

# The Annual report On the Latvian Fishing Fleet 2015

## 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 the accession to the EU, Latvia has fulfilled the existing rules and requirements of vessel entry/exit regime without any deviations. As a result from 2004 to 2015 all the parameters of the fishing fleet have been decreased including reduction of the total number of fishing vessels by 22%, total GT by 44% and total kW by 42%.

The fishing vessel decommissioning process affects positively the balance between the fishing fleet's capacity and the fish resources allocated to Latvia. However, in the coastal fishing fleet the scrapping plan was fulfilled in relation to GT and kW but was not fulfilled 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.

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 final*).

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. Values of the second Technical indicator - **The Vessel Utilization Indicator (VUI)** - for almost all Latvian fishing fleet segments demonstrated slight decrease in 2015 compared to the previous year. The most significant changes of technical indicator in terms of days and kW\* days were recorded in the segment of trawlers 12-18. In 2015 VUI value for this segment decreased by 21% comparing to 2014. According to the Guidelines (*COM(2014)545 final*) to consider whether the segment is "in balance" or not "*it is appropriate to consider several years rather than a single year*". Thus, taking into account average VUI value (0.75) for last four years it could be stated that capacity of this segment was approximately "in balance" with the fishing opportunity. The lowest values of the technical indicator over the observed period were in small-scale coastal fishery, where average activity level was less than 27% of the potential. Similarly the last year's report vessel utilization indicator shows existence of potential imbalance for the two Latvian fishing fleet segments - trawlers 24-40 m and small boats less than 10 m.

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

- for two segments (trawlers 12-18 m and trawlers 24-40 m) that rely on sprat and herring stocks in the Gulf of Riga SHI values are insignificantly oscillated closely to the "1", i.e. at the level of Sustainable Harvest Yield as the current fishing mortalities for these stocks are fluctuated around  $F_{msy}$  during more than four years. These segments can be considered as "in balance".

- for segment of trawlers 24-40 m which mainly exploits the sprat stock in the Baltic proper (Sd 25-32) SHI values are above "1" (threshold for "overfished stock" definition) during the previous 6 years, excluding 2012. It can be stated that segment trawlers 24-40 m relies on the "overfished" stock. This segment may be considered as "imbalance".

- for segment of netters 24-40 m targeting cod in Sd 25-32 there was not possibility to estimate it status in terms of "balance or imbalance" between fishing fleet segment opportunities and fish stock resources because the analytical assessment of Eastern cod stock was not constructed by WGBFAS.

The second of Biological indicators - **Stocks-at-risk indicator (SARI)** was not calculated because it was considered that none of the stocks correspond to the features of a stock at risk.

Two economic indicators were used 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. The economic indicator Return on Investment shows negative values for trawlers in the segment VL1218 operating in the Gulf of Riga from 2012 to 2014. During the analysed period 2012-2014 the ROI indicator have positive values for the segment trawlers VL2440 as well as for the coastal fleet vessels. 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 CR/BER ratio shows high values for the two fleet segments (trawlers VL2440 and coastal boats VL0010) in 2014. It indicates a potential under-capitalization. The fleet segment trawlers VL1218 operating in the Gulf of Riga has CR/BER ratio below zero during analysed period exclude results for 2012 where CR/BER ratio has positive value. The results for the segment VL1218 indicate of short-term economic inefficiency with potential over-capitalization.

## 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 before the entry of the new fishing vessel or vessels into register without public support. After 1 May, 2004 there were 324 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. The Latvian fishing fleet's capacity adjustment plan for years 2008-2013 was elaborated taking into account the scientific prognosis of the fish stocks development as well as the expected economic performance of the fishing fleet in the future.

Further more taking into account the information already provided in the Annual report on the Latvian fishing fleet 2013 as well as 2014 Annual report (Annex VII), Latvia is planning to scrap the whole VL 24-40m netters segment targeting only Eastern Baltic cod and these vessels are not able to switch the gears for fishing for other species (See page 9. of the Annual report on the Latvian fishing fleet 2014).

### 3. Section A

#### i) 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.

On 31<sup>st</sup> of December, 2014 the Latvian fishing fleet contained 700 vessels with total fleet engine power 37412 kW and overall gross tonnage 19535 GT, but on the 31<sup>st</sup> of December 2015 the Latvian fishing fleet contained 686 vessels with total fleet engine power 43300 kW and overall gross tonnage 24676 (Table 3).

**Table 1. The Latvian Fleet Segmentation for the 2015**

| Fleet segment       | % from total No of vessels | % from total GT | %from total kW |
|---------------------|----------------------------|-----------------|----------------|
| High Seas           | 1,6                        | 68,2            | 47,2           |
| Baltic Sea offshore | 9,2                        | 28,8            | 42,5           |
| Coastal             | 89,2                       | 3,0             | 10,3           |

#### ii) Link with fisheries

##### High Sea Fleet:

- Represented by 11 big vessels. These vessels contribute only 1.6% of the total vessel number but cover 68.2 % of the total GT and 47.2 % of the total KW respectively;

In 2015 vessels of this segment performed their fishing activities in the waters governed by the North East Atlantic Fisheries Commission (NEAFC) and in the Fishery Committee for the Eastern Central Atlantic (CECAF) area. Main fishing gears for these vessels were midwater trawls, bottom otter trawls and crab pots.

- Target species in the NEAFC area were redfish and crab opilio and in the CECAF area - horse mackerel, Atlantic mackerel, sardinella, sardine. This fleet segment contributed about 23.1% of the total Latvian catch.

In the last years the fishing opportunities for the segment were sufficient to guaranty full time operations for all fishing vessels involved in the High Sea fishery, with the exception for vessel specialized in shrimp fishery.

There were 9 Latvian vessels involved in the crab fishery and one vessel fished redfish in the NEAFC area in 2015. There were 2 Latvian vessel fishing in the Moroccan EEZ in 2015. There was one Latvian vessel fishing in the Mauritanian EEZ in 2015.

##### Baltic Sea (including the Gulf of Riga) offshore Fleet:

- This fleet group consisted of 63 fishing vessels with overall length from 12 to 40 m LOA (Length overall). Number of vessels in this segment was 9.2% of the total Latvian fishing fleet and it contributed 28.8 % to total GT and 42.5 % 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, cod and set gillnets targeting for cod. This fleet segment contributed about 73.8% of the total Latvian catch.
- However, in the Baltic Sea offshore fleet, to reach balance between the Latvian fishing fleet's capacity and the fish resources Latvia is planning to scrap the whole VL 24-40m netters segment targeting only Eastern Baltic cod.

