FISHERIES IN GERMANY

IN-DEPTH ANALYSIS
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Abstract:

The present note was requested by the Committee on Fisheries of the European Parliament for its Delegation to Germany (24-26 Mars 2014). The note provides a review of the main characteristics of the German fisheries sector, covering both the North and Baltic seas. It provides an overview of issues such as the legal and institutional framework, fisheries management, catches, the fishing fleet, fishing industry, trade, employment, the fish market and marine research.
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1. THE FEDERAL REPUBLIC OF GERMANY

1.1. Key Facts and Figures

Map 1: Map of the Federal Republic of Germany

The Federal Republic of Germany is bordered to the North by the North Sea, Denmark, and the Baltic Sea, to the East by Poland and the Czech Republic, to the South by Austria and Switzerland, and to the West by France, Luxembourg, Belgium, and the Netherlands. The territory of Germany covers 356 854 km² and with 80.2 million inhabitants, it has the largest population of the EU Member States.

Table 1: Key data of the Federal Republic of Germany

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>356 854 km²</td>
</tr>
<tr>
<td>Population</td>
<td>80.2 million</td>
</tr>
<tr>
<td>Population density (per km²)</td>
<td>229.9</td>
</tr>
<tr>
<td>Official language</td>
<td>German</td>
</tr>
<tr>
<td>Currency</td>
<td>Euro</td>
</tr>
<tr>
<td>GDP per capita EURO</td>
<td>30 563</td>
</tr>
<tr>
<td>Real GDP growth rate</td>
<td>0.7 % (2012), 0.5 % (forecast 2013)</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>5.3% (January 2013)</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>2.5% (2011), 2.1% (2012)</td>
</tr>
<tr>
<td>Public debt</td>
<td>80.5 % of GDP (2011)</td>
</tr>
</tbody>
</table>

Source: Eurostat; Statistisches Bundesamt 2013.
1.2. Political and governmental structures

Germany is a federal parliamentary republic. Its 16 states (Länder) have an important role in the legislative process at the federal level, as well as independent responsibilities, particularly in the fields of education and internal security, including police services. With the reunification, the Länder of the former German Democratic Republic (GDR, East Germany) acceded to the Federal Republic of Germany on October 3rd 1990.

Germany has a bicameral parliament: The Bundestag (lower house), has currently 620 members (either directly elected from the 299 individual constituencies, or elected through the party lists in each state, so as to obtain proportional representation). Parties must win at least 5% of the national vote, or three constituency seats, to gain representation. The Bundesrat (upper house) consists of members nominated by the 16 state governments.

Germany's main political parties are the Christian Democratic Union (CDU), its sister party, the Christian Social Union (CSU), the Free Democratic Party (FDP), the Social Democratic Party (SPD), the Alliance 90/The Greens and the Left Party.

The Head of state is the Federal president, elected for a maximum of two five-year terms by the Federal Assembly, which consists of members of the Bundestag and representatives of the state legislatures. His competences are mostly representative, and he signs all German laws after having checked their constitutional character. The current president, Joachim Gauck, was elected on March 18th 2012.

The federal executive government is led by the chancellor, who is elected by the Bundestag on the nomination of the federal president.

In the Federal Constitutional Court (Bundesverfassungsgericht), the German Supreme Court, which is regularly consulted when the legal basis of the EU is to be modified, half the judges are elected by the Bundestag and half by the Bundesrat.

1.3. Administrative Structures

The Federal Republic of Germany consists of 16 Länder which differ in size and population, especially between city states (Stadtstaaten) and states with larger territories (Flächenländer). There are 3 city states, Berlin and Hamburg being states in their own right, while the State of Bremen consists of two cities, Bremen and Bremerhaven. The other 13 states are Flächenländer.

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1 A part from this, there are currently 24 “Überhangsmandate”, i.e. excessive mandates that arise when a party receives fewer seats according to the party vote than it has won constituencies.
The Länder have considerable political competences and own constitutions and laws, though federal law takes precedence over Land law. The Federation holds exclusive legislative competence in all foreign policy issues, defense, including the protection of the civil population, citizenship, currency and money, the unity of the customs and trading area and cooperation between the Federation and the Länder concerning criminal police work. In fields subject to concurrent legislation, the Länder have the right to adopt legislation provided and in so far as the Federation makes no use of its legislative powers in the same field. Civil law, criminal law, the prison system, road traffic, the law of association and assembly, the education system, business law, consumer protection and the benefits granted to members of civil servants are all among the fields subject to concurrent legislation.

Most of the states are governed by a Prime Minister (Ministerpräsident)\(^2\), together with a unicameral legislative body known as the Landtag. The states are parliamentary republics and the relationship between their legislative and executive branches mirrors the one of the federal system: the legislatures are popularly elected for four or five years (depending on the state), and the Prime Minister is then chosen by a majority vote among the

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\(^2\) In the city states, the first Mayor occupies this position.
Landtag’s members. The Prime Minister appoints a cabinet to run the state’s agencies and to carry out the executive duties of the state’s government.

