009 depreciation was higher than investment (Table 4.9.2), indicating that there is a reluctance to invest, which in turn can seriously affect future production and profit opportunities. Additionally, the FEI shows stable negative expectations (resulting in disinvestment in the fish processing sector), at the same time investments are made by German companies into new facilities abroad. This disinvestment decreases the German FEI, but it increases the FEI of the country into which the investment was made. Main investments have been made to improve production and packing processes and to reduce energy costs (*Geschäftsbericht des Bundesverbandes der deutschen Fischindustrie und des Fischgroßhandels e.V., 2016*).



**Figure 4.9.3: Economic performance of the German fish processing industry sector, 2015**

**Table 4.9.2: Economic performance of the German fish processing industry sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)		Δ (2008-15)		
Income (million €)													
Turnover	2,366.5	2,034.0	1,972.7	1,966.5	2,040.4	2,059.7	1,982.9	2,091.4	▲	5%	▼	-12%	
Other income	6.7	4.4	4.3	5.1	11.4	6.2	9.7	16.1	▲	66%	▲	139%	
Subsidies	1.2	1.0	0.4	0.3	0.1	0.0	0.0	0.0	▼	-100%	▼	-100%	
Total Income	2,374.4	2,039.4	1,977.5	1,971.9	2,051.8	2,066.0	1,992.6	2,107.4	▲	6%	▼	-11%	
Expenditure (million €)													
Purchase of fish and other raw material for production	1,433.5	1,297.5	1,181.7	1,208.2	1,282.8	1,260.3	1,212.3	1,237.2	▲	2%	▼	-14%	
Wages and salaries of staff	270.8	250.5	240.8	232.9	241.1	233.4	239.8	239.4	▬	0%	▼	-12%	
Imputed value of unpaid labour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	▬	0%	▬	0%	
Energy costs	38.8	36.4	36.7	39.3	44.9	47.0	45.8	44.4	▼	-3%	▲	14%	
Other operational costs	540.8	387.6	378.7	398.1	456.4	413.2	427.7	479.1	▲	12%	▼	-11%	
Total production costs	2,284.0	1,972.0	1,837.9	1,878.5	2,025.3	1,954.0	1,925.6	2,000.1	▲	4%	▼	-12%	
Capital Costs (million €)													
Depreciation of capital	40.8	38.2	34.0	36.1	40.8	41.0	32.9	37.4	▲	14%	▼	-8%	
Financial costs, net	19.0	14.4	11.1	13.4	13.4	11.9	10.1	8.1	▼	-20%	▼	-58%	
Extraordinary costs, net	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	▬	0%	▬	0%	
Capital Value (million €)													
Total value of assets	586.2	410.1	403.5	402.7	392.3	952.7	915.5	932.5	▲	2%	▲	59%	
Net Investments	50.9	31.6	33.2	25.7	28.4	25.7	25.0	29.1	▲	16%	▼	-43%	
Debt	316.5	221.4	184.6	223.4	222.8	802.7	765.5	746.8	▼	-2%	▲	136%	
Economic performance (million €)													
Gross Value Added	360.1	316.8	379.9	325.9	267.6	345.4	306.8	346.7	▲	13%	▼	-4%	
Operating Cash Flow	90.4	67.4	139.6	93.4	26.5	112.0	67.0	107.4	▲	60%	▲	19%	
Earning before interest and tax	49.7	29.2	105.6	57.3	-14.3	71.0	34.1	70.0	▲	105%	▲	41%	
Net Profit	30.7	14.8	94.5	43.9	-27.7	59.1	24.1	61.9	▲	157%	▲	102%	
Productivity and performance Indicators (%)													
Labour productivity (thousand €)	45.0	43.9	56.0	49.8	40.2	53.3	49.1	54.4					
Capital productivity	61.4	77.3	94.2	80.9	68.2	36.3	33.5	37.2					
GVA margin	15.2	15.5	19.2	16.5	13.0	16.7	15.4	16.5					
EBIT margin	2.1	1.4	5.3	2.9	-0.7	3.4	1.7	3.3					
Net profit margin	1.3	0.7	4.8	2.2	-1.3	2.9	1.2	2.9					
Return on Investment	8.5	7.1	26.2	14.2	-3.7	7.5	3.7	7.5					
Financial Position	54.0	54.0	45.8	55.5	56.8	84.3	83.6	80.1					
Future Expectation Indicator	1.7	-1.6	-0.2	-2.6	-3.2	-1.6	-0.9	-0.9					

### 4.9.3 Trends and drivers for change

#### *Domestic and foreign landings*

The German fish processing sector as the whole fish sector does not rely very much on domestic products nor landings. In 2015, domestic and foreign landings of the German fleet (including fresh water fishery) covered only 13% of the total German fish market and 87% of the total volume of fish on the German market was imported (*Fischwirtschaft: Daten und Fakten, 2016*). In particular, in the herring processing industry most of the raw material is coming from other EU and non-EU countries. Especially non-EU countries are becoming increasingly important for these enterprises in order to deliver the required quality level and product type just in time. Price increases affect the herring processing industry. Moreover, the import of herring raw material from non-EU countries is partly still burdened by "ad valorem" tariffs (*Geschäftsbericht des Bundesverbandes der deutschen Fischindustrie und des Fischgroßhandels e.V., 2016*).

Although Germany has a low per capita fish consumption (around 14 kg per capita) and around 87% of the seafood products are imported, it has one of the biggest market in Europe due to the high population size. The German domestic processing industry is still important compared to the whole EU market, especially, in terms of employment (around 6%), number of enterprises (7%) and turnover (more than 7%).

The supply of fresh fish to the German market from EU and non-EU countries decreased by 7.6% from 2014 to 2015. The average import price of seafood products increased by 5% (€4.60 per kg.) from 2014 to 2015 (*Fischwirtschaft: Daten und Fakten, 2016*).

#### *Trade partners*

In Germany, almost 2 million tonnes have been imported and 273 thousand tonnes (including German marine and inland fisheries and aquaculture) have been produced in 2015. The German production has increased by 13% from 2014 to 2015. In 2015, the total import value was €4.34 billion, which is a 2% increase compared to 2014. When comparing 2014 and 2015 the German export volume declined by 6.3% (570 thousand tonnes), but the export value increased by 1.4% (around €2 billion). In 2015, the main export destinations were Poland (17.5%), The Netherlands (11.7%), Norway (9.9%), Denmark (9.4%), China (8.6%) and the United Kingdom (2.9%) making up 60% of the total value. In total 52.4% of the imports came from EU countries and 47.6% came from non-EU countries (*Fischwirtschaft: Daten und Fakten, 2016*).

#### *Product types*

In 2015, it is the first time that prepared and preserved products (29% of total per capita consumption) are more important product types than frozen products (26% of total per capita consumption). This is mainly due to the fact that consumer increasingly prefer already prepared fish meals or convenience food, either frozen or preserved (*Fischwirtschaft: Daten und Fakten, 2016*).

In 2015, the most valued products of the German fish processing industry included fish fingers and breaded fish fillets with a production value of €482 million, processed herring with €282 million, smoked salmon with €210 million and fresh fish fillets with €159 million. Following products showed the highest increase in production volume in 2015: fresh fish fillets (59.2%), dried salted fish fillets (33.2%), smoked salmon (22.7%) and other smoked fish (12.8%) (*Fischwirtschaft: Daten und Fakten, 2016*).

#### *Raw material*

The profit of the fish processing industry sector is still under high pressure from the retail sector and from the competitors from non-EU and eastern EU-countries. In particular, due to the weak Euro and strong Dollar expenditures for fish and other raw materials which make up three quarter of the total costs have increased in the last years. As enterprises are facing price increases that

cannot be easily transmitted to higher product prices due to market power of the retail sector, profitability is affected negatively. However, retail prices of seafood products have increased by 2% from 2014 to 2015. Moreover, discounters have started to introduce fresh fish in their shops, which will probably lead to more fresh fish consumption in Germany. For the processing sector the fresh fish segment is not of highest importance but could help to stabilize or even increase turnover and margins (*Geschäftsbericht des Bundesverbandes der deutschen Fischindustrie und des Fischgroßhandels e.V., 2016*).

### *Outsourcing*

A movement of processing enterprises and activities from Germany to non-EU and eastern EU-countries can still be observed, financed partly by subsidies from the European Union. In particular, investment activities in new facilities have been outsourced, leading to higher processing capacities abroad. This in turn affects the fish prices and profitability of German processing enterprises making them reluctant to new investments, which ultimately may lead to outdated facilities.

### *Certification*

The retailers are preferring certified products. Domestic producers including aquaculture producers try to meet this requirement in order to be listed in the supermarkets. Producers are facing an increasing pressure from both sides of the value chain: input markets for purchasing goods and services show higher prices for the enterprises with certified products and selling products on the sales markets results in lower margins.

### *Consumer*

German consumers of fish are mostly older couples and singles (older than 50) and around 60% of the weight of seafood is home consumption. Households with more than €2,000 net income consume more than 55% of the seafood. Data of seafood consumption outside the own households (e.g. in restaurants) is not available.

Marine fish had a market share of around 62% followed by fresh water fish (around 27%) and crustaceans and molluscs (around 11%). Most important species and groups in terms of consumption are salmon, pollack, herring, tunas, and trout (*Fischwirtschaft: Daten und Fakten, 2016*).

### *Enterprises structure*

One large company in Germany is owned by a private equity investment fund. This fund is mainly interested in profitability of its investment and takes financial resources from that processing company. As this enterprise is quite large, potential problems will affect the overall sector in Germany.

Increasing demand for convenience products, traceability requirements and energy costs reduction are the main investment drivers, including resource saving logistic solutions (*Fischwirtschaft: Daten und Fakten, 2016*).

### *EFF*

Under the EFF the German processors got around €13 million financial support (it is around 15% of the total) between 2007 and 2015. However, according to the national account statistics there was a decreasing trend of the reported subsidies for the German fish processing sector (ultimately with zero reported subsidies in 2015). According to the economic indicators (e.g. employees) the received EFF seemed not to have a significant effect on the economic performance of German fish processing sector. However, one aspect that might be taken into account here is the fact that there is a continuous outsourcing of activities to other countries (e.g. Poland).

## Brexit

For the German fishing fleet British waters are of major relevance with 28% of the weight and 17% of landings value originate from inside the UK EEZ (2011-2015 average), showing an increasing trend over the last years. The most important species caught in the British EEZ are pelagic species such as herring, mackerel, horse mackerel, blue whiting, sandeel and Norway pout. For the German fishing fleet high shares of total effort inside British waters were primarily observed for pelagic trawls fishing mainly for herring, mackerel and horse mackerel as well as for blue whiting. Important fishing grounds for these pelagic fisheries are located in the North Sea and in the waters west of Scotland, west of Ireland and in the English Channel (*Döring et al., 2017*).

Given the monitored fish and catch distribution of herring and mackerel of the last five years, it seems unlikely that the German pelagic fleet would be able to fish their current Total Allowable Catches (TACs) for North Sea herring and Atlantic Mackerel completely outside UK waters. Thus the main issue for the German fishing fleets will be whether the pelagic fleet will still have access to British waters after the Brexit and if so, how much quota of small pelagic fish can still be taken in the British waters (*Döring et al., 2017*).

For Germany, a reduction of fishing opportunities will have severe negative consequences, especially for the long distant fleet catching pelagic species and for the fish processing sector. As both, the fleet and the major processing plant, are based on the island of Rügen, the negative impact would be amplified by the fact that it would especially affect a deprived rural region (*Döring et al., 2017*).

For the UK, Germany is the fifth most important export market. From the German perspective the UK is ranking similarly. Thus for Germany the UK is an important trading partner for fish products. In contrast to the trade balance between the UK and the EU, Germany exports more seafood to the UK than it imports and hence a Brexit may complicate the access to the British market. In particular, the UK exports fish products of about €105 million to Germany, while it imports products of about €230 million from Germany (*Döring et al., 2017*). Those German exports comprise to a large extent processed products, such as fish fingers and breaded fillets made from raw material of Pacific origin (Alaska Pollock, Pacific cod) or smoked, filleted or frozen salmon from raw material which is imported as well. Of the German catches only cod is of major importance for exports to the UK. Most British exports are based on salmon which is to some extent caught or grown within the UK. German imports of herring and mackerel exceed the exports of these species. In case the UK no longer participated in the common European market this may increase costs for EU products to be exported to the UK and may also increase costs for imports from the UK (*Döring et al., 2017*).

### 4.9.4 Outlook

In the following years Germany will still be dominated by larger enterprises. In particular, in 2016 enterprises with 50 and more employees made up 97% of the total turnover of the German fish processing sector.

In 2016, again 87% of the total volume of fish on the German market was imported. This means that almost every second fish consumed in Germany is imported (*Fischwirtschaft: Daten und Fakten, 2017*). The consumption per capita increased slightly to 14.2 kg in 2016. It is expected that also in the following years marine fish will make up around two third of the total German consumption, followed by freshwater fish, crustaceans and molluscs. For the third year in a row salmon was the most consumed fish species in Germany in 2016. Similar to 2015, frozen products (27%) and preserved products (26%) are the main important product types in 2016 (*Fischwirtschaft: Daten und Fakten, 2017*). Therefore, it is expected that the consumer trend of preferring already prepared fish meals or convenience food, either frozen or preserved may increase in the following years.

Due to the weak Euro and strong Dollar expenditures for fish and other raw materials which make up three quarter of the total costs will continue to increase in the next years. As enterprises are facing price increases that cannot be easily transmitted to higher product prices due to market



power of the retails sector, profitability may be affected negatively in the next years. In particular, in 2016, a strong increase of raw material prices (e.g. for salmon and North Sea brown shrimp) for some period of time required the adjustment of product prices, which was only partly accepted and implemented by the retails sector. Moreover, in 2016, the price of imported raw materials for the German herring processing sector increased substantially by 12.2% reaching €1.65 per kg (€1.47 per kg in 2015). As the herring processing sector is increasingly depending on herring imports from other EU and non-EU countries the higher prices for herring are negatively impacting the enterprises in the herring processing sector (*Geschäftsbericht des Bundesverbandes der deutschen Fischindustrie und des Fischgroßhandels e.V.*, 2017).

In 2016, two enterprises had to stop their businesses and around 500 employees lost their jobs. This number is encompassed by the new enterprises that entered the fish processing sector in 2016. However, the declining trend of total number of employees in the German fish processing seemed to continue for the next years (e.g. there was a 3.6% reduction from 2015 to 2016).

Increasing demand for convenience products, traceability requirements and energy costs reduction will be the main investment drivers, including resource saving logistic solutions for the coming years.

#### 4.9.5 Data coverage and quality

Data has been collected by the Thünen Institute of Sea Fisheries and the Federal Statistical Office and since 2012 for employment also from the Federal Employment Agency. More than 90% of employment and turnover belong to companies with 20 and more employees. Therefore, already existing data collection schemes with the emphasis on these larger companies are used and a low response rate in the segments with fewer employees do not affect the results in terms of representation of the sector eminently. So a sampling frame concentrating on the large companies with 20 and more employees together with published financial statements seems to be appropriate. The data collected represent between 80% and 100% of the sector's total sales. The exceptions are data for debt and net value of assets. Here, the willingness to provide data voluntarily differs distinctly, and is often derived from financial statements. Additional data in particular for the social variables are gathered by the Federal Employment Agency. These data are almost all based on census. In order to avoid doubling data collection, these primary data are used for the purpose of the data collection in the processing sector.

The Federal Statistical Office in Germany (Destatis) holds a database with data on turnover, number of enterprises, employees and costs. Destatis further collects data on investment and sales on a census basis with a threshold of companies with 20 employees and conducts a probability sample survey on several cost items and employment data. Data from the German Federal Statistical Office (Destatis) on cost are available through the annual "Report on the cost structure of Processing Trade" which is released each June (year n) and which refers to year (n-2). Thus in 2017 data on 2015 have been collected.

The Federal Employment Agency registers all persons employed in Germany. Additional characteristics like gender, age etc. are collected as well. If data on employment figures are not sufficient or – as in the case of unpaid labour- maybe not fully covered by the Employment Agency, additional data collection on a triennial basis for social data and annually for economic data will be executed by the Thünen Institute of Sea Fisheries.

The already existing data collections by the Federal Statistical Office and the Federal Employment Agency are well established and provide reliable and validated time series. Respective quality reports are available on request or already on the respective websites. Data on variables that are not covered by other administrative bodies are more or less well achievable by questionnaire and telephone recall.

For the raw material input by species and origin, some experience in data collection exists at the institute from former years. In order to enhance quality, a pilot study will be conducted. The aim is to make use of data already stored for traceability purposes in the sector. It is intended to check the quality and availability of these data and eventually conduct an own survey to obtain reliable

pictures of the raw material input by species and origin. Meetings with industry representatives will form the starting point.

The quality of available secondary data can be regarded as very high due to the fact that Destatis' data on fish processing industry are collected under the European level for Structural Business Statistics (SBS) standards and Federal Employment Agency's data collection on employment is conducted via census. Destatis sets thresholds for specific cost data (20 and more employees) but the stratified random sampling covering around 40% of the sectors larger companies allows high quality of the data. Due to a high experience at the Thünen Institute regarding economic surveys for fisheries, (marine) aquaculture and fish processing, measurement errors are not expected.

#### 4.9.6 References

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## 4.10 GREECE

### 4.10.1 General overview of the Greek fish processing sector

The Greek processed seafood sector is comprised of 145 active small and medium sized enterprises in 2015. No large sized enterprises are recorded in the sector. There also exist 4 enterprises of processed seafood products not included in the sector (i.e., seafood processing is not the main activity) mostly involved with filleting of fish from aquaculture. The largest category in terms of enterprise number are the micro enterprises with less than 10 employees, the only category that recorded increase (12 enterprises) during 2015; in contrast, the number of the enterprises with more than 10 employees has remained the same since the previous year.

For the same year, 2,062 persons (corresponding to 1,690 FTE jobs) are employed in the sector, 5% more than in the previous year. Male employment has increased by 7% (75 persons) and female employment has also increased but on a lower rate of 2% (23 persons) in 2015 compared to 2014. Approximately the same rate of increase is evident for the FTE figures in 2015. The increased number of enterprises in the sector did not result to proportional creation of new jobs, according to the FTE per enterprise indicator, which has decreased by 3%. The percentage of unpaid work has remained almost stable but an increase of 20% on the average wage is recorded from 2014 to 2015.

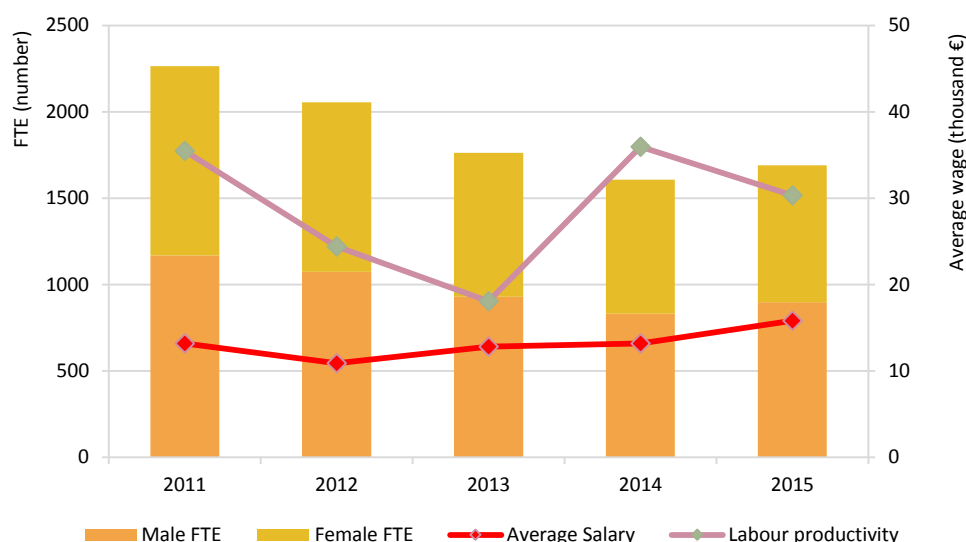
**Table 4.10.3: Greek fish processing sector overview, 2011-2015**

Variable	2011	2012	2013	2014	2015	Δ (2014-15)		Δ (2011-15)	
<b>Structure (number)</b>									
Total enterprises	152	147	144	133	145	▲	9%	▼	-5%
≤10 employees		107	111	100	112	▲	12%	▲	5%
11-49 employees		34	27	29	29	▬	0%	▼	-15%
50-249 employees		6	6	4	4	▬	0%	▼	-33%
≥250 employees		0	0	0	0	▬	0%	▬	0%
<b>Employment (number)</b>									
Total employees	2,505	2,330	2,183	1,964	2,062	▲	5%	▼	-18%
Male employees	1,226	1,172	1,127	1,005	1,080	▲	7%	▼	-12%
Female employees	1,279	1,158	1,056	959	982	▲	2%	▼	-23%
FTE	2,265	2,055	1,763	1,606	1,690	▲	5%	▼	-25%
Male FTE	1,168	1,073	928	831	898	▲	8%	▼	-23%
Female FTE	1,097	982	835	775	792	▲	2%	▼	-28%
<b>Indicators</b>									
FTE per enterprise	14.9	14.0	12.2	12.1	11.7	▼	-3%	▼	-22%
Average wage (thousand €)	13.2	10.9	12.8	13.2	15.8	▲	20%	▲	20%
Unpaid work (%)	5.2	3.3	4.5	4.4	4.4	▼	-1%	▼	-16%

For the period 2011-2015, the number of enterprises has decreased by 5%. Since 2012, this decrease is recorded only for the enterprises with more than 10 employees; on the contrary the number of the micro enterprises has increased. All the employment figures are negative for this period (2011-2015) as the total employment has decreased by 18% (or 25% in terms of FTE).

Female employment has been negatively affected to a greater extent (28%) than male employment (12%).

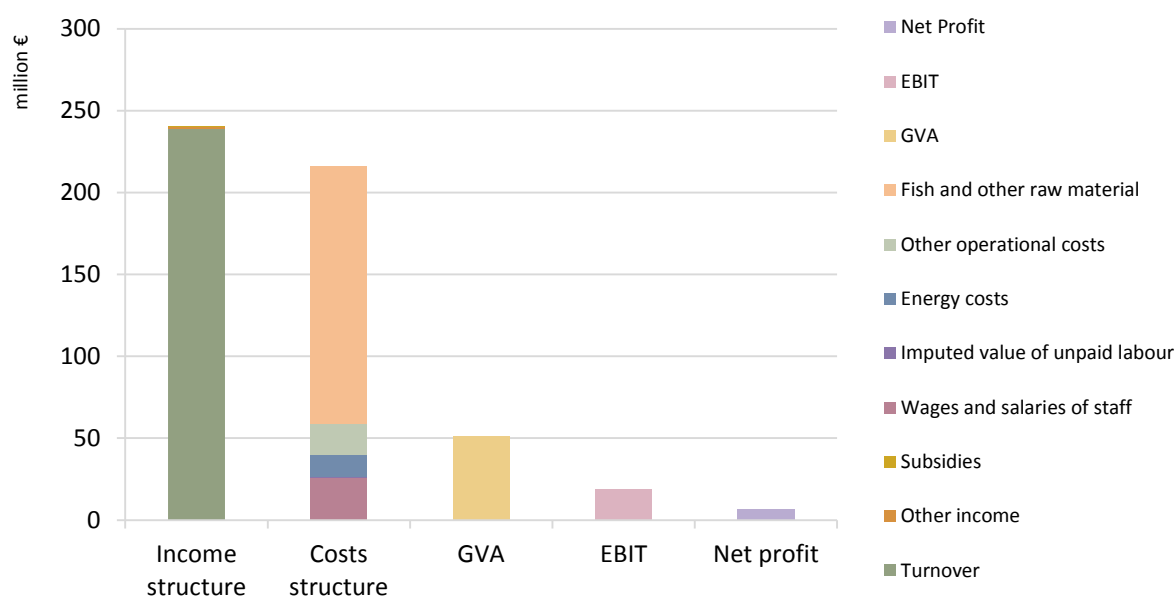
In Table 4.10.1 trends in employment, salaries and labour productivity are evident. The continuous downward trend of the employment in the sector has been interrupted in 2015. The steadily rise of the average salary since 2012 may probably be attributed to more specialized jobs in the sector. Labour productivity variation during the period 2011/2015 should probably be attributed to change in stocks each year.



**Figure 4.10.6: Greek employment trends, 2011-2015**

#### 4.10.2 Economic performance of the Greek fish processing sector

The vast majority of the income in the sector in 2015 originates from the processing activities. In the figure below, the importance of the various operating costs is presented; as expected the cost of raw materials is the most important cost item accounting for 73% of the annual turnover. Wages, salaries and inputted value of unpaid labour account for 13% of the turnover while energy costs and other operational costs account for 6% and 9%, respectively.



**Figure 4.10.7: Economic performance of the Greek fish processing sector, 2015**

**Table 4.10.4: Economic performance of the Greek fish processing sector, 2011-2015**

Variable	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2011-15)
<b>Income (million €)</b>								
Turnover	268.3	232.9	195.2	214.3	238.8	▲	11% ▼	-11%
Other income	0.0	0.0	2.4	2.2	1.7	▼	-24% ▬	0%
Subsidies	0.6	0.8	2.0	1.9	0.4	▼	-79% ▼	-31%
<b>Total Income</b>	<b>268.9</b>	<b>233.6</b>	<b>199.6</b>	<b>218.3</b>	<b>240.9</b>	▲	10% ▼	-10%
<b>Expenditure (million €)</b>								
Purchase of fish and other raw material for production	139.1	140.8	139.6	143.3	156.9	▲	9% ▲	13%
Wages and salaries of staff	28.3	21.6	21.6	20.2	25.5	▲	26% ▼	-10%
Imputed value of unpaid labour	1.5	0.7	1.0	0.9	1.2	▲	26% ▼	-24%
Energy costs	12.1	12.2	11.9	7.5	13.3	▲	79% ▲	10%
Other operational costs	36.8	29.7	14.3	8.0	19.0	▲	139% ▼	-48%
<b>Total production costs</b>	<b>217.8</b>	<b>205.1</b>	<b>188.4</b>	<b>179.9</b>	<b>215.9</b>	▲	20% ▼	-1%
<b>Capital Costs (million €)</b>								
Depreciation of capital	14.1	6.6	6.7	11.2	5.9	▼	-47% ▼	-58%
Financial costs, net	17.2	23.3	27.2	26.3	12.3	▼	-53% ▼	-28%
Extraordinary costs, net	1.2	2.8	21.0	32.4	5.2	▼	-84% ▲	320%
<b>Capital Value (million €)</b>								
Total value of assets		510.6	435.5	397.7	315.7	▼	-21% ▼	-38%
Net Investments	9.3	1.4	14.9	6.9	-0.6	▼	-109% ▼	-107%
Debt	199.1	294.0	409.3	419.1	254.4	▼	-39% ▲	28%
<b>Economic performance (million €)</b>								
Gross Value Added	80.3	50.1	31.8	57.7	51.2	▼	-11% ▼	-36%
Operating Cash Flow	51.1	28.5	11.3	38.4	24.9	▼	-35% ▼	-51%
Earning before interest and tax	37.0	21.9	4.5	27.3	19.0	▼	-30% ▼	-49%
Net Profit	19.8	-1.3	-22.7	0.9	6.7	▲	608% ▼	-66%
<b>Productivity and performance Indicators (%)</b>								
Labour productivity	35.5	24.4	16.7	34.6	29.3			
Capital productivity		9.8	7.3	14.5	16.2			
GVA margin	29.9	21.5	16.1	26.7	21.3			
EBIT margin	13.8	9.4	2.3	12.6	7.9			
Net profit margin	7.4	-0.6	-11.5	0.4	2.8			
Return on Investment		4.3	1.0	6.9	6.0			
Financial Position		57.6	94.0	105.4	80.6			
Future Expectation Indicator		-1.0	1.9	-1.1	-2.1			

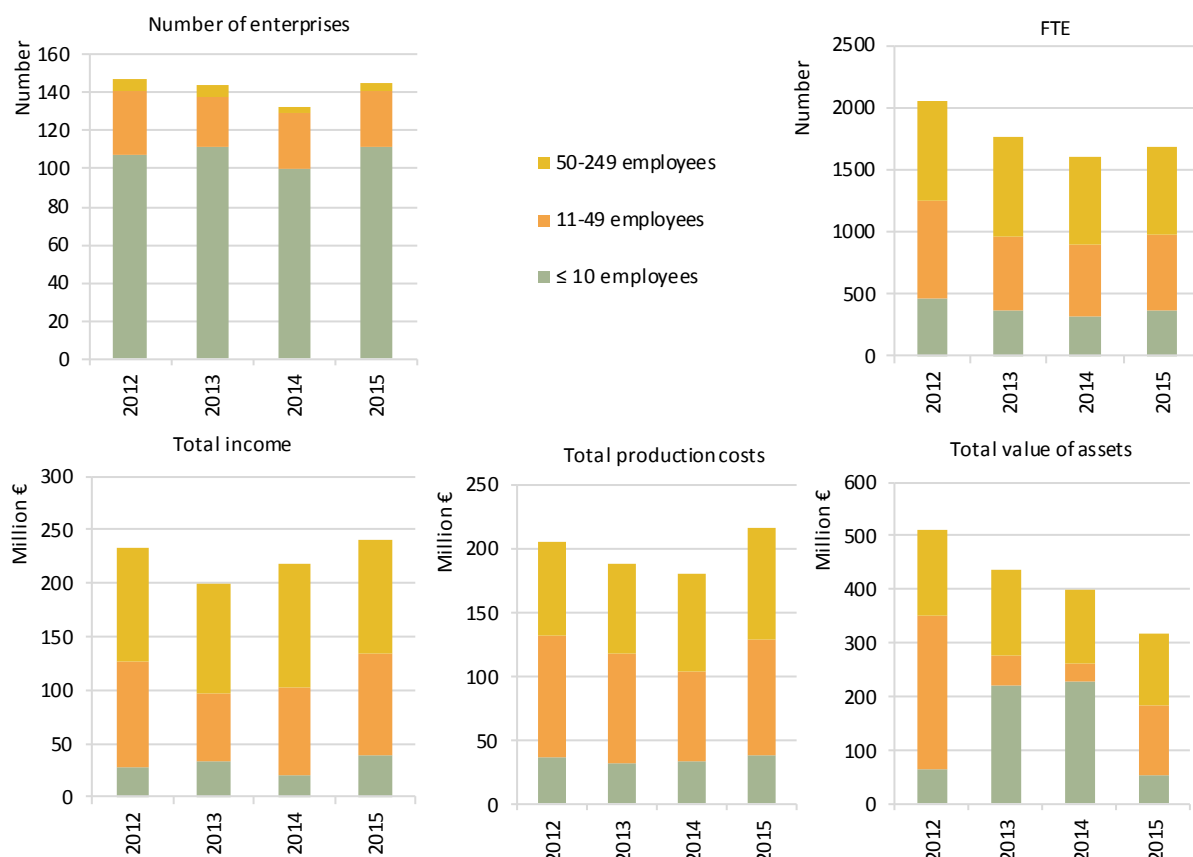
Earnings before interest and tax are positive at 8% of the turnover and net profit is estimated at 2.8% of the turnover.

According to the data of Table 4.10.2, Greek fish processing economic situation seems to be positively changed regarding the fisheries processing industry turnover (€238.8 million) that shows

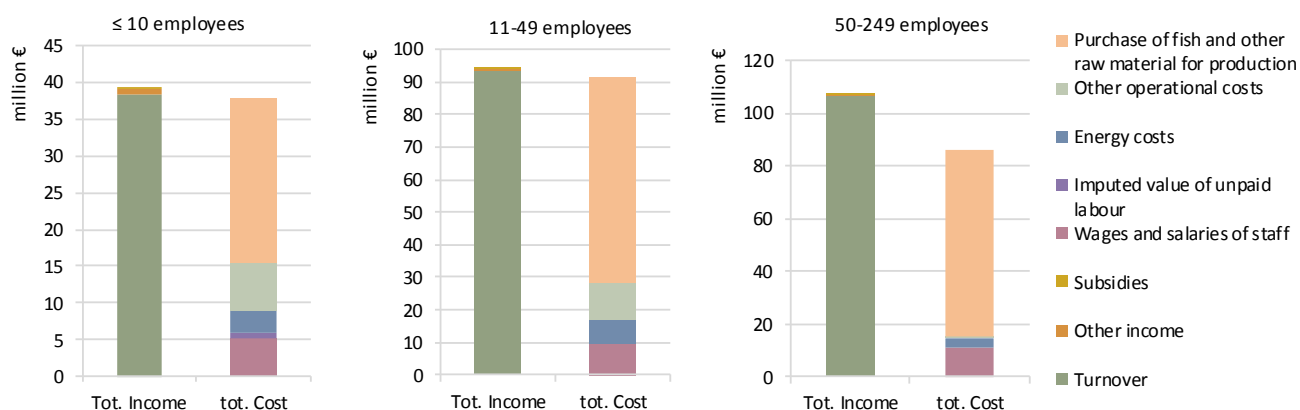
11% increase in 2015 in comparison to 2014. This fact is reflected also to an increase of the net profit of the sector (6.7%), although total production costs rose by 20%. Purchase of fish and other raw material for production has been increased by 9% and 13% for 2014-2015 and 2011-2015 time periods respectively. Although, in the time period 2011-2015 total income has dropped by 10% though, total production cost was decreased only by 1%. It is also notable that while the total expenditure for staff salaries in 2015 compared to 2014 has also increased (almost by 26%), still it remains 10% lower of the 2011 cost of salaries. Debt, in the time interval from 2014-2015, is drastically reduced (-39%), thus the drastic reduction of the financial costs (-53%) recorded. However, the continuing severe impact of the financial crisis on the Greek processing sector led to significant decrease of some performance indicators compared to previous years: Gross Value Added decreased 11% and 36% from 2014 to 2015 and from 2011 to 2015, respectively, Operating Cash Flow 35% and 51%, Earning before interest and tax 30% and 49%.

#### 4.10.3 Overview of the Greek fish processing industry sector by size categories

Regarding the number of employees, most of the fish processing industry companies in Greece belong over time to the sector with less than 10 employees (112 out of 145, 2015 data), companies that show an increasing trend in terms of number over the last few years. The 11-49 and 50-249 employees segments comprise 29 and 4 companies respectively, both dropped compared to 2012 number of companies. In terms of FTE employment, the 11-49 and 50-249 sectors share similar numbers (613 and 705, respectively) while the less than 10 sector employs 372. Similar to FTE categorization, the 11-49 and 50-249 sectors share the largest amount of total income, €94.6 million and €106.9 million, respectively; while the less than 10 employees sector produces €39.3 million.



**Figure 4.10.8: Greek main structural and economic variables trends by size category, 2012-2015**



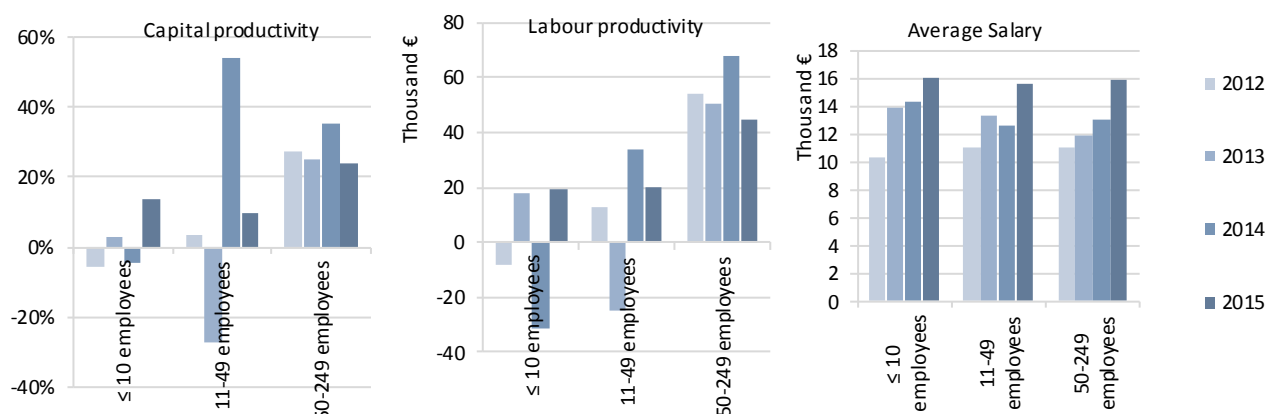
**Figure 4.10.9: Greek income and cost structure, by size category (indicators in million €), 2015**

Moreover, the 11-49 sector shows the highest total production cost (€91.5 million) mainly because it employs also the highest by far total value of assets (€129.4 million). The 50-249 sector follows with €86.5 million production cost and €132.6 million value of assets and finally the smallest ≤10 employees sector with €37.9 million and €53.7 million, respectively.

**Table 4.10.5: Economic performance of the Greek fish processing industry sector by size category, 2012-2015**

Variable	2012	2013	2014	2015		Δ (2014-15)	Δ (2012-15)
<b>less than or equal to 10 employees</b>							
Total Income	28.3	33.7	20.5	39.3	▲	92%	▲ 39%
Total production costs	36.1	32.2	33.3	37.9	▲	14%	▲ 5%
Gross Value Added	-3.6	6.6	-9.9	7.3	▲	173%	▲ 301%
Operating Cash Flow	-7.8	1.5	-12.8	1.4	▲	111%	▲ 118%
Earning before interest and tax	-9.5	-2.5	-19.5	0.7	▲	104%	▲ 108%
Net Profit	-14.8	-20.9	-33.9	-0.1	▲	100%	▲ 99%
<b>between 11 and 49 employees</b>							
Total Income	98.3	62.4	82.1	94.6	▲	15%	▼ -4%
Total production costs	96.4	85.3	69.7	91.5	▲	31%	▼ -5%
Gross Value Added	10.5	-14.9	19.6	12.4	▼	-37%	▲ 17%
Operating Cash Flow	1.9	-22.9	12.5	3.1	▼	-75%	▲ 62%
Earning before interest and tax	0.2	-23.7	11.6	0.5	▼	-95%	▲ 147%
Net Profit	-2.7	-24.2	7.3	-2.9	▼	-140%	▼ -6%
<b>between 50 and 249 employees</b>							
Total Income	107.0	103.5	115.7	107.0	▼	-8%	○ 0%
Total production costs	72.6	70.8	76.9	86.5	▲	13%	▲ 19%
Gross Value Added	43.2	40.1	48.0	31.6	▼	-34%	▼ -27%
Operating Cash Flow	34.4	32.7	38.8	20.4	▼	-47%	▼ -41%
Earning before interest and tax	31.3	30.7	35.2	17.8	▼	-50%	▼ -43%
Net Profit	16.2	22.5	27.5	9.7	▼	-65%	▼ -41%

According to the main structural and economic variables trends by size category values, only the less than 10 employees segments shows significantly over time larger amount of total income comparing to the other two sectors, a fact that indicates a somewhat poor performance of the 11-49 and 50-249 segments, always in comparison with the less than 10 employees sector. The Greek total income by size category indicators confirm that only the less than 10 segment presents significant profits (€0.1 million) amounting very small percentage of its total income while the 11-49 and the 50-249 employees segments presents losses (€2.9 million and €9.7 million, respectively).



**Figure 4.10.10: Greek capital productivity, labour productivity and average salary trends, by size category, 2012-2015**

#### 4.10.4 Trends and drivers for change

Even though, owing mainly to EFF funds, the net investment in the sector was positive (except for 2015) during the reporting period, only one positive value of the Future Expectations Indicator may be identified for 2013 while for the rest of the period (2012-2015) the indicator is negative. It is expected that the ongoing debt crisis in Greece at the reporting period and the resulting uncertainty for the economy, coupled with the scarcity of bank loans, has restricted further investment in the sector. Thus no concrete conclusion may be extracted from the future expectations indicator.

We note that while the variation of the number of enterprises in the sector is rather low, a downward trend of the value of assets is identified which reflects mainly the exit from the sector of two relatively larger enterprises since 2014.

According to the final figures of the European Fisheries Fund (EFF) Greek operational programme, 51 operations were funded under Measure 2.3. Fish processing and marketing. Thirty-two operations were related to seafood processing and nine operations were related to seafood trade. The total cost of the 32 seafood processing operations was €31.2 million which approximately equals the amount of the net investment estimated for the sector during the period 2011-2015 in table 4.10.2. It is evident that during the debt crisis in Greece, investment in the processing sector relied heavily on EU funding.

The public spending for Measure 2.3 previewed at the initial budget of the operational programme was €33.3 million or 12% of the total public spending of the programme. In the final implementation report, the public spending actually allocated to Measure 2.3 amounted for €18 million or 7% of the total public spending. The vast majority of the public spending (€15.6 million) under measure 2.3 was allocated at seafood processing operations; mainly for the construction of new or the extension of existing processing facilities.



The outputs of the funded projects for the construction of new or the extension of existing processing facilities, as presented in the final EFF implementation report, include the increased capacity of 26.3 thousand tonnes for fresh or chilled products, increased capacity of 26 tonnes for canned or semi-processed products, 913 tonnes increased capacity for frozen products and the creation of 109 new full time jobs. These outputs correspond to €436 of public spending per tonne of new capacity and to €109 thousand public spending for each new full time job.

The European Maritime and Fisheries Fund (EMMF) Greek operational programme for the period 2014-2020 has launched the first calls for proposals during 2017 and the first projects are expected to be granted funding during 2018. The amount of the public contribution previewed for processing of fisheries and aquaculture products is €50 million or 9.5% of the total public spending.

Greek processed fishery final products (frozen, processed and de-shelled mussels) were marketed per subsector at 2015 as follows: most of the quantities are distributed to the domestic Greek market (34.2, 8.7, and 0.7 thousand tonnes of frozen, processed and de-shelled, respectively). In the EU market 5.6 thousand tonnes, 1.8 thousand tonnes and 0.1 thousand tonnes respectively were exported. Only 0.2 and 0.7 thousand tonnes of frozen and processed products respectively were directed to non EU markets. The small percentages for Greek exports (with an exception of frozen fillet exports originated from aquaculture sea bass and seabream) could be explained by the big market competition between Greek (high selling prices) and non EU-countries (Morocco, Ecuador etc.) processed final products (low selling prices). After comparison of the values between the marketed final product quantities from the year 2015 with the mean values of the yearly quantities from 2011 to 2014, no significant differences were found.

Greek seafood imports until 2012 compared with most relevant trading partners come mainly from Spain, Italy, The Netherlands, Denmark and Germany with no significantly differentiated changes on over the past few years. Imports coming from the above 5 EU countries comprise approximately 40% of the total rate of seafood imports in Greece. In addition, very important representatives of non-EU countries for seafood imports to Greece are the following: Peru, Norway, India and China. Greece's exports of catches were made to the following countries: Italy, Spain, France, Netherlands, Portugal, Germany and Great Britain. Exports were made in the above seven EU countries comprise approximately 85% of the total rate of the Greek seafood exports.

As regards the type of products that were imported in Greece in the past few years, the first place is occupied by the frozen products, followed by prepared-preserved, fresh and finally the dried-salted-smoked products. Greece's exports comprised mainly fresh seafood (over 80% of the total rate of exported species), followed by frozen, dried-salted-smoked and finally prepared-preserved products. In the past few years prepared-preserved products were at third place followed by dried-salted-smoked products there were at fourth place of the above series.

Total Greek production of seafood from fisheries and aquaculture reached 164,761 tonnes in 2014 valued €672.2 million. The annual value of seafood produced in Greece for the period 2012 – 2014 is quite stable around €670 million.

The main species produced by the Greek fishing fleet are European anchovy and European pilchard, part of which are used as raw material for the processing sector. Main species produced by the aquaculture in Greece are Gilthead sea bream, European sea bass and Mediterranean mussel. A relatively small part of the production is processed, producing mainly fresh and frozen fillets oriented to export markets and de-shelled mussels oriented to the domestic market.

Molluscs are the main imported seafood category for human consumption both in volume (34% in 2014) and value terms (27.9% in 2014).

Salmon, a species not produced in Greece, is exported at relatively high quantities both in fresh and frozen form. Eurostat import and export figures suggest that Greek traders import salmon to cover the demand of both the Greek market and of markets in neighbouring countries. On top, import and export data of the smoked salmon suggest that there exists local production of value added products based on salmon which are then mostly exported. Salmon is also the highest specie, in terms of value, imported fresh Greece. Salmon is imported in all common presentations as fresh, frozen, filleted or smoked. Pangasius imports are relatively high in volume, 4-4.5 thousand tonnes annually for 2012 to 2014.

For the year 2014, regarding the origin of the imported seafood products based on Eurostat data, octopus is imported from Morocco, Tunisia, Spain and Italy and squids are mainly imported from India, New Zealand and Spain. In the case of crustaceans, main countries of origin are Spain, India, Ecuador, China and Argentina. The majority of frozen fish are imported from EU countries as salmon is imported from Netherlands and hake from Spain.

The Greek consumers have access to seafood products in Greek market mainly through fishmongers and retailers. Hotel, restaurant and catering sectors are also significant due to out of home consumption but mainly due to the fact that Greece is a popular touristic destination.

Production of final products in Greece (mean 2011-2015 values) comprised mainly fishery products freezing (76.9%, ca. 39.8 thousand tonnes final valued of approximately €177.2 million), fishery products processing (21.5%, ca. 11.1 thousand tonnes final valued of approximately €55.1 million) and deshelling of mussels (1.6%, ca. 0.8 thousand tonnes final valued of approximately €2.4 million). Moreover, sub-segmented final processed fishery products could be given as follows: canned (45.3%, ca. 5.3 thousand tonnes final valued of approximately €18.9 million), smoked (20.5%, ca. 2.4 thousand tonnes final valued of approximately €13.1 million), salted (14.5%, ca. 1.7 thousand tonnes final valued of approximately €9.3 million), ready to eat (11.9%, ca. 1.4 thousand tonnes final valued of approximately €11.4 million), filleted (5.2%, ca. 0.6 thousand tonnes final valued of approximately €5.2 million) and finally marinated (2.6%, ca. 0.3 thousand tonnes final valued of approximately €1.5 million). Percentages in the brackets correspond to the product quantities and the filleted processed products derives mostly from raw material derived from aquaculture (sea bream and sea bass).

Raw material used from the Greek fish processing industry sector derived (2015 data) mostly by non EU-countries (58.2%, ca. 34.0 thousand tonnes valued of approximately €103.2 million), followed by the Greek domestic quantities (24.2%, ca. 14.2 thousand tonnes valued of approximately €26.8 million) and the EU-countries quantities (17.6%, ca. 10.2 thousand tonnes valued of approximately €26.9 million). Quantities of ca. 44.7 thousand tonnes, 12.6 thousand tonnes and 1.5 thousand tonnes, valued €130.4 million, €25.3 million and €1.2 million were used by the freezing, processing and mussel deshelling subsectors, respectively. Octopus (4.2 thousand tonnes), squid (4.1 thousand tonnes), shortfin squid (3.9 thousand tonnes), anchovy (2.2 thousand tonnes) and shrimp (2.1 thousand tonnes), as well as squid (3.1 thousand tonnes), sardine (2.3 thousand tonnes), salmon (1.8 thousand tonnes), anchovy (1.4 thousand tonnes) and scomber (0.7 thousand tonnes) were the products used mostly from the freezing and the processing subsectors respectively.

#### *4.10.5 Outlook*

During the past decade, the Greek economy has suffered the effects of the southern European debt crisis. According to the Hellenic Statistics Authority, since 2008, the average monthly household expenditure has decreased by more than 30%, while at the same time the expenditure for food products being the largest part of the household expenditure (18%-20% of the total expenditure) has decreased by more than 15%. Obviously, the seafood processing sector has been negatively affected by the diminishing expenditure of households, thus losses were recorded from 2012 to 2014 for the micro and the small enterprises and diminishing profit for the larger enterprises. On top, as the vast majority of the raw material in the Greek seafood processing sector are imported, capital controls and scarce liquidity through bank loans has been restricting access to raw material.

The market for processed seafood products in Greece is expected to expand from 2016 onwards mainly owing to the expected rise of the demand from the hotel, restaurant and catering sector. As the arrivals and the expenditure of tourists is steadily increasing in Greece since 2016, a positive effect on the seafood processing sector is expected.

#### *4.10.6 Data coverage and quality*

Economic variables of the Greek processing industry are based on the information provided by Fisheries Research Institute (FRI) of the Hellenic Agricultural Organisation-Demeter (HAO-Demeter) that belongs to the Greek Ministry of Rural Development and Food. FRI collected economic data basing mainly on the questionnaires, but also on statistical forms that are provided by the Greek Ministry of Rural Development and Food and other administrative sources, such as official balance sheets, chambers of commerce and the national statistical office. The questionnaires are distributed by FRI to the owners of SME's, so all economic active enterprises are involved in the survey. The data for small SME's (less than 10 employees), were gathered only through the questionnaires and the statistical forms from the Ministry in charge. The data collection type was census for all fish processing industry segments for the years from 2011 to 2015.

## 4.11 Ireland

### 4.11.1 General overview of the Irish fish processing sector

There were 161 fish processing enterprises in Ireland in 2015. The total number of fish processing enterprises has decreased by 6% since 2008 but this has not affected turnover which in 2015 was estimated at €685.8 million, an increase of 5% from 2014.

In 2015, there were approximately 2,963 FTE's employed in the fish processing industry which was made up of 2,005 Male FTE's and 958 Female FTE's. Male employees represent around 68% of the total employees and the proportion of male/female employees has been relatively constant over time. Investment in the seafood industry has led to an increase in the numbers employed through the provision of grant aid in specific schemes and programmes influencing the number of FTE.

The industry comprised of finfish, shellfish, smoked, pelagic and whitefish operators. Shellfish and whitefish processors accounted for the largest number companies in Ireland. Many companies in Ireland specialised in more than one species. The processing sources its raw material from domestic and foreign landings into Irish ports, aquaculture production and imports. In 2016 there were 281 thousand tonnes of seafood landed by domestic and foreign vessels into Irish ports with an estimated value of €376 million. The primary landing ports in 2015 were Killybegs, Castletownbere, Dingle, Dunmore East, Ros a Mhil, Kilmore Quay, Howth, Greencastle, Union Hall, and Clogherhead. These ports accounted for 82% of the value of fish landings in Ireland in 2015. The top fisheries species landed in 2015 were Atlantic Mackerel, Norway Lobster, Blue Whiting, Monkfish, Horse Mackerel, Hake, Atlantic Herring, Megrim, Crab Edible and Tuna Albacore.

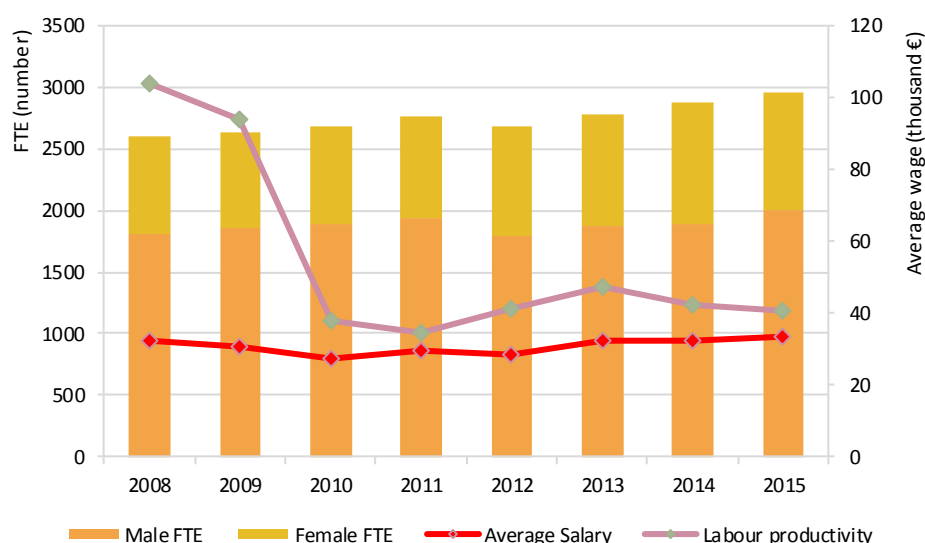
**Table 4.11.1: Irish fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	172	169	169	168	164	165	162	161	▼ -1%	▼ -6%
≤10 employees	93	98	96	97	87	86	84	92	▲ 10%	▼ -1%
11-49 employees	58	60	60	57	58	57	55	47	▼ -15%	▼ -19%
50-249 employees	21	11	13	14	19	22	23	22	▼ -4%	▲ 5%
≥250 employees	0	0	0	0	0	0	0	0	■ 0%	■ 0%
<b>Employment (number)</b>										
Total employees	2,867	3,020	3,064	3,200	3,342	3,534	3,688	3,797	▲ 3%	▲ 32%
Male employees	2,007	2,102	2,143	2,226	2,245	2,364	2,421	2,573	▲ 6%	▲ 28%
Female employees	860	918	921	974	1,097	1,170	1,267	1,224	▼ -3%	▲ 42%
FTE	2,596	2,633	2,677	2,761	2,678	2,789	2,874	2,963	▲ 3%	▲ 14%
Male FTE	1,817	1,859	1,891	1,942	1,797	1,867	1,886	2,005	▼ -7%	▼ -1%
Female FTE	779	774	786	819	881	922	988	958	▲ 8%	▲ 13%
<b>Indicators</b>										
FTE per enterprise	15.1	15.6	15.8	16.4	16.3	16.9	17.7	18.4	▲ 4%	▲ 22%
Average wage (thousand €)	32.2	30.5	27.5	29.5	28.2	32.6	32.5	33.2	▲ 2%	▲ 3%
Unpaid work (%)	5.8	6.0	5.2	4.7	4.9	3.4	3.5	3.4	▼ -3%	▼ -42%

Aquaculture production in 2016 was 43.9 thousand tonnes with an overall value of €167 million. The primary aquaculture species in Ireland were seabed cultured Mussels, Salmon (predominately

organic), Rope Mussels and Gigas Oysters. The most valuable of these species was Salmon which accounted for 62% of the value of overall aquaculture production in Ireland followed by Gigas Oyster (€41 million). The majority of aquaculture is still carried out along the western seaboard.

The employment and number of enterprises per category for 2008 were provided based on the best available information. However, for 2009-2016 an employment survey was carried out and this information allowed for the reclassification of enterprises into the most appropriate segments. Employment figures have demonstrated a positive trend since 2008 with both the number of FTE per enterprise and the average wage increase as much as 22% and 21%, respectively. FTE per enterprise has risen since 2008 by as much as 22% and this may reflect the rise in the amount of full time workers, a reduction in seasonal workers or a combination of both. The average wage decreased in 2009 to €28 thousand due to the downturn in the national economy and an increase in the number of seasonal staff employed. This figure recovered in 2013 and has increased to €32 thousand in 2015, a 2% increase from 2014.



**Figure 4.11.1: Irish employment trends, 2008-2015**

#### 4.11.2 Economic performance of the Irish fish processing sector

Table 4.12.2 details income, costs and overall economic performance for the Irish processing industry for the period 2008-2015. The amount of total income generated by the Irish fish processing industry in 2015 was €760.8 million, consisting almost exclusively by turnover (90%). Total income increased has decreased by 2% from 2014 to 2015 but this reduction was driven by a decrease in other income while total turnover maintained its upward trajectory with a 5% increase. Subsidies remained consistent around 1% of turnover.

It should be noted that the data for 2008 & 2009 may not be indicative due to the difference in the sampling methodology used between the years 2009 and 2010. The enterprises sampled in the 2010-2012 survey represent a sample of the main seafood processing companies in Ireland and the data provided may be more indicative than those provided in the 2008 & 2009 data set which was taken from a benchmarking study of the industry. The response rate of enterprises with ≤10 employees was low and this segment represents the largest number of total enterprises in the population. This issue is relevant for a number of years so caution should be taken with the data for this segment for all years. Therefore, the estimated data for this segment and its associated figures may be under/over representative of the industry.

The cost structure is dominated by raw material costs, representing 71% of total production costs and 69% of total income in 2015. In the same year, other operational costs and labour costs gave a contribution of 13% and 14% respectively to the total production costs.

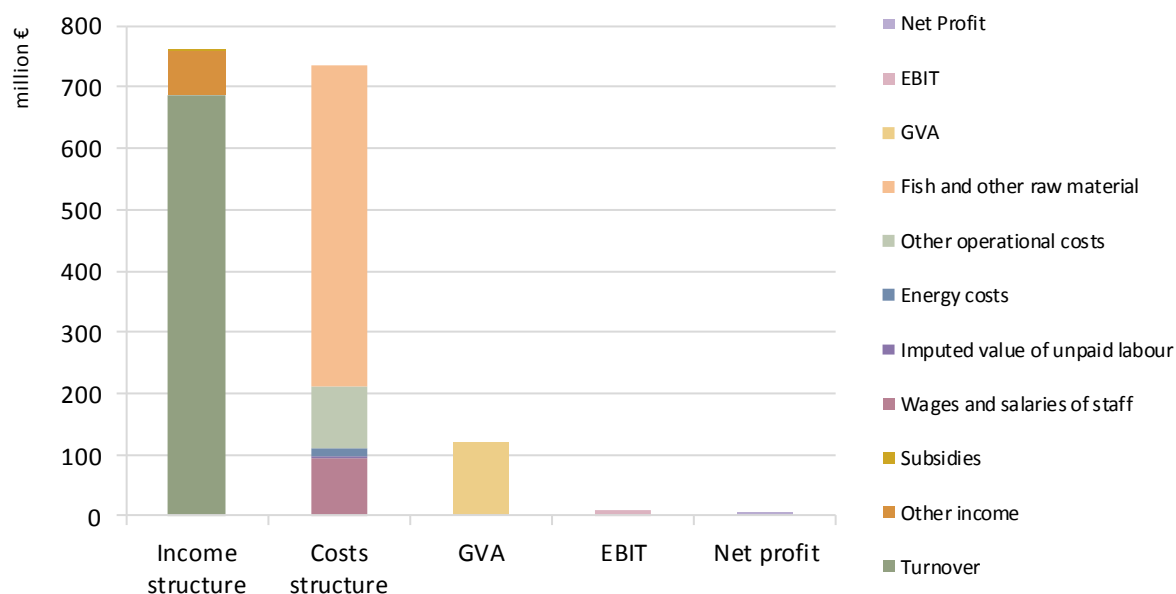
**Table 4.11.2: Economic performance of the Irish fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	571.5	537.9	544.8	558.7	656.5	613.3	655.3	685.8	▲ 5%	▲ 20%
Other income	4.0	1.3	0.9	2.8	7.8	37.5	118.3	71.2	▼ -40%	▲ 1683%
Subsidies	5.9	4.7	3.8	3.5	3.3	1.7	3.8	3.7	▼ -3%	▼ -37%
<b>Total Income</b>	<b>581.4</b>	<b>543.9</b>	<b>549.5</b>	<b>564.9</b>	<b>667.6</b>	<b>652.6</b>	<b>777.5</b>	<b>760.8</b>	▼ -2%	▲ 31%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	282.5	270.3	355.2	388.5	463.0	418.7	524.0	524.4	▲ 0%	▲ 86%
Wages and salaries of staff	78.8	75.4	69.8	77.7	71.9	87.7	90.3	95.2	▲ 5%	▲ 21%
Imputed value of unpaid labour	4.9	4.8	3.9	3.8	3.7	3.0	3.2	3.3	▲ 2%	▼ -32%
Energy costs	13.1	12.6	15.1	8.8	10.5	8.2	12.5	11.4	▼ -9%	▼ -13%
Other operational costs	9.6	9.2	73.4	69.5	80.0	92.7	114.7	100.7	▼ -12%	▲ 953%
<b>Total production costs</b>	<b>388.9</b>	<b>372.2</b>	<b>517.3</b>	<b>548.2</b>	<b>629.1</b>	<b>610.4</b>	<b>744.8</b>	<b>735.0</b>	▼ -1%	▲ 89%
<b>Capital Costs (million €)</b>										
Depreciation of capital	15.4	17.8	20.2	14.3	15.9	10.9	13.3	15.6	▲ 17%	▲ 1%
Financial costs, net	3.3	3.2	3.9	3.3	3.6	2.4	3.2	2.9	▼ -10%	▼ -13%
Extraordinary costs, net	0.0	1.7	0.6	0.3	2.6	0.0	0.4	0.0	▼ -100%	▲ 0%
<b>Capital Value (million €)</b>										
Total value of assets	270.5	258.8	233.0	177.2	199.6	179.0	298.1	403.0	▲ 35%	▲ 49%
Net Investments	8.6	8.3	19.6	17.6	19.4	11.1	18.4	40.5	▲ 120%	▲ 369%
Debt	206.0	197.1	98.9	75.7	75.6	40.9	85.3	70.8	▼ -17%	▼ -66%
<b>Economic performance (million €)</b>										
Gross Value Added	270.3	247.2	102.0	94.7	110.8	131.2	122.4	120.6	▼ -1%	▼ -55%
Operating Cash Flow	192.5	171.7	32.2	16.7	38.4	42.2	32.7	25.8	▼ -21%	▼ -87%
Earning before interest and tax	177.1	153.9	12.0	2.4	22.6	31.3	19.3	10.2	▼ -47%	▼ -94%
Net Profit	173.8	150.8	8.1	-0.9	18.9	28.9	16.2	7.4	▼ -55%	▼ -96%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity	104.1	93.9	38.1	34.3	41.4	47.1	42.6	40.7		
Capital productivity	99.9	95.5	43.8	53.5	55.5	73.3	41.1	29.9		
GVA margin	47.0	45.8	18.7	16.9	16.7	20.2	15.8	15.9		
EBIT margin	30.8	28.5	2.2	0.4	3.4	4.8	2.5	1.3		
Net profit margin	30.2	28.0	1.5	-0.2	2.8	4.4	2.1	1.0		
Return on Investment	65.5	59.5	5.1	1.4	11.3	17.5	6.5	2.5		
Financial Position	76.2	76.2	42.4	42.7	37.9	22.8	28.6	17.6		
Future Expectation Indicator	-2.5	-3.7	-0.3	1.9	1.7	0.1	1.7	6.2		

In terms of economic performance, the Gross Value Added (GVA), Operating Cash Flow, Earnings before Interest and Tax and Net Profit for the Irish processing sector, in 2015 were €120.6 million, €25.8 million, €10.2 million and €7.4 million, respectively.

Ireland's Future Expectation Indicator (FEI) has shown an increase over the period 2008-2015 (-2.5% in 2008 to 6.2% in 2015). The impact of the crisis was visible before 2011 after which point the FEI turns positive. In Ireland the total net investment has increased by 363% during the studied period and at the same time the total assets have fluctuated, decreasing between 2011-2013 but

experience increases in 2014 and 2015. A positive indicator means that the sector is allocating resources to increase its production capacity, and therefore it expects to remain in the market to recover the cost of the investment.



**Figure 4.11.2: Economic performance of the Irish fish processing sector, 2015**

#### 4.11.3 Overview of the Irish fish processing sector by size categories

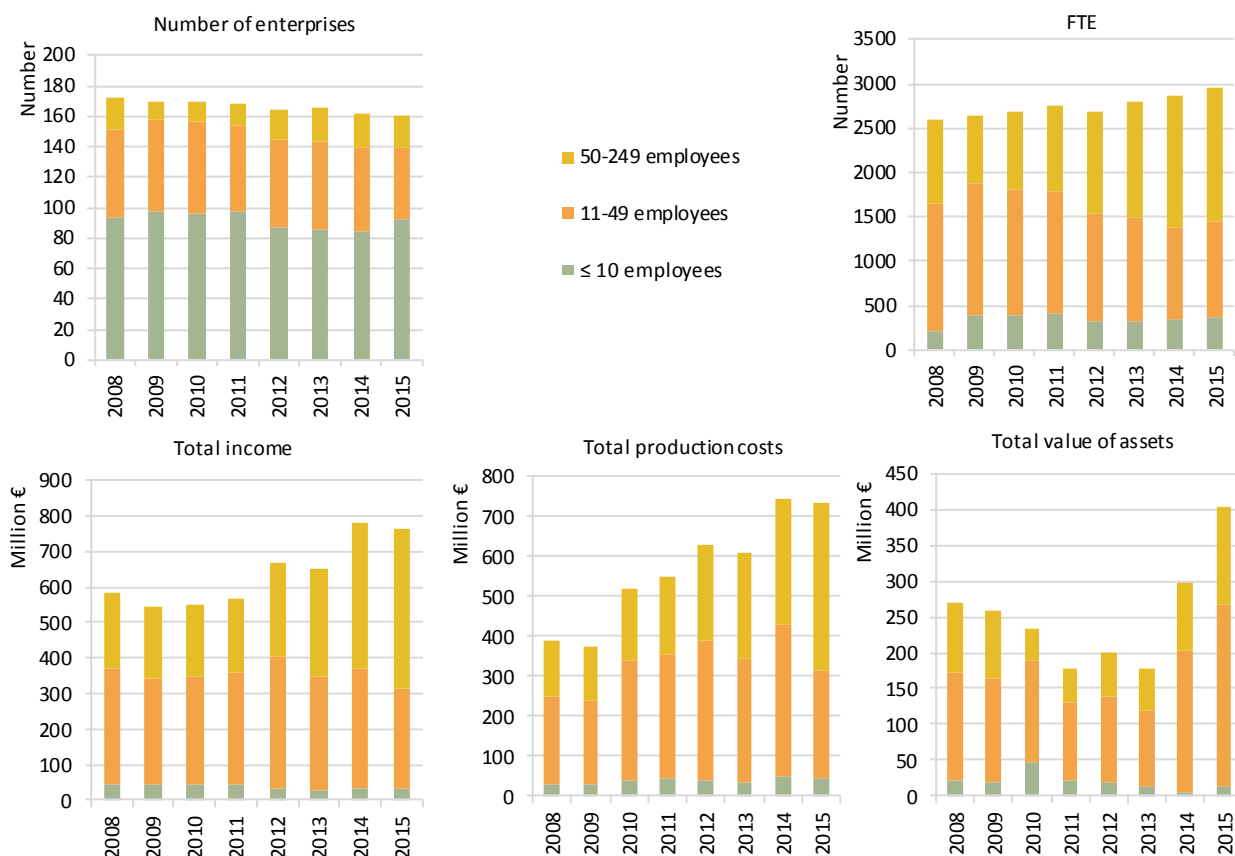
The total number of seafood companies in Ireland in 2015 with less than 10 employees was 92 and this has increased from 2014 value of 84. These enterprises represented 57% of the total number of seafood companies in Ireland in 2015. The total number of FTE employees in these companies was approximately 364 in 2015. This has increased compared to previous years, corresponding to the increase in enterprises.

