POLAND

Annual report on Poland's efforts to achieve a sustainable balance between fishing capacity and fishing opportunities

for the period 1 January to 31 December 2020

Introduction

Pursuant to Article 22(2) of Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC ('Regulation (EU) No 1380/2013'), EU Member States are required to send to the European Commission, by 31 May each year, a report on the balance between the fishing capacity of their fleets and their fishing opportunities.

I. SUMMARY

As at 31 December 2020, the Polish fishing fleet consisted of 823 fishing vessels (including vessels fishing in the Vistula Lagoon and Szczecin Lagoon). The total fishing capacity of those vessels was 32 384.63 GT and 80 371.51 kW. In general terms, Polish fishing can be broken down into two basic sectors: Baltic Sea fishing (in which the lion's share of the fleet is involved) and deep-sea fishing.

The main fish species caught by Polish fishermen in the Baltic Sea are cod, sprat, herring, salmon, sea trout and flatfish. The main species caught by Polish deep-sea vessels are horse mackerel, cod, blue whiting, mackerel, herring and northern prawn.

Since its accession to the European Union, Poland has strictly complied with the entry/exit scheme for fishing vessels as currently provided for in Article 23(1) of Regulation (EU) No 1380/2013.

II. Opinion on the balance between fleet capacity and resources

Given the status of marine biological resources and the fishing opportunities available to Poland in the Baltic Sea, the existing fleet structure must be changed.

Between its accession to the European Union and the end of 2013, Poland reduced its fishing capacity by more than 40%.

As the findings of the annual reports for 2014, 2015, 2016, 2017 and 2018 showed that the fishing capacity of individual fleet segments was not in balance with available fishing opportunities, corrective action was taken to achieve such a balance. That action covered the relevant segments of the fishing fleet in the form of support for permanent cessation of fishing activity as referred to in Article 34 of Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund and repealing Council Regulations (EC) No 2328/2003, (EC) No 861/2006, (EC) No 1198/2006 and (EC) No 791/2007 and Regulation (EU) No 1255/2011 of the European Parliament and of the Council (OJ L 149, 20.5.2014, p. 1) – implemented under Measure 1.6 'Permanent cessation of fishing

activity of the 2014-20 'Fisheries and the Sea' Operational Programme (2014-20 FISH OP)'. Action also took the form of support for temporary cessation of fishing activity as referred to in in Article 33 of Regulation (EU) No 508/2014 – implemented under Measure 1.10 'Temporary cessation of fishing activity (2014-20 FISH OP)'.

Pursuant to Article 34(4) of Regulation (EU) No 508/2014, **support for permanent cessation of fishing activity could be granted until 31 December 2017**. **In view of this, agreements for financing scrapping operations or operations for reclassifying fishing vessels under Measure 1.6 'Permanent cessation of fishing activity' were concluded by the end of 2017.** No agreements for financing operations under Measure 1.6. 'Permanent cessation of fishing activity' were concluded after that time.

In implementing the financing agreements under Measure 1.6. 'Permanent cessation of fishing activity', **between 1 January 2016 and 6 March 2018, 46 commercial fishing vessels were permanently withdrawn from commercial fishing, representing a total fishing capacity of 1 069.65 GT and 3 299.00 kW:**

- between 1 January 2016 and 31 December 2016 **33** fishing vessels with a total fishing capacity of 865.24 GT and 2 643.20 kW were permanently withdrawn from commercial fishing, of which 29 vessels were permanently withdrawn through scrapping, two vessels were withdrawn without scrapping through reclassification for land-based non-profit-making activities related to cultural heritage, and two vessels were withdrawn without scrapping through reclassification for non-profit-making activities other than commercial fishing;

- between 1 January 2017 and 31 December 2017 **8** fishing vessels with a total fishing capacity of 166.78 GT and 505.00 kW were permanently withdrawn from commercial fishing, of which six vessels were permanently withdrawn through scrapping and two vessels were withdrawn without scrapping through reclassification for non-profit-making activities other than commercial fishing;

- between 1 January 2018 and 6 March 2018 **5** fishing vessels with a total fishing capacity of 37.63 GT and 150.80 kW were permanently withdrawn from commercial fishing, of which two vessels were permanently withdrawn through scrapping and three vessels were withdrawn without scrapping through reclassification for non-profit-making activities other than commercial fishing.

In accordance with Article 34(5) of Regulation (EU) No 508/2014, **decrease in capacity as a result of the permanent cessation of fishing activities with public aid must result in the permanent equivalent reduction of the fishing capacity ceilings set out in Annex II to Regulation (EU) No 1380/2013.**

The fishing capacity of the vessels permanently removed from the EU fishing fleet register due to permanent cessation of fishing activities and by which the fishing capacity ceiling of the Polish fishing fleet – as set out in Annex II of the aforementioned Regulation – was reduced, is shown in Table 1a and in the chart below.

Table 1a. Change in the Polish fishing fleet capacity between 2016 and 2018

Fishing capacity permanently removed from the EU fishing fleet register between 2016 and 2018 due to permanent cessation of fishing activities as referred to in Article 34 of Regulation (EU) No 508/2014			
Year	No of vessels	GT	kW
2016	33	865.24	2 643.20
2017	8	166.78	505.00
2018	5	37.63	150.80
Total	**46**	**1 069.65**	**3 299.00**
Fishing capacity ceiling of the Polish fleet as set out in Annex II to Regulation (EU) No 1380/2013			
		GT	kW
		38 270.00	**90 650.00**
Fishing capacity ceiling of the Polish fleet minus capacity permanently removed from the EU fishing fleet register between 2016 and 2018			
		GT	kW
		37 200.35	**87 351.00**

Due to the imbalance between fishing capacity and available fishing opportunities referred to in the 2019 annual report, appropriate fleet segments were given over to the temporary cessation measure under Article 33 of Regulation (EU) No 508/2014, implemented under Measure 1.10 'Temporary cessation of fishing activity (2014-20 FISH OP)'.

Given that when the 2019 annual report and the action plan to that report were drawn up (i.e. 31 May 2020), Article 34(4) of Regulation (EU) No 508/2014 only allowed support for permanent cessation of fishing activities to be granted until 31 December 2017, the individual segments of the fleet in which an imbalance was identified were not covered by this measure.

In addition, Article 34(4) of Regulation (EU) No 508/2014 was reworded with the entry into force on 1 December 2020 of Regulation (EU) 2020/1781 of the European Parliament and

of the Council of 25 November 2020 amending Regulation (EU) 2016/1139 as regards fishing capacity reduction in the Baltic Sea, and Regulation (EU) No 508/2014 as regards permanent cessation of fishing activities for fleets fishing for Eastern Baltic cod, Western Baltic cod and Western Baltic herring (OJ L 400, 30.11.2020, p. 1).

In accordance with Article 34(4)(b) of the amended Regulation (EU) No 508/2014, **support under Article 34 may be granted until 31 December 2017, unless permanent cessation measures are adopted in order to achieve the objectives of the multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks, established by Regulation (EU) 2016/1139, with regard to vessels that have targeted Eastern Baltic cod, Western Baltic cod or Western Baltic herring as set out in Article 8a of Regulation (EU) 2016/1139**.

Under Article 34(4a) of the amended Regulation (EU) No 508/2014, expenditure related to permanent cessation measures adopted in order to achieve the objectives of Regulation (EU) 2016/1139, in particular Article 8a thereof, are eligible for support under the EMFF from 1 December 2020.

In 2020, there was no permanent cessation of fishing activities under Article 34(4a).

Notwithstanding the above, given the negative, dynamic changes in the status of fish stocks in the Baltic Sea and the increased natural mortality of Eastern Baltic cod, which far exceeds fishing mortality, there is a temporary imbalance between fishing capacity and available resources.

The latest assessments of the biological (2018-2020), technical (2018-2020) and economic (2017-2019) indicators relating to the Baltic fishing fleet, which are presented in Chapter VIII, Section F: 'Estimation and discussion of balance indicators' and Chapter IX: 'Analysis and evaluation of the balance between fishing capacity and fishing opportunities by fleet segment for 3 consecutive years' of this report show that no segments of the Baltic fleet are effectively balanced with available fishing opportunities.

Pursuant to Article 22(4) of Regulation (EU) No 1380/2013, an action plan has been prepared for the segments of the Baltic fleet with identified structural overcapacity. The action plan forms an integral part of this report and is included in Chapter X.

III. SECTION A

Description of the fishing fleet

In general terms, Polish fishing can be broken down into two basic sectors:

- **Baltic Sea fishing** (in which the lion's share of the fleet is involved);
- **deep-sea fishing**.

As at 31 December 2020, the Polish Baltic fishing fleet consisted of 821 fishing vessels. The total fishing capacity of those vessels was 15 981.63 GT and 62 971.51 kW. The fleet is made up of fishing vessels operating in the Baltic Sea and in internal maritime waters, including the Vistula Lagoon and the Szczecin Lagoon.

As at 31 December 2020, the Polish deep-sea fishing fleet consisted of 2 fishing vessels. The total fishing capacity of those vessels was 16 403.00 GT and 17 400.00 kW. The deep-sea fleet is made up of fishing vessels operating exclusively outside the Baltic Sea and Polish internal waters.

Types of fishing operations carried out

Baltic Sea fisheries

The main fish species caught by Polish fishermen in the Baltic Sea are: cod, sprat, herring, salmon, sea trout and flatfish. The Baltic Sea species important to Polish fishermen (in particular the coastal fleet) is cod, which is subject to restrictions, including as a result of the recovery plan for these stocks (significant annual reductions in fishing quotas, biological recovery periods and restricted use of some fishing gear). Catches of pelagic fish (sprat and herring) make up a significant share of the income of Polish fishermen. Polish fishermen also fish for sea trout and flatfish, considered equally valuable in economic terms. Baltic Sea catches in 2020, broken down by species: cod (sub-areas 22-32): 472.3 tonnes, salmon: 7 574 units, sprat: 60 607.7 tonnes, plaice: 369.7 tonnes, western herring (sub-areas 22-24): 500.3 tonnes, central herring (sub-areas 25-27, 28.2, 29 and 32): 36 963.7 tonnes, sea trout: 19 891 units and flounder: 14 664 tonnes.

Deep-sea fisheries

Deep-sea vessels operated mainly in areas managed by the North-East Atlantic Fisheries Commission (NEAFC) and in waters belonging to EU Member States, Mauritania, the Faroe Islands and Norway. The main species caught by Polish deep-sea vessels are: blue whiting, mackerel, horse mackerel, cod, herring and northern prawn. The deep-sea quotas allocated to Poland have been fully utilised, either through catch or by exchanging quotas – primarily with the Netherlands, the United Kingdom, Latvia, Estonia, Spain and France. The Polish deep-sea fleet's growth prospects depend on its ability to obtain fishing opportunities in deep-sea fisheries. In 2020, deep-sea catches amounted to a total of approximately 61 500 tonnes.

Changes in the fishing fleet

Changes in the Polish fishing fleet, broken down into the Baltic and deep-sea fleet, are presented in the table below.

Table 2. Changes in the fishing fleet as at 31 December 2020

	As at 31.12.2019			As at 31.12.2020			Change		
	GT	kW	No of vessels	GT	kW	No of vessels	GT	kW	No of vessels
Total	**32 327.84**	**80 220.10**	**827**	**32 384.63**	**80 371.51**	**823**	**+56.79**	**+151.41**	**- 4**
Deep-sea fleet	16 403.00	17 400.00	2	16 403.00	17 400.00	2	No change	No change	No change
Baltic fleet	15 924.84	62 820.10	825	15 981.63	62 971.51	821	+56.79	+151.41	- 4

The size and fishing capacity of the Baltic fishing fleet changed between 2019 and the end of 2020, decreasing by four vessels and increasing in capacity by 56.79 GT and 151.41 kW. In most cases this was due to modernisation measures taken by vessel owners to improve safety, working conditions, and the hygiene and quality of fishery products. Modernisation measures involved replacing and converting fishing vessels (i.e. increasing or decreasing gross tonnage), and replacing engines or adjusting their power (i.e. increasing or decreasing power). These measures were carried out by vessel owners at their own expense, using the individual fishing capacity (GT and kW) available to them or additional fishing capacity (GT and kW) granted to them by the minister responsible for fisheries. Changes in the Baltic fleet were also caused by the withdrawal from commercial fishing without state aid of two fishing vessels which sank. Those vessels were replaced by two other vessels (at the expense of their owners and using the individual fishing capacity available to them).

In 2020, 15 vessels were withdrawn from commercial fishing without state aid and replaced by 11 vessels which entered into commercial fishing that same year.

The size and fishing capacity of the deep-sea fishing fleet did not change in comparison to 2019. As at 31 December 2020, the fleet comprised two fishing vessels with a total fishing capacity of 16 403.00 GT and 17 400.00 kW.

IV. SECTION B

Impact on fishing capacity of effort reduction schemes

No permanent cessation measures as referred to in Article 34(4)(b) of the amended Regulation (EU) No 508/2014 **were carried out in 2020 in order to achieve the objectives of the multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks, established by Regulation (EU) 2016/1139, with regard to vessels that have targeted Eastern Baltic cod, Western Baltic cod or Western Baltic herring as set out in Article 8a of Regulation (EU) 2016/1139**.

Between 2016 and 2018, as a result of permanent cessation measures as referred to in Article 34(4) of Regulation (EU) No 508/2014 (i.e. before the amendment to that Regulation, which entered into force on 1 December 2020), 46 fishing vessels were permanently withdrawn from commercial fishing, corresponding to a total fishing capacity of 1 069.65 GT and 3 299.00 kW. This fishing capacity was therefore also permanently removed from the EU fishing fleet register, leading to a reduction – in accordance with Article 34(5) of Regulation (EU) No 508/2014 – in the fishing capacity ceiling of the Polish fleet under Annex II to Regulation (EU) No 1380/2013 corresponding to 1 069.65 GT and 3 299.00 kW (Table 1b).

In 2019, no measures for permanent cessation of fishing activities were carried out.

Table 1b. Change in the Polish fishing fleet capacity between 2016 and 2018

Fishing capacity permanently removed from the EU fishing fleet register between 2016 and 2018 due to permanent cessation of fishing activities as referred to in Article 34 of Regulation (EU) No 508/2014			
Year	No of vessels	GT	kW
2016	33	865.24	2 643.20
2017	8	166.78	505.00
2018	5	37.63	150.80
Total	**46**	**1 069.65**	**3 299.00**

Fishing capacity ceiling of the Polish fleet as set out in Annex II to Regulation (EU) No 1380/2013		
	GT	kW
	38 270.00	**90 650.00**

Fishing capacity ceiling of the Polish fleet minus capacity permanently removed from the EU fishing fleet register between 2016 and 2018		
	GT	kW
	37 200.35	**87 351.00**

V. SECTION C

Compliance with the entry/exit scheme and with the fishing capacity ceiling

During the reporting period, Poland strictly complied with the entry/exit scheme as set out in Article 23(1) of Regulation (EU) No 1380/2013.

As at 31 December 2020, the fishing capacity of the Polish fleet included in the fleet register was **32 384.63 GT** and **80 371.51 kW**.

Pursuant to Article 22(7) of Regulation (EU) No 1380/2013, the fishing capacity of the Polish fleet, as specified in the fleet register, did not at any time exceed the fishing capacity ceiling set out for Poland in Annex II to that Regulation or the ceiling after reduction by the fishing capacity permanently removed from the EU fishing fleet register between 2016 and 2018 due to permanent cessation of fishing activities under Article 34 of Regulation (EU) No 508/2014 (see Table 1b above).

VI. SECTION D

Summary of weaknesses and strengths of the fleet management system
Plan for improvements in the fleet management system
Information on the level of compliance with fleet policy instruments

Poland has fully complied with the fleet capacity restrictions provided for in EU law on balancing entry and exit capacity. The fishing capacity of the Polish fleet, as specified in the fleet register, did not at any time exceed the fishing capacity ceiling laid down for Poland in Annex II to Regulation (EU) No 1380/2013.