Every state (except the city-states) consists of rural districts (Landkreise), district-free towns/cities (Kreisfreie Städte, cities which are districts in their own right) or Kommunalverbände besonderer Art (local municipal association of a special kind). There are 295 Landkreise and 107/110 Kreisfreie Städte/Kommunalverbände in Germany. Each district has an elected council and an executive chosen by either the council or the people, depending on the state. It is in charge of supervising the local government administration. The Landkreise have primary administrative functions in specific areas, such as highways, hospitals, and public utilities.

1.4. The Economy

After the meltdown of 2008, the country suffered from a GDP contraction of -5% in 2009, but afterwards recuperated rapidly and has resisted the crisis better than the rest of the euro zone. In fact, reforms undertaken from the year 2003 on addressed chronically high unemployment and weak growth rates reigning at the time and helped, together with a specific government-subsidized, reduced-working-hour scheme, to keep the increase in unemployment during the recession of 2008/09 - the deepest since World War II - relatively low.

Despite an above-average fall in real GDP during the crisis, the unemployment rate in Germany increased by only 0.5%, compared to 3% in the OECD on average. This unemployment reaction was also highly unusual relative to past recessions in Germany itself (which followed the OECD average). Some of the reasons for this phenomenon are Germany-specific. For example, the impact was primarily hitting the German manufacturing sector while the more labour-intensive sectors, such as construction, were not affected. Also, employment in public services continued to increase. However, these factors cannot fully explain the benign labour market outcome during the crisis. Evidence suggests that the important structural reforms mentioned above played a significant role. They included notably labour market reforms on work incentives and flexibility for enterprises ("Hartz" reforms, and some other measures) and were arguably the most significant reforms realised among OECD countries during that time. They were at the time - and even until today - highly disputed in Germany because they significantly changed labour market institutions and structures in the country.

However, the current crisis has its impact in Germany. Economic activity weakened steadily during 2012, notably in the heavy industry sector. Real GDP contracted by 0.6% in the final three months of 2012, with a subdued private-sector confidence and a temporary falling export demand. Also, the worsening euro-zone financial crisis and the financial burden it places on Germany contributed to it.

Investment and stimulus efforts initiated in 2008/09 as well as tax cuts increased Germany's budget deficit to 3.3% in 2010, but slower spending and higher tax revenues reduced the deficit in 2011. The government is focused on steady consolidation of the public finances, with the aim of limiting the structural deficit. In fact, a constitutional amendment approved in 2009 limits the federal government to structural deficits of no

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3 The system is called "Kurzarbeit" and gives companies flexibility in times of crisis.

more than 0.35 % of GDP per year as of 2016. It also requires a balanced budget for the Länder by 2020 - a considerable challenge since some of them have serious consolidation problems.\textsuperscript{5} No borrowing limits have been specified for municipalities and social security funds.

As regards the sectorial profile, the German economy is a leading exporter of machinery, vehicles, chemicals, and household equipment and benefits from a highly skilled labour force. The service sector contributes around 72.6 % to the country's gross value added, followed by the industry with 22 %, the construction sector with 4.6 % and agriculture, forestry and fisheries with 0.8 % (all numbers 2009).

Finally, a significant policy change in the energy sector is affecting the German economy since 2011. In fact, following the March 2011 Fukushima nuclear disaster, Chancellor Merkel announced in May 2011 that 8 of the country's 17 nuclear reactors would be shut down immediately and the remaining plants would close by 2022. Germany intends to replace nuclear power with renewable energy and is working on a strategy to achieve this major policy change. Before the shutdown of the 8 reactors, Germany relied on nuclear power for 23% of its electricity generating capacity and 46% of its base-load electricity production. An intense political and public debate is currently ongoing about the way to implement this reversion of the energy sector and the promotion of renewable energies.

\textsuperscript{5} OECD, Regional Outlook 2011: Building resilient regions for stronger economies, OECD 2011, here p. 95.
2. FISHERIES MANAGEMENT

The Federal Ministry of Food and Agriculture (BMEL) is headed by Federal Minister Christian Schmidt. Within the Federal Government, the Federal Minister is competent for structuring German food and agricultural policy. The BMEL has a total of seven departments, headed by State Secretary Dr Robert Kloos, which provide the Minister with technical support.

Peter Bleser and Dr Maria Flachsbarth are the ministry's Parliamentary State Secretaries. They were appointed by the Federal President at the proposal of the Federal Chancellor and facilitate the exchange of information between government and parliament. They represent the minister politically, in the German Bundestag and the Bundesrat.