The total number of seafood companies in Ireland in 2015 with 11-49 employees was 47 which is a decrease of 15% since 2008. These enterprises represented 29% of the total number of seafood companies in Ireland in 2015. The total number of FTE employees in these companies was approximately 1,079 in 2015. This has increased slightly compared to previous years due to a decrease in the number of enterprises from 55 in 2009 and also due to the increase in the number of seasonal employees.

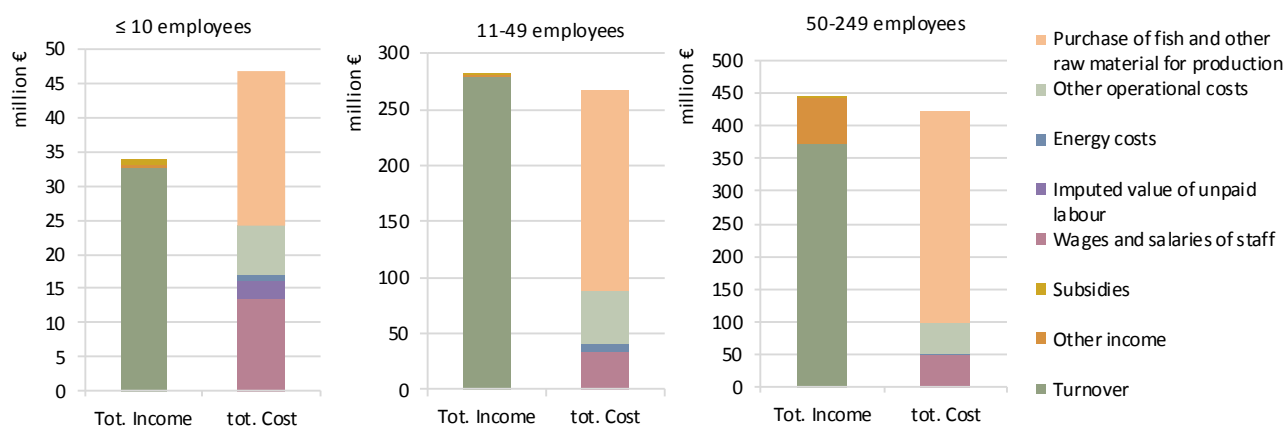
The total number of seafood companies in Ireland in 2012 with 50-249 employees was 22 remaining stable for the last three years. These enterprises represented 14% of the total number of seafood companies in Ireland in 2012. The total number of FTE employees in these companies was approximately 1,520 thousand in 2015.

This number has steadily increased compared to previous years due to an increase in the number of enterprises. There are no seafood processing companies in Ireland with more than 250 employees.

Income cost structures for 2015 show that for companies with  $\leq 10$  employee's costs were greater than income. This is driven by the cost of raw material which has increased but it is also driven by the possible inflation of total estimates for costs, especially for wages and purchase of fish and raw material. There is a high amount of variation in the sample data from which the total estimate was made which may result in overestimation of these variables.



**Figure 4.11.3: Irish main structural and economic variables trends by size category, 2008-2015**

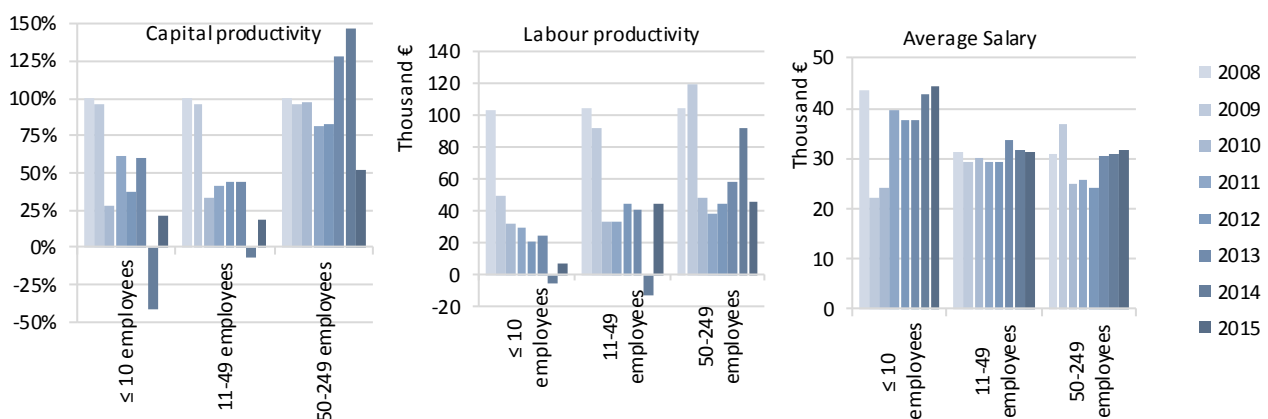


**Figure 4.11.4: Irish income and cost structure, by size category, 2015**



**Table 4.11.3: Economic performance of the Irish fish processing industry sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	44.7	41.8	43.8	43.2	35.8	29.3	31.9	34.1	▲	7%	▼ -24%
Total production costs	32.1	31.0	38.6	47.0	41.2	33.6	48.1	46.8	▼	-3%	▲ 46%
Gross Value Added	20.8	19.0	12.9	12.4	7.0	7.8	-2.1	2.5	▲	217%	▼ -88%
Operating Cash Flow	12.5	10.8	5.2	-3.9	-5.4	-4.3	-16.2	-12.7	▲	21%	▼ -202%
Earning before interest and tax	11.3	9.4	-1.3	-6.3	-7.3	-5.6	-16.8	-13.2	▲	22%	▼ -216%
Net Profit	11.1	9.2	-2.4	-6.8	-7.6	-5.9	-17.2	-13.9	▲	19%	▼ -226%
<b>between 11 and 49 employees</b>											
Total Income	323.8	303.0	304.4	315.2	367.5	320.1	336.2	281.4	▼	-16%	▼ -13%
Total production costs	215.5	206.4	299.3	308.1	348.2	310.9	380.9	266.7	▼	-30%	▲ 24%
Gross Value Added	150.6	137.7	46.6	45.2	53.3	47.6	-13.4	47.8	▲	457%	▼ -68%
Operating Cash Flow	108.3	96.6	5.1	7.2	19.3	9.2	-44.7	14.7	▲	133%	▼ -86%
Earning before interest and tax	99.7	86.7	-2.2	-1.7	9.5	3.8	-52.5	6.3	▲	112%	▼ -94%
Net Profit	97.9	85.0	-3.4	-3.6	8.0	3.1	-54.3	5.3	▲	110%	▼ -95%
<b>between 50 and 249 employees</b>											
Total Income	212.9	199.2	201.3	206.6	264.3	303.3	409.4	445.3	▲	9%	▲ 109%
Total production costs	141.2	134.9	179.4	193.2	239.7	266.0	315.7	421.5	▲	33%	▲ 198%
Gross Value Added	99.0	90.5	42.5	37.2	50.5	75.9	137.9	70.3	▼	-49%	▼ -29%
Operating Cash Flow	71.7	64.3	21.9	13.4	24.5	37.3	93.6	23.8	▼	-75%	▼ -67%
Earning before interest and tax	66.0	57.8	15.4	10.4	20.4	33.1	88.7	17.1	▼	-81%	▼ -74%
Net Profit	64.8	56.7	14.0	9.5	18.5	31.7	87.7	16.0	▼	-82%	▼ -75%



**Figure 4.11.5: Irish capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

#### 4.11.4 Trends and drivers for change

The global population is projected to grow to 8 billion by 2025 and Ireland is uniquely placed to play a key role in addressing the global demand for healthy seafood proteins.

The Irish seafood industry is relatively small in scale but has an excellent raw material base to work from. It is also quite under-scaled in comparison with other international companies. Despite the uncertainty surrounding the impact of Brexit on Ireland, the value of the Irish Seafood Industry was estimated to be worth €939 million. The domestic market grew by approximately 2.6% in sales over a 52-weeks period to €380 million – which is comprised of estimated retail sales of €239 million and estimated foodservice sales of €141 million. This was boosted by a further increase in seafood exports valued at €559 million, an overall increase of 5% on 2012.

In order to grow the industry further and build scale and competitiveness the Irish seafood industry needs access additional sources of raw material with a clear focus on attracting international landings into Irish ports. This will enable the sector to capitalise on emerging market opportunities. There is a need to shift the focus from commodity to premium and value-add exports. Also, to decrease Irish reliance on traditional EU markets and look to emerging markets such as Asia. China has a growing middle class population who are driving increased seafood consumption.

Exports to the Chinese (incl. Hong Kong) market was valued at €30 million in 2016, this is an increase of 24% on the previous year. Ireland's Seafood Development Agency (BIM) is continuing to work on a collective scheme aimed at promoting collaborations between seafood companies exporting to China to work collectively to reduce duplication costs, boost profitability and increase competitiveness in export markets.

In Ireland, 100% of salmon produced is farmed organically and has organic certification. All processing of harvested organic salmon must be processed in an Organic Certified Processing Plant. The primary processing of organic salmon is carried out in three organic certified processing plants. Any further processing carried out subsequent to primary processing in the chain (secondary processing, smoking etc.) must have organic certification. Further to the three primary processors of salmon mentioned above all have additional voluntary 3<sup>rd</sup> party quality and food safety certification including BIM's Certified Quality Aquaculture (CQA) Processing standard, BRC and ISO 22000.

BIM's Responsibly Sourced Seafood (RSS) standard is an accredited, 3<sup>rd</sup> party verified standard comprising two integrated elements, the fishing vessel standard and the onshore handling & quality standard. Certified members must also participate in a Fisheries Improvement Programme relevant to their species. There are four FIPs in Ireland, the Irish Brown Crab FIP (active), Irish Prawn FIP (prospective), Tuna FIP and Whitefish FIP (in development stage). Certification to the new RSS standard started in 2017. Currently, three onshore facilities and 15 vessels are verified to this standard with over 30 in application. A further four onshore facilities plan to implement the standard in 2018.

Processing companies along with certification are looking to improve their environmental performance through energy and water conservation. The Irish Seafood Development Agency's (BIM) and the Environmental Protection Agency's (EPA) Green Seafood Business Programme, funded through EMFF, aims at assisting Irish seafood processors in reducing their environmental impacts and, more importantly, reducing production costs. This programme has engaged with over thirty seafood processors, since 2012, throughout Ireland with the aim of identifying examples of good and bad practice within this very diverse sector.

These programmes have realised significant cost savings. Leak detections and leak mitigations saved one processor between €3,000 and €5,000 annually. Another processor after working with the Green Programme reduced electricity usage and waste to landfill by 3.5% and 36% respectively despite increase in production by 400 tonnes. By installing solar panels (part-funded by BIM) they will also save €18,000 per year in electricity costs.

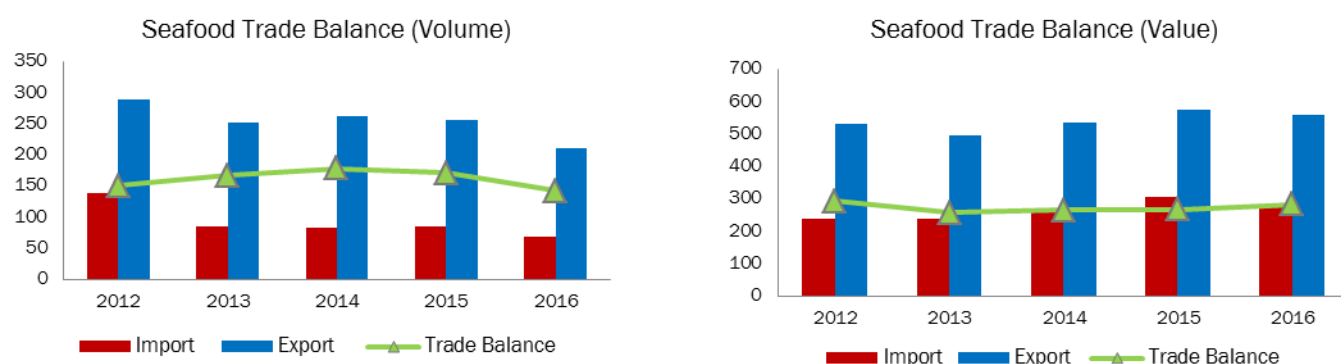
Water usage monitoring was conducted for another processor. After the initial site assessment was made, the flow rates and times for cleaning were measured for all areas for the processor. From these an estimate for the water used for cleaning annually, and the associated costs, was made. This provided the information to do a detailed cost benefit for an upgraded centralised cleaning

system. The savings made have seen a 30% reduction in the volume of water used per tonne of product processed the payback on the investment was about 13 months and has resulted in significant annual savings on water charges up to €20,000. Another large company invested in modernising its energy and water usages and with a financial investment of €86,000 they have made cost savings of €32,000 per annum making the payback period 2.5 years. The reduction in energy usage has the environmental benefit of reducing CO<sub>2</sub> by 137.5 tonnes per annum.

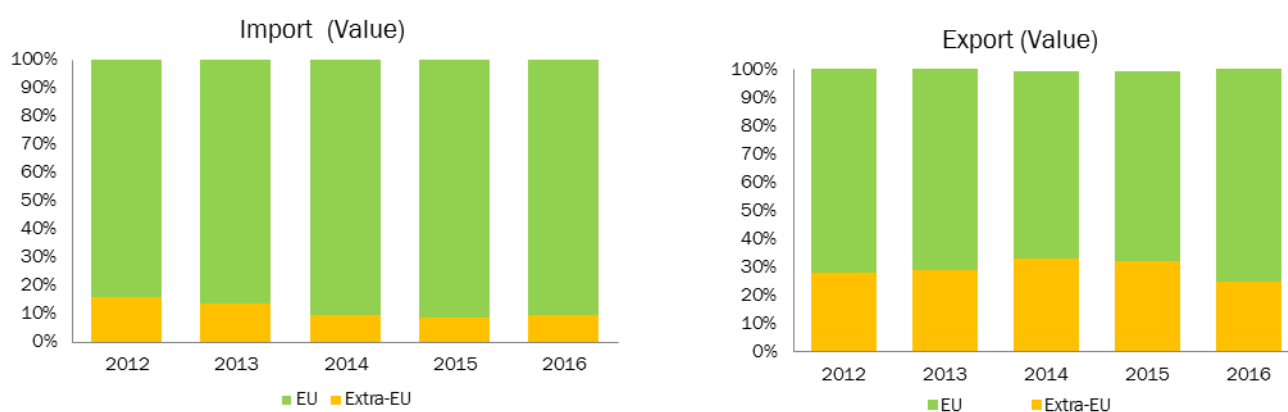
### *Irish seafood trade*

Irish seafood exports were valued at €559 million in 2016, an increase of 5% since 2012. The volume of seafood exported in 2016 was 212,300 tonnes - a decrease of 27% since 2012. Irish seafood imports were valued at €276 million in 2016 up 14% since 2012. The volume of Imports in 2012 was 69,000 tonnes - a decrease of 50% since 2012.

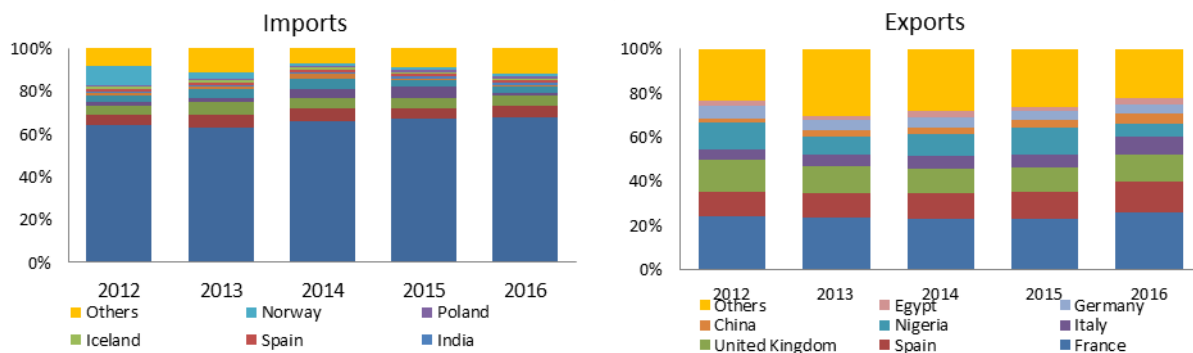
In 2016, approximately 44% of Irish seafood was exported to EU countries. Irish seafood exports to emerging markets such as China, Hong Kong and Japan continue to experience growth.



**Figure 4.11.7: Irish seafood trade balance trends in volume (left) and value (right)**



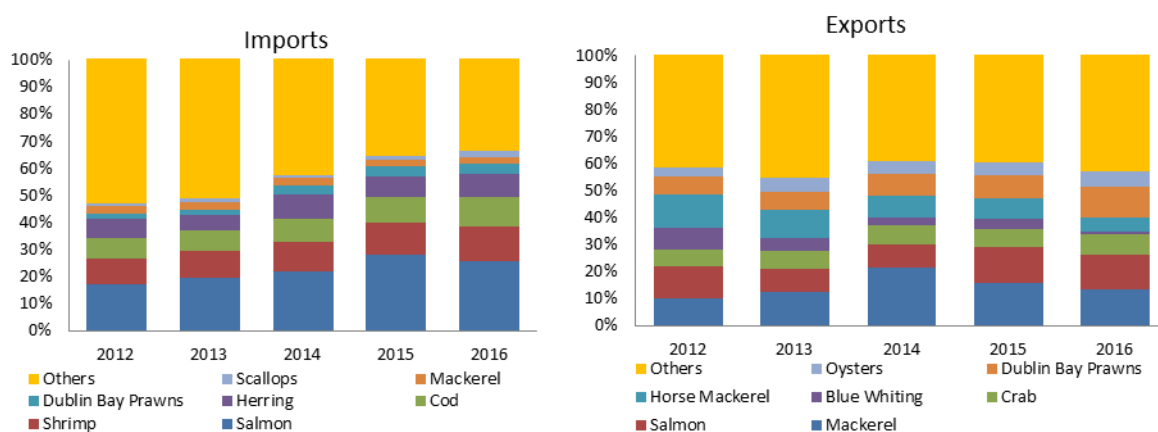
**Figure 4.11.8: Irish seafood imports (left) and exports (right) composition by type of origin/destination: shares in value**



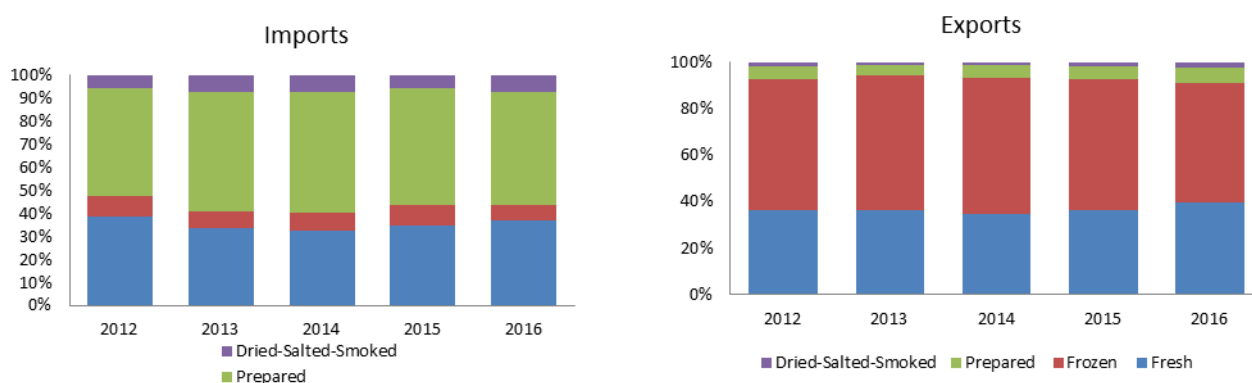
**Figure 4.11.9: Irish seafood imports (left) and exports (right) trends by most relevant trade partners: shares in value**

In 2016, the top countries Ireland exported seafood to were France (25%), Great Britain (14%), Spain (14%) and Italy (8%). The top species exported in 2016 were Mackerel (13%), Salmon (12%), Dublin Bay Prawns (11%), Crab (7%) and Oysters (6%).

In 2016, the top countries Ireland imported seafood from were Great Britain and Northern Ireland (67%), France (8%), Germany (6%) and Denmark (3%). The top species imported in 2012 were Salmon (22%), Shrimp (11%), Cod (9%) and Herring (4%).



**Figure 4.11.10: Irish seafood imports (left) and exports (right) trends by most relevant commercial species: shares in value**



**Figure 4.11.11: Irish seafood imports (left) and exports (right) trends by type of products: shares in value**

In 2016, exports by type of product were as follows: Fresh (39%), Frozen (52%), Prepared (7%) and Dried, Salted, Smoked (2%). In 2016, imports by type of product were as follows: Fresh (37%), Frozen (7%), Prepared (49%), dried salted and smoked (7%).

#### *4.11.5 Outlook*

The processing industry remains an important sector in the Irish Blue Economy. Ireland's ocean economy report (SEMRU) indicated that the processing industry accounts for 11% of direct turnover, 9% direct GVA and 9% of FTE for the total Irish Blue economy.

Predicted total income for the processing sector for 2016 is €790.5 million with an associated total production cost of €729 million. In 2016, there were 156 seafood processing companies providing 3 949 jobs including full time, part time and casual employment. Within this sector, 16% of the companies had revenues over €10 million. Of the remainder, 33% had revenues between €1 and €10 million and 51% of less than €1 million. The highest seafood category produced is whitefish/multi-species making up 44% of production, followed by Shellfish (25%), Salmonids (21%) and Pelagics (10%).

#### *Brexit*

More than 30% of Irish fishing quotas are caught in Irish waters and the UK is one of Ireland's main export (14%) destinations valued at €78 million. Conversely Ireland's imports an estimated €186m of seafood for direct retail and raw material, particularly salmon and whitefish. Specifically, prepared seafood (excl. filleted) accounts for €91 million of Irish imports from the UK (54%), €13.8 million is Filleted (8%), €44.4 million is Whole Fish (26%) and €20.2 million consists of Fresh or Frozen Shellfish (12%). Brexit will have many implications and challenges for the Irish seafood sector including currency volatility, tougher UK trade and more competition from UK processors. There may also be implications for supply chain management and tariffs.

Post Brexit there is the potential for tariffs on imports and exports. Higher estimates of tariffs could be based on third country rates for the European Union and would be as follows: Crab, 8%, *Nephrops* 12%, Whitefish, (Monkfish fresh, 15%; Haddock fresh, 8%; Cod fresh, 12%) Pelagic (Tuna prepared 24%; Herring prepared 20%; Mackerel prepared 25%; Horse mackerel frozen, 15%) and Fish oils 11%.

High risk areas with regards to regulatory controls can be categorised under the following points, additional time delays/costs, impact on product quality, customer Service / market development, increased traffic to mainland Europe direct from Ireland, HR & staffing issues, technical considerations, and third country registration.

Additional time delays/costs is one of the most significant potential impacts, with wide reaching effects. Depending on the outcomes of Brexit negotiations, there may be an increased number of customs, border controls and product checks. This would have a range of potential time delays and increased costs for products being shipped to, through or imported from the UK. Additional time required to process paperwork, customs for Irish seafood being transported into or through the UK customs would increase "time to market". This will impact Irish companies' costs, product quality and customer base. Short shelf-life products such as fresh live Irish mussels may be exposed to significant delays, which may result in the shipment of these and similar products becoming economically unviable.

#### *4.11.6 Data coverage and quality*

The collection and collation of data from the processing sector relied on the use of questionnaires completed in respect of applications for the receipt of EU or National grant aid and audited accounts from the Companies Registration Office (CRO) and an employment survey.

Survey target rates vary between employment categories with a high achievement of sampling targets in a number of segments and an under- achievement of targets in other segments. The achieved sample numbers for companies in the size category 11-49 and 50-249 were greater than the planned sample number due to a larger number of returns from these companies. For companies with less than 10 employees the achieved sample number was less than the planned sample number as there was not as much information made available.

As mentioned previously in this chapter the sample data collected from the industry are raised to total population level. As such, there is variation associated with estimated variables from sample data and this may have introduced sample bias and affected the final raised data sets.

## 4.12 ITALY

### 4.12.1 General overview of the Italian fish processing sector

The Italian fish processing industry has been characterized, in 2015, by a total number of enterprises equal to 785 units, producing a turnover of about €2.8 billion. This number includes enterprises processing fish products as "main" and as "non-main" activities. This overall number includes both joint-stock and limited companies as well as other forms (such as individual companies).

The "main" segment was equal, in 2015, to 577, representing around 74% in number and 80% in terms of contribution to the total turnover of the sector. On the other hand, enterprises processing fish products not as a main activity represent, in numerical terms, less than 26% of the total (208) while contribute for 20% to the total turnover of the sector.

The Italian fish processing industry is a very concentrated sector: the main segment is the canning sector with the most important products being canned and preserved products, mainly tuna, anchovies, scombers and sardines. In 2015, the canned sector represented around 54% of total turnover of processing industry. In particular, the production of canned tuna was equal to 67.3 thousand tonnes in volume and less than €1.1 billion in value. It represents also, in terms of per capita consumption, the most important processed fish product, in fact the average quantity per capita is a 2.4 kg over 2015-2016. Total consumers of tuna represent 94% of the Italian population and almost 1 Italian on 2 eats tuna products once per week. However, it is not only the internal consumption that drives the Italian canning tuna industry, but also the brilliant export trend, which, in 2015 registered a substantial increase (+ 4.2%) with a volume of exports of 89,491 tons. Italy is, thus confirmed, as one of the most important markets in the world for the consumption of this food and as the second European producer after Spain (source: ANCIT, Associazione Nazionale Conservieri Ittici e delle Tonnare)

The following analysis is based only on those enterprises processing fish as a "main-activity", according to the current specification of the DCF.

The Italian fish processing industry is characterized by two different typology of organization on the market: on one hand, there is a modern sector, made up of few large industrial companies, and, on the other hand, there is the traditional sector, highly atomized and formed mainly by micro, small and medium-sized enterprises, many of which are organized on a family basis.

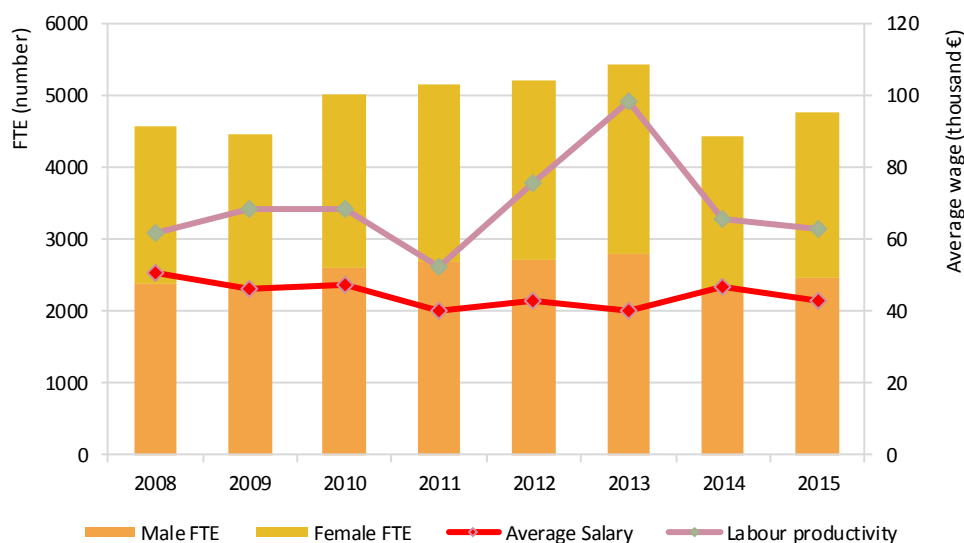
The 77% of enterprises is represented by micro-enterprises, with less than 10 employees. In general, looking at the other dimensional classes, it can be strongly asserted that the Italian fish processing industry is dominated by small companies, as 97% of enterprises are represented by companies with less than 50 employees (sum of classes <10 and 11-49). Table 4.12.1 highlights that in the last year smaller enterprises have increased (+4%) while the greatest contraction was recorded in segment 11-49 (-11%), which reached the lowest number of the entire period reported (2008-2015). Segment 11-49, in terms of employees, is similar, in economic terms, to segments with employees > 50, but it is not equally profitable. Among the main causes, there is the tax burden: a greater taxation impact in comparison with other segments.

As far as the geographical localisation, the large part of enterprises is located in the Southern Italy and in the islands (Sicily and Sardinia). Indeed, over 50% of companies are concentrated in four regions, such as: Sicily (23%), Calabria (11%), Campania and Veneto (9% each). Sicily is, by far, also the region with highest number of employees (20% of the national total). The Italian region with the greatest industrial vocation is Lombardia. Indeed, in terms of number of employees per company, the Lombardia region has over 21.6 employed for each company active in 2015, followed by Veneto with about 18 employed per company, while Sicily has only 9.3 employed per company. This result distinguishes the corporate structure present in Italy, where, in the South, there are more traditional small businesses, strongly based on family participation.

**Table 4.12.1: Italian fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	376	414	547	530	537	587	574	577	▲ 1%	▲ 53%
≤10 employees	192	221	347	375	372	444	430	447	▲ 4%	▲ 133%
11-49 employees	152	166	175	136	144	127	126	112	▼ -11%	▼ -26%
50-249 employees	31	27	24	18	21	16	18	18	■ 0%	▼ -42%
≥250 employees	1	0	1	1	0	0	0	0	■ 0%	▼ -100%
<b>Employment (number)</b>										
Total employees	5,425	5,285	5,950	6,109	6,197	6,292	5,628	5,926	▲ 5%	▲ 9%
Male employees	2,821	2,748	3,094	3,177	3,222	3,258	2,927	3,068	▲ 5%	▲ 9%
Female employees	2,604	2,537	2,856	2,932	2,975	3,034	2,701	2,858	▲ 6%	▲ 10%
FTE	4,572	4,454	5,015	5,149	5,223	5,426	4,422	4,778	▲ 8%	▲ 4%
Male FTE	2,378	2,316	2,608	2,677	2,716	2,809	2,299	2,474	▲ 8%	▲ 4%
Female FTE	2,195	2,138	2,407	2,471	2,507	2,617	2,123	2,304	▲ 9%	▲ 5%
<b>Indicators</b>										
FTE per enterprise	12.2	10.8	9.2	9.7	9.7	9.2	7.7	8.3	▲ 8%	▼ -32%
Average wage (thousand €)	50.9	46.2	47.4	39.8	42.7	40.3	47.0	43.1	▼ -8%	▼ -15%
Unpaid work (%)	3.9	3.8	7.9	3.8	4.4	8.0	8.1	8.2	▲ 1%	▲ 113%

The number of people employed in the sector was equal to 5,926 people consisting in 4,656 FTE. Figure 4.12.1 clearly shows that the Italian fish processing industry is a rather equal opportunity industry as the number of men and women employed in the sector is almost equal. In the observed period (2008-2015) the trend of FTE per enterprise shows a decrease (-4%), and the average labour productivity increased of around +2%. The average remuneration for employee have been affected by a decrease of -8% compared to the previous year and -15% compared to 2008. The contraction of the average salary is probably due to the employment of lower-profile employees, while managers are often external experts or consultants.

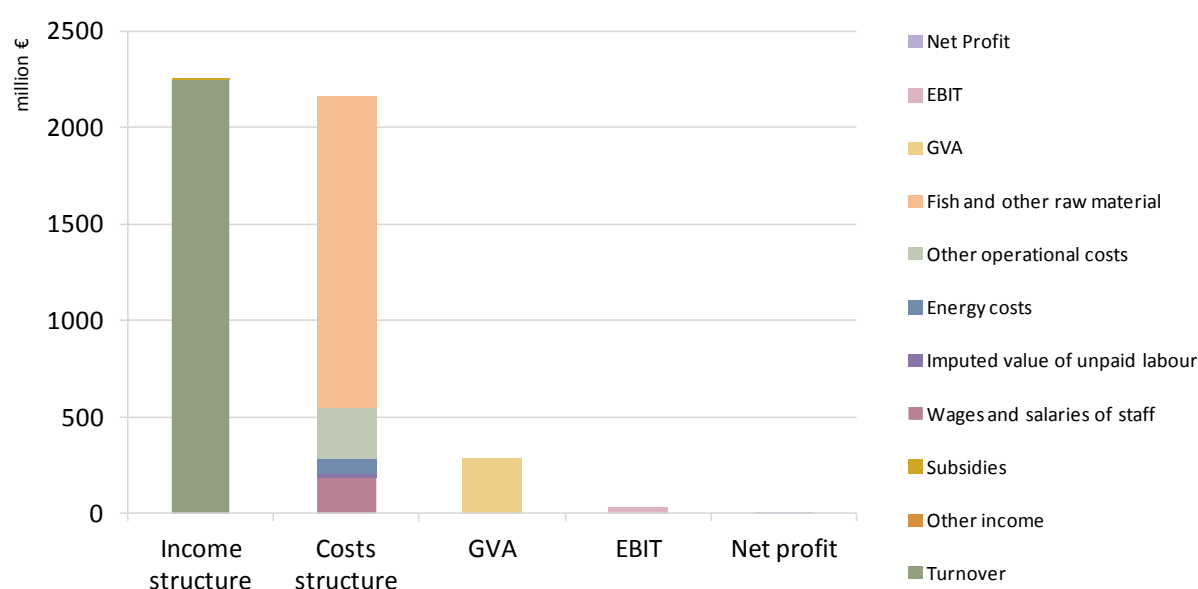


**Figure 4.12.1: Italian employment trends, 2008-2015**



#### 4.12.2 Economic performance of the Italian fish processing sector

The turnover of the sector amounted to €2,243 million in 2015, while the total income (turnover + subsidies + other income) amounted to €2,249 million. According to Italian Programme for the collection of the DCF data, turnover includes the overall turnover (i.e., turnover from all the activities as well other income). If looking at the trend, the main income items appear to have increased, compared to 2014: +0.4% for turnover and +55% for subsidies. The growth in subsidies is due to companies that, in previous years, had begun modernization activities, integration of their production processes, thanks to EFF structural funds. The increase is mainly linked to the financial flows received from companies on completion and closure of projects funded in previous years. As far as subsidies, the figures collected under the Italian NP refer mainly to incomes accounted by enterprises under item A5 according to the IV directive. According to enterprises' accounts, it results that subsidies have a very low incidence on the total income of the sector, on average 0.3%.



**Figure 4.12.2: Economic performance of the Italian fish processing sector, 2015**

Total production costs were equal to €2,165 million in 2015, representing about 96% of total income and showing an imperceptible decrease (-1%) compared to the previous year, and over the whole period considered, confirms a downward trend (-25% on the value of 2008).

It is interesting to evaluate how much income was eroded by operating costs.

Compared to a total income of €2,249 million, over 96% is used to cover direct production costs. The purchase of raw materials has a greater impact on total operating costs (+74%), although in 2015 this cost reduced by 1% and by more than 24% from 2008.

The observed long-term reduction highlights a greater capacity to acquire raw materials according to commercial agreements with international suppliers, which can guarantee favourable and more stable commercial conditions. This aspect is important for the control of the financial stability of the fish processing sector. According to the import / export statistics, Italy continues to depend on imports. The growth trend of the national sector is positive. In general, the countries from which fish is imported to be used for processing are Spain, the Netherlands and Poland among the European countries, while more and more quantities are imported from Ecuador<sup>10</sup>.

<sup>10</sup> <http://www.pesceinrete.com/php/news/9370-l-import-italiano-del-tonno-meno-vietnamita-piu-indonesiano.html>

**Table 4.12.2: Economic performance of the Italian fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	2.906,1	2.201,2	2.623,4	2.281,2	2.557,0	2.287,3	2.234,9	2.243,0	0,00%	-23%
Other income	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0%	0%
Subsidies	5,6	4,7	4,8	17,6	23,8	5,8	4,0	6,3	55%	12%
<b>Total Income</b>	<b>2.911,7</b>	<b>2.205,9</b>	<b>2.628,2</b>	<b>2.298,9</b>	<b>2.580,8</b>	<b>2.293,1</b>	<b>2.238,9</b>	<b>2.249,3</b>	<b>0%</b>	<b>-23%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	2.125,3	1.435,1	1.952,7	1.653,4	1.752,1	1.657,0	1.596,1	1.613,0	1%	-24%
Wages and salaries of staff	223,9	197,9	218,9	197,2	213,1	201,4	191,1	188,9	-1%	-16%
Imputed value of unpaid labour	9,0	7,9	18,8	7,9	9,8	17,5	16,8	16,9	0%	89%
Energy costs	119,8	93,2	87,7	97,5	92,3	81,4	79,4	78,5	-1%	-34%
Other operational costs	406,7	361,1	385,9	276,6	319,9	49,3	304,2	268,0	-12%	-34%
<b>Total production costs</b>	<b>2.884,6</b>	<b>2.095,2</b>	<b>2.664,0</b>	<b>2.232,5</b>	<b>2.387,3</b>	<b>2.006,7</b>	<b>2.187,5</b>	<b>2.165,4</b>	<b>-1%</b>	<b>-25%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	45,5	60,5	69,1	61,5	65,6	285,0	49,1	53,4	9%	17%
Financial costs, net	51,7	28,5	19,4	27,1	31,3	27,8	30,4	26,1	-14%	-50%
Extraordinary costs, net	-3,1	-4,6	2,1	1,0	-9,7	0,4	-0,8	1,1	253%	138%
<b>Capital Value (million €)</b>										
Total value of assets	2.164,8	2.166,0	2.607,2	2.118,4	2.247,8	1.976,5	1.811,8	1.724,3	-5%	-20%
Net Investments	225,9	-96,2	183,7	121,7	-7,2	-19,6	55,0	55,9	2%	-75%
Debt	1.485,4	1.425,6	1.597,9	1.444,7	1.569,0	2.281,5	1.245,8	1.174,3	-6%	-21%
<b>Economic performance (million €)</b>										
Gross Value Added	254,3	311,7	197,1	253,8	392,7	499,6	255,2	283,5	11%	11%
Operating Cash Flow	27,0	110,7	-35,8	66,3	193,5	286,5	51,4	83,9	63%	210%
Earning before interest and tax	-18,5	50,2	-104,9	4,9	127,9	1,5	2,2	30,5	1274%	265%
Net Profit	-70,2	21,7	-124,3	-22,2	96,6	-26,4	-28,2	4,4	116%	106%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	61,7	68,5	68,5	52,4	75,5	98,2	67,8	62,7		
Capital productivity	11,8	14,4	7,6	12,0	17,5	25,3	14,1	16,4		
GVA margin	8,7	14,2	7,5	11,1	15,4	21,8	11,4	12,6		
EBIT margin	-0,6	2,3	-4,0	0,2	5,0	0,1	0,1	1,4		
Net profit margin	-2,4	1,0	-4,7	-1,0	3,8	-1,2	-1,3	0,2		
Return on Investment	-0,9	2,3	-4,0	0,2	5,7	0,1	0,1	1,8		
Financial Position	68,6	65,8	61,3	68,2	69,8	115,4	68,8	68,1		
Future Expectation Indicator	8,3	-7,2	4,4	2,8	-3,2	-15,4	0,3	0,2		

<http://www.milomb.camcom.it/documents/10157/32870168/pesce-lavorato-conservato-comunicato-stampa-14-08-2017.pdf/ac8f3f92-4f1a-48dd-87d7-60a0be383df8>  
<http://www.pesceinrete.com/php/news/11286-in-italia-aumentano-import-ed-export-di-prodotto-ittico.html>

The reading of energy costs and the observation of the trend starting from 2008 must be carried out taking into account exogenous factors affecting the fish processing industry sector, such as: specific measures in the EFF and the liberalization of the energy market and the increase of collective purchases of energy from foreign countries. Energy costs represent only 4% of total operational costs, and they continue to confirm a significant role for the overall performance, although an important trend for companies to invest in energy efficiency actions has to be reported. Analysing the trend starting from 2008, energy costs have decreased by over 34%, as an effect of voluntary actions taken by companies also supported by EFF measures to support investments for the efficient use of energy. Furthermore, the cost of energy, following the liberalization of the market, has allowed new energy supply strategies. Starting from the EFF and reconfirmed in the EMFF, it is a priority for the State to support energy efficiency measures, like the introduction of new technologies, new alternative and innovative packaging, re-building facilities using low environmental impact materials, etc. At the same time, there are examples of companies that purchase electricity at the "Power Exchange". This new perspective on the purchase of consumer goods is especially important for companies that do not have high power consumption in the industrial sector to justify special supply agreements with the main national energy companies. Labour costs represents about 9% of the operative costs. In 2015 the processing sector recorded an increase of 5% on the employment side, while a decrease of 1% was reported for wages and salaries. One of the justification is linked to national policies concerning the labour market: Jobs Act, the reform of labour law in Italy, promoted and implemented in Italy and made up of various legislative measures, entered into force between 2014 and 2015. In summary, the reform introduced elastic measures to dismiss employees, and the possibility of obtaining tax benefits for several years related to hiring young workers.

As far as the performance indicators, Table 4.12.2 highlights a positive economic performance of the sector, being all the indicators increasing over the time.

The GVA provides the value for the amount of goods and services produced in an economy after deducting the cost of inputs and raw materials. It also gives a sector-specific picture of the growth of an area, industry or sector of an economy. During 2015, GVA was equal to €283.5 million, increasing of +11% compared to the previous year. Growth is not linked to the increase in total income, but rather to a general reduction in the production costs. In this regard, therefore, there is a slight reduction of the energy and wage (respectively -1%) and a decrease of the other operational cost (-12%). Among production costs, raw materials represent the item that absorbs the highest share of total incomes.

The sector shows a very positive performance also in terms of Operating Cash Flow (OCF), equal to around €83 million in 2015. Operating Cash flow gives a measure of the self-financing capacity of the sector. Since operating cash flow in 2015 increased by 65% compared to the previous year, it can be considered that the sector generates in 2015 an OCF sufficient to honour its commitments.

As far as EBIT, it was equal to €30.5 million in 2015, while the net profit has been about 7 times lower, about €4.4 million. This aspect is significant in interpreting the sector's low opportunity to generate income, since the taxation system cut the EBIT of about 50%.

The percentage impact of GVA, OCF, net profit and EBIT indicators on total income has changed over the past 4 years. Compared to the GVA there is a stable incidence with respect to the total income, in fact in 2015 the GVA has a 13% impact on total income. Net profit in 2015 affects only 0.2% of total income, but has grown significantly (+116%) compared to 2014.

The capital productivity, measuring the amount of GVA created by €1 of capital invested (or the capacity to produce GVA, in percentage terms, of 1 unit of capital invested), decreased from 25% during 2013, to about 16.4% in 2015.

The return on investments (ROI), given by the ratio EBIT/total value of assets and measuring the profitability (efficiency) of 1 unit of capital invested, increased from 0.1% (2014) to 1.8% (2015).

On the opposite, the FEI (future expectation indicator) appears to be lower in 2015 compared to 2014 (from 0.3 to 0.2). FEI should be interpreted as a proxy for the industry's wish to remain in the market in the medium/long term. It is given by the difference between net investments and depreciation compared to the total value of assets. A positive indicator means that the sector is

allocating resources to increase its production capacity, and therefore it expects to remain in the market to recover the cost of the investment. When the indicator is close to zero, it could be interpreted as an indicator that the sector is only wishing to maintain its production capacity in the future, and that it is not planning to expand. In this case, it means that the willingness of Italian fish processors to expand in the sector is highly decreasing.

#### 4.12.3 Overview of the Italian fish processing sector by size categories

Analysing the characterisation of the sector according to the size of companies in terms of number of employees, it is possible to conclude that the fish processing industry is characterised by an organisational structure divided into two main production segments:

- the first represented by a modern production segment which includes some large industrial companies;
- the second represented by a highly fragmented sector made up of micro, small and medium-sized enterprises, mainly based on a family basis.



**Figure 4.12.3: Italian main structural and economic variables trends by size category, 2012-2015**

The comparison of the three production size categories (in Italy there are not companies with more than 250 employees), the general picture is a rather uniform distribution of operating costs and the amount of income necessary to cover production costs.

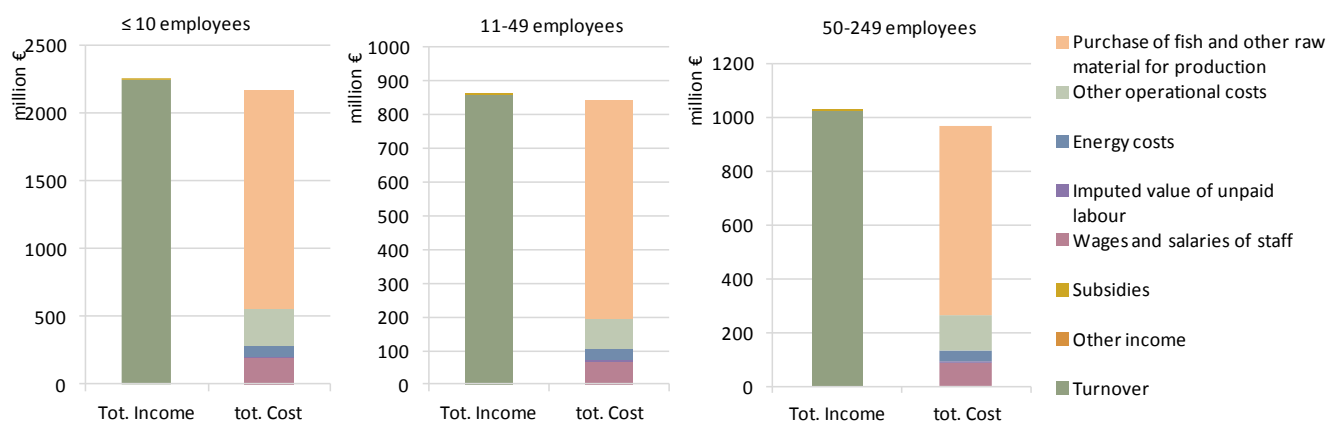
On the other hand, analysing each size categories, it can be said that the intermediate one of the Italian processing industry (11-49) is the less competitive compared to the other two.

The cost of wages and salaries is higher in the 11-49 size category, (over 10% of total operating costs). If the cost of unpaid work is added to paid employment, size category 11-49 reaches, for this aggregation, an incidence of the total cost of labour over 11%, which, compared to the total cost of labour of the size category <10 employees, means an average cost over 69%. The total cost of labour in the size category 11-49, on the other hand, is 13% higher than the total labour cost reported for size category 50 to 249. Surely, the size category 11-49 and 50-249, are more comparable for other costs, such as costs for raw materials. In size category 50-249, over 73% of total operating costs are represented by the cost of raw materials. For size category 11-49, this percentage rises to 84%. The micro and small business size category recorded low costs for raw materials (29% of total operating costs), whose percentage impact on total operating costs was about one third lower than those of companies in the size category 11-49.

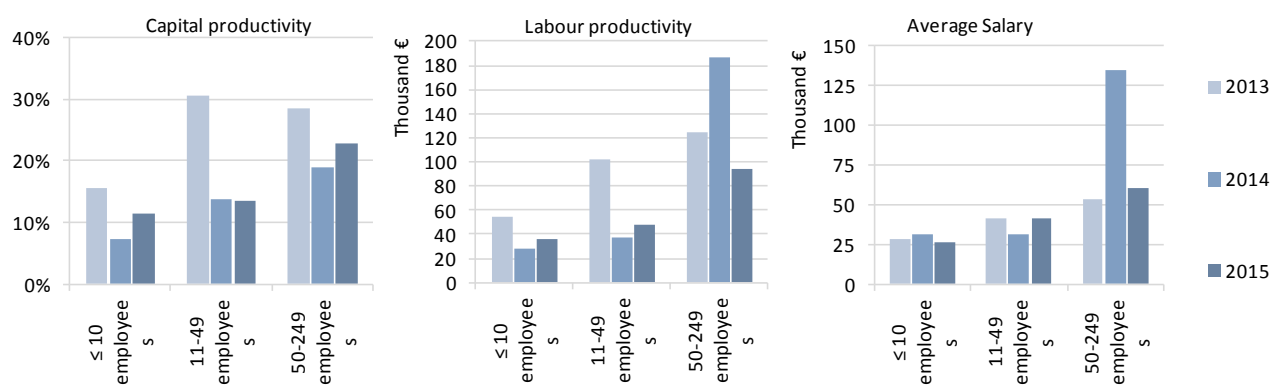
**Table 4.12.3: Economic performance of the Italian fish processing sector by size category (indicators in million €), 2013-2015**

Variable	2013	2014	2015		Δ (2014-15)	Δ (2013-15)
<b><i>less than or equal to 10 employees</i></b>						
Total Income	463.6	356.0	371.0	▲	4%	▼ -20%
Total production costs	407.5	349.8	351.7	▲	1%	▼ -14%
Gross Value Added	102.9	39.2	52.6	▲	34%	▼ -49%
Operating Cash Flow	56.1	6.3	19.2	▲	208%	▼ -66%
Earning before interest and tax	5.2	-4.8	6.9	▲	242%	▲ 32%
Net Profit	-3.7	-12.0	0.1	▲	101%	▲ 103%
<b><i>between 11 and 49 employees</i></b>						
Total Income	1,055.6	917.4	873.2	▼	-5%	▼ -17%
Total production costs	898.8	886.9	843.9	▼	-5%	▼ -6%
Gross Value Added	252.7	111.8	101.7	▼	-9%	▼ -60%
Operating Cash Flow	156.8	30.5	29.2	▼	-4%	▼ -81%
Earning before interest and tax	27.1	11.5	15.6	▲	36%	▼ -42%
Net Profit	16.4	-0.1	7.6	▲	7278%	▼ -54%
<b><i>between 50 and 249 employees</i></b>						
Total Income	807.4	1,001.6	1,021.1	▲	2%	▲ 26%
Total production costs	700.3	950.9	969.7	▲	2%	▲ 38%
Gross Value Added	177.4	140.4	145.0	▲	3%	▼ -18%
Operating Cash Flow	107.1	50.7	51.4	▲	1%	▼ -52%
Earning before interest and tax	2.6	31.7	24.0	▼	-24%	▲ 824%
Net Profit	-5.6	20.1	12.7	▼	-37%	▲ 326%

Overall income registered a slight improvement, mainly due to the 6% increase compared to 2015 for size category <10 and size category 50-249. Negative sign (-5%) was generated by the intermediate size category (11-49). Only size category 50-249, recorded a net profit while the other two size categories had a rather negative result, respectively - €1million (<10 employees) and - €8 million (11- 49 employees). Although the two previous size categories have confirmed a negative result for net profits, they have, compared to 2015, started to regrow.



**Figure 4.12.4: Italian income and cost structure, by size category, 2015**



**Figure 4.12.5: Italian capital productivity, labour productivity and average salary trends, by size category, 2013-2015**

Capital productivity follows a fluctuating trend in size category <10, while it is more stable in size category 11-49, where it has been recorded a steady growth trend over the last two years. The level of average wages recorded an increase for the size category 50-249 in the last three years, but in 2015 the degree of this indicator has halved compared to 2014. The reduction in the average salary is registered also in the size category <10, while it has increased in size category 11-49. This performance has suffered from the effects of tax incentives to employment, but also reflects the difficulty of the size category 11-49 to anticipate and self-finance the costs of staff, taking a very precautionary approach to the possibility for new employment. For size category 11-49, it is interesting to read the figure of labour costs and average wages which, together with the value of other operating costs, have grown over the last two years. Probably, companies included in size category 11-49 are more likely to resort to work on call, occasional or seasonal and especially to outsource activities with higher specialization (for example internal biologists instead of recurring to external institutes' analysis, external experts' quality control, etc.).

#### 4.12.4 Trends and drivers for change

The 2015 was characterized by the EXPO worldwide exhibition of food. The effect of EXPO has certainly supported the Italian fish processing industry. Many actions have been promoted for the internationalization of typical processed products and not on an industrial scale (such as the anchovy dripping "colatura di alici di Cetara" typical of the Campania Region). Also during the reference period, it is confirmed that the fish processing sector has been characterized by a reduced

propensity to export. This low propensity to export derives from the pulverization of companies, above all family-run or artisanal, companies too small for the global market and therefore struggling to export their products. The fish sector, in the last three years, aware of the potential for development if it succeeds in establishing itself in the foreign market, has started a process of dimensional growth based on the potential commercial aggregation among the micro enterprises. Further and parallel actions have been marked with respect to the protection of brands/recognitions, label, and, in general, on non-tariff barriers that limit the entry of production into foreign markets.

The Russian embargo has largely affected export of fish products. While at the end of 2014 exports of fish products to Russia registered an increase, at the end of 2015 a fall of -66.5% is recorded<sup>11</sup>. In general, while in 2013 Italy covered a share of 4.4% in the supply of meat and fish processed products for Russian consumers: the share in 2016 was equal to 0%<sup>12</sup>. It seems that there is only one Italian product out from the Russian black list, and it is a fish product: the caviar produced from a company based in Northern Italy. This is a top product not only in Italy but very well appreciated also in Russian where, for commercial reasons and for local consumers' satisfaction, it is exported without the specification of the country of origin.

It has also to be said that beside affecting negatively the Italian producers, the Russian embargo has increased the diffusion of the so-called Italian Sounding phenomenon, the worldwide process of counterfeiting and imitating Italian-made agri-food products. Nevertheless, it seems that the Italian canned fish sector is not affected by this phenomenon. On the contrary, there are several examples of products of the Italian processing industry produced and processed in other countries, both EU and extra-EU, and labelled with the Italian brand. On these dynamics, Italy should investigate the respect and protection of the real growth of processing companies that have their own facilities in Italy, in which they generate income, pay taxes and create jobs.

In general, in 2015 it is confirmed the difficulty of the Italian fishing industry to cope with several critical issues related not only to the severe economic crisis, but also to some characteristics of the industry for example the high dependence on imports for raw materials, which often are subject to high fluctuations in quantities and prices.

#### *4.12.5 Outlook*

Also in 2016 and 2017 the Italian fish canning sector seems to be in a good health, showing, at the end of 2016, an increase both in terms of volume and value (+0.9% and 1.9%, respectively). Almost all segments record positive performance, driven by mackerel based products (+5.9% in volume and + 9.4% in value), followed by sardines (spending +4.4% and +6.1%). A positive increase is registered also for tuna products, whose sales have increased by 1% in volume and by 1.5% in value (source DM Magazine, January 2017).

The market as a whole shows a polarized trend: premium and first-price products are growing, and the gap between those looking for quality or savings widens more and more. Without any doubt the lion's share is tinned with olive oil, consumed by over 95% of Italian families. Tuna fillets in glass are confirmed as one of the most loved and appreciated products by Italian consumers. Canned fish product in glass jar, in fact, has had incredible success in the last period reaching excellent quotas and confirm the high attention that Italian consumers pay on quality, especially those consumers who want to "see" what they are going to buy and eat.

Generally speaking, the canned tuna products represent a real challenge for the sector: canned tuna is an excellent opportunity for the consumer being the most affordable protein in the market along with the milk and eggs. The quality and versatility of tuna are an excellent remedy for a good

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<sup>11</sup> [http://www.federalimentare.it/new2016/AreeOperative/Promozione\\_Internazionalizzazione/InternazionalizzazioneDelSetto reAlimentare\\_Marzo2016.pdf](http://www.federalimentare.it/new2016/AreeOperative/Promozione_Internazionalizzazione/InternazionalizzazioneDelSetto reAlimentare_Marzo2016.pdf)

<sup>12</sup> <http://www.osservatorioagr.eu/approfondimenti/embargo-russia-la-fine-si-allontana-lagroalimentare-italiano-ne-paga-le-conseguenze/>

diet and Italian companies offering high level products, provide a complete product from the nutritional point of view.

Tuna therefore continues to satisfy customers for its versatility in the kitchen and because it is available in several versions and formats: it is a suitable product and satisfy the different willingness to pay of consumers. Based on this, different fish processing enterprises active on canned tuna are starting to enrich their portfolio with other high quality products, acting also as distributors.

In a context of a mature market, industries have started to differentiate also the range of products offered by proposing to consumers, new formats of products that can further stimulate sales (e.g., canned tuna produced with a single tuna fillet in olive oil in glass vase, handmade, and using only adult tunas over 20 kg of weight) or using packaging totally recyclable. To better penetrate the market, in the more recent year, tuna processor enterprises show also to be more active on the side of the communication strategy, using more and more digital means of communication.

#### *4.12.6 Data coverage and quality*

The collection of Italian data for the fish processing sector has been carried out in conformity with what planned in the National Programme 2014-2016, even if with some changes and improvements. Indeed, the Italian data collection carried out during the latest years has been adjusted to include the collection of data by size classes. Although not compulsory, Member States are requested to submit, if available, economic data for the processing industry at the segment level (where each segment is defined by the number of employees). To this aim, the planned survey has been extended and a more detailed and organized source of primary information has been used. The main data have been collected by mean of queries on different datasets (Chamber of Commerce, AIDA BvD, etc.) in order to obtain the balance sheets and financial statements of the sampled enterprises. Data by size class are, hence, available, only since the reference year 2013.

For the last collection year, the survey has covered a population of 785 enterprises of which 577 "main" and 207 "non-main". The achieved sample has covered 44% of the total population (37% for the "main" segment and 62% for the "non-main").

For the "non-main" segment, the survey has allowed to collect, according to the Commission Decision 93/2010, the number of enterprises and the turnover (data requested for the first programming year). The data collection has allowed to collect the primary data (number of enterprises and total turnover) for companies in the sample. The estimation of the share of the processing activities concerning fish processing ("non-main") has been obtained through the application, to the primary data collected, of the "non-main" share of activity collected during the survey of the first programming year.

For sake of clarity, it is relevant to note that, for the "main" segment, i.e., companies whose main activity is fish processing, the turnover includes the overall turnover, that means turnover deriving from the processing of fish products as well as turnover deriving from the processing of other products, e.g. meat or vegetable processed products.



## 4.13 LATVIA

### 4.13.1 General overview of the Latvian fish processing sector

Fish processing is a well-developed old tradition in Latvia. The processing sector is based on the local natural resources and also on the imported raw materials for production from the neighbouring countries. The most of fish processing enterprises are located in Riga and Roja cities. Large amount of the enterprises is also situated along the Latvian coast and in the Kurzeme region territory. Some of them are in Tukums, Engure, Carnikava and Kekava cities. The small enterprises with less than 10 employees had the biggest share in the sector around 52% in 2015. These enterprises usually are situated near the fishermen settlements. Some of the fishermen have smokehouses and sell the smoked, salted and brine fish to the tourists. Very often small fish processing enterprises are a family business.

There were 114 registered economic active fish processing enterprises in 2015 with a total turnover of €172.3 million. The number of enterprises has increased by 20% from 2008 to 2015. Investments to the new technologies, equipment and improvement of the working conditions for employees between 2008 and 2015 assisted in increase of the labour productivity by 21% during the same period.

All fish processing enterprises operate according to European Union standards. The enterprises which export its production are certificated in accordance with the standards of the buyer's country. The most common certifications are:

- IFC (International Food Standard);
- MSC Chain of Custody Standard is a traceability and segregation standard that is applicable to the full supply chain from a certified fishery or farm to final sale;
- GOST standard is a system of certification maintained by the Euro-Asian Council for Standardization, Metrology and Certification (EASC), a regional standard operating under the auspices of the Commonwealth of Independent States (CIS).

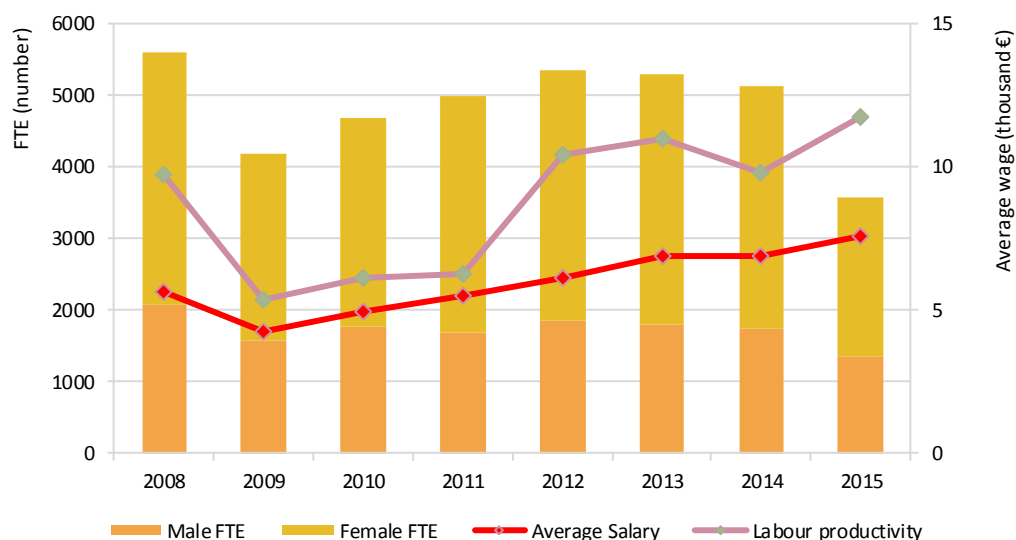
Fish processing as a type of economic activity is very important for Latvian agriculture and for employment especially in the coastal areas. Total number of employment was 4,169 in 2015 consisting of 3,580 FTE. Number of female was more than male and was 2,229 and 1,351 employments, respectively. Number of FTE's decreased significantly by 30% from 2014 to 2015 and was in average 31 FTE per enterprise in 2015. The decrease of FTE's could be connected to the total turnover decrease by 22% during the same period caused by Russian embargo for the exported production. Table 4.13.1 and Figure 4.13.1 show employment dynamic, companies' structure and some of economic performance indicators. The average wage showed the increasing by 34% from 2008 to 2015 and was €633 per month in 2015. However, the average wage per month in fish processing sector was 30% lower than the average wage in the country in 2015.

The fish processing sector production has important share in total Latvian export and also supplies domestic market. The fish products were exported to 59 countries and imported from 45 countries in 2015. The total volume and value of exported production were 96.5 tonnes and €155.4 million in 2015. The total export volume and value decreased by 7% and 10% respectively from 2014 to 2015. The exported volume to EU increase by 6% but the export to the non-EU countries decrease by 31% from 2014 to 2015. The most important countries for the production export in 2015 were Lithuania, Russian Federation (until 4 of June 2015), Belarus, Ukraine and Estonia contributing 62% and 59% respectively to the total export volume and income. The main countries for the production import were Lithuania, Poland, Sweden, Norway and Estonia. These countries contributed 68% to the total import volume in 2015. The main type of the production imports by volume were "Fresh or chilled fish, excluding fish fillets and other fish meat" and "Frozen fish, excluding fish fillets and other fish meat". These types of products have share of 44% and 26% respectively from the total imports volume in 2015. "Prepared or canned fish" was the main product type for the export with

the share of 41% and 45% respectively from the total export volume and income in 2015. The raw materials for the exporting production is mainly being made Baltic Sea and the Atlantic Ocean catches obtained by the Latvian fishing vessels or imported from the neighbouring countries. The fish species range in catches of the Latvian vessels is not very wide. The main species are sprat, herring and cod. North Sea and North East Atlantic Herring and Scomber imported from Norway also were used as the raw material for the production of canned fish. The biggest fish markets are concentrated in the Riga, Daugavpils, Liepaja and Jelgava cities.