**Table 2. Description and segmentation of the Baltic Sea (including the Gulf of Riga) offshore fleet in 2015**

| Length     | Type of gear | Number of vessels |                |            | % of total fleet catch in 2015 |       |         |
|------------|--------------|-------------------|----------------|------------|--------------------------------|-------|---------|
|            |              | 31.12.2014        | Active in 2015 | 31.12.2015 | Cod                            | Sprat | Herring |
| VL 12-18 m | Trawler      | 10                | 10             | 10         | 0                              | 2.3   | 30.1    |
|            | Netter       | 1                 | 0              | 1          | 0                              | 0     | 0       |

|           |         |    |    |    |      |      |      |
|-----------|---------|----|----|----|------|------|------|
| VL 18-24m | Trawler | 2  | 2  | 2  | 3.4  | 2.9  | 2.8  |
|           | Netter  | 1  | 1  | 1  | 3.8  | 0    | 0    |
| VL 24-40m | Trawler | 44 | 43 | 44 | 80.8 | 94.8 | 67.1 |
|           | Netter  | 6  | 4  | 5  | 12.0 | 0    | 0    |

#### **Coastal Fishing Fleet:**

- Represented by 612 fishing boats with overall length equal to or less than 12 m which constitute the majority of vessel number or 89.2 % from the total, but contribute only 10.3% to total kW and 3% to total GT.
- In 2015 the coastal fishermen used actively 204 boats for the commercial fishing and 88 boats - for self consumption fishing. Some boats have been used in both fisheries. Other fishing boats fished episodically or were used as accessory boats.
- Coastal fleet segment is very important for coastal regions of Latvia along the Gulf of Riga and the Baltic 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 4.2% of the total Baltic Sea catches) and these include Baltic herring, cod, salmon, as well as flounder, European smelt, eelpout, perch and other non-TAC and non-quota species mainly obtained by fixed passive fishing gears.
- In 2015 coastal fishing fleet also includes 88 boats (from 612) used for self consumption fishing with one gear limit (maximum 1 net, 1 herring net, 1 fyke net or 100 hooks) 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 fulfilled 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.

#### **iii) 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, 2015)**

| Date   | Number of vessels | GT    | kW    |
|--|-------------------|-------|-------|
| Census: 1 <sup>st</sup> of May, 2004                               | 898               | 44449 | 74320 |
| 31 <sup>st</sup> December, 2014                                    | 700               | 19535 | 37412 |
| 31 <sup>st</sup> December, 2015                                    | 686               | 24676 | 43300 |
| Difference between CEN date and 31 <sup>st</sup> of December, 2015 | 212               | 19773 | 31020 |

#### **4. Section B**

##### **i) statement of effort reduction schemes**

Fishing capacity reduction scheme, which applies to the Latvian fishing fleet, is represented by fishing vessels decommissioning (scraping) programme financed by national and EU public support provided through respective support measures of the European Fisheries Fund for years 2007-2013.

In accordance with the Council Regulation (EC) No 2371/2002 of 20 December 2002 *on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy* and the Council Regulation (EC) No 1198/2006 of 27 July 2006 *on the European Fisheries Fund* in the beginning of 2008 the *Latvian fishing fleet capacity adjustment plan for years 2008-2013* was approved to balance the capacity of the national fishing fleet with available fishing opportunities.

**Table 4. Number of vessels scrapped**

| No.  | Fishing fleet's segment            | Number of vessels planned to be scrapped within fleet capacity adjustment plan for years 2008-2014 | Number of vessels scrapped within capacity adjustment plan for years 2008-2012 | Number of vessels scrapped within Financial Instrument of Fisheries Guidance for years 2004-2006** |
|------|------------------------------------|--|--|--|
| 1.   | Baltic Sea offshore fishing fleet* | 71   | 71   | 57   |
| 1.1. | VL1224 Trawler                     | 19   | 19   | 18   |
| 1.2. | VL2440 Trawler                     | 30   | 30   | 18   |
| 1.3. | VL2440 Netter                      | 22   | 22   | 21   |
| 2.   | VL0012 Coastal fishing fleet       | 104  | 98   | 6  |

\*except vessels fishing also in the coastal area (engine power less than 75 kW)

\*\*part of the vessels scrapped in 2008 within n+2 period covered also start of scrapping for implementation of the fleet capacity adjustment plan for years 2008-2013

##### **ii) impact on fishing capacity of effort reduction schemes**

The main reason why owners of the fishing vessels actively applied for assistance from the European Fisheries Fund for decommissioning scheme is a good economic advantage and possibility for further investments in economic

activities within the fisheries sector (except vessel purchase) or in other fields. Since 1<sup>st</sup> of May, 2004 according to fishing capacity reduction scheme, 248 vessels have been scrapped from the Baltic Sea fishing fleet with national and EU financial support and 90 vessels went out from the fleet without such support. The latter were sold to other countries, scrapped or sunken. Scraping of the vessels has radically increased the catches per vessel figures increasing the profitability; however this cannot be addressed to the cod fishing fleet segment netters VL24-40 (See page 9. of the Annual report on the Latvian fishing fleet 2014).

## 5. Section C

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

In 2015 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 5. Management of entry/exit regime on 31.12.2015**

|           |  | GT                      |              | kW                      |              |
|-----------|--|-------------------------|--------------|-------------------------|--------------|
| 1         | Capacity of fleet on 1st May 2004  | <b>GT<sub>FR</sub></b>  | 44449        | <b>kW<sub>FR</sub></b>  | 74320        |
| 2         | Capacity level for the application of entry/exit regime                  | <b>GT<sub>04</sub></b>  | 56555        | <b>kW<sub>04</sub></b>  | 83930        |
| 3         | Entries of vessels of more than 100 GT financed with public aid          | <b>GT<sub>100</sub></b> | 0            | <b>kW<sub>100</sub></b> | 0            |
| 4         | Other entries or capacity increases (not included in 3 & 5)              |                         | 44359        |                         | 55330        |
| 5         | Increases in tonnage GT for reasons of safety                            | <b>GT<sub>S</sub></b>   | 0            | -                       | -            |
| <b>6</b>  | <b>Total entries (3+ 4 + 5)</b>  |                         | <b>44359</b> |                         | <b>55330</b> |
| 7         | Exits before 1/1/2007 financed with public aid                           | <b>GT<sub>a1</sub></b>  | 3134         | <b>kW<sub>a1</sub></b>  | 7441         |
| 8         | Exits after 1/1/2007 financed with public aid                            | <b>GT<sub>a2</sub></b>  | 7648         | <b>kW<sub>a2</sub></b>  | 18856        |
| 9         | Other exits (not included in 7 & 8)                                      |                         | 53350        |                         | 60053        |
| <b>10</b> | <b>Total exits (7 + 8 +9)</b>  |                         | <b>64132</b> |                         | <b>86350</b> |
| 11        | Power of engines replaced with public aid conditional to power reduction | -                       | -            | <b>kW<sub>r</sub></b>   | 0            |
| 12        | Capacity of the fleet on 31.12.2015 (1 + 6 - 10)                         | <b>GT<sub>t</sub></b>   | 24676        | <b>kW<sub>t</sub></b>   | 43300        |
| 13        | Fleet ceiling on 31.12.2015  |                         | 46126        |                         | 57633        |

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

Line 13: Ceiling  $GT = 2 - 35\% 3 - 98,5\% 7 - 96\% 8$  and  $kW = 2 - 35\% 3 - 7 - 8 - 20\% 11$

## 6. Section D

### i) Information on general level of compliance with fleet policy instruments

The main organizations responsible for the national fleet management as from 1st of January, 2015 were:

- the Fisheries Department (FD) of the Ministry of Agriculture with responsibilities:
  - for the elaboration of the national Fisheries Policy and functioning of the Integrated Control and Information System (ICIS);
  - for the supervision of implementation of the national fisheries management measures, including national fishing fleet ceiling levels and the fishing fleet capacity adjustment plan;
  - for the 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.);
- the State Environmental Service of the Ministry of Environment and Regional Development is responsible for general management of fishing licenses, 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 Fisheries Fund related to Vessels exploitation permanent cessation scheme for period 2008-2013.