The Federal Ministry of Food and Agriculture is the competent authority on fisheries and aquaculture at the federal level. It drafts policies, guidelines and promotes actions especially at the EU level in this area. The BMEL ensures that the production of freshwater and seawater fish strictly respects environmental sustainability and the priority of consumer protection. In the aquaculture sector, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety deals with matters related to the protection of inland waters and the maritime zones, groundwater protection, wastewater treatment, pollutants in food and landscape planning.

Due to the federal state structure, there are three levels of government: the federation (national level), the Länder (federal states, provinces, or regional level), and municipalities (local level). The fisheries laws are executed by the Länder as in principle, according to the constitution, the federal laws and regulations are executed by the administration of the Länder. In terms of legislative power at the federal level, the federal state can enact laws on sea and coastal fisheries within the so-called "concurrent legislation", whereas the Länder are exclusively responsible for national inland water fisheries. Therefore, fishery acts exist both at the federal level, including provisions on sea and coastal fisheries, and at the Länder level with provisions on inland water fisheries and territorial waters (within the 12 nautical miles zone).

2.1. The Baltic Sea Ecosystem

The Baltic Sea fish community is relatively simple, with few dominating species.

- The commercial marine fish species with the northernmost distribution range are cod, herring, sprat and flounder.
- Among the non-commercial are eelpout, sand goby, the smaller sand eel and pipefish.
- The coastal water in the Baltic is dominated by freshwater species such as perch, pike and roach.

The species distribution is primarily a function of salinity and temperature tolerance, but the fish community is also affected by anthropogenic factors such as eutrophication and fishery.

Rapid changes in the ecosystem (regime shifts) can be found all across the Baltic Sea. The most dramatic recent regime shift occurred in the late 1980s, from a fish community dominated by cod and herring to one dominated by sprat, and was accompanied by a
change in the abundance and composition of zooplankton. This shift was brought on by an excessive fishing mortality which reduced the spawning biomass of cod to an unsustainable level (figure 1).

Significant scientific effort in recent years has improved understanding of the Baltic Sea ecosystem, and in particular of how the fish species interact. There have been changes in the structure of the food web (regime shifts) in the Baltic Sea during the last 40 years.

The size of the sprat stock and to some degree the herring stock depend on cod predation and hence on the size of the cod stock. Since the early 1990s, the cod stock has been low as a result of excessive fishing and unfavourable environmental conditions. The removal of cod led to a shift in the structure of the central Baltic Sea ecosystem and allowed a substantial increase of the population of sprat that feeds strictly on zooplankton. As a consequence, total zooplankton biomass has declined and phytoplankton increased.

In recent years, hydrological conditions for cod recruitment have improved, not only in terms of favourable conditions for egg and larval survival, but also potentially enhancing the development of one of the key zooplankton prey for cod larvae, the copepod *Pseudocalanus spp*. Cod recruitment success, however, has not increased as expected form the high resources for larval cod, possibly because changed size structure of sprat population and predation by sprat on cod eggs. The feedback mechanisms potentially delaying cod recovery can be found not only in the top-down control by sprat on the food. MSY is therefore done on the exploitation level using simple exploitation reference points such as F0.1.

**Figure 1: The biomass of cod, sprat and herring in the Baltic Sea**

Source: Popescu, I., 2011.
2.2. The North Sea Ecosystem

The North Sea may seem a small, shallow pool compared with the oceans (total surface area approx. 750 000 km², average depth 95 m), but nevertheless it is teeming with life. The water supply from the Atlantic Ocean and the discharge from a number of major rivers create a perfect climate for micro-organisms. These ideal circumstances stimulate the development of plankton, which forms the basis for an extensive food web. Thus, the North Sea is a rich area and a very important fishing ground.

The fish community has been called temperature-boreal, and its biomass is dominated by a relatively small number of species, which include flatfishes (primarily plaice, flounder (Platichthys flesus), dab (Limanda limanda), sole (Solea solea), turbot (Psetta maxima), but historically also halibut), gadoids (primarily cod, but historically also haddock, whiting (Merlangius merlangus) and pollack (Pollachius pollachius)), and pelagic fishes (e.g., herring, sprat (Sprattus sprattus)). The community is supplemented on a seasonal basis by migrant species, including mackerel (Scomber scombrus), garfish (Belone belone), and occasionally horse mackerel (Trachurus trachurus).

Overall in the North Sea, the erosion of the entire fish community has been taking place for more than a century, and in large parts of the North Sea cod is presently considered to be commercially extinct. An even more profound reduction in demersal fish abundance has taken place in the eastern inshore of the Skagerrak. Recruitment to the sandeel, Norway pout, North Sea cod and North Sea herring stocks has been poor over the past decade. This is probably caused by changes in the physical and biological conditions. Cod and sandeel stocks have been heavily exploited, and the recruitment failures have probably been mainly due to overfishing.