**Table 4.13.1: Latvian fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	95	91	104	101	101	116	106	114	▲ 8%	▲ 20%
≤10 employees	27	33	44	44	48	56	56	59	▲ 5%	▲ 119%
11-49 employees	26	37	36	34	29	36	30	36	▲ 20%	▲ 38%
50-249 employees	37	16	18	16	18	17	12	15	▲ 25%	▼ -59%
≥ 250 employees	5	5	6	7	6	7	8	4	▼ -50%	▼ -20%
<b>Employment (number)</b>										
Total employees	5,792	4,684	5,015	5,399	5,781	6,223	5,558	4,169	▼ -25%	▼ -28%
Male employees	2,148	1,774	1,814	1,813	1,992	2,116	1,875	1,590	▼ -15%	▼ -26%
Female employees	3,644	2,910	3,201	3,586	3,789	4,107	3,683	2,579	▼ -30%	▼ -29%
FTE	5,592	4,174	4,681	4,992	5,357	5,285	5,132	3,580	▼ -30%	▼ -36%
Male FTE	2,074	1,580	1,761	1,691	1,846	1,797	1,732	1,351	▼ -22%	▼ -35%
Female FTE	3,518	2,594	2,920	3,301	3,511	3,488	3,400	2,229	▼ -34%	▼ -37%
<b>Indicators</b>										
FTE per enterprise	58.9	45.9	45.0	49.4	53.0	45.6	48.4	31.4	▼ -35%	▼ -47%
Average wage (thousand €)	5.7	4.3	4.9	5.5	6.1	6.9	6.9	7.6	▲ 10%	▲ 34%
Unpaid work (%)	0.6	0.9	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	▼ -100%

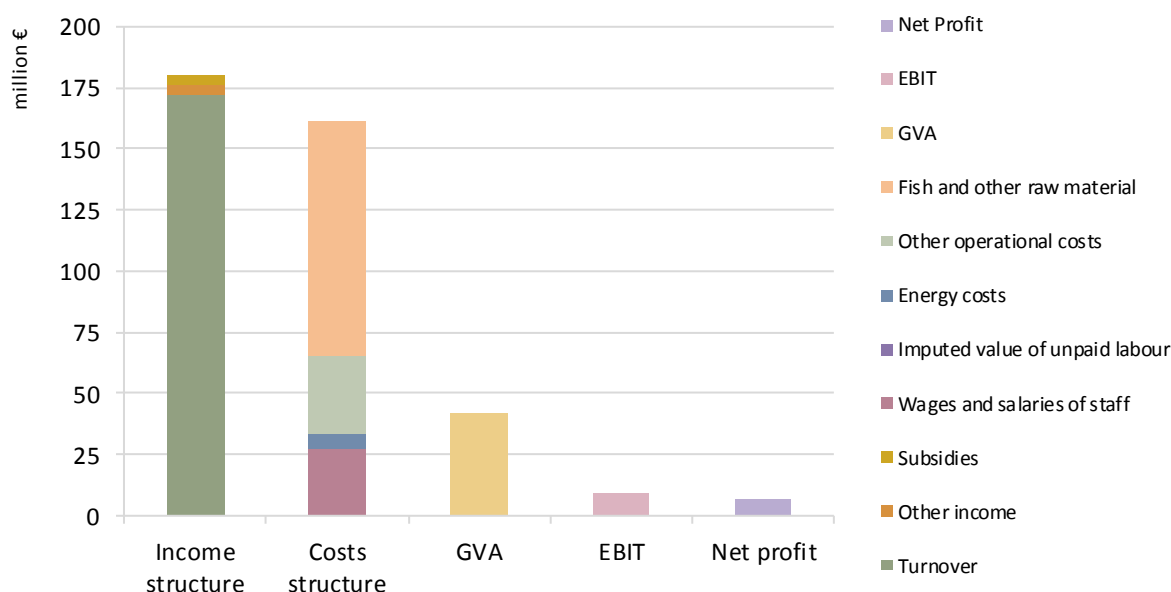


**Figure 4.13.1: Latvian employment trends, 2008-2015**

#### 4.13.2 Economic performance of the Latvian fish processing sector

Towards the end of 2008 and during 2009 the global economic crisis was negatively affected to Latvian sector of fish processing, which led to significant decrease of total turnover, employment and average wage levels by 29%, 21% and 24%, respectively (Table 4.13.1 and 4.13.2). In its turn the subsidies increased extremely in 16 times from 2008 to 2012. Despite of the growth of subsidies income of a lot of companies did not cover a high value of costs in the time period between 2009 and 2011. The negative impact of global economic crisis to economic situation in Latvia processing industry also shows the negative total profit €1.8 million in 2009 and €1.7 million in 2011. The sector started recovered after the crisis only in 2012 and 2013. The total income increased by 32% from 2011 to 2013 and was €263 million in 2013 (Table 4.13.2). However, the situation has worsened again from 2014 to 2015 and the total turnover decrease by 22%. One of the main reasons which directly influenced to the fish processing sector was embargo on the import of key food groups from the European Union imposed by Russia from 7 August 2014. Russian embargo applies to beef, pork, fruits, vegetables, poultry, cheese, milk products and also fish and fish products, although the embargo list did not include sprat, canned meat and fish. The second important reason was that the Russian food safety authority Rosselkhoz nadzor temporary banned import of all fish and fish products from Latvia and Estonia from 4 June 2015. In the result in Latvia suffered around 40 enterprises which exported their production to the Russian market.

Based on 2015 results the total production costs share was 90% of total fish processing sector income. The share of purchase of raw material for production made up of 53% of the total income in 2015. Furthermore, the value of total production costs demonstrated decreasing by 24% from 2014 to 2015. Table 4.13.2 and Figure 4.13.2 shows economic performance for the fish processing sector.



**Figure 4.13.2: Economic performance of the Latvian fish processing sector, 2015**

It can be observed that Gross Value Added decreased by 17% from 2014 to 2015 but Operating Cash Flow have increased by 4% during the same period. The increase for Operating Cash Flow could be explained by the sharp increase in subsidies by 36% from 2014 to 2015. Due to the reasons mentioned above the economic situation deteriorate in 2014 and Net Profit has a significant decrease by 44% between 2013 and 2014. Nevertheless, Net Profit increased by 26% from 2014 to 2015 and was €6.5 million in 2015. The main reason for Net Profit increase was the decrease of total production costs by 24% during the same time period mainly caused by the high decline of turnover by 22%. However, the increase of Operating Cash Flow, Earnings before interest and tax and Net profit by 4%, 31% and 26% respectively between 2014 and 2015 is not conducive to a

prosperous economic situation and the Net profit in 2015 does not exceed it level in 2008. The economic performance indicators such as Gross Value Added, Earning before interest and tax and Net Profit decline 23%, 35% and 48% respectively between 2008 and 2015. Nevertheless, the positive ROI values from 4.4% to 6.1% between 2014 and 2015 indicate that extraordinary profit is being generated and positive return of investments ensures the segment profitability.

**Table 4.13.2: Economic performance of the Latvian fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	214.9	152.8	153.8	170.8	226.7	255.1	221.6	172.3	▼ -22%	▼ -20%
Other income	9.1	5.2	6.7	6.5	9.5	5.7	6.3	3.9	▼ -39%	▼ -58%
Subsidies	0.1	1.5	2.3	1.0	1.7	2.2	2.7	3.6	▲ 36%	▲ 3308%
<b>Total Income</b>	<b>224.0</b>	<b>159.5</b>	<b>162.8</b>	<b>178.2</b>	<b>238.0</b>	<b>263.0</b>	<b>230.5</b>	<b>179.8</b>	▼ -22%	▼ -20%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	120.2	96.0	93.3	103.2	128.1	141.7	125.5	96.0	▼ -24%	▼ -20%
Wages and salaries of staff	31.5	17.7	23.0	27.6	32.9	36.5	35.3	27.2	▼ -23%	▼ -14%
Imputed value of unpaid labour	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	▼ -100%
Energy costs	9.4	7.6	7.6	8.3	9.5	13.8	10.2	6.2	▼ -39%	▼ -35%
Other operational costs	40.1	32.0	31.1	34.4	42.7	47.2	41.8	32.0	▼ -24%	▼ -20%
<b>Total production costs</b>	<b>201.3</b>	<b>153.4</b>	<b>154.9</b>	<b>173.5</b>	<b>213.2</b>	<b>239.2</b>	<b>212.8</b>	<b>161.3</b>	▼ -24%	▼ -20%
<b>Capital Costs (million €)</b>										
Depreciation of capital	8.4	6.0	4.5	4.3	6.2	9.9	10.5	9.1	▼ -14%	▲ 8%
Financial costs, net	1.9	1.9	2.0	2.1	2.2	2.1	2.0	2.9	▲ 43%	▲ 48%
Extraordinary costs, net	0.0	0.0	0.0	0.7	0.0	0.0	0.4	0.0	▼ -100%	▲ 21%
<b>Capital Value (million €)</b>										
Total value of assets	111.9	100.6	101.3	114.8	143.4	163.9	163.4	152.8	▼ -7%	▲ 37%
Net Investments	6.7	5.3	3.5	13.2	20.6	17.1	9.8	8.4	▼ -14%	▲ 25%
Debt	83.6	82.5	79.9	90.4	104.3	123.7	125.1	114.9	▼ -8%	▲ 37%
<b>Economic performance (million €)</b>										
Gross Value Added	54.2	22.5	28.6	31.4	55.9	58.1	50.4	42.0	▼ -17%	▼ -23%
Operating Cash Flow	22.7	6.1	7.9	4.7	24.7	23.8	17.7	18.4	▲ 4%	▼ -19%
Earning before interest and tax	14.3	0.1	3.5	0.4	18.6	13.9	7.1	9.4	▲ 31%	▼ -35%
Net Profit	12.4	-1.8	1.4	-1.7	16.3	11.8	5.1	6.5	▲ 26%	▼ -48%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	9.7	5.4	6.1	6.3	10.4	11.0	9.8	11.7		
Capital productivity	48.5	22.3	28.3	27.3	39.0	35.4	30.8	27.5		
GVA margin	24.2	14.2	17.8	17.7	23.7	22.3	22.1	23.8		
EBIT margin	6.4	0.1	2.1	0.3	7.9	5.3	3.1	5.3		
Net profit margin	5.5	-1.1	0.9	-1.0	6.9	4.5	2.3	3.7		
Return on Investment	12.8	0.1	3.4	0.4	12.9	8.5	4.4	6.1		
Financial Position	74.7	82.0	78.9	78.7	72.7	75.5	76.5	75.2		
Future Expectation Indicator	-1.5	-0.7	-1.0	7.7	10.1	4.4	-0.4	-0.5		

#### 4.13.3 Overview of the Latvian fish processing sector by size categories

The number of fish processing enterprises increased from 95 in 2008 to 114 in 2015. There were only 4 big enterprises which have more than 250 employees in 2015. The small size enterprises are dominated in Latvia and their total share was 52% from the all companies' size. The number of enterprises in the segment <10 employees increased significantly by 54% from 2008 to 2015 and was 59 enterprises in 2015. There were 36 enterprises included in the segment 11-49 employees and the segment 50-249 employees had consisted of 15 enterprises in 2015. Table 4.13.3 and Figures 4.13.3, 4.13.4 and 4.13.5 shows economic variables trends for the fish processing sector by size category. The economic situation in the fish processing sector was very dependent on the enterprise size and its strategy at the market.

For the small segment <10 employees the last year was not very successful due to the increased prices for the raw material. Furthermore, the total production costs increase by 8% but income only by 3% from 2014 to 2015. However, the economic performance shows the significant improvement between 2008 and 2015 for segment <10 employees and increase of total income and Gross Value Added by 82% and 50%, respectively. The small fish processing companies produce a variety of products such as dried, salted and smoked fish. The small profit was indicated in the last two years €0.3 million and €0.1 million respectively in 2014 and 2015.



**Figure 4.13.3: Latvian main structural and economic variables trends by size category, 2008-2015**

The segment with more than 250 employees was the most important segment for the Latvian economy. Unfortunately, from 2014 economic situation sharply worsened due to the segment orientation on the export of their production. The fish production export to the non-EU countries decline by 31% from 2014 to 2015. Due to that reason the total income for the segment with more

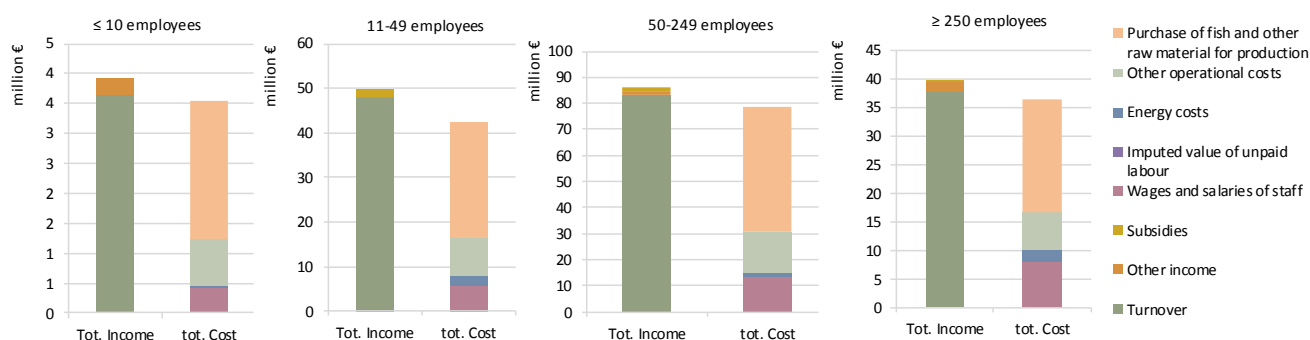
than 250 employees has sharp decrease by 70% from 2014 to 2015. The Gross Value Added, Operating cash flow and Net profit decreased significantly by 67%, 73% and 85% respectively during the same period. Despite of the sharp decrease of turnover the segment makes a Net profit €1.2 million in 2015. However, the Net profit decline by 88% from 2008 to 2015.

**Table 4.13.3: Economic performance of the Latvian fish processing sector by size category (indicators in million €), 2008-2015**

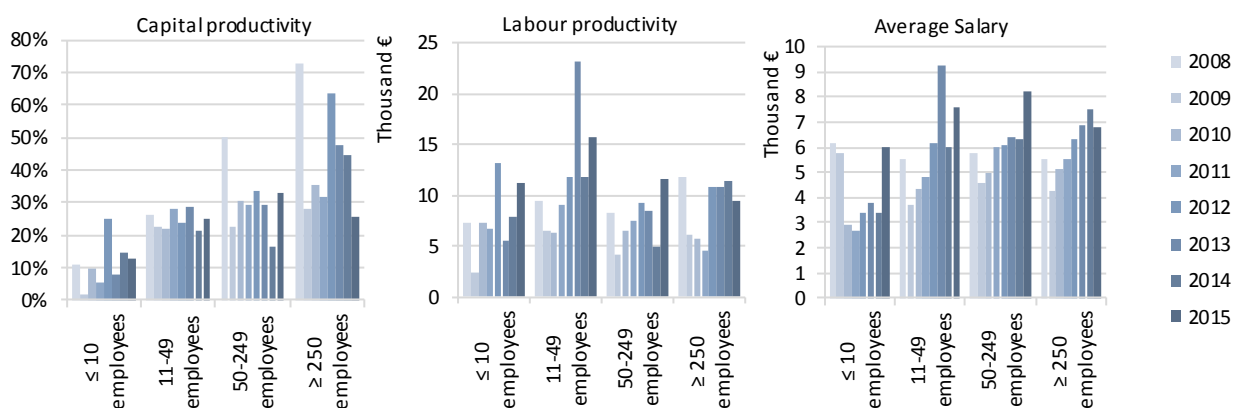
Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)		Δ (2008-15)
<b>less than or equal to 10 employees</b>												
Total Income	2.2	2.5	3.6	3.0	6.2	4.3	3.8	3.9	▲	3%	▲	82%
Total production costs	2.1	2.7	3.2	2.6	4.9	4.1	3.3	3.5	▲	8%	▲	71%
Gross Value Added	0.5	0.2	0.8	0.6	1.7	0.6	1.0	0.8	▼	-15%	▲	50%
Operating Cash Flow	0.1	-0.2	0.5	0.4	1.3	0.2	0.5	0.4	▼	-30%	▲	339%
Earning before interest and tax	-0.3	-0.6	0.1	-0.3	0.9	-0.2	0.3	0.1	▼	-57%	▲	144%
Net Profit	-0.3	-0.6	0.1	-0.4	0.8	-0.2	0.3	0.1	▼	-121%	▲	125%
<b>between 11 and 49 employees</b>												
Total Income	35.0	37.5	35.5	23.4	38.5	46.1	47.8	49.9	▲	4%	▲	42%
Total production costs	31.4	34.1	32.2	19.8	33.0	37.8	41.8	42.4	▲	2%	▲	35%
Gross Value Added	8.5	6.2	5.6	7.1	9.2	11.5	9.4	11.4	▲	22%	▲	35%
Operating Cash Flow	3.6	3.4	3.3	3.6	5.5	8.2	6.0	7.4	▲	24%	▲	106%
Earning before interest and tax	1.7	1.0	2.1	3.3	4.4	6.3	3.9	4.9	▲	24%	▲	182%
Net Profit	1.0	0.3	1.4	2.5	3.9	5.6	3.2	3.5	▲	10%	▲	236%
<b>between 50 and 249 employees</b>												
Total Income	108.5	70.3	60.1	70.2	98.0	87.1	47.3	86.2	▲	82%	▼	-20%
Total production costs	102.3	70.5	57.5	67.3	91.0	82.5	48.0	78.8	▲	64%	▼	-23%
Gross Value Added	20.9	7.0	10.8	12.2	19.0	16.0	6.3	18.7	▲	195%	▼	-11%
Operating Cash Flow	6.2	-0.1	2.7	2.9	7.0	4.6	-0.8	7.4	▲	1057%	▲	20%
Earning before interest and tax	2.6	-1.7	1.1	0.9	3.7	-0.2	-5.7	2.9	▲	151%	▲	10%
Net Profit	1.6	-2.3	0.3	0.2	2.7	-0.9	-6.3	1.7	▲	127%	▲	9%
<b>greater than or equal to 250 employees</b>												
Total Income	78.4	49.2	63.5	81.6	95.3	125.5	131.7	39.8	▼	-70%	▼	-49%
Total production costs	65.5	46.1	62.1	83.7	84.3	114.7	119.8	36.5	▼	-70%	▼	-44%
Gross Value Added	24.3	9.1	11.4	11.4	26.0	30.0	33.7	11.0	▼	-67%	▼	-55%
Operating Cash Flow	12.9	3.1	1.5	-2.1	11.0	10.8	12.0	3.3	▼	-73%	▼	-75%
Earning before interest and tax	10.3	1.4	0.2	-3.5	9.5	8.0	8.6	1.4	▼	-84%	▼	-86%
Net Profit	10.1	0.9	-0.3	-4.0	8.9	7.3	7.9	1.2	▼	-85%	▼	-88%

The segments 11-49 employees and 50-249 employees show the positive performance in 2015. The most profitable segment in 2015 was the segment with 11-49 employees contributing €3.5 million to the total fish processing Net profit. The segment with the 11-49 employees predominantly support local markets and is important for the employment in the coastal cities. The segment with 50-249 employees had the highest total income €86.2 million in 2015 and the segment contributed 48% in the total income. Segment with 50-249 employees and also the segment with more than

250 employees were exporting abroad a significant share of their production. However, the total income for the segment 50-249 employees had a sharp increase by 82% and the segment contributed €1.7 million to the total Net profit. Main reason directly influenced into the Net profit was the biggest share of subsidies 53% from total fish processing sector subsidies received in 2015.



**Figure 4.13.4: Latvian income and cost structure, by size category, 2015**



**Figure 4.13.5: Latvian capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

#### 4.13.4 Trends and drivers for change

Despite of economic crisis several fish processing companies due to availability of the EFF, had a benefited from the good investment possibilities that have been used for modernization and obtaining of new processing equipment to diversify products, improve quality of the production and increase productivity. In the last few years the problem with the raw material has arisen due to the quota reduction. Therefore, fish processing companies has to look for raw material imports to ensure the demand for fish products. However, it results in higher prices for the consumers. Another negative side effect is the export of frozen sprat, which also negatively influences the availability of raw materials for local processing of canned fish. Therefore, Latvia faces the challenge how to motivate the producers for production of high value products in Latvia not to export the useful raw material abroad.

The seven biggest Latvian enterprises are members of "Association Rīgas šprotes". The association is the owner of the trademark Rīgas šprotes eļļā (Fish Canned. Rīgas Sprats in Oil) and control the quality of the products produced by the members of the association. Latvian fish production is focused on quality and it has a high achievement at the international level. The fish processing enterprises take part in different multinational exhibitions where their production received rewards for the exclusive canned fish production in the different nominations. The canned fish has a different designs and volumes for the packing. The produced production of the canned fish annually is export

around 30 countries all over the world. The products have high demand at the markets of neighbouring countries. The main regions for the sales are the former CIS countries, neighbour European Union countries and Russian Federation where canned fish "Rigas Sprats in Oil" has a high demand from country inhabitants. Russian embargo and Rosselkhoznadzor ban for import of fish and fish products continue to have an influence on the Latvian fish processing sector export volume and income in 2016 and 2017.

In the last two years using the opportunities of EMFF the fish processing enterprises investing in marketing, explore the new markets and develop new products. One from the most successful new products is "Smoked Petites Sardines" which became a highly appreciated and recognized product in the international market. However, it takes time to earn the trust of new customers and to establish the stable export to the new markets. The new countries for the exported production in 2015 were Thailand, Mexico, Egypt, Somalia and Hong Kong. In its turn Ghana, Croatia, Iraq, Panama, Papua New Guinea, Taiwan and Vietnam were the new countries in 2016 and 2017. Nonetheless, it is still premature to predict how long the cooperation with these countries will last. Some of the fish processing enterprises for the straighten the cooperation at the European Union markets started the process of the new certifications such as BRC (the British Retail Consortium - Technical Standard for Companies Supplying Retailer Branded Food Products) and EFC (is a UKAS accredited and internationally recognized provider of high quality customer focused independent third-party certification).

Potentially, if the production volumes will increase the lack of employees at the sector could be observed. In recent years, companies are faced with the problem to find qualitative employees for the work at the conveyor, engineers, and electricians. Some of the employees are coming to work from the outermost regions in Latvia. The main reason is the low average wage in the fish processing sector which does not exceed the national level of the average wage.

The fish processing sector in 2017 was globally affected from the rising raw material price consumed by the fish processing enterprises. In general, were observed the price growth for the tuna, salmon and mackerel. These species are not the main species for the raw material for the processing sector in Latvia and the rising global price for the raw materials will not have direct influence on the sector in 2017 and 2018. However, the near future for the fish processing sector in Latvia will not be an easy time.

#### *4.13.5 Outlook*

There number of enterprises was stable between 2015 and 2016 and were 114 registered economic active fish processing enterprises in 2016 with a total turnover of €153.2 million. The small enterprises with less than 10 employees also compiled the biggest share in the sector around 52% in 2016. The decrease of turnover influenced into the size of some enterprises and only one enterprise which have more than 250 employees was registered in 2016. There were 38 enterprises in the segment with 11-49 employees and the segment 50-249 employees consisted of 16 enterprises in 2016.

Total number of employment was 3,783 in 2016 consisting of 3,273 FTE. Number of male was more than female and was 2,346 and 1,437 employments, respectively. Number of FTE's decreased by 9% from 2015 to 2016 and was in average 29 FTE per enterprise in 2016. The average wage stayed relatively stable from 2015 to 2016 and was €650 per month in 2016. The average wage per month in fish processing sector still was by 24% lower than the average wage in the country in 2016.

The production costs share was 95% of total fish processing industry income (subsidies included) in 2016. Share of purchase of raw material for production made up of 55% of the total income. The subsidies contributed around 3% to the total fish processing income and was €4.5 million in 2016. For the modernization of the processing equipment, new production development, and marketing was invested €4.7 million in 2016. The 95% of investments were contributed by the two segments 11-49 employees and 50-249 employees.

The fish products were exported to 65 countries and imported from 41 countries in 2016. The main type of imported production by volume were "Fresh or chilled fish, excluding fish fillets and other



fish meat" and "Frozen fish, excluding fish fillets and other fish meat". These products types have share of 39% and 36% respectively from the total import volume in 2016. "Frozen fish, excluding fish fillets and other fish meat" also was the main product type for the export in 2016 with the share of 44% from the total export volume in 2016. "Prepared or canned fish" become the second production type for the export with the share of 28% and 35% respectively from the total export volume and income in 2016. The total export volume was declined by 6% from 2015 to 2016 and income from export increased by 10% during the same period. The main countries for the production import in volume were Lithuania, Poland, Estonia, Sweden and Norway. These countries contributed 72% to the total import volume in 2016. The most important countries for the production export in 2016 were Lithuania, Dania, Estonia, Germany and Poland contributing 66% to the total income from export. The export to UK was around 1% and 3% respectively from the total export volume and income in 2016. The quantity of the exported production to the UK does not have important influence on the total turnover for the fish processing enterprises. However, the impact on the economic activity in the fishery sector in Latvia after the Brexit could be evaluated only after the more detailed trade analysis between Latvia and UK.

#### *4.13.6 Data coverage and quality*

Economic variables of processing sector are based on the information provided by Central Statistical Bureau of Latvia (CSB). CSB collects economic data basing on the questionnaires/statistical forms and administrative sources. Questionnaires/statistical forms are distributed by CSB to the owners of processing enterprises. All economic active enterprises are involved in the survey. The participation in the survey for the enterprises with more than 10 employees is obligatory according to the Latvian national legislation. The data for small segment with less than 10 employees were requested from Latvian Revenue Service. Some variables are obtained from the government databases or registers.

There are only few enterprises in Latvia where processing is not the main activity. For these enterprises the data about turnover could not be reported for confidentiality reasons.

The pilot study was planned in the Latvian WP 2017-2019 for the social data collection and the questionnaire was elaborated during 2017. The aim of the survey is to obtain information which characterise employment in the fishing industry by gender, age, education level, employment status and nationality. In addition, during the survey is planned to obtain data about raw materials, its origin and type of production produced by the enterprises.

## 4.14 LITHUANIA

### 4.14.1 General overview of the Lithuanian fish processing sector

In 2015, Lithuanian fish processing industry consisted of 51 enterprises with the main activity of fish processing. In 2015 the total income of Lithuanian processing industry, consisting of turnover from processing and other income, was €522.1 million with 7.5% annual increase as a result of 5.7% increase in turnover from fish processing and 17.9% increase from other income. In 2015, number of fish processing units with non-main activity increased to 21, compare to 6 in 2014. Turnover, attributed to non-main activity fish processing enterprises in 2015 improved by 34% to €9.7 million. Majority of non-main activity fish processing enterprises belongs to aquaculture sector, which process their own production.

Lithuanian processing industry is highly dependent from imported raw material. In 2015, Lithuanian companies with main activity of fish processing produced 120 thousand tonnes of production and compare to 2014 it increased by 18%. For the whole period till 2015 the largest part of production was surimi products, whereas in 2015 smoked fish including fillets were dominant in Lithuanian fish processing industry. Smoked fish including smoked fish fillets accounted for 28.8% of total production (including production for animal feed), whereas surimi products accounted for 26.6%. Important commodity in terms of value was frozen fish fillets, which accounted for 14.2% of total volume. Concerning value of production, smoked fish and smoked fish fillets were apparently dominant and covered around 53.2% of total production value. Concerning production structure by species in 2015, the most important was Atlantic Salmon, which mainly contributed to smoked fish category and was almost the most important processed products in terms of volume (30.2 thousand tonnes) and value (€233.3 million). The largest quantities of fresh salmon were imported from Sweden with 92% of total volume and Germany with 4.3% of total volume.

In 2015, around 51% of production from processing industry was exported, amounting 62.8 thousand tonnes. Volume of exported production was almost equal to the sales in the internal market, however production value was significantly higher for exported production corresponding to €302.7 million. In comparison to exports, internal market sales generated €175.9 million. In 2015 the structure of sales in the internal market in terms of volume were as follows: 79% for wholesale, 7% for retail market and 13.7% other (as for public sector, military, charity and etc.). Exports consisted from 95% in EU, 1.3% in CIS countries and 4% other countries. Compare to 2014, export volume increased by 6%, whereas sales in the internal market increased by 34.5% - from 45 thousand tonnes to 60.9 thousand tonnes. The main commodities for export were surimi, salted and smoked salmon production, prepared and preserved fishery products. The highest demand in the internal market consists of smoked and salted or in brine commodities.

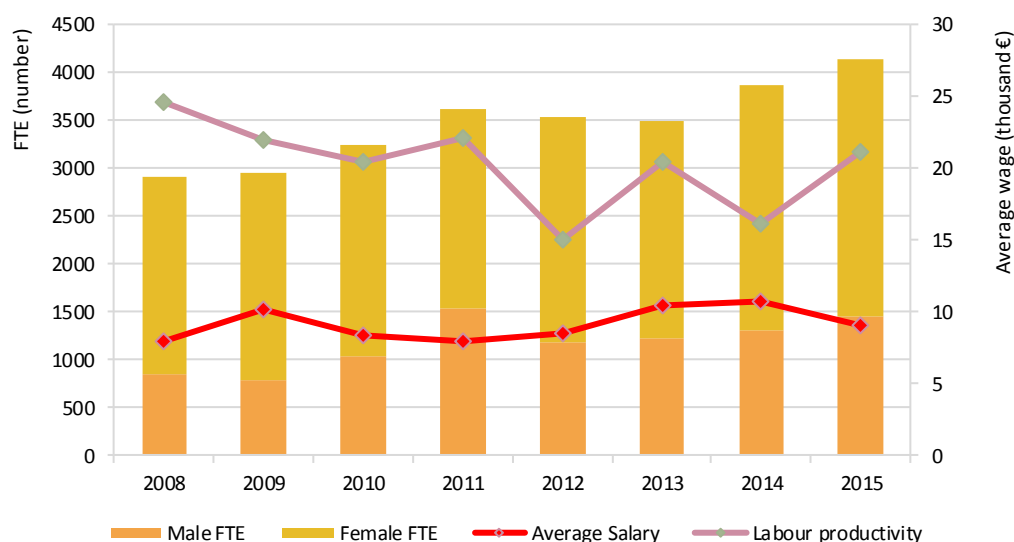
In 2015, Lithuanian processing industry employed 5,373 people and compare to 2014 increased by 4%. Employment by gender was dominant by female employees, which accounted for 66% of total employment in 2015. In terms of FTE, in 2015 fish processing sector employed 1461 male employees and 2670 female. Total employment in terms of FTE, compare to 2014 increased by 6.8%. In 2015, approximately 60% of total employees belonged to 25-49 age group and 27.7% to the 50-64 age group. Young employees from 15-24 age group contributed 11% to the total employment. Distribution of female and male among different age classes were almost the same. Type of employment was evidently dominant by main employment category and was 97.3% of total employees. Around 3% of employees were accounted for secondary or seasonal employment categories.

Compared to 2014, annual average wage decreased by 16% to €9 thousand. In general, average wages were constantly growing from 2011 to 2014. Furthermore, in 2015 average wage paid by fish processing industry was 3.6% higher compare to average national gross salary. In long term period wages in fish processing industry were relatively stable, fluctuating around €9.1 thousand per FTE. However, the average wages were different among size categories of enterprise. For example, in 2015 annual average wage for enterprises more than 250 employees were the highest in the sector and accounted for €9.9 thousand, enterprises with 50-249 employees paid around €7.8 thousand per FTE, enterprises with 11-49 employees €5.6 thousand per FTE and smallest companies which had less than 10 employees, paid €5.6 thousand per FTE. As the main part of fish

processing enterprise has JSC status, the unpaid labour was not present, however in 2015 appearance of individual companies declared unpaid employment, but in the context of total employment it was only 0.1%.

**Table 4.14.1: Lithuanian fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	37	33	32	32	31	30	34	51	▲ 50%	▲ 38%
≤ 10 employees	6	3	3	3	0	0	3	20	▲ 567%	▲ 233%
11-49 employees	12	13	13	14	14	14	14	12	▼ -14%	■ 0%
50-249 employees	12	13	12	10	12	11	11	12	▲ 9%	■ 0%
≥ 250 employees	7	4	4	5	5	5	6	7	▲ 17%	■ 0%
<b>Employment (number)</b>										
Total employees	5,013	4,489	4,351	4,445	4,451	4,471	5,165	5,373	▲ 4%	▲ 7%
Male employees	1,583	1,298	1,435	1,555	1,477	1,485	1,693	1,812	▲ 7%	▲ 14%
Female employees	3,430	3,191	2,916	2,890	2,974	2,986	3,472	3,561	▲ 3%	▲ 4%
FTE	2,912	2,948	3,240	3,615	3,536	3,502	3,868	4,132	▲ 7%	▲ 42%
Male FTE	845	794	1,042	1,534	1,190	1,215	1,302	1,461	▲ 12%	▲ 73%
Female FTE	2,067	2,154	2,199	2,082	2,346	2,288	2,566	2,671	▲ 4%	▲ 29%
<b>Indicators</b>										
FTE per enterprise	78.7	89.3	101.3	113.0	114.1	116.8	113.8	81.0	▼ -29%	▲ 3%
Average wage (thousand €)	7.9	10.1	8.4	7.9	8.5	10.4	10.7	9.0	▼ -16%	▲ 14%
Unpaid work (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	■ 0%	■ 0%

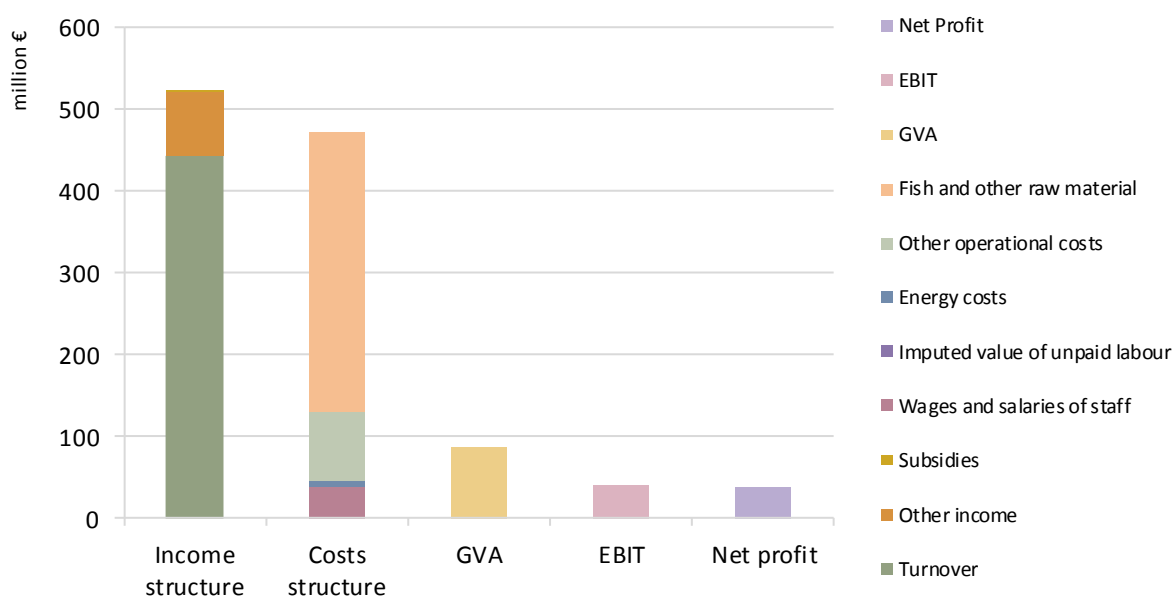


**Figure 4.14.1: Lithuanian employment trends, 2008-2015**

#### 4.14.2 Economic performance of the Lithuanian fish processing sector

The economic performance of the Lithuanian fish processing industry sector is further sustaining gradual increasing trend. In 2015, annual turnover from fish processing increased by 6% to €443.1 million. In 2015, total income improved by 8%. Other income increased in the enterprises, performing resale of fishery products as secondary activity and outsourcing services.

In 2015, estimated Gross Value Added (GVA) was €87.3 million and was 39% higher compare to 2014. The growth of GVA was influenced by significant decline in other operational costs. The production cost structure remained almost unchanged compare to average of previous years. In 2015 purchase of raw material accounted for 70% in total cost structure, 17% other operational costs, 8% wages and salaries of staff and 5% for the rest of costs. Costs of raw material is constantly rising and in 2015 it increased by 10%, compare to 2014. With regard to decline in other operational costs and lower average wages fish processing sector generated positive GVA and profitability. However, taking into consideration that during 2013 and 2014 sector generated the lowest profitability results from 2008, annual increase of net profits in 2015 to €37.5 million was significantly high - 244%, but in general this achievement shall be considered as recovery from low profits in 2014. Considering steady growth of total income, 2015 net income is unlikely be treated as sufficiently good achievement and it is illustrated by net profit margin. The highest net profit margin was observed in 2008 when it reached 15.1%, the lowest value was in 2014 when margin was 2.2% and growth by 7.2% in 2015 indicates recovery of fish processing sector efficiency.



**Figure 4.14.2: Economic performance of the Lithuanian fish processing sector, 2015**

Increase of raw material costs corresponded to the consistent rise of fish import price from 2008 to 2015. During this period average import price rose 59%. The biggest annual increase was in 2015 when import price went up by 11.2%. Since the Lithuanian fish processing industry is highly dependent from imported raw material, which meanwhile contributes to the major part of cost structure, fluctuation of currency rates also contributes to the cost formation. For instance, the main part of imported raw material is purchased from Sweden and Norway. EUR/NOK rate from 2013 has an increasing trend, cheaper NOK benefits for producer in terms of competitiveness and with a drop of Norwegian currency rate, salmon prices usually go up as one of the main export markets is EU.

Concerning origin of raw material, around 84% comes from imports. Domestic supply of raw fish is mostly presented by Baltic cod and Baltic herring and sprat, landed from Baltic Sea, whereas rainbow trout, carps and African catfish are supplied from aquaculture sector. Since 2014,

sufficiently increased volume of processed fish production was supplied into the market from aquaculture farms, which process their own production. Economic figures from this size category is not covered by this report as these processing units has a main activity in aquaculture and non-main activity for processing. The most part of this vertically integrated production, from raw material to high value processing production is produced after aquaculture farms invested to the development of fish processing lines according to the EFF support measures.

**Table 4.14.2: Economic performance of the Lithuanian fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	194.9	231.0	283.5	305.1	290.8	318.7	419.2	443.1	▲ 6%	▲ 127%
Other income	28.2	26.3	14.6	9.8	56.8	44.2	66.3	78.2	▲ 18%	▲ 178%
Subsidies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	■ 0%	■ 0%
<b>Total Income</b>	<b>223.0</b>	<b>257.3</b>	<b>298.1</b>	<b>314.9</b>	<b>347.6</b>	<b>362.9</b>	<b>485.5</b>	<b>522.1</b>	▲ 8%	▲ 134%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	111.0	147.4	177.9	178.5	217.8	222.6	305.5	341.4	▲ 12%	▲ 208%
Wages and salaries of staff	23.1	29.8	27.1	28.7	30.1	36.4	41.5	37.3	▼ -10%	▲ 61%
Imputed value of unpaid labour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	■ 0%
Energy costs	4.6	5.5	5.6	7.3	7.4	7.1	8.1	7.6	▼ -6%	▲ 65%
Other operational costs	35.6	39.7	48.4	49.0	69.1	61.4	109.3	85.1	▼ -22%	▲ 139%
<b>Total production costs</b>	<b>174.3</b>	<b>222.4</b>	<b>259.1</b>	<b>263.5</b>	<b>324.5</b>	<b>327.6</b>	<b>464.4</b>	<b>471.4</b>	▲ 2%	▲ 170%
<b>Capital Costs (million €)</b>										
Depreciation of capital	6.9	5.6	5.3	5.9	6.7	22.6	8.5	10.1	▲ 18%	▲ 46%
Financial costs, net	8.3	2.9	1.6	0.1	-1.0	1.9	1.7	3.1	▲ 84%	▼ -63%
Extraordinary costs, net	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	■ 0%	■ 0%
<b>Capital Value (million €)</b>										
Total value of assets	159.2	115.5	151.2	174.3	186.2	193.6	231.5	243.4	▲ 5%	▲ 53%
Net Investments	23.6	9.2	9.4	9.9	9.1	19.3	17.5	4.7	▼ -73%	▼ -80%
Debt	107.6	95.3	85.7	93.6	112.9	135.5	148.5	161.2	▲ 9%	▲ 50%
<b>Economic performance (million €)</b>										
Gross Value Added	71.8	64.7	66.1	80.1	53.3	71.8	62.6	87.3	▲ 39%	▲ 21%
Operating Cash Flow	48.7	34.9	39.0	51.4	23.2	35.3	21.1	50.7	▲ 140%	▲ 4%
Earning before interest and tax	41.9	29.2	33.7	45.5	16.5	12.7	12.6	40.6	▲ 223%	▼ -3%
Net Profit	33.6	26.3	32.2	45.4	17.5	10.8	10.9	37.5	▲ 244%	▲ 12%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	24.7	21.9	20.4	22.2	15.1	20.5	16.2	21.1		
Capital productivity	45.1	56.0	43.7	46.0	28.6	37.1	27.1	35.9		
GVA margin	32.2	25.1	22.2	25.5	15.3	19.8	12.9	16.7		
EBIT margin	18.8	11.4	11.3	14.4	4.7	3.5	2.6	7.8		
Net profit margin	15.1	10.2	10.8	14.4	5.0	3.0	2.2	7.2		
Return on Investment	26.3	25.3	22.3	26.1	8.9	6.6	5.4	16.7		
Financial Position	67.6	82.5	56.7	53.7	60.6	70.0	64.2	66.3		
Future Expectation Indicator	10.5	3.1	2.7	2.3	1.3	-1.7	3.9	-2.2		

In 2015, net investments in fish processing industry reached the lowest value since 2008 and accounted for €4.7 million. Compare to long term average investments to the sector, 2013 and 2014 were significantly higher and decline in 2015 was expected. Contribution from EFF fund was also significant, support under measure 2.3 “Fish processing and marketing” increased sector efficiency and boosted production. Capital productivity in 2015 increased to 35.9%. Total value of assets increased by 5% to €243.4 million whereas growth of total debts was 9% to €161.2 million. However, financial position remained at the long-term average level around 66%.

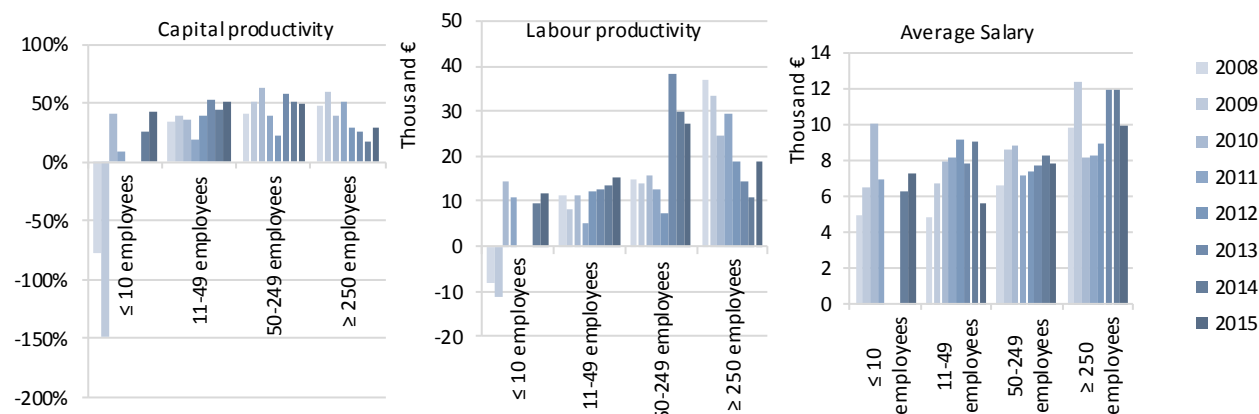
#### 4.14.3 Overview of the Lithuanian fish processing sector by size categories

In terms of total income, Lithuanian fish processing sector is mostly represented by large scale enterprises, employing more than 250 people and in 2015 generated 71% of national total income. However, number of enterprises, are mostly represented by 11-49 employees and 50-249 employees size categories, respectively. The smallest size category consisting from micro enterprises, mostly individual companies is characterized by processing its own produced or cached raw material. In the recent years this size category has a significant increase in number of enterprises which has main activity of fish processing. Small fishing and aquaculture companies seeking better benefit by adding value to the catches or primary aquaculture production with processing activities.

**Figure 4.14.3: Lithuanian main structural and economic variables trends by size category, 2008-2015**



**Figure 4.14.4: Lithuanian income and cost structure, by size category, 2015**



**Figure 4.14.5: Lithuanian capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

**Table 4.14.3: Economic performance of the Lithuanian fish processing sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	0.3	0.4	4.2	3.4			0.6	1.9	▲	226%	▲ 462%
Total production costs	0.5	0.7	4.1	3.3			0.5	1.7	▲	209%	▲ 206%
Gross Value Added	-0.1	-0.2	0.3	0.2			0.1	0.4	▲	257%	▲ 401%
Operating Cash Flow	-0.2	-0.3	0.1	0.1			0.0	0.2	▲	461%	▲ 203%
Earning before interest and tax	-0.2	-0.3	0.0	0.0			0.0	0.2	▲	659%	▲ 181%
Net Profit	-0.2	-0.3	0.0	0.0			0.0	0.2	▲	739%	▲ 185%
<b>between 11 and 49 employees</b>											
Total Income	9.2	15.0	17.0	20.5	17.1	14.3	15.4	14.7	▼	-4%	▲ 60%
Total production costs	8.0	14.5	16.0	21.7	16.0	12.7	14.0	12.3	▼	-12%	▲ 53%
Gross Value Added	2.0	2.8	3.0	2.0	4.2	4.5	4.5	3.8	▼	-15%	▲ 87%
Operating Cash Flow	1.2	0.5	0.9	-1.2	1.1	1.7	1.4	2.4	▲	68%	▲ 108%
Earning before interest and tax	0.9	0.1	0.4	-1.8	0.5	1.1	1.1	2.0	▲	90%	▲ 123%
Net Profit	0.3	-0.2	0.4	-1.9	0.5	1.1	1.0	2.0	▲	94%	▲ 608%
<b>between 50 and 249 employees</b>											
Total Income	60.6	65.4	54.5	51.9	54.6	85.6	115.9	134.9	▲	16%	▲ 123%
Total production costs	49.1	59.0	47.1	46.7	54.6	57.3	93.9	111.2	▲	18%	▲ 126%
Gross Value Added	20.5	16.9	16.9	12.3	7.5	35.5	30.5	32.8	▲	7%	▲ 60%
Operating Cash Flow	11.4	6.4	7.4	5.3	0.0	28.3	22.1	23.7	▲	7%	▲ 107%
Earning before interest and tax	9.4	4.9	5.9	3.7	-2.0	11.0	19.5	20.5	▲	5%	▲ 118%
Net Profit	7.4	4.3	5.6	3.4	-2.2	9.9	19.0	19.4	▲	2%	▲ 162%
<b>greater than or equal to 250 employees</b>											
Total Income	152.9	176.5	222.4	239.1	275.9	263.0	353.6	370.6	▲	5%	▲ 142%
Total production costs	116.6	148.2	191.9	191.8	253.8	257.7	356.0	346.2	▼	-3%	▲ 197%
Gross Value Added	49.4	45.1	45.9	65.6	41.7	31.8	27.5	50.3	▲	83%	▲ 2%
Operating Cash Flow	36.4	28.3	30.6	47.3	22.1	5.4	-2.4	24.3	▲	1096%	▼ -33%
Earning before interest and tax	31.8	24.5	27.4	43.6	17.9	0.6	-8.1	17.9	▲	322%	▼ -44%
Net Profit	26.1	22.5	26.2	43.9	19.3	-0.2	-9.1	15.9	▲	274%	▼ -39%

Despite the currently observed increase in very small fish processing companies, employment and generated profits at national level is mostly represented by large fish processing units. For example, two largest size categories, 50-240 and more than 250 employees, represent 97% of total national income and 93% of total employment. Sector consolidation to larger companies remained unchanged from 2008 when the same contribution for total income and total employment at national level was observed.

However, taking into consideration profitability, the largest size category did not show dominant performance. For comparison, size category more than 250 employees in 2015 generated 71% of total income and 42.4% of total profits, whereas 50-249 employees size category represented 25.8% of total income and 52% of total nation net profit generated from fish processing industry. Net profit margin in 2015 was also highest in 50-245 employees size category which achieved

14.4%. Compared to 2014, net profit margin for 50-245 employees size category enterprises slightly decreased; however, enterprises of this size category demonstrated significantly better contribution in terms of profitability at national level. In 2015, relatively high net profit margin was achieved also in smaller size category as 11-49 employees and less than 10 employees which generated 13.8% and 10.3%, respectively.

#### *4.14.4 Trends and drivers for change*

The main drivers for processing industry are supply and price of raw material, demand for exports of final production, consumption in the internal market, regional policy concerning trade and with modest importance aid from EMFF.

The main supply for raw material comes from imports, specifically imports of fresh salmon and raw material for surimi production. Smoked salmon fillets and surimi are the main products produced by Lithuanian fish processing industry. Raw material for smoked salmon is purchased mostly from Sweden which re-exports Norwegian production. The average import price of fresh salmon in 2015 was €4.8 per kg, in 2016 import price increased by 32% to €6.37 per kg and went up by 8% in 2017 to €6.9 per kg. In relation to the changes of raw material prices, according to production data, cost of smoked salmon fillets increased by 16% in 2016 and 9% in 2017. In relation to this export price of smoked salmon fillets increased by 13.7% in 2016 and 21.3% in 2017. Volume of exported smoked salmon production steadily increased year by year until 2017, when annual 10% decline was observed.

Employment has constant increasing trend. Investments and growth of sector had a positive impact on employment. In 2015 the record high number of employees was involved in this sector reaching 5373. This number do not include employees in the companies which has processing as non-main activity. After EFF programming period, number of companies with processing as secondary activity has recently increased. According to 2015 data employment was mostly dominated by female employees which covered 68% of total employees this proportion remained unchanged in 2016. In 2015 fish processing sector was mostly represented by 25-49 age employees, which accounted for 68% of total employment, whereas 50-64 age employees were accounted for 28%. In comparison, around 11% were 15-24 age employees.

Fish consumption in the internal market is mostly based on processed fish products, as consumption of freshwater aquaculture has more or less seasonal pattern. According to 2015 data, consumption of fish production was around 19 kg per capita. Fish consumption has an increasing trend. For example, in 2010 sales of processed fish products in the internal market accounted for 23 thousand tonnes, in 2014 it increased to 45 thousand tonnes and in 2015 it went up to 61 thousand tonnes, but in 2016 it declined to 54 thousand tonnes.

Lithuanian fish processing industry mainly focus on EU region and with minor part on CIS market. For example, in 2010 industry exported around 67.9% of total production, from which 87.7% was sold in EU and 9% in CIS countries. In long term run, trend of market share in terms of dependency of CIS market was reduced and before Russian ban, in 2013 exports to CIS countries accounted for only 2% of total exports. In 2015, around 4% of total exports were located in CIS.

Concerning Brexit and trade under its influence, will not have a significant impact as not so much production is exported to UK. For example, in 2015 from total exports of smoked salmon including fillets only 0.7% was sold in UK, slightly more defendant from UK market was surimi production, where in 2015 10.4% was sold in UK. From trade statistics, only 4.6% of total exported fish production (including re-export) was exported in UK. Concerning imports, around 2% of total imported fish production are purchased from UK. Concerning dependency on UK market there is no data how much Lithuanian fish processing production are re-exported from other MS.

According to data of National Paying Agency under the Ministry of Agriculture, around 25% of total paid EFF aid in Lithuania was appointed for action under measure 2.3 "Fish processing and marketing". During the whole EFF period, under measure 2.3. Fish processing and marketing, €14.12 million was paid to beneficiaries. The last EFF payments for measure 2.3 were made in 2015. During programming period based on the available 2008-2015 data, turnover in fish



processing increased by 127% from €194.9 million to €443.1 million, employment in terms of FTE increased by 42% from 2,912 FTE to 4,132 FTE.

In EMFF period Lithuanian Operational program foresee to support fish processing under Union Priority 5 "Fostering marketing and processing". Under this priority, applicants can be aquaculture and fisheries enterprises which are seeking to process their own production to increase value. According to the projections in Operational programme, 5 projects are foreseen till 2023 which will amount €6.1 million. In 2017, already €0.66 million of EMFF fund was paid for investments in processing of aquaculture production.

#### *4.14.5 Outlook*

The Lithuanian fish processing had steady growth of production with a record high volumes and value in 2015. According to 2016 data, production in enterprises with main activity fish processing further increased by 15.6% to the highest level and reached 138.8 thousand tonnes. Value of fish production in 2016 increased by 18.4% to €548 million. In 2017, production volume and value is foreseen to increase. According to preliminary data, volume and value of fish production in first half-year of 2017, compare to the same half year period of 2016 increased by 11.7% and 17.3%, respectively. In 2016, the highest volume of fish production was recorded as surimi products and second largest product is smoked fish including fillets. Despite increasing production in 2016, turnover from sales declined by 1% compare to 2015. Profitability indicators also had a tendency to decrease in 2016. As a result of growth in costs for raw material and wages, industry achieved net loss approximately €-23 million. Decline in profitability was related to significantly increased import price of raw material and improvements in wages. Average import price of fish products increased by 14% in 2016. As a result, in total cost structure purchase of raw material increased to 72%. Fish processing enterprises with main activity in 2016 generated around €37 million GVA.

#### *4.14.6 Data coverage and quality*

Population of commercial fish processing units for data collection is derived from Lithuanian State Food and Veterinary Service, register of entities, producing food of animal origin, activity fish processing. Register contains all commercial units which perform fish processing and under legal act of Lithuanian minister of agriculture (No. 3D-799), all registered enterprises semi-annually reports production data, and provide annual report for economic and social data to State enterprise AIRBC. Therefore, data collection scheme is census for all enterprises which has a veterinary number and licence to produce fishery products. Based on production NACE code enterprises are divided to main activity (NACE code 10.20) and non-main activity of fish processing. Enterprises with non-main activity of fish processing report data only for turnover from fish processing, whereas main activity enterprises provide all data for DCF requirements. Semi-annual production report contains information on used raw material by species, and origin, whereas production section disaggregated by type of product, species, volume and value as well as employment. For the main activity enterprises, layout of data allows to separate the income from fish processing and for other activities separately. Compared to 2014, population increased significantly by 50%. Increase in size of sector was mainly due to the higher number of small fish processing units (size category less than 10 employees) included into Register of State Food and Veterinary Service according to new requirements to obtain veterinary number and permission to carry out fish processing activities. Fish processing data collection is included in the annual Official Statistic data collection Program of Lithuania and therefore quality is ensured by application of principles of European Code of Practice. The data collection processes in AIRBC complies the ISO 9001 requirements for data quality and ISO 27001 requirements for data security.

## 4.15 MALTA

### 4.15.1 General overview of the Maltese fish processing sector

In 2013 and 2014 respectively, the number of enterprises in the Maltese fish processing industry remained constant at 6. The following year, in 2015, the number of enterprises decreased to 5. This has been the year with the least number of enterprises within the sector in a period of 8 years (2008 to 2015). In 2013 turnover amounted to €46.2 million resulting in a 56% increase from 2012, this result is the highest turnover rate the Maltese fish processing sector has shown since 2008. The turnover in 2014 shows that it decreased by 23% from 2013 to €35.6 million. Subsequently, due to the decrease in the number of enterprises, turnover for 2015 diminished by 36% (€22.7 million) from 2014, this result is the lowest turnover amount the sector has shown since 2010.

It should be emphasised that 60% of the enterprises in Malta's fish processing industry belong to the smallest enterprise segment ( $\leq 10$  employees).

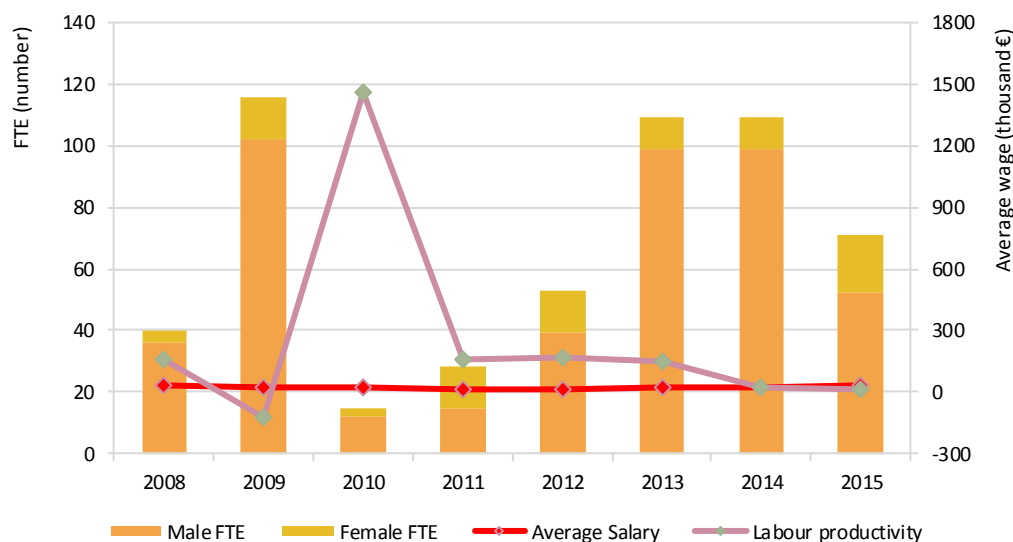
In the year 2015, FTE dropped by 35% from 2014, mainly deriving from the fact that the number of enterprises in 2015 had decreased. An interesting fact to note is that although FTE in 2015 dropped from 2014, it was only male FTE that has shown a decline, decreasing by 47%, on the other hand female FTE has increased by 90%. Overall since 2008 total FTE has increased by 78% higher when compared to 2015.

Investment in 2013, 2014, and 2015 amounted to €1.3 million, €0.9 million and €0.3 million respectively, indicating decreases of 85%, 31% and 71% respectively from the previous years. 2015 investment has decreased by 80% from 2008.

In 2015, there was no unpaid labour within the industry. The FTE per enterprise has dropped by 22% in 2015, though it is still 149% more than the FTE per enterprise recorded in 2008.

**Table 4.15.1: Maltese fish processing sector overview, 2008-2015**

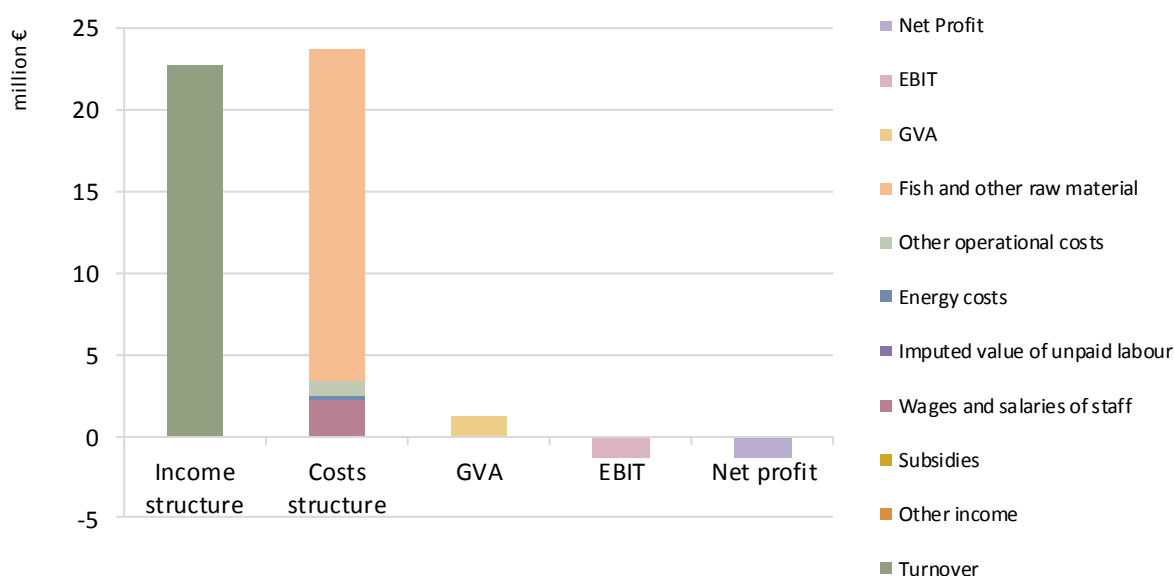
Variable	2008	2009	2010	2011	2012	2013	2014	2015	$\Delta$ (2014-15)	$\Delta$ (2008-15)
<b>Structure (number)</b>										
Total enterprises	7	10	8	8	6	6	6	5	-17%	-29%
≤10 employees	6	5	8	8	4	3	3	3	0%	-50%
11-49 employees	1	5	0	0	2	3	3	2	-33%	100%
50-249 employees	0	0	0	0	0	0	0	0	0%	0%
≥250 employees	0	0	0	0	0	0	0	0	0%	0%
<b>Employment (number)</b>										
Total employees	56	131	19	32	56	114	114	82	-28%	46%
Male employees	53	118	13	16	41	75	75	57	-24%	8%
Female employees	3	13	6	16	15	39	39	25	-36%	733%
FTE	40	116	15	28	53	109	109	71	-35%	78%
Male FTE	36	102	12	15	39	99	99	52	160%	8%
Female FTE	4	14	3	13	14	10	10	19	8%	250%
<b>Indicators</b>										
FTE per enterprise	5.7	11.6	1.9	3.5	8.8	18.2	18.2	14.2	-22%	149%
Average wage (thousand €)	33.2	20.1	18.7	16.2	14.7	22.9	26.2	31.8	21%	-4%
Unpaid work (%)	9.5	11.9	19.8	0.0	4.8	0.0	0.0	0.0	0%	-100%



**Figure 4.15.1: Maltese employment trends, 2008-2015**

#### 4.15.2 Economic performance of the Maltese fish processing sector

Given the fact that the number of enterprises in Malta's fish processing industry has decreased by 17% from 2014 to 2015, the total turnover for 2015 (€22.7 million) decreased by 36% from 2014 (€35.6 million).



**Figure 4.15.2: Economic performance of the Maltese fish processing sector, 2015**

In 2015, €1.3 million was recorded as net loss, resulting in an increase in net loss of 86% from the one recorded in 2014. The income structure in 2015 showed that total income is 100% composed of turnover earned from fish processing activities, whereas the cost structure of the sector in the same respective year was mainly contributed by expenditure in purchasing of fish and other raw material (86%). Net investment has been declining since the increase recorded in 2012 as in; 2013,

2014 and 2015 net investment has decreased by 85%, 31% and 71% respectively when compared to their previous years. Although 2015 debt levels were 32% lower than the previous year and 47% lower than 2008, the financial position indicator demonstrates that in 2013, 2014 and 2015 the sector has been financing a considerable proportion of its assets through debt. The value of assets within the sector has also been in the decline as in 2015, asset value has decreased by 39% from 2014, and 13% from 2008.