### ii) summary of strengths and weaknesses of the fleet management system

Strengths of the fleet management system:

- Development of the ICIS 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 ICIS was accessible for changes to correct the previously entered data; however on the other hand for justified reasons the data normally could be slightly changed within the time to adjust with real status.

### iii) plan for improvements in fleet management system

- In 2015 the new ICIS system to improve the ICIS in order to comply with all the requirements set by the EC Fisheries control regulation was completed. 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 ICIS.
- In order to improve the fleet management system through the ICIS was developed automatic vessel data input in the ICIS from the Latvian Ship Register (LSR).

## 7. Section E

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

There were no significant changes in 2015 in the administrative procedures. However it should be mentioned that the work with ICIS improvement and development is still continuing. For the years 2012-2015 the Fisheries Department (FD) invested quite a lot in development of ICIS to improve reliability of the data, to make easier the processing of the data and routine work, to improve the modeling of the required reports.

## 8. Section F

### Estimation and discussion of balance indicators

#### i) Technical indicators - Vessel Use Indicators

Technical indicators were calculated according to the “*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*”. These 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. The maximum day at sea was equal to the highest observed number of days at sea within each year.

#### i-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 and was done by different length classes. The values of Inactive Fleet Indicator for period 2011-2015 are presented in Annex I.

The indicator shows low values for vessel length-classes 24-40 m, less than 10% of the vessels in this fleet segment were inactive during the last 4 years. There were no inactive vessels of 12-18 meters in recent two years. The proportions of inactive vessels in terms of number, GT and kW exceed threshold value (20%) only for vessels 24-40m in 2011. In general, it can be stated, that for Latvian offshore fleet segments the proportion of inactive vessels does not exceed allowable level for the period of last 4 years. The IFI indicator cannot be accurately calculated for the commercial coastal fleet segment VL below 10 meters.

#### i-2) The Vessel Utilization Indicator - VUI

Data on Vessel Utilization Indicator also known as Vessel Utilisation Ratio for the segments of netters 24-40 m, trawlers 12-18 m, trawlers 24-40 m and small boats less than 10 m are presented in Annex II.

**The segment of netters 24-40 m** operates mainly in SD 25-32 with target species Baltic cod. In 2015 the number of active vessels and their total GT were lower by 88% and 85% respectively compared to 2005. Quite high ratio between the average GT\*days and maximum GT\*days, in the traffic light system refers to “yellow light”. Average activity level in terms of GT\*days was equal and more than 70% of the potential during last 5 years. In 2015 VUI values increased by 7% comparing to 2014. Average VUI (2012-2015) was 0.81 (see Annex VI). The statement of balance between fleet capacity and fishing opportunities for Latvia. According to this indicator it can be assumed that capacity of this segment was approximately *in balance* with the fishing opportunity.

**The segment of trawlers 12-18 m** operates mainly in the Gulf of Riga with target species Baltic herring. Number of active vessels in 2015 was reduced by 69% and total kW by 62% compared to 2005. Average activity level in terms of kW\*days was more than 70% of the potential during the period of 2010-2014 and fell to 64% in 2015. According to the guidelines COM(2014) 545 final to consider whether the segment is in balance or not “*it is appropriate to consider several years rather than a single year*”. Thus, taking into account average VUI value of last four years (0.75) it could be stated that capacity of this segment was approximately *in balance* with the fishing opportunity and corresponds to “yellow light” in terms of “traffic light system”.

**The segment of trawlers 24-40 m** operates mainly in areas 25-32 with target species Baltic sprat and Baltic cod as well. Number of active vessels in this fishery diminished by 43% and total kW by 28% compared to 2005. Vessel utilization indicator in terms of days and kW\*days for this segment showed slight increase from 2012 to 2015,

although the values of it remain on the quite low level and do not exceed threshold value of 0.7. The average VUI in terms of kW\*days for the period of 2012-2015 was 0.55 indicating the existence of unused capacity. Thus, capacity of this segment was somewhat in excess of opportunity as regards of Vessel utilization indicator and corresponds to “red light” in terms of “traffic light system”.

**Vessel utilization indicator for small-scale coastal Fishery** was calculated for only commercial fishery. The coastal fishery uses different static gears such as nets, traps, lines and seines. This segment is very important in socio-cultural aspect as traditional activities for population of coastal settlements. The segment of small boats less than 10 m is characterized by extremely low value of the technical indicators over the observed period. Average activity level for this segment was less than 27% of the potential during 2009-2015. The average VUI in terms of GT\*days for last four years was 0.24 demonstrating the existence of unused capacity. In general it indicates that for significant part of coastal fishermen the fishery constitutes only a part of their activities. This could be also connected with the availability of fish resources and its' seasonality in the coastal area and could be an indication of unbalance in this fleet segment.

#### **Summary:**

- To make equitable judgment about the balance of the segment a comprehensive analysis should be done. It should be noted that in case of small segment (in terms of number of vessels), where the number of vessels is around 10 or less, any changes in fishing strategy by one vessels or one company could noticeably vary the technical indicator values. Two Latvian segments can be considered as small in number of vessels: the segment of trawlers 12-18 m and the segment of netters 24-40 m. Thus any conclusion of that balance should be treated with caution and verified over the time.
- Value of the Vessel Utilisation Ratio for most Latvian fishing fleet segments demonstrated slight decrease in 2015 compared to the previous year.
- Similarly as in the last year's report vessel utilization indicator shows existence of potential imbalance for the two Latvian fishing fleet segments - trawlers 24-40 m and small boats less than 10 m.

#### **ii) Biological indicators**

##### **ii-1) Biological indicator Sustainable Harvest Indicator - SHI**

The *Sustainable Harvest Indicator* (SHI) was defined for four Latvian fishing fleet segments which contribute around 96 % to the total Latvian catch in the Baltic Sea. The values of SHI for period of 2008-2014 and two fishing regions (Baltic proper and Gulf of Riga) were calculated for the following fleet segments, combined by vessel length and gears:

- trawlers 24-40 m in Sd 25-32 with target species of sprat (86-92% in 2008-2014), besides this fleet segment is targeting also cod and herring;
- netters 24-40 m in Sd 25-32 with target species of cod (99-100% in 2008-2014);
- trawlers 12-18 m in the Gulf of Riga (28.1) with target species of herring (76-85% in 2008-2014);
- trawlers 20-40 m in the Gulf of Riga (28.1) with target species of herring (86-94% in 2008-2014).

