

**Action Plan to the Annual Fleet Report 2019 of Latvia**  
**Concerning adjustments of the Fleet Segment Trawlers VL2440 Targeting Baltic Cod**

## 1. Introduction

Member States compile an Annual Report on the balance between the fishing capacity of their fleets and their fishing opportunities to meet the aim of Article 22(1) of Regulation (EU) No 1380/2013 of the European Parliament and of the Council, which states: “*Member States shall put in place measures to adjust the fishing capacity of their fleet to their fishing opportunities over time*”.

To achieve a balance between fleet capacity and fishing opportunities, the fleets of the different Member States are segmented based on main gear used and on length size of the vessels. To evaluate each of this segments common indicators of vessel activity, economical and biological indicators are established. The methodology for calculating these indicators shall follow the guidelines set out in COM (2014) 545 final.

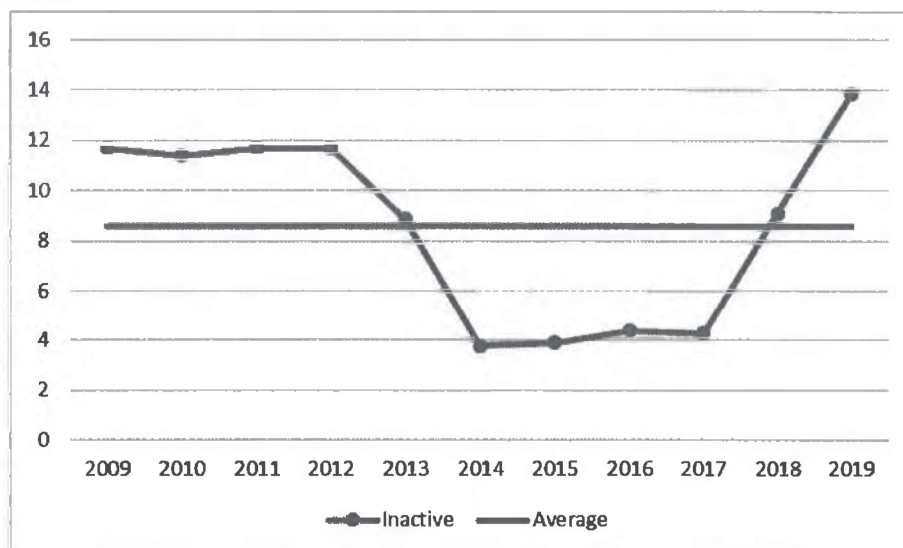
Article 22(3) of the COM (2014) 545 final states that: “*If the assessment clearly demonstrates that the fishing capacity is not effectively balanced with fishing opportunities, the Member State shall prepare and include in its report an action plan for the fleet segments with identified structural overcapacity*”.

This Action Plan identifies the part of the fleet segment VL2440 which indicators clearly show that the respective segment capacity targeting Baltic cod is not in balance with fishing opportunities.

## 2. Technical Indicators

Latvian fleet segment of trawlers VL2440 is targeted to the three stocks fished in in Baltic Sea: sprat, herring and cod. Taking into account the reduction of sprat and herring fishing quotas in last few years and implementation of targeted cod fishery ban in eastern part of the Baltic Sea (partly in 2019 and in full extent in 2020) the values of two technical indicators are in red zone according to the traffic light system.

Level of inactive vessels increased in last few years to almost 14% (Fig.1). In the period of 2014-2017 average level of inactivity was around 4%. Annually Latvia fulfils the fishing quotas of the sprat and herring assigned thereto almost completely. Taking into account implementation of targeted cod fishery ban the level of inactivity could be higher in the next years because vessels targeted to cod fishery cannot reorient to sprat and herring fishery due to unavailability of sufficient quota.



**Fig.1.** Level (in %) of inactive vessels in 2009-2019.

The average utilization level of fleet segment VL2440 in period 2006-2019 is less than 60% (Fig.2). The maximum was reached in 2018 and it constituted 73%. In 2019 level of utilization decreased to 66%. Taking into account sprat and herring quota reduction and targeted cod fishery ban partly in 2019 and fully in 2020, part of this segment could be out of fishery. As the result, some of the fishing vessels in the segment VL2440 will not be fully utilized and could increase the level of inactive vessels already starting from this year.

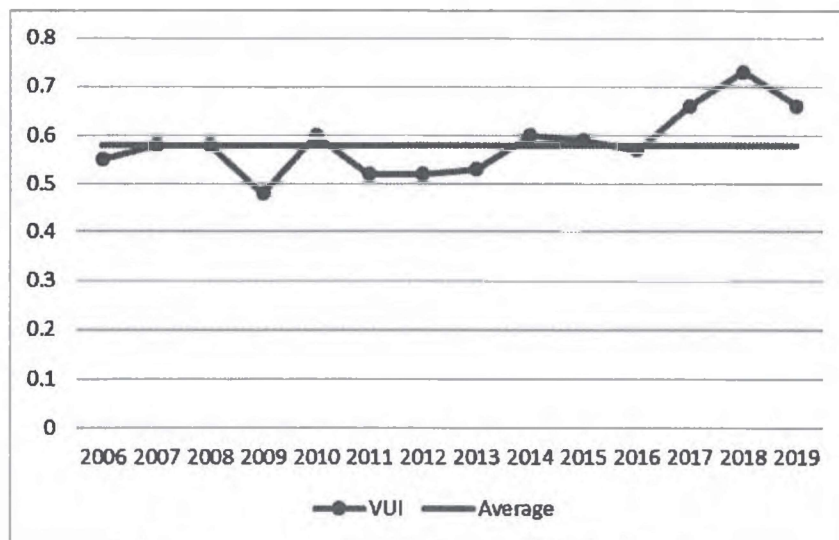


Fig.2. Level of Vessel Utilization Indicator in 2006-2019.

### 3. Biological Indicators

A review of changes in the SHI indicator values in 2006-2018 for the fleet segment VL2440 shows that this segment has quite high potential of fishing capacity (Fig. 3). Noticeable dominance of values above "1" (9 years out of 13) demonstrates the risk of being permanently in the "red zone", i.e., outside the "balance between fleet capacity and the possibility of fish resources" in at least medium term.

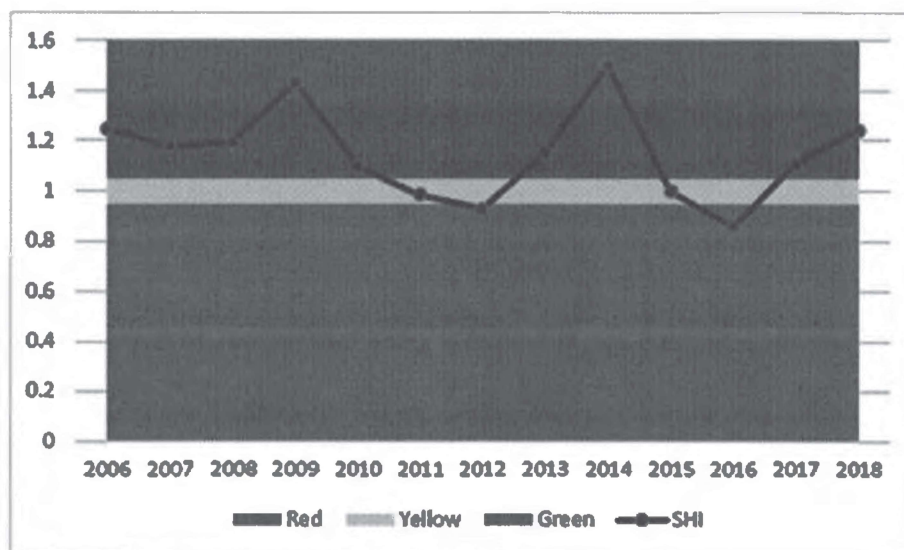


Fig.3. Level of Sustainable Harvest Indicator (ratio of fishing mortality and maximum sustainable yield) in 2006-2018 mapped in traffic light system.

The latest ICES advices noted that when the precautionary approach is applied, there should be zero catch of Eastern Baltic cod in 2020. Even with recorded lowest fishing mortality (what is significantly lower than natural mortality), spawning stock biomass of cod is below  $B_{lim}$ . Probability to reach good stock status in short and medium time is below 0.01%. Recruitment of cod has been declining, and the latest recruitment estimates was the lowest in the time series. The stock size of three pelagic stocks fished by Latvian fishermen (herring in Central Baltic Sea, herring in the Gulf of Riga and Sprat in the Central Baltic Sea) are above biological reference points and is on safe level therefore no effort reduction is needed for midwater otter trawls.