A key feature of the Polish fleet management system is that it incorporates a complex IT system. The IT system consists of a central database containing information necessary for the fisheries administration system to function properly and for it to be used to monitor fishing activity. The system takes into account links between vessel registration procedures, procedures for granting fishing licences and permits, and catch registration and accounting procedures. It has a statistical mechanism which enables a comprehensive set of reports to be generated. In addition, the system has a module for entering electronic reports into the database, which are submitted in accordance with Council Regulation (EC) No 1224/2009[1] and Commission Implementing Regulation (EU) No 404/2011[2]. The system was designed using the latest IT technology which, among other things, means it is able to operate more functionally, faster and can be accessed by all authorised users via the internet. A new 'infringements module' was added to the existing system in 2015 to allow users

[1]Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006 (OJ L 343, 22.12.2009, p. 1, as amended).
[2] Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy (OJ L 112, 30.4.2011, p. 1-153).

to record any infringements committed by Polish fishing vessels and document all stages of relevant administrative procedures.

Vtrack – a modern satellite fishing vessel monitoring system – became fully operational in 2009 and was functioning properly in 2019.

ERS-Vcatch, an electronic recording and reporting system allowing fishing and landing documents under Council Regulation (EC) No 1224/2009 and Commission Implementing Regulation (EU) No 404/2011 to be filed electronically, was deployed in January 2011. All Polish vessels over 12 metres in overall length have been equipped so that fishing activity and landing/transshipment declarations can be recorded and reported electronically. In 2020, all catch taken by those vessels was recorded using electronic logbooks.

The automatic SMS-based system for advance registration deployed in 2011 was functioning properly in 2020. Data transmitted from fishing vessels were automatically – in real time – recorded in a single database, which could be accessed by inspectors via the internet.

A balance between fishing capacity and available marine biological resources must be achieved in order to ensure effective fleet management. Adapting the size and structure of the fleet to the fishing opportunities available to Poland will therefore be crucial in the near future. The management rules for both areas which have so far been based on provisions resulting directly from EU law and the 2004 Act have been modified and enhanced in the new Sea Fisheries Act of 19 December 2014, in force since 4 March 2015.

Under those rules, the minister responsible for fisheries is empowered to manage fishing capacity, enabling efficient use to be made of the fishing capacity ceiling allocated to Poland (GT/kW), which, due to its progressively decreasing size, should be linked – whenever possible – to vessels actively involved in commercial fishing. The provisions set out the following:

- three fleet segments will be designated by area of operation (fleet segments comprising vessels used in commercial fishing in the Baltic Sea, Vistula Lagoon/Szczecin Lagoon and deep sea areas):
- the minister responsible for fisheries will establish how spare fishing capacity is managed, including through support measures for fleet modernisation;
- measures will be taken to prevent excessive fragmentation of fishing capacity due to ‘duplication’ (such as refusing to register more than one fishing vessel in the fleet register to replace a previously withdrawn vessel).

VII. SECTION E

Information on changes to fleet management administrative procedures

In 2020, work was completed on the Regulation of the Minister for Agriculture and Rural Development amending the Regulation on the detailed method for allocating overall and additional fishing quotas, and the Regulation of the Minister for Agriculture and Rural Development establishing conversion factors for 2021 applicable to the quantity of marine organisms belonging to species for which individual fishing quotas are exchanged between vessel owners and laying down detailed conditions for the exchange of such quotas.

The Regulation of the Minister for Agriculture and Rural Development on the detailed method for allocating overall and additional fishing quotas was issued due to the need to optimise the allocation method for cod quota and the use of this quota, and to enable further fishing activities by those operators which had used cod quota and were interested in catching additional cod. The previous restriction laid down in Section 10a(2) of that Regulation prevented cod quota from being allocated more than twice to the same vessel owner.

To enable further fishing activity by those operators which had used cod quota and were interested in catching additional cod, it was necessary to amend the Regulation.

The Regulation of the Minister for the Maritime Economy and Inland Waterways establishing conversion factors for 2021 applicable to the quantity of marine organisms belonging to species for which individual fishing quotas are exchanged between vessel owners and laying down detailed conditions for the exchange of such quotas, was issued in order to allow fishing quotas to be exchanged between vessel owners. When adopting the conversion factors laid down in the aforementioned Regulation, account was taken of Council Regulation (EU) 2020/1579 of 29 October 2020 fixing for 2021 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Baltic Sea and amending Regulation (EU) 2020/123 as regards certain fishing opportunities in other waters (OJ L 362, 30.10.2019, p. 3). This Regulation establishes the overall catch quotas for individual species of marine organisms subject to restrictions. Suggestions from the fishing community and the current market value of individual species of marine organisms were also taken into account when determining the conversion factors. In accordance with the detailed conditions for exchanging individual catch quotas proposed in the Regulation, a minimum quantity of 1 kg or 1 unit of marine organisms applies when exchanging individual catch quotas. This rule is to avoid any attempt to exchange smaller quantities of marine organisms.

VIII. SECTION F

Estimation and discussion of balance indicators

At the request of the Fisheries Department at the Ministry of Agriculture and Rural Development, the National Marine Fisheries Research Institute (*Morski Instytut Rybacki-Państwowy Instytut Badawczy*) in Gdynia prepared the following indicators to assess the balance between fishing capacity and fishing opportunities.

The methodology used to calculate these indicators is consistent with the European Commission's 'Guidelines for the analysis of the balance between fishing capacity and fishing opportunities according to Article 22 of Regulation (EU) No 1380/2013 of the European Parliament and the Council on the Common Fisheries Policy'.

The National Marine Fisheries Research Institute calculated the indicators below for each segment of the Polish Baltic fleet. It also analysed and interpreted the results of these indicators, which served as a basis for it to assess the balance between fishing capacity and fishing opportunities in each segment of the Polish Baltic fleet for the next 3 years:

1. **Biological indicators, 2018-2020:**
   - ***Sustainable harvest indicator,***
   - ***Stocks at risk indicator.***
2. **Economic indicators, 2017-2019:**
   - ***Return on investment (ROI) vs next best alternative,***
   - ***Ratio between current revenue and break-even revenue (CR/BER) indicator.***
3. **Technical indicators, 2018-2020:**
   - ***Vessel utilisation indicator,***
   - ***Inactive fleet indicator.***

The indicators were analysed for the following segments of the Polish fishing fleet[3]:

- **VL0010 PG** - vessels up to 10 m in overall length using nets and other passive gear,
- **VL1012 PG** - vessels between 10 m and 12 m in overall length using nets and other passive gear,
- **VL1218 DFN** - vessels between 12 m and 18 m in overall length using nets,
- **VL1218 DTS** - demersal trawlers between 12 m and 18 m in overall length,
- **VL1824 DTS** - demersal trawlers between 18 m and 24 m in overall length,
- **VL1824 TM** - pelagic trawlers between 18 m and 24 m in overall length,
- **VL2440 TM** - pelagic trawlers between 24 m and 40 m in overall length.

Data sources for biological indicators have not changed in terms of the assumptions upon

[3] Fleet segmentation in line with Commission Delegated Decision (EU) 2019/910 of 13 March 2019 establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sectors (Table 5B).
For reasons of data confidentiality, deep-sea vessels were excluded from the analysis. As there are few such vessels (two vessels) and their technical parameters and catch composition differ considerably from Baltic vessels, it would not be justified to cluster them with any Baltic fleet segment.

which previous reports were based. Data are taken from ICES advisory documents for Baltic stocks for 2020 and 2021, and catch data from 2018-2020. The economic data used for 2017-2019 were collected and approved (with the exception of 2019) under the EU Data Collection Framework (DCF EU). The catch and landing data used for the report were made available in the ERS system by the Fisheries Department of the Ministry of Agriculture and Rural Development, via the Fisheries Monitoring Centre (*Centrum Monitorowania Rybołóstwa*).

Biological indicators: sustainable harvest indicator, stocks at risk indicator and **technical indicators**: inactive fleet indicator and vessel utilisation indicator were prepared for the period **2018-2020**. Following the cycle for collecting economic data which is determined by the dates for submitting form RRW-19 to the National Marine Fisheries Research Institute (report on the economic performance of fishing vessels for the year), it is possible for **economic indicators** to be calculated **up to the year 2019**.

Table 9 provides a summary of the values of certain parameters which are important for analysing the sustainability of fleet activity.

Detailed definitions for each of the indicators are presented later on in this chapter. For the reader's convenience, a basic interpretation is provided below:

- Biological indicators:

- **Sustainable harvest indicator (SHI)** is a measure of how much a segment relies on stocks that are 'overfished' (meaning catch is above MSY). If the indicator is greater than 1, this corresponds to 'overfishing' and means the situation is negative. The higher above 1 the indicator is, the greater the fishing imbalance. The indicator should ideally be at around 1.
- **Stocks at risk indicator (SRI)** is a measure of how many stocks fished by the segment have significantly reduced biomass (usually below the threshold necessary to replenish successfully; such stocks are identified as 'at risk'). Stocks at risk which are exploited by the segment are taken into account if catch from such stocks make up at least 10% of the segment's catch, or if the segment takes at least 10% of the catches of the stock. If, for example, the value of the indicator is 2, this means that the segment catches two stocks at risk. If the value is 0, this means that no stocks at risk are caught by the segment (taking into account the condition of at least 10%).

- Economic indicators:

- **Return on investment (ROI) vs next best alternative indicator** – the return on investment indicator assesses the efficiency of the assets (capital) bound to the economic activity. If the value of the indicator is greater than 0, this means that the assets used generate income. Where this is the case, the indicator is interpreted according to the opportunity cost of capital and interest rate (0.25% in 2019). If the value of the indicator is above zero but below the interest rate, this means that there are better alternatives in which to invest capital. If the ROI indicator is below 0, this means that the activity is not profitable.
- **The ratio between current revenue and break-even revenue indicator (CR/BER)** constitutes a profitability threshold which indicates if revenue is equal to the fixed and variable

costs of a segment. If the ratio between current revenue and break-even revenue is less than one, this is an indication of short-term economic inefficiency which may suggest an imbalance.

- Technical indicators

- **Vessel utilisation indicator** – the ratio between the effort of a given fleet segment and the observed maximum effort actually expended by a segment (in kWdays or GTdays). Values below 70% could mean significant under-utilisation, which may indicate technical overcapacity.
- **Inactive fleet indicator** – the ratio in terms of the number of vessels, GT and kW between inactive vessels and the entire fleet. Under normal conditions, up to 10% of vessels in a fleet segment can be expected to be inactive.
  If more than 20% of the fleet segment is recurrently inactive or if the average activity level of vessels in a fleet segment is consistently less than 70% of the potential workable activity of comparable vessels, this could indicate technical inefficiency, which may suggest an imbalance.

Biological indicators, 2018-2020

1. Sustainable harvest indicator

The sustainable harvest indicator (SHI) is a measure of how much a fleet segment relies on stocks that are overfished. 'Overfished' means that a stock is fished above the fishing mortality rate (F), in excess of the reference value. In line with the European Commission's guidelines, the Fmsy fishing mortality rate, i.e. the rate which results in a stock size that produces the maximum sustainable yield (MSY) over a multi-year period, was adopted as a reference fishing mortality.

The sustainable harvest indicator (SHI) for the fleet segment is determined on the basis of all stocks exploited by the segment for which data are available to calculate the F/Fmsy ratio. The sustainable harvest indicator is an average of the F/Fmsy ratio for individual stocks (i) weighted by the value of the landings of that stock by the segment concerned (Vi):

$$SHI=\frac{\sum_{i=1}^{i=n} V_i \frac{F_i}{Fmsy_i}}{\sum_{i=1}^{i=n} V_i},$$

where 'n' represents the number of stocks taken into account.

The lower the value of the indicator, the less dependent the given fleet segment is on overfished stocks. The optimal situation is where all Fi/Fmsyi values are close to 1, meaning the value of the SHI indicator is also close to 1 and stocks are exploited close to MSY. According to guidelines from the Scientific, Technical and Economic Committee for Fisheries (STECF), the indicator is deemed unavailable if more than 60% of the value of the catch taken by the segment is made up of stocks for which the fishing mortality rate or Fmsy are lacking.

The SHI was calculated on the basis of stocks for which the F/Fmsy ratio could be established based on ICES assessments and analyses. Those stocks are:

a) Western Baltic cod (sub-areas 22-24)*,
b) Eastern Baltic cod (sub-areas 24-32)**,
c) Western Baltic herring (sub-areas 20-24),
d) Central Baltic herring (sub-areas 25-29 and 32),
e) Baltic Sea sprat (sub-areas 22-32).

* In spring 2021, ICES decided to postpone its assessment of Western Baltic cod stocks until difficulties over the quality of the assessment could be resolved (depending on the agreement of the European Commission, this may take several months). The ICES stock assessment for the previous year and the 2020 fishing mortality forecast from the previous year's assessment were therefore used in order to determine the F/Fmsy for 2020.

** No Fmsy values have been determined for Eastern Baltic cod. However F/Fmsy assessments based on the stock-production model (SPiCT) are available and were used to calculate the SHI.

For the period 2018-2019, the value of landings of the aforementioned stocks (listed under points a. to e.) was less than 40% of the total value of landings only in segments VL0010PG and

VL1012PG in 2019. In 2020, as there were almost no landings of cod, the value of such landings was below 40% in four of the seven segments (Table 3a). For those years and segments, the SHI indicator can be considered unavailable, although it has been calculated and is presented in this report.

Table 3a. Value of total landings of cod, herring and sprat as a percentage of the value of total landings by segment (values below 40% are shown in red)

Segment	2018	2019	2020
VL0010PG	17	13	10
VL1012PG	43	33	18
VL1218DFN	46	62	9
VL1218DTS	54	53	36
VL1824DTS	71	63	55
VL1824TM	94	96	80
VL2440TM	98	91	87

The SHI indicator values are presented in Table 3b. The values calculated for 2020 are presented alongside updated calculations for 2018-2019 resulting from changes in the F/Fmsy level in subsequent stock assessments by ICES.

Table 3b. Sustainable harvest indicator (SHI) for Polish fleet segments under review, 2018-2020

Segment	2018	2019	2020
VL0010PG	2.51*	2.53*	1.91*
VL1012PG	2.68	2.78*	1.92*
VL1218DFN	2.82	3.16	1.31*
VL1218DTS	2.54	2.64	1.50*
VL1824DTS	2.33	2.46	1.36
VL1824TM	1.84	1.93	1.63
VL2440TM	1.70	1.75	1.65

* the indicator for this year and segment is considered unavailable as less than 40% of the landings of the segment during this period was based on stocks for which there was an F/Fmsy ratio.

During the years under review, all fleet segments were heavily reliant on overfished stocks. The SHI exceeded 1 and, between 2018 and 2019, exceeded 2 in all segments other than VL1824TM and VL2440TM. In segments VL1012PG, V1218DFN, V1218DTS and V1824DTS, which had the highest indicator values in 2018 and 2019, cod accounted for 30-50% of the value of landings. In 2020, the SHI decreased in all segments, most notably in those segments which, until now, targeted cod. During the period under review, in terms of catch sustainability, the best segments were those fishing mainly herring and sprat, i.e. VL1824TM and VL2440TM. However, even in those segments the SHI indicator was far greater than 1.

2. Stocks at risk indicator

The stocks at risk indicator (SRI) aims to determine the catch taken by a given fleet segment from stocks with heavily reduced biomass and in a condition such that stock productivity may be greatly diminished. In accordance with the Commission's guidelines, a stock at risk is a stock:

a) with reproductive biomass below Blim;
b) for which closure has been recommended, targeted fishing banned, catch reduced to the lowest possible level, etc.;
c) subject to regulations on returning fish unharmed to the sea or banning landings;
d) on the 'red list' or listed by CITES.

The indicator is calculated as the number of stocks exploited by a given segment which meet the following conditions:

1) landings from stocks considered to be at risk make up more than 10% of the fleet segment's landings

or

2) more than 10% of the fleet segment's landings are from stock considered to be at risk.

The calculation formula is as follows:

$SRI=\sum_{i=1}^{i=n}$ (1 where ($C_i > 0.1\ C_t$) *or* ($C_i > 0.1T_i$); *otherwise* 0),

where
Ci – landings from stock i,
Ct – total landings of all stocks taken by the fleet segment,
Ti – total landings of stock i taken by all segments.

Of the stocks which were analysed, the following met the 'at risk' criteria:

a) Western Baltic herring in 2018-2020 as the stock biomass was lower than Blim during that period;
b) Western Baltic cod in 2018 as the stock biomass was lower than Blim in that year, contrary to 2019-2020 when Blim was exceeded;
c) Eastern Baltic cod in 2018-2020 as the stock biomass was lower than Blim during that period.