The spawning stocks of haddock, mackerel, herring and sprat have been quite good. For plaice and cod, however, the situation reached critical towards the end of the last decade. Anglerfish and Norway lobster fisheries have developed over the last 20 years. The fishery for Norway lobster declined up to the mid-2000s, but data from 2005 on have indicated a new increase.
3. THE GERMAN FISHING INDUSTRY

The small coastal line and a high population density imply that fisheries and aquaculture play a minor role in the economy of the country. The total value of all fish harvest is less than 2 % of the total value of all agricultural harvest and this later one is only a 1 % of the total GDP.

Nevertheless, fishing is a traditional industry in the coastal regions of Germany and also in some inland areas. It employs more than 40 000 people and provides consumers with over 1.2 million metric ton of high-quality fishery products from the sea and inland waters and from transformation industries each year, with a total turnover of EUR 8.5 billion per year.

German fishery mainly operates in the North Sea (Crangon shrimp, mussels, saithe, flat fish and many others), the Baltic Sea (herring, cod, flounder, sprat) and on long distant waters, mainly North Atlantic, NAFO, Greenland, Norway and Mauritania (herring, mackerel, blue whiting, horse mackerel, sardinella, Greenland halibut, Sebastes redfish, saithe, cod).

On 01 January 2012, the fleet consisted of 1 582 vessels with a total tonnage of 64 835 GRT and a total engine power of 149 500 kW. This makes it one of the smallest fleets in the European Union.

The core of the fleet is the cutter type trawlers and coastal fisheries vessels with 320 units, the majority of these being beam trawlers (240 units) (most of them involved in the brown shrimp fishery in the North Sea).

Small coastal fishing, with passive gear such as gill nets and fish traps, is almost exclusively operated on the Baltic coast and is composed of 1 174 small vessel of less than 12 meters length.

Furthermore, Germany has 7 deep-sea trawlers totalling 22 866 GRT and 27 960 kW, as well as two special vessels for pelagic fishing totalling 14 924 GRT and 12 841 kW, operating in distant water fisheries.

The total amount of staff on fishing vessels amounted to 2 684 crewmembers.

The evolution of the fishing fleet in recent years shows that there has been a slight decrease in terms of number of vessels, mainly in the smallest ones of less than 12 meters length which decreased by 27 % compared with a decrease of only 7 % of the larger vessels.

3.1. **Fisheries in the Baltic**

The German Baltic herring fishing fleet consists of two segments: a coastal fleet with boats < 12 m and a cutter fleet with vessels ≥ 12 m. The German sprat fishing fleet in the Baltic Sea mainly consists of a cutter fleet with vessels ≥ 12 m. This fleet of around 70 vessels is also operating in some times of the year in the North Sea and catches also Baltic cod and Baltic flounder. All the landings are used for human consumption⁷.

There is also an important coastal fishery for demersal species on small scale vessels (most of the German vessels under 12m are from ports of Baltic coast). Those artisanal vessels mainly fished three stocks: Cod in the western Baltic, herring stock in the western Baltic and the Baltic flounder. In addition to the three main marine species in this fleet, large quantities of perch, roach and pike-perch are also fished in Baltic waters.

3.2. **Fisheries in the North Sea**

Brown shrimp fishery is the most important sector within the German marine fishery operating in the North Sea. It accounts for about 20 % of total revenues and employment on board and in the processing sector (about 800 workers). As the fishery is limited to the

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⁷ Study: Industrial Fisheries in the Baltic Sea,
North Sea, it is related only to the states of Lower Saxony and Schleswig Holstein, where its contribution to revenues and employment is accordingly higher.

This important fishery shows a stronger seasonality in landings. Only few tonnes are landed during the winter months (between 100 and 700 tonnes from December to March) and most of the landings occur during spring and autumn months.

The fleet for brown shrimp counts with around 230 beam trawlers of old age, on average 34 years old, and less than 24 m (average 17.43 m).

**Figure 3: Well kept, 50-year-old wooden cutter in Cuxhaven harbor**

In the North Sea we have also some activity of the trawlers that share their time with Baltic fisheries for cod, herring, plaice, saithe, haddock, sprat and sandeel.

Germany has a fleet of about 18 vessels over 12 m length that fish for anglerfish with nets and deep-sea red crab with traps in the North Sea and that sometimes fish for herring in Baltic waters (this fleet has experienced an important reduction in most recent years 31 % since 2010). There is also a small fleet of beam trawlers in the North Sea of seven units that fish for sole and plaice.
3.3. Long-distant fisheries.

The German long distance fleet counts nine vessels of great tonnage (average between 3 200 and 7 500 GT). Two of them are big pelagic trawlers targeting Atlanto-Scandian herring, North Sea herring and Atlantic mackerel in European and international waters of the North Atlantic, and sardinella, sardine, horse mackerel and mackerel in CECAF waters under the agreement with Mauritania.