**Table 4.15.2: Economic performance of the Maltese fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	37.0	37.4	23.0	37.7	29.6	46.2	35.6	22.7	▼ -36%	▼ -39%
Other income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	▬ 0%	▬ 0%
Subsidies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	▬ 0%	▼ -100%
<b>Total Income</b>	<b>37.0</b>	<b>37.4</b>	<b>23.0</b>	<b>37.7</b>	<b>29.6</b>	<b>46.2</b>	<b>35.6</b>	<b>22.7</b>	▼ -36%	▼ -39%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	21.8	39.4	0.0	31.7	17.9	27.1	31.2	20.3	▼ -35%	▼ -7%
Wages and salaries of staff	1.2	2.1	0.2	0.5	0.7	2.5	2.9	2.3	▼ -21%	▲ 88%
Imputed value of unpaid labour	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	▬ 0%	▼ -100%
Energy costs	0.3	0.4	0.3	0.6	0.6	0.3	0.3	0.2	▼ -33%	▼ -35%
Other operational costs	8.5	11.6	0.7	1.0	1.9	2.1	1.6	0.9	▼ -40%	▼ -89%
<b>Total production costs</b>	<b>31.9</b>	<b>53.8</b>	<b>1.4</b>	<b>33.8</b>	<b>21.2</b>	<b>32.0</b>	<b>35.9</b>	<b>23.7</b>	▼ -34%	▼ -26%
<b>Capital Costs (million €)</b>										
Depreciation of capital	1.8	3.8	0.5	0.5	0.3	0.4	0.5	0.3	▼ -42%	▼ -84%
Financial costs, net	0.9	1.5	0.1	0.3	0.1	-0.1	-0.1	0.0	▲ 59%	▼ -103%
Extraordinary costs, net	0.1	0.2	0.0	0.4	6.3	0.0	0.0	0.3	▬ 0%	▲ 281%
<b>Capital Value (million €)</b>										
Total value of assets	8.6	14.0	2.7	5.1	7.7	15.4	12.3	7.5	▼ -39%	▼ -13%
Net Investments	1.3	0.3	1.3	1.4	8.5	1.3	0.9	0.3	▼ -71%	▼ -80%
Debt	17.9	31.3	2.3	3.8	5.7	16.6	13.8	9.5	▼ -32%	▼ -47%
<b>Economic performance (million €)</b>										
Gross Value Added	6.4	-14.0	21.9	4.3	9.2	16.7	2.6	1.2	▼ -52%	▼ -81%
Operating Cash Flow	5.1	-16.3	21.6	3.9	8.4	14.2	-0.3	-1.0	▼ -251%	▼ -120%
Earning before interest and tax	3.3	-20.1	21.2	3.4	8.1	13.8	-0.8	-1.3	▼ -63%	▼ -140%
Net Profit	2.4	-21.6	21.0	3.1	8.0	13.9	-0.7	-1.3	▼ -74%	▼ -154%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	160.3	-120.8	1,461.9	154.8	172.8	153.2	23.5	17.5		
Capital productivity	74.5	-100.1	817.6	85.0	118.9	108.1	20.8	16.6		
GVA margin	17.3	-37.5	95.3	11.5	31.0	36.2	7.2	5.5		
EBIT margin	9.0	-53.8	92.0	8.9	27.4	29.8	-2.3	-5.8		
Net profit margin	6.5	-57.8	91.4	8.2	27.1	30.0	-2.1	-5.7		
Return on Investment	38.5	-143.7	789.1	66.0	105.3	89.1	-6.6	-17.6		
Financial Position	207.5	223.4	86.1	74.4	74.0	107.5	112.5	126.3		
Future Expectation Indicator	-5.8	-25.1	30.4	18.0	106.3	5.5	2.9	-0.5		

The fish processing sector has been contributing less to the economy from 2014 onwards as the gross value added in 2015 indicated a 52% decrease from 2014 and an 81% decrease from 2008. Economic indicators are also showing declines in terms of economic performance of the Maltese fish processing sector. In 2015; ROI, EBIT margin, capital productivity and the FEI were -17.6%, -5.8%, 16.6% and -0.5%, respectively.

#### *4.15.3 Overview of the Maltese fish processing sector by size categories*

During 2015, 3 enterprises were categorised under segment 1 (enterprises employing less than 10 employees) while the remaining 2 enterprises were under segment 2 (enterprises employing between 11 and 49 employees). Segment 2 in 2015 generated 61% (€13.9 million) of the sector's total turnover while the remaining 39% (€8.8 million) was generated by Segment 1.

Although between 2013 and 2015 the number of enterprises in segment 1 remained the same, in 2015 FTE employees decreased from 29 in 2014, to 25, whereas in segment 2 due to the decrease in enterprises in 2015, when compared to 2014, FTE employees decreased to 46 from 80. Despite the fact that FTE employees decreased in both segments data shows that it was Male FTE that caused the decrease in both segments in 2015, as Male FTE decreased by 24% and 55% in segment 1 and 2 respectively from 2014. Female FTE on the other hand in 2015 had increased in both segments 1 and 2 from 2014. Female FTE in segment 1 increased from 4 to 6 (50%), whereas in segment 2 female FTE increased from 6 to 13 (117%).

Labour productivity in 2015 has decreased, in both segments 1 and 2, by 39% and 19% respectively from 2014. This decrease derives from the fact that GVA has been decreasing gradually, in both segments since 2013. The largest marginal changes in total income and costs were recorded in segment 2 as total income decreased by 45%, whereas in segment 1 total income decreased by 14%. Production costs, although decreased in both segment 1 and 2 by 11% and 43% respectively, still remained above the total income earned. Both segments, in 2015, have incurred more costs than the total income earned, resulting in negative EBIT at, €0.2 million (-342% from 2014) and €1.1 million (-27% from 2014) for segments 1 and 2, respectively.

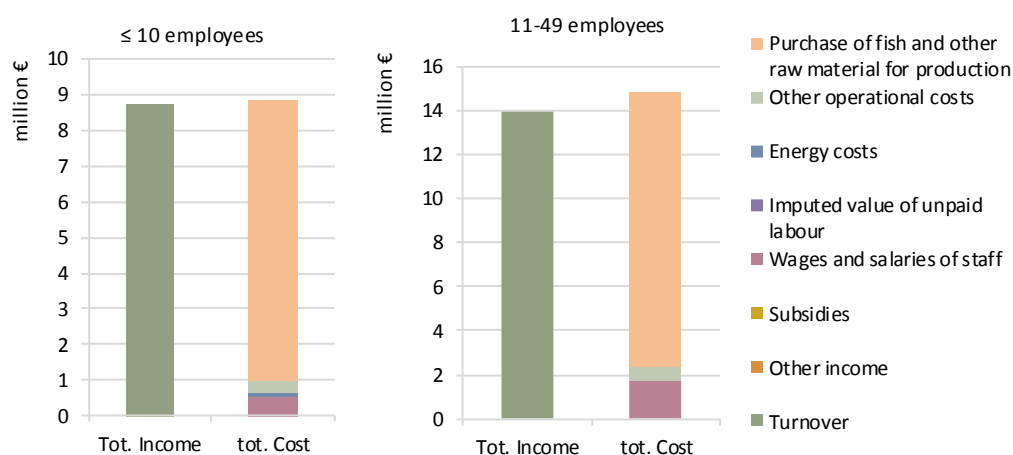
As a result to the negative EBIT recorded in both segments 1 and 2 in 2015, enterprises will not record any positive return from their investments. In fact, both segments 1 and 2 have recorded negative ROI. Segment 1 has recorded a negative ROI of 15.24%, which was the first time negative ROI was recorded since 2009. This negative indicator occurred mainly caused due to sharp decrease in EBIT for segment 1. Although segment 2 had already recorded negative ROI in 2014 (8.83%), in 2015 ROI continued to decrease and was recorded at negative 18.02% (a 104% increase from 2014).

Segment 1 went from having positive operating cash flow in 2014 to negative operating cash flow in 2015, recording a decrease of 166% in the indicator. On the other hand, segment 2's operating cash flow continued to decline as in 2015 it decreased by 87% from 2014, resulting in an increase in negative operating cash flow of the segment. The performance problem can also be seen from the efficiency ratio (running costs to turnover ratio) as in both segments the ratio indicates that the performance is not being fully efficient. Segment 1 shows a running costs to turnover ratio of 101% (an increase of 3% from 2014), whereas segment 2 recorded 106% in 2015 (an increase of 4% from 2014).

The lack of investment and the decrease in total asset value in 2015 has impacted the FEI, as both segments recorded declines, even if depreciation of capital had also decreased by 38% and 43% in segments 1 and 2 respectively. Although in segment 1, FEI has decreased by 29% from 2014 in 2015, it still remained positive, showing signs that enterprises within segment 1 are still considering the possibility to expand their production capacity or at least remain in the market to recover the cost of their previous investments. On the other hand, in segment 2, FEI was negative 1.06%, which mainly derives from the significant decrease in net investment of 77%, which caused depreciation of capital to be higher than the latter. A negative FEI gives a possible indication that enterprises within this segment have no willingness to expand their production capacity. Should

the negative trend in FIE continue in the upcoming years, it could cause enterprises in segment 2 to stop operating within the sector itself, as they no longer find profitable future endeavours within the fish processing sector.

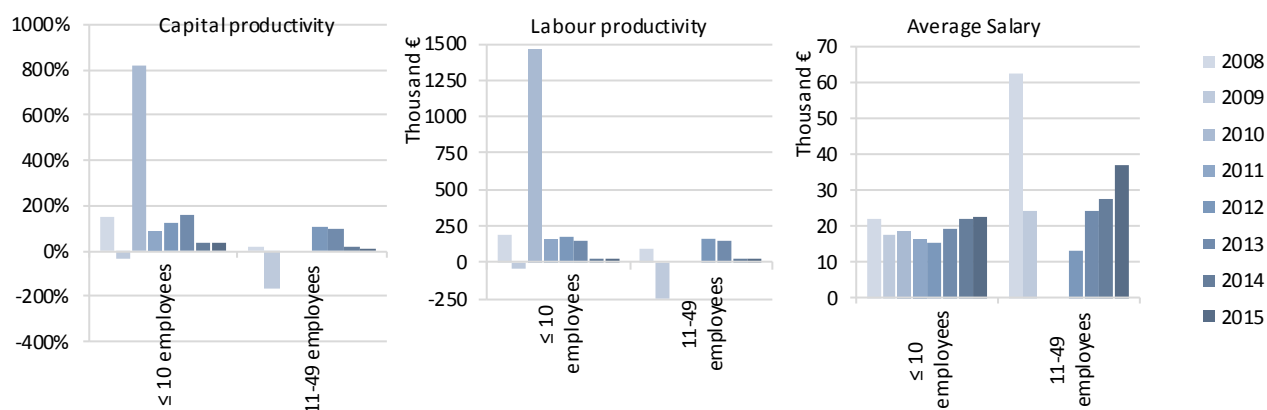
**Figure 4.15.3: Maltese main structural and economic variables trends by size category, 2008-2015**



**Figure 4.15.4: Maltese income and cost structure, by size category, 2015**

**Table 4.15.3: Economic performance of the Maltese fish processing sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	21.4	24.4	23.0	37.7	21.5	11.6	10.1	8.8	▼	-14%	▼ -59%
Total production costs	16.6	28.5	1.4	33.8	15.6	7.7	10.0	8.9	▼	-11%	▼ -46%
Gross Value Added	5.4	-2.9	21.9	4.3	6.5	4.5	0.8	0.4	▼	-47%	▼ -92%
Operating Cash Flow	4.8	-4.2	21.6	3.9	6.0	3.9	0.2	-0.1	▼	-166%	▼ -103%
Earning before interest and tax	4.4	-5.5	21.2	3.4	5.7	3.8	0.1	-0.2	▼	-342%	▼ -104%
Net Profit	4.3	-6.1	21.0	3.1	5.7	3.8	0.1	-0.2	▼	-308%	▼ -104%
<b>between 11 and 49 employees</b>											
Total Income	15.6	13.1			8.0	34.6	25.5	13.9	▼	-45%	▼ -11%
Total production costs	15.3	25.2			5.6	24.2	26.0	14.8	▼	-43%	▼ -3%
Gross Value Added	1.0	-11.1			2.6	12.3	1.7	0.8	▼	-54%	▼ -23%
Operating Cash Flow	0.4	-12.2			2.4	10.3	-0.5	-0.9	▼	-87%	▼ -347%
Earning before interest and tax	-1.1	-14.6			2.4	10.0	-0.9	-1.1	▼	-27%	▼ -6%
Net Profit	-1.9	-15.6			2.4	10.1	-0.8	-1.1	▼	-32%	▲ 41%



**Figure 4.15.5: Maltese capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

#### 4.15.4 Trends and drivers for change

The Maltese fish processing sector is mostly represented by enterprises, whose main products are preserving and processing of tuna, herring, sardines, and other marine fish and other products. The processed seafood is mainly exported to Spain, Italy and Great Britain.

The European Fisheries Fund (EFF) (2007-2013) granted Malta a total budget of €6.96 million for the measures considered under the respective priority axis. 7% (€0.46million) of this budget was allocated for 'Measure 2.3: Fish Processing and Marketing', a measure under 'Priority Axis 2: Aquaculture, Processing and Marketing of Fishery and Aquaculture Products'. This measure aimed to encourage innovation and capital investment in fish processing to improve the quality and to add value to the fish processing sector or its products. Throughout the duration of the EFF, Malta in total spent €1.46 million of which €0.42 million was funded by the EFF.

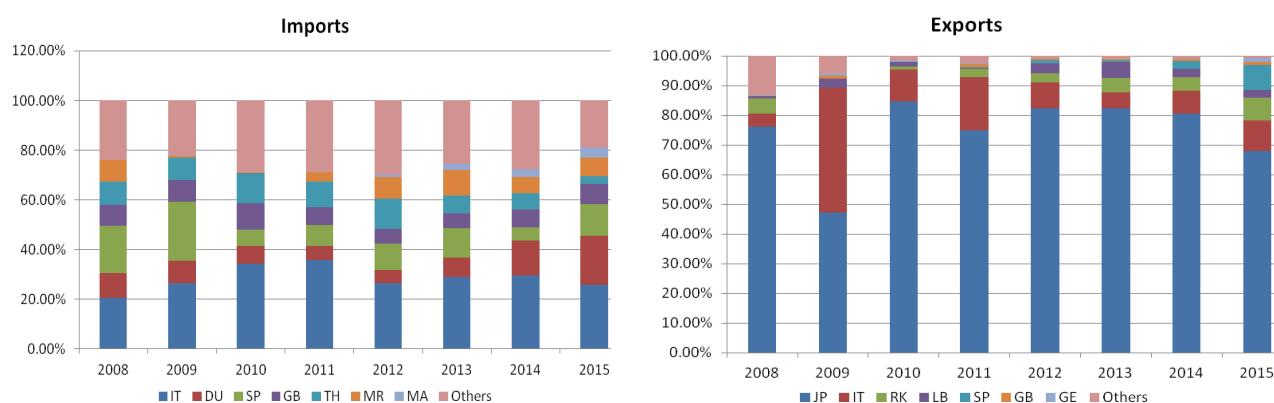
#### Maltese seafood trade

Malta exports to both intra-EU and extra-EU countries, though between 2008 and 2015 Malta always tends to export more to Extra-EU countries (78% in 2015) than EU Member States, due to the high value and quantities of exports to Japan. Malta's major trading partners outside the EU are Japan, the Republic of Korea, and Libya, whereas within the EU, Malta exports mostly to Italy, Spain, Germany and Great Britain. In 2015, Malta exported most of seafood to Japan and Italy. Export value in 2015 has decreased by 16% from 2014 and continues the decreasing trend which started in 2014.

The majority of the importation of the seafood to Malta is imported from other EU Member States. Malta imports 76% from EU Member States, mainly from; Italy, the Netherlands, Spain, and the United Kingdom. The remaining 24% are imported from Extra-EU countries, mainly from Morocco, Mauritius and Thailand. In 2015 Malta imported most from Italy and the Netherlands; also in 2015 Import value increased by 9% from 2014 and since 2008; imports value has increased by 40%.



**Figure 4.15.6: Maltese seafood imports (left) and exports (right) composition by type of origin/destination: shares in value**



**Figure 4.15.7: Maltese seafood imports (left) and exports (right) composition by type of origin/destination: shares in value**

#### 4.15.5 Data coverage and quality

Data for 2013, 2014 and 2015 was sampled, even though the population of the fish processing industry only involved between 5 and 6 enterprises in those years, due to the fact that it was not possible to collect data from the population. Sampling small data sets may create problems with issues such as over-fitting and noise within data which may cause outliers or unexpected change in trends and variables. Consequently, this may result in over or under estimation of these respective variables.



## 4.16 NETHERLANDS

### 4.16.1 General overview of the Dutch fish processing sector

In 2014 almost 500 enterprises in the Netherlands were registered at the Netherlands Food and Consumer Product Safety Authority for processing fish or fish products. For 81 enterprises fish processing was the main activity with a total turnover of €846 million. The main product segments are flatfish (e.g. sole and plaice), shrimp and mussels, for which the raw material is sourced from the North Sea and Wadden Sea. Also the processing of salted herring is an important product for the Dutch processing industry, although nearly all raw material is imported from countries in Northern Europe. Besides these traditional products, an increasing volume of imported species such as salmon and tropical shrimp is sourced by Dutch enterprises for processing and trading. The Dutch fish processing and wholesaling industry as a whole has an important function as trading hub for other EU countries. The growing diversity of fish products on the EU market, have resulted in growing imports of fish products. The reliance of the Dutch processing industry on domestic catches has become less important, but will still determine the profitability of a relevant part of the enterprises. In the Netherlands there is an upcoming trend of vertical integration. Processing becomes more and more integrated with trading and production activities. Therefore, it is often difficult to distinguish processing enterprises from for example wholesalers or traders.

Most traditional fish processing enterprises are situated around the main fish auctions near the North Sea like IJmuiden or Scheveningen, and in the city of Urk at Lake IJsselmeer. Nearly all mussel processing enterprises are based in Yerseke in the South of the Netherlands where also the only auction for mussels is located. The Dutch processing sector has an important position in the EU processing of flatfish which is mainly exported to countries in Southern Europe, especially to Italy. The main export markets for shrimp (not only domestically caught but also imported tropical shrimp) are Belgium, France and Germany. Mussels are mainly exported to Belgium and France. Besides these products, there is a wide variety of other products that are exported to many different countries.

Table 4.16.1 and Figure 4.16.1 provide an overview of the Dutch fish processing industry including the size of the enterprises and the level of employment. Most enterprises in the Dutch fish processing industry are small and have less than 50 employees. For the years 2013 and 2014 no distinction was made between enterprises with  $\leq 10$  employees or 11-49 employees. Based on the data from the period 2008-2014 there are no enterprises with more than 250 employees. In the Netherlands, however, there are several processing enterprises with more than 250 employees. These enterprises do process fish but fish processing is not their main activity, and they are more involved in trading activities.

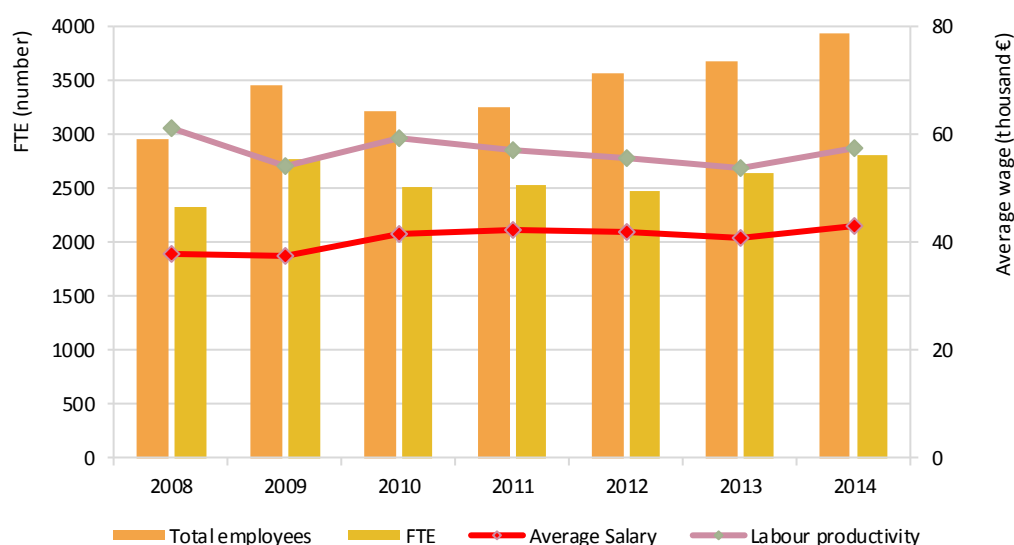
Between 2008 and 2014 the number of processing enterprises slowly decreased from 101 to 81 enterprises. The main explanation for the declining number of fish processing enterprises is that in the period 2008-2014 some enterprises switched from fish processing to fish wholesaling or trading as the main activity. These enterprises therefore are not characterised as fish processor, but still process fish. The number of enterprises with 11-49 employees and 50-249 employees remained rather stable during 2008-2014. Compared to 2013 there was a minor decrease of enterprises with less than 50 employees (-1%).

Both the number of employees and FTE showed an overall increase in the period between 2008 and 2014. The total number of employees increased by 33% and the total FTE increased by 21%. The increase in FTE and the fact that the number of (bigger) enterprises almost remained stable, indicate that the total FTE per enterprise increased with around 50%. Labour productivity however increased with 7% between 2013 and 2014. In the Netherlands no distinction is made between male and female employees in the collection of data regarding the number of employees and the number of FTE.

The wages in 2014 increased with 6% compared to 2013 and was on average around €43 thousand per FTE. The average wage in 2014 was higher than the years before, mainly driven by inflation.

**Table 4.16.1: Dutch fish processing sector overview, 2008-2014**

Variable	2008	2009	2010	2011	2012	2013	2014	Δ (2013-14)	Δ (2008-14)
<b>Structure (number)</b>									
Total enterprises	101	85	89	88	84	83	81	▼ -2%	▼ -20%
≤ 10 employees	54	47	48	39	35	0	0	■ 0%	▼ -100%
11-49 employees	34	33	30	33	33	67	66	▼ -1%	▲ 94%
50-249 employees	13	15	11	16	16	16	15	▼ -6%	▲ 15%
≥ 250 employees	0	0	0	0	0	0	0	■ 0%	■ 0%
<b>Employment (number)</b>									
Total employees	2,953	3,453	3,218	3,253	3,567	3,677	3,935	▲ 7%	▲ 33%
FTE	2,335	2,775	2,506	2,537	2,469	2,649	2,815	▲ 6%	▲ 21%
<b>Indicators</b>									
FTE per enterprise	23.1	32.7	28.2	28.8	29.4	31.9	34.8	▲ 9%	▲ 50%
Average wage (thousand €)	37.8	37.5	41.5	42.2	41.8	40.6	42.9	▲ 6%	▲ 13%
Unpaid work (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	▼ -17%	■ 0%



**Figure 4.16.1: Dutch employment trends, 2008-2014**

#### 4.16.2 Economic performance of the Dutch fish processing sector

Information about the economic performance can be found in Table 4.16.2, and Figure 4.16.2. In the period 2008-2014 the Dutch fish processing sector on average was profitable. During this period the net profit decreased by 39%, from almost €47 million in 2008 to €29 million in 2014. Both total income and production cost increased in the above mentioned period, production cost however showed a stronger increase (18% vs. 22%).

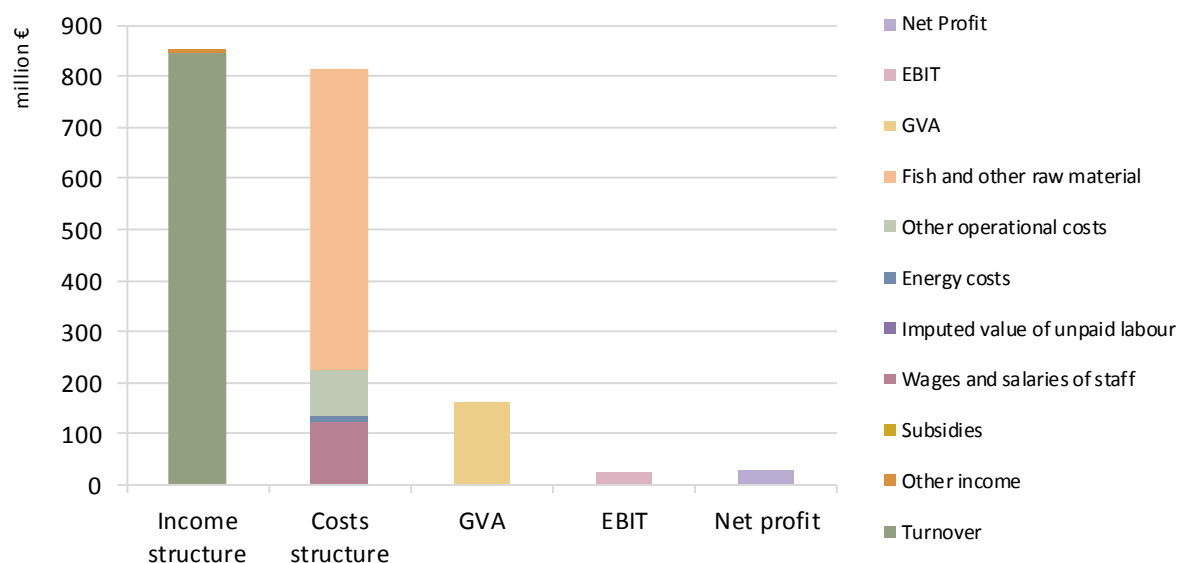
The income structure in 2014 is comparable with previous years. Subsidies and other income are only a very small part of the total income. In total less than €1 million or 2.7% of the Dutch EFF

aid was paid to beneficiaries in the for fish processing and marketing between 2007 and 2015. In 2014, the turnover accounted for 99% of the total income (see table 4.16.2). The total income increased with 4% compared to 2013.

**Table 4.16.2: Dutch economic performance of the fish processing sector, 2008-2014**

Variable	2008	2009	2010	2011	2012	2013	2014	Δ (2013-14)		Δ (2008-14)	
Income (million €)											
Turnover	712.3	689.0	704.4	803.7	775.4	814.9	846.3	▲	4%	▲	19%
Other income	11.4	16.2	3.7	10.7	3.9	0.2	9.1	▲	3656%	▼	-20%
Subsidies	1.6	0.4	0.5	0.1							
Total Income	725.3	705.6	708.6	814.6	779.3	821.0	855.4	▲	4%	▲	18%
Expenditure (million €)											
Purchase of fish and other raw material for production	504.5	479.3	472.8	584.9	554.6	581.0	590.3	▲	2%	▲	17%
Wages and salaries of staff	88.2	104.0	104.0	106.9	103.1	107.6	120.7	▲	12%	▲	37%
Imputed value of unpaid labour	0.0	0.1	0.1	0.1	0.1	0.1	0.1	▼	-7%	▲	42%
Energy costs	9.7	10.7	9.4	10.8	9.7	11.5	11.8	▲	3%	▲	21%
Other operational costs	66.5	64.7	77.1	74.2	78.0	86.2	91.1	▲	6%	▲	37%
Total production costs	669.0	658.7	663.4	776.8	745.5	786.4	814.0	▲	4%	▲	22%
Capital Costs (million €)											
Depreciation of capital	16.1	19.3	18.4	18.5	17.4	17.5	17.3	▼	-2%	▲	7%
Financial costs, net	-6.9	-8.2	-5.3	-4.3	-4.4	-5.5	-4.7	▲	13%	▲	31%
Extraordinary costs, net		1.2	-1.1		-0.3	-0.2					
Capital Value (million €)											
Total value of assets	638.7	973.2	529.2	709.2	595.2	703.8	622.7	▼	-12%	▼	-3%
Net Investments	2.5	77.7	3.8	89.1	23.9	24.3	66.7	▲	175%	▲	2606%
Debt	355.1	359.2	368.9	464.0	326.0	426.1	376.9	▼	-12%	▲	6%
Economic performance (million €)											
Gross Value Added	143.0	150.5	148.9	144.6	136.9	142.3	162.2	▲	14%	▲	13%
Operating Cash Flow	56.3	46.9	45.2	37.7	33.8	34.6	41.4	▲	19%	▼	-27%
Earning before interest and tax	40.2	27.6	26.9	19.2	16.4	17.1	24.1	▲	41%	▼	-40%
Net Profit	47.1	35.8	32.2	23.5	20.8	22.6	28.8	▲	28%	▼	-39%
Productivity and performance Indicators (%)											
Labour productivity	61.2	54.2	59.4	57.0	55.5	53.7	57.6				
Capital productivity	22.4	15.5	28.1	20.4	23.0	20.2	26.0				
GVA margin	19.8	21.3	21.0	17.8	17.6	17.5	19.0				
EBIT margin	5.6	3.9	3.8	2.4	2.1	2.1	2.8				
Net profit margin	6.5	5.1	4.5	2.9	2.7	2.8	3.4				
Return on Investment	6.3	2.8	5.1	2.7	2.8	2.4	3.9				
Financial Position	55.6	36.9	69.7	65.4	54.8	60.5	60.5				
Future Expectation Indicator	-2.1	6.0	-2.8	10.0	1.1	1.0	7.9				

Also the total production cost showed a 4% increase in 2014 (see Figure 4.16.2). Most of the production cost goes to the purchase of raw material, around 73% in general. Because of this reason the purchase of raw material is the main contributor to the growth in the total production cost. These cost increased with 2% in 2014 compared to 2013. Compared to the 2008-2014 average there is a 17% increase in the cost of raw material. Purchases of raw material as share of the total production cost are relatively stable in the period 2008-2014 and fluctuated between 70% and 75% of the total production cost. Other production cost that increased substantially between 2008-2014 are wages and salaries (+37%) and other operational costs (+37%). The increase in total income and wages and salaries resulted in an increased Gross Value Added and Operating Cash Flow. The net investments fluctuate a lot among years and are mostly influenced by restructuring of enterprises. In some years this caused negative investments in specific segments.



**Figure 4.16.2: Dutch economic performance of the fish processing sector, 2014**

#### 4.16.3 Overview of the Dutch fish processing sector by size categories

Figures 4.16.4, 4.16.5 and Table 4.16.3 show the main structural and economic variables for the processing industry per size category. The number of enterprises were subdivided into 4 size categories. Due to confidentially reasons it was not possible to make the same subdivision per size category for most of the economic variables for the Dutch processing industry. Instead of having four size categories the categories 0-10 employees and 11-49 employees were aggregated and put in the category 11-49 employees.

##### 0-49 employees size category

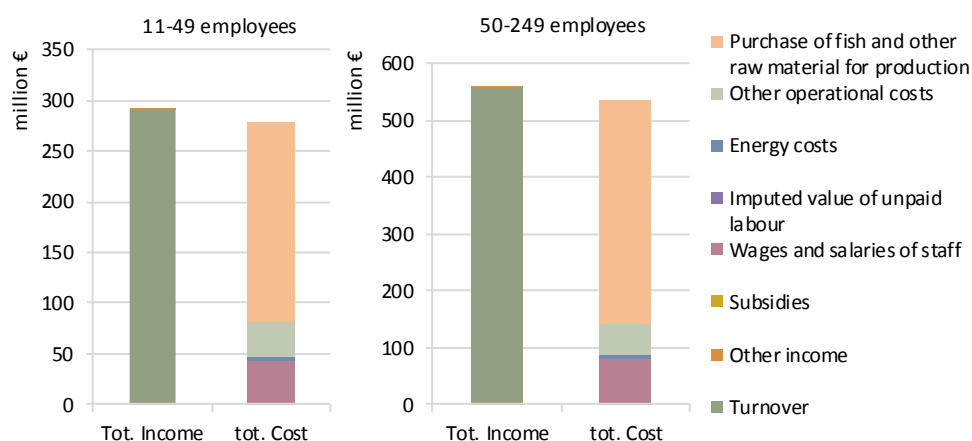
The number of FTE's in enterprises with 0-49 employees amounted to 961 FTE's in 2014, around 34% of the total FTE's in the processing industry sector. The number of enterprises in this size category decreased in time, but FTE's increased since 2012. Total income was €293 million in 2014, €9 million more than 2013 (+3%). The overall income decrease between 2008 and 2014 amounted to 20%. The same pattern was found for production costs. The production costs in 2014 were €279 million, an increase of €11 million compared to 2013 (+4%). The overall production costs decreased by €45 million compared to 2008 (-14%). Between 2008 and 2014 the enterprises in this size category were profitable. The highest net profit, €37.8 million, was realized in 2008 but decreased during the years to €8.8 million in 2012. In 2013 and 2014, net profit increased again and amounted to €11 million in 2014. The average salary varied between €32 thousand and €44 thousand.

### 50-249 employees size category

The number of FTE's in enterprises with 50-249 employees amounted to 1,854 in 2014, around 66% of the total FTE's in the processing industry sector. Between 2008 and 2014 the number of FTE's had increases while the number of enterprises did not change a lot. Also total income and total production costs increased for this size category in the same period with 57% and 55% respectively. Between 2008 and 2014 total income increased from €358 million to €562 million and production costs from €344 million to €535 million. The net result increased by 89% from €9.3 million in 2008 to €17.6 million in 2014. The average salary varied between €40 thousand and €45 thousand.



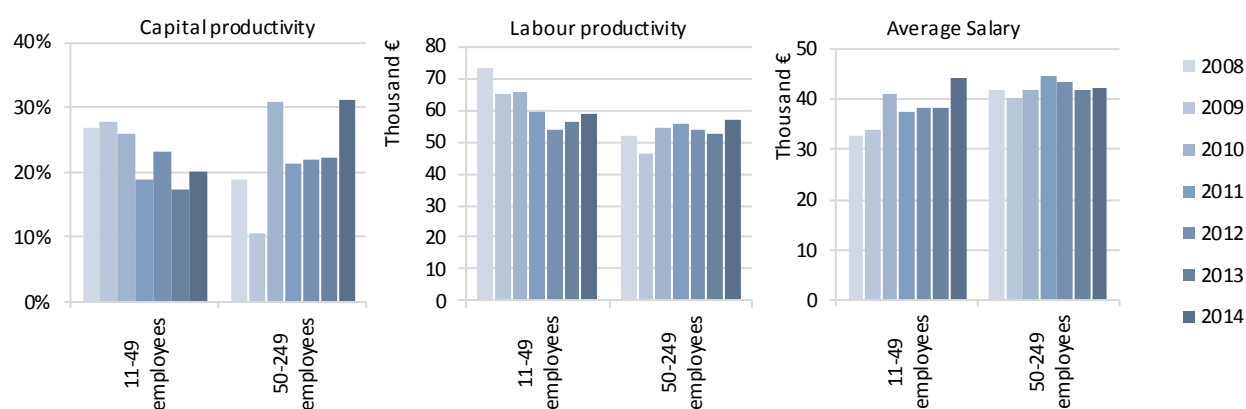
**Figure 4.16.3: Dutch main structural and economic variables trends by size category, 2008-2014**



**Figure 4.16.4: Dutch income and cost structure, by size category, 2014**

**Table 4.16.3: Economic performance of the Dutch fish processing sector by size category (indicators in million €), 2008-2014**

Variable	2008	2009	2010	2011	2012	2013	2014		Δ (2013-14)	Δ (2008-14)
<b>between 11 and 49 employees</b>										
Total Income	367.7	300.3	305.4	292.8	269.0	283.8	293.2	▲	3%	▼ -20%
Total production costs	324.5	263.2	278.1	272.9	257.5	267.8	279.1	▲	4%	▼ -14%
Gross Value Added	75.8	77.0	72.6	53.9	40.1	49.9	56.4	▲	13%	▼ -26%
Operating Cash Flow	43.2	37.1	27.3	19.9	11.5	16.1	14.2	▼	-12%	▼ -67%
Earning before interest and tax	35.2	28.8	18.3	13.0	6.7	10.6	9.8	▼	-7%	▼ -72%
Net Profit	37.8	31.8	21.0	15.6	8.8	12.2	11.2	▼	-8%	▼ -70%
<b>between 50 and 249 employees</b>										
Total Income	357.5	405.3	403.2	521.7	506.4	537.2	562.2	▲	5%	▲ 57%
Total production costs	344.4	395.5	385.2	503.9	488.0	518.6	535.0	▲	3%	▲ 55%
Gross Value Added	67.2	73.6	76.3	90.7	92.9	92.4	105.7	▲	14%	▲ 57%
Operating Cash Flow	13.1	9.8	18.0	17.7	18.4	18.6	27.2	▲	46%	▲ 108%
Earning before interest and tax	5.0	-1.2	8.6	6.1	5.8	6.5	14.3	▲	119%	▲ 183%
Net Profit	9.3	4.0	11.1	7.8	8.1	10.3	17.6	▲	71%	▲ 89%



**Figure 4.16.5: Dutch capital productivity, labour productivity and average salary trends, by size category, 2008-2014**

#### 4.16.4 Trends and drivers for change

Most of the EU-flatfish processing is done in the Netherlands. Access to raw material remains an essential element for the Dutch processing industry. Healthy fish stocks in the North Sea plays an important role in getting the raw materials. For the most important flatfish species used for processing (sole and plaice), quotas are managed by ITQs. Fishing rights for plaice increased where fishing rights for sole decreased in 2014.

The Dutch fish processing industry is not only depending on raw material from inside the EU. There is a growing demand for fish from outside the EU. In 2014, 57% of the import value was sourced from non-EU countries, while in 2008 it was 52%. Fish and shellfish are mainly exported to EU

member states, however export to non-EU countries is growing. In 2014, 77% of the value of exports was realised in other EU member states, while in 2008 this was 81%. Not all imported fish products will be processed. Where species like salmon are imported and processed (smoked) in the Netherlands, imports of species like cod and pangasius are not processed but traded directly to other EU countries through the harbour of Rotterdam. Having knowledge about logistics & distribution, and the understanding of the dynamics in the world market is an advantages for the processing industry in the Netherlands. This, however, could implicate that the focus will be more on trading instead of processing of fish products.

To stay competitive with fish processors from outside the EU, a level playing field is an important condition. Many enterprises mentioned that this level playing field is currently lacking. Non-EU member states are facing fewer regulations, and are therefore more competitive compared to fish processors in the Netherlands and in the EU.

An important driver for the Dutch fish processing industry is sustainability certification. More and more fisheries have been certified by the Marine Stewardship Council (MSC). The Dutch supermarkets have the ambition to only sell fish products that are certified by Marine Stewardship Council (MSC), the Aquaculture Stewardship Council (ASC) or an equivalent certification programme. At least for supermarkets and large food service companies in the Netherlands, sustainable caught or farmed fish is becoming a market access requirement. Many Dutch processing companies already sell certified seafood products. Because most of the processed fish products in the Netherlands are exported to Southern Europe where sustainability certification is not an important issue (yet), a large part of the processed products is still not certified sustainably.

#### *4.16.5 Outlook*

The aim of the new CFP is to ensure high long-term fishing yields for all fish stocks by 2020. A growing number of fish stocks that are of importance for the Dutch processing industry are fished at or below maximum sustainable yield. Healthier fish stocks increase the availability of fishing rights and thereby the availability of EU raw materials.

Plaice stocks have developed favourably under the new CFP management plans, which increased the quota of this species. The Dutch plaice quota has a lot of potential but is not optimally utilized. For 2016 and 2017 quota uptake for plaice was less than 60%. Despite the limited uptake the Production & Management Plan (PMP) for plaice is active in the Netherlands. This PMP has an impact on the plaice landings in the Netherlands and contributes to a smaller quota uptake of this species. For processing industry all forms of restrictions on uptake is unwanted.

Average prices of raw materials from EU waters increased in the last years. Especially plaice and common shrimp prices increased a lot. If prices become too high markets could be lost or cheaper substitutes will be used to provide the market. Substitutes for plaice could be rock sole or yellowfin sole.

The level of EU self-sufficiency lays around 42%. To ensure product coverage and volumes, around 58% of the fish and fish products need to be imported from outside the EU. Preferential agreements and ATQs will help the processing industry to get raw materials at lower costs. Having preferential treatments can make the EU processing industry more competitive compared to third countries.

Whilst the consequences of Brexit are unknown, it is to be expected that it could have a large impact on the fish sector in the Netherlands. As mentioned before, most of the EU flatfish is processed in the Netherlands. Potential trade barriers could impact the supply of raw materials from the UK.

#### *4.16.6 Data coverage and quality*

The DCF population is based on microdata received from Statistics Netherlands (CBS). It is known that not all enterprises <50 employees are included in this microdata, which cause an underestimation of both population and socio-economic values.

In 2017, no data for the processing industry was collected as for the period 2017-2019 the Netherlands decided not to collect data on the fish processing industry anymore. Therefore, only data until 2014 was available for this report.



## 4.17 POLAND

### 4.17.1 General overview of the Polish fish processing sector

In 2015, there were 244 fish processing companies involved in fish processing approved by the General Veterinary Inspectorate to intra-community trade according to Council Regulation (EC) no. 853/2004 and to direct sales in the internal market in accordance with the regulation of the Minister of Agriculture and Rural Development of December 29, 2006. 185 of them defined the primary production under the NACE Code 10.20. In the period 2008-2015 there was a fluctuating trend in the number of processing plants as a result of both the formation of new businesses, consolidation and changes in companies already working, as well as the uncertainties relating to population data. The share of enterprises for which fish processing was not the main activity represented 19-28% of the total number of processing firms.

In terms of the number of processing plants, Polish processing industry with the fish production as main activity is dominated by small and medium sized firms. In 2015 the largest number of plants (37% of total) employed between 11 and 49 persons, then 29% between 50 and 249, 28% less or equal than 10, and 6% employed greater or equal than 250 persons.

The distribution of processing activity across Poland remained consistent with previous years. There is a continued dominance of processing activity in the coastal region in Pomorskie and Zachodniopomorskie voivodeships where about 50% of Polish fish processing industry was located.

The Polish fish processing industry was highly concentrated. In 2015, most of production (52.6% of volume and 64.8% of value) was concentrated in large fish processing companies with more than 250 employees.

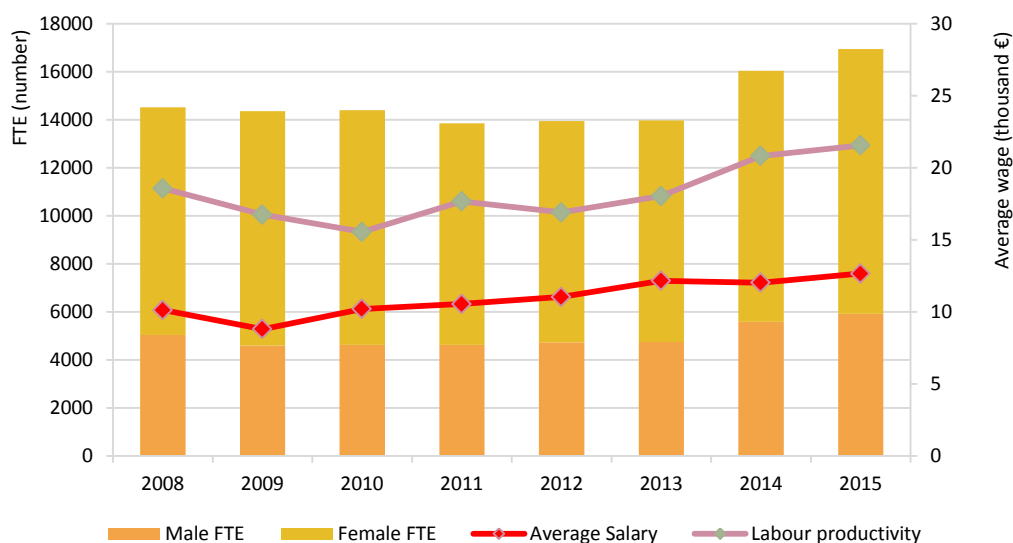
**Table 4.17.1: Polish fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)		Δ (2008-15)	
<b>Structure (number)</b>												
Total enterprises	190	191	188	185	184	183	180	185	▲	3%	▼	-3%
≤10 employees	57	53	49	46	49	49	51	52	▲	2%	▼	-9%
11-49 employees	68	75	76	82	73	78	65	68	▲	5%	▬	0%
50-249 employees	49	47	48	44	46	43	50	53	▲	6%	▲	8%
≥250 employees	16	16	15	13	16	13	14	12	▼	-14%	▼	-25%
<b>Employment (number)</b>												
Total employees	15 489	15 357	15 176	14 809	15 090	14 783	16 775	17 743	▲	6%	▲	15%
Male employees	5 304	4 892	4 908	4 884	5 096	4 933	5 825	6 131	▲	5%	▲	16%
Female employees	10 185	10 465	10 268	9 925	9 994	9 850	10 950	11 612	▲	6%	▲	14%
FTE	14 509	14 359	14 392	13 848	13 940	13 974	16 042	16 937	▲	6%	▲	17%
Male FTE	5 035	4 599	4 626	4 626	4 733	4 738	5 583	5 913	▲	6%	▲	17%
Female FTE	9 474	9 760	9 766	9 222	9 207	9 236	10 459	11 024	▲	5%	▲	16%
<b>Indicators</b>												
FTE per enterprise	76,4	75,2	76,6	74,9	75,8	76,4	89,1	91,6	▲	3%	▲	20%
Average wage (thousand €)	10,1	8,8	10,2	10,5	11,0	12,2	12,0	12,7	▲	5%	▲	25%
Unpaid work (%)	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	▼	-50%	▬	0%

In 2015, despite the decrease in the number of enterprises, the average number of employees increased to 17,743, by 6% compared with the previous year and by 15% compared to 2008. As in previous years the majority of the employed (65%) were women and the number of female employees increased by 6% compared to the previous year and by 14% compared to 2008.

Most employees worked full-time and FTE amounted to 16,937 FTE demonstrated an increasing tendency from 2012. The average size of the enterprises measured by the number of FTE was 91.6 employees and increased by 2.4 FTE from the previous year and by 15.2 FTE from 2008.

The average salary per employee (in FTE) per year reached €12.7 thousand and increased by 5% and 20% respectively from 2014 and 2008. The labour productivity increased compared to the previous year and to 2008, respectively by 4% and 16%. Both the average salary and labour productivity seems lower in comparison to the old EU countries.



**Figure 4.17.1: Polish employment trends, 2008-2015**

#### 4.17.2 Economic performance of the Polish fish processing sector

In 2015, the economic performance of fish processing industry in Poland was good and the increasing costs of raw materials did not affect the profitability of the industry. The total income increased to €2.5 billion, by 11% compared to the previous year and 71% compared to 2008. Turnover created nearly the whole total income and share of subsidies and other income did not exceed 1%. In general, the income structure does not show relevant differences in all the analysed years.

Total production costs increased to €2.37 billion, by 11% compared to the previous year and 75% compared to 2008. The greatest amount of total production costs (75%) was represented by the purchase of raw materials and other products needed for the production and resale in the same condition. The second cost item was represented by other operational costs (15%). The third by labour costs (9%), and the last by energy costs (1%). The share of labour costs seems lower in comparison to the other EU countries and explains why Danish, Germans or French companies located their fish processing in Poland.

In the period 2008-2015 the fastest rate of growth of production costs were costs of fish and other raw material, by 89% compared to 2008 and 10% by 2014. The rising cost of raw materials for processing fish was determined mainly by increases in the prices of raw materials on world markets. The energy costs increased by 59% compared to 2008 and by 5% by 2014. The rate of growth of labour costs increased by 46% and 11%, respectively to 2008 and previous year. Other operational costs increased by 44% and 17%, respectively to 2008 and the previous year.

In the period 2008-2015 capital costs decreased to 1% of the total income. From 2010, depreciation demonstrated an increasing trend as a result an increasing total value of assets and in 2015 increased by 7% compared to the previous year and 70% compared to 2008. Financial and extraordinary costs net showed irregular changes, related to the financial needs of the companies and unexpected gains and loss. In 2015, financial costs, net reached a negative number as a result of higher amount of financial income than financial charges.

**Table 4.17.2: Economic performance of the Polish fish processing sector, 2008-2015**

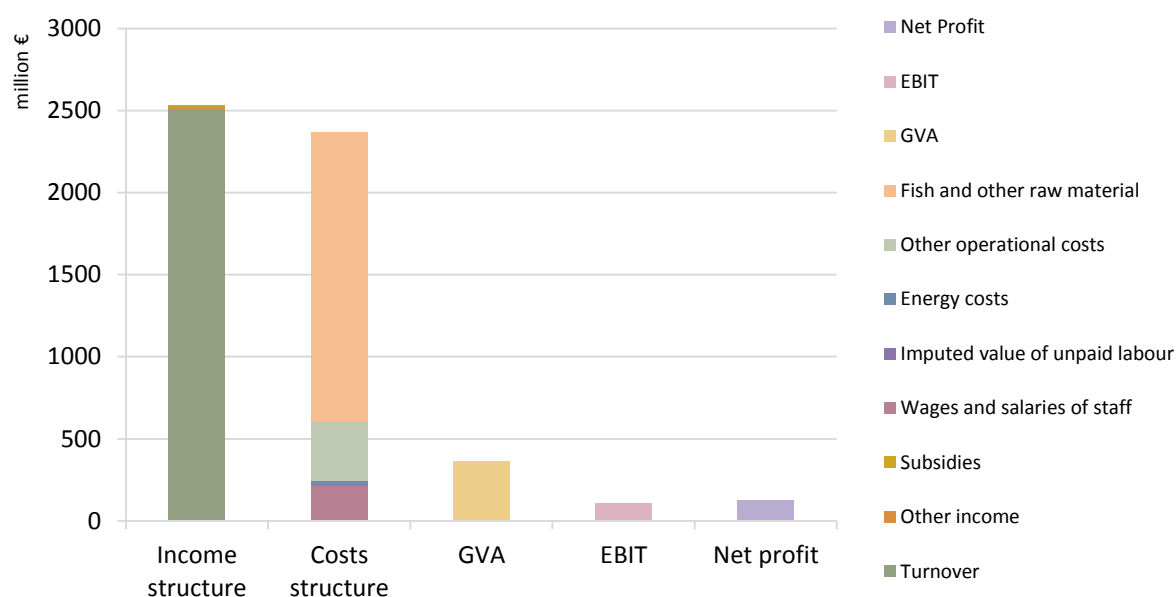
Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	1 462,5	1 438,6	1 634,4	1 749,1	1 883,0	2 127,7	2 251,8	2 503,3	▲	11% ▲ 71%
Other income	12,5	11,7	13,0	13,1	8,6	15,7	20,8	19,5	▼	-6% ▲ 56%
Subsidies	5,7	7,0	7,3	9,6	9,7	8,8	9,4	10,5	▲	12% ▲ 83%
<b>Total Income</b>	<b>1 480,8</b>	<b>1 457,2</b>	<b>1 654,7</b>	<b>1 771,8</b>	<b>1 901,2</b>	<b>2 152,1</b>	<b>2 282,0</b>	<b>2 533,4</b>	<b>▲</b>	<b>11% ▲ 71%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	936,6	953,9	1 125,9	1 217,6	1 309,7	1 567,1	1 602,5	1 768,5	▲	10% ▲ 89%
Wages and salaries of staff	146,8	126,4	146,7	146,0	153,7	169,8	192,8	214,3	▲	11% ▲ 46%
Imputed value of unpaid labour					0,1	0,1	0,1	0,0	▼	-54%
Energy costs	17,4	22,0	22,6	24,8	22,6	26,2	26,4	27,7	▲	5% ▲ 59%
Other operational costs	251,7	234,1	275,2	275,2	323,8	298,1	309,7	361,6	▲	17% ▲ 44%
<b>Total production costs</b>	<b>1 352,5</b>	<b>1 336,3</b>	<b>1 570,4</b>	<b>1 663,6</b>	<b>1 809,8</b>	<b>2 061,2</b>	<b>2 131,4</b>	<b>2 372,2</b>	<b>▲</b>	<b>11% ▲ 75%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	32,2	31,1	34,8	38,4	41,8	46,0	51,1	54,6	▲	7% ▲ 70%
Financial costs, net	28,8	19,8	5,9	35,2	7,0	9,1	18,2	-17,2	▼	-194% ▼ -160%
Extraordinary costs, net	0,0	0,2	-0,1	0,0	0,0	0,1	0,2	0,0	▼	-75% ▲ 340%
<b>Capital Value (million €)</b>										
Total value of assets	1 017,9	881,4	1 120,5	1 169,6	1 194,2	1 307,3	1 321,8	1 420,7	▲	7% ▲ 40%
Net Investments	52,7	43,3	56,0	87,9	50,1	82,6	90,4	73,1	▼	-19% ▲ 39%
Debt	686,4	564,2	709,6	708,9	725,1	819,1	817,4	872,9	▲	7% ▲ 27%
<b>Economic performance (million €)</b>										
Gross Value Added	269,3	240,4	223,7	244,6	235,5	252,0	334,0	365,1	▲	9% ▲ 36%
Operating Cash Flow	128,2	121,0	84,2	108,1	91,4	90,9	150,6	161,2	▲	7% ▲ 26%
Earning before interest and tax	96,0	89,9	49,4	69,8	49,6	45,0	99,5	106,6	▲	7% ▲ 11%
Net Profit	67,2	70,2	43,6	34,6	42,6	35,9	81,3	123,8	▲	52% ▲ 84%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	18,6	16,7	15,5	17,7	16,9	18,0	20,8	21,6		
Capital productivity	26,5	27,3	20,0	20,9	19,7	19,3	25,3	25,7		
GVA margin	18,3	16,6	13,6	13,9	12,4	11,8	14,7	14,5		
EBIT margin	6,5	6,2	3,0	4,0	2,6	2,1	4,4	4,2		
Net profit margin	4,6	4,8	2,6	2,0	2,3	1,7	3,6	4,9		
Return on Investment	9,4	10,2	4,4	6,0	4,2	3,4	7,5	7,5		
Financial Position	67,4	64,0	63,3	60,6	60,7	62,7	61,8	61,4		
Future Expectation Indicator	2,0	1,4	1,9	4,2	0,7	2,8	3,0	1,3		

In the whole period total assets demonstrated an increased trend by 7% and 40%, respectively to 2014 and 2008. But net investment decreased by 19% compared to the previous year due to delay in the implementation of EU aid from the EMFF under Operational Programme "Fisheries and the Sea" 2014-2020. Also the future industry expectations indicator (FEI) decreased but was still estimated as a positive number at 1.3%.

In 2015, fish processing industry achieved good financial and economic performance. The contribution of fish processing to the national economy measured by Gross Value Added (GVA) indicator amounted to €365.1 million and increased by 9% compared to the previous year and by 36% compared to 2008. The amount of cash companies generate from its operations, measured by Operating Cash Flow (OCF) indicator, amounted to €161.2 million and increased by 7% compared to the previous year and by 26% compared to 2008. Earnings before interest and taxes (EBIT) was equal to about €106.6 million, showing an increase by 7% compared to the previous year and by 11% compared to 2008. As a result of increase in turnover and significant reduction of financial costs net profit increased to €123.8 million, by 52% compared to the previous year and 84% compared to 2008.

The fish processing recorded an increase in capital productivity to €21.6 thousand and in capital productivity to €25.7 thousand. Return of investment indicating the sector's ability to innovate and investments stays at 7.5%. During the whole period fish processing activity was mainly financed by borrowed capital. The share of external financing of fish processing decreased to 61.4% in 2015.

In 2015, the turnover attributed to fish processing by the companies which processed fish as a secondary activity was €70.3 million. This was a decrease by 25% compared with the previous year and by 35% increase compared to 2008.



**Figure 4.17.2: Economic performance of the Polish fish processing sector, 2015**

#### 4.17.3 Overview of the Polish fish processing sector by size categories

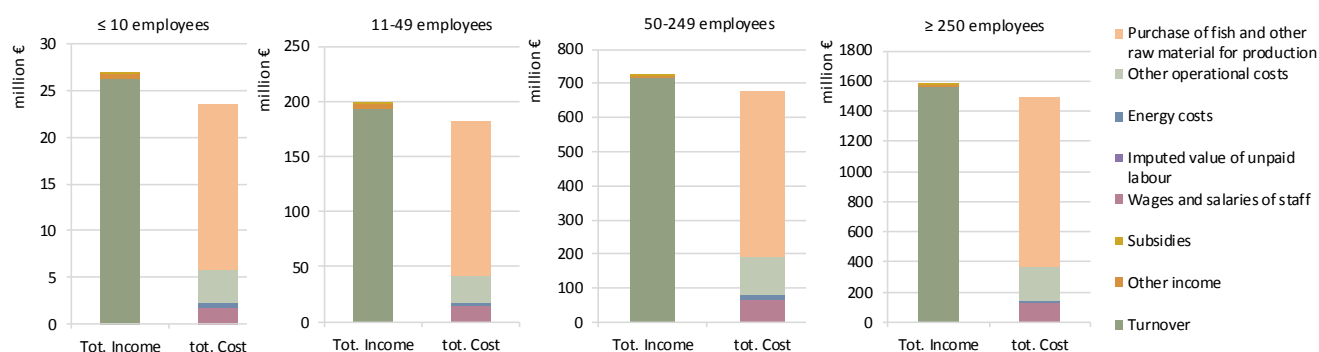
In the period 2008-2015 there were about 191-180 fish processing plants in Poland with defined primary production under the NACE Code 10.20. In terms of the number of enterprises, fish processing was dominated by small sized firms with the number of employees between 11 and 49 (36-44%). Micro sized enterprises (less than or equal to 10 employees) shared 25-30% of total population, medium sized enterprises (between 50 and 249 employers) shared 24-29%, and the largest (with more than 250 persons) 6-9%. On the other hand, most of the employed worked in the largest plants (52-54%), and further 35-39% in medium-sized enterprises. Production was also concentrated in the largest companies and 61-65% both of total income and total production costs were generated in plants with more than 250 people employed and further 23-29% in medium-

sized. Most of assets were also located in the largest and medium sized companies, respectively 59-68% and 24-32% of total.



**Figure 4.17.3: Polish main structural and economic variables trends by size category, 2008-2015**

In 2015, in the largest and medium sized enterprises the total income structure was the same with a 99% share of turnover. In small and micro the share of turnover was slightly smaller and was respectively 97% and 98%. Also, the structure of production costs was similar regardless of the size category. The dominance of raw material costs was revealed, accounting for 72-75% of total production costs in medium and large enterprises and for 76-77% in small and micro. Wages and salaries represented 8% of total production costs in micro and small companies and 9-10% in large and medium sized. Share of energy was 1-2% of total production costs in all size categories. Other operational costs (such as packaging, transport, water charges etc.) represented 14% of total production costs in small enterprises, 15% in micro and large sized and 16% medium sized.



**Figure 4.17.4: Polish income and cost structure, by size category, 2015**

Data reflect the variability of the economic performance of the Polish fish processing industry sector by size category. Production was concentrated in the largest companies and 62% of total income and 63% total production costs were generated in plants with more than 250 people employed and further 29% of both income and costs in medium-sized. The greatest increase of total income and total production costs was for the segment with a number of employees between 50 and 249, respectively by 26% and 28% compared to the previous year and by 90% and 102% compared to 2008. The smallest increase of total income and total production costs occurred in the largest companies, respectively by 5% both compared to the previous year and respectively by 71% and 73% compared to 2008.

**Table 4.17.3: Economic performance of the Polish fish processing sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)		Δ (2008-15)	
less than or equal to 10 employees												
Total Income	21,6	19,9	19,5	26,9	27,3	23,2	25,0	26,8	▲	7%	▲	24%
Total production costs	20,1	19,1	18,8	25,9	25,7	21,4	22,1	23,6	▲	7%	▲	17%
Gross Value Added	3,2	2,1	2,2	2,9	3,5	4,2	4,6	5,0	▲	9%	▲	57%
Operating Cash Flow	1,5	0,8	0,7	1,0	1,6	1,8	3,0	3,2	▲	8%	▲	112%
Earning before interest and tax	1,1	0,4	0,1	0,4	1,0	1,2	2,5	2,6	▲	5%	▲	144%
Net Profit	1,0	-0,9	0,0	0,2	0,8	1,1	2,4	2,8	▲	14%	▲	183%
between 11 and 49 employees												
Total Income	149,6	136,2	156,7	193,6	194,0	229,0	177,5	199,7	▲	13%	▲	33%
Total production costs	136,0	125,1	147,7	180,3	181,2	211,8	165,3	181,8	▲	10%	▲	34%
Gross Value Added	24,5	20,3	19,3	26,2	25,3	31,9	24,7	30,3	▲	23%	▲	23%
Operating Cash Flow	13,6	11,1	9,0	13,2	12,8	17,2	12,1	17,9	▲	47%	▲	31%
Earning before interest and tax	10,7	8,3	5,8	8,7	8,0	11,5	6,9	12,0	▲	74%	▲	12%
Net Profit	10,1	7,5	6,0	6,9	7,2	9,6	5,7	10,9	▲	89%	▲	7%
between 50 and 249 employees												
Total Income	384,5	340,4	423,0	475,2	442,4	487,4	578,8	728,9	▲	26%	▲	90%
Total production costs	335,1	315,2	390,7	442,5	417,5	448,8	528,5	677,1	▲	28%	▲	102%
Gross Value Added	92,3	59,0	72,6	72,9	64,3	81,4	100,0	114,5	▲	14%	▲	24%
Operating Cash Flow	49,3	25,2	32,3	32,7	24,8	38,6	50,4	51,8	▲	3%	▲	5%
Earning before interest and tax	38,8	16,8	21,8	20,8	13,9	23,5	32,9	34,4	▲	5%	▼	-11%
Net Profit	31,8	10,1	17,9	14,9	11,5	19,4	27,1	28,6	▲	5%	▼	-10%
greater than or equal to 250 employees												
Total Income	925,0	960,7	1 055,4	1 076,1	1 237,6	1 412,5	1 500,7	1 578,0	▲	5%	▲	71%
Total production costs	861,3	876,9	1 013,2	1 014,9	1 185,4	1 379,2	1 415,6	1 489,6	▲	5%	▲	73%
Gross Value Added	149,3	159,0	129,5	142,6	142,3	134,5	204,7	215,3	▲	5%	▲	44%
Operating Cash Flow	63,7	83,8	42,2	61,2	52,2	33,3	85,1	88,4	▲	4%	▲	39%
Earning before interest and tax	45,4	64,5	21,8	39,9	26,8	8,7	57,3	57,6	▲	1%	▲	27%
Net Profit	24,3	53,5	19,7	12,6	23,2	5,8	46,0	81,6	▲	77%	▲	236%

In 2015, fish processing industry achieved good financial and economic performance for all segments by size category compared to the previous year.

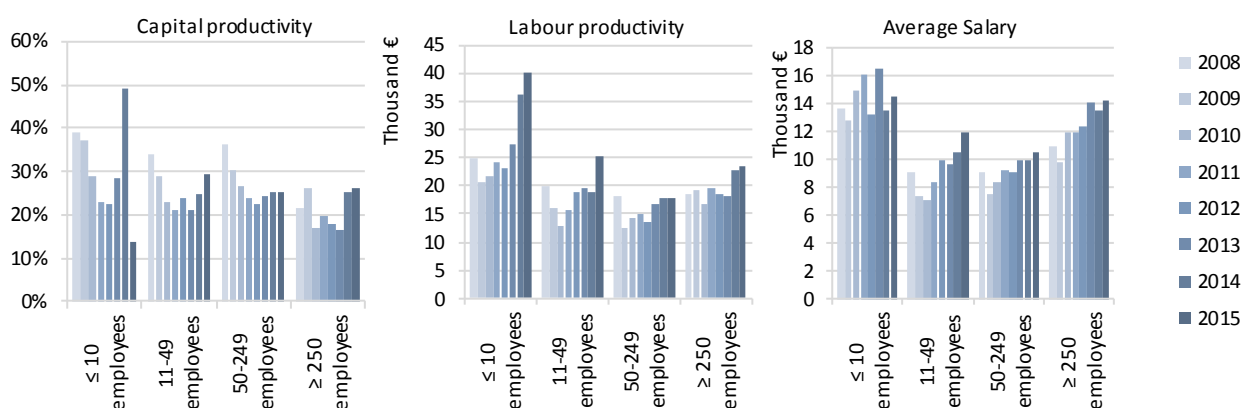
The amount of the GVA, OCF, EBIT and Net Profits indicators increased along with increasing size category. But the rate of growth was different for particular segments. The greatest increase of GVA, OCF, EBIT and Net Profits was noted for the segment with a number of employees between 11 and 49, respectively by 23%, 47%, 74% and 89% compared to the previous year. The smallest increase of the GVA, OCF, EBIT indicators was noted for the largest companies, respectively by 5%, 5%, 4% and 1% compared to the previous year. For Net Profit indicator the smallest increase was noted for the segment with a number of employees between 50 and 249, by 5% compared to the previous year. Only for the segment with a number of employees between 50 and 249 EBIT and Net Profit indicators decreased in 2015 compared to 2008, respectively by 11% and 10%.

Over the period 2008-2015 there was a fluctuated trend in the capital productivity for all segments by size category. In 2015 indicator increased in small (11-49 employees) and large enterprises ( $\geq$ than 250 employees), respectively to 30% and 25% compared to the previous year. Stabilization was noted in medium sized (50-249 employees) firms (to 25%) and weakened in micro sized ( $\leq$  10 employees) to 14%.

Also labour productivity indicator fluctuated from year to year in all segments by size category. In 2015 data shows increase for micro ( $\leq$  10 employees), small (11-49 employees) and large ( $\geq$ than 250 employees), respectively by 11%, 33% and 4% compared to the previous year and a slight decrease for medium sized (50-249 employees) firms (by 1%).

During the whole of the analysed period, the micro plants ( $\leq$  10 employees) achieved the highest labour productivity. In 2005, it was €40.1 thousand. Labour productivity for small (11-49 employees), medium (50-249 employees) and large ( $\geq$ than 250 employees) firms was lower respectively by 47%, 56% and 41% compare to micro segment.