If, for example, the value of the SRI indicator is 2, this means that the segment catches two stocks at risk. If the value is 0, this means that no stocks at risk are caught by the segment (taking into account the condition of at least 10%). The SRI values calculated for the segments of the Polish fleet which were analysed are presented in Tables 4(a) to (c) below.

Table 4. Stocks at risk indicator (SRI) for Polish fleet segments under review, 2018-2020

a) 2018

Segment	Herring landings 20-24 ('000 tonnes)	Cod landings 22-24 ('000 tonnes)	Cod landings 24-32 ('000 tonnes)	Segment landings ('000 tonnes)	Indicator
VL0010 PG	0.29	0.02	0.53	5.62	1
VL1012 PG	0.27	0.12	1.11	4.95	2
VL1218 DFN	0.00	0.02	0.21	0.40	2
VL1218 DTS	0.21	0.46	1.81	11.65	2
VL1824 DTS	0.03	0.23	1.50	11.13	2
VL1824 TM	0.00	0.00	0.53	24.73	1
VL2440 TM	0.94	0.00	0.27	98.95	1
Total	1.74	0.86	5.96	157.43	

b) 2019

Segment	Herring landings 20-24 ('000 tonnes)	Cod landings 24-32 ('000 tonnes)	Segment landings ('000 tonnes)	Indicator
VL0010 PG	0.21	0.22	6.98	1
VL1012 PG	0.10	0.39	3.98	1
VL1218 DFN	0.00	0.12	0.31	1
VL1218 DTS	0.11	1.07	11.00	2
VL1824 DTS	0.03	0.91	11.52	1
VL1824 TM	0.00	0.41	18.49	1
VL2440 TM	0.63	0.19	93.69	1
Total	1.08	3.31	145.96	

c) 2020

Segment	Herring landings 20-24 ('000 tonnes)	Cod landings 24-32 ('000 tonnes)	Segment landings ('000 tonnes)	Indicator
VL0010 PG	0.08	0.01	2.80	1
VL1012 PG	0.02	0.02	2.65	0
VL1218 DFN	0.00	0.01	0.15	0
VL1218 DTS	0.07	0.21	15.04	2
VL1824 DTS	0.00	0.11	1.56	1
VL1824 TM	0.02	0.02	29.96	0
VL2440 TM	0.36	0.01	77.86	1
Total	0.55	0.39	130.03	

In 2018-2020, there were no fleet segments in which Western Baltic cod and herring landings exceeded 10% of the segment's landings (condition 1 regarding reliance on catch from stocks at risk). Landings of Western Baltic cod are limited and represented less than 1% of the Polish fleet's total landings. Similarly, landings of Western Baltic herring were relatively small, accounting for no more than 1% of the fleet's landings during the period under review. However, in some cases, landings of stocks at risk by a given segment represented over 10% of the landings of that stock by all segments (condition 2 regarding reliance on catch from stocks at risk). In the case of Eastern Baltic cod in 2018, some segments fulfilled both conditions regarding reliance on catch from stocks at risk.

Over the period 2018-2019, the SRI indicator in each segment was 1 or 2 (and never 0). In 2020, the stocks at risk indicator decreased, and was zero in segments VL1012PG,

VL1218DFN and VL1824TM (Table 4 a, b, c). Segment VL1218DTS was the segment most reliant on stocks at risk, with an SRI of 2 (the segment exploits two stocks at risk, taking into account the condition that the indicator only includes stocks at risk which make up at least 10% of the segment's total catch, or if the segment takes at least 10% of the catches of the stock).

Economic indicators, 2017-2019

1. Return on investment (ROI) vs next best alternative

The return on investment indicator is a measure of the efficiency of an undertaking's operations, enabling the efficiency of the assets (capital) bound to the economic activity to be assessed. **If the value of the indicator is greater than 0, this means that the assets generate income**. In this scenario, the interpretation of the indicator depends on the opportunity cost of capital. **If the ROI indicator is below 0, this means that the activity is not profitable** and that capital would be better used elsewhere (e.g. in the form of long-term risk-free securities or other revenue sources). The differences in indicator values for individual fleet segments show which group of vessels (vessel segment) operates making the most efficient use of assets. The indicator is calculated in terms of the profitability of an undertaking relative to the value of its fixed assets (value of the vessel).

Table 5 presents the value of the ROI indicator and the data used to calculate it (N.B.: in the table, subsidies, however, were not taken into account when calculating the indicator).

Table 5. Return on investment indicator for Polish Baltic fleet segments in 2019 (in '000 EUR)

No	Specification	VL0010PG	VL1012PG	VL1218DFN	VL1218DTS	VL1824DTS	VL1824TM	VL2440TM	Total
1.	**Total revenue, of which:**	16 134	5 571	527	5 977	4 590	4 112	19 693	56 604
1.1	income from landings	8 051	3 137	304	4 939	4 130	3 622	19 691	43 874
1.2	other income	200	105	4	89	27	44	1	471
1.3	subsidies*	7 883	2 329	219	949	434	446	0	12 259
2.	**Total costs, of which:**	9 815	3 694	869	5 227	3 520	3 155	13 431	39 711
2.1	wages	2 618	1 137	329	1 246	668	905	4 330	11 235
2.2	unpaid work	3 658	702	187	356	242	528	697	6 369
2.3	energy consumption	701	419	90	1 479	1 037	431	2 923	7 079
2.4	repair and maintenance	504	225	46	528	446	366	1 622	3 739
2.5	other variable costs	1 368	608	101	489	301	145	781	3 793
2.6	fixed costs	813	454	67	857	577	298	2 353	5 419
2.7	depreciation	151	149	50	273	247	482	725	2 077
3.	Profit/loss (revenue minus subsidies – total costs)	-1 563	-452	-561	-199	636	511	6 262	4 633
4.	Fixed assets (value)	22 106	14 106	3 119	12 160	10 769	11 559	38 658	112 477
5.	**ROI (profit/fixed assets)**	**-7.07%**	**-3.20%**	**-18.00%**	**-1.64%**	**5.91%**	**4.42%**	**16.20%**	**4.12%**

* not included in ROI calculations

Terms and definitions:

Income from landings - estimate based on data from first-sale documents. In the absence of such documents – this applies to sales of vessels of less than 8 m in length and cases where certain data relating to vessels over 8 m are incomplete – the value of fish sales was calculated with reference to average annual prices of individual fish species by vessels which submitted first-sale documents, and to data relating to the value of catch taken by the entire fleet.

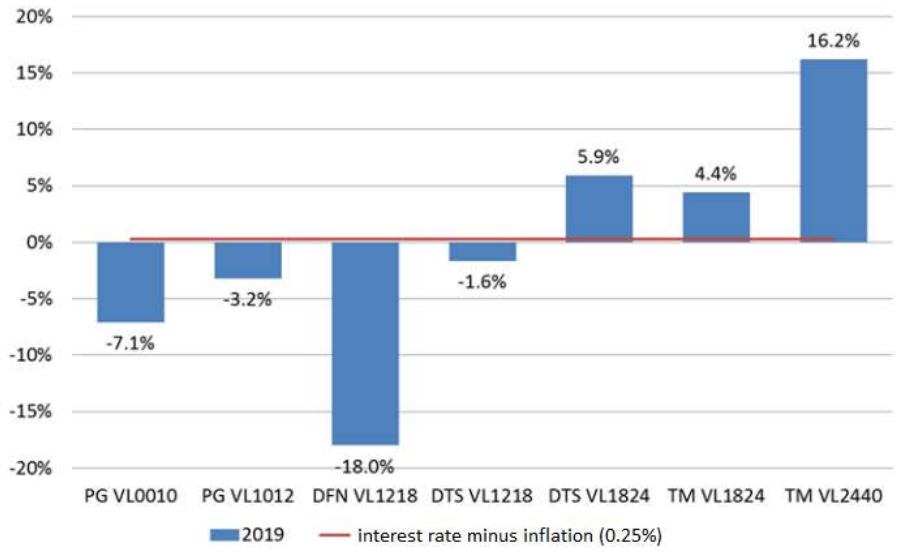
Other income - additional income from accompanying activities such as tourism or occasional activities.

Subsidies – mostly includes public aid granted to fishing vessel owners under the 'Fisheries and the Sea' Operational Programme, mainly in the form of compensation payments for temporary cessation of fishing activity and subsidies for vessel modernisation.

Wages – includes gross wages plus benefits.

Unpaid work – estimated value of unpaid work (e.g. owners and their families).
Energy consumption – covers fuel and lubricants used by vessels..
Repair and maintenance – technical support services for fishing vessels and equipment. Mostly provided as external services (e.g. bookkeeping). This includes costs incurred by vessel owners for the purchase of materials and services for ongoing vessel repairs and renovation. Data are determined on the basis of the RRW-19 statistics form.
Other variable costs – includes expenditure on fishing gear, ice, fish boxes, protective clothing, other materials, crew catering services, port and landing fees.
Fixed costs – costs not related to catch, incurred in respect of applicable fees, property insurance, protection measures, external services (except for renovation), financial costs, other costs, etc.
Depreciation – annual depreciation calculated on the basis of accounts, declared by fishing enterprises in RRW-19 forms.
Value of fixed assets – specified separately for each fishing vessel on the basis of a compensation rate obtainable by vessel owners where vessels are withdrawn with public aid.
Profit or loss – calculated on the basis of the above data as the difference between income from landings plus other income and total costs; does not include subsidies.
ROI – indicates profit or loss relative to the value of fixed assets.

Figure 1: Return on investment (ROI) indicator for Polish Baltic fleet segments (2019)



Interpretation of ROI indicators

Assessed as a whole, the fishing industry became more attractive for investment in 2019. The average return on equity was 4.1%, compared to 3.4% in 2018 and 4.5% in 2017. The return on investment indicator was considerably higher than the next best alternative, which was 0.25% in 2019[4] (indicator corrected for inflation). The improvement in the indicator was largely due to the very good results of pelagic segment VL2440TM, which generates the largest income. In 2019, the total costs of the Polish Baltic fleet were 12% lower than in 2018. This decrease was mainly due to a reduction in the two most important cost items, namely wages (-13%) and fuel (-21%). Overall, despite a fall in income from landings, profit increased by 20%.

The ROI indicator varied across individual vessel segments. Segments made up of smaller vessels continued to have a visibly lower ROI than segments comprising large vessels. Four segments had a negative indicator value, namely VL0010PG, VL1012PG, VL1218DFN

[4] Long-term interest rate for convergence purposes, https://ec.europa.eu/eurostat/databrowser/view/tec00118/default/table?lang=en, price index (inflation) - https://ec.europa.eu/eurostat/databrowser/view/irt_lt_mcby_a/default/table?lang=en

and VL1218DTS.

Segment **VL0010PG** had a negative ROI of -7.1% (-16.4% the previous year). The high relative improvement in the indictor was due to the extremely low reference base (high operating deficit of the segment in 2018). Compared to 2017 (-8.1%), the indicator improved only slightly, or rather remained stable (below zero). The negative indicator value, which is well below the level of the next best alternative (0.25%) means that the segment can be characterised as overcapitalised.

In 2019, the ROI indicator deteriorated in segment **VL1012PG**. The ROI indicator in 2018 (1.9%) was slightly higher than the next best alternative (1.6%) of investing in fishing capital. Nevertheless, the slight difference between the value of the indicator and the next best alternative suggested that an alternative capital investment may be more profitable, meaning that there is overinvestment in the fleet and it is economically inefficient. The negative return on investment suggests economic overcapitalisation of the segment. Due to the sharp decline in income from landings in 2020, the inefficient use of capital is expected to continue this year.

Between 2015 and 2017, the ROI indicator for segment **VL1218DFN** was hovering around the zero mark. However, in 2018 it deteriorated significantly, falling to -3.5%. A clear decline in the segment's economic status was observed in 2019, as demonstrated by the high negative ROI (-18%). Despite the negative financial performance, the segment increased in size by three vessels in 2019. This increased the asset (capital) value, thereby further reducing its efficiency. As with the previous segment, a negative indicator suggests overcapitalisation of the segment. Based on the decline in income, the deficit in the sector is expected to increase further in 2020.

Segment **VL1218DTS** generated a loss of approximately EUR 0.2 million in 2019. This resulted in a negative ROI indicator for the segment (-1.6%). In the years prior to this, the segment's performance had been satisfactory, albeit declining. The fall in profitability of the segment in 2019 was mainly due to a decline in income from landings (-16%). Vessels of between 12 m and 18 m in length specialise in bottom trawling for cod and flounder. In 2018, cod accounted for 44% of the value of landings. In 2019, the value of cod landings fell by 25% compared to 2018. A negative ROI indicator points to overcapitalisation of the segment and economic efficiency. On the basis of the landing performance for 2020, it is difficult to predict whether the indicator may improve or deteriorate in value.

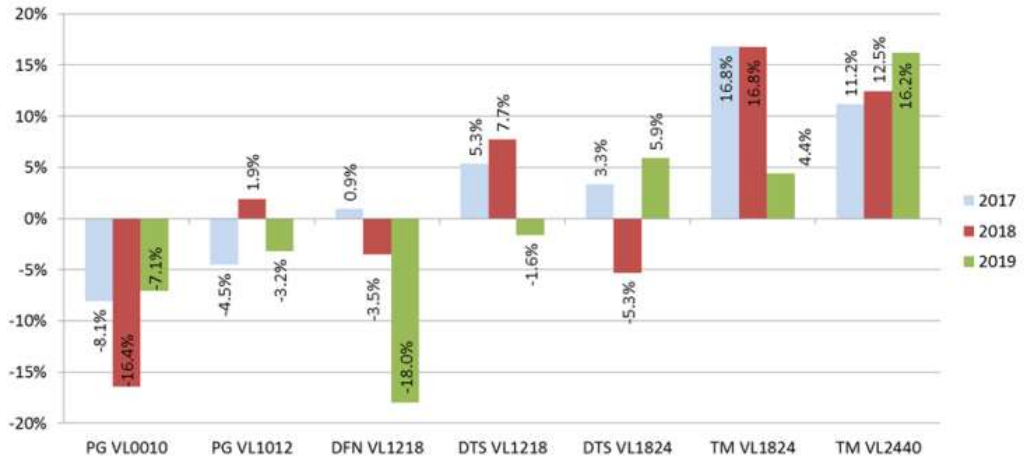
The return on investment indicator improved for segment **VL1824DTS** (from -5.3% to 5.9%), i.e. vessels with a similar operating profile to those in the segment referred to previously. The increase in the value of the indicator was a consequence of falling costs, mainly wages (-39%) and energy (-9%). In 2019, the fishing effort of the segment and the value of landings fell by 13% compared to 2018. Nevertheless, as cod accounts for a large share of income, it is difficult to assess whether the segment is economically stable. In accordance with the interpretative guidelines, the value of the indicator for this segment points to a shortage of invested capital. With the number of vessels having fallen significantly, from 25 in 2019 to 13 in 2020 (as a result of transferring to segment VL1824TM), if such a conclusion were justified,

it would have greater relevance for this pelagic segment.

The previous two segments bring together vessels which specialise in catching sprat and herring using pelagic trawls. As in previous years, the financial performance of both groups of vessels was positive, meaning that the ROI indicator also remained positive. In the first of those segments (**VL1824TM**) the ROI indicator for 2019 was 4.4% (16.8% in 2018). In 2019, the catch taken by segment VL1824TM was significantly lower than in 2018 (-23%), which translated into a 30% decrease in income earned from landings. The indicator deteriorated directly as a result of this. In 2019, the indicator was higher than the next best alternative for investing capital (reference value). In 2020, income from landings in the sector increased significantly. However, as the number of vessels in the segment increased at the same time (from 30 to 44 vessels), operating costs and invested assets are expected to increase, which will impact the efficiency of the segment.

The financial performance of segment **VL2440TM** has been satisfactory in recent years, translating into high ROI values. The ROI indicator increased from 12.5% in 2018 to 16.2% in 2019. Economic efficiency indicators improved thanks to a fall in operating costs, mainly fuel (-34%) and wages (-17%), following a reduction in fishing effort (number of fishing days). In accordance with the guidelines for interpreting the indicators, the segment may be characterised by a shortage of capital.