The remaining seven vessels can fish either pelagic or demersal species depending on the time of year and the possibilities of quota use. They fish cod and haddock in Norwegian waters, Greenland halibut and cod in Greenland and in the NAFO regulatory area and pelagic species in the North Atlantic.

3.4. Catches

The German commercial fishery is characterized by three sub-sectors:

- A demersal fishery with trawls, Danish seines and gill nets for roundfish species like cod and haddock, and various flatfishes like plaice, sole and turbot, most of it in the North and Baltic seas.

- An artisanal sector with passive gear for demersal species, mainly in Baltic waters.

- A long distance water fleet with some big trawlers and pelagic fisheries in the North Atlantic for demersal species and for herring and mackerel.

Compared to total EU catches, the German catch has been insignificant. It only represents about 5% of the total EU catch.

The main products are the small pelagic (herring, sprat, blue whiting), followed by round fishes (cod, haddock, ling), flat fishes (flounder, turbot) and crustaceans (mainly crangon shrimp).

Table 2: German Catches over the period 2005-2012 (in Tonnes)

<table>
<thead>
<tr>
<th>Product Type</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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<tbody>
<tr>
<td>Freshwater fishes</td>
<td>1 195</td>
<td>1 203</td>
<td>1 295</td>
<td>15 553</td>
<td>14 763</td>
<td>15 131</td>
<td>7 336</td>
<td>1 318</td>
</tr>
<tr>
<td>Flatfishes</td>
<td>21 302</td>
<td>15 359</td>
<td>16 796</td>
<td>16 195</td>
<td>15 504</td>
<td>18 848</td>
<td>15 930</td>
<td></td>
</tr>
<tr>
<td>Roundfishes</td>
<td>92 660</td>
<td>86 226</td>
<td>79 650</td>
<td>67 937</td>
<td>46 268</td>
<td>49 232</td>
<td>37 748</td>
<td>40 194</td>
</tr>
<tr>
<td>Small pelagics</td>
<td>175 446</td>
<td>135 383</td>
<td>99 852</td>
<td>87 183</td>
<td>73 993</td>
<td>64 092</td>
<td>78 706</td>
<td>79 785</td>
</tr>
<tr>
<td>Other marine fish</td>
<td>54 682</td>
<td>40 726</td>
<td>30 527</td>
<td>34 098</td>
<td>52 570</td>
<td>72 758</td>
<td>76 241</td>
<td>50 835</td>
</tr>
<tr>
<td>Crustaceans</td>
<td>46 431</td>
<td>19 737</td>
<td>17 054</td>
<td>18 726</td>
<td>18 248</td>
<td>19 362</td>
<td>18 501</td>
<td>17 020</td>
</tr>
<tr>
<td>Molluscs</td>
<td>51</td>
<td>17</td>
<td>24</td>
<td>6 997</td>
<td>3 697</td>
<td>5 009</td>
<td>20 842</td>
<td>7 182</td>
</tr>
<tr>
<td>Other marine</td>
<td>281</td>
<td>279</td>
<td>192</td>
<td>22 872</td>
<td>22 822</td>
<td>21 674</td>
<td>12 424</td>
<td>121</td>
</tr>
<tr>
<td>Total production</td>
<td>392 048</td>
<td>298 940</td>
<td>244 953</td>
<td>270 162</td>
<td>248 556</td>
<td>262 762</td>
<td>270 646</td>
<td>212 385</td>
</tr>
</tbody>
</table>
Figure 4: German catches in tonnes by main groups of products 2004-2012

Data Source: EUROSTAT.

Figure 5: Distribution of German catches by main products 2012

Data Source: EUROSTAT.
3.5. **Aquaculture and inland fisheries**

Alongside sea fisheries, inland fishing (including aquaculture) also plays an important role for the fishing industry in Germany as there are more than 1 000 full-time enterprises and almost 20 000 part time enterprises engaged in this sector. Of the fish produced, 80% comes from aquaculture, one of the sectors with the greatest potential for growth. The remaining 20% is supplied by traditional river and lake fisheries. In addition to professional fishermen, more than 1.5 million recreational fishermen use and manage Germany's water bodies Catching around 9 000 tons per year (Ernst and Young, 2011).

3.5.1. **Aquaculture**

Aquaculture in Germany is a small industry, practiced only in a few specifically suited areas. Aquaculture production is done in the 4 762 facilities that have the country, most of them of low size. In 2010 the total volume was around 40 164 tonnes with a value of EUR 94 million. Trout farming in freshwater flow-through-systems is the most profitable branch of production, both in terms of quantity, around 22 000 tonnes per year, and the revenue generated, around EUR 60 million.