The values of current fishing mortality  $F_c$  for different years and reference points  $F_{msy}$  for following stocks exploited by Latvian fishing fleet were obtained from ICES Baltic Fisheries Assessment Working Group Report (WGBFAS 2015, ICES CM 2015/ACOM:10):

- Sprat in Subdivisions 22-32;
- Cod in Subdivisions 25-32;
- Herring in Subdivisions 25-29 and 32 (excluding Gulf of Riga herring);
- Herring in Subdivision 28.1(Gulf of Riga).

Fishing mortality values for level of *maximum sustainable yield*  $F_{msy}$  for considered stocks are:

- for Sprat in Sd 22-32  $F_{msy}=0.26$ ;
- for Herring in Sd 25-29 and 32 (excluding Gulf of Riga herring),  $F_{msy}=0.22$ ;
- for Herring in Subdivision 28.1(Gulf of Riga)  $F_{msy}=0.32$ .
- for Cod in Sd 25-32  $F_{msy}$  were not defined.

The calculated SHI indicators for all species and fleet segments are shown in the Annex III. and Fig.1-2.

For segment trawlers 24-40 m in SD 25-32, unlike previous years, average value of SHI was calculated only for herring and sprat as cod stock parameters were not defined by WGBFAS. This was not significant influence to average SHI as the catches of cod contribute less than 4 % to total catch by this segment. The SHI values are fluctuating around 1 and mainly depend from the variation of fishing mortality values for the sprat, which is the largest part of the total catches in this segment.

SHI value for netters 24-40 m (target species – cod) was not calculated for 2014 because there was no accepted analytical assessment in 2015 and the earlier estimated reference points are no longer considered relevant for this stock (WGBFAS, 2015)

In the Gulf of Riga for trawlers 24-40 m and trawlers 12-18 m which are mostly fishing herring, the small by-catch of sprat was also taken into account decreasing insignificantly average value of SHI for these segments.

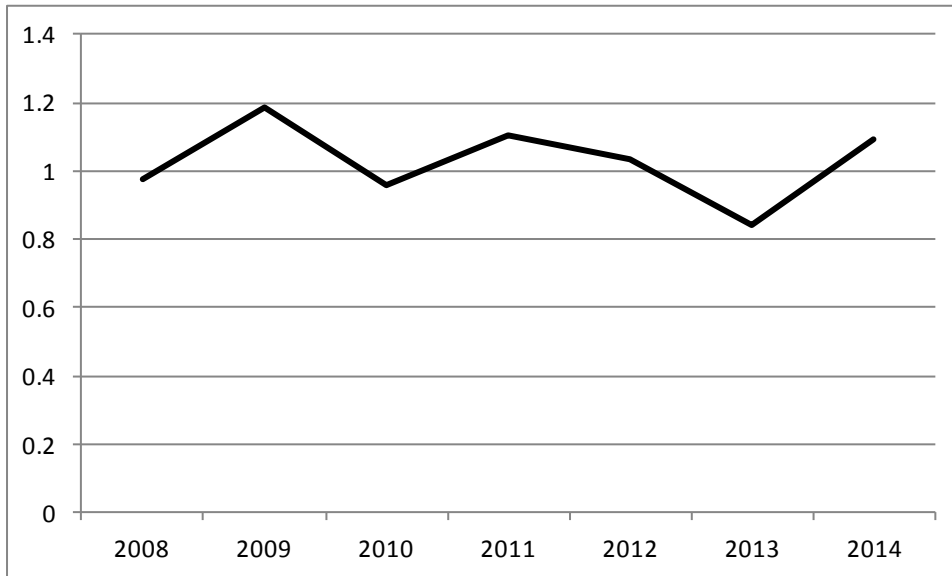


Fig.1 The changes of biological indicator SHI during the period of 2008-2014 for the segments of VL1218 and VL2440 trawlers in the Gulf of Riga.

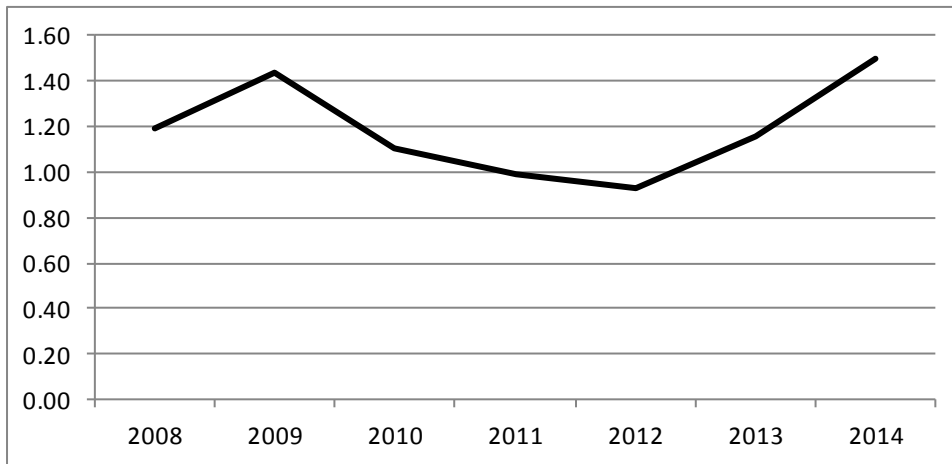


Fig 2. The changes of biological indicator SHI during the period of 2008-2014 for the segment of VL2440 trawlers in the Baltic Sea.

Following the recommendations and applying the interpretation proposed in the Guidelines (*COM(2014)545 final*) it can be concluded:

- for two segments (trawlers 12-18 m and trawlers 24-40 m) that rely on sprat and herring stocks in the Gulf of Riga SHI values are insignificantly oscillated closely to the “1”, i.e. at the level of Sustainable Harvest Yield as the current fishing mortalities for these stocks are fluctuated around  $F_{msy}$  during more than four years. These segments can be considered as “in balance”.
- for segment of trawlers 24-40 m which mainly exploits the sprat stock in the Baltic proper (Sd 25-32) SHI values are above “1” (threshold for “overfished stock” definition) during the previous 6 years, excluding 2012. It can be stated that segment trawlers 24-40 m relies on the “overfished” stock. This segment may be considered as “imbalance”.
- for segment of netters 24-40 m targeting cod in Sd 25-32 there was not possibility to estimate it status in terms of “balance or imbalance” between fishing fleet segment opportunities and fish stock resources because the analytical assessment of Eastern cod stock was not constructed by WGBFAS.

## ii-2) Biological indicator Stocks-at-risk indicator - SARI

According to the “*Guidelines for analysis of the balance between fishing capacity and fishing opportunities*” Stocks-at-risk indicator refers to:

- a) assessed as being below the Blim biological level; or, b) subject to an advice to close the fishery, to prohibit directed fisheries, to reduce the fishery to the lowest possible level, or similar advice from an international advisory body, even where such advice is given on a data-limited basis; or, c) subject to a fishing opportunities regulation which stipulates that the fish should be returned to the sea unharmed or that landings are prohibited; or d) a stock which is on the IUCN "red list" or is listed by CITES.