### 4. Description of fleet segment VL2440

The fleet segment VL2440 in 2019 consisted of 43 vessels with overall engine power equal to 14601 and overall gross tonnage equal to 5778 (Table 1). Only 37 vessels were active in 2019. Six vessels were inactive in 2019 due to reduced

quota on herring and due to low catches of cod in first half of the year and partly ban of targeted cod fishery in eastern part of the Baltic Sea as from April 2019 (by the National and the European Commissions' decisions).

**Table 1. Description of fleet segment VL2440**

<b>2019</b>	<b>Number</b>	<b>KW</b>	<b>GT</b>
<b>Active</b>	37	12763	5103
<b>Inactive</b>	6	1838	675
<b>Total</b>	<b>43</b>	<b>14601</b>	<b>5778</b>

#### 5. Aims to be achieved

In fleet segment VL2440 main fishing gears are midwater otter trawls (OTM) targeted to sprat and herring and bottom otter trawls (OTB) targeted to cod. Biological indicators provided by ICES are showing positive trend for stock utilized by midwater otter trawls, while fishing opportunities for bottom otter trawls targeting eastern Baltic cod will be limited or close to zero. With the aim of adjusting fleet capacity to available resources, the goal of fleet reduction was therefore set based on highest average cod catches in 2014-2018. The aim of adjusting fleet capacity to available resources will be achieved through the permanent withdrawal from fishing activity of a number of vessels, which were involved in cod fishery in 2014-2018. Taking into account hard restrictions for eastern Baltic cod targeted fishery as from April 2019 (national and the European Commission emergency measures) the cod fishing activities in 2019 is no very representative and the catches are extremely low. An overall reduction in the fleet segment VL2440 is expected to achieve level up to 24% less vessels, up to 20% less gross tonnage and up to 20% less engine power (Table 2).

**Table2. Aim of reduction fleet segment VL2440**

	<b>Number</b>	<b>KW</b>	<b>GT</b>
<b>Total</b>	10	2881	1150

#### 6. Action Plan Implementation Schedule

The fleet adjustment measures will be decided for their implementation before 31-12-2020 in accordance with applicable European Union legislation. The most appropriate and efficient implementation time frame would be within the programming period 2014-2020 (with n+3 rule). In a case of unavoidable legal and technical constrains or limitations the available measures under next programming period 2021-2027 should be used.

#### 7. Applicable Financial Instruments

Fishing vessels will be permanently withdrawn through financial aid provided to vessel owners and respective fishermen from the segment of trawlers VL2440 as described in this Action Plan and capacity as identified in Table 4, in accordance with Article 34(2), (3) and (5) of Council Regulation (EU) 508/2014 (EMFF Regulation) of 15 May and other rules which may be established in national legislation. The amount of aid will be determined based on the calculation methods set out in the operational programme OP Mar 2020.

In accordance with EMFF regulations, vessel owners in the fleet segment of trawlers VL2440 specified in this Action Plan and falling under capacity identified in the Table 4 may not benefit from aid for the replacement of drive and auxiliary engines (Article 41(2) and (3)). Moreover, they may not benefit from the aid set out in Article 31 for start-up support to young fishermen (Article 31(1)(d)).

However in a case of unavoidable legal and technical constrains or limitations which could appear within the existing legal framework of the EMFF then the available measures under next EMMF programming period 2021-2027 should be applied in accordance to respective regulations in force.

## The Annual Report on the Latvian Fishing Fleet 2019

### 1. Summary of report

This report is elaborated according to *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*.

Since 2004, Latvia has fulfilled the existing rules and requirements of vessel entry/exit regime without any deviations.

The fishing vessel decommissioning process affects positively the balance between the fishing fleet's capacity and the fish resources allocated to Latvia.

The Technical indicators shows by how much fleet capacity could be reduced without reducing overall fleet output (landings). The Technical indicators can therefore be considered the baseline indicator for each fleet segment (*COM (2014)545*).

The first of Technical indicators - Inactive Fleet Indicator (IFI) showed that for Latvian offshore fleet segments the proportion of inactive vessels does not exceed allowable level for the period of last 4 years. However, for segment VL2440 in the last two years increasing in number of inactive vessels is observed. It is especially relevant to cod fishing vessels which temporary cease their activities as from spring 2019 (following with total stop in 2020). The Vessel Utilisation Indicator (VUI) for segment VL0010 slightly decreased in comparison to the previous year and reached 0.27, i.e. not "in balance". It could be explained by low activity level and seasonality. VUI for segment VL1218 slightly decreased in comparison to the previous year and reached 0.92 and therefore this segment can be considered as "in balance". VUI for segment VL2440 decreased in comparison to the previous year and reached 0.66 below the threshold 0.7. It could be stated that capacity of this segment is not "in balance" with the fishing opportunities.

Following the recommendations and applying the interpretation proposed in the Guidelines (*COM (2014)545*) about the first of Biological Indicator - Sustainable Harvest Indicator (SHI) it can be concluded:

- for two segments (trawlers VL1218 and trawlers VL2440) that rely on herring and sprat stocks in the Gulf of Riga SHI values are under the critical value of 1. Therefore, it could be assumed that these segments are "in balance between fleet capacity and the possibility of fish resources".
- for segment of trawlers VL2440 which mainly exploits the sprat stock and herring stock as a bycatch in the Baltic proper (SD 25-32) SHI average value (1.24) is above the critical value of 1. Formally, it can be stated that segment is not "in balance". However, for more reliable assessment "*this has to occur in 3 consecutive years*" (*COM (2014)545*). Thus, despite the formal excess of the critical SHI value, it still could be considered that the segment at this stage would be counted as "in balance" rather than "imbalance". Further closer look on this segment development in relation to available fish resources should be done in the next year. However, for the part of the segment targeting only or mainly cod, which was hit by the adopted national and European Commission emergency measures to protect the eastern Baltic cod (from spring 2019), the immediate measures are proposed in this Annual Report to balance the fleet capacity with the current status of eastern Baltic cod population for which according to recent ICES advice there will not be signs for recovery in a short terms.

For the evaluation of the achievement of balance between fleet capacity and fishing opportunities in Latvian fishery from 2014 to 2018 three Baltic Sea fleet segments were selected and included in the analysis. Two economic indicators were calculated for each fleet segment to evaluate whether fleet segments are economically sustainable in the long-term and short-term.

The indicator Return on Investment (ROI) shows investment profitability. ROI positive and greater than the low risk long-term interest rate shows positive return generated by the investment and suggests that extraordinary profits are being generated a sign of economic under-capitalization. During the analysed period from 2014 to 2018 the ROI indicator has stable positive values for the segment trawlers VL2440. In turn, the ROI indicator for the segment VL1218 trawlers operating in the Gulf of Riga was positive in 2015 and 2017-2018. Despite of negative ROI shown in 2017 for the coastal vessels attributed to the segment VL0010 the ROI value show improvement in 2018. Further closer look on this segment development should be done in the following years. In general, during the analysed period the ROI ratio greater than 1 indicates that the economic activity of the

segments VL2440, VL1218 and VL0010 are cost-effective in the long-term. The detailed ROI calculations for each fleet segment and conclusions are presented in the section 7.3.1 and Annex IV.

The second economic indicator Ratio of Current revenue to Break-even revenue (CR/BER) reflects the financial capability of businesses with vessel in a given fleet segment to continue operating on a day-by-day basis. The trawlers segments VL1218 and VL2440 operating in the Baltic Sea offshore zone show CR/BER ratio positive and greater than 1 in 2018, characterizing the segments profitability in the short-term. The coastal zone segment VL0010 show CR/BER ratio positive but close to zero in 2017-2018. The CR/BER results for the segment VL0010 indicate that the insufficient income is generated to cover variable, fixed and capital costs signify the potential over-capitalization in 2017-2018. However, during the analyzed period 2014-2018 the CR/BER indicator is not stable. The results for 2015 indicate a ratio greater than 1 for the all fleet segments indicating the economically efficient activity. The detailed calculations and conclusions are presented in the section 7.3.2 and Annex V.

## 2. Statement of MS opinion on balance of fleet capacity and fishing opportunity

Latvia continues to apply strictly and fully complies with the existing rules for the Community Fishing Fleet entry/exit scheme. The Fisheries Department (FD) of the Ministry of Agriculture requires withdrawal of the fishing vessel or vessels with equivalent or bigger capacity from the fishing fleet without public support before the entry of the new fishing vessel or vessels into register. After 1<sup>st</sup> of May, 2004 there were 353 fishing vessels decommissioned and withdrawn from the Baltic Sea fleet in total. This process positively affects the balance between the fishing fleet's capacity and the fish resources allocated to Latvia.