Figure 2. Changes in the ROI indicator, 2017-2019



2. Ratio between current revenue and break-even revenue (CR/BER) indicator

The CR/BER indicator constitutes a profitability threshold which indicates if revenue is equal to the fixed and variable costs of a segment. Break-even revenue (BER) is the amount of revenue equivalent to all costs, whereas current revenue (CR) is the total operating revenue of a vessel or segment. The CR/BER indicator shows how close a fishing vessel is to becoming financially viable in the short-term. **If the ratio is greater than 1, revenue is greater than or equal to fixed and variable costs, meaning that the segment is profitable. If the ratio is less than 1, the fleet/segment does not generate sufficient revenue to cover its costs. A negative CR/BER indicator means core activity is unprofitable and fixed costs cannot be covered (variable costs are higher than the revenue of the segment)**.

The CR/BER parameter is assessed in order to consider the financial viability of a given segment and the ratio between operating revenue and costs according to their degree of variability. The break-even point can serve as a comparison against revenue obtained. Segments which demonstrate that they can at least fully break even receive a positive assessment ('1').

A long-term downward trend in the BER indicator is a sign of an improved ratio between these key economic parameters (revenue/variable costs/fixed costs) and the increased profit-making potential of the segment.

The CR/BER indicator by fleet segment in 2019 is presented in Table 6.

Table 6. CR/BER (current revenue/break-even revenue) indicator in 2019 (in '000 EUR)

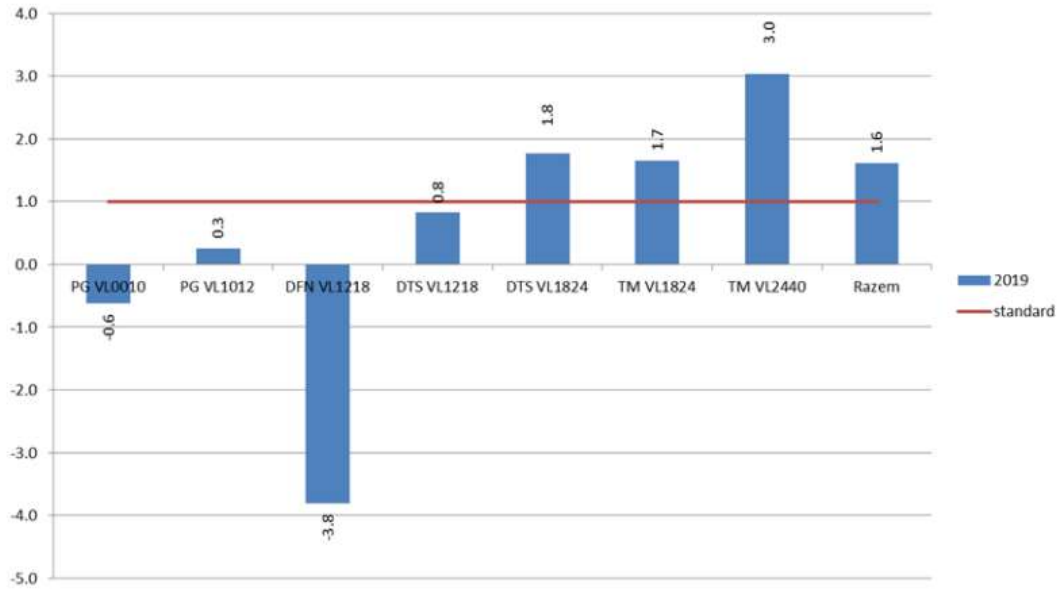
No	Specification	VL0010PG	VL1012PG	VL1218DFN	VL1218DTS	VL1824DTS	VL1824TM	VL2440TM	Total
1.	**Total revenue (CR), of which:**	**16 134**	**5 571**	**527**	**5 977**	**4 590**	**4 112**	**19 693**	**56 604**
1.1	income from landings	8 051	3 137	304	4 939	4 130	3 622	19 691	43 874
1.2	other income	200	105	4	89	27	44	1	471
1.3	subsidies	7 883	2 329	219	949	434	446	0	12 259
2.	**Variable costs, of which:**	**8 850**	**3 091**	**753**	**4 097**	**2 695**	**2 375**	**10 353**	**32 215**
2.1	wages	6 277	1 839	516	1 602	911	1 433	5 027	17 604
2.2	energy consumption	701	419	90	1 479	1 037	431	2 923	7 079
2.3	repair and maintenance	504	225	46	528	446	366	1 622	3 739
2.4	other variable costs	1 368	608	101	489	301	145	781	3 793
3.	**Fixed costs, of which:**	**964**	**603**	**117**	**1 130**	**825**	**780**	**3 078**	**7 497**
3.1	non-variable costs	813	454	67	857	577	298	2 353	5 419
3.2	depreciation	151	149	50	273	247	482	725	2 077
3.3	opportunity cost (not included)*	53	34	7	29	26	28	93	270
4.	**Revenue minus subsidies to ensure profitability (BER)**	-13 275	12 924	-81	6 103	2 346	2 215	6 490	27 406
5.	**CR/BER**	**-0.6**	**0.3**	**-3.8**	**0.8**	**1.8**	**1.7**	**3.0**	**1.6**

* As in previous years, the calculation method includes a short-term analysis, meaning that the opportunity cost, although shown in the table, is not taken into account in the calculations.

Terms and definitions:
Fixed costs – costs calculated independently of the catch volume associated with the activities of fishing enterprises.
Variable costs – costs determined on the basis of the catch levels (effects) or fishing effort of fishing enterprises.

Other fixed costs – costs not directly associated with fishing vessel catch volumes (including port fees, external services, insurance, financial and other costs).
Opportunity cost – should only be included in long-term assessments. This is the cost of using capital for the next best alternative.
CR (current revenue) – total current revenue.
BER (break-even revenue) – revenue which would cover all (fixed and variable) costs and mean a normal profit is generated (0).

Figure 3. CR/BER indicators by fleet segment, 2019 (public subsidies excluded from calculations).



Interpretation of CR/BER indicators

Following a decrease in the value of the CR/BER indicator between 2016 and 2018, from 2.2 in 2016 to 1.7 in 2017 to 1.5 in 2018, the indicator increased to 1.6 in 2019. As mentioned above, this was due to total costs decreasing more (-12%) than income from landings (-10%).

The sharp decline (-3.5) in 2018 in the indicator for the segment comprising the smallest vessels (segment **VL0010PG**) was not repeated the following year. However, due to operating losses, the indicator remained negative (-0.6), a sign that the segment is still economically unsustainable. In order for the indicator to improve, it is necessary for income from landings to increase or fixed and variable costs to decrease. In 2020, it is more likely that the indicator will deteriorate as a result of a 60% decrease in the catch value. A considerable reduction in variable costs is also to be expected (due to a 50% decrease in the number of fishing days). By contrast, with the number of vessels in the segment remaining constant, only a limited reduction in fixed costs is likely. If subsidies had been taken into account when calculating the indicator, a high positive value would have been recorded (+3.9).

The indicator for segment **VL1012PG** was slightly lower than recommended, falling from 1.35 to 0.3. This was due to the total costs of the segment decreasing far more than income from landings. As a consequence, the segment recorded losses of EUR 0.5 million, compared to a profit of EUR 0.3 million as was the case in 2018. The sharp decline in the value of landings in 2020, despite a significant reduction in fishing effort, may help to keep the indicator below the reference level.

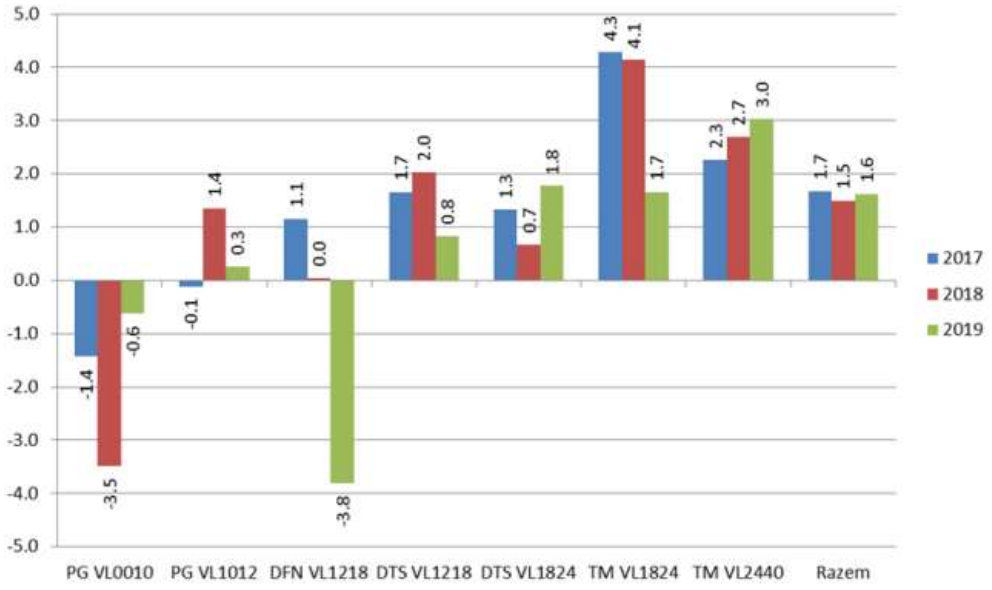
In segment **VL1218DFN**, the considerable reduction in operating revenue and, in relative terms, much lower reduction in costs, resulted in a significant increase in operational losses and, consequently, a negative CR/BER indicator of -3.8, which is therefore below the reference value. The deficit in the segment is so high that the indicator would be negative even after taking subsidies into account. The segment specialises in catching demersal fish with gillnets and is therefore particularly affected by the cod crisis. An additional disadvantage is that due to the type of gear used, there are few alternative species which the segment is able to catch. Far lower prices mean that unlimited quotas for flounder are only partially able to bridge the revenue gap left as a result of halting cod fishing. In 2020, the value of landings by the segment was 52% lower than in 2019. With restrictions on cod fishing continuing in 2021, vessels will remain in a very difficult economic situation.

In 2019, the CR/BER indicator for segment **VL1218DTS** was 0.8, i.e. slightly below the reference value. An indicator value of less than 1 means that the revenue generated by the segment did not cover its variable, fixed or capital costs and that the segment may therefore be overcapitalised. During the previous 3 years, the value of the indicator had far exceeded the desired level (2-2.6), meaning that the segment was generating sufficient revenue to cover its costs. This fall in profitability was mainly due to a decline in income from landings (-16%). Segment VL1218DTS is heavily reliant on cod. In 2018, cod accounted for 44% of the value of landings. In 2019, the value of cod landings fell by 25% compared to 2018. It is difficult to predict whether the indicator will improve or deteriorate in the coming years. With little prospect of cod stocks recovering quickly, this paints a rather bleak assessment of the future economic performance.

The other vessel segments (over 18 meters and over 24 meters) achieved correct CR/BER indicator values in 2019. The indicator values for segments **VL1824DTS and VL2440TM** showed an improvement compared to 2018, achieving 1.8 and 3 respectively. For segment VL1824DTS, this improvement meant that the indicator moved from a negative value (below 1) to a value above the reference level. The segment is therefore once again able to cover its costs through revenue and there is an appropriate amount of capital, if not a shortage, invested. The indicator for segment **VL1824TM** deteriorated (from 4.1 to 1.7), but nevertheless remained above the level expected. The indicator had been very high in previous years, suggesting a possible capital shortage. Consequently, this adjustment could be interpreted as positive. As mentioned above, the high profitability of the segment (based mainly on pelagic fishing) and the poor situation in cod fisheries resulted in vessels transferring to this segment from segment VL1824DTS during 2020. This could have a negative impact on maintaining an appropriate revenue to cost ratio in the segment.

Figure 4 shows the long-term trend in the CR/BER indicator.

Figure 4. CR/BER indicators by fleet segment, 2017-2019



Technical indicators, 2018-2020

1. Vessel utilisation indicator

As in previous years, the vessel utilisation indicator was calculated on the basis of data on Baltic fleet activity provided by the Fisheries Monitoring Centre (*Centrum Monitorowania Rybołóstwa*) from the ERS database and analyses of those data by the National Fisheries Data Collection Programme (NPZDR).

The term 'fishing day' was defined as any continuous period of 24 hours (or part thereof) during which a vessel is present in a given zone and absent from port. For vessels submitting monthly fishing reports, a fishing day was a calendar day. Engine power (kW) and vessel capacity (GT) were determined on the basis of the ERS database for a given day of vessel fishing activity. Consequently, both values are calculated taking into account any changes in vessel parameters during the year. An exception applied to technical data for vessels not found in the ERS database. Where this was the case, values were based on the technical parameters in the fishing vessel register. Furthermore, in contrast to the methodology used to calculate the inactive fleet indicator (which only takes into account the vessels included in the register as at 31 December of the year concerned), the fleet capacity utilisation indicator was calculated taking into account all vessels active during the year (including those which began commercial fishing after 1 January of the year concerned, even if withdrawn from fishing before 31 December). In accordance with the methodology adopted, the actual maximum number of fishing days for the segment concerned was determined taking into account the number of such days reported for the most active vessel in that segment. As in previous years, the theoretical number of fishing days was not calculated.

Data on fleet activity in the Baltic Sea are set out in Table 7.

Table 7. Vessel utilisation statistics by fleet segment, 2018-2020

Year	Segment	No of vessels, power and capacity			Current effort			Maximum theoretical effort (observation data)				INDICATOR	
		No	kW	GT	Days	kWdays	GTdays	Days per vessel[1]	Total days	kWdays	GTdays	kWdays	GTdays
2018	VL0010PG	510	14 220	1 529	40 792	1 141 724	119 598	211	107 610	3 000 420	322 619	38%	37%
	VL1012PG	107	7 218	1 198	8 779	612 766	104 220	206	22 042	1 486 908	246 788	41%	42%
	VL1218DFN	10	1 151	331	999	110 231	30 699	202	2 020	232 502	66 862	47%	46%
	VL1218DTS	49	6 195	1 381	5 188	691 486	154 535	187	9 163	1 158 465	258 247	60%	60%
	VL1824DTS	26	5 898	1 691	2 828	639 403	183 609	188	4 888	1 108 824	317 908	58%	58%
	VL1824TM	32	7 931	1 855	2 910	717 405	180 513	184	5 888	1 459 304	341 320	49%	53%
	VL2440TM	43	17 259	7 255	5 465	2 219 344	939 546	196	8 428	3 382 764	1 421 980	66%	66%
Total 2018		**777**	**59 871**	**15 239**	**66 961**	**6 132 360**	**1 712 721**	**206**	**160 039**	**11 829 187**	**2 975 724**	**51.8%**	**57.6%**
2019	VL0010PG	517	14 411	1 558	44 622	1 315 079	132 953	217	112 189	3 127 187	338 086	42%	39%
	VL1012PG	106	7 077	1 157	8 266	561 736	92 773	169	17 914	1 196 013	195 533	47%	47%
	VL1218DFN	13	1 441	390	688	70 043	19 164	157	2 041	226 237	61 230	31%	31%
	VL1218DTS	52	6 364	1 414	4 491	573 940	126 282	169	8 788	1 075 516	238 966	53%	53%
	VL1824DTS	25	5 676	1 631	2 466	566 887	163 426	155	3 875	879 780	252 805	64%	65%
	VL1824TM	30	7 320	1 689	2 075	513 894	128 966	131	3 930	958 920	221 259	54%	58%
	VL2440TM	43	17 573	7 255	4 871	2 015 167	836 769	192	8 256	3 374 016	1 392 960	60%	60%
Total 2019		**786**	**59 862**	**15 095**	**67 479**	**5 616 747**	**1 500 333**	**200**	**156 993**	**10 837 669**	**2 700 839**	**51.8%**	**55.6%**
2020	VL0010PG	519	14 439	1 549	21 033	566 038	61 122	254	131 826	3 667 506	393 446	15%	16%
	VL1012PG	119	7 815	1 243	5 100	341 753	55 077	131	15 589	1 023 765	162 833	33%	34%
	VL1218DFN	16	1 771	436	574	67 017	15 984	77	1 232	136 367	33 572	49%	48%
	VL1218DTS	45	5 628	1 247	3 270	433 900	94 614	140	6 300	787 920	174 580	55%	54%
	VL1824DTS	13	2 542	741	572	113 997	32 448	123	1 599	312 666	91 143	36%	36%
	VL1824TM	44	10 303	2 643	3 219	751 562	198 192	144	6 336	1 483 632	380 592	51%	52%
	VL2440TM	43	17 730	7 341	4 303	1 813 292	776 499	159	6 837	2 819 070	1 167 219	64%	67%

Total 2020	**799**	**60 229**	**15 201**	**38 071**	**4 087 560**	**1 233 937**	**212**	**169 719**	**10 230 926**	**2 403 385**	**40%**	**51%**

[1]The number of days at sea by the most active vessel in a given segment.