It is considered that none of the fish stocks which are exploited by the Latvian fishing fleet in the Baltic Sea corresponds to the above indicated features. Although the assessment of the Eastern Baltic cod stock was not accepted in 2015 this did not create conclusions that the stock is in a state that would require closure of fishery or reduction of the fishery to the lowest possible level. Therefore SARI indicators were not calculated.

### iii) Economic Indicators

The methods used for economic analysis have been proposed by *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. For the evaluation of economic situation in the long-term the return on investment compared to the long - term profitability of the fishing fleet segment to other available investment was calculated. The second indicator, ratio between current revenue and break-even revenue reflects the financial capability of businesses with vessels in a given fleet segment to continue operating on a day-by-day basis and was calculated to analyse economic situation in the short-term.

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

- vessels over 40 meters operated in the Atlantic (area 27 and 34) due to the limited number of analysed vessels and respective data confidentiality;
- netters 24-40 meters operated in the Baltic Sea. The vessels in the segment netters VL2440 are going to be scrapped according to the "Action plan for 2015-2017 to reach balance between the Latvian fishing fleet's capacity and the fish resources for fleet segment VL24-40 m netters targeting Eastern Baltic Cod";
- inactive vessels due to the small number and low capacity;
- coastal fishing boats does not involved in commercial fishery and used only for self consumption fishery.

For the calculations and analysis the data collected in the frame of Data Collection (implemented under Reg. No 199/2008; CD 2010/93/EU Appendix VI List of economic variables and VIII List of transversal variables with sampling specification) have been used.

The economic indicators have been calculated for the active Baltic Sea fishing fleet by economic segments provided in Appendix III Reg.199/2008; CD 2010/93/EU. All commercial vessels operated in the coastal zone were included in the segment VL0010.

Long-term interest rates for indicators calculation have been taken as Latvian average interest rate for the last five years from the European Central Bank, available at <http://www.ecb.europa.eu/stats/money/long/html/index.en.html>.

#### iii-1) Return on Investment (ROI)

Return on investment (ROI) shows investment profitability and was defined as net profit after capital stock depreciation and then divided by capital asset value of the fleet. The direct income subsidies were 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, which is a sign of economic undercapitalization. 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 be more beneficial to invest elsewhere which is a sign that probably the fleet is overcapitalised and therefore economically inefficient. Negative ROIs can by themselves indicate economic over-capitalisation. ROI for each fleet segment and calculations are shown in the table 6 and Annex VI.

Table 6. **Return on Investment** (ROI – risk free long term interest rate %)

| Segments      | 2012 | 2013  | 2014 |
|---------------|------|-------|------|
| VL0010 PG     | 755  | 2683  | 2315 |
| VL1218 TM     | -72  | -135  | -149 |
| VL2440 TM     | 45   | 29    | 26   |
| VL1218+VL2440 | 14   | -3.24 | 6    |

#### iii-1a) Application and interpretation

The ROI for the trawlers in the segment VL2440 shows positive and high values from 2012 to 2014. The positive ROI values indicate that extraordinary profits are being generated, which is a sign of economic undercapitalization. The



ROI values for the coastal fleet vessels in the segment VL0010 are too high during the period from 2012 to 2014. 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 25 years and the share of the capital asset value in the total fleet was 0.9% in 2014. The positive ROI values indicate that the segment is profitable in the long term and normal investments returns are being generated. Nevertheless the results (too high ROI values and the low capital asset values) also can indicate that fleet modernization will be necessary in the near future.

The segment trawlers VL1218 operating in the Gulf of Riga shows negative values of ROI from 2012 to 2014. The ROI values below zero indicate economic over-capitalization and suggest negative returns. For the same period fleet segment VL1218 has losses annually around 1.5 million euros. A negative ROI values means for the companies that it would be more profitable to invest the money in something other than fishery. However, it should be noted that potential vessels capacity for the segment VL1218 could be used by 10-20% more (Annex X4). If intensity of fishing for the vessels in the segment VL1218 will increase, the segment could obtain greater amount of catch and higher revenue from sales which in turn can facilitate a positive profit. Also negative results of the ROI could be explained with the redistribution of costs and revenue between the segments VL1218 and VL2440, when one company owns vessels included in the different segments. The calculation results for both segments are presented in Annex V.

Generally for the three main fleet segments (coastal boats VL0010, trawlers VL1218, trawlers VL2440) it could be conclude that fleet modernization should be necessary and also increase of turnover for vessels in the segment trawlers VL1218 operating in the Gulf of Riga.

### iii-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 direct income 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.

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 period (Table 7 and Annex V).

Table 7. **Ratio of Current revenue to Break-even revenue CR/BER)**

| Segments         | 2012 | 2013  | 2014  |
|------------------|------|-------|-------|
| VL0010 PG        | 9.78 | 47.94 | 51.29 |
| VL1218 TM        | 0.20 | -1.20 | -1.14 |
| VL2440 TM        | 1.51 | 1.30  | 1.31  |
| VL1218+VL2440 TM | 1.10 | 0.96  | 1.07  |

### iii-2a) Application and interpretation

For the two fleet segments: trawlers VL2440 and coastal boats VL0010, CR/BER ratio was greater than '1' for each year included in the analysis. The negative CR/BER ratio is for the segment trawlers VL1218 in 2013 and 2014. The segment of small boats less than 10 metres with polyvalent passive gears had the highest CR/BER ratio. That segment contributed only 9% to total Latvian value of landing in 2014 and does not practically affect to the economic situation in the Latvian fleet.

The segment trawlers VL1218 operated in the Gulf of Riga has CR/BER ratio below zero: -1.20 in 2013 and -1.14 in 2014. The negative ratio is an indication of short term financial difficulty. The current revenue does not cover costs and that fishing is not economically sustainable. This could be due to the fact that some of the company's owns not only vessels 12-18 metres but also vessels 24-40 metres. In that situation companies do not share their financial assets between the segments but attribute all assets to the biggest segment (VL2440 metres). Thus the CR/BER ratio lower than 1, cannot be taken into consideration only as negative situation in the segment VL1218 and the results have a positive values if calculation is applied in general for the vessels in the both segments (Table 7). The calculation results for both segments are presented in AnnexV Table 2.