Based on the results of traffic light system (Annex VI) the measures to balance the fleet segment VL2440 are included into Annex VII of this Annual Report.

## 3. Section A

### 3.1. Description of fleets

#### General Description of the Latvian Fishing Fleet

The Latvian fishing fleet is historically divided into three major groups: High Sea vessels, Baltic Sea (including the Gulf of Riga) offshore vessels and coastal fishing vessels. All fishing vessels flying Latvian flag are registered in ten Latvian ports.

**Table 1. The Latvian Fleet Segmentation for the 2019**

Fleet segment	% from total No of vessels	% from total GT	% from total kW
High Seas	0.8	58.4	37.6
Baltic Sea offshore	7.7	37.0	49.0
Coastal	91.5	4.6	13.4

On 31<sup>st</sup> of December, 2018 the Latvian fishing fleet contained 671 vessels with total fleet engine power 41539 kW and overall gross tonnage 22317 GT, but on the 31<sup>st</sup> of December, 2019 the Latvian fishing fleet contained 661 vessels with total fleet engine power 32927 kW and overall gross tonnage 16061 GT (Table 3).

### 3.2. Link with fisheries

#### High Sea Fleet

The segment is represented by 5 big vessels. These vessels contribute only 0.8% to the total vessel number but cover 58.4% of the total GT and 37.6% of the total KW respectively.

In 2019 vessels of this segment performed their fishing activities in the waters governed by the North East Atlantic Fisheries Commission (NEAFC) and the Fishery Committee for the Eastern Central Atlantic (CECAF). Main fishing gears for these vessels were midwater otter trawls, shrimp trawls and pots.

Target species in the NEAFC area was northern shrimp and in the CECAF area - mackerel, horse mackerel, sardinella, sardine. This fleet segment constitutes about 37.0% of the total Latvian catch in 2019.

#### Baltic Sea (including the Gulf of Riga) Offshore Fleet

This fleet group consisted of 51 fishing vessels (on the 31<sup>st</sup> of December, 2019) with overall length from 12 to 40 m LOA (Length overall). Number of vessels in this segment was 7.7% of the total Latvian fishing fleet and it contributed 37.0 % to total GT and 49.0% to total kW.

Vessels of this group operate only in the Baltic Sea (including the Gulf of Riga) offshore waters in ICES SD (subdivisions) 22 – 32.

The main fishing gears for these vessels are midwater and bottom otter trawls targeting for sprat, herring and cod. This fleet segment constitutes about 60.1% of the total Latvian catch in 2019.

**Table 2. Description and segmentation of the Baltic Sea (including the Gulf of Riga) offshore fleet in 2019**

Length	Type of gear	Number of vessels			Total fleet catch in 2019 (% of catch quota)		
		31.12.2018	Active in 2019	31.12.2019	Cod	Sprat	Herring
VL1218	Trawler	11	11	9	0	2.6	27.4
	Netter	0	0	0	0	0	0
VL2440	Trawler	44	37	42	100	97.4	72.6
	Netter	0	0	0	0	0	0

### Coastal Fishing Fleet

Represented by 605 fishing boats with overall length equal to or less than 12 m which constitute the majority of vessel number or 91.5% from the total, but contribute only 4.6% to total GT and 13.4% to total kW.

In 2019, the coastal fishers used actively 191 boats for the commercial fishing and 45 boats - for self-consumption fishing. Some boats (13) have been used in both fisheries. Other fishing boats fished episodically or were used as accessory boats.

Coastal fleet segment is very important for Latvian coastal regions along the Gulf of Riga and sea coastline for socio-economic reasons. Small-scale fishery is the main source of subsistence and employment for residents of remote coastal communities.

However, the catches of coastal fishing fleet are relatively small (about 4.6% of the total Baltic Sea catches) and these include Baltic herring, cod, round goby, flounder, smelt, as well as garfish, perch, vimba, bream and other non-TAC and non-quota species mainly obtained by fixed passive fishing gears. This fleet segment contributed about 2.9% to the total Latvian catch (including High Sea fishery) in 2019.

In 2019 coastal fishing fleet also includes 45 boats (from 605) used for self-consumption fishing within one gear rule (maximum 1 net or 1 herring net or 1 fyke net or 100 hooks could be used simultaneously by one person) and it is prohibited the marketing of these catches.

However, in the coastal fishing fleet the scrapping plan was fulfilled in relation to GT and kW but was not fully achieved in relation to the number of vessels. Since in the coastal fishery only passive gears are deployed, the balancing of the number of the vessels is more important than GT and kW.

### 3.3. Development in fleets

**Table 3. Evolution of Latvian fishing fleet (from 1<sup>st</sup> of May, 2004 to 31<sup>st</sup> of December, 2019)**

Date	Number of vessels	GT	kW
Census: 1 <sup>st</sup> of May, 2004	898	44449	74320
31 <sup>st</sup> December, 2018	671	22317	41539
31 <sup>st</sup> December, 2019	661	16061	32927
Difference between CEN date and 31 <sup>st</sup> of December, 2019	237	28388	41393

## 4. Section B

### Statement of compliance with entry/exit scheme and with level of reference

In 2019 Latvia fully respected capacity limitations in terms of GT and kW according to the *Commission Regulations 1438/2003* and *916/2004*. National legislation prescribes that all new intensions for entries – purchase or construction of any fishing vessel shall be agreed before with the relevant authorities (the Fisheries Department (FD) of the Ministry of Agriculture).

**Table 4. Management of entry/exit regime on 31.12.2019**

		GT		kW	
1	Capacity of fleet on 1st May 2004	GT <sub>FR</sub>	44449	kW <sub>FR</sub>	74320
2	Capacity level for the application of entry/exit regime	GT <sub>04</sub>	56555	kW <sub>04</sub>	83930
3	Entries of vessels of more than 100 GT financed with public aid	GT <sub>100</sub>	0	kW <sub>100</sub>	0
4	Other entries or capacity increases (not included in 3 & 5)		53018		68332
5	Increases in tonnage GT for reasons of safety	GT <sub>S</sub>	0	-	-
<b>6</b>	<b>Total entries (3+ 4 + 5)</b>		<b>53018</b>		<b>68332</b>
7	Exits before 1/1/2007 financed with public aid	GT <sub>a1</sub>	3134	kW <sub>a1</sub>	7441
8	Exits after 1/1/2007 financed with public aid	GT <sub>a2</sub>	8105	kW <sub>a2</sub>	19826
9	Other exits (not included in 7 & 8)		70167		82458
<b>10</b>	<b>Total exits (7 + 8 +9)</b>		<b>81406</b>		<b>109725</b>
11	Power of engines replaced with public aid conditional to power reduction	-	-	kW <sub>r</sub>	0
12	Capacity of the fleet on 31.12.2019 (1 + 6 – 10)	GT <sub>t</sub>	16061	kW <sub>t</sub>	32927
13	Fleet ceiling on 31.12.2019		45687		56663

Line 4 is calculated as:  $4 = (12 - 1) + 10 - (3 + 5)$

Line 13: Ceiling GT =  $2 - 35\% 3 - 98.5\% 7 - 96\% 8$  and kW =  $2 - 35\% 3 - 7 - 8 - 20\% 11$   
%11

## 5. Section C

### 5.1. Information on general level of compliance with fleet policy instruments

In 2019, as before, the main organizations responsible for the management of the national fleet were:

- The Fisheries Department (FD) of the Ministry of Agriculture with responsibilities:
  - Elaboration of the national Fisheries Policy and functioning of the Latvian Fisheries Integrated Control and Information System (LFICIS);
  - Supervision of implementation of the national fisheries management measures, including national fishing fleet ceiling levels and the fishing fleet capacity adjustment plans;
  - Implementation of the fisheries policy in Latvia (issuing special fishing permits for fishing vessels according to the EU requirements, authorization for entry/exit of the fishing vessels into the Fishing Fleet Register etc.);
  - General management of fishing licenses and fishing authorization for offshore fishing vessels.
- The State Environmental Service of the Ministry of Environment and Regional Development is responsible for control and enforcement of the fishing activities and VMS reporting;
- The Latvian Ship Register (LSR) of the Maritime Administration of the Ministry of Transport is responsible for registration of the vessels (also the fishing vessels) into the common ship register;
- The Rural Support Service (RSS) under the supervision of the Ministry of Agriculture is responsible for management of projects implementation with respective national and EU public support from the European Maritime and Fisheries Fund.