**Figure 6: German Aquaculture production by main productions 2003-2010**

The design and construction of production units as well the production densities vary widely, in some areas in the south of Germany in particular, earthen ponds with a low stocking density are still dominant. At the same time, some companies are operating modern farms equipped with tanks or raceways and high production densities. The main production regions are situated in the south of Germany and in the foothills of the mountains.

The farming of carp in freshwater ponds is the second major type of aquaculture practiced in Germany and has a long tradition, with an annual production of around 9 000 tonnes with a value of EUR 19 million.
The aquaculture in brackish and marine waters mainly focuses on blue mussel with an annual production of around 1 500 tonnes. Production of blue mussels is concentrated on the German North Sea Coast, with companies in the States of Schleswig-Holstein and Lower Saxony. The volume of production differs from years to year as it very much depends on the natural seed fall (STECF 2013)\(^8\).

The German market for aquaculture products is dominated by imports, mostly salmon and pangasius.

### 3.5.2. Inland fisheries

The most important areas of interest for inland fisheries are: the Lakes of Brandenburg and Mecklenburg, the Lake Constance, the Elbe, the Havel, the Rhine and the Mosel rivers. On those water bodies more than 900 fishermen (half of them part time) catch 3 256 tons of different species like eel (*Anguilla anguilla*), whitefishes (*Coregonus* spp.), pike (*Esox lucius*), pike perch (*Sander lucioperca*), perch (*Perca fluviatilis*). The main gear used from boats (5-11 m length) are gill nets, pots, fyke nets, seine nets. Germany is the fourth EU country in terms of volume and the second one in terms of value of its inland fisheries (around EUR 11 million per year). The inland catch represents only 1.4 % of the total landings (Ernst and Young, 2011).

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\(^8\) Summary of the 2013 Economic Performance Report on the EU Aquaculture Sector ([STECF 13-30](#)).
4. PROCESING INDUSTRY, TRADE EMPLOYMENT

Germany is not a great consumer of seafood and its per capita consumption was around 15 kg per person in 2006, going down to about 10 kg in recent years. This is lower than the European average of 23.3 kg\(^9\). The main species for the German consumers are Alaska-Pollock, Herring and Salmon followed by tuna and bonito\(^10\).

4.1. Foreign trade

German national production is not able to supply the overall demand for seafood and most of it comes for imports from countries like Norway, Poland, China, Denmark, the Netherlands and the United States. In 2012, Germany imported more than 1.2 million tonnes of fish and fish products with a value of almost USD 5.2 billion. The national fleet and the aquaculture sector contribute less than 19% the total fish market.

A huge part of the imports are processed in the national industry and then exported outside Germany. In 2010 the seafood export was 754 254 tonnes with a value of USD 2.6 billion.

Table 3: Germany import and export of fishery products 2011

<table>
<thead>
<tr>
<th>NC CODE</th>
<th>Import</th>
<th>Export</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weigh in tonnes</td>
<td>Value in 1000 US$</td>
</tr>
<tr>
<td>0302</td>
<td>Fish, fresh or chilled</td>
<td>120 147.1</td>
</tr>
<tr>
<td>0303</td>
<td>Fish, frozen</td>
<td>59 032.9</td>
</tr>
<tr>
<td>0304</td>
<td>Fish fillets and other fish meat</td>
<td>424 754.8</td>
</tr>
<tr>
<td>0305</td>
<td>Fish, dried, salted, smoked, or in brine</td>
<td>72 638.4</td>
</tr>
<tr>
<td>0306</td>
<td>Crustaceans</td>
<td>42 045.9</td>
</tr>
<tr>
<td>0307</td>
<td>Molluscs</td>
<td>33 986.1</td>
</tr>
<tr>
<td>121220</td>
<td>Seaweeds and other algae</td>
<td>3 360.0</td>
</tr>
<tr>
<td>1504</td>
<td>Fats, oils and their fractions</td>
<td>11 039.3</td>
</tr>
<tr>
<td>1604</td>
<td>Prepared or preserved fish; caviar and substitutes</td>
<td>172 785.9</td>
</tr>
<tr>
<td>1605</td>
<td>Prepared or preserved crustaceans</td>
<td>32 660.9</td>
</tr>
<tr>
<td>230120</td>
<td>Fish meal</td>
<td>229 828.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1 202 279.5</td>
<td>5 179 118.80</td>
</tr>
</tbody>
</table>

Source: OCDE review of fisheries. Country statistics 2013 (Germany)

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\(^10\) The Economic Performance of the EU Fish Processing Industry (STECF - 13-31).
Most of the imports are fish fillets, followed by fish meal and prepared or preserved fish products.