In 2020, as in previous years, the kWdays and GTdays indicators were lower than the reference indicator (0.7) in all segments. In accordance with the guidelines for interpreting the technical indicators, this means there is **potential technical overcapacity throughout the entire Polish Baltic fleet**. In 2020, the indicator for the entire Baltic fleet deteriorated significantly. As already mentioned, this was due above all to the collapse in cod stocks and large-scale aid in the form of compensation for temporary cessation of fishing activities.

A clear deterioration in the indicators for segments **VL0010PG** and **VL1012PG** was recorded. In 2020, in the first of these segments, the kWdays and GTdays indicators decreased by 27 and 23 percentage points respectively compared to 2019. In segment VL1012PG, they decreased by 14 and 13 percentage points respectively. **In the segments comprising vessels up to 10 meters and 12 meters, both indicators are at their lowest level for many years, relative to other segments, suggesting structural technical overcapacity in those segments. That being said, both segments have the largest number of vessels in the Baltic fleet. Inevitably, in such a large group, there can be large internal differences.** Furthermore, segment VL0010PG comprises vessels which fish in waters differing vastly in nature – the Szczecin Lagoon, Vistula Lagoon and open seas.

Segment **VL1218DFN** is the only segment in which the kWdays and GTdays indicators improved significantly, namely by 18 and 17 percentage points respectively. Nevertheless, the indicator remained well below the reference level (48%-49%), close to the level from 2018, pointing to overcapacity in the segment.

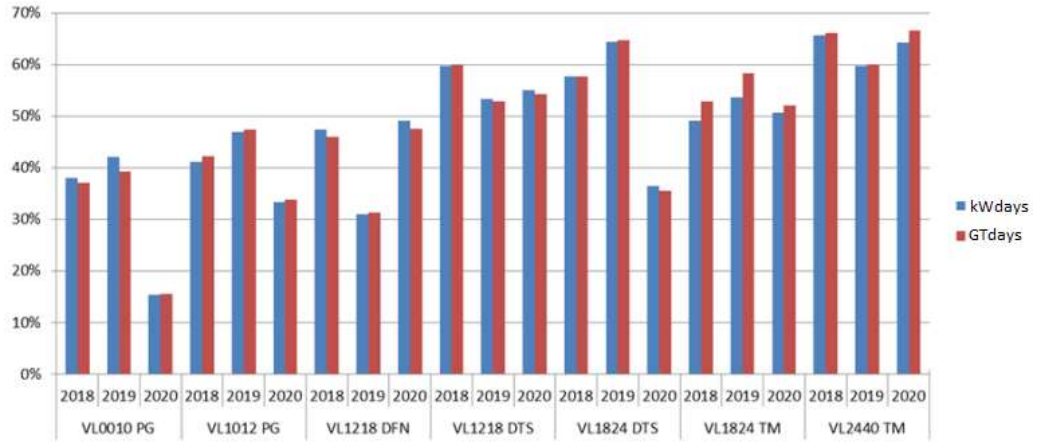
A slight improvement (by 1-2 percentage points) was registered in the indicator for segment **VL1218DTS**. However, it remained well below the reference value, which suggests that technical capacity is not being fully utilised.

In segment **VL1824DTS**, despite a significant reduction in the number of vessels (from 25 to 13), utilisation of technical capacity decreased considerably. The kWdays and GTdays indicators fell by 28 and 29 percentage points respectively, to just 36%. This was a natural consequence of the limited fishing opportunities for cod (the main species caught by the segment). Slight changes in the value of the indicator were registered in the segments targeting pelagic fish.

In segment **VL1824TM**, the kWdays and GTdays indicators fell by 3 and 6 percentage points, to 51% and 52% respectively. The decline in the utilisation of technical capacity may have been due to less technically efficient vessels from segment VL1824DTS transferring to the pelagic segment comprising vessels of between 18 and 24 metres.

After falling the previous year, the indicators for segment **VL2440TM** improved by 4-7 percentage points. Both indicators were at a similar level, but were lower than the reference level (70%), which is a sign of technical overcapacity.

Figure 5. Fleet capacity utilisation in kWdays and GTdays, 2017-2019



2. Inactive fleet indicator

Inactive fleet indicators were calculated on the basis of data for all active and inactive vessels recorded in the EU fishing fleet register by 31 December of the reporting year, pursuant to Commission Implementing Regulation (EU) 2017/218 of 6 February 2017 on the Union fishing fleet register. 'Active vessel' means any vessel fishing on at least one day of the reporting year.

Data analysis was carried out by vessel length (VL) in accordance with the Data Collection Framework (DCF) methodology.

According to the guidelines, inactive vessels constitute unused capacity and as such reduce the technical efficiency and capacity utilisation indicators for the entire fleet.

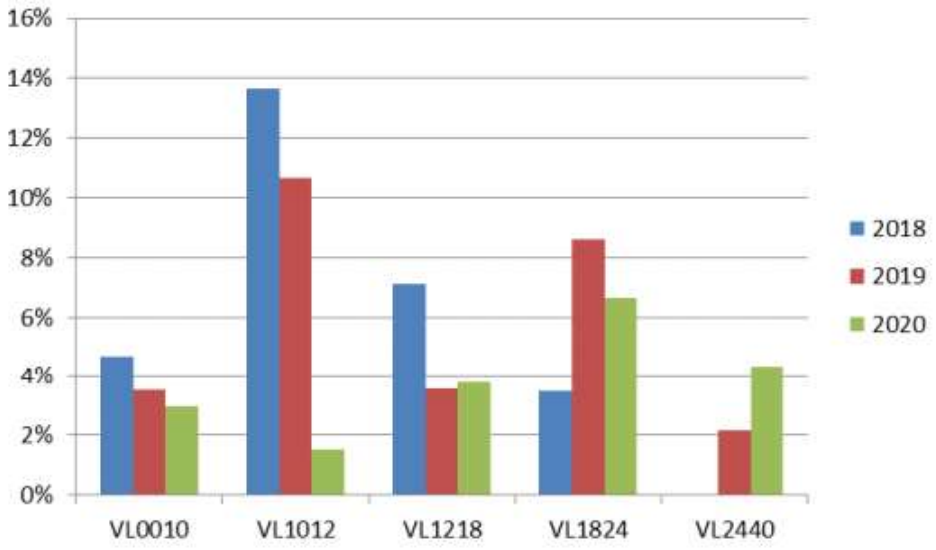
In 2020, the number of inactive vessels in the Polish fishing fleet fell considerably, from 41 to 26 vessels. They accounted for only 3% of all fishing vessels entered in the register (5% in 2019). The highest inactive fleet indicator was for vessels of between 18 and 24 meters (7% or 4 fishing vessels). The indicator did not exceed 4% in any of the other length categories, which can be considered to be low.

Table 8. Fleet activity statistics, 2018-2020

Year	DCF length	Active			Inactive			Inactive/total		
		No	GT	kW	No	GT	kW	No	GT	kW
2018	VL0010	510	1 529	14 230	25	71	387	5%	4%	3%
	VL1012	114	1 284	7 843	18	132	904	14%	9%	10%
	VL1218	52	1 629	6 800	4	70	323	7%	4%	5%
	VL1824	55	3 206	12 737	2	180	455	4%	5%	3%
	VL2440	46	7 386	18 476				0%	0%	0%
	VL40XX	4	24 636	23 436				0%	0%	0%
Total 2018		**781**	**39 670**	**83 522**	**49**	**453**	**2 069**	**6%**	**1%**	**2%**
2019	VL0010	517	1 560	14 420	19	37	201	4%	2%	1%
	VL1012	117	1 306	7 963	14	107	732	11%	8%	8%
	VL1218	54	1 637	6 919	2	41	193	4%	2%	3%
	VL1824	53	3 125	12 325	5	298	988	9%	9%	7%
	VL2440	45	7 241	18 056	1	145	420	2%	2%	2%
	VL40XX	3	16 871	18 140				0%	0%	0%
Total 2019		**789**	**31 740**	**77 823**	**41**	**628**	**2 534**	**5%**	**2%**	**3%**
2020	VL0010	519	1 559	14 472	16	44	380	3%	3%	3%
	VL1012	129	1 378	8 601	2	14	42	2%	1%	0.5%
	VL1218	51	1 549	6 636	2	28	140	4%	2%	2%
	VL1824	56	3 285	12 583	4	168	940	7%	5%	7%
	VL2440	44	7 232	17 800	2	290	840	4%	4%	5%
	VL40XX	3	16 871	18 140				0%	0%	0%
Total 2020		**802**	**31 874**	**78 232**	**26**	**544**	**2 342**	**3%**	**2%**	**3%**

The data on the inactive fleet indicator for the last three years (2018-2020) are presented below in the form of a graph. In line with the interpretation of the indicator on the basis of the guidelines which state that a fleet which is 90% active is positive, in 2020 the indicator did not go below this level in any of the length categories.

Figure 6. Relative share of inactive vessels by vessel length category, 2018-2020



IX. Analysis and evaluation of the balance between fishing capacity and fishing opportunities by fleet segment over three consecutive years

Table 9. List of indicator values for individual segments of the Polish fishing fleet over three consecutive years (2017-2019 or 2018-2020 respectively)

Segment	Number of fishing vessels		Sustainable harvest indicator (SHI)		Stocks at risk indicator (SRI)		CR/BER		ROI		Vessel utilisation indicator			
											kWdays		GTdays	
VL0010PG	519	2020	1.91*	2020	1	2020	-0.6	2019	-7.1%	2019	15%	2019	16%	2019
	517	2019	2.53*	2019	1	2019	-3.5	2018	-16.4%	2018	42%	2018	39%	2018
	510	2018	2.51*	2018	1	2018	-1.4	2017	-8.1%	2017	38%	2017	37%	2017
VL1012PG	119	2020	1.92*	2020	0	2020	0.3	2019	-3.2%	2019	33%	2020	34%	2020
	106	2019	2.78*	2019	1	2019	1.35	2018	1.9%	2018	47%	2019	47%	2019
	107	2018	2.68	2018	2	2018	-0.1	2017	-4.6%	2017	41%	2017	42%	2018
VL1218DFN	16	2020	1.31*	2020	0	2020	-3.8	2019	-18.0%	2019	49%	2020	48%	2020
	13	2019	3.16	2019	1	2019	0.04	2018	-3.5%	2018	31%	2019	31%	2019
	10	2018	2.82	2018	2	2018	1.1	2017	0.9%	2017	47%	2018	46%	2018
VL1218DTS	45	2020	1.50*	2020	2	2020	0.8	2019	-1.6%	2019	55%	2020	54%	2020
	48	2019	2.64	2019	2	2019	2.0	2018	7.7%	2018	53%	2019	53%	2019
	49	2018	2.54	2018	2	2018	1.7	2017	5.3%	2017	60%	2018	60%	2018
VL1824DT	13	2020	1.36	2020	1	2020	1.8	2019	5.9%	2019	36%	2020	36%	2020
	25	2019	2.46	2019	1	2019	0.7	2018	-5.3%	2018	64%	2019	65%	2019
	26	2018	2.33	2018	2	2018	1.3	2017	3.3%	2017	58%	2018	58%	2018
VL1824TM	44	2020	1.63	2020	0	2020	1.7	2019	4.4%	2019	51%	2020	52%	2020
	30	2019	1.93	2019	1	2019	4.1	2018	16.8%	2018	54%	2019	58%	2019
	32	2018	1.84	2018	1	2018	4.3	2017	16.8%	2017	49%	2018	53%	2018
VL2440TM	43	2020	1.65	2020	1	2020	3.0	2019	16.2%	2019	64%	2020	67%	2020
	43	2019	1.75	2019	1	2019	2.7	2018	12.5%	2018	60%	2019	60%	2019
	43	2018	1.7	2018	1	2018	2.3	2017	11.2%	2017	66%	2018	66%	2018

N.B.: the biological indicators for 2018-2020 have been updated compared to the previous report.
* the indicator for this year and segment is considered unavailable as less than 40% of the landings of the segment during this period was based on stocks for which there was an F/Fmsy ratio.

Summary assessment of the balance in the individual segments of the Baltic fishing fleet.

1. Performance of segment VL0010PG (vessels up to 10 m in overall length, fishing with nets and other passive gear):

- Biological indicators (2020):
  - ✓ sustainable harvest indicator: 1.91
  - ✓ stocks at risk indicator: 1
- Technical indicators (2020):
  - ✓ vessel utilisation indicator: 15% kWdays and 16% GTdays
  - ✓ inactive fleet indicator: 3% of the total number of fishing vessels in the segment comprising vessels up to 10 m in length, meaning that 3% GT and 3% kW were under-utilised
- Economic indicators (2019):

✓ return on investment (ROI) indicator: -7.1%
✓ current revenue/break-even revenue (CR/BER) indicator: -0.6%

During the period under review, the SHI biological indicator for segment VL0010PG far exceeded 1, although it decreased slightly in 2020. Catches by segment VL0010PG are therefore heavily dependent on overfished stocks according to the MSY principle. Nevertheless, the segment fails to meet the condition whereby a minimum of 40% of the value of landings comes from stocks for which F/Fmsy can be determined. According to the guidelines, the SHI indicator is therefore deemed unavailable. Consequently, the indicator value for those vessels (as shown in Table 3b) should be treated as supplementary and not be taken into account when assessing the segment's balance. In addition, the catch taken by the segment is based on a single stock at risk (the stocks at risk indicator is 1).

The vessel utilisation indicator fell considerably in the segment. In 2020, the indicator was only 15% (kWdays), corresponding to a reduction of 27 percentage points compared to the previous year (42%).

In 2019, as in 2018, the segment generated a loss (EUR -1.6 million). However, due mainly to a higher catch value (+ 26%), the loss was lower than the year before (-EUR 3.5 million). As a result, the ROI indicator improved. However, it remained negative and below the reference value (0.25% in 2019).

The value of the current revenue/break-even revenue indicator (CR/BER) was also negative, i.e. below the reference value (> 1). In 2019, the indicator noticeably improved (due to an increase in revenue). However, in 2020, the segment's profitability is expected to deteriorate considerably once again as the catch volume declined sharply.

Based on its performance, segment VL0010PG has a long-term economic imbalance. Its imbalance may be structural (recurring negative indicator values in recent years). Between 2018 and 2020, the technical indicators were below the recommended value (70%) which, according to the guidelines, suggests technical overcapacity. The segment fails to meet the condition whereby a minimum of 40% of the value of landings comes from stocks for which F/Fmsy can be determined. According to the guidelines, the SHI indicator is therefore deemed unavailable. Even if this condition were not taken into account, bearing in mind that the SHI over the last three years has been >1, there is reason to conclude that the segment has a biological imbalance. During the period 2018-2020, the segment was based on a single stock at risk, which suggests an imbalance in the segment. In conclusion, the values of the SHI indicator (if considered available) and SRI indicator during the period 2018-2020 point to a biological imbalance in the segment. When considering the segment as a whole, the negative biological, economic and technical indicators suggest there is an imbalance in the segment.

2. Performance of segment VL1012PG (vessels between 10 m and 12 m in overall length, fishing with nets and other passive gear):

- ❖ Biological indicators (2020):
  - ✓ sustainable harvest indicator: 1.92
  - ✓ stocks at risk indicator: 0
- ❖ Technical indicators (2020):
  - ✓ vessel utilisation indicator: 33% kWdays and 34% GTdays
  - ✓ inactive fleet indicator for the segment comprising vessels of between 10m and 12m in length: 2% of the total number of fishing vessels, meaning that 1% GT and 0.5% kW of vessels from this length category were under-utilised
- ❖ Economic indicators (2019):
  - ✓ return on investment (ROI) indicator: -3.2%
  - ✓ current revenue/break-even revenue (CR/BER) indicator: 0.3% (i.e. below the reference value)

In 2018, an improvement in the segment's indicators was registered, with the indicators changing from negative to positive. This was brought about by an increase in income from landings (increased catches of cod, flounder and sea trout). In 2019, income from landings decreased considerably (-31%) in the segment, as a result of which the segment generated a loss (EUR -0.5 million). The two economic indicators deteriorated in value, falling below the reference level. Similarly, the values for the technical indicators were significantly below the recommended level.