### 5.2. Summary of strengths and weaknesses of the fleet management system

Strengths of the fleet management system:

- Development of the LFICIS provided close collaboration between above mentioned Latvian fishing fleet management institutions;
- The Institute of Food Safety, Animal Health and Environment “BIOR” has to provide and obtain precise information about stock conditions and fleet fishing effort in the Baltic Sea and the Gulf of Riga;
- Functioning of the fishing fleet register is supervised by FD that provides complete and precise data on all concerned vessels;
- Good and practically functioning vessel entry/exit management scheme is established in Latvia.

Weaknesses of the fleet management system:

- Information entered in LFICIS was accessible for changes to correct the previously entered data; however, on the other hand for justified reasons under proper management by competent authorities the data normally could be slightly changed within the time to adjust with real status.

### 5.3. Plan for improvements in fleet management system

In 2019 still some improvements was done in the LFICIS in order to comply with all the requirements set by the EU Fisheries control regulation. This ensured not only improvement of the fisheries data quality by the crosschecks and data validation but also facilitates the work of the personnel working with LFICIS.

At this stage massive work is done in order to develop and put in place the new UN/FLUX standard for the snapshot reporting in Latvia. It is main priority to deliver UN/FLUX standard reporting as soon as possible in order to comply with the EU requirements.

## 6. Section D

### Information on changes of the administrative procedures relevant to fleet management

There were no significant changes in 2019 in the administrative procedures. However it should be mentioned that the work with LFICIS improvements and development is still continuing. For the years 2012-2019, the Fisheries Department (FD) invested quite a lot in development of LFICIS to improve reliability of the data, to make easier its processing and routine work, to improve the forming of the required reports.

## 7. Section E

### Estimation and discussion of balance indicators

#### 7.1. Technical indicators – Vessel Use Indicators

Technical indicators for Latvian fishing fleet were calculated according to the 2014 Balance Indicator Guidelines (*COM 2014, 545*). These indicators show how much fleet capacity could be reduced without reducing overall fleet output (landings). The technical indicators can be considered as the **baseline indicator** for each fleet segment. The maximum day at sea was calculated as follows: the average number of days at sea of the top 10 most active vessels in a fleet segment in a given year.

##### 7.1.1. The Inactive Fleet Indicator – IFI

The proportion of inactive vessels of the total fleet was calculated with respect to number of vessels, GT and kW. The total number of vessels registered in the fleet register on 31<sup>st</sup> of December and all active vessels of the corresponding year were taken to determine the number of inactive vessels by different length classes. The values of Inactive Fleet Indicator for period 2009-2019 are presented in Annex I.

The IFI indicator for the segment VL1218 shows zeros in last three years, as there were no inactive vessels in this segment. For the segment VL2440 the IFI indicator is increased in last two years by 4.8% per year. This increasing could be explained by negative effect of the reduction of sprat and herring quota in last few years and by implementation of complete cod targeted fishery ban in eastern part of the Baltic Sea. The proportion of inactive vessels in the segment VL2440 exceed threshold value (10%) and according to the 2014 Balance Indicator Guidelines these segment is not in balance with respect to IFI. Especially it is relevant to the part of this segment targeting only or mainly cod where all vessels temporary case their activities started from spring 2019 following the national and European Commission emergency measures to protect the eastern Baltic cod stock and further stay inactive in 2020 in accordance to Council Regulation setting the ban for targeted fishery from this stock. The measures to balance the fleet segment VL2440 with this emerging situation are included into Annex VII.

##### 7.1.2. The Vessel Utilisation Indicator – VUI

Vessel Utilisation Indicator characterizes the ratio between efforts actually deployed to the maximum effort that could be extended by the fleet. All active Baltic Sea vessels, which had license and fished at least one day a year have been taken for the calculation. The values of Vessel Utilisation Indicator also known as Vessel Utilisation Ratio (VUR) are presented in Annex II.

**The segment of trawlers VL1218** operates mainly in the Gulf of Riga with target species Baltic herring. Number of vessels is reduced by 67% in comparison to 2006. Taking into account that VUI value of last three years is greater than 0.9, it could be stated that capacity of this segment is in balance with the fishing opportunities.

**The segment of trawlers and netters VL1824** does not exist since 2017. According to the rules of clustering (*Regulation (EU) 2016/679*) the remaining vessel was included to the segment of trawlers VL2440.

**The segment of netters VL2440** historically targeted Baltic cod does not exist anymore. However, data on vessel Utilisation ratio for the period of 2006-2015 is presented in Annex II.



**The segment of trawlers VL2440** operates mainly in ICES areas 25-32 with target species Baltic sprat with bycatch of Baltic herring and targeting Baltic cod as well. The quotas for these stocks were reduced for several years with recent total closure of eastern Baltic cod targeted fishery in its' main distribution areas in the second half of 2019 following with decision on full stop in 2020. Number of vessels in 2019 is reduced by 49% in comparison to 2006. VUI for this segment decreased in comparison to the previous year and reached 0.66 below the threshold 0.7. It could be stated that capacity of this segment is not "in balance" with the fishing opportunity. The measures to balance the fleet segment VL2440 with this emerging situation are included into Annex VII of this Annual Report.

**The segment of small-scale coastal fishery VL0010** was calculated only for commercial fishery. The coastal fishery uses different static gears such as nets, traps, lines and seines. Average activity level for this segment was less than 25% of the potential during the period of 2009-2019. In general, it indicates that for significant part of coastal fishers the fishery constitutes only a part job in their activities. This could be also connected with the availability of fish resources and its' seasonality in the coastal area. Although the utilization ratio of small boats VL0010 is consistently at a very low level, this segment is very important in socio-cultural aspect as traditional activities for population of coastal settlements.

### Summary

In the segments where the number of vessels is around 10 or less, any changes in fishing strategy by one vessel or one company could noticeably vary the technical indicator values. For Latvian fishing fleet the segment of trawlers VL1218 can be considered as small in number of vessels and any conclusion of it balance should be treated with caution and verified over the time.

In 2019 the value of the vessel utilization rate for the segment VL1218 is greater than 0.9 and it could be stated that capacity of this segment is in balance with the fishing opportunity. VUI value for segment VL2440 is below the threshold 0.7 and it could be stated that capacity of this segment is not "in balance" with the fishing opportunity. The measures to balance the fleet segment VL2440 in relation to eastern Baltic cod crisis are included into Annex VII of this Annual Report.

VUI value for segment VL0010 is on the low level as in previous years and it could be explained by low activity level and seasonality. Further closer look on this segment development in relation to available fish resources should be done in the following years.

## 7.2. Biological indicators

### 7.2.1. Biological indicator Sustainable Harvest Indicator - SHI

The Sustainable Harvest Indicator (SHI) was defined for three Latvian fishing fleet segments, which contribute around 96% to the total Latvian catch in the Baltic Sea. The values of SHI for period of 2009-2018 and two fishing regions (Baltic proper and Gulf of Riga) were calculated for the following fleet segments:

- trawlers VL2440 in SD 25-32 with target species of sprat (63-93% in 2009-2018);
- trawlers VL1218 in the Gulf of Riga (28.1) with target species of herring (75-90% in 2009-2018);
- trawlers VL2440 in the Gulf of Riga (28.1) with target species of herring (78-91% in 2009-2018).

The values of current fishing mortality  $F_c$  for different years for stocks exploited by Latvian fishing fleet were obtained from the Report of Baltic Fisheries Assessment Working Group (*WGBFAS ICES. 2019, Volume I, Issue 20*):

- sprat in Subdivisions 22-32;
- herring in Subdivisions 25-29 and 32 (excluding Gulf of Riga herring in Subdivision 28.1);
- herring in Subdivision 28.1(Gulf of Riga);
- cod in Subdivisions 24-32;

Fishing mortality values for level of maximum sustainable yield  $F_{msy}$  for considered stocks were obtained from the ICES Advices on fishing opportunities, catch, and effort for the Baltic Sea ecoregion:

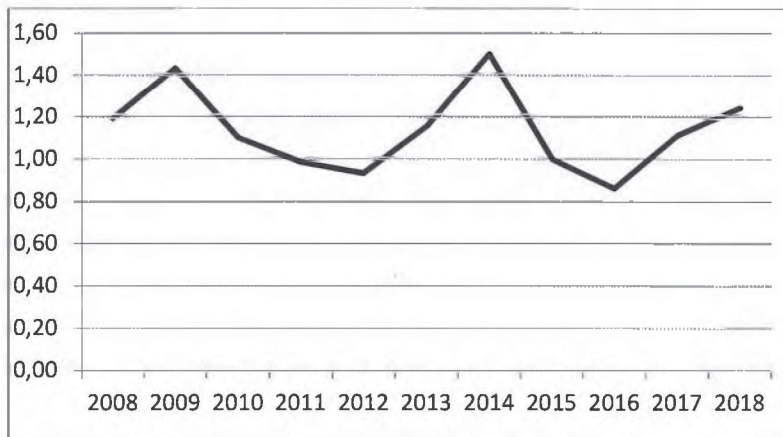
- for Sprat in SD 22-32  $F_{msy}=0.26$  (range 0.19-0.27);
- for Herring in SD 25-29 and 32 (excluding Gulf of Riga herring in Subdivision 28.1)  $F_{msy}=0.22$  (range 0.16-0.28);
- for Herring in Subdivision 28.1(Gulf of Riga)  $F_{msy}=0.32$  (range 0.24-0.38);
- for Cod in SD 24-32 reliable and standard stock assessment is undefined.