**Figure 7: Imports of fish products by mayor product groups in volume**

![Pie chart showing import distribution]

*Data Source: OCDE review of fisheries. Country statistics 2013 (Germany)*

Exports consist of fish meal (32 % in volume) canned, marinated and smoked fish and frozen and fish filets. In general, more value added fish is exported than imported.
4.2. **Seafood Industry**

The food processing industry is an important sector in the German economy, and the fishing subsector is an essential part in this industry. The fish and seafood sector include breaded and frozen fish filets and fish sticks, herring, fish salads, and Atlantic and Pacific salmon.

The German Fish Processing Sector contains around 265 enterprises that employ around 6,780 persons. From 2008 to 2011, there was a decline of 20% in total employment. Female workers were more affected than male employees. More than one quarter of the industry employment is located in Bremerhaven, the largest city on the German North Sea Coast.

The German fish processing sector, like the whole fish sector, does not rely very much on domestic products. The largest foreign suppliers are Poland, followed by China, Norway, the Netherlands and Denmark. The main products in 2011 were fish fingers and breaded fish fillets followed by processed herrings. As in most other countries, the profitability of the sector is rather low but still positive. The profit of the sector remains under high pressure from the retail sector as well as from competitors from non-EU and eastern EU countries.

National production form the long-distance fleet comes in frozen fish blocks that are processed by the frozen fish industry into various value added products, mainly fish fingers (small breaded portions) and *Schlemmerfilet* (a block of fish covered with sauce). Frozen single fillets (iqf or shatter packed) are re-packed into boxes or polyetilen-bags and sold via retail (to the final consumer) or specialized catering wholesale (to professional cooks)
nation-wide. Frozen Greenland halibut have smoke houses as their main destination. Herring and mackerel go to smoke houses as well as to the canning and marinating industry. The input value of this fish processing industry is calculated at EUR 2 - 2.2 billion per year\(^{11}\).

### 4.3. Markets

While, formerly, most of the fresh fish landed in Germany was sold via fish auctions in the major fishing ports (Bremerhaven, Cuxhaven, Hamburg, Kiel), auctions have lost their importance and most fish is sold directly to wholesale traders, filleting wholesalers (in fishing harbours) and processors, or processed and sold by fishermen’s cooperative trade and filleting units (fish landed in Denmark or the Netherlands is often sold through auctions at the landing ports). Specialized wholesale traders sell this fresh fish nation-wide to caterers, stationary and mobile fish mongers and supermarkets equipped with fish counters. They also sell part of the landed fish after it has been value added by processors to smoked or marinated products. Most of the whitefish landed is processed into fillets, because German consumers prefer these species to be filleted. There is also some direct marketing of round fish from the boat to the consumer.

Fresh whitefish (cod, saithe, redfish...), flatfish (plaice, sole...), shellfish (blue mussels) and crustaceans (cooked-on-board Crangon shrimp, Norway lobster, crab, some lobster) are mostly sold to the consumer/caterer without more processing being done than filleting/peeling. Pelagic fish, which is, for inland consumption, mainly herring and mackerel, predominantly go into further processing by smokehouses and the canning and marinating industry.

Fish is sold either through retailers (supermarkets, stationary/mobile fish mongers) or caterers (restaurants, canteens etc.) to the final consumer. The share of direct marketing to the consumer is below 1 %. While retailers sell all types of fish (frozen, fresh, canned, marinated, smoked, salads), frozen and fresh fish dominates in catering.

Frozen fish has a total market/consumption share (2006) of 36 %, fresh fish 10 %, canned and marinated fish 28 % (marinated and canned herring 16 %, canned tuna 10 %, canned sardines 2 %), crustaceans and molluscs 12 % (fresh, frozen, prepared), smoked fish 6 %, fish salads 3 %, others 5 %.

The market shares of fish species are (2006): Alaska pollock 25.9 %, herring 17.5 %, salmon 11.3 %, tuna 10.7 %, saithe 4.0 %, redfish 3.8 %, trout 3.8 %, hake 3.3 %, cod 2.8 %, mackerel 1.6 %, carp 1.2 %, plaice 0.9 %, monkfish 0.5 %, sardine 0.4 %, others 12.3 %. – Seawater fish has a share of 71.1 %, freshwater fish 20.3 % and crustaceans and molluscs 8.6 %. (Official figures do not always match, even if they come from the same source) In general, more fish is consumed in the northern states of Germany (at the coast or close by) than in the southern states (far away from the coast) (FAO 2007)\(^{12}\)

### 4.4. Employment

Total employment in the fishing sector and the seafood industry is very low compared to this employment nationwide. The Ministry’s web page gives a figure of more than 40 000

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\(^{11}\) The Economic Performance of the EU Fish Processing Industry (STECF - 13-31).

people, but it seems to be over-estimated. In the fishing fleet, due to his low size and part-time employment there is total employment of no more than 1,142 full time equivalents. Figures from the FAO Country Profile, calculate employment in the primary sector (fishing and aquaculture) at 8,150 (most in inland aquaculture and inland fisheries) and in the secondary sector (including wholesale) at 12,914 persons.
5. **FISHERIES RESEARCH**

The Federal Ministry for Food and Agriculture (BMEL) relies on four federal research institutes for advice in all relevant matters. The Johann Heinrich von Thünen Institute is in charge of marine and fisheries issues (it also covers rural development, forestry and climate change). It comprises, among others, the Federal Research Institute for Rural Areas, Forestry and Fisheries. The Federal Research Institute is headquartered in Hamburg. The Institute of Sea Fisheries and Institute of Fisheries Ecology in Hamburg and the Institute for Baltic Sea Fisheries in Rostock form part of this Federal Research Institute.