The sustainable harvest indicator was approximately 3 in 2018 and 2019, falling to slightly below 2 in 2020. However, between 2018 and 2020, the value of landings of overfished stocks caught by the segment decreased from 43% to only 18%, meaning that the indicator can be considered unavailable for the period 2019-2020. By contrast, the stocks at risk indicator decreased from 2 in 2018 to zero in 2020 (i.e. the segment did not fish any stocks at risk in 2020. The indicator only includes stocks at risk which make up at least 10% of the segment's total catch, or if the segment takes at least 10% of the catches of the stock).

As in previous years, there was an economic imbalance in segment VL1012PG. Given the significant decline in the value of landings, the segment can be expected to lose further profitability in 2020. As the indicators changed between positive and negative during the period 2017-2019, it cannot be concluded that there is structural economic overcapacity. Between 2018 and 2020, the technical indicators were below the recommended value (70%) which, according to the guidelines, suggests technical overcapacity. The SHI indicator over the period 2018-2020 was well above the reference value of 1, which therefore points to an imbalance. However, between 2019 and 2020, the segment failed to meet the condition whereby a minimum of 40% of the value of landings comes from stocks for which F/Fmsy can be determined. According to the guidelines, the SHI indicator is therefore deemed unavailable. Even if this condition were not taken into account, it could be justifiably concluded that the segment had a biological imbalance during the three years under review. The SRI indicator decreased in turn from 2 to zero between 2018 and 2020. However, in two of the three years, it pointed to a potential imbalance. In conclusion, the values of the SHI indicator (if considered available) and SRI indicator during the period 2018-2020 point to a biological imbalance in the segment. When considering the segment as a whole, the negative biological and technical

indicators and the unstable economic indicators suggest there is an imbalance in the segment.

3. Performance of segment VL1218DFN (vessels between 12 m and 18 m in overall length, fishing with nets):

- Biological indicators (2020):
  - ✓ sustainable harvest indicator: 1.31
  - ✓ stocks at risk indicator: 0
- Technical indicators (2020):
  - ✓ vessel utilisation indicator: 49% kWdays and 48% GTdays
  - ✓ inactive fleet indicator for vessels between 12 m and 18 m in length (fleet segments DFN and DTS): 4% of the total number of fishing vessels (as was the case the previous year), meaning that 2% GT and 2% kW of vessels from this length category were under-utilised,
- Economic indicators (2019):
  - ✓ return on investment (ROI) indicator: -18% (negative value)
  - ✓ current revenue/break-even revenue (CR/BER) indicator: -3.8%

In 2020, the sustainable harvest indicator for the segment under review was clearly lower than the previous years. However, it was still above 1. Nevertheless, in 2020, the value of landings of overfished stocks caught by the segment was only 9% (previously approximately 50-60%). Consequently, the indicator can be considered unavailable for that year. The stocks at risk indicator decreased from 2 (in 2018) to 0 in 2020.

In 2019, the loss generated by the segment increased to EUR 0.6 million, which had a significant adverse impact on the economic indicators for that year. The decline in the segment's profitability was caused by a sharp drop in income from landings (-48%), due mainly to lower catch volumes for cod which account for almost 50% of the value of landings by the segment.

In terms of the economic indicators, the CR/BER indicator for segment VL1218DFN was below the reference level ('1') in 2019 (for the second consecutive year). The ROI indicator was below the level of the next best alternative (0.25%). There is therefore an economic imbalance in the segment. Between 2018 and 2020, the technical indicators were below the recommended value (70%) which, according to the guidelines, suggests technical overcapacity. The low levels registered for these indicators between 2017 and 2019 suggest there is structural overcapacity. The SHI indicator decreased significantly over the period 2018-2020. However, it was above the reference value of 1, which points to an imbalance in the segment (nevertheless, as it did not exceed the 40% threshold, according to the guidelines the indicator is deemed unavailable for 2020). The SRI indicator decreased in turn from 2 to zero between 2018 and 2020. However, in two of the three years, it indicated a potential imbalance. In conclusion, the values of the SHI indicator (if considered available) and SRI indicator during the period 2018-2020 point to a biological imbalance in the segment. When considering the segment as a whole, the negative biological and technical indicators and partially negative economic indicators

suggest there is an imbalance in the segment.

4. Performance of segment VL1218DTS (bottom trawlers between 12 m and 18 m in overall length):

- Biological indicators (2020):
  - ✓ sustainable harvest indicator: 1.50
  - ✓ stocks at risk indicator: 2
- Technical indicators (2020):
  - ✓ vessel utilisation indicator: 55% kWdays and 54% GTdays
  - ✓ inactive fleet indicator: 4% of the total number of fishing vessels, meaning that 2% GT and 2% kW of vessels from this length category were under-utilised
- Economic indicators (2019):
  - ✓ return on investment (ROI) indicator: -1.6% (negative value)
  - ✓ current revenue/break-even revenue (CR/BER) indicator: 0.8%

The SHI indicator fell from over 2.5 to 1.5 in 2020. That same year, the value of landings of imbalanced stocks caught by the segment was 36% (previously over 50%). Consequently, the indicator can be considered unavailable for 2020. At the same time, the stocks at risk indicator for segment VL1218DTS maintained a value of 2 over the period 2018-2020 (i.e. the segment exploited two stocks at risk during that period. The indicator only includes stocks at risk which make up at least 10% of the segment's total catch, or if the segment takes at least 10% of the catches of the stock).

The segment's economic and technical indicators deteriorated significantly in 2019, registering values below the reference level (unlike in 2018). This fall in profitability was mainly due to a decline in income from landings (-16%). Segment VL1218DTS is heavily reliant on cod. In 2018, cod accounted for 44% of the value of landings. In 2019, the value of cod landings fell by 25% compared to 2018. A significant reduction in the catch quota for cod is forecast in 2020, contributing to a more extensive economic collapse among the vessels in this segment.

In 2019, the economic indicators for segment VL1218DTS were below the reference value, which points to an economic imbalance (in previous years the segment was profitable). It is impossible to establish structural (economic) overcapacity based on the indicators for the period 2017-2019. Between 2018 and 2020, the technical indicators were below the recommended value (70%) which, according to the guidelines, suggests technical overcapacity. For the period 2018-2020, the SHI indicator was at a level which suggests a biological imbalance. Nevertheless, in 2020 the segment failed to meet the condition whereby a minimum of 40% of the value of landings comes from stocks for which F/Fmsy can be determined. According to the guidelines, the SHI indicator is therefore considered unavailable for that year. The SRI indicator in turn maintained a value of 2 between 2018 and 2020, suggesting a potential imbalance in the segment. In conclusion, there is a biological imbalance in the segment on the basis of the SHI and SRI indicators over the period 2018-2020. When considering the segment as a whole, despite positive economic indicators, the negative biological and technical indicators suggest

there is an imbalance in the segment[5].

5. Performance of segment VL1824DTS (bottom trawlers between 18 m and 24 m in overall length):

- Biological indicators (2020):
  - ✓ sustainable harvest indicator: 1.36
  - ✓ stocks at risk indicator: 1
- Technical indicators (2020):
  - ✓ vessel utilisation indicator: 36% kWdays and 36% GTdays
  - ✓ inactive fleet indicator for the segment comprising vessels of between 18 m and 24 m in length: 7% of the total number of fishing vessels, meaning that 5% GT and 7% kW of vessels from this length category were under-utilised
- Economic indicators (2019):
  - ✓ return on investment (ROI) indicator: 5.9%
  - ✓ current revenue/break-even revenue (CR/BER) indicator: 1.8%

The SHI indicator fell from approximately 2.33-2.46 between 2018 and 2019, to 1.36 in 2020. The stocks at risk indicator for this segment fell from a value of 2 to a value of 1 during the period under review (i.e. the number of stocks at risk exploited by the segment fell from 2 to 1. The indicator only includes stocks at risk which make up at least 10% of the segment's total catch, or if the segment takes at least 10% of the catches of the stock). The segment relies heavily on overfished stocks, meaning that levels of overfishing decreased significantly.

In 2019, the segment was characterised by a positive ROI. The CR/BER indicator was similarly above the desired level ('1') in 2019. The negative values registered for both indicators in 2018 showed an improvement, caused by a reduction in costs, mainly wages (-39%) and energy (-9%). In 2019, the fishing effort of the segment and the value of landings fell by 13% compared to 2018. As cod accounts for a large share of income, the segment is registering a decline. The number of vessels in the segment fell from 25 in 2019, to 13 in 2020. This was due to vessels switching to pelagic fishing and moving to segment VL1824TM.

During the period under review, the biological indicators for segment VL1824DTS suggested heavy reliance on overfished stocks and stocks at risk. Although the segment became less reliant in 2020, the SHI indicator remained well above 1, pointing to an imbalance in the segment. Similarly, the SRI indicator for the period 2018-2020 was between 1 and 2 (i.e. the segment was exploiting one or two stocks at risk, taking into account the condition of a minimum of 10%). This indicates a potential imbalance in the segment. In conclusion, there is a biological imbalance in the segment on the basis of the SHI and SRI indicators over the period 2018-2020. In 2019, the economic indicators were positive (above the reference values). No imbalance was therefore identified in the economic assessment of the segment. Between 2018 and 2020, the technical indicators were below the recommended value (70%) which, according to the guidelines, suggests technical overcapacity. When considering the segment as a whole, despite positive

[5] Fleet segments that are not in balance with the fishing opportunities they are exploiting would normally be considered as being in imbalance, even if economic indicators show short and long term profitability [COM(2014) 545 final, p. 4].

economic indicators, the negative biological and technical indicators suggest there is an imbalance in the segment[6].

6. Performance of segment VL1824TM (pelagic trawlers between 18 m and 24 m in overall length):

- Biological indicators (2020):
  - ✓ sustainable harvest indicator: 1.63
  - ✓ stocks at risk indicator: 0
- Technical indicators (2020):
  - ✓ vessel utilisation indicator: 51% kWdays and 52% GTdays
  - ✓ inactive fleet indicator: 7% of the total number of fishing vessels, meaning that 5% GT and 7% kW of vessels from this length category were under-utilised
- Economic indicators (2019):
  - ✓ return on investment (ROI) indicator: 4.4%
  - ✓ current revenue/break-even revenue (CR/BER) indicator: 1.7%

During the period under review, the SHI indicator for segment VL1824TM was close to 2, although it decreased slightly in 2020. The segment is heavily reliant on overfished stocks. The stocks at risk indicator decreased from 1 to zero over the period 2018-2020 (i.e. the segment did not exploit any stocks at risk in 2020. The indicator only includes stocks at risk which make up at least 10% of the segment's total catch, or if the segment takes at least 10% of the catches of the stock).

The segment's economic indicators progressively deteriorated between 2017 and 2019. In 2019, the ROI indicator for segment VL1824TM was 4.4%, i.e. far lower than in 2018 (16.8%). However, it was still above the next best alternative (0.25%). Similarly, the ratio between current revenue and break-even revenue (CR/BER) was above the recommended value of 1, albeit clearly below its 2018 value of 4.1. The deterioration in performance was due to a decline in income from landings (-31%), which in turn was caused by a reduction in fishing quotas for two of the most economically important species for the segment, namely sprat and, in particular, herring.

As the SHI indicator was greater than 1 during the period 2018-2020 (with over 80% of the value of landings based on overfished stocks), there is a biological imbalance in segment VL1824TM. Furthermore, in two of the three years under review, the SRI indicator had a value of 1. In conclusion, there is a biological imbalance in the segment on the basis of the SHI and SRI indicators over the period 2018-2020. However, the economic indicators are still satisfactory. Between 2018 and 2020, the technical indicators were below the recommended value (70%) which suggests capacity is being under-utilised. When considering the segment as a whole, despite positive economic indicators, the negative biological and technical indicators suggest there is an imbalance in the segment[7].

[6] Op. cit.
[7] Op. cit

7. Performance of segment VL2440TM (pelagic trawlers between 24 m and 40 m in overall length):

- Biological indicators (2020):
  - ✓ sustainable harvest indicator: 1.65
  - ✓ stocks at risk indicator: 1
- Technical indicators (2020):
  - ✓ vessel utilisation indicator: 64% kWdays and 67% GTdays
  - ✓ Inactive fleet indicator: no inactive vessels
- Economic indicators (2019):
  - ✓ return on investment (ROI) indicator: 16.2%
  - ✓ current revenue/break-even revenue (CR/BER) indicator: 3%

As with segment VL1824TM, the SHI indicator for segment VL2440TM was significantly above 1 during the period under review. The segment was heavily reliant on overfished stocks. The stocks at risk indicator throughout the period 2018-2020 had a value of 1.

The segment's economic indicators were positive and improved between 2017 and 2019. The ROI indicator for 2017-2019 was 11.2% in 2017, 12.4% in 2018, and 16.2% in 2019. In other words, it was far higher than the next best alternative. The CR/BER indicator exceeded the reference value of 1 over the period 2017-2019, pointing to a sound cost-revenue ratio.

As the SHI indicator was greater than 1 during the period 2018-2020 (with around 90% or more of the value of landings based on overfished stocks), there is a biological imbalance in segment VL2440TM. Furthermore, the SRI indicator had a value of 1 in each of the three years under review (i.e. the segment exploited one stock at risk, taking into account the condition of at least 10%). In conclusion, there is a biological imbalance in the segment on the basis of the SHI and SRI indicators over the period 2018-2020. The segment is, however, economically very stable (economically balanced). After deteriorating in 2019, the vessel utilisation indicator improved in 2020, nearly reaching the recommended value of 70%. When considering the segment as a whole, despite positive economic indicators, the negative biological and technical indicators suggest there is an imbalance in the segment[8].

[8] Op. cit.

Catch by fleet segment

In 2020, as in 2019, Polish catch volumes in the Baltic Sea were lower than the previous year. There were two key factors behind this. First, in July 2019, targeted fishing was stopped (due to the catastrophic condition of the stocks) and conservation measures were maintained in 2020. Second, catch limits for pelagic fish were lowered (herring was reduced from 61 000 tonnes in 2018 to 48 000 tonnes in 2019 to 43 000 tonnes in 2020, and sprat was reduced from 78 000 tonnes in 2018 to 77 000 tonnes in 2019 to 64 000 tonnes in 2020).

The Baltic fleet caught 146 000 tonnes in 2019, which represented a 6% decrease on 2018. In 2020, the catch volume was 130 000 tonnes, i.e. 11% less than in 2019. Among the most economically important species, the largest decreases were for sprat (-19%) and flounder (-13%). The herring catch fell by 8%. Fishing restrictions introduced for cod resulted in landing volumes falling to barely 470 tonnes (-90%). Catches of freshwater fish, which are mainly targeted by small-scale fishing vessels, also decreased significantly. Landings of bream decreased by 67%, perch by 64%, roach by 60%, and zander by 42%.

Vessels up to 10 meters in length (**VL0010PG**) caught just 2 800 tonnes of fish, i.e. 60% less than in 2019 (a historic catch of nearly 9 000 tonnes was recorded by the segment in 2015). Among the key species caught by vessels in the segment, the largest decreases were for herring (-62%) and flounder (-49%). The cod catch, which still accounted for 10% of the catch volume in 2018, fell to a negligible 18 tonnes (-93%). The segment is based mainly on freshwater fishing (largely caught in lagoons). Similar to marine fish, landings of freshwater fish fell sharply in 2020. Catches of bream, roach and perch – the three key freshwater species – decreased by 68%, 61% and 63% respectively.

In 2020, the landing volume of segment **VL1012PG** (which, like the segment described previously, fishes with static gear) decreased by 34% compared to 2019. This decline was caused mainly by the aforementioned restrictions on cod fishing. In 2018, cod accounted for approximately 25% of the segment's catch composition. In 2019, it accounted for 14% and in 2020, just 1%. Conservation measures in relation to cod fishing may also have had a negative impact on the exploitation of other fish species, mainly flounder, for which landings fell by 20%.

In 2020, vessels of between 12 m and 18 m in length predominantly fishing with gillnets (**VL1218DFN**) caught only half the volume caught in 2019. The reduction in landings mainly concerned cod, which accounted for 58% of the segment's total catch in 2018, and 48% in 2019. In 2020, landings of cod dropped to less than 8 tonnes. The reduction in cod landings was offset to a certain extent by the flounder catch, which increased (year on year) by 25% in 2019 and 4% in 2020. Despite accounting for a relatively small share of the catch volume, salmon contributed significantly to the segment's income from landings in 2020 due to its high price. The salmon catch more than tripled, accounting for more than 40% of income from landings.