Recommended values of  $F_{msy}$  (mean value) were used for each stock.

The calculated SHI indicator values for all species and fleet segments are presented in the Annex III.

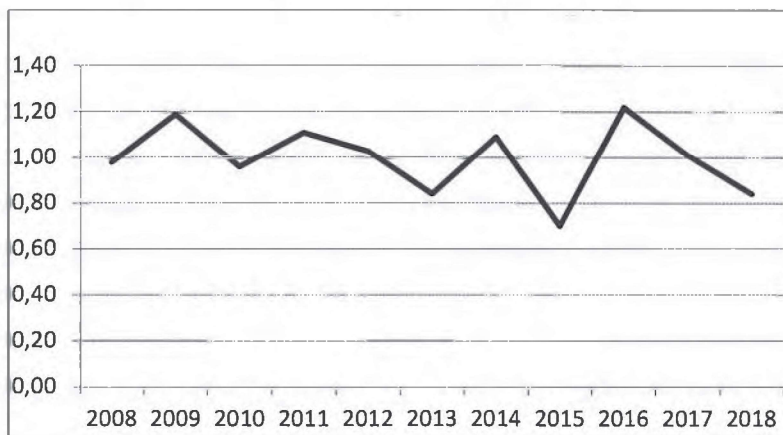
**For segment trawlers VL2440 in SD 25-32 (excl. 28.1)** average values of SHI were calculated for sprat and herring only, as cod stock parameters were not defined by WGBFAS and cod catch contributed 2.7% to total catch of this fleet segment (Annex III). The SHI values are quite widely fluctuating around 1, and mainly depend on the variation of fishing mortality values for the sprat, which is the largest part of total catches in this segment (around 78 %). In 2018, the value of SHI parameter was 1.24 (Fig. 1, Annex III).

Formally, this value of SHI parameter could be considered as out of balance, however according to the guidelines: *"SHI > 1 may indicate that fleet segment is relying on a stock of which fishing opportunity is set above MSY if this has occurred in 3 consecutive years.* Further closer look on this segment development in relation to available fish resources should be done in the next year. However for the part of this segment targeting only or mainly cod what was hit by the adopted national and European Commission emergency measures to protect the eastern Baltic cod (from spring 2019) the immediate measures are proposed in this Annual Report to balance the fleet capacity with the current status of eastern Baltic cod population for which according to recent ICES advice there will not be signs for recovery in a short terms.



**Fig. 1.** The changes of biological indicator SHI during the period of 2008-2018 for the segment of trawlers VL2440 in the Baltic Sea.

**In the Gulf of Riga for trawlers VL2440 and trawlers VL1218,** which are mostly fishing herring the small bycatch of sprat was also taken into account (Fig. 2, Annex III). The share of herring in mixed catches is approximately the same for both considered segments and is about 88%.



**Fig. 2.** The changes of biological indicator SHI during the period of 2008-2018 for the segments of trawlers VL1218 and VL2440 in the Gulf of Riga.

In 2018 average value of SHI parameter for both trawler segments in the Gulf of Riga was determined as 0.84, i.e. less than reference value 1. According to the guidelines, this value indicates that both fleet segments (VL2440 and VL1218) in the Gulf of Riga are in a state of "balance between fleet capacity and the possibility of fish resources".

Following the recommendations and applying the interpretation proposed in the guidelines it can be concluded:

- for the segment of trawlers VL2440 which mainly exploits the sprat stock (78%) with bycatch of herring in the Baltic proper (SD 25-32) SHI average value (1.24) indicates some excess of “balance” level for Maximum Sustainable Harvest Yield. Taking into account that this is the second time for the last three years, it can be assumed that the situation is not extreme and the segment is “in balance”. However further closer look on this segment development in relation to available sprat and herring resources should be done in the next year, but for the part of the fleet targeting only or mainly cod the measures to balance fleet capacity are included in the Annex VII of this Annual Report;
- for two segments (trawlers VL1218 and VL2440) in the Gulf of Riga that rely on stocks of herring and sprat (bycatch) average value of SHI is 0.84, i.e. under the level of Sustainable Harvest Yield. Long-term dynamics of the SHI parameter demonstrates quite widely fluctuation around reference point of 1 for period of 2008-2018 and decline to 2018 (Fig. 2). It can be concluded that the cluster of the trawler segments in the Gulf of Riga is “in balance”.

### 7.3. Economic Indicators

For the evaluation of the achievement of balance between fleet capacity and fishing opportunities in Latvian fishery from 2014 to 2018 three Baltic Sea fleet segments were selected and included in the analysis. Two economic indicators were calculated for each fleet segment to evaluate whether fleet segments are economically sustainable in the long-term and short-term.

The indicator Return on Investment (ROI) shows investment profitability. ROI positive and greater than the low risk long-term interest rate shows positive return generated by the investment and suggests that extraordinary profits are being generated a sign of economic under-capitalization. During the analyzed period from 2014 to 2018 the ROI indicator has stable positive values for the segment trawlers VL2440. In turn, the ROI indicator for the segment VL1218 trawlers operating in the Gulf of Riga was positive in 2015 and 2017-2018. Despite of negative ROI shown in 2017 for the coastal vessels attributed to the segment VL0010 the ROI value show improvement in 2018. In general, during the analyzed period the ROI ratio greater than 1 indicates that the economic activity of the segments VL2440, VL1218 and VL0010 are cost-effective in the long-term. The detailed ROI calculations for each fleet segment and conclusions are presented in the section 7.3.1 and Annex IV.

The second economic indicator Ratio of Current revenue to Break-even revenue (CR/BER) reflects the financial capability of businesses with vessel in a given fleet segment to continue operating on a day-by-day basis. The trawlers segments VL1218 and VL2440 operating in the Baltic Sea offshore zone show CR/BER ratio positive and greater than 1 in 2018, characterizing the segments profitability in the short-term. The coastal zone segment VL0010 show CR/BER ratio positive but close to zero in 2017-2018. The CR/BER results for the segment VL0010 indicate that the insufficient income is generated to cover variable, fixed and capital costs signify the potential over-capitalization in 2017-2018. However, during the analyzed period 2014-2018 the CR/BER indicator is not stable. The results for 2015 indicate a ratio greater than 1 for the all fleet segments indicating the economically efficient activity. The detailed calculations and conclusions are presented in the section 7.3.2 and Annex V.

The methodology used for economic analysis have been proposed by *COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL 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 (Brussels, 2.9.2014. COM (2014) 545 final)*. There are two economic indicators proposed by the guidelines. The economic indicators show the extent of economic over or under capitalization in a fleet, both in the short and in the long-term. In order to assess the profitability of the fleet in the long-term the indicator return on investment (ROI) was calculated. The second indicator applied is ratio between current revenue and break-even revenue (CR/BER) reflects the financial capability of businesses with vessels in a given fleet segment to continue operating on a day-by-day basis. The indicator characterizes economic situation in the short-term.

The following categories of fishing vessels were excluded from the analysis:

- vessels over 40 meters operating in the Atlantic (area 27 and 34) due to the limited number of vessels and data confidentiality;
- inactive vessels due to the small number and low capacity;
- coastal vessels listed in the Fleet Register not engaged in commercial fishing and involved only in fishing for self-consumption.

For the calculations and analysis the data collected in the frame of Data Collection (implemented under *Reg. (EU) 2017/1004; Commission Implementing Decision (EU) 2016/1251* Table 5A Economic variables for the fleet and Table 4 Fishing activity variables) have been used.

The economic indicators have been calculated for the active Baltic Sea fishing fleet by economic segments provided in Table 5B *COM (EU) 2016/1251*. All commercial vessels operated in the coastal zone were included in the segment VL0010.

According to the recommendations provided by the Workshop on Capital value estimations (Salerno, 7-10 October 2019) the Net profit for 2018 was calculated based on capital costs and capital value delivered from perpetual inventory method (PIM) which provides more precise economic assessment in macro perspective.