During the analysed period average salary in every group of enterprises was fluctuated. In 2015, average salary increase for all segments by size category by 13% for small (11-49 employees), by 8% for micro plants ( $\leq$  10 employees) and by 6% for medium (50-249 employees) and large ( $\geq$ than 250 employees) compare to previous year. The highest average salary, €14.5 thousand, was noticed for micro plants. For large, small and medium companies average salary was lower respectively by 2%, 18% and 28% compared to micro segment.



**Figure 4.17.5: Polish capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

#### 4.17.4 Trends and drivers for change

Presented figures show a developing Polish fish processing industry, with the ability of generating profits for the companies and jobs and incomes for the involved workers and the future industry expectations indicator (FEI) was estimated at 1.3%.



In 2015, in terms of the number of processing plants, Polish processing industry with the fish production as the main activity was dominated by small and medium sized firms. But most of the employed worked in the largest plants (52%) and also most of production (53% of volume and 65% of value) was concentrated in large fish processing companies with more than 250 employees.

In 2015, the production of fish processing industry defined as the main activity increased to 426.8 thousand tonnes (by 9.1% compared to 2014) and reached €1,987 million (by 12.4% compared to 2014). The most important group of products in terms of volume were prepared and preserved fish with the share of 52.1% of the total production. The production of fish prepared and preserved increased by 11.3% compared to the previous year and 16.5% compared to the 2008. Processed or preserved herrings covered 49.5% of production in this group of products. The production of processed and preserved herring increased by 8.1% compared to the previous year. The second largest group were smoked fish with a 20.9% share in production volume. The production of smoked fish increased by 11.1% compared to the previous year. In this group the largest share of 61.8% had smoked salmon which production increased by 6.2% compared to the previous year. Other groups of products had a smaller share of production volume. Frozen fish, filets and fish meat covered 10.1% of the volume of total production, fresh or chilled fish, filets and fish meat 8.6%, salted fish 4.5% and meals and other fish products 3.9%. In terms of value smoked fish were the most important covering 45.6% of the total value, while prepared and preserved covered 33.6%. Fresh and frozen fillets and fish meat make up for 9.8% and 8.1%, respectively, while salted for 2.4% and other fish products for 0.5%.

The internal market has limited potential of growth. According to the "Household budget survey" the Polish households demand in 2015 increased in value by 1.7% and amounted €940 million<sup>13</sup>, compared to 2014. Per capita household expenditure recorded at €24, which was 23% the EU average (€106), remained on the level of the previous year<sup>14</sup>. It is estimated that per capita consumption of fish and seafood product in live weight equivalent decreased in 2015 to 12.47 kg, by 7%.

For this reason, in 2015 as in the previous years, a key driver of fish processing sector development was growing exports. In 2015, exports of fish and fish products amounted to 440.7 thousand tonnes with a value of €1.6 billion<sup>15</sup>. It was an increase both in volume and value, respectively by 16% and by 4% compare to the previous year. Such a significant increase in the volume of exports was mainly due to the increased domestic catches and consequently increased exports straight from the side of the ship.

Three groups of products: smoked fish, processed and preserved fish and fish fillets fresh and frozen accounted for 91% of exports value and 58% of its volume. The species structure of Polish exports was dominated by salmon, which sales in 2015 accounted for 53% of total export value.

Poland has become the largest exporter of smoked salmon among member countries. However, exported products are often not associated with Poland, because a large part of them is produced on behalf of foreign companies and offered in target countries under the names of own brands of store chains.

The main export market for Polish fish for smoked fish, processed and preserved fish and fish fillets was the EU market with 83% share in volume and 91% in value. Most of them were sent to the German and French market, respectively 54% and 8% of total exports value.

In 2015, the share of turnover from direct exports in fish processing industry turnover accounted for 60% of the value of products sold. For some product groups, such as smoked salmon, this share was even higher and increased to 81%.

Imports played a dominant role in the supply of raw materials because of limited ability to domestic harvest fish from the Baltic Sea and limited production of Polish aquaculture. In 2015, Baltic catch amounted to 134.7 thousand tonnes and aquaculture production for consumption was about 37 thousand tonnes. The Baltic basic catch were sprats (48%), herrings (29%), cods (10%), and

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<sup>13</sup> Out-of-home consumption was excluded.

<sup>14</sup> "The EU fish market" 2016 Edition

<sup>15</sup> Including exports directly from the fishing ship's sides.



flounders (7%). The main aquaculture species were carp (48%) which was generally sold alive and rainbow trout (43%). Polish deep-sea fishery sold their catches in foreign markets.

In 2015, the import of fish and fish products amounted to 533.3 thousand tonnes with a value of €1.7 billion, mainly intended for further processing. It was an increase both in volume and value, respectively by 0.1% and by 3.5% compared to the previous year. Three groups of products: fresh and frozen fish, fillets fresh and frozen accounted for 87% of import value and 84% of its volume.

The most important imported species, in terms of volume and value, were salmon (respectively 30% and 48% of total), herrings (respectively 17% and 8%), cod (respectively 9% and 8%), mackerels (respectively 8% and 3%) and Alaska Pollock (respectively 7% and 5%). In Poland most fish, in terms of volume, is imported from Norway (41%), Sweden (8%), Denmark (8%), Germany (7%) and China (6%). But Sweden was only the logistic centre for Norwegian salmon exports to Poland.

In 2015 the negative balance of foreign trade was recorded which amounted to €61.4 million.

A large role of foreign trade in fish processing industry means that its economic and financial results are largely dependent on the exchange rate of the Polish zloty against other currencies and trends in prices on international markets.

In the period 2007-2015 most of projects which modernized fish processing technologies and manufacturing process were funded from the European Fisheries Fund (EFF) on the basis of the Operational Programme "Sustainable development of fisheries sector and coastal fishing areas 2007-2013". From the beginning of operational program 446 agreements were signed to support investments in fish processing and marketing and payments to beneficiaries amounted to €125.7 million<sup>16</sup>.

In the 2014-2020 programming period investment in fish processing industry will be supported from the European Maritime and Fisheries Fund (EMFF) on the basis of the Operational Programme "Fisheries and the Sea" 2014-2020. €81.3 million has been planned to support marketing and processing related measures. Most of the aid are planned for "Processing of fisheries and aquaculture products" (49%), than 30% for "Production and marketing plan", 17% for "Marketing measures" and 3% for "Storage aid".

Only micro, small and medium enterprises (Recommendation 2003/361/EC), which carry out activities in the processing of fishery products, are entitled to financial aid for investments.

Until the end of 2015, call for proposals to carry out investments within the framework of Article 66 Production and marketing plans was not announced.

In Poland, as in the European Union countries, the production and marketing of food, including regulations introducing the obligation to implement and apply certain food safety management systems. All establishments that process, prepare or produce, repack and store animal products for which requirements are set out in Annex III to Regulation 853/2004 must be approved by an official veterinarian from the competent Poviats Veterinary Inspectorate (PIV).

Obligatory requirements and procedures necessary to ensure food safety in food processing industry (in accordance with the Act of 11 May 2001 on health conditions of food and nutrition (Journal of Laws 2006 No. 171 item 1225 consolidated text 2017 item 149) include:

- Good Hygienic Practice – GHP,
- Good Manufacturing Practice – GMP,
- Hazard Analysis and Critical Control Point – HACCP.

The implementation of non-obligatory quality, safety and also environmental management systems is not a result of legal regulations, and therefore is voluntary. Fish industry enterprises can implement and use these systems voluntarily or if this is required by the domestic or foreign customers.

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<sup>16</sup> Final Report on Implementation Operational Program "Sustainable development of fisheries sector and coastal fishing areas 2007-2013" CCI 2007 PL 14 FPO 001, approved by Monitoring Committee on 11.01.2017.

For non-obligatory quality, safety and environment management systems used in the fish processing industry belong:

- Food Safety Management System according to the ISO 22000:2005
- International Featured Standard (IFS Food),
- British Retail Consortium (BRC Global Standards),
- Marine Stewardship Council Chain of Custody (MSC CoC).

Enterprises from the fish processing industry supplying their goods to the EU markets to retail chains under the retailer's chain's own brands have obtained certificates for the implemented IFS or BRC system, or both.

On the MSC website you can find the Brand or retailer list as well as certified fish species and product types in Poland<sup>17</sup>.

#### *4.17.5 Outlook*

In 2016 the production of fish processing industry defined as the main activity increased to 509 thousand tonnes (by 19% compared to 2015) and reached €2,987 million (by 11% compared to 2015). The production structure has not changed. The most important group of products in terms of volume were prepared and preserved fish with the share of 48% of the total production. The production of fish prepared and preserved increased by 9% compared to the previous year. The second largest group were smoked fish with a 19% share in production volume. The production of smoked fish increased by 6% compared to the previous year. In this group the largest share of 61% had smoked salmon which production increased by 2% compared to the previous year.

Further development of the fish processing industry in Poland is expected and the future industry expectations indicator (FEI) was estimated at 1.3%. Exports and investment will be the factor that accelerates the pace of development. Focusing sales on the EU market may be a big challenge for the Polish processing industry in the near future. Further development should be based more on third country markets and on the stimulation of the internal market.

#### *4.17.6 Data coverage and quality*

Economic variables of processing industry are based on the information provided with questionnaires. The study was census and questionnaire with economic variables was sent to all processing companies approved by the General Veterinary Inspectorate:

- to intra-community trade according to Council Regulation (EC) no. 853/2004 of April 29, 2004, which sets forth detailed requirements regarding hygiene in foodstuffs of animal origin, Appendix III Section VIII Fishery Products.
- to make direct sales in accordance with the regulation of the Minister of Agriculture and Rural Development of December 29, 2006 regarding veterinarian requirements during the production of products of animal origin for direct sale (Journal of Laws of 2007. No. 5, pos. 38).

Answering the questionnaire is mandatory but the response rate was 81% in 2015 for companies defined the primary production under the NACE Code 10.20. and 71% for firms involved in fish business, but as a secondary activity.

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<sup>17</sup> <http://cert.msc.org/supplierdirectory/VController.aspx?xf=1&Country=Poland&Path=be2ac378-2a36-484c-8016-383699e2e466>

## 4.18 PORTUGAL

### 4.18.1 General overview of the Portuguese fish processing sector

Portuguese domestic market is a large final consumer for fish and fish products, the biggest within UE in per capita consumption, with around 53.8 Kg/person/year in 2013 (FAO - Food Balance Sheets, 2016). This configures a unique UE profile, combining tradition, experience, opportunity, innovation and know-how, for the fish processing companies.

In 2015, Fish Processing Industry in Portugal consisted of 157 enterprises, 63 of which were small enterprises with less than 11 employees. Most enterprises are located in the north (33) and in the centre (71) of the country. The outermost regions (Azores and Madeira) gather 9 and 6 companies. All together Portuguese enterprises employed 7,148 people (about 750 in Azores, and 100 in Madeira) and global production is about 234 thousand tonnes, and total income of €1,197 million.

Traditionally, there are three main segments in fish processing in Portugal: frozen and fresh industry; cannery and preparation; salting and drying, each with their own national and international market and specificity.

Frozen and fresh industry produced 130.1 thousand tonnes of fish and seafood in 2015. With a lot of different productions presented, from fish to crustaceous, shellfish or cephalopods, the main products of this segment are frozen desalted cod and frozen hake and fillets. In general, frozen industry depends on a high import of raw material. Production is mostly directed to supply national market, but also has a high export value component.

Salting and drying sector produced 59.2 thousand tonnes in 2015. The main product of this segment of the industry is salted dried cod. This production is mostly concentrated near the port of Aveiro (Ílhavo) and the final product is mainly for domestic consumption within the national market. The raw material is mainly imported.

Cannery and preparation produced 44.7 thousand tonnes in 2015. Main products include preparation and cannery of sardine, mackerel, horse mackerel and tuna. This industry is concentrated near major ports specialized on pelagic fisheries, such as Matosinhos (North), Peniche (Center) and Olhão (South). One of the reasons for this situation is the high dependency of the national cannery industry on small pelagic production. This is the only segment of the Portuguese fish processing industry that is more exported than home consumed, and with increased figures on exports.

Fish processing as secondary activity is done by 17 enterprises representing a combined turnover of €50.8 million in 2015 and corresponding to approximately 5% of total turnover from fish processing.

Most Portuguese fish processing enterprises are small companies with less than 11 employees (40%). By contrast, only 2% of the enterprises have more than 250 employees. This is related with the labour work intensity over the production: cannery still is very high intensive man-power (mostly women by tradition), the salted cod is medium to small intensive, while frozen is much less intensive in labour-work, general female workers (but also with the higher number in companies).

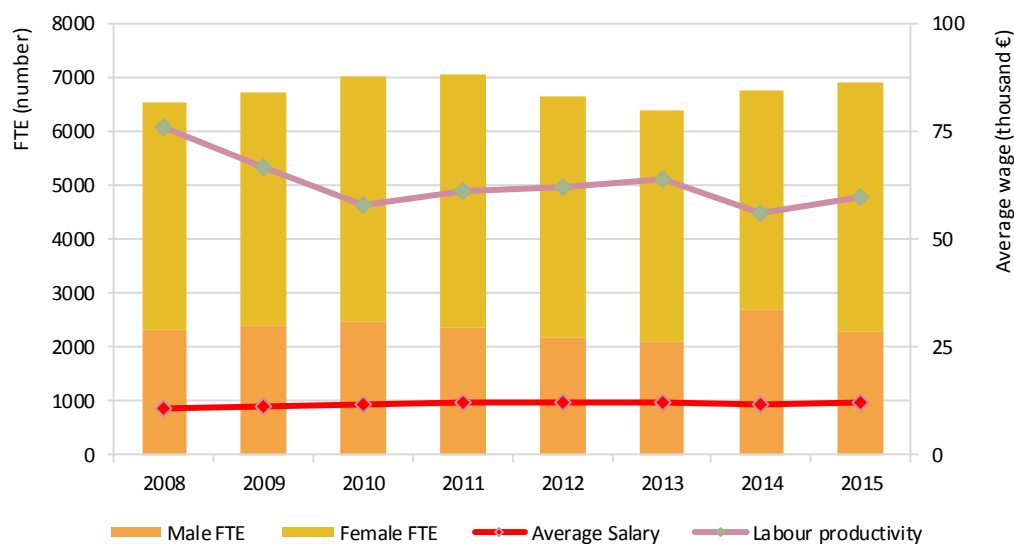
From 2008 to 2015 the number of enterprises in total reduced by 26%, mainly due to the decrease in the number of small enterprises between 0 and 10 (-43%), and between 11 and 49 employees (-11%), and mostly in frozen and salting segments.

In contrast, the number of employees increased (by 7%) during the same period and the average wage increased by 10% to an average €12 thousand *per year* (+1% comparing with the previous year).

The ratio between male and female workers is changing, with the prevalence of the last one over the first. Over the period, female workforce increased by 11% while male workforce oscillates during the years, but recover to the same figure as in 2008. In 2015, the female workforce represented 67% of the total employees, against 64% in 2008.

**Table 4.18.1: Portuguese fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	213	202	180	169	166	154	153	157	▲ 3%	▼ -26%
≤10 employees	111	99	73	63	70	62	61	63	▲ 3%	▼ -43%
11-49 employees	57	62	63	60	50	48	51	51	■ 0%	▼ -11%
50-249 employees	43	37	41	42	42	41	37	39	▲ 5%	▼ -9%
≥250 employees	2	4	3	4	4	3	4	4	■ 0%	▲ 100%
<b>Employment (number)</b>										
Total employees	6,664	6,815	7,376	7,447	7,167	6,726	7,068	7,148	▲ 1%	▲ 7%
Male employees	2,377	2,431	2,578	2,501	2,350	2,194	2,799	2,370	▼ -15%	■ 0%
Female employees	4,287	4,384	4,798	4,946	4,817	4,532	4,269	4,778	▲ 12%	▲ 11%
FTE	6,561	6,738	7,037	7,065	6,666	6,380	6,774	6,913	▲ 2%	▲ 5%
Male FTE	2,339	2,404	2,460	2,373	2,186	2,081	2,683	2,292	▼ -15%	▼ -2%
Female FTE	4,222	4,334	4,577	4,692	4,480	4,299	4,091	4,621	▲ 13%	▲ 9%
<b>Indicators</b>										
FTE per enterprise	30.8	33.4	39.1	41.8	40.2	41.4	44.3	44.0	▼ -1%	▲ 43%
Average wage (thousand €)	10.9	11.1	11.7	12.1	12.0	12.3	11.8	12.0	▲ 1%	▲ 10%
Unpaid work (%)	1.3	1.1	4.3	5.1	6.8	4.7	3.9	3.0	▼ -24%	▲ 138%



**Figure 4.18.1: Portuguese employment trends, 2008-2015**

#### 4.18.2 Economic performance of the Portuguese fish processing sector

Total income was €1,168 million in 2015, with an increase of 3% when compared with 2014 and a positive variation over the period 2008-2015.

Frozen industry production in 2015 was 130.1 thousand tonnes of fish and seafood, an increase of 3.3% compared with 2014, while the sales amounted to 117 thousand tonnes, with a value of €388 million. From 2014 to 2015, there was an increase of 2.6% on sales in quantity but with a slightly decrease of 0.6% in value, which translates in the decreasing of the average price per kilo, from €3.44 per kg to €3.33 per kg.

Salting and drying industry produced 59 thousand tonnes in 2015 (-13.7% from the previous year), while sales amount 49 thousand tonnes, with a value of €270 million. The sales quantity has decreased by 20.4% over the previous year while the decrease in value was 5.9%. The average price per kilo increased from €4.68 per kg to €5.53 per kg from 2014 to 2015.

Cannery and preparation produced 45 thousand tonnes in 2015, a decrease of 3.8% over the previous year, while sales amount rise to 46.4 thousand tonnes, for value of €237 million. The sales quantity has increased by 2% over the previous year (+6.7% in value). The average price per kilo increased from €4.85 per kg to €5.10 per kg from 2014 to 2015.

The raw material purchase costs went up to €728 million in 2015.

Purchase fish and other raw materials for production represented in 2015 the largest share of the cost structure, with 84% of total costs, representing 61% of the total income. This share has been increased from 51.6% in 2008 to 61.8% in 2014. In terms of absolute values, the Purchase fish and other raw materials has increased a total of 28% over the period 2008-15.

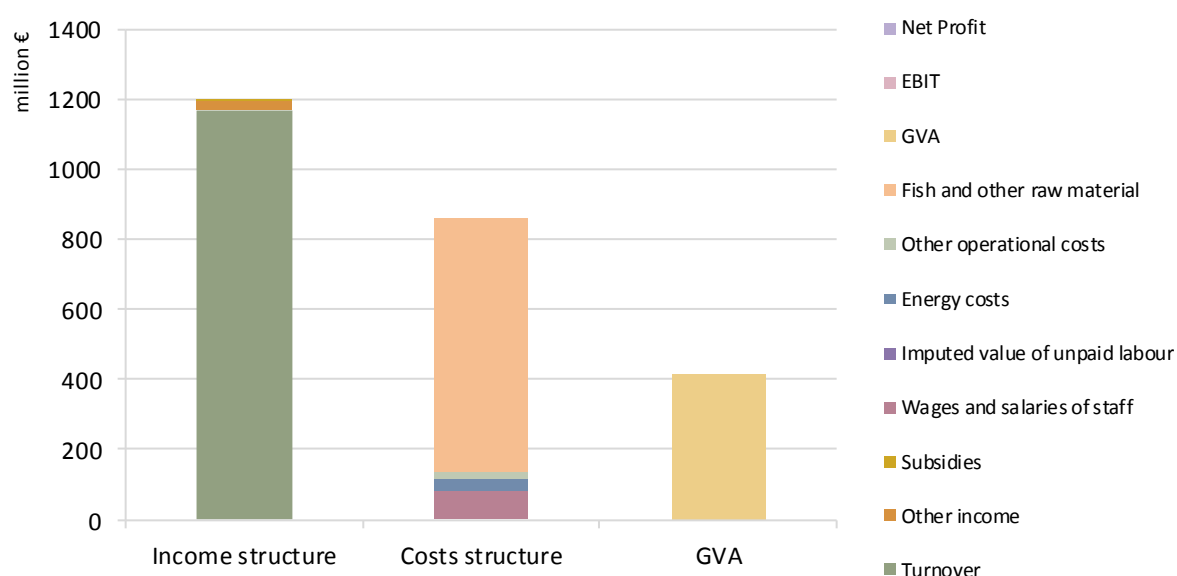
Energy costs went up to €33.9 million in 2015.

Labour costs are historically the second main cost item, followed by Energy costs. Labour costs amount in 2015 up to 10% of the total cost structure and 7% of the total income. Labour costs also increased 14% over the 2008-15 period (the Energy costs had the same tendency, increased 25%). Energy costs amount 4% of the total cost structure and 3% of the total income.

Labour productivity has reduced when compared with 2008 value, nevertheless, from 2014 to 2015 an increase of 7% is observed, this means that the increase on turnover and in other incomes was enough to overwrite the effect of the increase of the production costs and FTE.

The GVA has been decreasing over the years, mainly due to increasing prices of fish and other raw material and simultaneously to a decreasing income (resulting from lower prices from sales). Albeit decreasing GVA from 2008 to 2014, the processing industry appears to start recovering showing a significant improving on GVA of 9% from 2014 to 2015.

Portuguese processing industry as increased the total value of assets from 2014 to 2015 in 14% (up to €1,165 million), the net investments by 76% (up to €74 million), but also increased in their debt by 17% (up to €740.5 million).



**Figure 4.18.2: Economic performance of the Portuguese fish processing sector, 2015**

**Table 4.18.2: Economic performance of the Portuguese fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	1,090.8	1,015.0	1,075.2	1,145.0	1,132.8	1,129.3	1,130.5	1,167.6	▲ 3%	▲ 7%
Other income	3.5	2.8	-9.0	9.6	-4.5	23.3	2.5	26.5	▲ 958%	▲ 663%
Subsidies	3.7	4.1	3.0	3.4	3.9	3.3	3.3	3.2	▼ -4%	▼ -15%
<b>Total Income</b>	<b>1,098.0</b>	<b>1,021.8</b>	<b>1,069.2</b>	<b>1,158.0</b>	<b>1,132.2</b>	<b>1,156.0</b>	<b>1,136.3</b>	<b>1,197.2</b>	▲ 5%	▲ 9%
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	566.6	541.8	613.1	671.3	663.2	692.3	701.9	727.6	▲ 4%	▲ 28%
Wages and salaries of staff	70.5	73.8	79.0	81.0	74.5	74.7	77.0	80.2	▲ 4%	▲ 14%
Imputed value of unpaid labour	0.9	0.8	3.6	4.3	5.5	3.7	3.2	2.5	▼ -22%	▲ 176%
Energy costs	26.7	25.8	24.2	27.8	31.2	33.8	34.7	33.9	▼ -2%	▲ 27%
Other operational costs	1.3	1.2	19.7	23.5	19.0	18.3	16.0	18.2	▲ 13%	▲ 1259%
<b>Total production costs</b>	<b>666.1</b>	<b>643.4</b>	<b>739.6</b>	<b>807.9</b>	<b>793.3</b>	<b>822.8</b>	<b>832.8</b>	<b>862.3</b>	▲ 4%	▲ 29%
<b>Capital Costs (million €)</b>										
Depreciation of capital										
Financial costs, net	42.2	27.7	21.1	26.4	23.7	22.2	21.7	18.2	▼ -16%	▼ -57%
Extraordinary costs, net	4.8	5.8								
<b>Capital Value (million €)</b>										
Total value of assets	1,034.8	989.9	1,059.8	1,038.0	1,023.6	1,003.5	1,020.9	1,164.9	▲ 14%	▲ 13%
Net Investments	43.8	47.2	31.6	30.1	40.8	19.1	42.1	74.0	▲ 76%	▲ 69%
Debt	745.8	697.0	729.1	709.4	657.7	647.6	630.7	740.5	▲ 17%	▼ -1%
<b>Economic performance (million €)</b>										
Gross Value Added	499.6	449.0	409.1	432.0	414.9	408.2	380.4	414.4	▲ 9%	▼ -17%
Operating Cash Flow	431.9	378.4	329.6	350.1	339.0	333.2	303.5	334.9	▲ 10%	▼ -22%
Earning before interest and tax										
Net Profit										
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	76.1	66.6	58.1	61.1	62.2	64.0	56.2	59.9		
Capital productivity	48.3	45.4	38.6	41.6	40.5	40.7	37.3	35.6		
GVA margin	45.7	44.1	38.4	37.4	36.8	35.4	33.6	34.7		
EBIT margin										
Net profit margin										
Return on Investment										
Financial Position	72.1	70.4	68.8	68.3	64.3	64.5	61.8	63.6		
Future Expectation Indicator										

### European Fisheries Fund (2007-2013) - PROMAR

During EFF (2007-2013) a considerable number of operations were granted between 2007 and 2015. Portugal, for fishing processing industry, approved 124 operations with €207.3 million in total investment.

In all, eligible expenditure, certified and actually paid by beneficiaries was €133.9 million, with €18.6 million national contribution, and €44.7 million EFF contribution.

The fishing industry and marketing (measure 2.3, from Axis 2.) embodied 42% from total of the eligible expenditure certified and actually paid by beneficiaries and 4.3% of total approved projects of the EFF.

#### 4.18.3 Overview of the Portuguese fish processing sector by size categories

Not all variables have a linear reading when segmented by size categories, due to statistical limitations, namely energy costs and purchase of fish and other raw material for production. Moreover, with the partial absence of data, becomes impossible to analyse the full economic performance of each size category.

In 2015, 40% of the companies have less than 10 employees, and only 2% have more than 250 employees. The smallest companies increased in number by 3%, while the segment 50-249 by 5%, comparing with 2014. The segment of 11-49 employees and over 250 employees remains equal to previous year.

Within a total employment of 6,913 FTE, the smallest companies represent 40% of total FTE, while the big companies represent 2.6% of employment. The 50 to 249 employees' category represents 25%.



**Figure 4.18.3: Portuguese main structural and economic variables trends by size category, 2008-2015**

By income in 2015, the small companies represent 40% of the all (€480.4 million, increased 7% from the previous year), while big companies get 3% (€30.5 million, an increase of 4% from 2014).

The 11 to 49 employees' companies represent 32% income, with €388.9 million, plus 4% regarding the previous year, while the 50 to 249 employees' companies get with over 25% share of income (€297.4 million), plus 4% comparing with 2014.

The Raw material purchase costs went up to €728 million in 2015. Small companies spent €292 million (40% of total), 11-49 employees €236 million (33%), 50-249 employees €181 million (25%) and companies over 250 employees purchase only €19 million (2.5%). This last segment includes only four factories, mainly cannery, and use small pelagic as primary raw material, purchased directly at first sale and from third country imports low price.

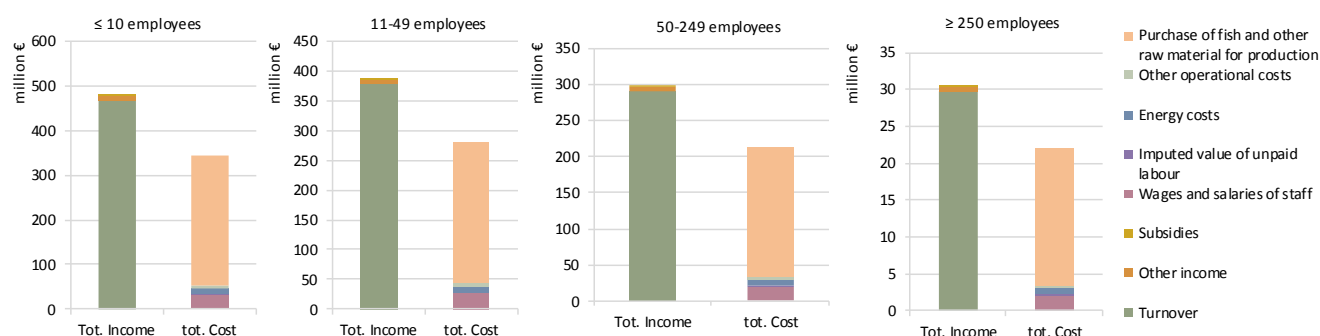
Energy costs went up to €33.9 million in 2015. Small companies spent €13.6 million (40% of total), 11-49 employees €11.0 million (32%), 50-249 employees €8.4 million (25%) and companies over 250 employees spent only €0.9 million (3%).

**Table 4.18.3: Economic performance of the Portuguese fish processing sector by size category (indicators in million €), 2008-2015**

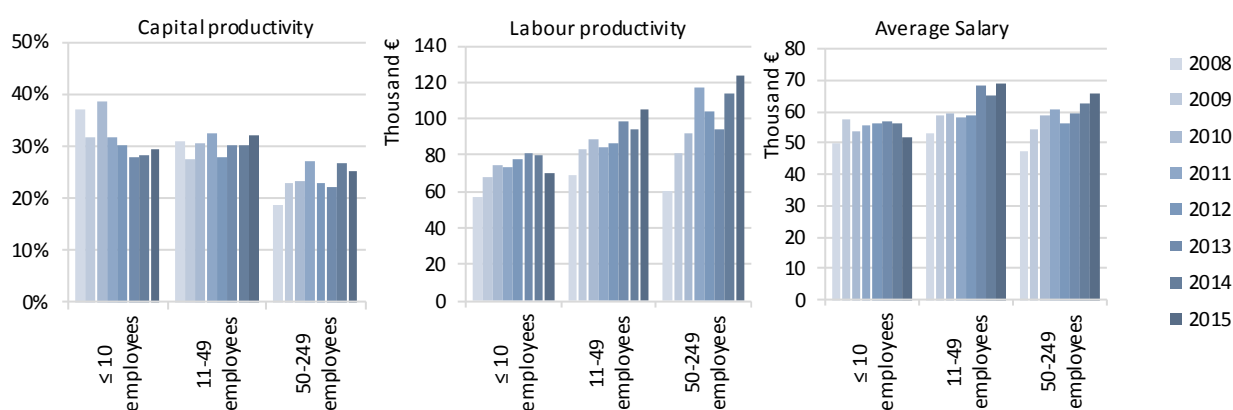
Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	572.2	500.8	433.6	431.7	477.4	465.4	447.2	480.4	▲	7%	▼ -16%
Total production costs	347.1	315.3	299.9	301.2	334.5	331.2	327.7	346.0	▲	6%	■ 0%
Gross Value Added	260.3	220.0	165.9	161.0	175.0	164.3	149.7	166.3	▲	11%	▼ -36%
Operating Cash Flow	225.1	185.5	133.7	130.5	142.9	134.1	119.5	134.4	▲	12%	▼ -40%
Earning before interest and tax											
Net Profit											
<b>between 11 and 49 employees</b>											
Total Income	293.8	313.6	374.2	411.1	341.0	360.3	373.9	388.9	▲	4%	▲ 32%
Total production costs	178.2	197.5	258.8	286.8	238.9	256.5	274.0	280.1	▲	2%	▲ 57%
Gross Value Added	133.7	137.8	143.2	153.4	125.0	127.2	125.2	134.6	▲	8%	▲ 1%
Operating Cash Flow	115.6	116.1	115.4	124.3	102.1	103.8	99.9	108.8	▲	9%	▼ -6%
Earning before interest and tax											
Net Profit											
<b>between 50 and 249 employees</b>											
Total Income	221.7	187.2	243.5	287.8	286.5	307.8	285.9	297.4	▲	4%	▲ 34%
Total production costs	134.5	117.9	168.5	200.8	200.7	219.1	209.5	214.2	▲	2%	▲ 59%
Gross Value Added	100.9	82.2	93.2	107.4	105.0	108.7	95.7	102.9	▲	8%	▲ 2%
Operating Cash Flow	87.2	69.3	75.1	87.0	85.8	88.7	76.4	83.2	▲	9%	▼ -5%
Earning before interest and tax											
Net Profit											
<b>greater than or equal to 250 employees</b>											
Total Income	10.3	20.2	17.8	27.4	27.3	22.5	29.3	30.5	▲	4%	▲ 196%
Total production costs	6.3	12.7	12.3	19.1	19.1	16.0	21.5	22.0	▲	2%	▲ 251%
Gross Value Added	4.7	8.9	6.8	10.2	10.0	8.0	9.8	10.6	▲	8%	▲ 125%
Operating Cash Flow	4.1	7.5	5.5	8.3	8.2	6.5	7.8	8.5	▲	9%	▲ 110%
Earning before interest and tax											
Net Profit											

Because there are some inconsistencies on data for small company (under 10 employees) either productivity or average salary will not be considered to further analysis.





**Figure 4.18.4: Portuguese income and cost structure, by size category, 2015**



**Figure 4.18.5: Portuguese capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

#### 4.18.4 Market

The Portuguese profile in fish processing industry is reflected in the natural trend on imports and exports.

For each industry segment there is an enormous difference on that pattern, which is consistent over the years, and is based on the natural home resources versus the offer of the international markets to fulfil a huge and potentially growing national demand.

In the whole there is a traditional dependence on imports, with a considerable deficit on the international trade balance for fish and seafood products.

In 2015, EU market represented about 75% of the total exported and 65% of imported origin. If in imports this figure is stable for the last years, in exports the extra EU trend is growing.

The most important partner is both import and export, Spain. For imports Russia (frozen cod) and Sweden (salted cod) are a very relevant source. For exports, also France (frozen, cannery), Brazil (dry salted and desalted frozen cod) and Italy (frozen and cannery) are the most relevant markets.

Altogether in 2015, the imports of fish and products from fisheries and aquaculture represents around 490 thousand tonnes and over €1,767 million.

By segments, only cannery is considerably provisioned by national fleet (by small pelagic, but not tuna), and get positive results within the general Trade Balance.

In the other side, both frozen and salting/drying industry has an enormous and structural dependency on imported raw-material (cod and Alaska pollack), with negative consequences over

the Portuguese trade balance. This is expected to increase due to a major demand from the tourism-gastronomic sector.

For frozen products there is a considerable amount of different species imported, but for salting the main species is and will be Atlantic and Pacific cod and also the alternative Alaska pollack.

All together in 2015, in gross weight, the imports of frozen fish products and seafood represents 39% in quantity; 30% in value), while salted dried products (13% and 18%), fresh (15% and 17%) and cannery (9% and 8% in volume and in value) are the remaining components.

By species the imports are quite different: salting and drying is mainly cod, the imports on cannery is based on tuna and tune like, but fresh and frozen imports are based on multiple species (frozen cod for salting is the main, but then came hake, squid, octopus, tuna, crustaceous, redfish, horse-mackerel, sardine and salmon, before a long list of other species).

#### Import (2012-2015)

	2012				2015			
	ton	%	1000euro	%	ton	%	1000euro	%
Dried-salted-smoked	65098,4	16,8	300 678	22,0	61 220	12,5	315 549	17,9
Fresh	68711,8	17,7	274 839	20,1	74 779	15,3	302 074	17,1
Frozen	221982,8	57,1	680 535	49,7	191 385	39,2	527 424	29,8
Other	0	0,0	0	0,0	114 860	23,5	476 859	27,0
Prepared-preserved (cannery)	32757	8,4	113 473	8,3	45 767	9,4	145 121	8,2
<b>TOTAL</b>	<b>388550</b>	<b>100,0</b>	<b>1 369 525</b>	<b>100,0</b>	<b>488 011</b>	<b>100,0</b>	<b>1 767 027</b>	<b>100,0</b>
<b>Variation (2012/2015)</b>					<b>99 461</b>	<b>397502</b>		

#### Export (2012-2015)

	2012				2015			
	ton	%	euro	%	ton	%	euro	%
Dried-salted-smoked	11269,5	5,4	67 423	9,9	10184	3,5	61 382	5,9
Fresh	59372,9	28,7	156 569	23,1	45653	15,8	131 006	12,5
Frozen	90411,5	43,7	269 684	39,7	102256	35,4	289 828	27,6
Other	0	0,0	0	0,0	79481	27,5	363 135	34,6
Prepared-preserved (cannery)	46043,1	22,2	185 240	27,3	51641	17,9	203 654	19,4
<b>TOTAL</b>	<b>207097</b>	<b>100,0</b>	<b>678 916</b>	<b>100,0</b>	<b>289215</b>	<b>100,0</b>	<b>1 049 005</b>	<b>100,0</b>
<b>Variation (2012/2015)</b>					<b>82118</b>	<b>370089</b>		

#### Trade Balance (2012-2015)

	2012		2015	
	ton	1000euro	ton	1000euro
Dried-salted-smoked	-53 829	-233 255	-51 036	-254 167
Fresh	-9 339	-118 270	-29 126	-171 068
Frozen	-131 571	-410 851	-89 129	-237 596
Other	0	0	-35 379	-113 724
Prepared-preserved (cannery)	13 286	71 766	5 874	58 533
<b>TOTAL</b>	<b>-181 453</b>	<b>-690 609</b>	<b>-198 796</b>	<b>-718 022</b>

Data source: Eurostat/National Statistical Institute

Because Portugal is a net consumer of fish and seafood products, exports has a traditional smaller impact on the general economics and in trade balance. Even so, exports represented in 2015 around 289.2 thousand tonnes and close to €1.049 million. For the last years, exports are increasing consistently both in value and quantity, based in add-value products.

Cannery, and more specific sardine and mackerel cannery, are traditionally the main exports of the national resources, but due to the lack of local raw material was overcame by fresh and frozen products (both fish and molluscs segments). Still, cannery represents 18% in volume (gross weight) and 19% on total exports value. Either fresh or frozen has important and increasing shares in

exports: 16% and 29% in volume and 13% and 20% in value. New coming is the molluscs, mainly frozen squids and octopus, with 16% in total export volume and 19% in value.

As a result of this dynamics from import/export the Portuguese Trade Balance for fish and fisheries and aquaculture products is typically negative, with total imports roughly of about twice the total amount of exports. The export/import coverage ratio is about 60%.

The outcome is a traditional deficit of about 200 thousand aggregated tonnes or €718 million, in 2015. Because of the involved amounts in import and export, frozen products gives the biggest share to this reality (-89 thousand tonnes/ -€238 thousand tonnes). Dried and salted products also get big responsibility on the negative result (-51 thousand tonnes/ -€293 million).

#### *4.18.5 Trends and drivers for change*

In the past years Portugal endure a crisis with huge impact over the society as an all, either with economic, financial, and social effects that shorten the demand for goods in general. The fish and fish product consumption was no exception. From 2015 the recoveree is a general feeling, and the fish industry is a clear reflection of this reality.

The Portuguese fish processing industry will continue to be highly dependent on imports in order to fulfil the demand for the **huge consumption per capita**, mainly due to restrictions on the catches imposed by quota regulation.

Only cannery still depends on domestic production (mainly for sardine and mackerel). Salting and drying sector depends almost exclusively from cod imports.

Increasing prices of sardine due to low availability of this specie and the implementing of further catch restrictions on national level fleet (sardine catches reduce from 71 thousand tonnes in 2008 to 33 thousand tonnes in 2012 and then to 13 thousand tonnes in 2015) are putting high pressure on the cannery industry. The sardine capture restrictions imposed until end of April 2018, after an increasing shortage during last years, is asphyxiating the industry. Even with the imports as alternative source, the industry suffers with shrinking margins and struggle against hard international competitiveness.

Also a particular **new market trend** is sensible: the enormous increase on incoming tourism based on culture and gastronomic demand is start pressing the traditional balance between final consumption and raw material. The actual situation asks for more fresh fish, molluscs and crustaceous as "natural" country offer, even outside normal season, as occurs with sardine or octopus for example.

This will provide more income to the economics, but can predictably unbalance the offer from local or regional producers, and will deny competitive price in general for the industry.

The increasing prices of raw material are expected to grow in the short future and will put more pressure over the costs and overall industry value chain. Although the industry still has small room to accommodate this increasing fish prices, it will continue to hinder its profitability, as the trends shows with the consistent decreasing of the net profit. It's expectable, however, that the industry can achieve some stability on structure and economic results in this scenario of an uncertain future.

With **EMFF (2014-2020)**, the processing sector trend to be even more modernised as it is, and its economic performance and sustainability will be supported throughout investments in the development of new or improved products, with the introduction of new technology and systems, and/or with marketing and promotional drivers. Budget for the processing sector is €111.3 million (28% of total EMFF allocation).

The compensation for additional costs in outermost regions for fisheries and aquaculture products within EMFF represents 40% of the allocations under this Priority.

By this time there are already 22 projects approved with up to €91 million of total investment. With this investment the production is expected to increase 270 thousand tonnes and generate new 136 permanent work places.

About **tariff and contingents**, and on autonomous tariff quotas, is important to have in mind that EU supply of certain fishery products depends to a large extent on imports from third countries.

It is common ground that, despite the tariff reduction quotas set up by the EU, those totals seem to be insufficient to meet the demand and development of the processing industry, in particular salting and drying industry and cannery.

In this context, the codfish quotas (*Gadus morhua*, *Gadus ogac*, *Gadus macrocephalus*) and of fillets denominated "loins" of tunas have been deserving special attention from Portugal, with a view to increasing their annual volume at 0% status.

About salting industry it is a general consideration from the sector that are a huge necessity to achieve an agreement over a new contingent to *Alaska pollack* at 0% or close to 0% tax, either to wet salted and salted dry as raw material. They are submitted to the actual 12% import tax, so this option, if get a general agreement, can relieve costs within industry value-chain and ensure a better competitiveness to EU fishing industry.

A different matter, with enormous relevance and awkwardness, is the fact that the contingent for tuna and bonito 'loins', based in the principle "first to come first to serve" but is usually exhausted as early as the first days of each year. Indeed, this contingent, whose annual volume is 25,000 tonnes, is completely exhausted before the end of the first week of January, something that needs to be changed rational and consistently. The national sector demands for years some changes, at least 30,000 tonnes at 0% tax with some safeguard clause from de Commission: to increase automatically in 20% the final volume if, by September of each year, 80% of total contingent is already used.

In parallel, the quota for hake has also been relevant to the frozen industry, and should be maintained as it is.

#### 4.18.6 Outlook

Social and economic data on processing industry was not included in the Work Plan once it is based on the principle of voluntariness basis.

Nevertheless, it is Portugal's intention to keep the regular collaboration with JRC and STECF to keep providing the same available variables from structural business statistics (SBS), in order to maintain the national chapter in future Economic Performance of the Processing Industry reports.

#### 4.18.7 Data coverage and quality

Portugal did not provide data on depreciation of capital and extraordinary costs-net, thus some economic indicators couldn't be calculated. This condition comes from the fact that they are not available at the SBS collected by the National Statistics Institute (INE).

A data revision was performed by INE on Enterprise Statistics for the period 2010 to 2013, obtained from the Integrated Enterprise Accounts System (SCIE).

The update of the Enterprise Statistics derived from the implementation of the SEC 2010 in the National Accounts, which implied, among others, in the reclassification of the institutional sector of some entities, affecting consequently a delimitation of the industrial sector, fish processing industry included.

This reclassification of companies reflects the difference on data between previous report and this one, for the years 2010 to 2012.

## 4.19 ROMANIA

### 4.19.1 General overview of the Romanian fish processing sector

In 2015, the Romania processing industry registered a decrease of productive enterprises in number at 8 comparing with 2014-10 units.

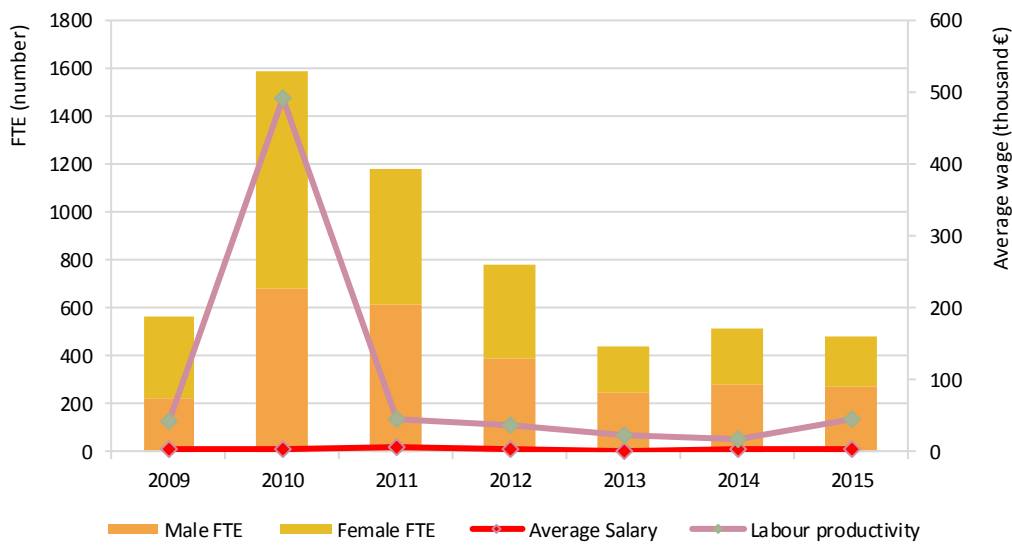
The analyses of data tables are based on the data recorded only for the companies having declared the processing as main activity, according to the provisions of data collection regulation.

The registration of data transmitted by these operators - as a main activity (subject of data collection) is showing the actual situation change, due to the fact that those types of producers didn't operate significant modifications in the structure of the companies trying to keep their profile. Consequently, the number of the employees reported decreased from 510 to 483, as well as FTE - no part time employees are reported, out of which male number is 276 and female 207 - see Table 4.19.1. In 2015, only 1 company was reporting data, having less than 10 employees. In the segment 11-49 employees only 4 companies were reported data, comparing with the 2014 year - 7, leading to the conclusion that the decrease of such kind of companies was 57%, while the number of companies with 50-250 employees was the same. The average wage is increasing up to €4 thousand due to the slight decreasing of total number of employees by 5%. It should be stress the needs to verify previous data collected and to ensure a higher percentage of coverage by Romania data collecting system and to improve the methods used for, in the future. This is an important issue that would ensure consistent explanation as it is the case for the variation of the figures from year to year, as it's the case for level of average wage and other indicators. The level of it was decreased to €1.8 thousand in 2014, but it increased in 2015 up to €4 thousand. Considering the proportion between male and female as FTE, should be observed that the proportion is all most similar, i.e., in 2014 - 55% male and 45% female, as in 2015 - 57% male, and 43% female.

**Table 4.19.1: Romanian fish processing sector overview, 2009-2015**

Variable	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2009-15)
<b>Structure (number)</b>									
Total enterprises	13	18	22	14	7	10	8	▼ -20%	▼ -38%
≤10 employees	3	2	7	2	0	0	1	▬ 0%	▼ -67%
11-49 employees	5	9	7	7	5	7	4	▼ -43%	▼ -20%
50-249 employees	5	5	8	5	2	3	3	▬ 0%	▼ -40%
≥250 employees	0	2	0	0	0	0	0	▬ 0%	▬ 0%
<b>Employment (number)</b>									
Total employees	572	1,598	1,181	780	438	510	483	▼ -5%	▼ -16%
Male employees	230	681	612	388	251	280	276	▼ -1%	▲ 20%
Female employees	342	917	569	392	187	230	207	▼ -10%	▼ -39%
FTE	564	1,591	1,178	780	438	510	483	▼ -5%	▼ -14%
Male FTE	224	677	610	388	251	280	276	▼ -1%	▲ 23%
Female FTE	340	914	568	392	187	230	207	▼ -10%	▼ -39%
<b>Indicators</b>									
FTE per enterprise	43.4	88.4	53.6	55.7	62.6	51.0	60.4	▲ 18%	▲ 39%
Average wage (thousand €)	3.1	4.0	4.6	3.2	1.7	2.8	4.0	▲ 42%	▲ 32%
Unpaid work (%)	23.5	3.9	5.3	5.5	11.1	4.0	1.7	▼ -58%	▼ -93%

The actual figures cannot lead to a conclusion of a decreasing trend of employees' number, because of the reduced number of companies covered by data collection, due to the units which changed in 2015 the percentage of other activities in their total income, and in this way being excluded from the process of data collection, according to the regulation. This is an issue should be considered when analysing the sector as a whole, in what meant the global overview on the export, import of raw material, total products sales, according to other information sources, for example Eurostat data. A significant trend is the reduction of the percentage of unpaid labour to 1.7% as a consequence of the stability of full time working contracts for employees engaged in processing industry.



**Figure 4.19.1: Romanian employment trends, 2009-2015**

The distribution of fish processing companies into the sector reveals that 50% is of the segment of companies 11-49 employees, 37.5% is of the segment 50-249 employees and 12.5% is of the segment  $\leq 10$  employees, as per data collected and reported by member state. The policy to consolidate the development of the sector, as a government strategy, should comprise not only technical measures for these enterprises. The significant increase of labour productivity from €16.1 thousand in 2014, to €45 thousand in 2015 could be explained by the decreased number of total employees and the total income increasing up to €24.1 million in 2015, comparing with €16.1 million in 2014 for a slight decrease of total number of employees. It is underlined the observed significant percentage of other income €9.4 million, respective 39%; it is conducting to the observation that the companies are dealing in processing as basic activity, but the income are providing from other sources – it could be the commercialisation of the own products through own selling points/chain. Member state is to provide more information and in the future to be sure that the companies have the first activity processing and other activities as percentage in total income are under than that the processing one.

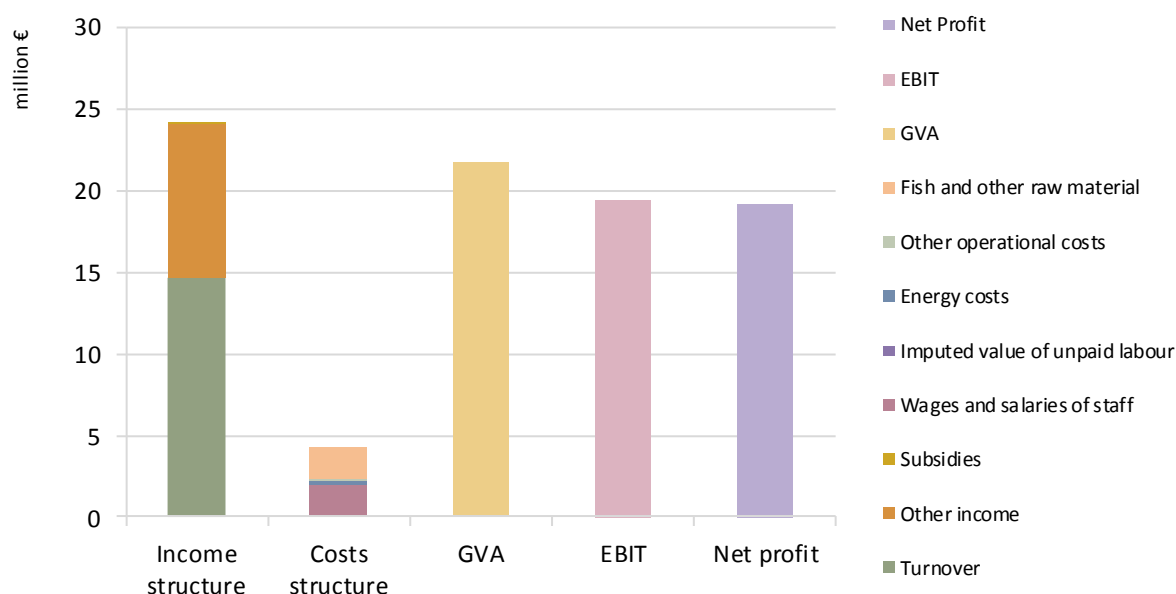
#### 4.19.2 Economic performance of the Romanian fish processing sector

The total turnover of the Romania fish processing industry in 2015 registered a slight decrease, as a consequence of the decreased number of units as main activity, from €15.8 million to €14.7 million, respectively a decreasing percentage of 7%; the other income shoes a huge increase by 4400%, from €0.2 million to €9.4 million. The total income increased from €16.1 million in 2014 to €24.1 million 2015, by a total percentage of 50%. The subsidies for the sector have been 0, without any influence on the evolution of the total income inside industry. The EMFF financing operation are missing from data reported. Member state has to address this data in the future covering all

years of EMFF financing operations in the sector. The missing of other subsidies could be also an explanation on the decreasing number of enterprises and number of employees, as well as a migration trend to develop other activities in order to resist on the business. Table 4.19.2 reflects the corresponding changes in this unequal evolution of the sector, i.e.: increase of total income (turnover and mainly the other income – as above mentioned), decrease of total number of units, employees, and an increase of total value of assets and debts-a significant one, despite of a slow increase of investments by 16%. This last indicator shows the fact that the real producers (not the investors guided by the other opportunities resulting exclusively in profit increase) are still on the way.

According to Figure 4.19.2., the structure of the total income is characterised by the consistency of the turnover-61% of total income, and 39% for other income. The structure the costs is composed by the main cost – purchase of fish and other raw material for production – 44.1%, and wages and salaries of staff – same percentage in total costs – 44.1%. It seems to be not really realistic the value €0.3 million and percentage –around 7% for energy costs, as well as the value and percentage for other operational costs, €0.2 million, respectively – 4.7%. The decreasing value of total costs in 2015, versus 2014 of €5 million is very big, corresponding to a percentage of 54%, while the total capital costs (depreciation, financial costs, extraordinary costs) has the same level as in 2014. This structure is illustrating the low level of net investments only €0.6 million in 2015, versus €0.5 million in 2014. It could lead to the conclusion the owners/investors are not targeting the modernization of the production technology, investing in new equipment, but just looking to the net profit. The net profit of €19.1 million in 2015, versus €6.1 million in 2014, with an increase of 214%, economically is too high. Member state should analyse carefully the economic data send by the responding processing units through questionnaires recorded, so the collecting system has to be improved to ensure more accurate data.

The extensive use of the manual work could ensure a good qualitative level of the products, but it appears in contradiction with a low level of total costs as wages and salaries; this aspect is apparently the explanations of a huge labour productivity for 2015 of €45 thousand, comparing to 2014 of €16.1 thousand, an increase of 79%, that seems to be very huge. This aspect is permissive in the domestic market, due to the lower cost of the work.



**Figure 4.19.2: Economic performance of the Romanian fish processing sector, 2015**

As mentioned above, the levels of GVA and EBIT are extraordinary high due to the assumed inconsistency and robustness of data collected and transmitted by member state, who has to improve the collecting system or methods used, in the future, attempting to revue data of the previous years, at least for the last 2-3 years.

**Table 4.19.2: Economic performance of the Romanian fish processing sector, 2009-2015**

Variable	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2009-15)
<b>Income (million €)</b>									
Turnover	31.9	816.6	44.5	30.4	19.6	15.8	14.7	▼ -7%	▼ -54%
Other income	0.3	60.2	23.3	13.0	0.0	0.2	9.4	▲ 4400%	▲ 2695%
Subsidies	0.0	0.1	0.0	0.0	0.0	0.0	0.0	▬ 0%	▬ 0%
<b>Total Income</b>	<b>32.3</b>	<b>876.9</b>	<b>67.9</b>	<b>43.4</b>	<b>19.6</b>	<b>16.1</b>	<b>24.1</b>	▲ 50%	▼ -25%
<b>Expenditure (million €)</b>									
Purchase of fish and other raw material for production	6.4	18.5	12.2	13.2	9.7	7.4	1.9	▼ -74%	▼ -69%
Wages and salaries of staff	1.3	6.1	5.2	2.4	0.7	1.4	1.9	▲ 38%	▲ 45%
Imputed value of unpaid labour	0.4	0.2	0.3	0.1	0.1	0.1	0.0	▼ -43%	▼ -92%
Energy costs	0.3	2.3	0.7	0.4	0.1	0.3	0.3	▼ -25%	▼ -1%
Other operational costs	1.4	72.9	0.5	0.7	0.1	0.1	0.2	▲ 90%	▼ -89%
<b>Total production costs</b>	<b>9.7</b>	<b>99.9</b>	<b>18.8</b>	<b>16.7</b>	<b>10.6</b>	<b>9.3</b>	<b>4.3</b>	▼ -54%	▼ -56%
<b>Capital Costs (million €)</b>									
Depreciation of capital	0.6	44.6	2.3	0.8	0.6	0.5	0.4	▼ -10%	▼ -30%
Financial costs, net	7.0	161.6	0.0	0.0	0.2	0.2	0.3	▲ 15%	▼ -96%
Extraordinary costs, net	0.0	0.0	0.0	0.0	0.0	0.0	0.0	▬ 0%	▬ 0%
<b>Capital Value (million €)</b>									
Total value of assets	19.0	1,022.0	29.4	20.0	16.7	15.9	16.0	▲ 1%	▼ -15%
Net Investments	3.4	15.3	1.0	1.1	0.2	0.5	0.6	▲ 16%	▼ -81%
Debt	15.9	469.9	24.1	16.6	11.5	1.1	12.5	▲ 1063%	▼ -21%
<b>Economic performance (million €)</b>									
Gross Value Added	24.3	783.2	54.5	29.1	9.8	8.2	21.7	▲ 164%	▼ -11%
Operating Cash Flow	22.6	777.0	49.0	26.6	9.0	6.8	19.8	▲ 192%	▼ -12%
Earning before interest and tax	21.9	732.4	46.7	25.8	8.4	6.3	19.4	▲ 207%	▼ -12%
Net Profit	15.0	570.8	46.7	25.8	8.2	6.1	19.1	▲ 214%	▲ 28%
<b>Productivity and performance Indicators (%)</b>									
Labour productivity (thousand €)	43.1	492.3	46.3	37.3	22.3	16.1	45.0		
Capital productivity	128.2	76.6	185.3	146.0	58.5	51.8	135.4		
GVA margin	75.3	89.3	80.3	67.1	49.8	51.3	90.3		
EBIT margin	68.0	83.5	68.9	59.6	43.0	39.3	80.5		
Net profit margin	46.4	65.1	68.9	59.5	41.8	37.9	79.4		
Return on Investment	115.8	71.7	158.9	129.5	50.6	39.6	120.7		
Financial Position	84.1	46.0	81.9	83.0	69.1	6.8	78.1		
Future Expectation Indicator	14.5	-2.9	-4.2	1.4	-2.3	0.4	1.3		

As mentioned above, the extensive use of the manual works is resulting in a decrease trend of productivity Table 4.19.3. This aspect is permissive in the domestic market, due to the lower cost of the work. Despite of this aspect, due to the fact that employees number decreased only by 5%, and meantime the average of wages and salaries increased by around 42%; the productivity increased by 39% in 2015 versus 2014, as per reported data, and Table 4.19.2.



According to transmitted data in Romania processing sector are investors which are looking not only for processing; they invested money as a business opportunity and are ready to shift any time to other activities appearing more profitable in a certain economic situation. That could also be interrelated with the lack of support from the authorities for the sector (excepting the EMFF funding that could be assimilated with subsidies – but not specified by member state in transmitted data) and the difficulties on getting financial support from other sources, as example bank funding.

The lack in new investments (equipment, technologies, innovation actions, products advertising to increase the sales, etc.) is resulting in unchanged policy to consolidate the development of the processing sector, as a government strategy, that should comprise measures for the enterprises, as medium size companies.

#### *4.19.3 Overview of the Romanian fish processing sector by size categories*

Romania fish processing industry is characterized only by 3 segments of size category, namely by the size category of enterprises with 11-49 employees, segment 1, corresponding to 50% units number, followed by the segment with 50-249 employees – 36%, segment 2, and the third one less than 10 employees – 14%, segment 3, in 2015. The main characteristic is the domination of enterprises as SSM companies. Analyses of the structure composition of total income – segment 1 and 2 summing €24.1 million represents all most 99% of the total income in 2015. These companies have the possibility to resist on the market to increasing competition of the imported fish and fish products of the super market chains; these companies, as a general remark, decreased the total number of employees, over the period, resulting in a good economic efficiency and profitability.

Considering the importance of the companies having 50 - 249 employees, showed by the percentage of total income of 92%, the analyses is reflecting the importance of these companies inside the processing sector of member state, amounting €22.3 million. The total costs of €2.9 million seems to be not realistic, so that the values of GVA €21.01 million, Operating cash flow of €19.4 million and EBIT of €19.1 million are a direct consequence of this huge values, as well as the Net Profit – €18.8 million. Member state is to improve the collecting data system.

The segment 2 of companies having 11 – 49 employees has total income of €1.8 million, representing around 7% of total sector. It seems that the data transmitted by member state are more accurate, and this aspect is proved by the respective levels of total costs of €2.9 million, GVA level of €0.6 million, operating cash flow of €0.4 million, and EBIT of €0.3 million, almost very close to net profit amount of around €0.3 million. As a general remark and very contradictory should be underlined the small differences between values of EBIT and net profit. The only acceptable explanation is that one that member state should improve the quality, accurateness of the data, and the coverage level of data collected.

The segment 3 (less than 10 employees) was not able to adapt to the actual market status. Is to be mentioned that only one company is recorded in 2015. As a general overlook the sector registered a decrease over the period 2008-2015 from total income of €32.2 million in 2008 to €24.1 million in 2015 of 25%. The reduced number of companies from 13 to 8, as number, and missing investments in technical production means and resuming to investments only to improve the facilities of auxiliary activities means that it's a sign of a lack of confidence in the future evolution of the sector and the limitation of owners of the risks, aiming just the own profit, despite the market demands. Also the competition of international super market chains is an explanation of these results.

According to the regulation in Romania in 2015, data were collected for the three existing segments, corresponding on the number of employees per productive unit- Figure 4.19.4. Despite of a constant demand on the market for fish and fish products, the sector is still under emergent stage, with a weak organization; some of processing companies are members in professional organization which include also aquaculture companies, those having the majority inside its. Secondly, the most part of investors are people looking after the profit opportunities.



**Figure 4.19.3: Romanian main structural and economic variables trends by size category, 2009-2015**

The total employees as number and FTE, also, is a result in the evolution of capital migration shifting to other opportunities, as a business. These shifting are resulting on the inconsistency of the figures to one year to other, as per the graphs, both as total income and total costs. Between the years the comparability of economic data series is not relevant for analysing the sector using even a guide of a SWOT analyses; figures are helping more to have a year status picture - 2015, member state has to improve the quality of collected data series.

The main characteristic is that one that the segment 50-249 employees is giving the biggest values for income and costs, showing the importance of those companies, which are the more stable during the analysed period. In terms of value of assets, the same assumption is made; that meant the stability of the business in the segment 50-249 employees is crucial for the entire processing sector in Romania.

The total assets value of the whole sector decreased in 2015 over 2008 with €3 million, mostly to decreased number of companies as main activity processing, from 13 to 8.

As a consequence of the mentioned above analysed aspects related to the costs, income, net assets as value and structure, and missing significant investments, as value and composition (especially for equipment) in Table 4.19.3 it could be seen the economic performance of the Romania processing sector by segments composition during 2008-2015.

There is a finding, generally spiking, basically resulting from analysed figures, namely the processing is a profitable activity, especially to the fact that the prices for raw material are not so high in respect to the products prices sold on the market. The aspect of this discrepancy has an explanation on the presence of supermarket chains imposing a level of prices comparable with the similar products in other EU countries, but used in the Romania market with a low availability of consumers' money.

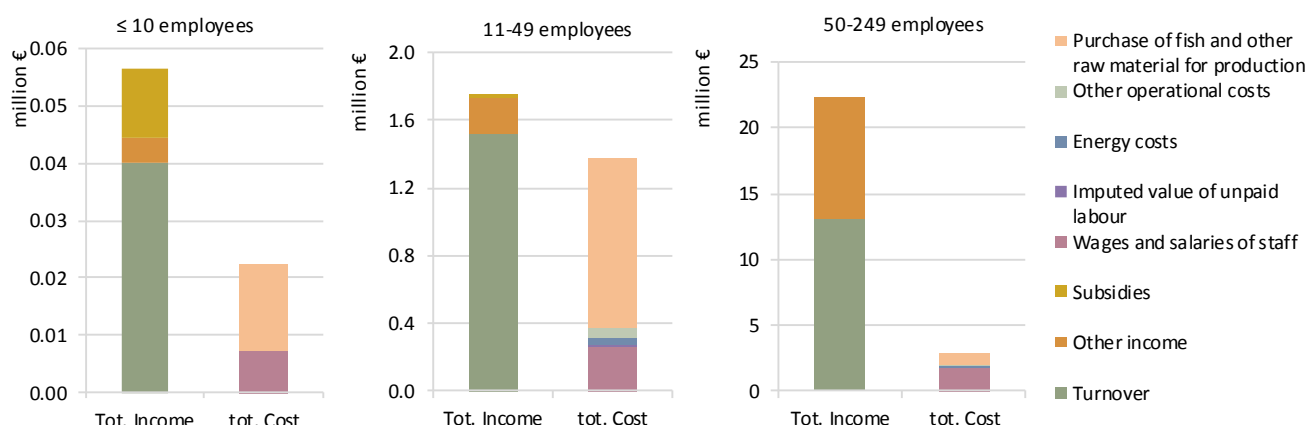
This is also an explanation for the contradictory evolution of data collected into the sector resulting in a certain variability of the data year to year, creating a possible conclusion of instability of the sector; more than that the domination of the fish and fish products market by the super market

chains is creating the shifting from main activity processing companies to other activities, during the overlooked time period.