## Annex I.

### Technical indicators - The Inactive Fleet Indicator

#### Number and proportion of inactive vessels

##### Values for vessels 12-18 m

| Year | Inactive vessels |     |       | % of total    |      |      |
|------|------------------|-----|-------|---------------|------|------|
|      | No of Vessels    | kW  | GT    | No of Vessels | kW   | GT   |
| 2009 | 5                | 602 | 139.7 | 19.2          | 15.1 | 19.4 |
| 2010 | 1                | 110 | 29    | 5.6           | 3.7  | 5.6  |
| 2011 | 2                | 220 | 51    | 11.1          | 7.4  | 9.9  |
| 2012 | 1                | 110 | 29    | 7.1           | 4.5  | 7.0  |
| 2013 | 1                | 147 | 29    | 8.3           | 6.8  | 8.1  |
| 2014 | 0                | 0   | 0     | 0             | 0    | 0    |
| 2015 | 0                | 0   | 0     | 0             | 0    | 0    |

##### Values for vessels 24-40 m

| Year | Inactive vessels |      |      | % of total    |      |      |
|------|------------------|------|------|---------------|------|------|
|      | No of Vessels    | kW   | GT   | No of Vessels | kW   | GT   |
| 2009 | 18               | 3531 | 1641 | 18.4          | 14.8 | 14.5 |
| 2010 | 12               | 3702 | 1943 | 15.4          | 17.3 | 19.2 |
| 2011 | 18               | 4357 | 2360 | 24.3          | 21.4 | 24.4 |
| 2012 | 6                | 1437 | 662  | 10.0          | 8.2  | 8.6  |
| 2013 | 7                | 1712 | 803  | 11.7          | 9.6  | 10.4 |
| 2014 | 5                | 1360 | 603  | 8.8           | 7.9  | 8.2  |
| 2015 | 4                | 1066 | 328  | 7.5           | 6.5  | 4.8  |

## Annex II. Technical indicators - The Vessel utilisation Indicator

##### Values for netters 24-40 m

| Year | Number of vessels | Capacity (average) | Effort (average) |       | Maximum effort (based in observed max.) |       | Technical indicator |                    |
|------|-------------------|--------------------|------------------|-------|---|-------|---------------------|--------------------|
|      |                   |                    | GT               | days  | GT*days                                 | days  | GT*days             | days <sup>1)</sup> |
| 2005 | 41                | 80                 | 138              | 11286 | 221                                     | 17707 | 0.63                | 0.64               |
| 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 | 0.60                | 0.62               |
| 2011 | 10                | 101                | 143              | 14089 | 199                                     | 20159 | 0.72                | 0.70               |
| 2012 | 9                 | 94                 | 158              | 15230 | 196                                     | 18424 | 0.81                | 0.83               |
| 2013 | 8                 | 96                 | 145              | 14092 | 212                                     | 20273 | 0.68                | 0.70               |
| 2014 | 7                 | 87                 | 134              | 12984 | 181                                     | 15721 | 0.74                | 0.83               |
| 2015 | 5                 | 99                 | 136              | 13836 | 158                                     | 15610 | 0.86                | 0.89               |

**Values for trawlers 12-18 m**

| Year | Number of vessels | Capacity (average) | Effort (average) |         | Maximum effort (based in observed max.) |         | Technical indicator |                       |
|------|-------------------|--------------------|------------------|---------|---|---------|---------------------|-----------------------|
|      |                   | kW                 | days             | kW*days | days                                    | kW*days | days <sup>1)</sup>  | kW*days <sup>3)</sup> |
| 2005 | 35                | 156                | 152              | 24845   | 229                                     | 35748   | 0.67                | 0.69                  |
| 2006 | 33                | 153                | 133              | 21987   | 236                                     | 36180   | 0.56                | 0.61                  |
| 2007 | 31                | 153                | 144              | 24156   | 290                                     | 44239   | 0.50                | 0.55                  |
| 2008 | 28                | 156                | 139              | 23495   | 231                                     | 36110   | 0.60                | 0.65                  |
| 2009 | 23                | 160                | 142              | 24797   | 258                                     | 41269   | 0.55                | 0.60                  |
| 2010 | 17                | 168                | 156              | 27244   | 207                                     | 34752   | 0.75                | 0.78                  |
| 2011 | 16                | 172                | 172              | 31023   | 260                                     | 44590   | 0.66                | 0.70                  |
| 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                  |

**Values for trawlers 24-40 m**

| Year | Number of vessels | Capacity (average) | Effort (average) |         | Maximum effort (based in observed max.) |         | Technical indicator |                       |
|------|-------------------|--------------------|------------------|---------|---|---------|---------------------|-----------------------|
|      |                   | kW                 | days             | kW*days | days                                    | kW*days | days <sup>1)</sup>  | kW*days <sup>3)</sup> |
| 2005 | 77                | 257                | 124              | 31668   | 215                                     | 55309   | 0.58                | 0.57                  |
| 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   | 0.60                | 0.63                  |
| 2011 | 48                | 308                | 102              | 30791   | 197                                     | 60606   | 0.52                | 0.51                  |
| 2012 | 48                | 320                | 111              | 34344   | 214                                     | 68578   | 0.52                | 0.50                  |
| 2013 | 46                | 321                | 115              | 37437   | 217                                     | 69549   | 0.53                | 0.54                  |
| 2014 | 45                | 320                | 107              | 33801   | 180                                     | 57620   | 0.60                | 0.59                  |
| 2015 | 44                | 326                | 113              | 36169   | 193                                     | 62870   | 0.59                | 0.58                  |

**Values for boats less 10 m using polyvalent passive gears**

| Year | Number of vessels | Capacity (average) | Effort (average) |         | Maximum effort (based in 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               | 2.0                | 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                  |

<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 2012-2014**

N/d – not defined

N/d – not defined

|                         | Fleet segment   | Parameters         | 2012        |                           |           |                | 2013        |                           |           |                | 2014       |                           |             |                |
|-------------------------|-----------------|--------------------|-------------|---------------------------|-----------|----------------|-------------|---------------------------|-----------|----------------|------------|---------------------------|-------------|----------------|
|                         |                 |                    | 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            | 2961        | 2082                      | 30860     |                | 1707        | 2211                      | 33085     |                | 1295       | 3224                      | 31192       |                |
|                         |                 | F c                | 0.37        | 0.13                      | 0.29      |                | 0.453       | 0.12                      | 0.35      |                | N/d        | 0.16                      | 0.41        |                |
|                         |                 | Fmsy               | 0.46        | 0.26                      | 0.29      |                | 0.46        | 0.26                      | 0.29      |                | N/d        | 0.22                      | 0.26        |                |
|                         |                 | F/Fmsy             | 0.80        | 0.50                      | 1.00      |                | 0.98        | 0.46                      | 1.21      |                | N/d        | 0.73                      | 1.58        |                |
|                         |                 | F/Fmsy for segment | <b>0.95</b> |                           |           |                | <b>1.15</b> |                           |           |                |            | <b>1.50</b>               |             |                |
|                         | VL2440 netters  | Catch,t            | 1196        |                           |           |                | 609         |                           |           |                | 541        |                           |             |                |
|                         |                 | F c                | 0.373       |                           |           |                | 0.453       |                           |           |                | N/d        |                           |             |                |
|                         |                 | Fmsy               | 0.46        |                           |           |                | 0.46        |                           |           |                | N/d        |                           |             |                |
|                         |                 | F/Fmsy             | <b>0.81</b> |                           |           |                | <b>0.98</b> |                           |           |                | <b>N/d</b> |                           |             |                |
|                         |                 | F/Fmsy for segment | <b>0.81</b> |                           |           |                | <b>0.98</b> |                           |           |                |            | <b>N/d</b>                |             |                |
| 28.1 Gulf of Riga (GOR) | VL1218 trawlers | Catch,t            |             |                           |           | 8169           |             |                           |           | 7054           |            |                           | 593         | 7344           |
|                         |                 | F c                |             |                           |           | 0.369          |             |                           |           | 0.295          |            |                           | 0.41        | 0.34           |
|                         |                 | Fmsy               |             |                           |           | 0.35           |             |                           |           | 0.35           |            |                           | 0.26        | 0.32           |
|                         |                 | F/Fmsy             |             |                           |           | <b>1.05</b>    |             |                           |           | <b>0.84</b>    |            |                           | <b>1.58</b> | <b>1.06</b>    |
|                         |                 | F/Fmsy for segment |             |                           |           |                |             |                           |           |                |            |                           | <b>1.10</b> |                |
|                         | VL2440 trawlers | Catch,t            |             |                           |           | 8426           |             |                           |           | 9149           |            |                           | 455         | 9651           |
|                         |                 | F c                |             |                           |           | 0.369          |             |                           |           | 0.295          |            |                           | 0.41        | 0.34           |
|                         |                 | Fmsy               |             |                           |           | 0.35           |             |                           |           | 0.35           |            |                           | 0.26        | 0.32           |
|                         |                 | F/Fmsy             |             |                           |           | <b>1.05</b>    |             |                           |           | <b>0.84</b>    |            |                           | <b>1.58</b> | <b>1.06</b>    |
|                         |                 | F/Fmsy for segment |             |                           |           |                |             |                           |           |                |            |                           | <b>1.08</b> |                |