Long-term interest rates for indicators calculation have been taken from the European Central Bank as Latvian average interest rate for the last five years, available at [https://www.ecb.europa.eu/stats/financial\\_markets\\_and\\_interest\\_rates/long\\_term\\_interest\\_rates/html/index.en.html](https://www.ecb.europa.eu/stats/financial_markets_and_interest_rates/long_term_interest_rates/html/index.en.html)

### 7.3.1. Return on Investment (ROI)

Return on investment (ROI) shows investment profitability and is defined as Net profit after capital stock depreciation and then divided by capital asset value of the fleet. The subsidies are excluded from the calculation. According to the guidelines the ROI positive and greater than the low risk long-term interest rate shows positive return generated by the investment and suggesting that extraordinary profits are being generated, a sign of economic under-capitalization. Values of ROI positive but smaller than the low risk interest rate would yield negative values for the indicator indicating that in the long-term it would more beneficial to invest elsewhere which is a sign that probably the fleet is overcapitalized and therefore economically inefficient. Negative ROIs can by themselves indicate economic over-capitalization. ROI results and calculations for each fleet segment are presented in Table 5 and Annex IV.

**Table 5. Return on Investment (ROI – risk free long term interest rate %)**

Fleet Segments	2014	2015	2016	2017	2018
VL0010 PGP	2315	1486	857	-17	31
VL1218 TM	-149	50	-0.76	49	110
VL2440 TM	26	41	25	26	171

#### Application and interpretation

The ROI shows positive and high values from 2014 to 2018 for the trawlers in the segment VL2440. The positive ROI values indicate that extraordinary profit is being generated and positive return of investments ensures the segment profitability. The main factor is that the segment target species are herring and sprat, which provide the necessary turnover for the segment. The herring and sprat catches contributed in average 40% and 51% respectively to total Latvian volume of landing as well as 34% and 47% respectively to total Baltic Sea value of landing from 2014 to 2018.

The positive ROI values also are indicated in 2015 and 2017-2018 for the segment trawlers VL1218 operating in the Gulf of Riga with the main target species herring and sprat. The ROI positive and greater than low risk long-term interest rate indicate the profitable fishery in the long-term.

The ROI values for the coastal fleet vessels in the segment VL0010 were too high during the period from 2014 to 2016. The high values of ROI in the segment can be explained with a low fleet capital asset value due to low residual values of capital and a long service life of vessels and vessel equipment. The average vessel age for the segment VL0010 was around 30 years and the share of the capital asset value in the total fleet capital assets was 0.8% in 2016. The positive ROI values indicate that the segment is profitable in the long-term and normal investments returns are being generated. Nevertheless, too high ROI results caused by the low capital asset value also can indicate the modernization of the vessels and equipment is necessary. The negative value of ROI in 2017 is a result of increased costs in the segment VL0010 and in particular of the costs - crew wage, which in turn led to losses in 2017. However, negative ROI values for the VL0010 segment cannot be considered as characterizing of the low profitability of the segment in the long-term. The segment VL0010 has a positive ROI value (31%) in 2018. Further closer look on this segment development should be done in the following years.

In general, for the three main fleet segments (coastal boats VL0010, trawlers VL1218, trawlers VL2440) it could be concluded that fishing activity is cost-effective in the long-term but fleet modernization could be necessary in the near future. It should also be noted that the potential capacity can be exploited by 20-30% more for some vessels in segments VL1218 and VL2440. If intensity of fishing for some vessels in the segments VL1218 and 2440 will increase, the segments could obtain greater amount of catch and higher revenue from sales, which in turn could facilitate a profit growth.

### 7.3.2. Ratio of Current revenue to Break-even revenue (CR/BER)

The break-even revenue (BER) is the revenue required to cover both fixed and variable costs, that no losses are incurred and no profits are generated. The current revenue (CR) is the total operating income of the fleet segment, which consists of income from landings and non-fishing income. Data on subsidies were excluded from the calculation. In addition, income and expenditures from the fishing rights has 0 values due to the absence of fishing rights market in Latvia. The opportunity costs are included in the calculation.

According to the definition in the guidelines, the ratio between fleet current revenue and break-even revenue shows how close the current revenue of a fleet is to the revenue required for the fleet to break even in the short-term. If the ratio is greater than 1, then enough income is generated to cover variable, fixed and capital costs, indicating that the segment is profitable, with potential under-capitalisation. Conversely, if the ratio is less than 1, insufficient income is generated to cover variable, fixed and capital costs, indicating that the segment is unprofitable, with potential over-capitalisation. If the CR/BER result is negative, this means that variable costs alone exceed current revenue, indicating that the more revenue is generated, the greater the losses will be. Ratio between current revenue and break-even revenue (CR/BER) indicates a profitable fishery in the short-term. The CR/BER results and calculations for each fleet segment are presented in Table 6 and Annex V.

**Table 6. Ratio of Current revenue to Break-even revenue CR/BER)**

Fleet Segments	2014	2015	2016	2017	2018
VL0010 PGP	51.29	10.53	3.24	0.16	0.49
VL1218 TM	-1.14	3.60	0.16	0.42	1.05
VL2440 TM	1.31	1.88	0.30	0.44	1.46

#### **Application and interpretation**

The segment of small boats less than 10 meters with polyvalent passive gears attributed to the segment VL0010 annually has the highest CR/BER ratio between 2014 and 2016. The segment contributed only 7% to total Latvian value of landing during analyzed period and does not have significant impact to the economic situation in the Latvian fishery.

The negative CR/BER ratio -1.14 in 2014 indicates short-term financial difficulty for the segment trawlers VL1218 operated in the Gulf of Riga. The situation had improvements in 2015 when the segment operated with the profit €1.4 million and CR/BER ratio of 3.60 indicated the profitable economic activity in the short-term. However, the decrease of average price for the target species herring and sprat by 8% and 20% respectively in 2016 deteriorate the segment VL1218 profitability for 2016-2017 and decline the CR/BER indicator to 0.16 and 0.42 respectively. Similar situation raised by the negative influence from the fish price reduction is observed also for the segment trawlers VL2440 where CR/BER ratio in 2016 and 2017 were 0.30 and 0.44 respectively. However, the price for the sprat increased by 8% from 2017 to 2018 in turn insignificantly increased the value of landing by 3%. In the result the CR/BER ratio for the fleet segments trawlers VL1218 and VL2440 is above 1 in 2018 indicating the segments profitability in the short-term. Therefore, it can be concluded that two main segments (trawlers VL1218 and trawlers VL2440) have CR/BER ratio above 1 indicating that the segments are profitable in the 2018 with potential under-capitalization.

**Annex I**

Technical indicators - The Inactive Fleet Indicator (number and proportion of inactive vessels)

**Values for trawlers VL1218**

Year	Inactive vessels			% of total		
	No of vessels	kW	GT	No of vessels	kW	GT
2009	1	110	29	5.6	3.7	5.6
2010	1	110	29	5	3	3.4
2011	1	110	29	7.1	4.5	7
2012	1	110	29	8.3	5.2	8.1
2013	1	147	29	8.3	6.6	8.1
2014	0	0	0	0	0	0
2015	1	147	29	8.3	6.6	8.1
2016	1	147	29	8.3	6.6	8.1
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0

**Values for trawlers VL2440**

Year	Inactive vessels			% of total		
	No of vessels	kW	GT	No of vessels	kW	GT
2009	9	1857	831	11.7	8.8	8.3
2010	8	1790	788	11.4	9.7	9.4
2011	7	2392	1002	11.7	13.6	13.1
2012	7	1712	805	11.7	9.6	10.5
2013	5	1102	579	8.9	6.5	7.9
2014	2	699	214	3.8	4.3	3.1
2015	2	698	222	3.9	4.3	3.3
2016	2	607	230	4.4	4.1	3.7
2017	2	606	221	4.3	3.9	3.6
2018	4	1047	441	9.1	6.9	7.5
2019	6	1838	675	13.9	12.6	11.7

## Annex II

### Technical indicators - The Vessel Utilisation Indicator

#### Values for boats VL0010 using polyvalent passive gears

Year	Number of vessels	Capacity (average)	Effort (average)		Maximum effort (based on observed max)		Technical indicator	
		GT	days	GT*days	days	GT*days	days <sup>1</sup>	GT*days <sup>2</sup>
2009	259	2.3	37	88	206	477	0.18	0.19
2010	260	2.2	42	101	175	382	0.24	0.26
2011	252	2	38	84	157	321	0.24	0.26
2012	210	1.7	41	78	215	363	0.19	0.21
2013	200	1.7	44	84	205	347	0.21	0.24
2014	223	1.9	51	104	203	383	0.25	0.27
2015	204	1.9	53	102	223	420	0.24	0.24
2016	200	2	50	90	188	368	0.26	0.25
2017	196	1.89	52	98	193	365	0.27	0.27
2018	194	2	49	103	173	350	0.28	0.28
2019	196	2	47	94	171	342	0.27	0.27