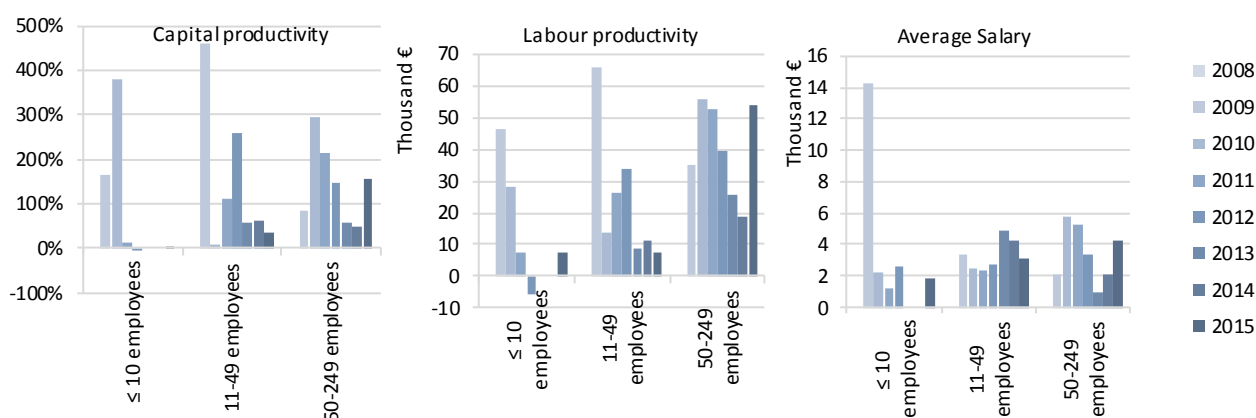
**Table 4.19.3: Economic performance of the Romanian fish processing sector by size category (indicators in million €), 2009-2015**

Variable	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>									
Total Income	2.3	0.5	0.3	0.5			0.1	▼	-98%
Total production costs	1.5	0.1	0.1	0.6			0.0	▼	-98%
Gross Value Added	1.3	0.5	0.2	-0.1			0.0	▼	-98%
Operating Cash Flow	0.9	0.5	0.2	-0.1			0.0	▼	-96%
Earning before interest and tax	0.8	0.5	0.2	-0.2			0.0	▼	-100%
Net Profit	0.8	0.5	0.2	-0.2			0.0	▼	-101%
<b>between 11 and 49 employees</b>									
Total Income	10.1	5.4	8.5	11.3	2.3	3.4	1.8	▼	-48%
Total production costs	1.4	2.6	3.1	4.3	2.0	2.2	1.4	▼	-39%
Gross Value Added	9.2	3.3	6.0	7.5	0.8	1.9	0.6	▼	-65%
Operating Cash Flow	8.7	2.8	5.4	6.9	0.3	1.1	0.4	▼	-66%
Earning before interest and tax	8.4	2.0	5.0	6.6	0.1	0.9	0.3	▼	-66%
Net Profit	8.2	0.8	5.0	6.6	0.1	0.9	0.3	▼	-70%
<b>between 50 and 249 employees</b>									
Total Income	19.8	48.3	59.1	31.6	17.3	12.7	22.3	▲	76%
Total production costs	6.8	17.1	15.7	11.8	8.6	7.0	2.9	▼	-59%
Gross Value Added	13.8	34.7	48.3	21.6	9.0	6.4	21.0	▲	230%
Operating Cash Flow	13.0	31.2	43.4	19.8	8.7	5.6	19.4	▲	244%
Earning before interest and tax	12.8	29.5	41.6	19.4	8.4	5.4	19.1	▲	255%
Net Profit	6.0	28.2	41.6	19.4	8.1	5.1	18.8	▲	266%
<b>greater than or equal to 250 employees</b>									
Total Income		822.6							
Total production costs		80.1							
Gross Value Added		744.6							
Operating Cash Flow		742.5							
Earning before interest and tax		700.4							
Net Profit		541.3							

These indicators reveal the actual status that it could be the base for the policy makers' guidance for the medium size companies, supporting the investments and helping the consolidation of the companies having 50-249 and 11-49 employees, covering more than 97% of total results in the sector, mainly in capital productivity, ensuring the increasing of the average salary. In each segment, especially for 50-249 employees due to the very low cost reported by companies, the GVA, EBIT, and as a consequence labour productivity, average salary are huge and seems to be unrealistic. Member state has to carefully collect data from companies, especially the number of employees, costs – per each component, as well as for the value of debts should be paid more attention. The resulting data in the Figure 4.19.6 seems to be unrealistic, member state is encouraged to improve the method used to collect data.



**Figure 4.19.4: Romanian income and cost structure, by size category, 2015**



**Figure 4.19.5: Romanian capital productivity, labour productivity and average salary trends, by size category, 2009-2015**

#### 4.19.4 Trends and drivers for change

Romania started to implement the data collection programme in 2008 only for marine fishery and aquaculture. Starting with 2009 data were collected for each segment and transmitted to JRC/EC according to each data call. The first aspect should be underlined is the fact that number of processing enterprises is varying from year to year because of the instability of owners keeping the main activity processing during the analysed period; this is a structural weakness of the sector leading to the different results in annually assessment of the contribution of the sector to the economy growth. Consequently, the total income and costs, as well the other indicators, especially those used for efficiency evaluation have certain fluctuation, as per figures and indices evolution, based on transmitted data by member state. Considering these mentioned specific aspects of the sector should be stressed, again, the importance must be granted by the national authorities, under fish policy principles, oriented to achieve a stable evolution of the processing sector in short and medium term.

Considering the potential of the internal sectors of fishery (inland mainly, and development of marine fishery) and fresh water aquaculture direction of developments, it could be observed that the fish and other raw material for production are coming from imports, and the national products are used in a small percentage.

This is generating a negative balance for trade (import are over exports values), in one hand, and, in the other hand the diversification of the products offered for the internal consumers, as well as

the export opportunities are dependent to imports, also. The explanation could be that the imports are consisting in other fish species, mainly oceanic ones, not provided by national resources, as first element of analyse, but, also, by the lack of available quantities and not varied spectrum of production technologies, using intensive manual work and less new equipment.

The weak organization of the producers is leading to inappropriate actions promoting the national products. The advertising actions should be oriented to products deriving from local fishing production. The labelling actions indicating the national origin of raw material used for the products is a key element for the increasing sales of these products. These products are easy to be accepted by local consumers who are now looking after its.

Nevertheless, there still exist a serious and strong competition from supermarket international chains offering similar category of products, but using as raw materials fish species who are not provided by the national fleet.

Those realities are asking for more measures to organize the producers, to guide them on enlarging the chain production-advertising-sales, focusing in the last two components. These could be opportunities on using funds through the new EMFF under national OPF. According to the national report on EFF data, Romania was benefitting of a total amount €30.5 million for 23 operations, namely an average of €1.326 million per operation, but the actual status reveals a percentage of 33% of available money, corresponding to a total amount of €10.1 million, for 13 operations with an average of €776 thousand per operation. The weak use of these opportunities should be mentioned as unsuccessful level of it.

This EMFF resource should be better used in the future as an alternative for the lack of investments, because the previous and actual governmental policies in the mater do not provide subsidies for the processing sector.

Is still persisting the huge challenge from super markets chains, dominating the national market, the contribution of the national processing sector to the national GDP is less than 1% (insignificant), as the whole fish country sector.

Taken into account the needs of the domestic market there are important opportunities to invest in the sector (the processing enterprises having good efficiency and level of profitability in Romania). In the same time, should be mentioned the weak concentration of the capital, as well the geographical distribution over the country. The most important companies are located around the capital (here is around 11% of total country population - first, and second - the main entries of imported fish and other raw material for production are also located around the most important cities).

The structure of products offered by the processing companies is more or less the same, namely: marinated products, smoked fish and fish eggs salad, as most important. Canned fish counts less than 5% in total production.

The raw material used is deeply pending of the imported ones, due to the reduced number of fish species caught by national fleet, which is acting only in the Black Sea when is not a big variety of species with commercial value. In compensation, in general, as domestic raw material offer is dominated by carp species, from natural habitats or aquaculture units, and only trout offering a good alternative, as well some quantities of perch and catfish.

As in the last years, considering the evaluation of the sector, the main conclusion is valuable, namely, the responsible member state authorities in the country has to take the necessary measures and to promote the opportunities of the new EMFF, so that processing sector might have a higher contribution to the national economy growth, cooperating with the specific structure of processing units that should be implemented and should act in the benefit of the local producers (organization of the producers, and why not including main traders), because for 2016 the same uncertainties are foreseen for the processing industry.

#### *4.19.5 Outlook*

In the analysed period of time the processing industry in Romania had an inconstant evolution from year to year, as per data transmitted by operators. As a general overview should be mentioned that the sector has not an important contribution to the national GDP. This is due to the fact that there is a small number of enterprises identified as main activity fish processing, and the number decreased from 13 in 2018 to 8 in 2015. The sector is negatively influenced by the strong competition of the supermarket chains, imports of fish products, despite to a constant decrease from around more than 100 thousand tons in the years 2008, 2009 till around 80 thousand tons in the last year, the industry is still dependent on imports. Due to the offer of raw material from domestic fishery (inland and marine waters, including aquaculture), which is not covering the new demand of the market, the imports are 3/4 times higher than total production of national fishery sector. The ocean fish species (which are not caught by the national fleet) are the new type of consumption on the national market, e.g.: tuna fish, salmon, cod, mackerel, sea food, etc. Also the use of EFF is at a low level of utilisation, as it was stated in the dedicated chapter.

#### *4.19.6 Data coverage and quality*

It should be mentioned that member state is to improve the existing system of data collection in order to use better quantitative and qualitative data – robust, accurate, with a high level of consistency. The basic data should be collected in the future as to have a better coverage level, having taking into account the number of companies – which level varies from year to year, and also the level of some indicators, e.g.: energy costs, other operational costs, as well the good identification and collection of the correct level of invested amounts, taxation level, depreciation of capital, and financial and extraordinary costs. Not accurate data of mentioned indicators is misleading to realistic aggregate indicators, used for analyses, such as labour productivity, capital productivity, GVA, EBIT and ROI, resulting in an oversized net profit margin. The shortages between collected and submitted data and Eurostat data is a very important issue that should be address by member state in the future.

As it is mentioned in each component of the chapter, there is a strongly need that member state has to improve the implemented system used and methods to collect data, compiling its, especially considering the relative low number of companies having main activity processing. Also, it has to mention the correct figures for companies whose main activity is not fish processing, to conduct to a better over view/analysis of the whole sector.

## 4.20 SLOVENIA

### 4.20.1 General overview of the Slovenian fish processing sector

In 2015, there were 12 companies in the Slovenian fish processing sector. Between 2008 and 2015, the number of companies remains relatively stable. In 2015, Slovenia had 7 companies with less than 10 employees, three companies with 11-49 employees and two companies with 50-249 employees. Among them are 4 companies with fish processing as not main activity. These companies generate €6.98 million of turnover from fish processing, which representing 27% of all turnover from fish processing activities.

In 2015, the turnover was €25.7 million. Between 2008 and 2015 the turnover of Slovenian fish processing industry decreased by 12%.

The value of raw material decreased by 46% from 2008 to 2015 and amounted €8.8 million in 2015.

In the Slovenian fish processing sector was 209 employees in 2015. With respect to the gender of those in employment, women are predominated with 115 employees. According to the FTE there were 209 FTE employees in 2015. Among them were 115 women and 94 men. The level of employment decreased between 2008 and 2015, with total employed decreasing by 16% while the number of FTEs decreased by just 1% over the period.

Slovenian fish processing industry mainly depends on imports of raw materials. The raw material for fish processing industry is traded from all over the world, but most of the raw material comes from the EU, especially from Spain, Italy and Croatia. Only a few small companies depend on local landings of sardines and anchovy.

In 2015, Slovenia imported 15.7 thousand tonnes of fish and fish products, while the Slovenian volume of landings for this year amounted 196 tonnes. In the same year Slovenian aquaculture sector has produced 1.59 thousand tonnes of fish and shellfish.

The main products in Slovenian fish processing industry are various fish cans, Tuna pate, dried cod spread, and products from cephalopods, Atlantic salmon and hake filet. Turnover from the Fish cans and tuna pate represents more than 77% of all turnovers from Slovenian fish processing sector.

In the period 2010-2015, especially from 2010-2013, Slovenian fisheries processing sector underwent major structural changes. Small businesses are brought together in larger companies which have more impact on the market. Some of the larger companies that are dealing with different types of processing activities, separated fish processing from other activities formed a new smaller companies which are exclusively engaged in the processing of fish and other marine organisms. Consequently, the share of other income (packing costs, insurance costs etc.) in total income has increased significantly in the period 2008-2015 (+184%). The structural changes made in Slovenian fish processing sector had impact also in Slovenian employment trends in period 2008-2015.

Most of the Slovenian fish processing companies were located on the Slovenian coast before structural changes was made in the period 2010-2013. Now we can notice even distribution of fish processing companies throughout the country.

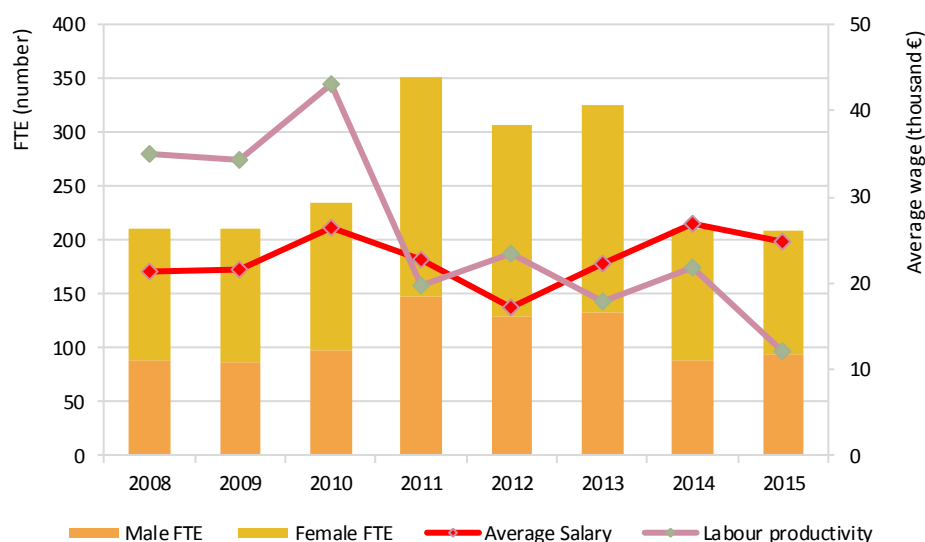
### *Socio-Economic aspects - Employment (male FTE/female FTE) and wages*

Total employment and FTEs was 209 in the Slovenian fish processing sector in 2015, see Table 4.20.1. The level of employment in the Slovenian fish processing sector has decreased between 2014 and 2015. The total number employed decreased by 5% between 2014 and 2015 while the number of FTEs decreased by 1%. Among all employees are 55% of women and 45% of male.

Mean wage per employee in the Slovenian fishing processing industry amounted €24.9 thousand in 2015 and it was 35% higher from average wage in Slovenia in the same year, which was €18.5 thousand. Mean wage in fish processing sector increased by 16% from 2008 to 2015.

**Table 4.20.1: Slovenian fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	12	13	13	14	15	14	13	12	▼ -8%	■ 0%
≤ 10 employees	7	9	8	8	10	9	7	7	■ 0%	■ 0%
11-49 employees	4	3	3	3	2	2	4	3	▼ -25%	▼ -25%
50-249 employees	1	1	2	3	3	3	2	2	■ 0%	▲ 100%
≥ 250 employees	0	0	0	0	0	0	0	0	■ 0%	■ 0%
<b>Employment (number)</b>										
Total employees	250	223	266	379	354	351	221	209	▼ -5%	▼ -16%
Male employees	105	93	110	159	148	143	93	94	▲ 1%	▼ -10%
Female employees	145	130	156	220	206	208	128	115	▼ -10%	▼ -21%
FTE	211	210	234	351	306	325	211	209	▼ -1%	▼ -1%
Male FTE	89	87	97	148	128	133	87	94	▼ -13%	▲ 45%
Female FTE	122	123	137	203	178	192	123	115	▼ -12%	▲ 46%
<b>Indicators</b>										
FTE per enterprise	17.6	16.2	18.0	25.1	20.4	23.2	16.2	17.4	▲ 7%	▼ -1%
Average wage (thousand €)	21.4	21.5	26.4	22.8	17.1	22.4	26.9	24.9	▼ -8%	▲ 16%
Unpaid work (%)	4.2	3.6	1.2	0.7	0.4	0.3	0.6	0.5	▼ -13%	▼ -89%



**Figure 4.20.1: Slovenian employment trends, 2008-2015**



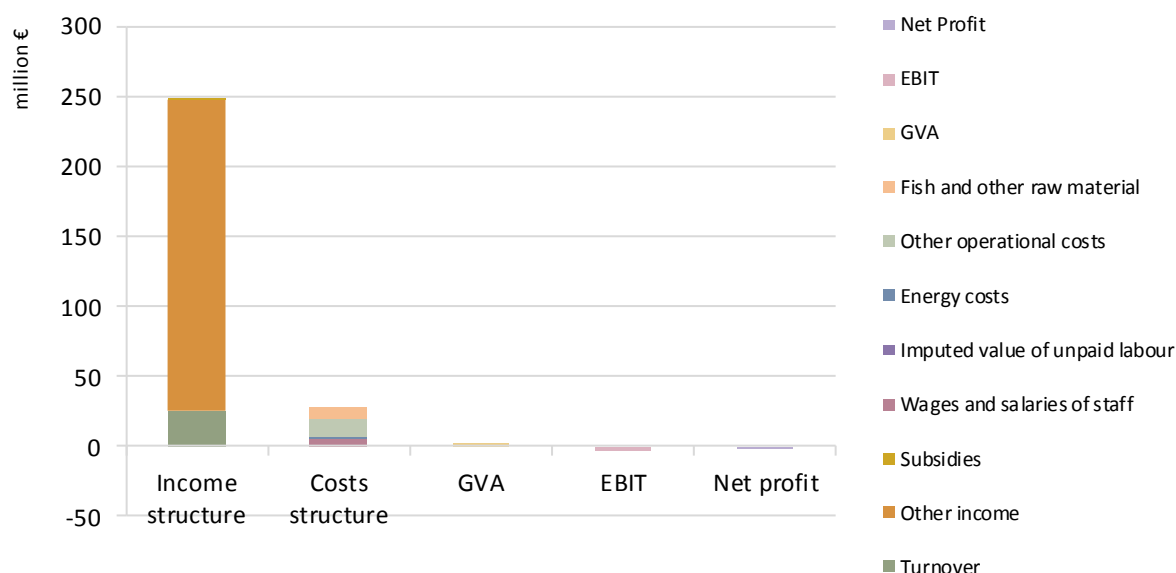
#### 4.20.2 Economic performance of the Slovenian fish processing sector

The total amount of income generated by the Slovenian fish processing industry, in 2015, was €248.4 million. This consists of €0.4 million in subsidies, €25.7 million in turnover and €222.3 million in other income.

Slovenia has just a few processing companies that are entirely committed to fishery products. Most companies do have different types of processing activities, of which fish may be one, but not necessarily the most important one. That is the reason for large share of other income in total income. Other income of companies with less than 50% activities in fish processing (four companies) amounted €219.2 million in 2015 which is almost 99% of all other income in 2015. Most of this share, €177.6 million or 80% of all other income, contributed just one company.

In the period 2008 - 2015 Slovenian fisheries processing sector underwent major structural changes. Small businesses are brought together in larger companies which have more impact on the market. Some of the larger companies that are dealing with different types of processing activities, separated fish processing from other activities formed a new smaller companies which are exclusively engaged in the processing of fish and other marine organisms. There was also a general tendency to reduce primary processing so some enterprises also switched to resale.

Between 2008 and 2015 the turnover has decreased by 12%, while the profit has decreased by 847% in the same period. GVA and OCF have decreased for 66% and 170% in the same period. We recorded also decreasing of EBIT by 263% in the period from 2008 to 2015.



**Figure 4.20.2: Economic performance of the Slovenian fish processing sector, 2015**

The decrease in the performance indicators is mainly due to a large increase in other operational costs, as a result of structural changes made in Slovenian fish processing sector. Other operational costs increased significantly in the period 2008-2015 (+184%). However, the increase was not observed in all companies equally. In 2010, one middle size company, with very high operation costs (around €8 million) entered in fish processing. Furthermore, the significantly increase of other operational costs (+447% in the period 2008-2015) was recorded in another fish processing company. The reason for that increase is mainly due higher packing costs.

Total operating cost increased by 8% in the period 2008-2015 and amounted €28.4 million in 2015. Other operational costs are the most important cost item covers 46% of the total operating cost (+184% from 2008-2015). The cost of raw material (fish) is the second most important input in the processing industry, and covers 31% of the total running cost. Raw material costs decrease by 46% from 2008 to 2015. Two main species used in Slovenian fish processing sector are Mackerel and Tuna. Wages and salaries of staff cover 18% and Energy costs 4% of total operating costs in

2015. Wages and salaries and Energy cost increased in the period 2008-2015 by 19% and 101%, respectively.

**Table 4.20.2: Economic performance of the Slovenian fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)		Δ (2008-15)	
Income (million €)												
Turnover	29.0	26.1	28.6	35.4	32.3	30.0	24.4	25.7	▲	5%	▼	-12%
Other income	209.6	176.6	178.6	186.8	217.5	216.7	211.3	222.3	▲	5%	▲	6%
Subsidies	0.4	0.0	0.1	0.0	0.1	0.0	0.0	0.4	■	0%	▼	-10%
Total Income	29.5	26.1	28.7	35.4	32.3	30.0	24.4	26.1	▲	7%	▼	-12%
Expenditure (million €)												
Purchase of fish and other raw material for production	16.5	15.6	11.1	12.2	11.2	8.3	7.7	8.8	▲	15%	▼	-46%
Wages and salaries of staff	4.3	4.4	6.1	8.0	5.2	7.2	5.6	5.2	▼	-8%	▲	19%
Imputed value of unpaid labour	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	▼	-19%	▼	-87%
Energy costs	0.6	0.9	0.9	1.1	1.4	1.5	1.0	1.2	▲	22%	▲	101%
Other operational costs	4.6	2.4	6.6	15.2	12.5	14.5	11.1	13.1	▲	18%	▲	184%
Total production costs	26.2	23.5	24.7	36.5	30.3	31.5	25.5	28.4	▲	11%	▲	8%
Capital Costs (million €)												
Depreciation of capital	1.3	1.4	1.3	1.4	1.3	1.1	0.9	1.0	▲	10%	▼	-24%
Financial costs, net	2.4	0.4	0.4	0.7	0.7	0.6	0.3	0.2	▼	-8%	▼	-90%
Extraordinary costs, net	0.3	0.9	0.1	0.0	0.2	0.3	0.2	0.2	▼	-27%	▼	-57%
Capital Value (million €)												
Total value of assets	53.0	28.0	22.5	32.2	27.7	32.1	22.2	25.7	▲	15%	▼	-52%
Net Investments	0.8	0.5	0.3	0.3	0.4	0.3	0.5	4.1	▲	732%	▲	448%
Debt	41.2	12.8	11.4	14.0	17.5	20.2	11.1	11.8	▲	7%	▼	-71%
Economic performance (million €)												
Gross Value Added	7.4	7.2	10.1	6.9	7.2	5.8	4.6	2.5	▼	-45%	▼	-66%
Operating Cash Flow	3.3	2.7	4.0	-1.1	2.0	-1.5	-1.1	-2.3	▼	-107%	▼	-170%
Earning before interest and tax	2.0	1.3	2.7	-2.5	0.7	-2.5	-2.0	-3.3	▼	-64%	▼	-263%
Net Profit	-0.4	0.9	2.2	-3.2	0.0	-3.2	-2.2	-3.5	▼	-56%	▼	-847%
Productivity and performance Indicators (%)												
Labour productivity (thousand €)	34.9	34.2	43.1	19.7	23.5	17.9	21.7	12.1				
Capital productivity	13.9	25.6	44.7	21.5	25.9	18.1	20.6	9.9				
GVA margin	3.1	3.5	4.9	3.1	2.9	2.4	1.9	1.0				
EBIT margin	0.8	0.6	1.3	-1.1	0.3	-1.0	-0.8	-1.3				
Net profit margin	-0.2	0.4	1.1	-1.4	0.0	-1.3	-1.0	-1.4				
Return on Investment	3.8	4.6	11.8	-7.8	2.5	-7.9	-8.9	-12.7				
Financial Position	77.8	45.7	50.4	43.6	63.2	62.8	49.8	46.0				
Future Expectation Indicator	-1.0	-3.2	-4.6	-3.4	-3.3	-2.4	-1.7	12.4				

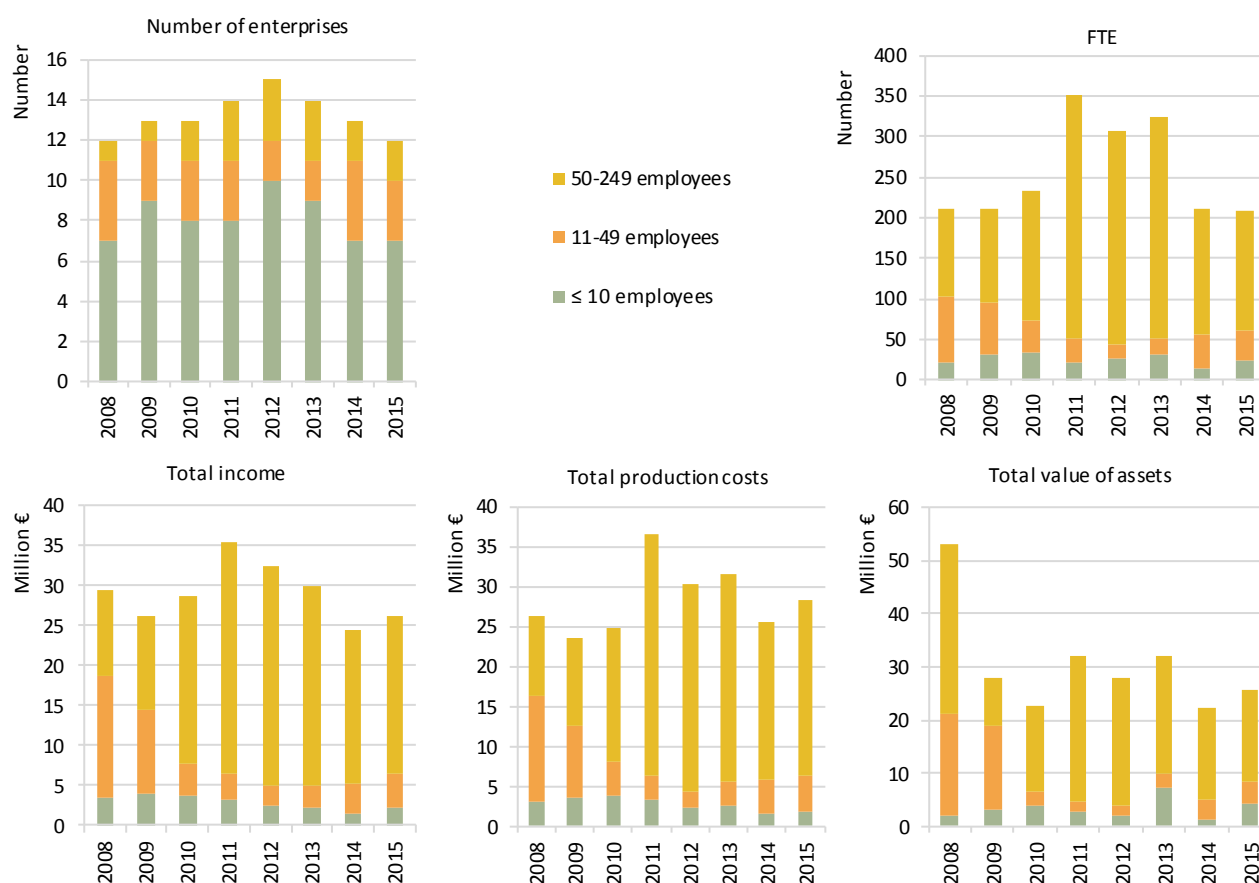
GVA per employee was €12.1 thousand in 2015, which is below the Slovenian GVA per employee average of the same year, €40.3 thousand.

The Slovenian fish processing industry had an estimated value of assets of €25.7 million and a return on investment of -12.7%.

#### 4.20.3 Overview of the Slovenian fish processing sector by size categories

The total number of fish processing enterprises in the Slovenia was 12 in 2015. The vast majority of them had ten or fewer employees. Three enterprises had 11 to 49 employees and two enterprises had more than 50 employees. In Slovenia there is no large fish processing company with more than 250 employees. Slovenia has a few processing companies that are entirely committed to fishery products. Most companies do have different types of processing activities, of which fish may be one, but not necessarily the most important one.

In terms of full time employment, the smallest segment employs only 11% of the total numbers of full time employees. The segment between 10 and 49 employs 18% of the total number of FTE employees, whereas the segment between 50 and 249 employs 71% of the total numbers of full time employees in the Slovenian fish processing industry.



**Figure 4.20.3: Slovenian main structural and economic variables trends by size category, 2008-2015**

#### Sector less or equal 10 employees

The total amount of income generated by this sector, in 2015, was €49.7 million. This consists of €0.2 million in subsidies, €2 million in turnover and €47.5 million in other income. Total income decrease for 34% over the period 2008-2015.

The value of Total production costs decreased by 40% from 2008 to 2015 and amounted €1.9 million in 2015.

In the period between 2008 and 2015 the net profit has increased by 52%. GVA decreased for 15% in 2015 while OCF increased for 35% in the same period. We recorded also increasing of EBIT by 41% in the period from 2008 to 2015.

The main products in the present sector are dried cod spread and products from cephalopods.

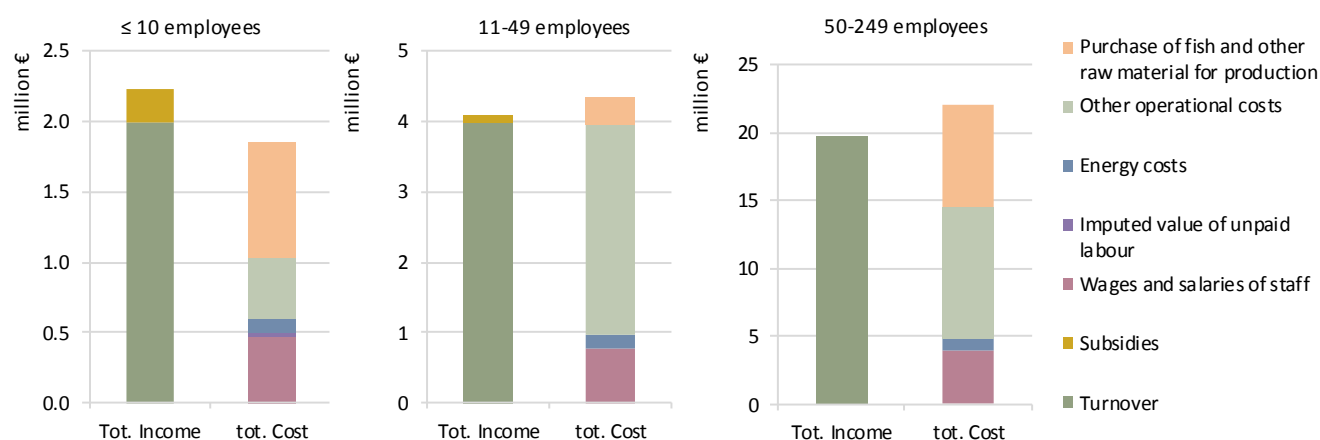


Figure 4.20.4: Slovenian income and cost structure, by size category, 2015

Table 4.20.3: Economic performance of the Slovenian fish processing sector by size category (indicators in million €), 2008-2015

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	3.4	4.0	3.8	3.3	2.5	2.2	1.6	2.2	▲	42%	▼ -34%
Total production costs	3.1	3.6	3.7	3.2	2.3	2.5	1.5	1.9	▲	21%	▼ -40%
Gross Value Added	0.7	1.2	0.7	0.5	0.6	0.3	0.4	0.6	▲	80%	▼ -15%
Operating Cash Flow	0.3	0.5	0.1	0.0	0.2	-0.3	0.0	0.4	▲	694%	▲ 35%
Earning before interest and tax	0.2	0.3	-0.1	-0.2	0.1	-0.4	0.0	0.3	▲	2037%	▲ 41%
Net Profit	0.1	0.3	-0.2	-0.2	0.0	-0.5	0.0	0.2	▲	847%	▲ 52%
<b>between 11 and 49 employees</b>											
Total Income	15.4	10.4	3.8	3.1	2.6	2.8	3.7	4.1	▲	12%	▼ -73%
Total production costs	13.3	9.0	4.3	3.2	2.1	3.0	4.3	4.3	▲	2%	▼ -67%
Gross Value Added	4.2	3.0	0.3	0.6	0.9	0.3	0.3	0.4	▲	46%	▼ -90%
Operating Cash Flow	2.1	1.4	-0.4	0.0	0.5	-0.2	-0.6	-0.2	▲	61%	▼ -111%
Earning before interest and tax	1.6	0.9	-0.5	-0.1	0.4	-0.4	-0.8	-0.4	▲	52%	▼ -124%
Net Profit	1.0	0.5	-0.5	-0.1	0.4	-0.4	-0.8	-0.4	▲	51%	▼ -140%
<b>between 50 and 249 employees</b>											
Total Income	10.7	11.7	21.1	29.0	27.3	25.1	19.1	19.7	▲	3%	▲ 84%
Total production costs	9.8	10.9	16.8	30.1	25.9	26.0	19.7	22.2	▲	13%	▲ 126%
Gross Value Added	2.4	3.0	9.1	5.8	5.7	5.2	3.9	1.5	▼	-62%	▼ -39%
Operating Cash Flow	0.9	0.8	4.3	-1.1	1.3	-0.9	-0.6	-2.4	▼	-335%	▼ -370%
Earning before interest and tax	0.3	0.1	3.3	-2.3	0.3	-1.7	-1.2	-3.1	▼	-164%	▼ -1326%
Net Profit	-1.5	0.0	3.0	-2.9	-0.4	-2.3	-1.4	-3.3	▼	-134%	▼ -124%

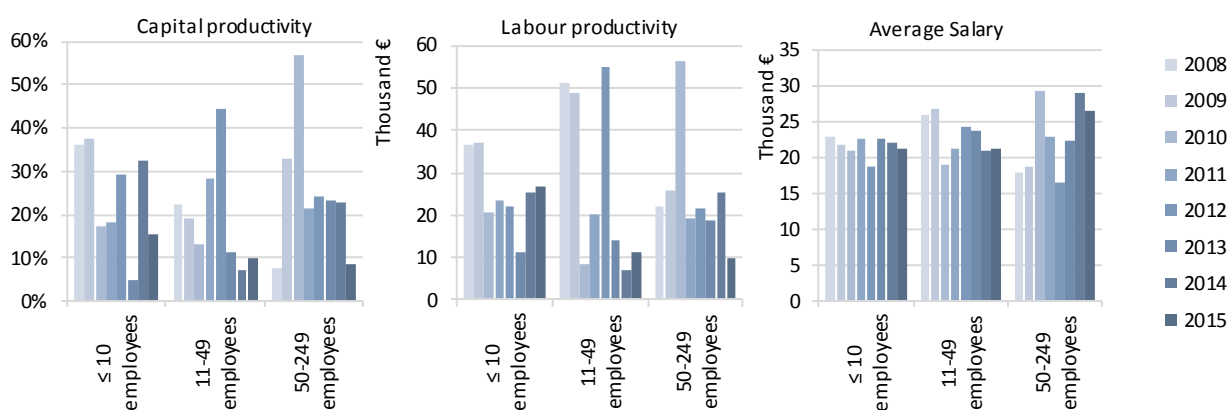
### Sector 11-49 employees

The total amount of income generated by this sector, in 2015, was €4.7 million. This consists of €3.9 million in turnover, €0.1 million in subsidies and €0.7 million in other income. Total income decrease for 73% over the period 2008-2015.

The value of Total production costs decreased by 67% from 2008 to 2015 and amounted €4.3 million in 2015.

In the period between 2008 and 2015 the net profit has decreased by 140%. GVA and OCF have decreased for 90% and 111% in the same period. We recorded also decreasing of EBIT by 124% in the period from 2008 to 2015.

The main products in the present sector are dried cod spread and products from Atlantic salmon and trout.



**Figure 4.20.5: Slovenian capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

### Sector 50-250 employees

The total amount of income generated by this sector, in 2015, was €193.8 million. This consists of €19.7 million in turnover and €174.1 million in other income. Total income increase for 84% over the period 2008-2015.

The value of Total production costs increased by 126% from 2008 to 2015 and amounted €22.2 million in 2015.

In the period between 2008 and 2015 the net profit has decreased by 124%. GVA and OCF have decreased for 39% and 370% in the same period. We recorded also decreasing of EBIT by 1326% in the period from 2008 to 2015.

The main products in the present sector are various fish cans and Tuna pate.

#### 4.20.4 Trends and drivers for change

Lower turnover and higher operating cost, especially other operating costs, were the main driving forces behind the overall deteriorated trend in Slovenian fish processing sector. Between 2008 and 2015 the turnover has decreased by 12%, while the profit has decreased by 847% in the same period. The decrease in the performance indicators is mainly due to a large increase in other

operational costs, as a result of structural changes made in Slovenian fish processing sector. Other operational costs increased significantly in the period 2008-2015 (+184%).

### *Markets and Trade*

The Slovenian seafood trade balance is relatively stable over the years and it is significantly negative. Slovenia is a net importer of fish and fish products. In 2015, imports were approximately four times larger than export and amounted to 15,724 tonnes (€75.2 million) of fish and other fish product. On the other hand, export amounted to 3,871 tonnes (€22.3 million) in the same year. The majority of the imported fish and fish products come mainly from European Union. The largest Slovenian seafood import partners are Italy, Spain and Croatia. Concerning exports, the largest partners are Austria, Croatia and Bosnia and Herzegovina.

In general, the Slovenian processing sector relies on a steady inflow of raw materials. For industries that are relying mainly on EU stocks a change in the availabilities of these materials can heavily affect the industry income, production and employment.

Slovenian market for marine products is fragmented and disorganized. A large number of producers and dealers are unorganized and acting individually. Most of the products are sold directly to known customers.

### *Future Expectations of the Industry*

The indicator "Future Expectations of the Industry" can be interpreted as a proxy for the industry's intent to remain in the market in the medium/long term. If investments minus depreciation are positive, the sector is allocating resources to increase its production capacity, and therefore it expects to remain in the market to recover the cost of the investments. From 2008 – 2014 the FEI indicator was negative for Slovenian fish processing industry. In 2015, was positive at the first time. The reason lies primarily in increasing investments, which increase 732% from 2014 to 2015 and amounted €4.1 million in 2015. In 2015, some new companies started with fish processing and invested fresh capital, also with help of EMFF, into business.

### *Certification of fish products*

Regarding certification when fish products are sold, Slovenia follows all relevant legislation of EU. For this purpose, Slovenia accepted "Decree on the monitoring of catches and sales of fisheries products" which establish the rules for sale fish and fish products. In decree it is specified that all lots of fisheries and aquaculture products shall be traceable at all stages of production, processing and distribution, from catching or harvesting to retail stage.

Regarding purchasing, Slovenia accepted:

1. Decree amending the Decree on the implementation of the Regulation (EC) establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing.
2. Regulation on the implementation of the Regulation of the European Parliament and of the Council establishing a catch documentation programme for bluefin tuna (*Thunnus thynnus*).

Also these two documents follow all relevant EU legislations.

#### *EFF/EMFF information*

Under the EFF processors applied for support under EFF priority axis 2.3: "Processing and marketing of fishing and aquaculture products". A total amount of EFF and national support of €4 million, between 2007 and 2015 (18% of the total), has been paid out to support initiatives under this priority.

#### *4.20.5 Outlook*

Slovenia consumes around 11 kg of fish per year per capita, which is well below the European average of around 25.5 kg per capita. However, fish consumption per capita in Slovenia is growing due to increasing awareness of healthy lifestyles. So, in the future we can expect further development of the fisheries processing industry in Slovenia and therefore higher revenues from this sector. Because of the increased number of enterprises in the future and resulting increased competition we can expect a fall in prices of fish products and thus lower profits.

Due to scrapping in 2011 and 2012 the size of the Slovenian fishing fleet decreased between 2011 and 2012, with the number of vessels by 6% and GT and kW by 38% and 19%, respectively. Consequently, the weight of landings decreases in 2012 for more than 50%. Furthermore, Slovenian fisheries sector is affected by the small size of our sea fishing area, significant characteristic of Slovenian fleet is also age. Average age was calculated at approximately 36 years in 2012. Because of that and because of increase in markets, the Slovenian fish processing industry will be even more dependent on imports of fish raw material.

#### *4.20.6 Data coverage and quality*

Slovenia reported data also from companies with fish processing not as main activity to avoid confidentiality issues and because these companies are of great importance for Slovenian processing industry. In this case there is a high proportion of other income.

Target populations in Slovenia for collecting economic data are all companies who have, according to the data from Veterinary Administration of the Republic of Slovenia (VURS), a license for the processing of maritime organisms and the processing involved in practice. The number of such enterprises in Slovenia in 2015 was 12. In June 2016 the questionnaires were sent to all enterprises.

In cases where a questionnaire, as the only source, was used the response rate was 88%. In cases where the data from annual accounts of business enterprises was used the response rate was 100%, because we have economic reports for all investigated companies.

Slovenia has a few processing companies that are entirely committed to fishery products. Most companies do have different types of processing activities, of which fish may be one, but not necessarily the most important one. This was taken into account when we putting together the questionnaires and in the subsequent analysis of the data provided. Therefore, all the provided data refers just to fish processing part of all companies' activities. Because of the large differences between turnover and total income, only turnover was used in calculating the economic performance indicators (e.g. GVA, OCF). Furthermore, completely set of the data was provided for "Sector 50-250 employees" but, because of confidentiality reasons, some of the data and figures are not presented in the chapter.

## 4.21 SPAIN

The seafood industry has been the main economic activity and driver of the coastal communities in a country with around 6,000 km of coasts until the present times. In a context of decline in the relative importance of harvesting in the national economy, the economic sustainability of the seafood industry is a key element for the social and economic development of coastal communities. Seafood processing has been evolving in parallel with the development of the fishing fleet along the centuries. The fishing industry used to be the main economic engine for the coastal communities for centuries and it is still in many of them. However, the decrease in labour demand in the harvest activities in the last decades, especially in the small communities more dependent on the small scale fisheries, made the fish processing industry a relevant tool for development and social welfare of the coastal regions.

Today, processing industry is a way for reallocation of unemployment resulting from the decrease in fishing effort. Traditionally, there were many examples in which the fish processing activities were not a source of fixed employment, due to the seasonality of the raw material sources. Nowadays, many of the companies overcome this business limitation through the diversification of their productions using imported raw materials. This new scenario allows the processing industry to provide full time, more stable and better skilled jobs, which directly contributes to the improvement of the neighbourhood's livelihood.

In recent years, the value chain of seafood products in Spain had significant changes. The traditional value chain starts at the Spanish sources of production (aquaculture and fisheries) and imports to satisfy this part of the demand not covered with the domestic seafood production, and re-exporting activities. Wholesalers and processors purchase the product in first sale from auctions, private arrangements or imports, and sell the seafood to wholesaler in destination and retailers. In the last decade the fish value chain has changed significantly with the entry of new agents, the shortening of channels, and concentration at the retail level. With the increasing concentration of sales in retail chains their bargain power has grown. Consequently, retail chains are transferring their preferences on transactions to the previous segments in the value chain. They request continuous supply of a standardized product with a stable price (SUCCESS, 2017a). These standards mean an extra-cost for producers and processors and require a minimum production scale to be able to efficiently address it.

Under this scenario, there are producers and processors that can increase their scale and fit with these requirements, however many others cannot. In the latter case, they need to find alternative marketing channels as direct channels to the consumer, local markets, Ho.Re.Ca, labelling and product differentiation. The existence of these two main competitive alternatives seems to have been reinforced in recent years. On one hand, small companies have led the increase in the number of companies in the industry in Spain. On the other hand, the number of large companies has remained stable, but has increased its contribution to the total industry's incomes. In terms of medium-sized companies, although they are the segment that most contributes to the industry total incomes, has been decreasing in recent years, and is no longer the largest segment in companies.

The Spanish fish processing industry is not only relevant in social terms for coastal communities. This economic activity is a quite dynamic, profitable and productive activity. Although over the period analysed total revenues have increased, and the industry's profitability has been positive, since 2013 the performance indicators have fallen below the values of 2008. All business segments have seen their profitability reduced. However, the reduction has been proportionately greater, as the companies are larger. Although medium-sized companies still provide 60% of total income in 2015, their contribution has been reduced, in favour of large companies. This evolution suggests a significant redistribution of the activity from the medium size to large companies between 2008 and 2015. The transfer of the activity was more pronounced between 2008 and 2012, and then it has continued, although it has slowed down.



It is expected that, in the next few years, the fish processing industry will continue increasing its role as economic driver in many coastal areas, not only as a source of employment, but as an economic activity providing greater added value. Recent data and experiences of the industry suggest that this development will be based on two main strategic lines. On the one hand, large companies looking for production efficiency improvements with the use of technology and large volumes of production. On the other hand, small companies focus on high value added products, based on the quality of the raw material and/or a higher level of processing.

#### 4.21.1 General overview of the Spanish fish processing sector

The Spanish fish processing industry comprised 598 enterprises in 2015. The distribution by size segments (number of employees as a proxy variable of size) indicates that the industry is composed mainly by small firms. The 86% of the industry are companies below 50 workers, and companies under 10 employees represent 53.5%. The number of enterprises increased 10% with regard to the previous year and 5% since 2008. However, the evolution varies throughout the period analysed across size segments, mainly due to the variability in the number of small companies. On the other hand, the number of enterprises of more than 50 employees has remained more stable between 2008 and 2015. In the last period, the number of enterprises increased at small and large enterprise segments, 24% and 22%, respectively. However, the number of medium size companies decreased 3%. In the long term, it is particularly significant the increase of 34% in the number of small enterprises and the decrease of 21% in the number of medium size enterprises between 11-49 employees. The number of large companies remains the same in 2015 compared to 2008.

**Table 4.21.1: Spanish fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>											
Total enterprises	572	585	552	513	487	640	542	598	▲	10%	▲ 5%
≤ 10 employees	239	234	215	209	178	356	258	320	▲	24%	▲ 34%
11-49 employees	247	267	253	218	229	203	201	196	▼	-2%	▼ -21%
50-249 employees	75	75	76	77	71	72	74	71	▼	-4%	▼ -5%
≥ 250 employees	11	9	8	9	9	9	9	11	▲	22%	▲ 0%
<b>Employment (number)</b>											
Total employees	19.737	19.331	18.581	18.390	18.324	18.448	18.340	19.033	▲	4%	▼ -4%
Male employees	7.223	8.614	7.321	7.858	8.595	7.262	7.005	7.417	▲	6%	▲ 3%
Female employees	12.514	10.717	11.260	10.532	9.729	11.186	11.335	11.616	▲	2%	▼ -7%
FTE	19.095	18.449	17.590	17.701	17.398	17.592	17.564	18.052	▲	3%	▼ -5%
Male FTE	7.363	8.460	7.141	7.678	8.194	7.117	6.918	7.025	▲	2%	▼ -5%
Female FTE	11.732	9.989	10.449	10.023	9.204	10.475	10.646	11.027	▲	4%	▼ -6%
<b>Indicators</b>											
FTE per enterprise	33,4	31,5	31,9	34,5	35,7	27,5	32,4	30,2	▼	-7%	▼ -10%
Average wage (thousand €)	23,6	25,0	26,0	25,1	25,1	25,6	26,2	25,3	▼	-4%	▲ 7%
Unpaid work (%)	0,7	6,5	6,1	0,9	0,8	2,8	5,3	1,0	▼	-82%	▲ 32%

Large companies have more resources and financial ability to withstand the fluctuations suffered in production costs and demand over the period considered. They have a greater knowledge about economics and business management, and resources to finance vital aspects of business activity such as marketing, promotion, logistics, access to international markets, etc. In general, small companies have lower ability for competing with large companies in terms of average production costs. In addition, many of them produce high value-added products for which demand has declined in Spain during the financial crisis due to their higher price and has not yet fully recovered. The medium-sized enterprises operating in the segment of differentiated products have in many cases the resources and knowledge to export the product as a solution to the contraction of domestic demand.

Employment in the Spanish fish processing industry in 2015 is still lower than in 2008, particularly 4% and 5% less in terms of total employment and FTE, respectively. The positive aspect for the industry is that, after a decrease in total employment and FTE between 2008 and 2012, there has been stability between 2012 and 2014, until 2015, year in which there was a new increase on labour force in the industry. This positive trend follows the increase in the number of enterprise in recent years. The consequence of these changes revert the situation of destruction of work observed until 2012, and point out to not only and stabilization, but also to an apparent recovery.

The Spanish fish processing industry provides, in general, stable and full time jobs as the number of employees in full time equivalent shows. In 2015, the proportional increase in the total number of employees was slightly higher than the rise in the FTE. This can indicate an increase in part-time jobs and or that part of the new job positions created between 2014 and 2015 were part-time jobs. The number of total employees in the large and small enterprises increased a 22.71% and 3.63% between 2014 and 2015, respectively, while the evolution of FTEs was only 18.75% and 2.22%. Anyway, this industry provides much more stable and full-time jobs than other primary sector activities in Spain.

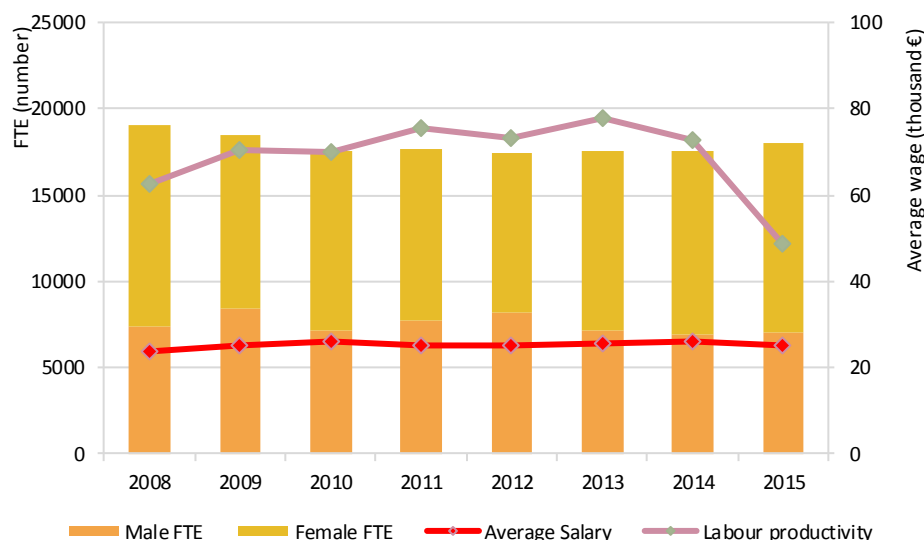
Regarding gender distribution of labour, the Spanish processing industry has been traditionally intensive in the use of female employees as a result of technical division of work in the coastal areas. Manual tasks at processing of fishery products were traditionally carried out by women. The increasing use of technology in the processing processes did not imply a great change in the labour structure, which is rather the result of sociodemographic and cultural issues. However, this scenario suffered significant changes between 2008 and 2012. In 2008 there were 12,514 females (11,732 FTE) in confront of 7,223 males<sup>18</sup>, and in 2012 the distribution was 9,729 females (9,204 FTE) versus 8,595 (8,194 FTE) males. During that period, males appear to be replacing females in a similar opposed trend. Female total employment has decreased 22%, male total employment increased 19%. The period 2008-2012 coincides with the years with the highest unemployment rate in Spain during the financial crisis. The lack of job opportunities in alternative economic activities caused men to apply for job offers in a sector of activity, such as the processing industry, which barely reduced their level of employment compared to other industries. After that, since 2012 the evolution in the gender distribution shifted since the number of male employees has decreased from 8,595 (8,194 FTE) to 7,417 (7,025 FTE), and the number of female employees increased from 9,729 (9,204 FTE) to 11,616 (11,027 FTE). Thus, after a period in which the increase in male employment and the decrease in female employment resulted in a more balanced situation, gender distribution in the Spanish fish processing industry in the last three years returned to the values of 2008 with a less balance gender distribution biased to greater presence of women in the sector.

When analysing the relative FTE per enterprise it shows a variability during all the period considered. However, two trends can be distinguished. From 2008 to 2012, the indicator follows a positive trend with an increase of 7% and following a negative evolution until 2015. In the whole period considered the FTE per enterprise experimented a decrease of 10% and in the last year with a decrease of 7%. In the case of the average salary, it has remained stable since 2009 between

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<sup>18</sup> Note that male FTE in 2008 is bigger than total male employment. The number of hours carried out by people in this segment is above 1800h used for the calculation of the FTE, so these are greater than the jobs.

€25 thousand and €26 thousand. Particularly, in 2015, when the number of total employees in the industry increased 4% and the part-time jobs slightly increased, the average salary decreased 4%. This is consistent with the idea of lower quality new jobs in terms of workers' occupation and income. Labour productivity was stable since 2009 between €70,000 and €75,000 until 2015, when fall to €48,600. These can have many explanations related with production cost, marketing and market conditions, but it is common than when temporality increase, labour productivity suffers a decline. Between 2012 and 2014, the total income of the industry was stable. However, the total income increased a 7%. It is probably that the enterprises of the fish processing industry decided to cover the higher demand of labour force during this year with part-time job until determine if this increase is new positive trend or is a circumstantial situation.

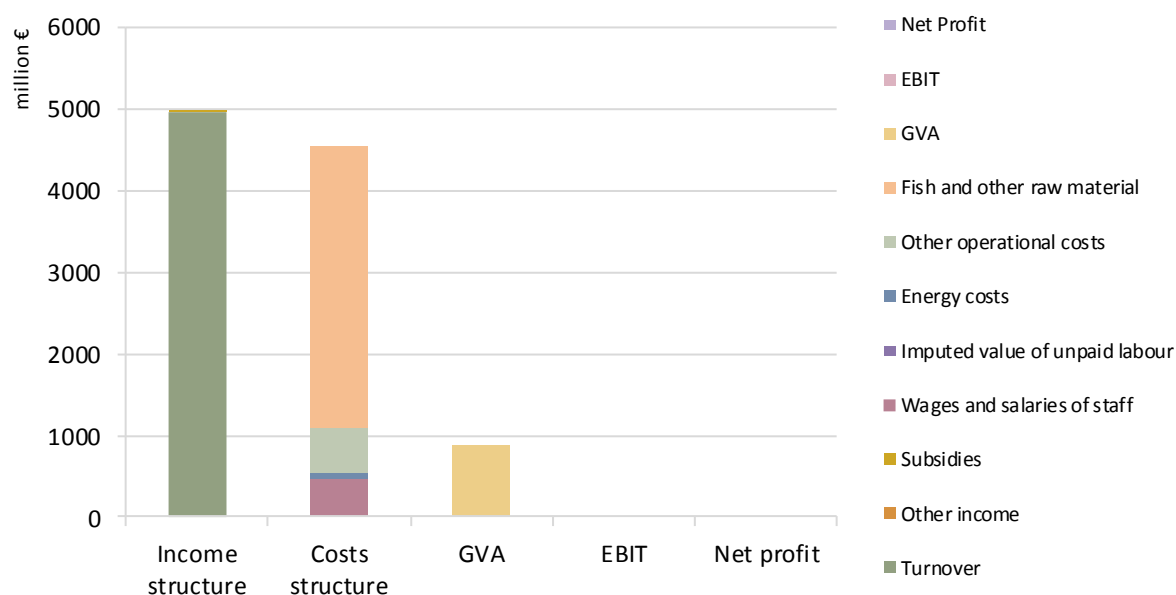


**Figure 4.21.1: Spanish employment trends, 2008-2015**

#### 4.21.2 Economic performance of the Spanish fish processing sector

The national processing industry has demonstrated between 2008 and 2015 its capacity not only to overcome the problems generated by the financial crisis, but also to specialize and adapt its strategy to the strong changes in the value chains of seafood products and to changes in markets and consumer behaviour during this period. This strength allowed the industry at first (2008-2012) recover from the financial crisis faster than other sectors. This first period was characterized by the concentration of production in large companies in the sector, which took advantage of economies of scale to maintain, even improve their profitability. The big losers at that time were the medium and small companies. Then, the period 2012 and 2014, can be named as a period of consolidation of the achievements, in which the incomes of the industry were stable, mainly due to medium-large companies, and the number of small companies started to grow again. During these years, large enterprises consolidate the new levels of production, new management strategies and commercialization, and their activity in foreign markets, increased to maintain profitability when the demand of the domestic market contracted. More recently, 2015 was a new year of improvements in terms of total incomes in all the industry, but led by the small and large companies. The results seem to support the idea that the companies that obtain better results in terms of total incomes are those that bet for the production of small quantities of a product differentiated by quality and/or level of processing, or for massive production with the objective of obtaining economies of scale. The augmented focus on foreign markets with high value added products has reduced reliance on domestic demand.

99% of the Spanish fish processing industry's income comes from sales turnover, what states a strong dependence on the main activity. Turnover has followed a positive trend during the period analysed resulting in an increase of 19% between 2008 and 2015, which was more accentuated in 2015, when it grew by 7% compared to 2014. It is necessary to wait for the results of the next periods to check whether the latter significant increase is timely, or is the result of a recovery in domestic demand, a continuous growth of exports to third countries, or both. Incomes coming from other activities other than fish processing decreased 53% in the period 2008-2015, and represent less than 0.3% of the total incomes in 2015. Direct subsidies account for less than 1% of total income and remained stable during the observed period. The low dependence of the total incomes on subsidies and other incomes resulted in a similar evolution of the total incomes and turnover.



**Figure 4.21.2: Economic performance of the Spanish fish processing sector, 2015**

The number of enterprises whose main activity is not fish processing reported by Spain was one in 2008 and zero for the rest of the years. In recent times, several big retail chains have developed business initiatives of upstream integration in the value chain, incorporating fish processing activities inside their business areas of work. These processing companies are normally subsidiary corporations, which are part of the corporate group. On the other side, there are also many examples of small-medium scale companies, particularly fish and aquaculture producers, which in recent years integrated fish processing in their activities or collaborate with fish processing companies (SUCCESS 2017a). In a context of growing competitiveness in the seafood value chain, this behaviour can have several explanations. This strategy of forward vertical integration helps to overcome the bottle-necks generated by their lower bargain power with wholesalers and big retailers (SUCCESS 2017b), it is a way to find new alternative distribution channels, and also allow producers to obtain a higher part of the value added to the product along the value chain.

The main operational cost of the Spanish fish processing industry is the purchases of raw materials, which in 2012 accounted 76% of the total production costs. This cost has increased 42% during the observed period, and a 25% during 2015. As in the case of the turnover, purchase of raw materials remained stable from 2011 to 2014. The parallel evolution of these two variables suggests that the increase in the total purchase of raw materials mainly responds to the increase in production during 2015, which was 16% in terms of quantities (INE, 2014 and 2015). This, together with the increase in the number of companies and the employment, indicates an increase in the activity of the industry during 2015.

Total cost in wages and salaries not suffers so strong variations as purchase of raw material during the period considered, but still it raised 3.64% in 2015. Although the increase in total wages and salaries of staff was proportionally higher than the increase in FTE in 2015. Considering also the value of the unpaid work, the average salary decreased 4% in 2015. This is consistent with the increase in the importance of part-time jobs already mentioned. Anyway, in the long term the average wage rise 7% during the period analysed.

**Table 4.21.2: Economic performance of the Spanish fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	4,148.2	4,112.1	4,256.1	4,646.4	4,533.2	4,633.7	4,604.9	4,944.4	▲ 7%	▲ 19%
Other income	29.2	27.9	22.7	22.9	45.0	25.4	14.9	13.8	▼ -7%	▼ -53%
Subsidies	25.0	28.0	28.4	28.2	25.3	27.4	20.8	26.8	▲ 29%	▲ 7%
<b>Total Income</b>	<b>4,202.4</b>	<b>4,168.0</b>	<b>4,307.2</b>	<b>4,697.4</b>	<b>4,603.5</b>	<b>4,686.5</b>	<b>4,640.7</b>	<b>4,984.9</b>	<b>▲ 7%</b>	<b>▲ 19%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	2,433.1	2,282.7	2,503.1	2,744.5	2,727.3	2,707.6	2,754.1	3,449.1	▲ 25%	▲ 42%
Wages and salaries of staff	446.6	430.6	430.1	441.0	432.7	438.0	435.8	451.6	▲ 4%	▲ 1%
Energy costs	69.4	68.5	70.7	83.2	81.7	78.2	76.3	76.4	▲ 0%	▲ 10%
Other operational costs	476.8	487.6	470.0	508.2	492.7	506.4	511.3	555.3	▲ 9%	▲ 16%
<b>Total production costs</b>	<b>3,429.3</b>	<b>3,299.2</b>	<b>3,501.9</b>	<b>3,780.6</b>	<b>3,738.0</b>	<b>3,742.6</b>	<b>3,801.9</b>	<b>4,536.9</b>	<b>▲ 19%</b>	<b>▲ 32%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital										
Financial costs, net	107.4	94.7	50.9	84.5	53.8	74.5	66.3	0.0	▼ -100%	▼ -100%
Extraordinary costs, net	13.5	6.4	3.4	-7.6	-3.6	-3.8	-8.5	0.0	▲ 100%	▼ -100%
<b>Capital Value (million €)</b>										
Total value of assets										
Net Investments	204.6	125.6	112.9	80.5	88.5	81.4	94.1	76.7	▼ -18%	▼ -62%
Debt						0.0	0.0	0.0	▲ 0%	
<b>Economic performance (million €)</b>										
Gross Value Added	1,198.1	1,301.3	1,234.9	1,333.5	1,276.5	1,366.9	1,278.1	877.3	▼ -31%	▼ -27%
Operating Cash Flow	773.1	868.8	805.3	916.8	865.5	943.9	838.8	448.0	▼ -47%	▼ -42%
Earning before interest and tax										
Net Profit										
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	62.7	70.5	70.2	75.3	73.4	77.7	72.8	48.6		
Capital productivity										
GVA margin	28.7	31.4	28.9	28.6	27.9	29.3	27.7	17.7		
EBIT margin										
Net profit margin										
Return on Investment										
Financial Position										
Future Expectation Indicator										

Energy cost accounts less than 2% of the total production cost in the fish processing industry in 2015. The evolution of the energy cost helps to confirm the argument of an increase in the production during the period analysed, since it grew 10% between 2008 and 2015. The energy cost increased from €69.4 million in 2008 to €83.2 million in 2011. However, despite the stability of production between 2012 and 2014 and its growth in 2015, the cost of energy has followed a downward trend since 2011 until the €76.4 million achieved in 2015. This may be due in part to the reduction in Spain in the price of electricity for industrial use during this period (MINETAD 2017).

Finally, other operational costs, mostly associated with external services, have not followed a clear trend, with increases and decreases from year to year. However, these cost raised 9% and 16% during 2015 and in the long term, respectively. The importance of the other operational cost in the total production cost has remained stable around 13%.

The net financial result shows an irregular evolution without a clear trend. Without additional information it is not possible to assess whether this evolution in the financial cost is related with changes in the amount of debt, changes in the debt structure, or changes in the interest rates or renegotiation of the existing debt. Extraordinary costs also show a similar irregular trend. From 2011 to 2014, the net result of the extraordinary cost indicator is negative. The extraordinary incomes were higher than the extraordinary cost during this period. Finally, net investments have decreased 62% from 2008 and 5% since 2011. The decrease in the investments may be related both with the crisis affecting industrial investments in Spain, but also with the modernization and capitalization strategy developed in the previous years. The period 2008-2010 was the most difficult moment for the Spanish industry due to the impact of the general financial crisis. At that time, the most competitive fish processing companies initiated a process of increase in the production scale, innovation in the production and diversification of their product portfolio. That process required a strong investment in technology. In the opposite side, small companies and family business with less financial capacity due to the reduction in the incomes, needed to extend the use of their facilities, what reduce technology renovation and the sales of the old tangible assets. The reduction in the net investment since 2011 can have several causes, and it does not necessary mean a reduction in the modernization of the industry. If the highest net investment in at beginning of period was mostly in machinery and equipment, after that the investment effort has decreased and focuses on maintenance of the new equipment and renovation of the old ones. It is necessary to mention that in recent years, Spanish large fish processing enterprises increased their dependency on non-domestic raw materials. One of the consequences has been several initiatives of relocation of production activities in third countries, what means also a relocation of a part of the enterprise investments not in the Spanish industry, but in the subsidiaries located at these third countries.