## Annex IV.

Table 1. ROI calculation

| Year | Values for calendar year (€)   | VL0010 PG      | VL1218 TM      | VL2440 TM    |
|------|--|----------------|----------------|--------------|
| 2012 | Income from landings + other income  | 1,447,523      | 4,270,377      | 17,486,569   |
|      | Low risk long term interest rate %   | 7.92           | 7.92           | 7.92         |
|      | Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs   | 251,674        | 4,928,449      | 13,285,003   |
|      | Capital costs (depreciation + interest payments)   | 34,529         | 526,031        | 647,791      |
|      | Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation) | 1,161,321      | -1,184,104     | 3,553,775    |
|      | Fleet capital asset value (vessel replacement value + estimated value of fishing rights)   | 152,178        | 1,860,687      | 6,777,524    |
|      | <b>ROI = Net profit / capital asset value %</b>  | <b>763.14</b>  | <b>-63.64</b>  | <b>52.43</b> |
|      | <b>ROI – risk free long term interest rate %</b>   | <b>755.22</b>  | <b>-71.56</b>  | <b>44.51</b> |
| 2013 | Income from landings + other income  | 1,327,239      | 3,212,550      | 17,183,804   |
|      | Low risk long term interest rate %   | 7.30           | 7.30           | 7.30         |
|      | Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs   | 111,116        | 4,896,305      | 13,670,847   |
|      | Capital costs (depreciation + interest payments)   | 18,965         | 542,441        | 926,881      |
|      | Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation) | 1,197          | -2,226,197     | 2,586,076    |
|      | Fleet capital asset value (vessel replacement value + estimated value of fishing rights)   | 44,496         | 1,745,767      | 7,110,643    |
|      | <b>ROI = Net profit / capital asset value %</b>  | <b>2690.48</b> | <b>-127.52</b> | <b>36.37</b> |
|      | <b>ROI – risk free long term interest rate %</b>   | <b>2683.18</b> | <b>-135.82</b> | <b>29.07</b> |
| 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> |

Table 2. ROI calculation for the VL1218 and VL2440

| Segment       | Values for calendar year (€)   | 2012       | 2013       | 2014       |
|---------------|--|------------|------------|------------|
| VL1218+VL2440 | Income from landings + other income  | 23,296,762 | 20,396,354 | 18,512,827 |
|               | Low risk long term interest rate %   | 7.92       | 7.30       | 5.33       |
|               | Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs | 19,890,085 | 18,567,152 | 15,986,668 |
|               | Capital costs (depreciation + interest payments)   | 1,340,190  | 1,469,323  | 1,545,001  |

|  |              |              |              |
|--|--------------|--------------|--------------|
| Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation) | 2,066,488    | 359,878      | 981,158      |
| Fleet capital asset value (vessel replacement value + estimated value of fishing rights)   | 9,564,354    | 8,856,409    | 8,867,475    |
| <b>ROI = Net profit / capital asset value %</b>  | <b>21.61</b> | <b>4.06</b>  | <b>11.06</b> |
| <b>ROI – risk free long term interest rate %</b>   | <b>13.69</b> | <b>-3.24</b> | <b>5.73</b>  |

## Annex V.

Table 1. Ratio of Current revenue to Break-even revenue (CR/BER)

| Year | No. | Values for a calendar year (€)   | VL0010 PG    | VL1218 TM    | VL2440 TM   |
|------|-----|--|--------------|--------------|-------------|
| 2012 | 1   | Current revenue (CR) = Income from landings + other income   | 1,447,523    | 4,270,377    | 17,486,569  |
|      | 2   | Fixed costs = Non variable costs + depreciation +opportunity of capital  | 130,866      | 1,656,606    | 5,940,655   |
|      | 3   | Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs | 167,388      | 3,945,238    | 8,528,907   |
|      | 4   | BER = $2 / (1 - [3 / 1])$  | 147,978      | 21,757,891   | 11,596,963  |
|      | 5   | <b>CR / BER = 1 / 4</b>  | <b>9.78</b>  | <b>0.20</b>  | <b>1.51</b> |
| 2013 | 1   | Current revenue (CR) = Income from landings + other income   | 1,327,239    | 3,212,550    | 17,183,804  |
|      | 2   | Fixed costs = Non variable costs + depreciation +opportunity of capital  | 25,437       | 1,071,561    | 6,899,383   |
|      | 3   | Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs | 107,893      | 4,494,653    | 8,217,529   |
|      | 4   | BER = $2 / (1 - [3 / 1])$  | 27,688       | -2,684,997   | 13,222,620  |
|      | 5   | <b>CR / BER = 1 / 4</b>  | <b>47.94</b> | <b>-1.20</b> | <b>1.30</b> |
| 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> |

Table 2. Ratio of Current revenue to Break-even revenue (CR/BER) for the segments VL1218 and VL2440

| No. | Values for calendar year (€)   | 2012        | 2013        | 2014        |
|-----|--|-------------|-------------|-------------|
| 1   | Current revenue (CR) = Income from landings + other income   | 21,756,945  | 20,396,354  | 18,512,827  |
| 2   | Fixed costs = Non variable costs + depreciation +opportunity of capital  | 8,440,143   | 7,970,945   | 7,226,314   |
| 3   | Variable costs = Crew costs + Unpaid labour costs + Energy costs + Repair & maintenance costs + Other variable costs | 12,474,145  | 12,712,181  | 10,778,139  |
| 4   | BER = $2 / (1 - [3 / 1])$  | 19,781,933  | 21,157,543  | 17,296,044  |
| 5   | <b>CR / BER = 1 / 4</b>  | <b>1.10</b> | <b>0.96</b> | <b>1.07</b> |