#### Values for trawlers VL1218

Year	Number of vessels	Capacity (average)	Effort (average)		Maximum effort (based on observed max)		Technical indicator	
		kW	days	kW*days	days	kW*days	days <sup>1</sup>	kW*days <sup>3</sup>
2006	33	153	133	21987	236	36180	0.56	0.61
2007	31	153	144	24156	290	44239	0.5	0.55
2008	28	156	139	23495	231	36110	0.6	0.65
2009	23	160	142	24797	258	41269	0.55	0.6
2010	17	168	156	27244	207	34752	0.75	0.78
2011	16	172	172	31023	260	44590	0.66	0.7
2012	13	180	160	29651	232	41760	0.69	0.71
2013	11	183	176	32837	217	39770	0.81	0.83
2014	11	190	159	30281	197	37430	0.81	0.81
2015	11	188	161	30382	251	47256	0.64	0.64
2016	11	188	147	27997	221	41608	0.67	0.67
2017	11	190	178	34015	188	35737	0.94	0.95
2018	11	190	178	34225	189	35927	0.94	0.94
2019	11	194	145	28130	157	30458	0.92	0.92

#### Values for netters VL2440

Year	Number of vessels	Capacity (average)	Effort (average)		Maximum effort (based on observed max)		Technical indicator	
		GT	days	GT*days	days	GT*days	days <sup>1</sup>	GT*days <sup>2</sup>
2006	38	81	126	10581	207	16699	0.61	0.63
2007	29	86	128	11044	199	17032	0.64	0.65
2008	26	86	122	10510	186	15932	0.66	0.66
2009	23	88	94	8359	173	15171	0.55	0.55
2010	18	90	109	10270	182	16451	0.6	0.62
2011	10	101	143	14089	199	20159	0.72	0.7
2012	9	94	158	15230	196	18424	0.81	0.83
2013	8	96	145	14092	212	20273	0.68	0.7
2014	7	87	134	12984	181	15721	0.74	0.83
2015	5	99	136	13836	158	15610	0.86	0.89
2016	Number of vessels less than 5							
2017	Not exist							
2018	Not exist							
2019	Not exist							

**Values for trawlers VL2440**

Year	Number of vessels	Capacity (average)	Effort (average)		Maximum effort (based on observed max)		Technical indicator	
			kW	days	kW*days	days	kW*days	days <sup>1</sup>
2006	75	265	110	28526	199	52758	0.55	0.54
2007	70	270	118	32706	205	55431	0.58	0.59
2008	69	266	106	28741	184	48929	0.58	0.59
2009	60	308	91	25569	191	58780	0.48	0.44
2010	49	301	105	33199	176	52911	0.6	0.63
2011	48	308	102	30791	197	60606	0.52	0.51
2012	48	320	111	34344	214	68578	0.52	0.5
2013	46	321	115	37437	217	69549	0.53	0.54
2014	45	320	107	33801	180	57620	0.6	0.59
2015	44	326	113	36169	193	62870	0.59	0.58
2016	44	333	105	34050	184	61243	0.57	0.56
2017	44	336	118	39672	180	60590	0.66	0.65
2018	40	342	127	43414	173	60243	0.73	0.73
2019	37	357	105	37539	158	56459	0.66	0.66

<sup>1</sup> ratio between average days at sea and maximum days at sea.

<sup>2</sup> ratio between average GT\*days at sea and maximum GT\*days at sea.

<sup>3</sup> ratio between average kW\*days at sea and maximum kW\*days at sea.



**Annex III**

Biological indicators SHI for Latvian Fleet segments in 2016-2018

Area	Fleet segment	Parameters	2016				2017				2018			
			COD 25-32	HER 25-29, 32 (excl.28.1)	SPR 22-32	HER GOR (28.1)	COD 25-32	HER 25-29, 32 (excl.28.1)	SPR 22-32	HER GOR (28.1)	COD 25-32	HER 25-29, 32 (excl.28.1)	SPR 22-32	HER GOR (28.1)
SD 25-32	VL2440 trawlers	Catch,t	2404	6989	26503		2384	6819	33017		1210	9837	35042	
		F c	n/d	0.2	0.22		n/d	0.28	0.28			0.28	0.32	
		Fmsy	n/d	0.22	0.26		n/d	0.22	0.26			0.22	0.26	
		F/Fmsy	n/d	<b>0.91</b>	<b>0.85</b>		n/d	<b>1.27</b>	<b>1.08</b>			<b>1.27</b>	<b>1.23</b>	
		F/Fmsy for segment		0.86				1.11				1.24		
28.1 Gulf of Riga (GOR)	VL1218 trawlers	Catch,t	n/d		706	6413			1000	7219			937	6540
		F c	n/d		0.22	0.4			0.28	0.32			0.32	0.25
		Fmsy	n/d		0.26	0.32			0.26	0.32			0.26	0.32
		F/Fmsy			<b>0.85</b>	<b>1.25</b>			<b>1.08</b>	<b>1</b>			<b>1.23</b>	<b>0.78</b>
		F/Fmsy for segment			1.21				1.01				0.84	
	VL2440 trawlers	Catch,t	n/d		892	9901			1724	8896			1120	7985
		F c	n/d		0.22	0.4			0.28	0.32			0.32	0.25
		Fmsy	n/d		0.26	0.32			0.26	0.32			0.26	0.32
		F/Fmsy			<b>0.85</b>	<b>1.25</b>			<b>1.08</b>	<b>1</b>			<b>1.23</b>	<b>0.78</b>
		F/Fmsy for segment			1.22				1.01				0.84	

**Annex IV.**  
ROI calculation

Year	Values for calendar year (€000)	VL0010PGP	VL1218TM	VL2440TM
2014	Income from landings + other income	1,735,010	2,406,672	16,106,155
	Low risk long term interest rate %	5.33	5.33	5.33
	Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs	174,763	3,558,292	12,428,376
	Capital costs (depreciation + interest payments)	18,925	316,277	1,228,724
	Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation)	1,541,322	-1,467,897	2,449,055
	Fleet capital asset value (vessel replacement value + estimated value of fishing rights)	66,432	1,024,936	7,842,539
	<b>ROI = Net profit / capital asset value %</b>	<b>2320.15</b>	<b>-143.22</b>	<b>31.23</b>
	<b>ROI – risk free long term interest rate %</b>	<b>2314.82</b>	<b>-148.55</b>	<b>25.90</b>
2015	Income from landings + other income	1,514,647	2,670,386	16,502,938
	Low risk long term interest rate %	3.46	3.46	3.46
	Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs	522,681	1,808,191	10,817,657
	Capital costs (depreciation + interest payments)	24,822	90,131	1,514,114
	Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation)	967,144	772,064	4,171,167
	Fleet capital asset value (vessel replacement value + estimated value of fishing rights)	64,915	1,450,109	9,340,218
	<b>ROI = Net profit / capital asset value %</b>	<b>1489.86</b>	<b>53.24</b>	<b>44.66</b>
	<b>ROI – risk free long term interest rate %</b>	<b>1486.40</b>	<b>49.78</b>	<b>41.20</b>
2016	Income from landings + other income	1,072,810	2,429,772	14,082,390
	Low risk long term interest rate %	2.38	2.38	2.38
	Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs	314,188	1,909,862	11,171,380
	Capital costs (depreciation + interest payments)	26,955	479,572	555,351
	Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation)	731,667	40,339	2,355,659
	Fleet capital asset value (vessel replacement value + estimated value of fishing rights)	85,093	2,490,057	8,456,737
	<b>ROI = Net profit / capital asset value %</b>	<b>859.84</b>	<b>1.62</b>	<b>27.86</b>
	<b>ROI – risk free long term interest rate %</b>	<b>857.46</b>	<b>-0.76</b>	<b>25.47</b>

Year	Values for calendar year (€000)	VL0010PGP	VL1218TM	VL2440TM
2017	Income from landings + other income	1,223,394	2,871,084	17,618,796
	Low risk long term interest rate %	1.61	1.61	1.61
	Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs	1,097,354	2,186,827	13,148,491
	Capital costs (depreciation + interest payments)	303,966	121,156	2,048,458
	Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation)	-177,926	563,101	2,421,846
	Fleet capital asset value (vessel replacement value + estimated value of fishing rights)	1,150,165	1,119,599	8,630,287
	<b>ROI = Net profit / capital asset value %</b>	<b>-15.47</b>	<b>50.29</b>	<b>28.06</b>
	<b>ROI – risk free long term interest rate %</b>	<b>-17.08</b>	<b>48.68</b>	<b>26.45</b>
2018	Income from landings + other income	2,653,268	2,999,991	17,436,858
	Low risk long term interest rate %	0.90	0.90	0.90
	Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs	2,027,530	2,619,276	12,373,113
	Capital costs (depreciation + interest payments)*	171,043	38,166	344,964
	Net profit **= (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation)	454,696	342,549	4,718,780
	Fleet capital asset value* (vessel replacement value + estimated value of fishing rights)	1,417,407	308,637	2,750,183
	<b>ROI = Net profit / capital asset value %</b>	<b>32.08</b>	<b>110.99</b>	<b>171.58</b>
	<b>ROI – risk free long term interest rate %</b>	<b>31.00</b>	<b>110.09</b>	<b>170.68</b>

\* Calculation based on PIM recommended by Workshop on Capital value estimations, Salerno, 7-10 October 2019.