The only available economic performance indicators to assess the evolution of the performance in the Spanish seafood processing industry are the gross value added and the operating cash flow. These indicators may not be enough to develop a detailed analysis of the profitability and performance of this industry in Spain. GVA evolution between 2008 and 2015 reflects fluctuations, but in general a stable trend, except 2015, when it felt 31%. During this period GVA accounted between 28% and 31% of the total income, except 2015, when drastically felt to 17%. The same can be said about the operating cash flow, which ranged between 18% and 21% of the total income. In 2015, the cash flow dropped 47% compared to 2014, and it represented only the 9% of the total income. While the total income in 2015 increased 7% compared to 2014, total production cost raised 19% in the same period. Particularly significant was the higher proportional increase of the purchase of raw material for production, 25% in only one year.

Because data on capital depreciation is not available, it is not possible to calculate the missing indicators in Table 4.21.2.

#### 4.21.3 Overview of the Spanish fish processing sector by size categories

The detailed analysis of the employment (FTE) and the number of enterprises by size categories shows significant changes in the structure of the Spanish fish processing industry. General data show an increase in the number of companies and a reduction in the total employment and FTE in the long term, but a positive evolution for all the cited variables during 2015. However, a more detailed analysis allows identifying two different contexts both at general level and detailed by size categories, before and after 2012.

The distribution of enterprises by size segments indicates that the industry is composed mainly by small firms. The 86% of the industry are companies below 50 workers, and companies under 10 employees represent 53.5%. The number of enterprises increased 10% with regard to the previous year and 5% since 2008. However, the evolution varies throughout the period analysed across size segments, mainly due to the variability in the number of small companies. On the other hand, the number of enterprises of more than 50 employees has remained more stable between 2008 and 2015. In 2015, the number of enterprises increased at small and large enterprise segments, 24% and 22%, respectively. However, the number of medium size companies decreased a 3%. In the long term, it is particularly significant the increase of 34% in the number of small enterprises and the reduction of 21% in the number of medium size enterprises between 11-49 employees. The number of large companies remains the same in 2015 compared to 2008.

The structure of the employment distribution by industry segments remains stable during the period analysed. Enterprises of ten or less employees represent around 5% of the total employees and FTE. When we consider enterprises from 11 to 249 employees, they represent around the 65% of the total employment and FTE, but it is observed a negative trend from 2008 to 2015. In the case of enterprises with 250 employees or more, they provide during this period around 25% of the total employment and FTE. Here there has been a positive evolution from 20% in 2010 to 30% in 2015. While small enterprises led the positive evolution in the number of enterprises, large companies are creating most of the new employments, especially in 2015.



**Figure 4.21.3: Spanish main structural and economic variables trends by size category, 2008-2015**

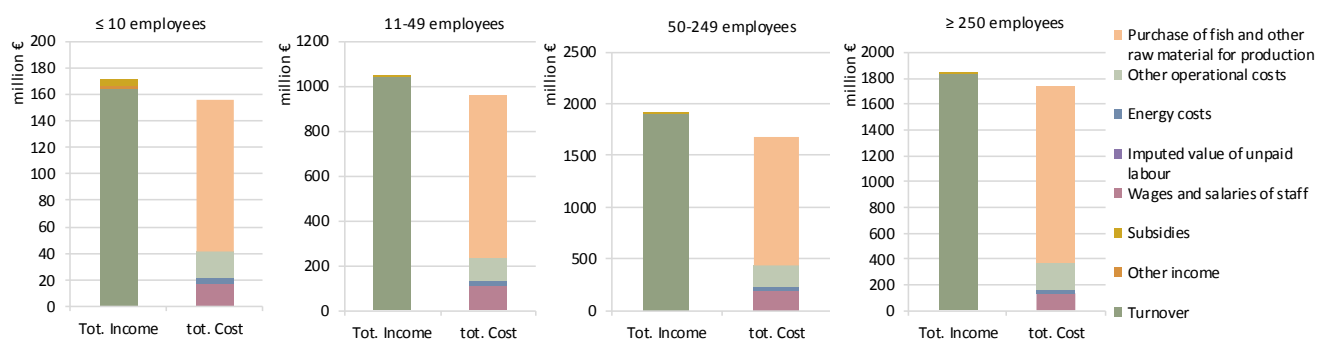
There are some interesting conclusions arising from these data. During the period 2008-2011 took place a general decreasing trend in the number of companies and employees. Small companies were the most affected by the financial crisis, because of the reduction in the incomes and their higher difficulties in access to credit and liquidity, due to their small scale in terms of both assets and production. The medium size companies suffer a lower impact from the negative economic context, but they still needed to reduce their work force. Large companies increased their work force probably due to a strategy according to which these enterprises used their scale as a competitive advantage to reduce their unit cost and increase their economic margin or reduce the impact derived from reduction in prices. After that, 2012 was a year in which the general trend changed, and the number of companies and the level of employment started to increase. Since 2012, the number of small enterprises increased in 2015, but their average size is smaller in terms of employees. Large companies are increasing their work force to attend their increasing production activity. The medium size segment follows a negative trend, not only in terms of number of production units, but also in terms of labour force by enterprise.

The contribution of the small enterprises to the Spanish fish processing industry remained stable despite the fluctuations in the number of companies and employees. Both the total income and the total production cost generated by small enterprise segment accounts between 2.39% and 4.23% of the total industry. Although the importance of the small enterprise total income in the industry in 2015 was 14% lower than in 2008, it is necessary to point out that it increased 44% compared to 2014. In absolute values, the total income and the total production cost of the small companies increased 2% and 14% in 2015 compared to 2008 and 54% and 65% compared to 2014, respectively. Different from the general trend of the sector, which started to increase total income in 2010, small companies needed more time to adjust their business to the new economic context. However, their activity resulted in the highest proportional increase during 2015 compared to the rest of the segments, both in terms of total incomes and total cost. Considering these two variables, the level of activity of this part of the industry in 2015 appears to be slightly higher than at the beginning of the economic contraction in 2008. The increase in the number of small companies appears to be the most probably cause of the significant grow of the production activity at the segment. However, the average number of employees per Enterprise dropped, and the average income by Enterprise decrease 44% since 2012. Furthermore, the higher proportional increases in the total production cost than in the total income in 2015, both compared to 2014 and to 2008, suggest a decrease in the average profitability of the small companies.

The medium size companies generated in 2015 60% and 58% of the total income and the total production cost of the Spanish fish processing industry, respectively. It evidenced a reduction compared to 2008, when these percentages achieved 67% and 65%. The evolution in the total income and the total production cost in the medium size companies between 2008 and 2015 have followed the evolution of the industry, that is, a positive trend, proportionally higher in the case of cost. As in the case of the small enterprises in 2015 these enterprises also suffered in average a reduction in the profitability of their production process compared to 2014 and to 2008.

In contrast with the small and medium size enterprises, the large companies increased their importance in the Spanish fish processing industry. The contribution of the big companies to the total industry's income increased from 29% to 37% between 2008 and 2015, suggesting an increasing concentration of the production in the large companies. The recovery of total income after the first years of the economic crisis started in 2010, and continued until 2015, with a significant improvement in 2012 and then again in 2015. In absolute terms, the total income of the fish processing industry in 2015 increased 13% and 53% compared to 2014 and 2008, respectively. From 2008 to 2012, the proportional improvement of the total income was higher than the total cost one, improving the profitability of this segment. However, during the last three years considered in this analysis, large companies follow the general trend in which the profitability of these companies also decreased.





**Figure 4.21.4: Spanish income and cost structure, by size category, 2015**

**Table 4.21.3: Economic performance of the Spanish fish processing sector by size category (indicators in million €), 2008-2015**

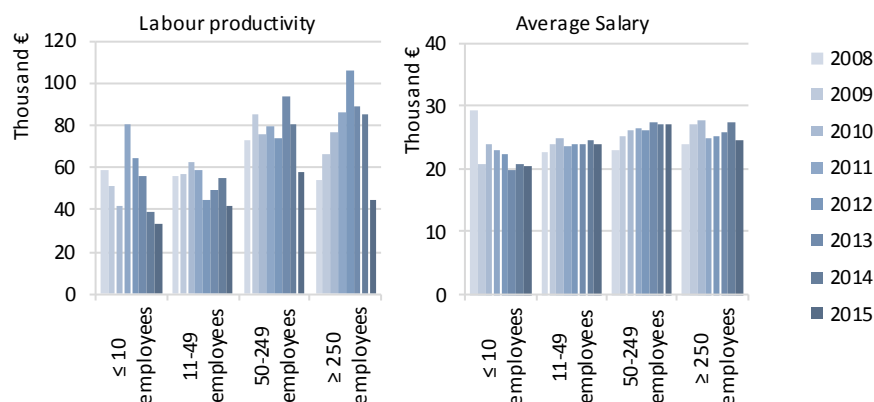
Variable	2008	2009	2010	2011	2012	2013	2014	2015			Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>												
Total Income	168.3	148.2	133.5	170.6	172.7	198.4	111.1	171.5	▲	54%	▲	2%
Total production costs	136.8	115.3	116.6	117.0	139.6	153.3	94.5	156.2	▲	65%	▲	14%
Gross Value Added	58.3	53.0	34.6	73.9	50.2	66.0	31.9	27.7	▼	-13%	▼	-52%
Operating Cash Flow	31.5	32.9	16.9	53.6	33.0	45.1	16.7	15.3	▼	-8%	▼	-51%
Earning before interest and tax												
Net Profit												
<b>between 11 and 49 employees</b>												
Total Income	1,033.6	983.1	995.8	1,016.5	893.8	821.7	1,017.1	1,052.9	▲	4%	▲	2%
Total production costs	828.6	784.2	782.0	835.7	785.6	689.4	863.0	960.3	▲	11%	▲	16%
Gross Value Added	328.3	324.7	336.7	284.1	218.8	242.4	265.4	197.0	▼	-26%	▼	-40%
Operating Cash Flow	204.9	199.0	213.9	180.8	108.2	132.2	154.1	92.6	▼	-40%	▼	-55%
Earning before interest and tax												
Net Profit												
<b>between 50 and 249 employees</b>												
Total Income	1,793.2	1,949.3	2,019.6	2,187.8	1,916.0	2,062.5	1,878.5	1,917.6	▲	2%	▲	7%
Total production costs	1,392.7	1,462.2	1,618.2	1,759.4	1,558.4	1,578.6	1,472.5	1,683.5	▲	14%	▲	21%
Gross Value Added	574.6	677.6	598.5	624.4	534.4	665.3	600.6	418.7	▼	-30%	▼	-27%
Operating Cash Flow	400.5	487.1	401.4	428.4	357.7	483.9	406.0	234.2	▼	-42%	▼	-42%
Earning before interest and tax												
Net Profit												
<b>greater than or equal to 250 employees</b>												
Total Income	1,207.3	1,087.4	1,158.2	1,322.5	1,621.0	1,603.9	1,633.9	1,842.9	▲	13%	▲	53%
Total production costs	1,071.1	937.6	985.1	1,068.6	1,254.4	1,321.3	1,371.9	1,737.0	▲	27%	▲	62%
Gross Value Added	236.9	246.0	265.0	351.0	473.2	393.2	380.1	233.9	▼	-38%	▼	-1%
Operating Cash Flow	136.2	149.9	173.1	254.0	366.6	282.6	261.9	105.9	▼	-60%	▼	-22%
Earning before interest and tax												
Net Profit												

The income in all the size categories shows the same structure and it has been following the same trends. Around 99% of the total income was generated by turnover, while the subsidies received by the enterprises represented less than 1% of the total income, except in the case of the small enterprise. In this case, turnover represents 96% of the total income and subsidies achieve 2.73%. In the other segments of the industry, the importance of subsidies is lower as the company becomes larger, until the case of large enterprise, where subsidies represent only 0.14% of the total income. Considering this percentages, the performance of the industry is far from having a reliance on subsidies.

In 2015, all the size categories of the industry obtained more incomes that the cost assumed to develop the production, resulting in a positive operating cash flow. The analysis of the cost structure and the subsequent comparison between the different categories revealed some interesting differences. Labour cost represented 11% in the small and medium size companies while in the large companies it was less than 7.5%. It suggests a more capital intensive production in the case of the large ones. Energy cost achieved the 2.9% of the total production cost in the small companies, 1.9% in the medium size companies, and only represented 1.30% in the large ones. This can be explained by several reasons: the use of more energy efficient systems at the big companies and, an electricity price system in which the more you consume, the lower is the price, among others. The other cost achieved around 12% in all the size categories. The purchase of fish and raw materials achieve 73% and 74% in the case of the small and medium size companies, respectively and 78.5% at the big companies. It is a possibility that the development of a production process less labour intensive and more intensive in capital and technology, allows large companies to process proportionally more quantities of seafood.

As in the whole industry, all the size categories resulted in a positive GVA and operating cash flow during the period analysed. However, both indicators followed a negative evolution in all the segments since 2013, and the reduction was particularly strong in 2015. Small companies' performance indicators in 2015 decreased 52% and 51% compared to 2008 and 13% and 8% compared to 2014, for the GVA and operating cash flow respectively. This means that small companies suffered the strongest reduction of the industry in the long term, but the smallest in the last year. The available performance indicators for Spain in 2015 also had a decrease at the medium size segment, which as in the case of small companies, was proportionally higher compared to 2014 than to 2008. The large companies, different from the other segments of the sector, improve their performance indicator until 2012. However, since that year, also large company's profitability followed the general negative trend. In 2015, the reductions of the GVA and the operational cash flow were proportionately greater the greater the size of the company.

The contribution of the small size companies to the GVA and the operating cash flow of the fish processing industry is the lowest of the three main segments considered and it has varied between 2% and 6%. In the case of the medium size and the big companies there have been significant changes. While in 2008 the contribution of the medium size and big companies to the GVA were 75% and 20% respectively, in 2012 these percentages decreased to 59% in the medium size companies and increased to 37% in the big ones. However, since 2012 this trend changes, and the contributions of these two segments in 2015 is similar to 2008. More than an improvement in the medium sized enterprise performance indicators, this is the results of a worse proportionally evolution of GVA and OPC in the case of large enterprises segment. Despite this evolution in the performance indicators, income indicators suggest that the significant redistribution of the activity from the medium size companies to the biggest ones identified between 2008 and 2012, continued until 2015, but in a lesser extent. The same situation has taken place in the case of the operating cash flow, but in a more intense way.



**Figure 4.21.5: Spanish labour productivity and average salary trends, by size category, 2008-2015**

Two trends can be drawn in general terms. The first half of the period, during which labour productivity grew in all segments due to the increase in GVA and the reduction of FTE. The second half marked by the recovery of FTE employment and the reduction of GVA, especially in 2015. Between 2008 and 2012, large companies experienced almost exponential growth in labour productivity. However, since 2013 it has decreased at a very high rate, and only in the last year it has been reduced by almost 50%. The increase in employment, together with the sharp drop in GVA, has led to the negative evolution of this indicator.

The average salary in the Spanish fish processing industry has remained stable between €20 thousand and €27 thousand during the observed period, with an average of €25,264 in 2015. The average salaries at this industry have been over the Spanish national average salary all the years analysed particularly, from 10% to 15% higher (INE, 2017). However, there were differences in the average salaries and their evolution by size categories. At small companies between 2008 and 2012 there was an adjustment in the salaries and then, the average salary remained stable until 2015. Such a decrease can be explained by the difficulties derived from the economic crisis and the need to reduce production cost. In 2015, the average salary at small companies was €20,575, 14% and 11% under the average salary of the industry and the national average salary, respectively. This is probably related with the lower technical level of small companies' production process and the less qualified positions needed at these enterprises. The evolution of the average salaries in the medium size companies has followed a positive trend during the period considered, especially in those with more than 49 employees and less than 250. This evolution can arise for the changes in the production process to a more technological based processes which requires more qualified employees. The national average salary increased a 6% between 2008 and 2015 while the average salary at 50-249 employees' enterprises raised a 16%. In 2015, the average salary at medium companies was €23,986 at enterprises of 11-49 employees and €27,060 at 50-249 enterprises, the highest of the industry and 17% higher than the national average. The average salary at large companies in 2015 was €24,683, 2.5% higher than the average salary of the industry. Since 2011, the difference between the large enterprise average salary and the national average salary grew until 20% in 2014. However, the decrease of 10% in the average salary perceived by large enterprise employees in 2015 compared to 2014, reduced this difference to 7%. The average salary in companies with more than 50 workers is higher than that of small companies. The greater use of technology usually requires a more qualified and better-remunerated workforce, which would explain this structural salary.

#### *4.21.4 Trends and drivers for change*

The Spanish fish processing industry has followed a positive trend in recent years (2013-2015) due to the positive evolution of the number of enterprises, employment, total incomes and value of the production. The performance indicator remained positive. The most negative aspect to highlight in recent years is that, despite the increase in the value of production in the sector, production costs grew more proportionally, reducing the profitability of the sector in all sizes. The comparison with

the previous fish processing report period (2008-2012), helps to confirm the consolidation of some of the changes, trends and drivers identified in the evolution of the industry during that period, and to identify new others.

Medium-sized companies continue to be the main engine of the industry, being the segment that contributes the most to incomes. However, in the last three years there have been changes in the structure of the industry. On the one hand, the importance of large companies has continued to grow, although to a lesser extent than in the previous stage, thus consolidating the tendency to concentrate activity in large companies, to the detriment of small companies. The search for a greater productive scale to obtain a lower average cost of production, seems to be the main driver of large companies to face the growing competitiveness in the seafood markets. On the other hand, there has been a change of trend as far as small enterprises are concerned. The number of small fish processors has grown again, as well as the value of their production. All of the above suggests that the segments that have grown the most in recent years are those that have opted well for the differentiation of small productions, or for the improvement of efficiency through the economies of scale. Consequently, the competition inter-segments (small vs large companies) should be lower, since both strategies target most of the times different distribution channels and customer segments.

Employment in the fish processing industry has resumed the path of growth since 2012, although it has not yet recovered the levels of 2008. In the last year, there has been a slight increase in part-time work, but with the available data, it is still soon to see a tendency on it. Traditionally, the fish-processing sector in Spain has employed more women than men. The greater presence of women than of men is even greater in the canning sector, in which mostly women carry out the manufacturing activities. In the previous report, data showed a change in this traditional structure, with an increase in the number of male employees and a gender balance structure. However, the latest data indicate that this was not a trend, but a temporary change, probably caused by the lack of employment in other economic activity due to the economic crisis. Since 2012, the male employment figure has stabilized, while the number of employed women has grown again. This has caused a further increase in the gap between male and female employment and the return to the gender structure prior to the economic crisis. In recent years, producer organizations have started, in collaboration with public bodies, initiatives to increase the presence of women in management positions in the canning sector.

The total amount of subsidies received by the Spanish fish processing industry in 2015 was €26.8 million, which was a 29% more than in 2014. Although it is a relevant amount in absolute terms, it did not represent a significant part of the total income generated by the industry. Between 2008 and 2015, subsidies represented less than the 1% of the total income. The average amount of subsidies per company was €44,754 in 2015, which was 17% compared to 2014, but 14% less than in 2012. In terms of employment, the average subsidies per FTE was €1,483, which was 25% and 2% compared to 2015 and 2012, respectively. The analyses by segments provides interesting information about the industry. There can be identified two main trend. Large companies' subsidies have experimented a reduction in recent years, particularly 32% and 53% less in 2015 compared to 2014 and 2012, respectively. The contribution to the total incomes in 2015 was only 0.14%. The amount of subsidies per company decreased from €593,000 in 2012 to €226,445 in 2015. The same negative tendency is observed in the amount of money perceived by FTE, which decreased from 1,196 per FTE in 2012 to 471 per FTE in 2015. In the case of the small companies, data shows the opposite trend. In 2015, small companies only represented 3.44% of the total income, but perceived 18% of the total subsidies. The public financial support perceived by small enterprises in 2015 increased a 180% compared to 2014, and represented 2.73% of the total income, that is more than five times the average at the sector. The average subsidies per company was only €14,641. However, if we look at the average subsidies per FTE (which allow to compare between segments), it was €5,645 in 2015, that is 281% more that the average of the industry. The economic and social impact of the structural funds does not only depend on the funded project, but also on external factors such as the economic cycle, political framework or market dynamics.

The fish processing industry in Spain produced 847,013 tonnes in 2015, which was a 2% more than the previous years. The distribution by type of product was as follows: prepared and preserved fish (46.5%), frozen fish (21%), frozen molluscs and invertebrates (12.87%), prepared and preserved mollusc and invertebrates (8.60%), frozen crustaceans (4.47%), dried, salted and smoked fish

(3.95%), fresh fish (2.03%) y prepared and preserved crustaceans (0.44%). Regarding the evolution of the quantities produced in each segment, the most significant trend was the increase of 8% in the production of prepared and preserved fish. The prepared and preserved products grouped 55% of the production in 2015. The main species produced in this segment are tuna, sardines, mackerel, mussels and anchovies in order of importance.

Although the consumption of fish continues a downward trend in Spain in recent years as a result of the crisis, Spain continues to demand large quantities of fish products. In 2015, households allocated 13.3% of their spending on food to the consumption of products from fisheries, aquaculture and their processed products (MAPAMA 2015a). The distribution of this consumption by type of product in quantities was led by fresh fish (45%), followed by prepared and preserved (17.3%), fresh mollusc and crustaceans (15.5%), frozen fish (10.9%), frozen mollusc and crustaceans (9%) and boiled mollusc and crustaceans (2.4%). The per capita consumption in households in 2015 was: seafood total 25.90 kg/person, fresh fish 11.64 kg/person, frozen fish 2.62 kg/person, molluscs and crustaceans 6.96 kg/person and prepared and preserved fish, mollusc and crustaceans 4.47 kg/person. The 61.2% of seafood products were sold in supermarkets and hypermarkets (MAPAMA 2015a).

In recent years there have been changes in the value chain of seafood products in Spain, with general increase in competition. On the one hand, there is a growing concentration of distribution in large retailers. The big retailers accumulate a greater bargain power with the previous agents of the chain of value, between, which are the fish processors. Large retail chains demand large volumes of product and boost white brands. In addition, imports of seafood products grow. Large retailers often buy the product directly at source, without any other intermediary. All of this means that Spanish fish processing companies need to produce large volumes and reduce their average production costs in order to be competitive. Small processing companies have problems competing in a mass market with an undifferentiated product. Therefore, there is a growing trend in this segment towards diversification, product differentiation, the commitment to own brands, the search for alternative distribution channels, shortening them and product innovation with a higher level of processing. In recent years, there are an increasing number of collaborations between producers and processors. There is also a tendency for fish and aquaculture producers to integrate fish processing among their tasks as a strategy to obtain a greater proportion of the value added to the final product.

The increase in imports is not only relevant in terms of greater competition for Spanish companies, but also in the case of imports of raw materials to meet the demand of processing companies. The large processing companies have developed a growth strategy mainly based on a continuous production and larger quantities. This strategy is possible thanks to the supply from imports, because in Spain a large part of domestic production goes to fresh consumption. On the other hand, small companies base their production mainly on the supply of high quality domestic production. Imports of the fish processing industry in Spain reached a value of €4,433 million in 2015, 15% more than in 2012. This evolution reinforces the growing trend observed in previous years (MAPAMA 2017). The value of exports was €2,626 million in 2015, 9% higher than in 2012. These data confirm that export markets are a clear driver in the competitive strategy of this industry and a key element to understand the growth in the activity (MAPAMA 2017).

During the last years, there has been an increasing use of certifications, mainly associated with the origin of the raw material. In the case of large companies, certification in most cases occurs to meet the demand of customers. In the case of small businesses, as a tool to differentiate their product.

In terms of regional importance of the fish processing industry, Galicia is by far the most important region, followed to a lesser extent by Andalusia and Valencia. In 2014, Galicia accounted for 61% of the sector's total sales, while Andalucía and Valencia achieved 7% and 6%, respectively. Regarding employment, companies in Galicia employed 52% of the workers in the industry, followed by Andalucía and Cantabria with 11% and 8%, respectively. In the case of Cantabria, the most important segment is canning industry, which is very labour-intensive and is mainly dedicated to the production of tuna and anchovy.

#### 4.21.5 Outlook

The increase in competition in the value chain of fishery products, makes it expected that in the next few years the trend towards concentration in two large business strategies will continue, the mass production of large and medium-sized companies to reduce the cost of production and be more competitive, and the search for differentiation by small businesses.

In terms of employment, the increasing activity of the industry in terms of production and value. This makes to expect that the new growing trend in employment since 2012 will continue in the future. In terms of gender balance, the proportion of females can continue increasing until reach the levels previous to the economic crisis. Also, the programs started in recent years to include more females in management positions, should start to provide results if we consider the commitment expressed by the industry. This issue is not only the case of the fish processing industry, but a general situation in the country.

In 2016, the fish processing industry in Spain imported raw material worth €4,874 million, 10% more than in 2015. This data confirms the strong growth of imports and the increase in the industry's dependence on imported raw materials. The most representative imported products in 2016 were frozen shrimp and prawns (€962 million); frozen squids (€459 million); preserved and prepared tuna (€384 million) and octopus frozen or in brine (€364 million). Exports have also continued growing since 2012, from €2,410 million to €2,915 million in 2016. Trade balance has experimented small changes in recent years (MAPAMA 2017). The ratio value of exports on the turnover of the sector is 70%, higher than that registered in 2014 (56.7%). This data clearly indicates the high added value of exports (MAPAMA 2017).

#### 4.21.6 Data coverage and quality

Fish processing industry data comes the Spanish National Institute of Statistics (Instituto Nacional de Estadística).

Depreciation of capital, total value of assets and debt, are not available for all the period. Financial cost net and extraordinary cost net are not available for 2015. The explanation provided by the MS was that the data are not collected by the main survey source. This issue does not allow us to estimate beyond the GVA and the Operational Cash Flow indicator.

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## 4.22 SWEDEN

### 4.22.1 General overview of the Swedish fish processing sector

The total number of enterprises operating in the Swedish processing industry increased from 301 to 356 during the period 2008-2015 if one includes both enterprises that process fish as their main activity and enterprises that do not. If you separate these two groups, the enterprises that process fish as their main activity increased from 214 to 224, which can be compared to 177 enterprises in 2001. This can also be compared to an increase by more than 50% for enterprises that do not process fish as their main activity. Please note that the rest of this chapter mostly concerns enterprises that have fish processing as their main activity, since we have almost no further data on the other enterprises.

The fish processing industry sector in Sweden is very heterogeneous with small family businesses processing their own landings as well as larger enterprises with large-scale industrial production. A majority of the companies, however, are small firms with less than 10 employees. Often only the owner is working in the company. A correlation between business size and diversification is to be expected, since smaller enterprises tend to specialise and larger enterprises produce a wider range of products.

The fish processing industry is located mainly along the west and south coasts of Sweden, as are major parts of the fishing fleet. Two regions stand out: the Sotenäs municipality and the county of Halland. In these coastal areas the processing industry is an important source of employment, particularly since other employment can sometimes be hard to find there. Several Swedish companies have merged with foreign ones during the studied period, for example from Norway and the United Kingdom.

The Swedish processing industry produces a wide range of fresh, chilled, canned and frozen products. The products produced by the largest companies are mainly based on herring, whitefish, prawn and roe, but also cod, salmon, Alaska Pollack and Pangasius are important raw materials. The products produced differs from one part of Sweden to another. In the northern part it is mainly vendace roe, fermented Baltic herring and some salmon that are processed. The west coast produces mainly sandwich caviar, caviar, sprat/anchovies and canned products like fishballs, mackerel and herring, but also shellfish in brine and smoked salmon and rainbow. The south of Sweden mainly processes herring, Baltic herring and cod from the Baltic Sea, but also some smoked fish. On Gotland there is mainly local processing of Baltic fishing (including smokers).

In recent years, the processing rate has increased since demand has moved towards products that are almost ready to eat. At the same time, less whole fish is being sold. To be able to compete on the market the Swedish fish processing industries, especially the larger enterprises, are very dependent on raw material of the right quality and quantity. They therefore import approximately three quarters of their raw material.

In 2015, a total of 224 enterprises had fish processing as their main activity. Many of the small companies were financially connected to the fishery operations, since they often processed their own landings. During the period 2008-2015, on average, 84% of the enterprises had less than ten employees which can be compared to 82% in 2008. The total number of employees was slightly higher in 2015 compared to 2008 (2,171 compared to 2,165). There was a drop in total number of employees in 2009, and the number of employees has in fact increased every year until 2014, when one of the largest fish processing companies in Sweden merged and changed their activity from main to non-main. With this in mind it is very likely that the total number of employees has continued to increase, if you exclude this company from previous years. The decrease in labour productivity in 2013-2015 is also very likely due to the fact that one of the larger fish processing enterprises changed their activity in 2013. This company is included in the statistics for main activity for some months in 2013, but after that the enterprise is only included in enterprises in which fish processing is not their main activity.

In 2015, total FTE in the Swedish processing industry was 1,662 which was a decrease by 6% compared to 2008. The fact that FTE is lower than the total number of employees indicates that several employees are working full time or more hours.

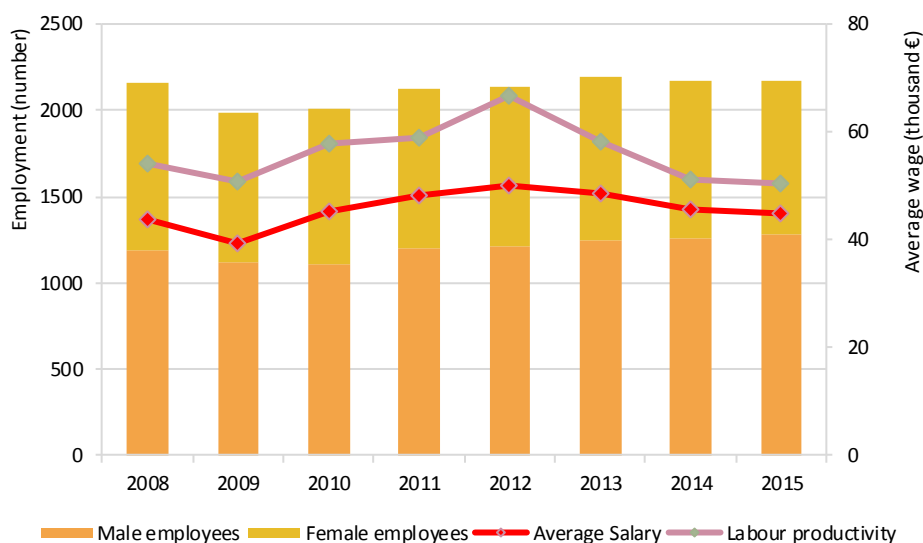


**Table 4.22.1: Swedish fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	214	217	219	219	223	222	224	224	<div><div></div>0%</div> <div><div></div></div>	5%
≤10 employees	181	186	183	186	190	185	188	183	<div><div></div>-3%</div> <div><div></div></div>	1%
11-49 employees	26	26	30	26	25	29	28	33	<div><div></div>18%</div> <div><div></div></div>	27%
50-249 employees	7	5	6	7	8	8	8	8	<div><div></div>0%</div> <div><div></div></div>	14%
≥250 employees										
<b>Employment (number)</b>										
Total employees	2,165	1,991	2,007	2,126	2,135	2,199	2,174	2,171	<div><div></div>0%</div> <div><div></div></div>	0%
Male employees	1,187	1,116	1,112	1,202	1,215	1,245	1,256	1,283	<div><div></div>2%</div> <div><div></div></div>	8%
Female employees	978	875	895	924	920	954	918	888	<div><div></div>-3%</div> <div><div></div></div>	-9%
FTE	1,773	1,736	1,807	1,837	1,831	1,658	1,587	1,662	<div><div></div>5%</div> <div><div></div></div>	-6%
<b>Indicators</b>										
FTE per enterprise	8.3	8.0	8.3	8.4	8.2	7.5	7.1	7.4	<div><div></div>5%</div> <div><div></div></div>	-10%
Average wage (thousand €)	43.9	39.3	45.4	48.3	50.2	48.5	45.8	45.0	<div><div></div>-2%</div> <div><div></div></div>	2%
Unpaid work (%)	1.3	2.8	0.0	0.0	0.0	0.0	0.0	0.0	<div><div></div>0%</div> <div><div></div></div>	-100%

Note: The data covers 3 segments, since the data in the third segment includes firms with more than 50 employees.

FTE development can only be studied on an aggregated level, since no data is available by gender. However, between 2008 and 2012 total FTE increased by 8% which can be compared to a decrease by 1% in total employment. The development between 2014 and 2015 is almost the same, with an increase in FTE by 5% and an unchanged total number of employees. This development might be explained by the fact that more employees are working part time, and the increase in average wages may also have an impact.



**Figure 4.22.1: Swedish employment trends, 2008-2015**

As shown in Figure 4.22.1 the average wage level has a positive trend during the period and increased by 2% in value, which is slightly higher than the increase in Sweden as a whole. The decrease in 2009 is mainly due to changes in exchange rates, since the Swedish krona was weak. The exchange rate also effected the average salary after 2013, since the Swedish krona became weaker compared to the euro. The total number of employees was slightly higher in 2015 compared to 2008 (2,171 compared to 2,165), which can be compared to a decrease in FTE with 6% during the same period. During the studied period the total number of male employees increased by 8% and at the same time the total number of female employees decreased by 9%. Figure 4.22.1 also shows that labour productivity increased between 2008 and 2012, and decreased after the merger and during the studied period by 7%. This decrease can be compared to an increase by 2% for average salary. Worth mentioning again is that the number of enterprises increased during this period.

#### *4.22.2 Economic performance of the Swedish fish processing sector*

The performance of the Swedish processing industry is highly dependent on the prices of raw material, which amounted to more than 60% of total production costs during the studied period. The industry is also dependent on raw material of the right quality and quantity. If such materials cannot be found within the Union the industry has to import it from third countries. Generally speaking, smaller enterprises are more dependent on local landing, and larger enterprises with industrial production depend more on imported raw material. Therefore, in addition to variations in the prices of raw material, the industry is also sensitive to fluctuations in exchange rates.

When the economic performance is evaluated for the studied period, one must bear in mind that economic data at national level refers to the main activity of the entire company or business group. One of Sweden's largest fish processing industries merged with another industry in 2013 and their activity changed from main to non main fish processing activity. The relevant enterprise is included in the statistics for some months in 2013, but after that they are not included at national level when it comes to fish processing as main activity. The consequence is that it is difficult to study the development and trends of the economic performance between 2008 and 2015. It would probably be more relevant to study the development 2008-2012 (which was done in the last report, STECF-14-21) and the development 2014-2015.

As shown in Figure 4.22.2 both EBIT and GVA are low since income (especially turnover) has not increased at the same rate as costs (especially other operational costs). However, the figure also shows that the purchase of fish and other raw material without question is the largest expenditure for the Swedish fish processing industry. The development of the different indicators is shown in Table 4.22.2.

Please note that the development of the economic performance (Table 4.22.2) would be different if it was presented in Swedish krona, especially for the year 2009 when the Swedish krona was weak<sup>19</sup>.

For example, if you compare the turnover in 2008 and 2009 it was at a similar level in Swedish krona, but decreased by 10% when presented in €. During the same period the costs of raw material increased by 11% in krona, but were almost the same when expressed in €. When you compare the evaluation for the turnover between 2008 and 2015 it decreased by 4% in Swedish krona, but by 1% expressed in €. The situation is much the same as regards the cost of raw material; in Swedish krona it increased by 11% between 2008 and 2015, but by 14% expressed in €.

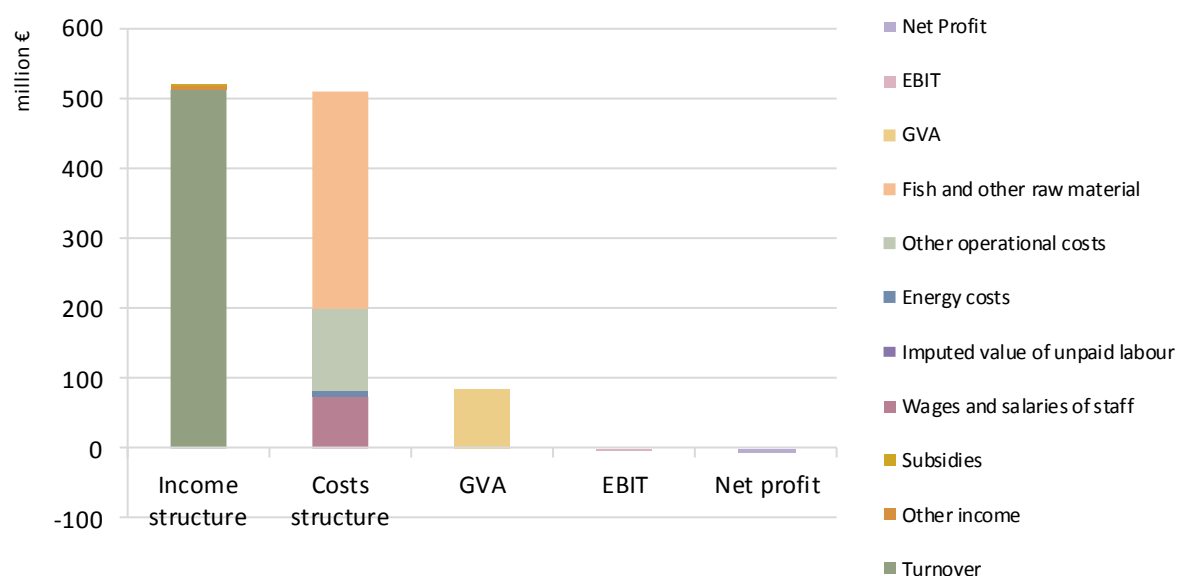
The development (2008-2015) of the Swedish economic performance of the fish processing sector is shown in table 4.22.2. Beneath the table the most interesting variables are commented.

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<sup>19</sup> The exchange rates used in this chapter are for €1: SEK 9.6055 in 2008, SEK 10.6213 in 2009, SEK 9.5413 in 2010, SEK 9.0355 in 2011, SEK 8.7053 in 2012, SEK 8.6494 in 2013, SEK 9.0968 in 2014 and SEK 9.3562 in 2015.

**Table 4.22.2: Swedish economic performance of the fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	519.8	467.2	567.5	599.4	613.2	542.0	499.8	512.5	▲ 3%	▼ -1%
Other income	3.7	3.6	3.9	3.4	8.7	13.6	4.2	4.6	▲ 9%	▲ 24%
Subsidies	0.3	0.3	0.5	0.5	0.8	1.0	0.5	0.3	▼ -38%	▲ 22%
<b>Total Income</b>	<b>523.8</b>	<b>471.1</b>	<b>571.9</b>	<b>603.3</b>	<b>622.7</b>	<b>556.6</b>	<b>504.6</b>	<b>517.4</b>	<b>▲ 3%</b>	<b>▼ -1%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	271.9	272.8	327.1	360.8	358.6	342.3	313.2	309.3	▼ -1%	▲ 14%
Wages and salaries of staff	76.8	66.4	82.0	88.8	92.0	80.4	72.6	74.8	▲ 3%	▼ -3%
Imputed value of unpaid labour	1.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	▼ -100%
Energy costs	7.4	6.5	8.5	7.6	6.4	7.9	7.0	6.3	▼ -9%	▼ -14%
Other operational costs	148.3	103.6	130.9	126.0	134.5	108.7	102.9	117.7	▲ 14%	▼ -21%
<b>Total production costs</b>	<b>505.4</b>	<b>451.1</b>	<b>548.6</b>	<b>583.2</b>	<b>591.5</b>	<b>539.3</b>	<b>495.7</b>	<b>508.1</b>	<b>▲ 3%</b>	<b>▲ 1%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	12.3	10.5	12.5	12.7	13.3	11.9	9.7	9.7	■ 0%	▼ -21%
Financial costs, net	0.8	-0.1	0.6	-1.7	5.3	2.3	48.7	5.6	▼ -89%	▲ 596%
Extraordinary costs, net	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	■ 0%	■ 0%
<b>Capital Value (million €)</b>										
Total value of assets	401.3	344.5	355.8	441.8	409.7	394.9	335.1	289.8	▼ -14%	▼ -28%
Net Investments	9.5	9.8	11.4	12.4	8.9	7.8	15.1	9.6	▼ -37%	▲ 1%
Debt	254.8	206.0	233.7	246.0	251.7	218.2	188.2	183.4	▼ -3%	▼ -28%
<b>Economic performance (million €)</b>										
Gross Value Added	96.0	88.0	104.8	108.4	122.4	96.7	81.0	83.8	▲ 3%	▼ -13%
Operating Cash Flow	18.4	19.9	23.3	20.1	31.3	17.3	8.9	9.3	▲ 5%	▼ -49%
Earning before interest and tax	6.1	9.5	10.8	7.4	18.0	5.3	-0.8	-0.4	▲ 54%	▼ -106%
Net Profit	5.3	9.6	10.2	9.0	12.8	3.0	-49.5	-5.9	▲ 88%	▼ -213%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	54.1	50.7	58.0	59.0	66.9	58.3	51.0	50.4		
Capital productivity	23.9	25.5	29.5	24.5	29.9	24.5	24.2	28.9		
GVA margin	18.3	18.7	18.3	18.0	19.7	17.4	16.1	16.2		
EBIT margin	1.2	2.0	1.9	1.2	2.9	1.0	-0.2	-0.1		
Net profit margin	1.0	2.0	1.8	1.5	2.1	0.5	-9.8	-1.1		
Return on Investment	1.5	2.8	3.0	1.7	4.4	1.4	-0.2	-0.1		
Financial Position	63.5	59.8	65.7	55.7	61.4	55.2	56.2	63.3		
Future Expectation Indicator	-0.7	-0.2	-0.3	-0.1	-1.1	-1.1	1.6	0.0		



**Figure 4.22.2: Economic performance of the Swedish fish processing sector, 2015**

### Income

The Swedish processing industry has shown a steady increase in net turnover since 2001, which probably is related to the increase in the total number of enterprises during the same time. With the exception of 2009 both turnover and total income increased every year during the period, both when expressed in € and in krona, but, due to exchange rates the increase was larger when expressed in €. The turnover decreased in 2013 and 2014 due to the merger of one of the fish processing enterprises. Over the studied period the turnover therefore decreased by 1% for enterprises where fish processing is their main activity. This can be compared to turnover for enterprises in which fish processing is not their main activity. For these enterprises, turnover increased from €73.4 million in 2008 to €223.32 million in 2015, which is an increase by more than 200%. The increase is most likely related to the merger and to the increase in total number of enterprises during the same period. The number of enterprises in which fish processing is not their main activity increased by 52%, from 87 to 132.

If turnover is aggregated for the enterprises where fish processing is their main activity and the ones where it is not, total turnover increased by 24% from €593.2 million in 2008 to €735.8 million in 2015. If the number of enterprises where aggregated in the same way, the increase was 18% during the studied period (301 in 2008 and 356 in 2015). Unfortunately, no data is available on other economic variables for enterprises in which fish processing is not their main activity and similar comparisons on an aggregated level can therefore not be made.

The variable "subsidies" shows a very large percentage change, but from extremely low values. The variable is one of two collected by surveys, and variations can probably be explained by differences in structures of the enterprises that are included in the survey or that one more measure has been paid one year compared to another. If you compare the value for the variable "subsidies" collected by surveys to the value from the European Fisheries Fund they correspond well.

When it comes to subsidies from the European Fisheries Fund, the Swedish processing industry has mainly received subsidies under Article 34 (investments in processing and marketing) during the studied period. The total OP budget for the Swedish fisheries program is approximately €105 million (of which 50% is national co-financing). Between 2007 and 2013 around 10% can be related to actions under measure 2.3 (Fish processing and marketing).

The processing industry has shown a great interest in these subsidies and the amount of the received subsidies varies considerably. More than 40% of the received subsidies under this measure amounted to less than 30,000 krona (approximately €3,200) and the larger subsidies can mainly be referred to subsidies that increase production capacity. Examples of investments in that measure

include cold storage rooms, sorting machines, facilities for fish handling, packaging machines, ice machines, recycling centres, loading docks and traceability systems for frozen fish. According to the Swedish 2016 Annual report for EFF, 254 applications were received, 150 of them approved and 141 finalised. The annual report states that 63 of the measures have led to an increase in processing capacity, 73 to new production, extension or modernization of the processing unit, and that five have led to a modernization of existing marketing establishments. There are several examples of investments that have resulted in better health and working conditions for some companies and improved environmental conditions. The processing industry has also received subsidies for MSC certification and the Swedish KRAV certification, for marketing surveys and for marketing campaigns etc.

When it comes to the European Maritime Fisheries Fund, the total budget is €172.9 million. The fifth union priority "Fostering marketing and processing", will be most interesting for the processing industry. One of the aims of that priority is to reinforce the processing and marketing of fisheries and aquaculture products through innovation, certification and improved product traceability. The total budget for this priority is €11.4 million. In 2015, 124 applications were received and 59 approved.

### *Expenditures*

The purchase of fish and other raw material for production is without question the largest expenditure for the Swedish fish processing industry. It amounts to 54-63% of total production costs during the studied period. The processing industry is therefore sensitive to changes in prices of raw material as well as to changes in exchange rates. As shown in Table 4.22.2 this expenditure increased by 14% between 2008 and 2015, but if it had been presented in krona the increase would have been less (11%).

As mentioned before, there are insufficient quantities of fish of the correct quantity, quality and species in Swedish waters to satisfy the requirements of the Swedish processing industries' need for raw material. The processing industry is therefore highly dependent on imported raw material. Approximately 70-80% of the raw material is imported, but the share differs between species. For example, all Alaska Pollock used by the processing industry have to be imported. In addition, herring (Norwegian spring spawning herring), prawn (cooked and peeled), roe and farmed salmon have to be imported from third countries; if this was not possible the processing industry would not have sufficient quantities and the right quality of raw material. However, only 9% of Sweden's total import of fish and other seafood during 2015 came from EU28, which can be compared to 15% in 2008.

Wages and salaries added up to 15% of total production costs during the whole studied period, and decreased in value by 3% during the same period. However, the decrease is a result of the merger of one of the enterprises and does not show the development in a correct way during the period. Between 2008 and 2012 wages and salaries increased by 20%, which were a few percentage points higher than Sweden as a whole. Wages and salaries increased between 2014 and 2015 by 3%, almost the same as Sweden as a whole. When it comes to imputed value of unpaid labour, it is not relevant to analyse the development since the values are extremely low.

Energy costs represent a small share of total operational costs and have been fairly stable during the period, even in absolute terms. The variable is one of two collected by surveys, and the small variation can probably be explained by differences in structures of the enterprises that are included in the survey. "Other operational cost" decreased during the studied period, especially in 2009 when the krona was weak, and in 2013 and 2014 as a result of the merger. In 2015, the variable increased by 14%.

### *Capital Costs and Capital Value*

It is noteworthy that financial costs and net investment increased significantly in 2014 from very low values. However, the increase can be explained by a large investment in a production facility and in new machines.

### *Performance Indicators*

As shown in Table 4.22.2 all indicators decreased between 2008 and 2015, probably due to the merger of one of the fish processing enterprises. However, if you study the trend 2008-2012 all

indicators (except "Financial position") show an increasing trend, except for 2009 when the krona was weak compared to the €. The weakening of the market has also been affected by the financial crisis in 2009. However, despite the financial crisis the total number of enterprises has been increasing every year. Net profit has fluctuated, but displays a positive trend. The decrease in net profit in 2011 can be explained by increased costs for raw material and reduced TAC for i.e. Norwegian spring spawning herring (2010-2012). Since the processing industry feared a negative reaction from consumers if they were to increase their prices too quickly, they could not immediately compensate for the increase in raw material prices. Between 2014 and 2015 most indicators increased, some of them from very low values.

EBIT and GVA are low since income has not increased at the same rate as costs (especially other operational costs). EBIT has increased from low values, probably since turnover and costs for raw material had the same percentage increase. Like almost all indicators and variables, operating cash flow has had a positive trend between 2008 and 2012, but decreased in 2013 and 2014. However, in 2015 operating cash flow increased by 5% compared to 2014.

#### 4.22.3 Overview of the Swedish fish processing sector by size categories

The fish processing industry sector in Sweden is very heterogeneous with small family businesses processing their own landings as well as larger enterprises with large-scale industrial production. A majority of the companies, however, are small firms with less than 10 employees. Please note that the Swedish data covers three segments, since the data in the third segment includes firms with more than 50 employees.



**Figure 4.22.3: Swedish main structural and economic variables trends by size category, 2008-2015**

Note: The data covers 3 segments, since the data in the third segment includes firms with more than 50 employees

As mentioned several times earlier the merger of one of the largest fish processing enterprises has affected the economic performance, especially in 2013 and 2014. When you compare the development in Figure 4.22.4, you can see some similarities. For example, the decrease in 2013 and 2014 can be most clearly seen in the segments with more than 50 employees.

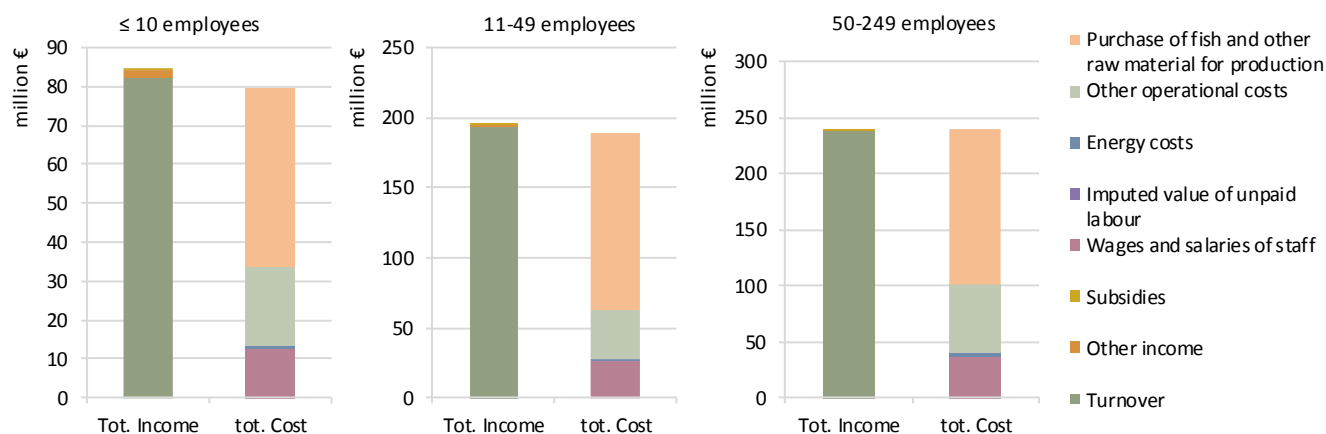
When you compare developments in total income and total production costs for the three segments in Sweden, you can see that only in the middle segment, the increase in total income has been a few percentage points higher than the corresponding increase in total costs during the studied period. For the segment less than 10 employees, the decrease in total income was a few percentage points lower than the decrease in total production costs. The larger enterprises with industrial production are, however, generally speaking more dependent on imported raw material than smaller ones, which often process their own landing. Therefore, in addition to variations in the prices of raw material, the industry is also sensitive to fluctuations in exchange rates. This is illustrated in Figure 4.22.4 where it is shown that total production cost has increased by 34% between 2008 and 2012 for enterprises with more than 50 employees and by 3% for enterprises with less than 10 employees. The development in 2013 and 2014 is a result of the merge.

Even if the values for the different segments differ in Figure 4.22.5, the relationships between the included variables are almost the same for all segments. Purchase of fish and other raw material is the largest variable in total costs, followed by other operational costs and wages and salaries of the staff.

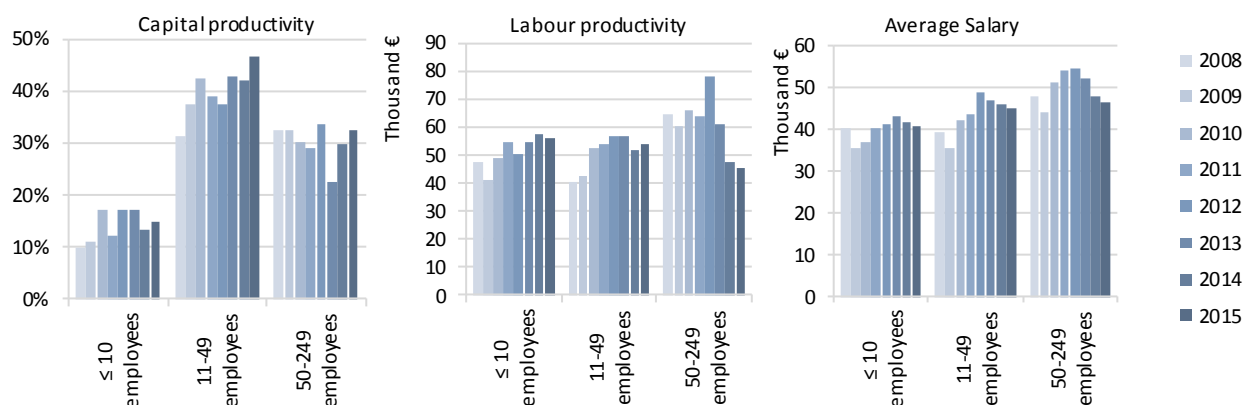
**Table 4.22.3: Economic performance of the Swedish fish processing sector by size category (indicators in million €, 2008-2015)**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	91.3	77.9	85.3	92.7	95.8	98.8	94.9	84.4	▼	-11%	▼ -8%
Total production costs	89.0	75.8	80.9	87.2	92.0	94.1	88.8	79.7	▼	-10%	▼ -10%
Gross Value Added	14.5	14.3	16.3	19.8	18.9	20.0	20.8	17.0	▼	-18%	▲ 17%
Operating Cash Flow	2.3	2.2	4.4	5.5	3.8	4.7	6.1	4.7	▼	-23%	▲ 106%
Earning before interest and tax	-0.2	-0.2	2.3	2.9	1.4	1.9	3.9	2.6	▼	-33%	▲ 1323%
Net Profit	-1.8	-1.8	1.1	2.4	0.5	-1.7	-46.3	-4.6	▲	90%	▼ -152%
<b>between 11 and 49 employees</b>											
Total Income	173.1	164.0	199.9	198.1	176.8	196.9	178.5	194.8	▲	9%	▲ 13%
Total production costs	172.6	159.5	193.3	192.4	172.6	191.4	175.6	189.4	▲	8%	▲ 10%
Gross Value Added	22.3	25.5	33.0	29.8	27.7	30.7	25.5	31.9	▲	25%	▲ 43%
Operating Cash Flow	0.5	4.5	6.5	5.7	4.2	5.5	2.9	5.4	▲	90%	▲ 1047%
Earning before interest and tax	-2.3	2.1	3.2	2.8	1.1	3.0	0.5	3.0	▲	515%	▲ 228%
Net Profit	-1.2	2.5	3.5	3.6	0.0	3.7	1.0	4.0	▲	295%	▲ 445%
<b>between 50 and 249 employees</b>											
Total Income	259.4	229.2	286.7	312.5	350.1	260.9	231.2	238.2	▲	3%	▼ -8%
Total production costs	243.8	215.9	274.3	303.6	326.8	253.8	231.3	239.0	▲	3%	▼ -2%
Gross Value Added	59.1	48.1	55.6	58.7	75.8	46.1	34.7	34.9	▲	1%	▼ -41%
Operating Cash Flow	15.6	13.3	12.3	8.9	23.3	7.1	-0.1	-0.8	▼	-655%	▼ -105%
Earning before interest and tax	8.6	7.6	5.3	1.7	15.6	0.4	-5.2	-5.9	▼	-14%	▼ -169%
Net Profit	8.2	8.9	5.5	3.0	12.2	1.0	-4.2	-5.3	▼	-27%	▼ -165%

Some of the economic indicators in Table 4.22.3 show an increase by several hundred percent for some segments, since the calculations are based on very low values. It is therefore not relevant to analyse the development. This is similar to when a country has few enterprises in one segment, and then the percentage change might also be misleading.



**Figure 4.22.4: Swedish income and cost structure, by size category, 2015**



**Figure 4.22.5: Swedish capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

#### 4.22.4 Trends and drivers for change

The Swedish processing industry is to a large extent affected by the global situation, for example supply of raw material of the right quality and quantity and consumer behaviour. In 2014 the new Common Fisheries Policy for the EU entered into force, which aims to create a more sustainable sector. Fishing and aquaculture are to be sustainable ecologically, economically and socially. The ambition is that the new policy will increase the sector's credibility and create sustainable fishery. Actors in the whole chain are to improve sustainability and pay more attention to fish and other seafood coming from sustainable stocks. If the sector's credibility is low, there is a risk that consumers will prefer other protein-rich food than fish and other sea food. Hopefully, clearer labelling of for example origin and traceability will increase the sector's credibility.

The Swedish processing industry works to a large extent with different certifications like the MSC, ASC and the Swedish KRAV label. Non-certified products are hard to place on the market since consumer awareness has increased, which of course has been picked up by the retailing chains. Also the fish and seafood guide from the WWF appears to play a more important role for consumers



and retailing chains. The aim of the WWF fish and seafood guide is to help consumers to choose fish that comes from sustainable stocks and to reduce the depletion of the oceans. Since consumer awareness is increasing, several retailing chains do not sell products that are marked with a red light in the WWF fish and seafood guide. For 2014, for example, the WWF put a red light on the shrimp from the North Sea (*Pandalus borealis*), which caused a debate in Sweden since according to ICES the shrimp stock has been fluctuated during the past ten years. One reason, according to ICES, could be fishing pressure, but natural variations are deemed to be the most important factor. Researchers estimate that despite the low level there are margins for a fishery.

There are insufficient quantities of fish of the correct quantity, quality and species in Swedish waters to satisfy the requirements of the Swedish processing industries' need for raw material. The processing industry is therefore highly dependent on imported raw material. Approximately 70-80% of the raw material is imported, but the share differs between species. Since the purchase of fish and other raw material for production accounts for 60% of total operational costs, the development of this variable is very important for the sector's economic performance. The processing industry often fears a negative reaction from consumers if it was to increase its own prices too quickly, which means that the industry cannot immediately compensate for the increase in raw material prices.

The processing industry in Sweden imports most of its raw material at reduced tariffs within the framework of autonomous tariff quotas (ATQs) and other import quotas. The volume of these quotas (and the in-quota tariff) is of vital importance for the industry since the in-quota tariff is lower than the so called MFN tariff (most favoured nation). If the quota is not large enough the industry has to import the raw material at full duty, which of course has a negative effect on their economic performance. For example, the autonomous tariff quota for cooked and peeled prawns for processing has been too small during some of the years in the studied period. It has frequently been exhausted as early as during the summer. As a consequence, the processing industry has had to store their raw materials in order to ensure a stable supply throughout the year. This increases their production costs.

Farmed salmon from Norway is one of the most imported raw materials used by the Swedish processing industry. Between 2008 and 2011 the imported quantity of whole salmon to Sweden increased by almost 60%. In 2011, this import accounted for 40% of the total Swedish import of fishery products. After the EU accession Sweden has become a transit country for Norwegian fish, especially salmon. In 2007, 15% of total EU import of fish and fishery products entered Sweden. In 2011, this share had increased to 58%. According to Swedish estimates nearly 80% of the value of fish in Swedish trade statistics 2009-2011 were re-exported to other countries, most likely without going through any processing in Sweden.

Data on trade patterns and domestic landings show clear trends. Domestic landings of fish decrease whereas imports increase of fish that is fresh, frozen or primarily processed. However, how dependent the enterprise is on imported or Swedish landed raw material depends on the individual enterprise.

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 size of the Swedish fishing fleet decreased between 2008 and 2015. The total number of vessels decreased by 14% to 1,298 in 2015, while total vessel tonnage (GT) and engine power (kW) of the fleet declined by 29% and 21%, respectively, during the same period. However, in 2015 the fleet, GT and kW increased by a few percent compared to 2014 as a result of a change in definition to include all active vessels during the year in the statistics, not as before, just vessels registered by 1 January. It is worth mentioning that the fleet is rapidly decreasing in size and therefore the changed definition and the increase in 2015 probably only caused a one-year break in the downward trend. The EU-subsidized scrapping campaign during late 2009 and 2010, along with the introduction of an ITQ system in the pelagic fishery, are the main reasons for the decrease. However, the eel fishing ban that was introduced in 2007 has also had some effect on the decrease of the total number of vessels, but only a minimal impact on the decrease in the fleet's capacity.

During 2008-2015 total landing weight decreased by 5% and at the same time the corresponding landing value decreased by 4%. The main reason for the decrease in landing weight was decreased quotas for mainly pelagic species. An increase in prices for shrimp, Norwegian lobster, herring and

sprat is the main reason for the increase in landing value during the studied period. In 2015 the total landing weight increased by 22% due to the new definition and higher quotas for herrings. Higher quotas for pelagic species and low fuel prices were the main driving forces behind the change from losses in 2014 to profits in 2015 for the Swedish fleet.

In 2010-2012 for example, the TAC for Norwegian spring spawning herring decreased, which led to increased costs for raw material and a decrease in net profit. The Swedish processing industry imports approximately 70% of all of its raw material and the sector is therefore dependent on tariff quotas and sensitive to changes in exchange rates. Since Swedish landings are declining it is likely that the share of imported raw material will increase as inputs in the fish processing industry in the future, since the industry needs raw material of the right quality and quantity. On the other hand, smaller enterprises that often process their own landings are less likely to be dependent on imported raw material. The ITQ system that was introduced in 2009 for the Swedish pelagic fishery has probably resulted in a win-win situation for the fishery sector as well as for the processing industry as a whole. The fishery can adapt their processes to better meet the demands of the processing industry, and the processing industry can invest in processes for better supply.

In recent years, demand has increased for highly processed products that are almost ready to eat. This development is likely to continue since most consumers prefer food that is almost ready to eat, easy to cook and healthy at the same time. A similar development has already taken place in sectors of other protein-rich food like chicken. The fishery products sector needs to move in this direction if it is to be competitive compared to beef, pork and chicken in the future. Developing new products and product differentiation are other ways for the enterprises to improve their economic performance and competitiveness.

Herring, sprat, cod, North Sea shrimp and Norwegian lobster are the most important species when it comes to landing volume and value in Sweden. They accounted for around 80% of the total Swedish landing value during the studied period, and for 90% of the landing volume. The prices of herring, sprat, North Sea shrimp and Norwegian lobster have increased during the period, but the price of Baltic cod has decreased. The decrease in cod prices has had a significant impact on the profitability of the Swedish cod fishermen. The cod that are caught in the Baltic Sea have been very small compared to earlier years and therefore yield a low price per kilo. The lower price for Swedish cod is also due to the fact that Baltic cod is part of a wider European market for whitefish. In recent years, Norway has increased its sales of cod a lot on the European market and prices for Swedish cod have been pushed down.

Finally, the development of the krona is also of great importance for the processing industries' economic performance. If the data in this chapter was converted into krona a different development would have been shown, especially for the year 2009 when the Swedish krona was weak.

#### *4.22.5 Outlook*

The global situation, for example supply of raw material of the right quality and quantity, consumer behaviour and exchange rates, will most likely be important even in the future for the processing industry. Especially since the general trend since the beginning of the 2000s is a decrease in Swedish fleet capacity, including landing values and volumes. At the same time imports of fish that is fresh, frozen or primarily processed are increasing. However, how dependent enterprises are on imported or Swedish landed raw material depends on the individual enterprise.

Access to raw material of the right quality and quantity is vital for the Swedish processing industry to compete on the market. Increased competition can be an incentive for enterprises to reduce costs. Incentives for cost reductions combined with an expected increase in consumer demand, especially for highly processed products, can be reasons for enterprises to outsource production to regions with low labour costs and better access to raw materials.

Since the processing industry in Sweden imports most of its raw material at reduced tariffs within the framework of autonomous tariff quotas (ATQs) the reform of council regulation (EU) 2015/2265 will be of vital importance. If the ATQ for 2019-2021 will not be large enough the industry will have to import the raw material at full duty, which of course has a negative effect on their economic

performance. The most important ATQs for Sweden have so far been herring, shrimp and prawns and fish roe.

Brexit will most likely effect the Swedish fishing fleet and fish processing industry, depending on the outcome of the negotiations between the UK and the EU. The Swedish pelagic fleet substantially depends on catch opportunities in British waters, in value around 10%, mainly for sand eels, herring, and mackerel. The demersal fleet is currently not affected, but could indirectly be affected if other member states fishing in UK economic zone today will move their fishing into Sweden's economic zone. If the result of the negotiations is that the pelagic fleet will not be able to fish in British waters it will be a huge problem for the fishermen, but also for some parts of the processing industry. The problem occurs since the equipment is made and adjusted to process herring from the North Sea and there are limited possibilities to replace the fish with other raw material at a reasonable cost. The enterprises that might be effected by this has high fixed costs, that do not vary with volume, and to make it profitable the costs must be split on a production volume that is as high as possible.