5.1. **Task of the research area fish of the Thünen-Institut**

The Johann Heinrich von Thünen Institute (*Thünen-Institute or vTI*) operates its own research into bio-monitoring and sustainable management of living marine resources (fish, crustaceans and molluscs) within the network of European fisheries research institutes and also deals with questions concerning the conservation and protection of marine mammals and birds. The distribution and effects of pollutants in the sea and the impact of aquaculture on the aquatic environment and their communities are other areas of work. It also carries out in the field of consumer protection of fish and fishery products in an integrated approach at different levels of the production chain ("from catch to consumer").

Another important task is the development of more selective and more energy-efficient fishing methods. On the basis of its own scientific work, the Institute advises the BMEL particularly with regard to the Common Fisheries Policy (CFP) of the EU and participates in international scientific research cooperation and coordination. The Institute operates the fisheries research ships "Walther Herwig III", "Solea" and "Clupea".

5.2. **Priority tasks of the different Institutes**

5.2.1. **Institute of Sea Fisheries**

The Institute of Sea Fisheries (*Institut für Seefischerei*) explores and monitor fish stocks in EU-Seas (North Sea and waters west of the British Isles), and deals with stocks that affect the German long-distance fleet in fishing areas of the North Atlantic. The aim of this work is to align the use of living marine resources to the criteria of sustainability and ecosystem quality, and thus contribute to the long-term preservation of an ecologically and economically stable fishing sector and the sustainable supply of seafood to the population.

5.2.2. **Institute of Fisheries Ecology (IFÖ)**

The Institute for Fisheries Ecology (*Institut für Fischereiökologie - IFÖ*) conducts fisheries research in the area of the marine environment, is active in the field of ecological monitoring and is especially dedicated to the study of marine organisms. This includes research in the fields of radio-ecology, pollution analysis, ecotoxicology, fish diseases, aquaculture and inland fisheries. The IFÖ examines the impact of natural and anthropogenic factors on the pollution of fish, health and reproductive capacity, the genetic diversity of populations and the environmental impacts of aquaculture.
5.2.3. **Institute of Baltic Sea Fisheries (OSF)**

The Institute of Baltic Sea Fisheries (*Institut für Ostseefischerei - OSF*) provides the main German contribution to international efforts to conserve and responsibly use the fishery resources of the Baltic Sea. In addition to continuous monitoring of trends in populations of key species used by the fishing fleet (cod, herring, sprat, flounder, turbot, dab, eel and zander) the Institute follows up their relations with certain environmental parameters during different phases of life of those species. It also analyses relationships of fish species with each other and researches the effects of fishing on fish stocks.

5.2.4. **Research area "Quality Fish"**

The research area of "Quality Fish" started on January 2004 with the newly founded Federal Research Centre for Nutrition and Food, whose successor since 1 January 2008 is the Max Rubner-Institut for nutrition and food, as part of the Thünen-Institute.

The research subject of the "quality fish" is all fish used for human and animal nutrition, crustaceans and molluscs at all stages from catch to consumer. They range from studies on fresh raw materials immediately after the catch on board to finished products and also include fish meal. Questions relating to the "Food Safety and Quality", "food law" and "consumer protection" are processed in an integrated approach with the use of techniques in food chemistry, analytical chemistry, biochemistry, physics and microbiology (source: [http://www.portal-fischerei.de/](http://www.portal-fischerei.de/)).

Most applied research in inland fisheries and aquaculture is carried out in research bodies operated within the individual States, like the Potsdam-Sacrow Institute for Inland Fisheries (in Potsdam) or the Leibniz-Institute of Freshwater Ecology and Inland Fisheries (in Berlin) thus, research priorities in aquaculture are in most cases set by the States depending on their specific needs. In order to coordinate research activities of these State institutions, special meetings are organised regularly.
References

- Annual report to the European Commission on efforts by the German fishing fleet to achieve a sustainable balance between fishing capacity and fishing opportunities in accordance with Articles 13 and 14 of Regulation (EC) No 1013/2010 in 2011
- Eurostat data base
- Facts and figures on the Common Fisheries Policy Basic statistical data 2012 edition
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