\*\* Net profit (economic) for 2018; Net profit (financial) for 2014-2017.

**Annex V**

## Ratio of Current revenue to Break-even revenue (CR/BER) calculation

Year	Nr.	Values for a calendar year (€'000) Use Segment total figures	VL0010 PGP	VL1218 TM	VL2440 TM
2014	1	Current revenue (CR) = Income from landings + other income	1,735,010	2,406,672	16,106,155
	2	Fixed costs = Non variable costs + depreciation + opportunity of capital	30,577	711,514	6,514,800
	3	Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs	166,653	3,217,701	7,560,438
	4	$BER = 2 / (1 - [3 / 1])$	33,826	-2,111,369	12,278,476
	5	<b>CR / BER = 1 / 4</b>	<b>51.29</b>	<b>-1.14</b>	<b>1.31</b>
2015	1	Current revenue (CR) = Income from landings + other income	1,514,647	2,670,386	16,502,938
	2	Fixed costs = Non variable costs + depreciation + opportunity of capital	101,246	277,432	4,380,236
	3	Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs	448,503	1,671,064	8,274,707
	4	$BER = 2 / (1 - [3 / 1])$	143,838	741,353	8,785,213
	5	<b>CR / BER = 1 / 4</b>	<b>10.53</b>	<b>3.60</b>	<b>1.88</b>
2016	1	Current revenue (CR) = Income from landings + other income	1,072,810	2,429,772	14,082,390
	2	Fixed costs = Non variable costs + depreciation + opportunity of capital	236,275	6,977,332	25,407,456
	3	Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs	307,574	1,343,832	6,464,632
	4	$BER = 2 / (1 - [3 / 1])$	331,241	15,611,667	46,968,901
	5	<b>CR / BER = 1 / 4</b>	<b>3.24</b>	<b>0.16</b>	<b>0.30</b>
2017	1	Current revenue (CR) = Income from landings + other income	1,223,394	2,871,084	17,618,796
	2	Fixed costs = Non variable costs + depreciation + opportunity of capital	2,420,402	2,141,086	20,625,599
	3	Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs	832,684	1,969,451	8,466,112
	4	$BER = 2 / (1 - [3 / 1])$	7,578,781	6,817,895	39,704,008
	5	<b>CR / BER = 1 / 4</b>	<b>0.16</b>	<b>0.42</b>	<b>0.44</b>
2018	1	Current revenue (CR) = Income from landings + other income	2,653,268	2,999,991	17,436,858
	2	Fixed costs = Non variable costs + depreciation + opportunity of capital	1,623,268	1,296,746	4,871,004
	3	Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs	1,850,971	1,638,470	10,322,238
	4	$BER = 2 / (1 - [3 / 1])$	5,368,291	2,857,263	11,938,095
	5	<b>CR / BER = 1 / 4</b>	<b>0.49</b>	<b>1.05</b>	<b>1.46</b>

## Annex VI

The statement of balance between fleet capacity and fishing opportunities for Latvia

VL1218TM									
Indicator	Definition	Area	2014	2015	2016	2017	2018	2019	
ECONOMIC1	ROI	Area 27 SD 28.1	negative ROI over-capitalization	positive ROI under-capitalization	negative ROI over-capitalization	positive ROI under-capitalization	positive ROI under-capitalization	NA*	
ECONOMIC2	CR/BER	Area 27 SD 28.1	$-1.14 < 0$ economically unprofitable with potential over- capitalization	$1 < 3.60$ economically profitable with potential under- capitalization	$0 < 0.16 < 1$ current revenue covers the current costs	$0 < 0.42 < 1$ current revenue covers the current costs	$1 < 1.05$ economically profitable with potential under- capitalization	NA*	
TECHNICAL1	IFI - Proportion of inactive vessels	Area 27 SD 28.1	0	8.3 (<10%)	8.3 (<10%)	0	0	0	
TECHNICAL2	VUI-Vessel utilisation (Ratio between average and maximum effort per vessel, kW*days)	Area 27 SD 28.1	0.81	0.64 (<0.7)	0.67 (<0.7)	0.95	0.94	0.92	
BIOLOGICAL1	SHI - Ratio between F estimated and F target (MSY)	Area 27 SD 28.1	1.1	0.71	1.21	1.01	0.84	-	
BIOLOGICAL2	SARI - Stock-at-risk	Area 27 SD 28.1	Not calculated						

\*NA – not applicable. The economic data for 2019 will be available in November of 2020.

VL2440TM									
Indicator	Definition	Area	2014	2015	2016	2017	2018	2019	
ECONOMIC1	ROI	Area 27 SD 22- 32	positive ROI under-capitalization	positive ROI under-capitalization	positive ROI under-capitalization	positive ROI under-capitalization	positive ROI under-capitalization	NA*	
ECONOMIC2	CR/BER	Area 27 SD 22- 32	1<1.31 economically profitable with potential under - capitalization	1<1.33 economically profitable with potential under - capitalization	0<0.30<1 current revenue covers the current costs	0<0.44<1 current revenue covers the current costs	1<1.46 economically profitable with potential under - capitalization	NA*	
TECHNICAL1	IFI - Proportion of inactive vessels	Area 27 SD 22- 32	3.8 (<10%)	3.9 (<10%)	4.4 (<10%)	4.3 (<10%)	9.1 (<10%)	13.9	
TECHNICAL2	VUI-Vessel utilisation (Ratio between average and maximum effort per vessel, kW*days)	Area 27 SD 22- 32	0.60 (<0.7)	0.59 (<0.7)	0.56 (<0.7)	0.65 (<0.7)	0.73	0.66 (<0.7)	
BIOLOGICAL1	SHI - Ratio between F estimated and F target (MSY)	Area 27 SD 22- 32 (excl. Gulf of Riga)	1.5	1	0.96	1.11	1.24	-	
		Gulf of Riga	1.08	0.69	1.22	1.01	0.86	-	
BIOLOGICAL2	SARI - Stock-at-risk	Area 27 SD 22- 32	Not calculated						

\*NA – not applicable. The economic data for 2019 will be available in November of 2020.

VL0010PGP								
Indicator	Definition	Area	2014	2015	2016	2017	2018	2019
ECONOMIC1	ROI	Area 27 SD 26;28	positive and high ROI under-capitalization fleet modernization will be necessary in the future	positive and high ROI under-capitalization fleet modernization will be necessary in the future	positive and high ROI under-capitalization fleet modernization will be necessary in the future	negative ROI over-capitalization	positive ROI under-capitalization	NA*
ECONOMIC2	CR/BER	Area 27 SD 26;28	1<51.29 economically profitable with potential under - capitalization	1<18.53 economically profitable with potential under - capitalization	1<3.24 economically profitable with potential under - capitalization	0<0.16<1 current revenue covers the current costs	0<0.49<1 current revenue covers the current costs	NA*
TECHNICAL1	IFI - Proportion of inactive vessels	Area 27 SD 26;28	Not calculated					
TECHNICAL2	VUI-Vessel utilisation (Ratio between average and maximum effort per vessel, kW*days)	Area 27 SD 26;28	0.25 (<0.7)	0.24 (<0.7)	0.25 (<0.7)	0.27 (<0.7)	0.28 (<0.7)	0.27 (<0.7)
BIOLOGICAL1	SHI - Ratio between F estimated and F target (MSY)	Area 27 SD 26;28	Not calculated					
BIOLOGICAL2	SARI - Stock-at-risk	Area 27 SD 26;28	Not calculated					

\*NA – not applicable. The economic data for 2019 will be available in November of 2020.