Segment **VL1218DTS** was one of two segments which saw landings increase in 2020 compared to 2019 (+37%). Paradoxically, this increase was a result of the difficult situation in the cod fishery and served as an example of how to deal with the drastic reduction in quotas.

The changes observed were geared towards catching a greater share of pelagic fish. In 2020, the segment increased its catch volume for sprat by almost 70%, and for herring by over 40%.

The catch volume of segment **VL1824DTS** fell by as much as 86% in 2020. As with the previous segment, this was due to the collapse in the cod catch and a shift to pelagic fishing by vessels which previously specialised in cod. The result is that vessels from the segment under review transferred to the segment comprising vessels fishing with pelagic trawls (VL1824TM).

Segment **VL1824TM** was the other segment which saw its catch increase in 2020 (by as much as 62%). As mentioned above, this was mainly the result of vessels which previously fished with bottom trawls transferring to this segment. This led to a sharp rise in catches of species which were previously only caught to a limited extent, such as flounder (7.5-fold increase). In 2020, previously unreported species of fish, such as sand lance, sand eel and whiting, were also caught by the segment.

The final segment under review comprised the largest vessels fishing mainly with pelagic trawls (**VL2440TM**). In 2020, the catch volume taken by the segment decreased by 17%, caused by a reduction in catches of sprat (-27%). Vessels in this segment depend almost entirely on pelagic fish (sprat and herring), which in 2018 accounted for 98% of the catch volume. Changes in the TACs for these two species therefore very much determine the segment's fishing opportunities. In 2020, due to a reduction in catch quotas, the share accounted for by sprat and herring decreased to 86%. Moreover, landings included species which were previously largely unreported, such as sand eel and sand lance.

Table 10. Catch volumes by segment for key fish species, 2018-2020 (in tonnes)

Segment	Species	2018	2019	2020	2020/2019
VL0010PG	Sprat	1			
	Herring	1 100	1 577	601	-62%
	Flounder	1 108	1 131	572	-49%
	Other	3 620	4 269	1 630	-62%
Total VL0010PG		5 829	6 977	2 803	-60%
VL1012PG	Sprat	11			
	Herring	676	609	497	-18%
	Flounder	2 807	2 307	1 840	-20%
	Other	1 877	1 067	309	-71%
Total VL1012PG		5 371	3 983	2 646	-34%
VL1218DFN	Sprat			1	
	Herring	8	7		-100%
	Flounder	90	113	117	4%
	Other	276	186	28	-85%
Total VL1218DFN		375	306	146	-52%
VL1218DTS	Sprat	1 925	1 912	3 239	69%
	Herring	1 111	1 136	1 625	43%
	Flounder	4 916	5 304	5 190	-2%
	Other	3 119	2 650	4 989	88%
Total VL1218DTS		11 070	11 002	15 043	37%
VL1824DTS	Sprat	4 777	3 878	609	-84%
	Herring	2 279	2 470	170	-93%
	Flounder	2 467	3 147	612	-81%
	Other	2 203	2 021	171	-92%
Total VL1824DTS		11 726	11 515	1 563	-86%
VL1824TM	Sprat	13 555	11 951	15 313	28%
	Herring	9 765	5 806	9 077	56%
	Flounder	465	296	2 248	660%
	Other	649	436	3 326	662%
Total VL1824TM		24 433	18 490	29 964	62%
VL2440TM	Sprat	59 420	56 751	41 360	-27%
	Herring	35 935	29 065	25 602	-12%
	Flounder	1 103	4 422	3 933	-11%
	Other	731	3 451	6 968	102%
Total VL2440TM		97 190	93 690	77 863	-17%
Grand total		**155 994**	**145 962**	**130 028**	**-11%**

X. Action plan

Introduction

In accordance with Article 22(4) of Regulation (EU) No 1380/2013, if the assessment (annual report) clearly demonstrates that fishing capacity is not effectively balanced with fishing opportunities, the Member State is to prepare and include in its report an action plan for the fleet segments with identified structural overcapacity. The action plan must set out the adjustment targets and tools to achieve a balance and a clear time-frame for its implementation.

The results of the biological, technical and economic indicators relating to the Polish Baltic fleet and the analysis and evaluation of those results are presented in Chapter VIII, Section F: 'Estimation and discussion of balance indicators' and Chapter IX: 'Analysis and evaluation of the balance between fishing capacity and fishing opportunities by fleet segment over three consecutive years'. In this regard, it should be noted that the individual segments of the Polish Baltic fleet are not effectively balanced with available fishing opportunities.

As a result, an action plan has been drawn up pursuant to Article 22(4) of Regulation (EU) No 1380/2013 for all segments of the Baltic fleet, namely:

- **VL0010PG** - vessels up to 10 m in overall length using nets and other passive gear,
- **VL1012PG** - vessels between 10 m and 12 m in overall length using nets and other passive gear,
- **VL1218DFN** - vessels between 12 m and 18 m in overall length using nets,
- **VL1218DTS** - bottom trawlers between 12 m and 18 m in overall length,
- **VL1824DTS** - bottom trawlers between 18 m and 24 m in overall length,
- **VL1824TM** - pelagic trawlers between 18 m and 24 m in overall length,
- **VL2440TM** - pelagic trawlers between 24 m and 40 m in overall length,

This action plan was developed together with the National Marine Fisheries Research Institute (Morski Instytut Rybacki-Państwowy Instytut Badawczy) in Gdynia.

Summary analysis of the situation in the Baltic fleet segments

The period under review coincides with dynamic changes in the operating conditions of the sea fishing industry. Environmental changes have been heavily influencing stock conditions, while the COVID-19 pandemic and regulatory restrictions have restricted opportunities for business growth.

In such volatile and turbulent circumstances, the analytical apparatus in place would seem inadequate for deciding on the future of the industry and the directions to be taken by legislation. As a first step, more in-depth analyses and projections should therefore be carried out in order to study in greater detail the structures and processes in the sector, while protecting the industry's economic interests.

Due to interpretative uncertainty over the situation due to the availability of biological indicators linked to segment balance, tactical measures need to be taken (for 3

to 5 years until clear conclusions have been reached).

Given the recent difficulties in interpreting the indicators currently in use, a methodology needs to be developed in such a way that all indicators (biological, economic, technical) can be modelled jointly for a single period of time, improving support for decisions, including those of a strategic nature. Currently, there is no holistic approach for analysing and modelling all these indicators.

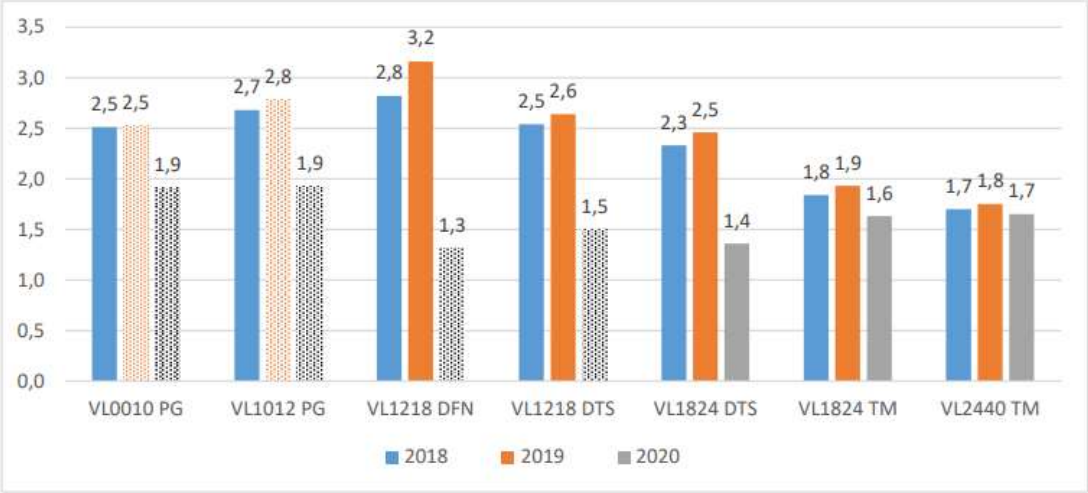
Analysis and evaluation of biological aspects relating to the operation of the Baltic fleet

The Baltic Sea environment is highly dynamic, which has operational consequences for Polish sea fisheries. According to the analysis of biological (but also technical and economic) indicators, there is an imbalance in the operation of the sector (i.e. the intensity of exploitation exceeds the maximum sustainable yield). However, the current situation and prospects for the industry are difficult to clearly assess on the basis of what is understood. The following arguments offer a possible explanation for this:

1. 2020 was an exceptional year due to the COVID-19 pandemic and temporary cessation of cod fishing. **Compared to previous years, management conditions fluctuated considerably in 2020 (related, among other things, to the COVID-19 pandemic). In Poland, during the first wave of the pandemic, fish sales temporarily collapsed (in spring 2020) and fishing fleet activity decreased due to the sanitary restrictions. 2020 therefore cannot be considered a typical year and the results from this year should not be used as a basis for long-term measures.** During the second half of the year, compensation for the restrictions on cod fishing intended to conserve stocks and other compensation were paid out to vessel owners.
2. **The 2020 sustainable harvest indicator (SHI) is, by definition, unavailable for four of the seven segments.** Long-term analysis of biological indicators is therefore mainly limited to catch volumes for species for which the Fmsy has been determined. This situation is described in Figure 1.
3. The biological indicators calculated despite the unavailability of an SHI indicator suggest there is limited environmental pressure exerted by the industry on restricted species (these are the only species for which an SHI indicator has been determined).

Although SHI indicators are deemed unavailable for some segments, their value was calculated. In line with earlier descriptions, if these SHI indicators are taken into account ‘in 2020, the SHI decreased in all segments, most notably in those segments which, until now, targeted cod’. The downward trend in this indicator ranged from 3% to 54% compared to 2019, which represents a significant improvement for this parameter.

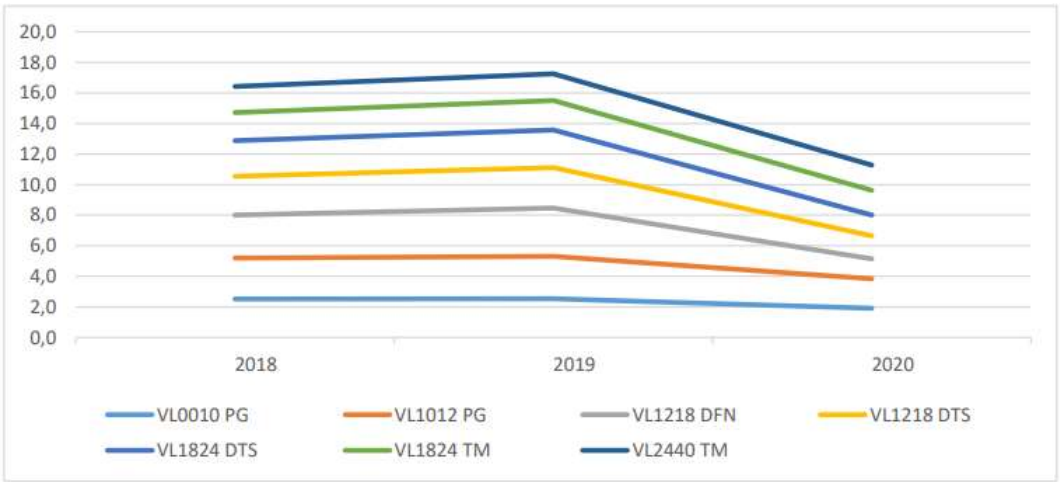
Figure 1. SHI indicator, 2018-2020



During the period under review, the best segments in terms of catch sustainability were those fishing mainly herring and sprat, i.e. VL1824TM and VL2440TM. However, even in those segments the SHI indicator was far greater than 1. However, this improvement was mainly due to the restrictions on cod fishing and, in view of the formal restrictions ('Guidelines for the analysis of the balance between fishing capacity and fishing opportunities according to Art 22 of Regulation (EU) No 1380/2013 of the European Parliament and the Council on the Common Fisheries Policy'), no account should be taken whatsoever of the indicators for 2020.

A second basis for analysing the SHI indicator is to observe its cumulative value. This is presented in Figure 2, whereby successive SHI indicators have been overlaid for each fleet segment by adding the indicators. Taking into account the SHI indicators calculated earlier (despite four unavailable indicators in 2020 and two in 2019), a decrease can be seen in the overall pressure exerted on stocks by the fishing fleet (Figure 2). The cumulative SHI indicator decreased from 16.4 in 2018 to 11.3 in 2020 (a decrease of 31%), which brings the indicator close to the recommended value (<= 7 for seven segments assuming a constant Fmsy for that period).

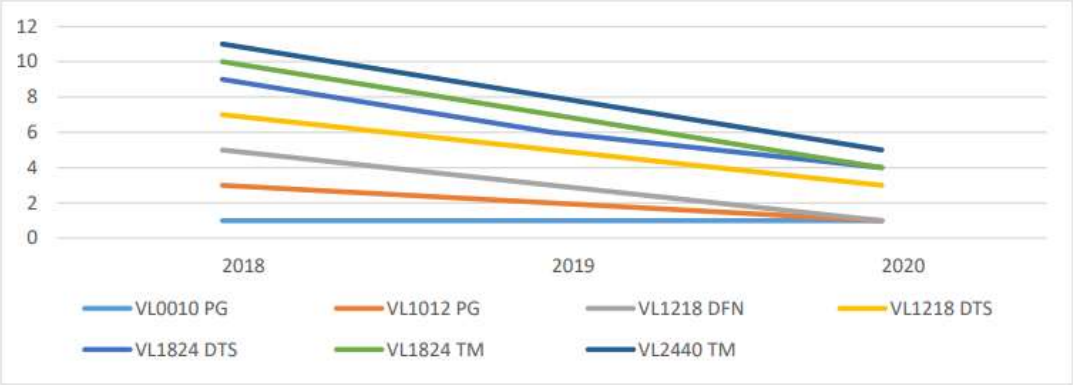
Figure 2. Fleet segment cumulative SHI indicators, 2018-2020



Another question for discussion is whether the SHI indicator is useful in this situation for assessing the fleet's activity. Fishing mortality (for those species for which the Fmsy has been determined) is included in the structure of the indicator, which is derived from the catch limits granted to Poland for those species. It is difficult to expect fishing fleets to catch less than the weight limit allocated to a species for which there is advice, taking into account the best interests of the environment.

The second factor which determines whether segments are balanced is the stocks at risk indicator (SRI). This indicator shows whether segments exploit stocks at high biological risk. As with the SHI indicator, all values in Figure 3 are overlaid in order to demonstrate the trend in terms of how all stocks at risk are impacted. As stated in the report 'over the period 2018-2019, the SRI indicator in each segment was 1 or 2 (and never 0). In 2020, the stocks at risk indicator decreased, and was zero in segments VL1012PG, VL1218DFN and VL1824TM. Segment VL1218DTS was the segment most reliant on stocks at risk, with an SRI of 2'.

Figure 3. Cumulative trend in SRI indicators for all fleet segments, 2018-2020



As can be seen from the data presented in Figure 3, the cumulative SRI indicator for the entire fleet decreased significantly between 2018 and 2020 (from 11 to 5 points), demonstrating that the fleet segments are shifting their focus towards less at-risk stocks and species for which there is no advice. However, there are negative economic consequences to this.

To summarise the considerations on the biological balance, bearing in mind the guidelines, most fleet segments are still exploiting stocks at risk with a fishing mortality above Fmsy. At the same time, the fleet is clearly reducing its cumulative pressure on the environment. Moreover, the catch taken for which there is advice is within the catch limits adopted by the European Commission.