## Annex VI. The statement of balance between fleet capacity and fishing opportunities for Latvia

| <b>VL1218TM</b> |  |              |                                  |   |   |             |  |  |
|-----------------|--|--------------|----------------------------------|---|---|-------------|--|--|
| Indicator       | Definition   | Area         | 2012                             | 2013  | 2014  | 2015        | Average (2012-2014,2015)                   |  |
| ECONOMIC1       | <b>ROI</b>   | Gulf of Riga | negative ROI over-capitalization | negative ROI over-capitalization  | negative ROI over-capitalization  | NA          | NA   |  |
| ECONOMIC2       | <b>CR/BER</b>  | Gulf of Riga | 0<0.20<1<br>Current              | -1.20<1<br>economically unprofitable with potential over-capitalization | -1.14<1<br>economically unprofitable with potential over-capitalization | NA          | NA   |  |
| TECHNICAL1      | <b>IFI - Proportion of inactive vessels**</b>  | Gulf of Riga | 7.1 (<20%)                       | 8.3 (<20%)  | 0   | 0           | 3.85 (<20%)<br>In balance                  |  |
| TECHNICAL2      | <b>VUI-Vessel utilisation (Ratio between average and maximum effort per vessel, kW*days)</b> | Gulf of Riga | 0.71 (0.7-0.9)                   | 0.83 (0.7-0.9)  | 0.81 (0.7-0.9)  | 0.64 (<0.7) | 0.75 (0.7-0.9)<br>Approximately in balance |  |
| BIOLOGICAL1     | <b>SHI - Ratio between F estimated and F target (MSY)</b>                                    | Gulf of Riga | 1.05                             | 0.84  | 1.1   |             | Approximately in balance                   |  |
| BIOLOGICAL2     | <b>SARI - Stock-at-risk</b>  | Gulf of Riga | Not calculated                   |   |   |             |  |  |

| <b>VL2440TM</b> |  |                                 |   |   |   |             |                          |  |
|-----------------|--|---------------------------------|---|---|---|-------------|--------------------------|--|
| Indicator       | Definition   | Area                            | 2012  | 2013  | 2014  | 2015        | Average (2012-2014,2015) |  |
| ECONOMIC1       | <b>ROI</b>   | Sd 22-29, 32                    | positive ROI under-capitalization                                     | positive ROI under-capitalization                                     | positive ROI under-capitalization                                     | NA          | NA                       |  |
| ECONOMIC2       | <b>CR/BER</b>  | Sd 22-29, 32                    | 1<1.51<br>economically profitable with potential under-capitalization | 1<1.30<br>economically profitable with potential under-capitalization | 1<1.31<br>economically profitable with potential under-capitalization | NA          | NA                       |  |
| TECHNICAL1      | <b>IFI - Proportion of inactive vessels**</b>  | Sd 22-29, 32                    | 10.0 (<20%)   | 11.7 (<20%)   | 8.8 (<20%)  | 7.5 (<20%)  | 9.5 (<20%)<br>In balance |  |
| TECHNICAL2      | <b>VUI - Vessel utilisation (Ratio between average and maximum effort per vessel, kW*days)</b> | Sd 22-29, 32                    | 0.50 (<0.7)   | 0.54 (<0.7)   | 0.59 (<0.7)   | 0.58 (<0.7) | 0.55 (<0.7)<br>Imbalance |  |
| BIOLOGICAL1     | <b>SHI - Ratio between F estimated and F target (MSY)</b>                                      | Sd 22-29, 32 excl. Gulf of Riga | 0.95  | 1.15  | 1.5   |             | Imbalance                |  |
|                 |  | Gulf of Riga                    | 1.05  | 0.84  | 1.08  |             | Approximately in balance |  |
| BIOLOGICAL2     | <b>SARI - Stock-at-risk</b>  | Sd 25-32                        | Not calculated  |   |   |             |                          |  |

| <b>VL2440 DFN</b> |            |      |      |      |      |      |                          |
|-------------------|------------|------|------|------|------|------|--------------------------|
| Indicator         | Definition | Area | 2012 | 2013 | 2014 | 2015 | Average (2012-2014,2015) |
|                   |            |      |      |      |      |      |                          |

|             |  |                                 |                  |                |                |                |  |
|-------------|--|---------------------------------|------------------|----------------|----------------|----------------|--|
| ECONOMIC1   | <b>ROI</b>   | Sd 22-29, 32                    | Not calculated   |                |                |                |  |
| ECONOMIC2   | <b>CR/BER</b>  | Sd 22-29, 32                    | Not calculated   |                |                |                |  |
| TECHNICAL1  | <b>IFI - Proportion of inactive vessels**</b>  | Sd 22-29, 32                    | 10.0 (<20%)      | 11.7 (<20%)    | 8.8 (<20%)     | 7.5 (<20%)     | 9.5 (<20%)<br>In balance                   |
| TECHNICAL2  | <b>VUI - Vessel utilisation (Ratio between average and maximum effort per vessel, GT*Days)</b> | Sd 22-29, 32                    | 0.83 (0.7 - 0.9) | 0.70 (0.7-0.9) | 0.83 (0.7-0.9) | 0.89 (0.7-0.9) | 0.81 (0.7-0.9)<br>Approximately in balance |
| BIOLOGICAL1 | <b>SHI - Ratio between F estimated and F target</b>  | Sd 22-29, 32 excl. Gulf of Riga | 1.24             | 1.51           | Not defined    |                | Not defined                                |
| BIOLOGICAL2 | <b>SARI - Stock-at-risk</b>  | Sd 25-32                        | Not calculated   |                |                |                |  |

| <b>VL0010 PGP</b> |  |                             |  |  |  |             |                          |
|-------------------|--|-----------------------------|--|--|--|-------------|--------------------------|
| Indicator         | Definition   | Area                        | 2012   | 2013   | 2014   | 2015        | Average (2012-2014,2015) |
| ECONOMIC1         | <b>ROI</b>   | Sd 26,28 incl Gulf of Riga  | 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 | NA          | NA                       |
| ECONOMIC2         | <b>CR/BER</b>  | Sd 26,28 incl Gulf of Riga  | 1<9.78 economically profitable with potential under - capitalization                             | 1<47.94 economically profitable with potential under - capitalization                            | 1<51.29 economically profitable with potential under - capitalization                            | NA          | NA                       |
| TECHNICAL1        | <b>IFI - Proportion of inactive vessels**</b>  | Sd 26,28, incl Gulf of Riga | Not calculated   |  |  |             |                          |
| TECHNICAL2        | <b>VUI - Vessel utilisation (Ratio between average and maximum effort per vessel, GT*Days)</b> | Sd 26,28 incl Gulf of Riga  | 0.21 (< 0.7)   | 0.24 (<0.7)  | 0.27 (<0.70)   | 0.24 (<0.7) | 0.24 (<0.7)<br>Imbalance |
| BIOLOGICAL1       | <b>SHI - Ratio between F estimated and F target</b>  | Sd 26,28 incl Gulf of Riga  | Not calculated   |  |  |             |                          |
| BIOLOGICAL2       | <b>SARI - Stock-at-risk</b>  | Sd 26,28 incl Gulf of Riga  | Not calculated   |  |  |             |                          |