#### *4.22.6 Data coverage and quality*

There are no major data issues in the Swedish DCF data. The Swedish data in this report was bought by the Swedish Board of Agriculture from Statistics Sweden and reported by the Swedish Board of Agriculture. The reported data are consistent with the data reported to Eurostat by Statistics Sweden. The calculations of indicators from the data collected under the data collection framework may however differ from figures reported to Eurostat, due to different methods of calculation or different exchange rates. The description and interpretation of the Swedish data show how important the choice of currency can be. Even if it is important to use the same currency for all countries for comparability it can have a large effect on the description of a single country.

## 4.23 UNITED KINGDOM

### 4.23.1 General overview of the UK fish processing sector

It is estimated that in 2015 there were 371 UK companies deriving the majority of their income from fish processing, with a marked variety in processor size, range of activities and other business characteristics such as location and processed species. The number of processors in 2015 decreased by 1% compared to 2014 (down by 4 from 375) and 29% compared to 2008 (down by 154 from 525). The observed contraction in the number of companies from 2014 to 2015 (1%) occurred at a slower rate compared to previous years.

Underlying the continued contraction in industry size since 2008 was a pronounced decline in the number of businesses with 10 or fewer FTEs (a 34% decrease since 2008) and businesses with 11-49 FTEs (a 31% decrease since 2008). The average size of UK processors has increased, further increasing the already relatively high industry concentration. The most recent data suggests that in 2015 the largest 13 fish processing enterprises accounted for 4% of total enterprises and 43% of industry employment.

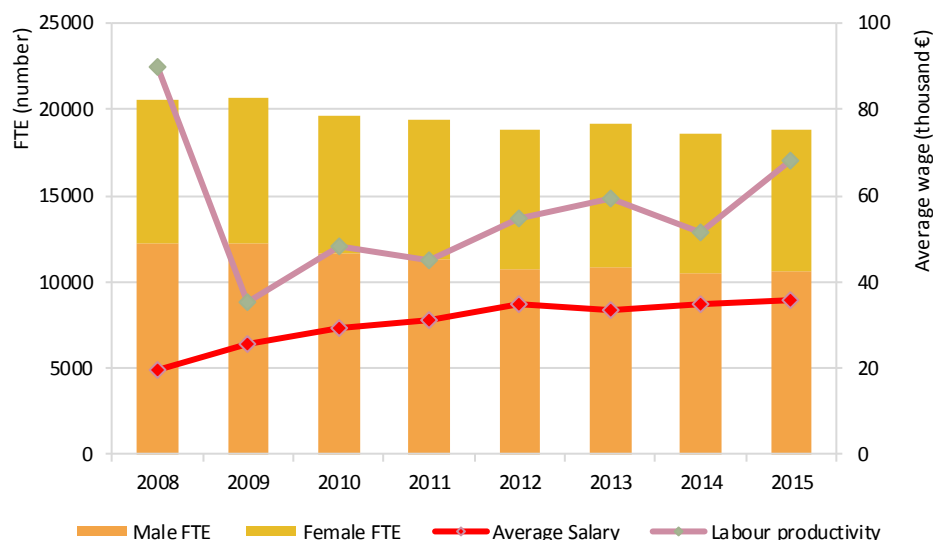
**Table 4.23.1: UK fish processing sector overview, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Structure (number)</b>										
Total enterprises	525	482	420	408	383	389	375	371	▼ -1%	▼ -29%
≤10 employees	252	223	190	177	154	167	172	166	▼ -3%	▼ -34%
11-49 employees	188	171	147	146	144	138	127	129	▲ 2%	▼ -31%
50-249 employees	74	76	69	72	73	70	62	63	▲ 2%	▼ -15%
≥ 250 employees	11	12	14	13	12	14	14	13	▼ -7%	▲ 18%
<b>Employment (number)</b>										
Total employees	22,988	22,583	21,057	20,754	20,073	20,541	20,126	20,111	▲ 0%	▼ -13%
Male employees	13,023	12,936	12,169	11,815	11,254	11,470	11,142	11,118	▲ 0%	▼ -15%
Female employees	9,965	9,647	8,888	8,938	8,819	9,071	8,984	8,993	▲ 0%	▼ -10%
FTE	20,612	20,631	19,606	19,405	18,858	19,142	18,618	18,778	▲ 1%	▼ -9%
Male FTE	12,274	12,260	11,608	11,269	10,741	10,891	10,526	10,589	▲ 1%	▼ -14%
Female FTE	8,338	8,370	7,998	8,136	8,117	8,252	8,092	8,189	▲ 1%	▼ -2%
<b>Indicators</b>										
FTE per enterprise	39.3	42.8	46.7	47.6	49.2	49.2	49.7	50.6	▲ 2%	▲ 29%
Average wage (thousand €)	19.6	25.6	29.1	31.1	34.8	33.3	34.7	35.6	▲ 3%	▲ 81%
Unpaid work (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	▲ 0%	▲ 0%

Majority-processing companies in the UK employed a total of 18.8 thousand Full Time Equivalent workers (FTEs) in 2015, which is 1% higher than 2014 but 9% lower than 2008. In 2015, the number of FTEs per enterprise was approximately 51, which is 2% higher than in 2014 and 29% higher than in 2008.

In 2015, 56% of FTE jobs and 55% of employees were male – proportions which have remained relatively stable over the period 2008 to 2015. Male FTEs declined by 14% between 2008 and 2015, while the number of female FTEs decreased by 2%, increasing the overall share of female FTEs by 3% over the eight-year period.

The mean nominal wage in the industry was €35.6 thousand in 2015, an increase of 3% on the previous year and an increase of 81% since 2008.



**Figure 4.23.1: UK employment trends, 2008-2015**

#### 4.23.2 Economic performance of the UK fish processing sector

The combined turnover of the 371 processing companies (turnover from all activities, not just processing activity) was approximately €5.3 billion in 2015, roughly the same as 2014 (in nominal terms), but 4% lower than in 2008. Industry total income in 2015 was similar to 2014 and 4% lower than in 2008. In 2015 total income was comprised of 99% turnover, with a combination of other income and subsidies accounting for the remaining 1%.

Total production costs in 2015 are estimated to have been around €4.7 billion, accounting for about 88% of total income. Production costs in 2015 were 6% lower than in 2014 and 15% higher than in 2008. This decrease in costs between 2014 and 2015 was primarily driven by a 6% reduction in industry spending on purchasing fish and other raw materials for production between years.

In 2015, raw materials accounted for around 74% of production costs and 66% of total income. Labour remuneration accounted for 14% of production costs and 13% of total income in 2015. Operational costs (excluding energy costs) were 9% as a proportion of total income and 11% as a proportion of production costs in 2015. Although industry energy costs account for a relatively small part of overall production input spending (less than 1% of both total income and production costs in 2015), it is worthwhile highlighting the 43% drop in industry energy spending since 2008.

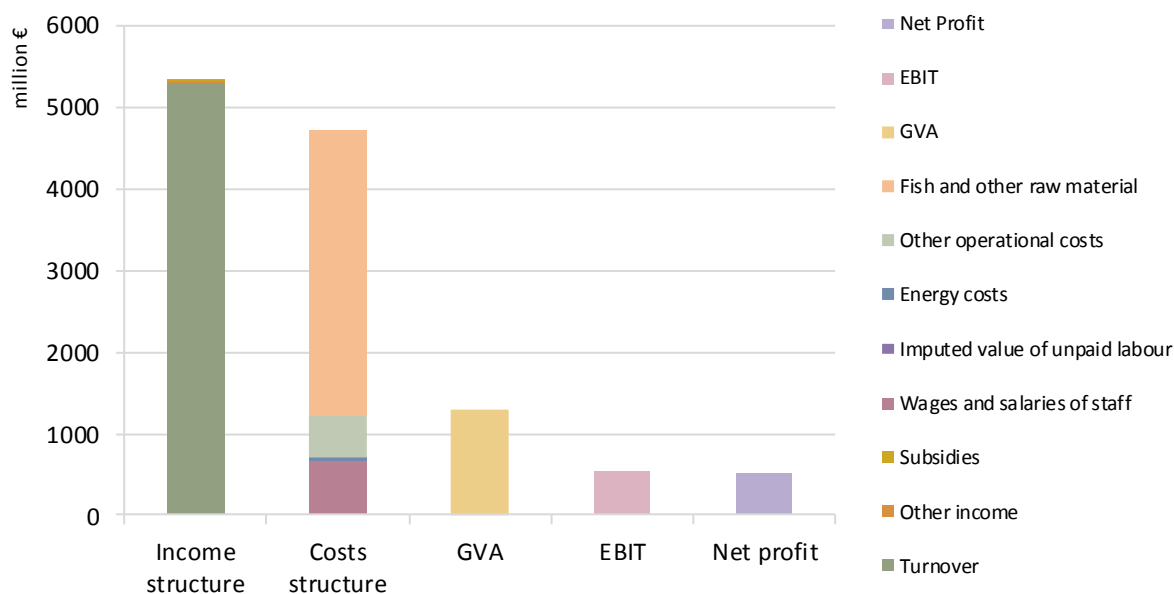
The value of assets employed in the industry in 2015 was around €3.2 billion: 9% lower than in 2014 but up 91% compared to 2008. In 2015, net investments dropped to zero from an estimated €68.9 million in 2014, when it was around 1% of total income. The total amount of industry debt in 2015 was 42% less than in 2014, but 22% higher than in 2008. Capital costs accounted for around 2% of total income in 2015.

The gross value added (GVA) of the industry stood at approximately €1.3 billion in 2015: a 34% increase on 2014 but a 31% decrease on 2008. Between 2008 and 2015 industry net profit is estimated to have fallen by 63%, despite an estimated 169% increase from 2014 to 2015. The industry net profit margin stood at 9.5% in 2015 – down from 24.4% in 2008 but up from 3.5% in 2014.

Labour productivity was at its peak in 2008 at an estimated €89.9 thousand. After a large drop in 2009, labour productivity improved considerably to reach an estimated €68.3 thousand in 2015.

**Table 4.23.2: Economic performance of the UK fish processing sector, 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015	Δ (2014-15)	Δ (2008-15)
<b>Income (million €)</b>										
Turnover	5,554.1	4,517.6	4,927.7	5,078.0	5,525.2	5,064.5	5,315.5	5,305.7	0%	-4%
Other income	8.5	16.2	100.8	13.7	25.5	164.9	13.1	25.5	95%	202%
Subsidies	0.0	0.0	0.0	0.0	1.1	0.2	4.7	4.6	-2%	0%
<b>Total Income</b>	<b>5,562.5</b>	<b>4,533.8</b>	<b>5,028.4</b>	<b>5,091.7</b>	<b>5,551.9</b>	<b>5,229.7</b>	<b>5,333.3</b>	<b>5,335.7</b>	<b>0%</b>	<b>-4%</b>
<b>Expenditure (million €)</b>										
Purchase of fish and other raw material for production	3,123.6	3,244.3	3,426.0	3,626.5	3,912.1	3,575.5	3,727.5	3,505.6	-6%	12%
Wages and salaries of staff	404.5	527.6	570.1	603.6	655.6	637.8	646.2	668.1	3%	65%
Imputed value of unpaid labour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%
Energy costs	66.5	36.8	45.1	40.4	50.9	46.4	78.7	38.2	-52%	-43%
Other operational costs	520.2	523.1	614.0	553.0	556.6	472.7	562.7	504.0	-10%	-3%
<b>Total production costs</b>	<b>4,114.8</b>	<b>4,331.9</b>	<b>4,655.3</b>	<b>4,823.6</b>	<b>5,175.2</b>	<b>4,732.4</b>	<b>5,015.1</b>	<b>4,716.0</b>	<b>-6%</b>	<b>15%</b>
<b>Capital Costs (million €)</b>										
Depreciation of capital	62.8	72.9	79.7	86.6	109.1	85.0	104.4	93.7	-10%	49%
Financial costs, net	30.0	88.6	77.4	56.0	61.6	57.4	25.1	19.0	-24%	-37%
Extraordinary costs, net	0.0	0.0	0.0	0.0	3.1	6.2	2.4	0.0	-100%	0%
<b>Capital Value (million €)</b>										
Total value of assets	1,697.2	1,937.8	2,174.5	3,182.3	3,461.5	2,952.1	3,545.1	3,233.5	-9%	91%
Net Investments	0.0	18.7	26.0	61.1	39.6	131.1	68.9	0.0	-100%	0%
Debt	231.0	508.7	281.4	323.6	399.0	402.4	486.1	281.7	-42%	22%
<b>Economic performance (million €)</b>										
Gross Value Added	1,852.3	729.6	943.3	871.7	1,031.1	1,134.8	959.6	1,283.3	34%	-31%
Operating Cash Flow	1,447.7	202.0	373.2	268.1	376.6	497.3	318.2	619.8	95%	-57%
Earning before interest and tax	1,384.9	129.1	293.4	181.5	267.6	412.3	213.8	526.1	146%	-62%
Net Profit	1,354.9	40.5	216.1	125.6	205.9	354.9	188.7	507.0	169%	-63%
<b>Productivity and performance Indicators (%)</b>										
Labour productivity (thousand €)	89.9	35.4	48.1	44.9	54.7	59.3	51.5	68.3		
Capital productivity	109.1	37.7	43.4	27.4	29.8	38.4	27.1	39.7		
GVA margin	33.3	16.1	18.8	17.1	18.6	21.7	18.0	24.1		
EBIT margin	24.9	2.8	5.8	3.6	4.8	7.9	4.0	9.9		
Net profit margin	24.4	0.9	4.3	2.5	3.7	6.8	3.5	9.5		
Return on Investment	81.6	6.7	13.5	5.7	7.7	14.0	6.0	16.3		
Financial Position	13.6	26.3	12.9	10.2	11.5	13.6	13.7	8.7		
Future Expectation Indicator	-3.7	-2.8	-2.5	-0.8	-2.0	1.6	-1.0	-2.9		



**Figure 4.23.2: Economic performance of the UK fish processing sector, 2015**

#### 4.23.3 Overview of the UK fish processing sector by size categories

Company size category	2008				2015			
	No. of enterprises	% of total No. of enterprises	FTEs	% of total employment (FTEs)	No. of enterprises	% of total No. of enterprises	FTEs	% of total employment (FTEs)
Less than or equal to 10 FTEs	252	48%	1234	6%	166	45%	776	4%
Between 11 and 49 FTEs	188	36%	3977	19%	129	35%	2793	15%
Between 50 and 249 FTEs	74	14%	7469	36%	63	17%	7055	38%
Greater than or equal to 250 FTEs	11	2%	7932	38%	13	4%	8155	43%
All size categories	525	100%	20612	100%	371	100%	18778	100%

**Figure 4.23.3: UK shares of total number of enterprises and industry employment by size category, 2015**

Company size category	2008				2015			
	Total income (million EUR)	% of industry total income	Net profit (million EUR)	% of total industry net profit	Total income (million EUR)	% of industry total income	Net profit (million EUR)	% of total industry net profit
Less than or equal to 10 FTEs	260	5%	44	3%	87	2%	13	3%
Between 11 and 49 FTEs	1303	23%	80	6%	886	17%	35	7%
Between 50 and 249 FTEs	1595	29%	428	32%	2384	45%	159	31%
Greater than or equal to 250 FTEs	2404	43%	802	59%	1979	37%	301	59%
All size categories	5563	100%	1355	100%	5336	100%	507	100%

**Figure 4.23.4: UK shares of industry total income and net profits by size category, 2015**

The number of fish processing companies employing up to 10 FTEs stood at 166 in 2015. Companies employing up to 10 FTEs represented 45% of the total number of enterprises and 4% of total employment in 2015. This is a slight reduction in industry share compared to 2008, when there were 252 companies of this size, representing 48% of the total number of enterprises and 6% of total FTEs. Between 2008 and 2015 the number of majority fish processing businesses in this smallest size category decreased by 34%. This is a notable reduction in enterprises of this size, however in terms of share of total number of companies and share of industry employment there were only reductions of 3% and 2%, respectively. The relative economic position of this size

category has also deteriorated slightly with regards to income, having experienced a 3% reduction in its share of total industry income between 2008 and 2015.

In 2015, the number of enterprises employing between 11 and 49 FTEs was 129. This segment represented 35% of the total number of processors and 15% of total FTEs in 2015. In 2008, 188 companies were in this size category, making up 36% of enterprises and 19% of total FTEs. This category of processors has seen a 1% decrease in its share of the total number of enterprises and a 4% reduction in its share of employment between 2008 and 2015. Companies in the 11-49 FTEs category experienced a 6% reduction in their share of total industry income between 2008 and 2015. The 11-49 FTE band's share of industry net profit increased slightly from 2008 to account for 7% of the industry total net profit in 2015.

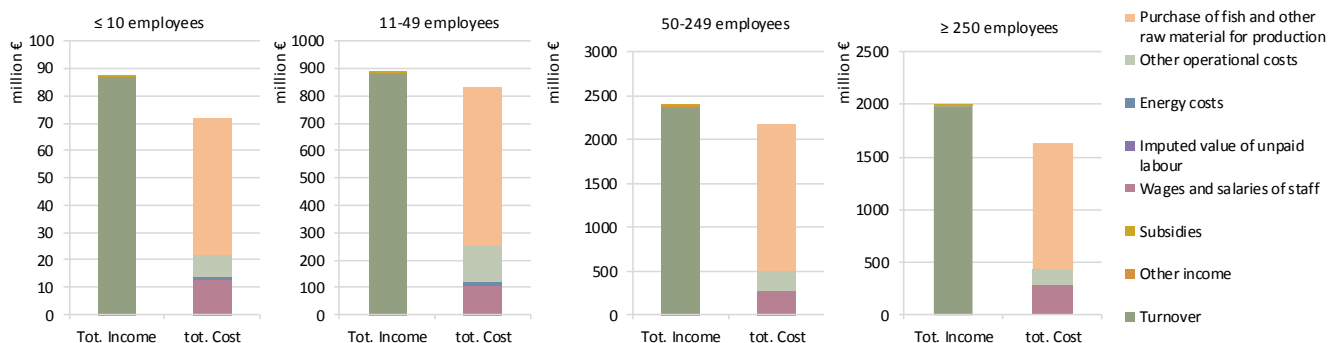
In 2015, there were 63 processors employing between 50 and 249 FTEs, representing 17% of processing companies and 38% of FTEs. In 2008 this category contained 14% of processors and 36% of FTEs. Despite the overall decline in the total number of enterprises, this size category has increased its relative importance to the industry between 2008 and 2015, both in terms of its share of total number of companies (up 3%) and in terms of its share of total industry employment (up 2%). Between 2008 and 2015 the 50-249 FTEs size category saw a 16% increase in its share of total industry income (from 29% to 45%) while experiencing a 1% drop in its share of industry net profit.

In 2015, 13 processing companies employed more than 250 FTEs, representing 4% of the total number of processors and 43% of FTE jobs in the industry. In 2008 there were 11 such companies, which represented 2% of the total number of processors and 38% of FTEs in the industry. The relative importance of this largest size category has increased between 2008 and 2015, both in terms of its share of total number of enterprises (up 2%) and in terms of its share of industry employment (up 5%). Concurrently this industry segment has experienced a relative decline in its share of total income (down 6% to 37%), while maintaining its share of net profit at an estimated 59% between 2008 and 2015.



**Figure 4.23.3: UK main structural and economic variables trends by size category, 2008-2015**





**Figure 4.23.4: UK income and cost structure, by size category, 2015**

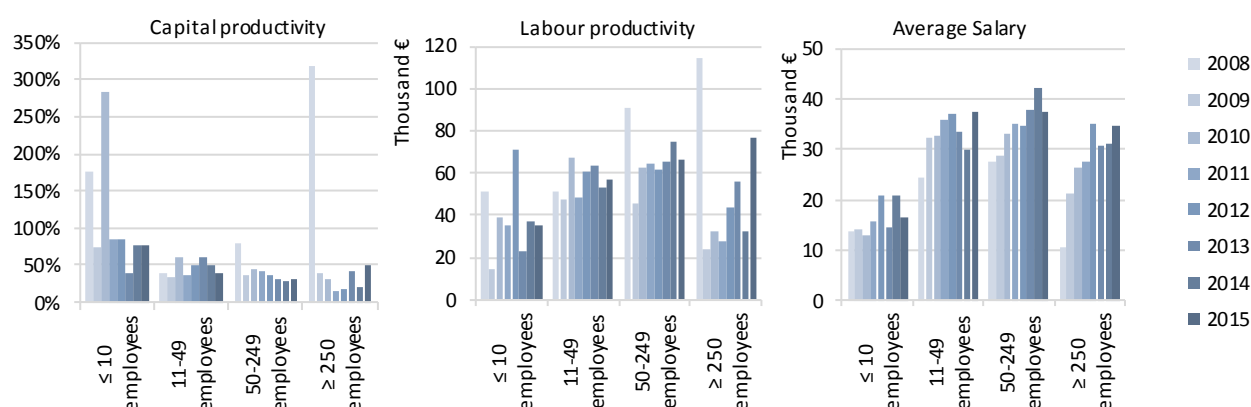
In terms of income and cost structures, the data reveal almost identical structures across the company size bands in 2015.

**Table 4.23.5: Economic performance of the UK fish processing sector by size category (indicators in million €), 2008-2015**

Variable	2008	2009	2010	2011	2012	2013	2014	2015		Δ (2014-15)	Δ (2008-15)
<b>less than or equal to 10 employees</b>											
Total Income	259.6	125.9	135.0	138.2	184.3	120.3	104.4	86.7	▼	-17%	▼ -67%
Total production costs	213.1	124.9	111.6	121.7	148.0	113.6	91.6	72.0	▼	-21%	▼ -66%
Gross Value Added	63.4	16.3	35.0	29.8	51.2	18.0	29.4	27.3	▼	-7%	▼ -57%
Operating Cash Flow	46.5	1.0	23.4	16.5	36.3	6.7	12.8	14.7	▲	15%	▼ -68%
Earning before interest and tax	45.2	0.0	22.2	15.2	34.3	5.9	11.9	13.1	▲	10%	▼ -71%
Net Profit	44.5	-0.6	22.1	14.6	33.9	5.7	11.6	12.8	▲	11%	▼ -71%
<b>between 11 and 49 employees</b>											
Total Income	1,303.5	1,401.0	1,140.9	1,123.0	1,162.4	719.0	697.9	886.5	▲	27%	▼ -32%
Total production costs	1,197.9	1,344.6	1,036.1	1,084.5	1,085.1	628.1	632.8	831.3	▲	31%	▼ -31%
Gross Value Added	203.3	174.1	206.6	152.3	195.3	194.8	148.9	159.2	▲	7%	▼ -22%
Operating Cash Flow	105.6	56.4	104.8	38.6	77.4	90.8	65.0	55.1	▼	-15%	▼ -48%
Earning before interest and tax	90.9	41.5	95.5	27.5	64.6	79.2	52.5	38.9	▼	-26%	▼ -57%
Net Profit	80.4	33.9	91.0	23.0	59.7	73.7	50.3	35.0	▼	-30%	▼ -56%
<b>between 50 and 249 employees</b>											
Total Income	1,595.5	1,797.2	1,884.5	2,204.8	2,214.3	2,394.8	2,713.8	2,384.0	▼	-12%	▲ 49%
Total production costs	1,121.4	1,671.7	1,691.8	1,996.0	2,016.8	2,195.1	2,483.8	2,177.8	▼	-12%	▲ 94%
Gross Value Added	680.4	341.6	412.3	456.1	446.9	473.7	518.1	468.5	▼	-10%	▼ -31%
Operating Cash Flow	474.1	125.5	192.8	208.8	197.5	199.7	230.0	206.1	▼	-10%	▼ -57%
Earning before interest and tax	444.1	95.1	163.5	175.1	147.5	162.8	173.9	169.0	▼	-3%	▼ -62%
Net Profit	427.6	85.3	155.4	166.3	135.8	149.2	154.3	158.5	▲	3%	▼ -63%
<b>greater than or equal to 250 employees</b>											
Total Income	2,404.0	1,209.8	1,868.1	1,625.7	1,990.9	1,995.7	1,817.2	1,978.7	▲	9%	▼ -18%
Total production costs	1,582.5	1,190.6	1,815.9	1,621.4	1,925.4	1,795.7	1,806.9	1,634.8	▼	-10%	▲ 3%
Gross Value Added	905.2	197.6	289.4	233.5	337.6	448.4	263.2	628.3	▲	139%	▼ -31%
Operating Cash Flow	821.5	19.1	52.2	4.3	65.5	200.0	10.3	343.8	▲	3229%	▼ -58%
Earning before interest and tax	804.7	-7.5	12.2	-36.2	21.1	164.4	-24.6	305.1	▲	1342%	▼ -62%
Net Profit	802.4	-78.1	-52.4	-78.2	-23.5	126.2	-27.5	300.7	▲	1192%	▼ -63%

Absolute changes in financial performance across the different size categories reveal additional nuances of recent industry developments. For the smallest size category (less than or equal to 10 FTEs) and the 50-249 FTEs category the decrease in production costs between 2014 and 2015 outweighed the reduction in total income, increasing net profit. In the 11-49 FTEs category the increase in production costs outpaced the increase in total income from 2014 to 2015, decreasing net profit. The 250+ FTEs category fared the best, experiencing an increase in income and a decrease in costs between 2014 and 2015, resulting in a sizeable increase in net profit from -€28 million in 2014 to €301 million in 2015 (a 1,192% increase).

Despite recent increases, all indicators across all size categories were at lower levels in 2015 than they were in 2008, with the exception of total income and production costs in the 50-249 FTE category and total production costs in the 250+ FTE category.



**Figure 4.23.5: UK capital productivity, labour productivity and average salary trends, by size category, 2008-2015**

Capital productivity has fluctuated between years across all size categories. Companies in the 10 and below FTEs category experienced the highest capital productivity in 2008 and 2010 and the lowest levels in 2009 and 2013. Capital productivity remained fairly stable between 2008 and 2015 for companies with 11-49 employees and companies with 50-249 employees, with small peaks in productivity in 2010 and 2013 for the 11-49 group and a peak in 2008 for the 50-249 group. After a peak in capital productivity in 2008 of over 300% for the 250+ category, capital productivity dropped and remained below 50% between 2009 and 2015.

Labour productivity shows a general upward trend since a low point in 2009 for companies with 11 or more employees. Between 2008 and 2015 companies in the smallest size category show a more cyclical trend in labour productivity with each year of high labour productivity followed by a year of lower labour productivity. Both capital and labour productivity for all categories except the 11-49 FTEs group were estimated to be lower in 2015 than they were in 2008.

Average salaries in the different size categories have generally increased between 2008 and 2015. 2012 was a high point for average salaries across all categories, apart from the 50-249 FTE group which saw average salaries continue to rise until 2014 before falling back to 2013 levels in 2015. Each year average salaries were estimated to be the highest in companies employing 11-49 people and in companies employing 50-249 people.

#### 4.23.4 Trends and drivers for change

From 2008 to 2015 the UK industry continued to shift toward fewer, larger enterprises with the number of FTEs per enterprise growing year on year between 2008 and 2015. Following a 13% reduction in the number of enterprises between 2009 and 2010, the rate of decline in the size of

the industry has decelerated, with only a 1% decrease in the number of companies between 2014 and 2015. While the number of companies with 50 or more employees varied little between 2008 and 2015, the number of companies with 10 or fewer FTEs went from 252 to 166 (a loss of 86 enterprises) while the number of companies with 11-49 FTEs was reduced by 59 enterprises during this same period.

The above analysis suggests that the pre-existing trends of industry contraction and concentration continued into 2015. Broadly speaking, concentration has taken place through a combination of: business consolidation (mergers and take-overs); market exits (e.g. cessation due to loss of market share to competitors who offer lower prices, either consistently due to better technology of production, or temporarily as a strategic tactic); and independent increases in average firm size. A more in-depth analysis of the relative importance of each of these mechanisms is beyond the scope of this report.

In 2015, the number of FTEs was 9% lower than in 2008; however, after the largest drop of over 1,000 total FTEs between 2009 and 2010, the total number of FTEs in the industry has stabilised to fluctuate at around 19 thousand FTEs. Of the 1.8 thousand FTEs removed from the industry between 2008 and 2015, nearly 1.2 thousand were from the 11-49 FTE category, making up 65% of the total FTE jobs lost during this period. A further 25% of the total FTE jobs lost from 2008 to 2015 were from the 10 FTEs or fewer category. The share of female FTEs increased by approximately 3% between 2008 and 2015. This small shift in the gender profile of workers can be largely explained by the 14% reduction in male FTEs compared to the 2% reduction in female FTEs during this period. The overall contraction in total FTEs between 2008 and 2015 can be explained in part by increased mechanisation as well as continued industry consolidation, requiring fewer FTEs.

Average wages and total wages and salaries paid to staff increased every year between 2008 and 2015 except 2013. Total wages and salaries paid to staff as a share of total production costs also increased every year between 2008 and 2015 except 2014. Total production costs increased 15% between 2008 and 2015, partly due to the observed increase in total wages and salaries paid to staff over time. The increase in average wages could be linked to progressive changes in the UK minimum wage which has been steadily increasing since 2009 (Eurostat; Office of National Statistics).

From 2014 to 2015, total production costs decreased and net profit increased for all size categories except the 11-49 FTE group which experienced increased production costs and decreased net profit. Total income increased for the 11-49 FTE group and the 250+ FTE category, but decreased for the smallest size category (less than or equal to 10 FTEs) and the 50-249 FTEs size group from 2014 to 2015.

Between 2008 and 2012, total industry spending on raw material inputs rose year on year to reach a peak of €3.9 billion in 2012. In 2015 both raw material costs and total production costs were the lowest since 2010, following a second peak in spending in 2014. With similar total income in 2014 and 2015, the reduction in spending on raw material inputs and consequent reduction in production costs in 2015 led to a 6% increase in the net profit margin between 2014 and 2015 for the UK industry. Exchange rate fluctuations may explain some of the annual variation in raw material spending. In 2015 the Pound Sterling was particularly strong against the Euro (European Central Bank). For raw materials sourced from EU countries, the increased purchasing power of processing companies operating in the Pound Sterling may explain some of the reduction in raw material costs in 2015 compared to 2014. The Russian embargo on food imports from EU countries beginning in August 2014 may also explain some of the difference in the cost of raw materials between 2014 and 2015, particularly for pelagic processors. In 2014 and 2015 mackerel accounted for the largest volume of pelagic landings by the UK fleet and the peak fishing season for mackerel is at the start of the year. The Russian ban on food imports therefore did not begin to impact the UK export market for mackerel until the start of 2015 and may explain some of the overall observed decrease in the cost of raw material supplies in 2015.

In 2015, the productivity and performance indicators: labour productivity, GVA margin, EBIT margin, net profit margin and return on investment were all at their highest since 2008, while capital productivity was at its highest since 2010 for the industry as a whole. The overall boost in the economic performance of the industry, which has been observed since 2009, can be explained

by a number of things, including favourable exchange rate adjustments, cheaper supplies of raw materials (e.g. as a result of a boost in supply, collapse in demand, or higher bargaining power of the increasingly bigger processors), industry concentration and the associated increase in average firm size (fewer companies commanding higher market share and utilising economies of scale and scope, as well as market power), and mechanisation through investment in capital-intensive technologies of production (increasingly larger spending on capital than on labour due to lower marginal costs).

The future expectation indicator (FEI) increased from -3.7% in 2008 to -0.8% in 2011 before dropping back down to -2.0% in 2012 when production costs peaked. In 2015, the FEI was -2.9%, suggesting that the UK industry may seek to reduce investments in future; however, the total value of assets nearly doubled from €1.7 billion in 2008 to €3.2 billion in 2015, suggesting that processing companies have continued to invest in fixed assets such as equipment, premises and technology despite a negative FEI score.

EU subsidies may have helped support some of this investment growth. According to the data, subsidies increased from an estimated €0 in 2008 to €4.7 million in 2014 and €4.6 million in 2015. The EFF and EMFF have provided EU funding to the processing sector to improve industry sustainability, increase economic performance and support the development of new or improved products. €26.5 million in EFF funding was allocated to fish processing and marketing (21% of total UK EFF funding) under axis 2 measure 3. These funds were used for 340 operations between 2007 and 2015. Comparatively, under the EMFF Operational Programme, €27.2 million was allocated to the UK to help foster investment and development of the processing sector.

In absolute terms, the amount of EU funding invested in the UK processing industry has not declined; however, in relative terms, under the EMFF funding mechanism the share of funding for processing and marketing in the UK is 10% less than it was in the EFF budget. Recent anecdotal evidence from UK processors suggests that access to external funding from grants and funds such as the EMFF has gotten easier in recent years, but that access could still be improved, especially for small companies.

#### *4.23.5 Outlook*

Data collected during the latest UK Processing Census suggests that the total number of enterprises and FTEs continued to contract in 2016 (Seafish Seafood Processing Industry Report 2016<sup>20</sup>). This suggests that the industry has continued to consolidate and invest in physical capital resources to improve long-term economies of scale and lower the marginal cost of production.

The UK fish processing industry continues to rely heavily on trade with a variety of countries in a multitude of currencies. Foreign market developments and exchange rate fluctuations are crucial to the future of the industry; the pound-euro exchange rate is still particularly important for UK imports and exports. Following a high in 2015 the value of the Pound Sterling dropped against the Euro and has continued to stay low (European Central Bank). If the value of the Pound Sterling remains low, UK processors could face increased production costs for imported raw materials and struggle to attract foreign labour due to unfavourable exchange rates. UK unemployment has continued to decline since 2013 which could make it more difficult for UK processors to fill job vacancies with British workers without increasing wages or investing in other ways to make jobs more appealing, thereby increasing production costs (Office of National Statistics). On the other hand, the de-valuation of the Pound Sterling could strengthen UK export competitiveness and potentially make UK assets more attractive for foreign capital investors (European Central Bank). In future, economic performance could be improved through increased access to export markets and supplies of raw materials from abroad through new trade agreements. A new trade environment may also allow access to other sources of labour which current trade agreements do not provide.

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<sup>20</sup> Seafish Seafood Processing Industry Report 2016.

[http://www.seafish.org/media/Publications/2016\\_Seafood\\_Processing\\_Industry\\_Report.pdf](http://www.seafish.org/media/Publications/2016_Seafood_Processing_Industry_Report.pdf)

While the long-term impacts of permanent exchange rate adjustments are unavoidable, the extent to which exchange rate fluctuations affect businesses' short-term financial performance depends heavily on the financial instruments businesses utilise to hedge those risks. Generally speaking, larger companies have better access to bespoke financial services. Therefore, if the average company size continues to increase in the coming years, short-term financial performance volatility associated with exchange rate fluctuations could be expected to decrease, despite the uncertain financial climate surrounding Brexit.

In 2016, landings into the UK and abroad by UK vessels were slightly lower than in 2015 (701.1 thousand tonnes compared to 708.6 thousand tonnes) and the value of landings was much higher, up nearly 21% on 2015 (MMO Annual Sea Fisheries Statistics 2016). The overall increase in the value of landings by UK vessels suggests that the cost of raw material inputs was higher in 2016 than in 2015; however, this financial data is not yet available for analysis. Looking ahead, the re-nationalisation of UK waters is likely to impact UK processors access to raw materials. Some supplies may become cheaper if the UK fleet has an excess landings capacity; however other materials which were previously caught in non-UK waters or were imported from or through EU countries could become more expensive or otherwise less accessible after the UK exits the EU.

The UK processing industry continues to address issues securing a smooth supply of raw materials with improved freezing and storage capacity and increased vertical integration both with the supply base and with customers. The UK's reputation for high quality sourced and imported raw materials with various certifications such as the Marine Stewardship Council (MSC) label and the continued improvement of the environmental status of the majority of UK supply chain fisheries has allowed the UK industry to build good relationships with clients and suppliers globally (Seafish Seafood Processing Industry Report 2016). Finally, while some UK processors continue to suffer from restricted access to resources or markets due to their remote locations, the increasing global demand for seafood products has created opportunities for many processors to expand their product and client base. In the domestic market for seafood, for example, the recent growth in the number of 'metro stores' selling seafood has increased the number of sales outlets for seafood, providing an opportunity for growth and innovation within the industry (Seafish Seafood Processing Industry Report 2016).

#### *4.23.6 Data coverage and quality*

To collect financial data, questionnaires were sent to all companies identified in the population of majority fish processors in the UK. Response rates are relatively low as data provision is voluntary. The target sample rate each year is 10% coverage for each FTE size band and these targets have been surpassed each year; however, issues with coverage of smaller sites remain. Specifically, sample bias arising from self-selection and the fact that only accounts for larger companies are publicly available may skew the data in some ways, as data for smaller companies is more limited. Other limitations result from the inconsistency of companies in the sample used for the estimation each year. In some FTE bands there is a great deal of variation in terms of which particular companies are included in the sample in each year (e.g. less than 50% of the sample from the previous year is included again in the next year).

Continued work is being done to address and resolve these issues going forward. Since the last processing report, significant improvements in data collection, management, estimation methods and increasing the robustness of definitions mean that direct comparisons with data for earlier years used in previous reports may not always be possible, even where seemingly comparable figures have been previously published. However, general trends are believed to be reflective of actual business activity. The UK government intends to continue sampling the processing sector within the new data collection framework, rather than relying on Eurostat structural business statistics.

**Table 4.23.6: Sample size of companies that submitted turnover figures and associated sample coverage, 2008-2015.**

Year	Sample Size	Population	Sample Coverage
2008	114	525	21.71%
2009	93	482	19.29%
2010	103	420	24.52%
2011	112	408	27.45%
2012	113	383	29.50%
2013	92	389	23.65%
2014	83	375	22.13%
2015	85	371	22.91%

## 5 CONTACT DETAILS OF EWG-18-XX PARTICIPANTS

<sup>1</sup> - 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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## **6 LIST OF ANNEXES**

Electronic annexes are published on the meeting's web site on:  
<http://stecf.jrc.ec.europa.eu/web/stecf/ewg1716>

List of electronic annexes documents:

EWG-18-XX – Annex 1 - XXXXX

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## **7 LIST OF BACKGROUND DOCUMENTS**

Background documents are published on the meeting's web site on:  
<http://stecf.jrc.ec.europa.eu/web/stecf/ewg1716>

List of background documents:

EWG-18-XX – Doc 1 - Declarations of invited and JRC experts (see also section XX of this report –  
List of participants)

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## **Annex 1: DCF Data Coverage and Quality**

### **Quality and Coverage checking procedures on the data submitted under the 2017 DCF fish processing economic data call**

Although the quality and coverage of the data reported under the Data Collection Framework (DCF) are a responsibility of the EU Member States, JRC (European Commission) has undertaken 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 17 16 meeting on the Economic Report of the EU fish processing sector which took place in Italy, during the week 15 to 19 January 2018.

Fish processing data submitted under the 2017 data call and used for the STECF report have been checked in four subsequent steps. This section provides a synthetic description of each of them. More information of the quality and coverage checking procedures undertaken on DCF fish processing data are available in the JRC technical report available at:

<http://datacollection.jrc.ec.europa.eu/>

#### **Step 1- Data checks before and during uploading procedure to the JRC/DCF database**

Several data checks are already embedded in the excel templates which the Member States are required to use for uploading data on their national fish processing sector. In specific cells of these files, the data entry is restricted to certain records (e.g. acceptable codes, value types and ranges).

Furthermore, during the data uploading procedure, a number of automatic syntactic checks are carried out on the data before it is accepted by the DCF database hosted by JRC. Syntactic checks are carried out without any specific knowledge of what the data contains or its meaning. They tell if the data is present or not and in the correct format. These checks automatically reject data that do not confirm to specific restrictions, such as ensuring textual data is validated against defined parameters lists. In addition, numeric data are checked to make sure they contain numbers and not strings. Member States receive immediate feedback when attempting to upload their data submissions.

#### **Step 2 - Results of the data quality checks/analyses are assessed by JRC experts**

Once the datasets with the fish processing data are successfully uploaded by the Member States, JRC produces different analyses on the data submitted in order to facilitate the assessment of its quality and coverage. Some of these analyses are presented in interactive online dashboards created using the software Tableau. The same software is also used for analyses not specifically related to data quality, i.e. analyses on the structure and economic performance of the EU fish processing sector and overviews of the uploading status of DCF fish processing data.

All the analyses performed by JRC in Tableau are available in interactive online dashboards, which are refreshed every morning and are accessible (only after authentication), on the following link:

<https://datacollection.jrc.ec.europa.eu/da/aqua/quality>

Besides developing the checks and analyses, JRC experts actively participate in the analysis of their results. All quality issues (e.g. inconsistencies, outliers and missing data) concerning the data submitted, identified through the analyses performed in Tableau or with manual checks are listed by JRC in excel files, one for each MS, including the most relevant information concerning the problems identified (e.g. description of the problem, structural and economic indicators affected and assessed impact on the analyses of the final STECF report), together with comments and actions recommended by JRC to solve the issues.

#### **Step 3 – National correspondents receive a list of data transmission issues and may resubmit revised data**

The excel files listing the data quality issues (and including JRC experts' comments and opinions on the action to undertake) are sent to the national correspondents (each national correspondent receives information only about the country he/she represents).

MS are requested to consider the potential anomalies listed in the excel file, amend and re-submit the data as necessary. They are also requested to go over the quality analyses performed in order to detect additional (if any) problems and add them to the list. Finally, they are asked to provide feedback (i.e. whether or not the problem has been resolved, which actions have been taken and possible comments) in designated columns of the excel file.

Step 4 – The quality and coverage of the data have been checked by the STECF Expert Working Groups

In addition to being analysed by JRC's experts, the quality and coverage of fish processing data submitted under the DCF is also checked by national fisheries experts during the STECF EWGs meetings. Data submitted under the 20167 fish processing economic data call has been checked during the EWG meeting 17 16 which took place during the week 15 to 19 January 2018.

At the beginning of the meeting, the experts received the excel files with the list of data transmission issues of the MS assigned to them, which also included for each specific issue comments by JRC and feedback sent by the MS. MS have been contacted whenever an inconsistency was found and the expert attending the meeting could not solve it by resubmitting data. Furthermore, all experts have been given access to the tableau dashboards. This has allowed them to visualise changes in the data whenever the MS have uploaded revised data during the meeting or submitted new templates.

The comments provided by the experts are added in designated columns of the excel files and used to decide on the exclusion of part of the data submitted from the analyses of the AERs, due to data coverage or quality issues.

## Annex 2: Tables on ESTAT/DCF match by MS

**Table 1 - FTE reported by MS to Eurostat and DCF**

FTE	ESTAT								DCF								DIFFERENCE (ESTAT - DCF)	DIFFERENCE (ESTAT - DCF)							
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015		2008	2009	2010	2011	2012	2013	2014	2015
Austria	130	120	107	121	117	111	105	-										130	120	107	121	117	111	105	-
Belgium	956	904	651	707	1,066	961	931	-	2,518	2,813	2,985	2,964	2,914	2,874	2,864	2,952		- 1,562	- 1,909	- 2,334	- 2,257	- 1,848	- 1,913	- 1,933	- 2,952
Bulgaria	1,311	1,309	1,328	1,287	1,254	1,464	1,431	1,482	3,355	2,957	3,738	3,416	3,215	3,378	3,623	3,578		- 2,044	- 1,648	- 2,410	- 2,129	- 1,961	- 1,914	- 2,192	- 2,096
Croatia	-	1,380	1,116	1,020	-	1,124	1,379	1,149	-	-	-	2,911	2,799	3,371	3,668	3,271		-	1,380	1,116	- 1,891	- 2,799	- 2,247	- 2,289	- 2,122
Cyprus									99	86	132	144	112	54	72	28		- 99	- 86	- 132	- 144	- 112	- 54	- 72	- 28
Czech Republic	333	333	837	833	703	673	710	742										333	333	837	833	703	673	710	742
Denmark	4,316	3,501	3,199	2,956	2,924	2,971	2,972	3,018	8,526	7,823	7,026	6,747	6,408	6,492	6,641	6,668		- 4,210	- 4,322	- 3,827	- 3,791	- 3,484	- 3,521	- 3,669	- 3,650
Estonia	2,072	1,730	1,741	1,871	1,912	1,862	1,803	1,844	3,800	3,593	3,748	3,660	3,677	3,724	3,794	3,721		- 1,728	- 1,863	- 2,007	- 1,789	- 1,765	- 1,862	- 1,991	- 1,877
Finland	649	715	708	747	746	-	1,021	748	1,643	1,622	1,627	1,647	1,737	2,024	2,309	1,807		- 994	- 907	- 919	- 900	- 991	- 2,024	- 1,288	- 1,059
France	10,525	9,842	11,367	10,995	11,056	11,661	10,954	11,218	30,874	30,573	30,792	31,625	30,874	32,569	33,355	27,012		- 20,349	- 20,731	- 19,425	- 20,630	- 19,818	- 20,908	- 22,401	- 15,794
Germany	8,793	7,772	7,809	7,184	7,466	7,287	7,243	7,160	16,436	14,778	13,817	13,324	13,674	13,227	12,812	13,038		- 7,643	- 7,006	- 6,008	- 6,140	- 6,208	- 5,940	- 5,569	- 5,878
Greece	1,297	1,110	2,035	1,916	1,815	1,757	975	-	-	-	-	4,770	4,385	3,946	3,570	3,752		1,297	1,110	2,035	- 2,854	- 2,570	- 2,189	- 2,595	- 3,752
Hungary	52	70	61	56	37	11	47	6										52	70	61	56	37	11	47	6
Ireland	1,797	1,850	1,916	1,934	2,026	2,087	2,233	2,147	5,463	5,653	5,741	5,961	6,020	6,323	6,562	6,760		- 3,666	- 3,803	- 3,825	- 4,027	- 3,994	- 4,236	- 4,329	- 4,613
Italy	4,340	3,949	4,167	4,365	4,412	4,437	3,916	4,002	9,997	9,739	10,965	11,258	11,420	11,718	10,050	10,704		- 5,657	- 5,790	- 6,798	- 6,893	- 7,008	- 7,281	- 6,134	- 6,702
Latvia	5,790	4,222	3,889	4,280	4,607	4,791	5,282	3,588	11,384	8,858	9,696	10,391	11,138	11,508	10,690	7,749		- 5,594	- 4,636	- 5,807	- 6,111	- 6,531	- 6,717	- 5,408	- 4,161
Lithuania	4,190	3,894	4,392	4,222	4,446	4,612	4,738	5,240	7,925	7,437	7,591	8,060	7,987	7,973	9,033	9,505		- 3,735	- 3,543	- 3,199	- 3,838	- 3,541	- 3,361	- 4,295	- 4,265
Malta	-	-	-	-	-	-	-	-	96	247	34	60	109	223	223	153		- 96	- 247	- 34	- 60	- 109	- 223	- 223	- 153
Netherlands	2,630	2,312	2,237	2,202	2,181	2,126	2,114	2,181	5,288	6,228	5,724	5,790	6,036	6,326	6,750	-		- 2,658	- 3,916	- 3,487	- 3,588	- 3,855	- 4,200	- 4,636	2,181
Poland	-	-	-	14,793	14,753	15,332	16,000	16,569	29,998	29,716	29,568	28,657	29,030	28,757	32,817	34,680		- 29,998	- 29,716	- 29,568	- 13,864	- 14,277	- 13,425	- 16,817	- 18,111
Portugal	6,918	7,040	7,037	7,065	6,666	6,380	6,774	6,913	13,225	13,553	14,413	14,512	13,833	13,106	13,842	14,061		- 6,307	- 6,513	- 7,376	- 7,447	- 7,167	- 6,726	- 7,068	- 7,148
Romania	1,572	1,355	1,380	1,119	1,100	1,161	1,189	1,279	-	1,136	3,189	2,359	1,560	876	1,020	966		1,572	219	- 1,809	- 1,240	- 460	285	169	313
Slovenia									461	433	500	730	660	676	432	418		- 461	- 433	- 500	- 730	- 660	- 676	- 432	- 418
Slovakia	749	648	702	650	588	569	-	-										749	648	702	650	588	569	-	-
Spain	18,668	18,082	17,311	17,487	17,216	17,150	17,232	17,693	38,832	37,780	36,171	36,091	35,722	36,040	35,904	37,085		- 20,164	- 19,698	- 18,860	- 18,604	- 18,506	- 18,890	- 18,672	- 19,392
Sweden	-	1,736	-	-	-	-	1,867	-	3,938	3,727	3,814	3,963	3,966	3,857	3,761	3,833		- 3,938	- 1,991	- 3,814	- 3,963	- 3,966	- 3,857	- 1,894	- 3,833
United Kingdom	15,497	-	14,428	13,197	12,660	12,766	13,271	-	43,600	43,214	40,663	40,158	38,931	39,683	38,744	38,888		- 28,103	- 43,214	- 26,235	- 26,961	- 26,271	- 26,917	- 25,473	- 38,888
Total	92,585	73,874	88,418	101,007	99,751	101,293	104,187	86,979	237,457	231,967	231,933	239,198	236,208	238,725	242,535	230,629		-144,872	-158,093	-143,515	-138,191	-136,457	-137,432	-138,348	-143,650

**Table 2 - Wages and Salaries reported by MS to Eurostat and DCF**

Wages and Salaries	ESTAT								DCF								DIFFERENCE (ESTAT - DCF)	DIFFERENCE (ESTAT - DCF)							
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015		2008	2009	2010	2011	2012	2013	2014	2015
Austria	4	4	4	4	4	4	4	-										4	4	4	4	4	4	4	-
Belgium	30	32	23	25	41	39	39	39	45	51	55	54	57	59	61	61		- 15	- 19	- 32	- 29	- 16	- 19	- 22	- 22
Bulgaria	3	3	3	3	4	5	6	5	4.8	4.7	5.4	4.9	4.6	5.1	5.5	7.1		- 2	- 2	- 2	- 2	- 1	- 1	0	- 2
Croatia	-	15	13	13	-	13	16	14	-	-	-	13.2	12.4	12.7	16.2	15.6		-	15	13	- 0	- 12	1	- 0	- 2
Cyprus									0.7	0.5	0.9	1.0	0.8	0.4	0.6	0.2		- 1	- 1	- 1	- 1	- 1	- 0	- 1	- 0
Czech Republic	-	2	8	8	7	7	7	7										-	2	8	8	7	7	7	7
Denmark	188	177	170	157	150	162	166	175	200.8	199.2	188.0	179.5	169.7	185.2	189.5	199.4		- 13	- 22	- 19	- 23	- 20	- 23	- 23	- 25
Estonia	15	12	12	14	15	16	17	17	18.2	16.7	16.0	17.2	18.6	20.7	22.4	23.0		- 4	- 5	- 4	- 4	- 4	- 5	- 6	- 6
Finland	18	21	21	22	24	-	33	24	22.8	26.1	25.3	27.1	30.1	38.8	40.7	30.3		- 4	- 5	- 5	- 5	- 6	- 39	- 8	- 6
France	-	297	316	322	332	356	339	344	604.1	640.2	655.7	742.6	604.1	813.4	0.9	0.9		- 604	- 343	- 339	- 421	- 273	- 458	338	343
Germany	240	219	217	206	218	206	216	214	270.8	250.5	240.8	232.9	241.1	233.4	239.8	239.4		- 30	- 32	- 24	- 27	- 23	- 27	- 24	- 26
Greece	21	17	39	38	37	35	16	14	-	-	-	28.3	21.6	21.6	20.2	25.5		21	17	39	10	15	13	- 4	- 12
Hungary	0	0	0	0	0	0	-	-										0	0	0	0	0	0	-	-
Ireland	61	64	63	68	70	72	83	73	78.8	75.4	69.8	77.7	71.9	87.7	90.3	95.2		- 18	- 11	- 7	- 10	- 2	- 16	- 8	- 22
Italy	118	114	128	125	123	135	132	137	223.9	197.9	218.9	197.2	213.1	201.4	191.1	188.9		- 106	- 84	- 91	- 72	- 90	- 67	- 59	- 52
Latvia	26	18	18	22	27	29	29	22	31.5	17.7	23.0	27.6	32.9	36.5	35.3	27.2		- 5	- 0	- 5	- 5	- 6	- 7	- 6	- 5
Lithuania	26	23	26	26	29	33	33	38	23.1	29.8	27.1	28.7	30.1	36.4	41.5	37.3		2	7	- 1	- 3	- 1	- 4	- 8	1
Malta	-	-	-	-	-	-	-	-	1.2	2.1	0.2	0.5	0.7	2.5	2.9	2.3		- 1	- 2	- 0	- 0	- 1	- 3	- 3	- 2
Netherlands	-	70	84	85	80	83	95	90	88.2	104.0	104.0	106.9	103.1	107.6	120.7	-		- 88	- 34	- 20	- 22	- 23	- 24	- 26	90
Poland	125	108	120	121	126	138	158	168	146.8	126.4	146.7	146.0	153.7	169.8	192.8	214.3		- 22	- 19	- 27	- 25	- 28	- 31	- 35	- 47
Portugal	75	77	79	81	75	75	77	80	70.5	73.8	79.0	81.0	74.5	74.7	77.0	80.2		5	3	0	0	0	0	0	0
Romania	6	5	5	4	4	4	5	6	-	1.3	6.1	5.2	2.4	0.7	1.4	1.9		6	3	- 1	- 1	2	4	4	4
Slovakia	6	6	6	6	6	5	-	-										6	6	6	6	6	5	-	-
Slovenia	2	-	-	-	2	2	-	-	4.3	4.4	6.1	8.0	5.2	7.2	5.6	5.2		- 2	- 4	- 6	- 8	- 4	- 6	- 6	- 5
Spain	351	336	338	346	335	338	336	350	446.6	430.6	430.1	441.0	432.7	438.0	435.8	451.6		- 96	- 94	- 92	- 95	- 98	- 100	- 100	- 101
Sweden	-	47	-	-	-	-	63	63	76.8	66.4	82.0	88.8	92.0	80.4	72.6	74.8		- 77	- 20	- 82	- 89	- 92	- 80	- 10	- 12
United Kingdom	303	301	341	328	355	329	406	459	404.5	527.6	570.1	603.6	655.6	637.8	646.2	668.1		- 102	- 226	- 229	- 276	- 301	- 309	- 240	- 210
Total	1,617	1,967	2,032	2,022	2,063	2,084	2,274	2,338	2,764.0	2,846.4	2,949.8	3,112.8	3,027.7	3,270.6	2,509.9	2,449.1		- 1,147	- 879	- 918	- 1,091	- 964	- 1,186	- 236	- 111

**Table 3 -GVA reported by MS to Eurostat and DCF**

Value added at factor cost	ESTAT								DCF								Difference (ESTAT - DCF)	Difference (ESTAT - DCF)								
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015		2008	2009	2010	2011	2012	2013	2014	2015	
Austria	9	10	8	9	10	9	9	-										9	10	8	9	10	9	9	-	
Belgium	70	76	53	58	86	86	83	-	194	213	220	229	172	177	220	207		- 124	- 138	- 167	- 172	- 86	- 91	- 137	- 207	
Bulgaria	7	7	7	8	10	13	10	13	25.1	25.9	29.0	27.5	25.6	33.2	36.1	42.5		- 18	- 19	- 22	- 20	- 16	- 21	- 27	- 29	
Croatia	-	27	24	29	-	30	28	31	-	-	-	35.5	23.3	23.0	26.5	51.2		-	27	24	- 7	- 23	7	1	- 20	
Cyprus									3.2	0.7	5.3	- 3.5	2.7	5.1	1.4	0.4		- 3	- 1	- 5	3	- 3	- 5	- 1	- 0	
Czech Republic	4	5	17	14	13	14	14	15										4	5	17	14	13	14	14	15	
Denmark	268	280	269	242	224	223	266	283	256.6	290.3	290.8	321.5	293.9	287.9	329.3	356.7		11	- 11	- 21	- 80	- 70	- 65	- 63	- 73	
Estonia	25	23	27	26	29	30	28	25	24.7	21.4	24.0	21.9	28.6	27.9	24.6	34.7		1	1	3	4	0	2	3	9	
Finland	34	36	43	43	45	-	63	44	33.0	39.3	42.4	41.9	44.8	59.0	63.1	44.4		1	- 3	0	1	- 0	- 59	0	- 0	
France	556	560	565	556	569	604	599	625	899.3	804.9	811.6	943.3	899.3	1,359.9	5,275.7	5,510.9		- 344	- 245	- 246	- 388	- 331	- 756	- 4,677	- 4,886	
Germany	364	342	400	358	340	352	333	372	360.1	316.8	379.9	325.9	267.6	345.4	306.8	346.7		4	25	20	32	73	7	26	25	
Greece	45	43	66	93	77	44	37	37	-	-	-	80.3	50.1	29.4	55.5	49.6		45	43	66	13	27	14	- 19	- 13	
Hungary	1	1	1	1	0	-	0	-										1	1	1	1	0	-	0	-	
Ireland	92	107	121	140	126	126	128	130	270.3	247.2	102.0	94.7	110.8	131.2	122.4	120.6		- 178	- 141	19	45	15	- 6	6	10	
Italy	270	296	298	295	277	346	356	366	281.9	305.3	343.5	269.6	394.2	533.0	291.3	299.4		- 12	- 9	- 45	25	- 117	- 187	65	67	
Latvia	56	30	39	40	57	60	53	45	54.2	22.5	28.6	31.4	55.9	58.1	50.4	42.0		2	7	11	9	1	2	2	3	
Lithuania	30	50	51	60	59	59	84	85	71.8	64.7	66.1	80.1	53.3	71.8	62.6	87.3		- 42	- 15	- 15	- 21	5	- 13	21	- 3	
Malta	-	-	-	-	-	-	-	-	6.4	- 14.0	21.9	4.3	9.2	16.7	2.6	1.2		- 6	14	- 22	- 4	- 9	- 17	- 3	- 1	
Netherlands	-	139	155	155	143	151	174	170	143.0	150.5	148.9	144.6	136.9	142.3	162.2	-		- 143	- 12	6	10	6	9	12	170	
Poland	285	284	259	283	268	285	369	375	269.3	240.4	223.7	244.6	235.5	252.0	334.0	365.1		15	43	35	39	33	33	35	9	
Portugal	162	157	159	165	151	168	172	174	499.6	449.0	409.1	432.0	414.9	408.2	380.4	414.4		- 337	- 292	- 250	- 267	- 264	- 240	- 208	- 240	
Romania	17	14	14	12	13	13	14	10	-	24.3	783.2	54.5	29.1	9.8	8.2	21.7		17	- 10	- 769	- 43	- 16	3	5	- 12	
Slovakia	8	11	10	3	9	2	-	-										8	11	10	3	9	2	-	-	
Slovenia	4	-	-	-	3	2	-	-	7.4	7.2	10.1	6.9	7.2	5.8	4.6	2.5		- 3	- 7	- 10	- 7	- 4	- 4	- 5	- 3	
Spain	734	722	723	768	677	772	792	742	1,198.1	1,301.3	1,234.9	1,333.5	1,276.5	1,366.9	1,278.1	877.3		- 464	- 579	- 512	- 565	- 599	- 595	- 487	- 135	
Sweden	-	99	-	-	-	-	144	-	96.0	88.0	104.8	108.4	122.4	96.7	81.0	83.8		- 96	11	- 105	- 108	- 122	- 97	63	- 84	
United Kingdom	588	680	633	586	682	613	858	808	1,852.3	729.6	943.3	871.7	1,031.1	1,134.8	959.6	1,283.3		- 1,264	- 50	- 310	- 285	- 349	- 521	- 102	- 475	
Total	3,628	3,996	3,940	3,942	3,870	3,999	4,610	4,351	6,545.9	5,328.4	6,222.6	5,700.0	5,685.2	6,575.4	10,076.0	10,242.7		- 2,918	- 1,333	- 2,282	- 1,758	- 1,816	- 2,576	- 5,466	- 5,892	

**Table 4 - Profits reported by MS to Eurostat and DCF**

Gross operating surplus	ESTAT								DCF								DIFFERENCE (ESTAT - DCF)	DIFFERENCE (ESTAT - DCF)							
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015		2008	2009	2010	2011	2012	2013	2014	2015
Austria	4	6	4	5	5	4	5	-										4	6	4	5	5	4	5	-
Belgium	28	32	21	23	29	31	28	-	140	151	155	164	104	107	149	135		- 112	- 119	- 134	- 141	- 76	- 76	- 121	- 135
Bulgaria	4	4	3	4	6	8	3	7	12.5	14.1	16.3	16.0	14.7	23.5	26.1	32.5		- 8	- 11	- 13	- 12	- 9	- 16	- 23	- 25
Croatia	-	10	9	14	-	15	10	15	-	-	-	20.3	12.0	10.5	7.2	34.6		-	10	9	- 7	- 12	4	2	- 20
Cyprus									2.3	- 0.5	3.2	- 6.0	- 0.4	4.3	0.6	- 0.0		- 2	1	- 3	6	0	- 4	- 1	0
Czech Republic	1	2	6	3	3	5	5	5										1	2	6	3	3	5	5	5
Denmark	62	86	84	68	60	44	82	89	13.3	49.5	65.5	107.2	87.5	68.2	107.8	124.1		49	37	19	- 39	- 28	- 24	- 26	- 35
Estonia	6	7	10	8	9	8	5	2	2.9	1.2	4.6	0.6	5.4	2.7	- 2.8	6.0		3	6	6	7	4	6	8	- 4
Finland	11	10	17	16	15	-	23	14	5.9	8.2	11.0	9.2	8.2	11.3	11.4	6.8		5	2	6	6	7	- 11	11	7
France	137	150	128	107	106	113	129	147	240.5	106.6	78.3	95.6	240.5	537.9	5,274.8	5,510.0		- 103	43	50	11	- 134	- 425	- 5,146	- 5,363
Germany	73	78	137	111	79	104	76	116	49.7	29.2	105.6	57.3	- 14.3	71.0	34.1	70.0		23	48	31	53	93	33	41	46
Greece	17	21	17	46	30	14	19	-	-	-	-	37.0	21.9	2.1	25.1	17.4		17	21	17	9	8	12	- 6	- 17
Hungary	0	0	0	0	0	-	-	-										0	0	0	0	- 0	-	-	-
Ireland	27	37	53	67	51	49	42	53	177.1	153.9	12.0	2.4	22.6	31.3	19.3	10.2		- 151	- 117	41	65	28	18	23	43
Italy	106	138	121	121	105	157	169	176	9.2	43.8	41.6	20.7	129.4	34.9	38.4	46.4		97	94	79	100	- 25	122	131	129
Latvia	24	8	17	13	24	23	17	17	14.3	0.1	3.5	0.4	18.6	13.9	7.1	9.4		9	7	13	12	5	9	9	8
Lithuania	-	4	19	17	25	21	16	35	41.9	29.2	33.7	45.5	16.5	12.7	12.6	40.6		- 46	- 10	- 17	- 20	4	3	28	- 6
Malta	-	-	-	-	-	-	-	-	3.3	- 20.1	21.2	3.4	8.1	13.8	- 0.8	- 1.3		- 3	20	- 21	- 3	- 8	- 14	1	1
Netherlands	-	56	56	54	47	52	61	63	40.2	27.6	26.9	19.2	16.4	17.1	24.1	-		- 40	28	29	35	31	35	37	63
Poland	133	152	113	137	113	119	179	173	96.0	89.9	49.4	69.8	49.6	45.0	99.5	106.6		36	62	64	67	64	74	79	66
Portugal	65	59	58	61	57	73	74	71	-	-	-	-	-	-	-	-		65	59	58	61	57	73	74	71
Romania	10	8	8	7	8	7	7	3	-	21.9	732.4	46.7	25.8	8.4	6.3	19.4		10	- 14	- 724	- 40	- 18	- 1	1	- 17
Slovakia	0	3	2	- 5	2	- 5	-	-										0	3	2	- 5	2	- 5	-	-
Slovenia	1	-	-	-	2	0	-	-	2.0	1.3	2.7	- 2.5	0.7	- 2.5	- 2.0	- 3.3		- 1	- 1	- 3	3	1	3	2	3
Spain	287	292	291	326	245	334	355	291	-	-	-	-	-	-	-	-		287	292	291	326	245	334	355	291
Sweden	-	33	-	-	-	-	58	-	6.1	9.5	10.8	7.4	18.0	5.3	- 0.8	- 0.4		- 6	23	- 11	- 7	- 18	- 5	59	0
United Kingdom	248	346	255	225	294	253	407	297	1,384.9	129.1	293.4	181.5	267.6	412.3	213.8	526.1		- 1,137	217	- 39	44	27	- 160	193	- 229
Total	1,241	1,554	1,428	1,435	1,310	1,425	1,792	1,574	2,241.7	845.3	1,667.1	896.0	1,053.2	1,430.6	6,050.8	6,690.3		- 1,000	709	- 240	539	256	- 6	- 4,259	- 5,117



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