Analysis and evaluation of economic and technical aspects relating to the Baltic fleet

When evaluating the efficiency of the fleet for the period 2018-2020, it is important to bear in mind that the economic indicators have a 1-year delay due to the data collection cycle

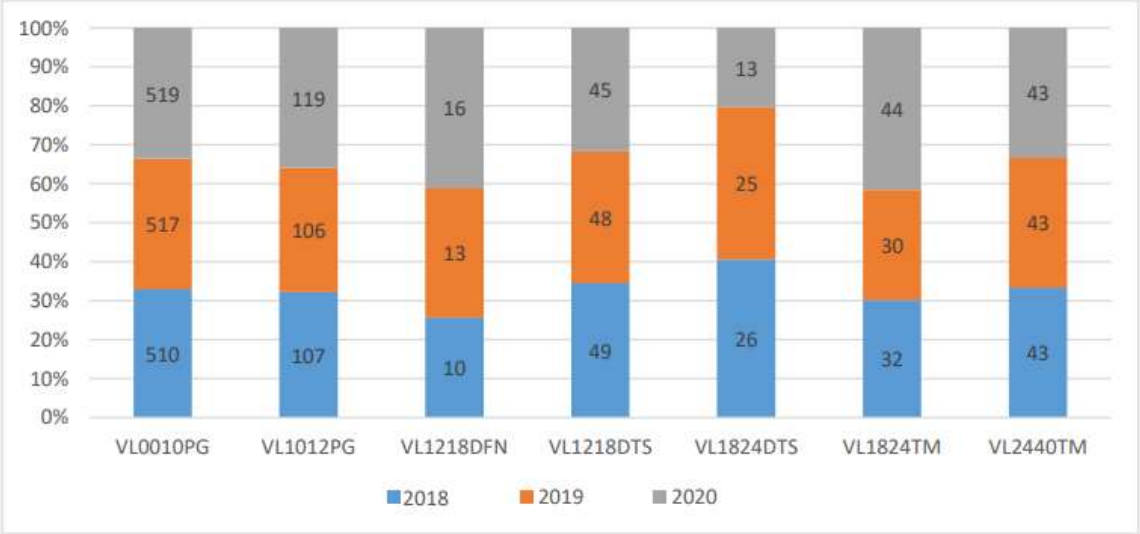
under the DCF (Data Collection Framework). The 2019 results certainly do not reflect the economic situation for fleet segments in 2020, this being a particularly difficult year from an economic perspective due to the ban on cod fishing and the COVID-19 pandemic. Although the total catch volume decreased in 2020 by only 11%, the Baltic catch composition shifted towards species of lower value. In certain segments the catch volume decreased significantly, e.g. in segment VL0010PG comprising small-scale fishing vessels (decrease of 60% in landing volume) and in segment VL1824DTS (decrease of 86%). Vessel owners tried to compensate for the losses from cod by fishing for other species, often resulting in vessels transferring to other fleet segments (on account of the fishing gear). However, in 2020, total fleet activity (effort in days) in the Baltic Sea was much lower than in previous years, amounting to just over 38 000 days at sea[9] (42% lower than in 2019).

For the period under review, the fleet efficiency evaluation was determined by the following general economic developments:

- transfer of vessels between segments in subsequent years (in particular in 2020) due to changes in fishing gear;
- shift in catch composition due to the ban on cod fishing in 2020;
- sharp decline in catch volume in certain fleet segments;
- reduction in activity, mainly among the smallest vessels, in 2020;
- significant reduction in fleet effort (in days) in 2020;
- decline in the use of small-scale fishing vessels, in particular in 2020.

An initial factor which complicated the analysis is the transfer of vessels between segments in 2020 as compared to previous years. The biggest change in the number of vessels occurred in the segments which, according to Figure 4, saw the largest changes in proportion (i.e. in particular in segments VL1824DTS and VL1824TM). The change in classification resulted from the use of other fishing gear. When analysing the segments in the long term, those in which the number of vessels remained the most stable over time were those at the ends of the spectrum.

Figure 4. Changes in fleet size by segment

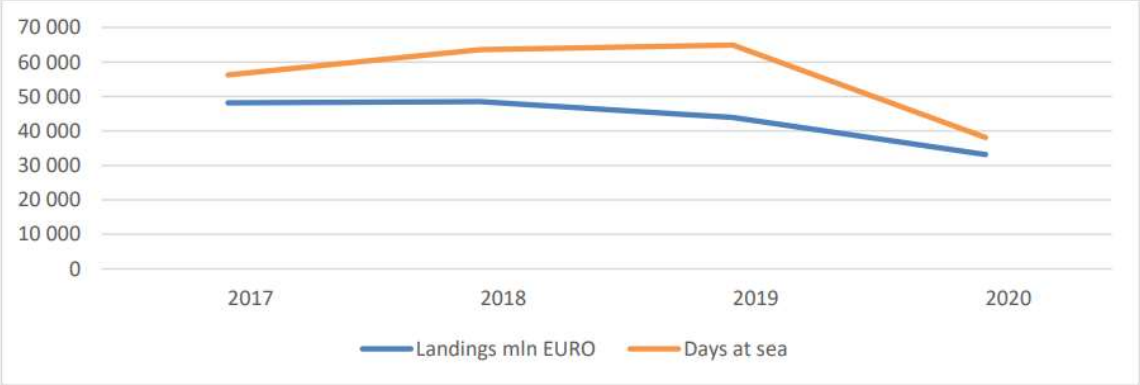


The dynamic transfer of vessels between segments makes it difficult to compare economic performance over time. Some segments reduced in size by as much as 50% year on year (VL1824DTS), while others increased by that amount. As a rule, vessel transfers concerned the most actively profit-oriented vessels, which also determined the financial performance of segments.

Vessel utilisation is another technical issue which is difficult to clearly assess. Changes in the intensity of vessel utilisation in 2020 (technical indicators) were a natural consequence of the restrictions on fleet activity due to administrative measures and the international situation. The catch volume in 2020 was achieved mainly through the activity of the largest vessels. The low utilisation of potential in 2020 is therefore difficult to accept as a premise for identifying structural overcapacity.

An undoubtedly important aspect of the economic analysis is not only the overall segment performance, but also vessel performance, which provides a more cross-sectional view of the operational activities of the fleet. A fundamental aspect of fisheries production is fishing effort, measured in the terms of number of days at sea. Operational performance is determined for individual segments according to the species exploited, fishing effort and fishing technique (Figure 5).

Figure 5. Correlation between the value of landings (in million EUR) and fishing effort (days at sea).



Between 2017 and 2019, average landings per day at sea for an average vessel in the Baltic Sea decreased by approximately 10% per year. However, average landings per day at sea increased significantly (by almost 30%) due to a considerable reduction in fishing effort and an increase in the catch share for a single category (pelagic). However, the increase in the average value of landings varied between segments. In 2020, a sharp decrease in the value of landings by vessel was observed in segment VL1218DFN (by 57%) and VL1824DTS (by 48%).

Table 2. Average value of landings per fishing day (in EUR)

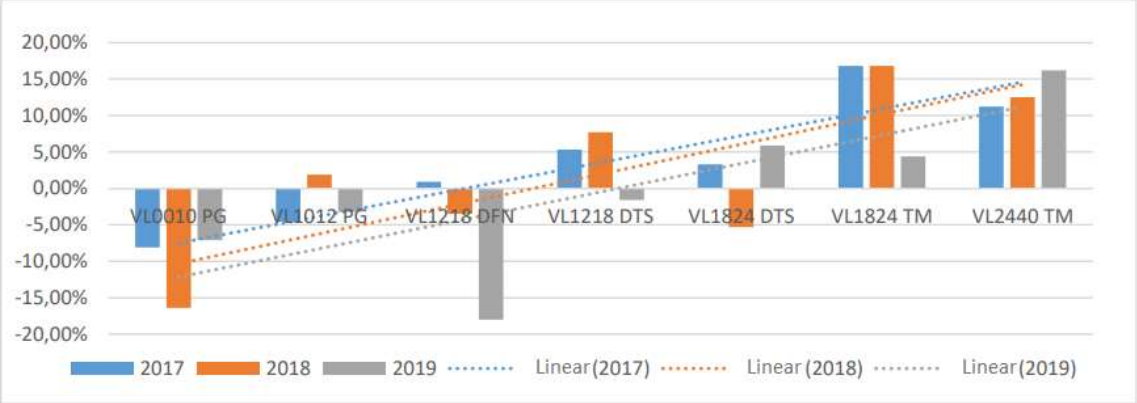
Segment	2017	2018	2019	2020
VL0010PG	208.7	156.7	181.2	165.5
VL1012PG	493.7	575.5	404.9	333.9
VL1218DFN	1064.4	812.7	587.7	250.5

VL1218DTS	1378.1	1321.8	1255.4	1273.8
VL1824DTS	2035.2	1964.4	2020.3	1046.5
VL1824TM	1775.8	1909.1	1802.1	1988.1
VL2440TM	4344.4	4532.9	4638.7	3861.6
Average	**855.6**	**762.2**	**675.7**	**869.6**

Revenue per fishing day provides information on the productivity of fishing activity. As fishing effort was limited in 2020, some segments were unable to cover their total costs through fishing activity. Consequently, the economic performance of certain segments was negative.

An analysis of the results for the period 2017-2019 showed that the economic situation across fleet segments was fairly diverse. For the first criterion, i.e. the return on investment (ROI) indicator, annual return rates varied (Figure 6). This is not necessarily a cause for concern as a deficit is natural in certain situations and does not have to result in action being taken.

Figure 6. Results of the return on investment (ROI) indicator for Baltic fleet segments, 2017-2019



In particular in segments comprising smaller vessels, profitability is not the only goal for operators. For some fishermen, fishing is an activity carried out in addition to other activities (e.g. gastronomy, trade, tourism), is not their sole source of income (e.g. employment) or is a passion (no successors) or hobby. The right course of action would therefore be to analyse the subjective structure of segments which are not balanced and to identify typical types of economic behaviour. Only then will it be possible to conclude on the economic rationality and the appropriate mechanisms for maintaining it.

To summarise the evaluation of the economic and technical indicators, far more data and in-depth methods of analysis and evaluation are needed to interpret the indicators. The fundamental problem is the delay in information, which, in the current situation, makes it impossible to evaluate the actual situation and adjust regulatory tools. The first step should therefore be to put in place methods which enable the current economic situation of fishing segments and future projections to be established. As a second step, all groups of indicators must be considered jointly and scenarios devised

aimed at optimising the biological situation with the use of economic priorities.

Adjustment plan

The above analyses show that Baltic fisheries require support in two main areas, namely protecting the economic interests of fleet segments where there is currently an imbalance, and strengthening scientific advice as regards collecting information, carrying out analyses and projecting scenarios for achieving a balance in fleet segments. The second area offers a basis for building a long-term fleet management system under changing conditions.

Considerations

The main considerations for the adjustment measures are as follows:

1. The adjustment measures in this plan are to have a medium-term focus and should not be ad hoc. They should nevertheless cover at least the coming 3 years.
2. As there are biological parameters which are unavailable and there is a built-in delay with the economic indicators, the recommended action is to temporarily reduce the fishing effort of the fleet.
3. Resources should be protected, as should the economic interests of the sea fishing industry, for a period of at least 3 years.
4. Compensation due to a reduction in fishing effort will apply to all segments which have an imbalance. However, the level of aid will depend on the economic parameters of the segment.
5. If catch is temporarily excluded, compensation will be paid for loss of income or for operators' costs due to the temporary cessation of activity.
6. Monitoring will be strengthened (frequency and sensitivity), in particular in terms of economic, technical, biological and social performance. In terms of economic and social indicators, the typical vessel approach (agri benchmark) could be implemented to monitor the current situation and simulate the results of administrative and business decisions.
7. Fleet segments will resume activity once the biological indicators reach their recommended values.
8. Holistic analytical tools for the dynamic conditions of the Baltic Sea should be developed and rolled out within 3 years.

Measurable targets and timeframes

Currently, there is no way of estimating how long Poland needs to protect the economic interests of the fleet. The present plan applies a period of 3 years as fleet management support measures are possible to complete within that time. Over the course of that period, Poland will

develop holistic balance assessment methods and a data collection system (typical vessel approach) enabling better structuring and modelling of fleet scenarios. The results of these systems will be used to develop an adjustment programme for the next period.

It is also assumed that 3 years of reduced fishing effort will lead to lower environmental pressure from the Polish Baltic fishing fleet.

Adjustment measures applying to Baltic fleet segments, 2021-2024

Group of measures/measures	VL0010PG	VL1012PG	VL1218DFN	VL1218DTS	VL1824DTS	VL1824TM	VL2440TM
Compensation for fishing effort reduction							
Temporary cessation of fishing activities (Article 33 of Regulation (EU) No 508/2014)	3 years (until 31.12.2024)	3 years (until 31.12.2024)	3 years (until 31.12.2024)	3 years (until 31.12.2024)	3 years (until 31.12.2024)	3 years (until 31.12.2024)	3 years (until 31.12.2024)
Decision support systems							
Holistic fleet management model	3 years (until 31.12.2024)						
Typical vessel approach – fishing vessel simulation models	3 years (until 31.12.2024)						

Characteristics of the adjustment measures

The recommended measures cover two areas of activity:

1. Compensation for fishing effort reduction

1.1. Temporary cessation of fishing activities, as referred to in Article 33 of Regulation (EU) No 508/2014. With funding from the **'Fisheries and the Sea' Operational Programme (2014-20 FISH OP)** co-financed by the European Maritime and Fisheries Fund, this measure will cover the following segments of the Baltic fleet:

- **VL0010PG** - vessels up to 10 m in overall length using nets and other passive gear,
- **VL1012PG** - vessels between 10 m and 12 m in overall length using nets and other passive gear,
- **VL1218DFN** - vessels between 12 m and 18 m in overall length using nets,
- **VL1218DTS** - bottom trawlers between 12 m and 18 m in overall length,
- **VL1824DTS** - bottom trawlers between 18 m and 24 m in overall length,
- **VL1824TM** - pelagic trawlers between 18 m and 24 m in overall length,
- **VL2440TM** - pelagic trawlers between 24 m and 40 m in overall length.

In accordance with Regulation (EU) No 508/2014, aid for temporary cessation of fishing activities will concern Polish fishing vessels which have carried out fishing activities in the

Baltic Sea for at least 120 days during the last two calendar years preceding the date of submission of the application for support.

Support will be granted for a maximum duration of six months per vessel during the period 2014-2020. If the support is granted for a specified period, all fishing activities carried out by the fishing vessel or fishermen concerned will be effectively suspended.

As part of this, measures will be carried out to protect the economic interests of fleet segments related to the reduction in fishing effort (fishing days). There are three possible compensation options:

a. compensation for loss of revenue, i.e. the value of landings per fishing day for vessels in the segment.
b. compensation for the total costs per fishing day for vessels in the segment.
c. compensation for the fixed costs per fishing day for vessels in the segment.

As the second option fails to guarantee protection for fisheries workers (whose salaries are predominantly variable costs), the recommended option is to compensate loss of revenue or the cost per fishing day. The average revenue per fishing day in 2020 is indicated in Table 2. These values can be adjusted depending on the economic situation of the segment (ROI) or fishing effort reductions by the segment. It will not be possible to determine the costs per segment for 2020 until 2021.

2. Decision support systems

2.1. Holistic fleet management modelling (balance point) involves developing mathematical models allowing scenarios to be comprehensively devised and modelled (i.e. taking into account biological, economic, social and technical aspects) for the development of production and fishing potential based on environmental, social and economic forecasts. By producing such models, the optimal fishing capacity of the fleet in specific conditions can be determined and infrastructure investment needs can be estimated, etc. Development strategies can also be drawn up. The basic functions of such modelling are to build scenarios based on data and to perform optimisation, i.e. find the most appropriate production level based on biological and social conditions. Research institutes in other countries use this type of modelling. The development, testing and implementation of such modelling takes a minimum of 3 years.

2.2. The **typical vessel approach** is a data collection method which supplements the DCF (Data Collection Framework on Fisheries). The current system for collecting economic data focuses on traditional formal reporting systems, i.e. values recorded in the accounting systems of fisheries enterprises. However, the delay in such data makes them of little use for management purposes. There is a lengthy cycle for registering and processing such data (companies must complete the financial year before producing financial statements), following which data are transferred and processed. The most recent economic data in 2021 are therefore data from 2019, a time when the management conditions differed from today, e.g. the fuel price in Poland was PLN 4 and there were no limits on cod fishing. In order to meet management needs, a supplementary data collection system would seem reasonable, consisting in an in-depth analysis of vessels typical of the segment. This idea is based on the 'agri benchmark' method which is trusted in agriculture, and consists in observing typical fishing

vessels (small-scale vessels). Microeconomic models are produced for these vessels, enabling changes in a given factor (e.g. fuel prices, fish prices, labour costs, taxes, etc.) to be verified on an ongoing basis in terms of their impact on the performance of typical vessels in the segment. Modelling should be carried out for several dozen vessels and the data renewed every 2 to 3 years. The implementing period for the system is 3 years.

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