The Annual Report on the Fishing Fleet of Estonia 2016

Summary on the balance between fishing opportunities and fishing capacity

The annual report evaluates the balance between fishing opportunities and fishing capacity of Estonia's fishing fleet in year 2016. For the evaluation, altogether 6 indicators have been calculated – SHI, SAR, ROI (ROFTA), CR/BR, inactive fleet indicator and vessel utilisation indicator. All indicators observe changes over 5-year period. Due to the lack of data under STECF JRC, the SHI and SAR are presented only for the Baltic Sea fleet segments and the latest data is only for year 2014. The economic indicators for fleet segment VL40XX will be presented in a separate report due to the confidentiality restrictions.

Compared to 2015, the number of vessels, total main engine power and gross tonnage increased slightly in 2016. Estonia has followed the entry-exit scheme as foreseen under the common fisheries policy and fleet capacity is in compliance with the reference levels.

Biological sustainability indicators

The latest data available on JRC web-page was only for 2014, thus there are no changes in the interpretation of the data compared to the year 2015 annual report. As in 2013, in year 2014 the SHI was above 1 in 3 fleet segments (TM VL1218, TM VL1824, TM VL2440). In those fleet segments, the SHI value has been above 1 for more than 3 consecutive years, which may refer to unsustainable fishing. Nevertheless, as was stated in the STECF JRC report (STECF-15-15), SHI indicator above 1 may reflect political decisions to reach F_{MSY} not immediately, but by 2020. Sustainable management of the most concerned stocks, Baltic herring in the Gulf of Riga and sprat, is foreseen with the new multi-annual plan which came into effect mid-July 2016. Thus, the target to reach F_{MSY} in 2020 is achievable. SAR indicates that during the period of 2010-2014 the only fleet segment exploiting stocks at risk is PG VL0010. Fleet segment PG VL0010 targets various species at various fishing seasons with different fishing gears, therefore the overall dependence on the Baltic herring of Gulf of Riga is not relevant. On the other hand, further reduction of the Atlantic salmon quota may limit fishing opportunities of other species in fleet segment PG VL0010 as the Atlantic salmon is mostly received as a by-catch in other fisheries. Other fleet segments are considered to be in balance.

Economic indicators

Out of four fleet segments active in the Baltic Sea, two (PG VL0010 and PG VL1012) showed significant profitability both in long-term (ROI) and in short-term (CR/BER) during the period of 2011-2015. The value of ROI of fleet segment TM VL1218 has been fluctuating over time the most compared to other fleet segments. This can be explained by the small amount of vessels in a segment TM VL1218, which means that individual results may affect sharply the whole segment. ROI value in fleet segment TM VL2440 has been low for the whole period under preview, but it has been always positive and in recent years shows increasing trend. It is important to stress that most of the fish landed by vessels in segments TM VL1218 and TM VL2440 is owned by producer organisations in charge of the whole chain from catches to processing to exports, therefore their profits are generated at the export stage and not at the moment of landing. Also, as Baltic sea trawling fleet has been historically more dependent on the eastern market, then the Russian embargo may have affected the economic results together with the overall economic standstill.

Vessel use indicators

The number of inactive vessels in fleet length classes VL1218, VL1824, VL2440 and VL40XX is very low – 4 vessels out of 35, but as individual fleet segments consist of a relatively small number of vessels, then few vessels with very low number of fishing days affect the indicator value of a whole segment. The highest vessel use indicator is in the distant water fishing fleet (VL40XX). The lowest is in coastal fleet PG VL0010, which can be expected due to various socio-economic, fishery-specific and weather-related vessel use factors.

Based on the calculations and analysis of the balance indicators presented in section F, it can be stated, that all fleet segments are balanced in general. The evaluation of balance indicators shows that an overall assessment of the situation in Estonia's fleet is rather positive – the structural balance has been achieved and there is some room left for adapting with the changes in stocks. Negative values for single years should not be overemphasized as they may not accurately reflect general trends in fleet segments. In conclusion, no structural overcapacity exists in Estonia's fishing fleet segments.

Section A

Description of fleets

On EU level, all Estonian marine fishing vessels belong into the MFL segment. On national level, the Government Regulation of 12.11.2015 No 117 determines the criteria for grouping fishing vessels into segments based on overall length (LOA), fishing gear, main target species and fishing grounds. The national segments for marine fishing vessels are: the Baltic Sea trawling segment (4S1, vessels with overall length 12 metres and above), high seas fishery segment (4S3, overall length 24 metres and above) and coastal fishing segment (4S2, less than 12 metres in length). The number of fishing vessels in Estonian marine fishing fleet at the end of 2016, together with their main characteristics, is given in the table below.

Table 1. Estonian marine fishing fleet as of 31 December 2016.

National segment	DCF fleet segment	Clustered segment	No of vessels	kW	GT	Average age	Average kW	Average GT	Average length (m)
4S2	PG VL0010		1 434	17 487	1639	23	12	1	5.5
	PG VL1012		83	4 648	576	26	54	7	11.6
4S1	TM VL1218		6	752	97	26	125	16	13.6
	INACTIVE VL1218		4	353	60	30	88	16	14
	TM VL1824*	TM VL2440	5	1 546	633	24	309	127	22.6
	TM VL2440*		20	6 673	2 779	32	338	139	26.5
4S3	VL40XX		5	13 941	8 472	25	2788	1694	64
Total			**1 557**	**45 400**	**14 256**				

* Following fleet segments are clustered together as the number of vessels in a segment is less than 10: TM VL1824 with TM VL2440. The clustering has been done according to the Chapter III.A.4 of 18 December 2009 Commission Decision (2010/93/EU), which states that in cases where a fleet segment has less than 10 vessels a clustering may be necessary.

Fleet segments PG VL0010 and PG VL1012

The Baltic Sea coastal fishing segment is divided between two distinctive fleet segments PG VL0010 and PG VL1012. These vessels are used in the Baltic Sea coastal waters up to 12 nautical miles or up to the 20-metre isobaths.

Fleet segment PG VL0010 has the largest number of vessels, 92% of the whole Estonian marine fishing fleet and their total engine power and gross tonnage make up 39% and 11% of

the fleet respectively. As can be seen from the Table 2 below, the total landings by vessels in fleet segment PG VL0010 is relatively small considering the number of vessels, making only 5.5% of the total landings. These vessels are used for fishing for different species (European perch, smelt, Baltic herring, flounder, pike-perch, roach, northern pike, etc.) with various passive gears.

Fleet segment PG VL1012 comprises of vessels used for fishing for Baltic herring in the Baltic Sea with stationary uncovered pound nets, mostly in a short spring season from April to June. The total number of vessels in fleet segment PG VL1012 is relatively small, 5% of the whole fleet, and their total engine power and gross tonnage make up only 10% and 4% of the fleet respectively, but the quantity of fish (Baltic herring) landed by these vessels makes 10.5% of the total landings and 22% of all Baltic herring landings.

Fleet segments TM VL1218 and TM VL2440

By DCF classification, the Baltic Sea trawling segment consists of three fleet segments: TM VL1218, TM VL1824 and TM VL2440. Segment TM VL1824 has below 10 vessels. Therefore, TM VL1824 and TM VL2440 have been clustered together to form a segment TM VL2440.

Vessels belonging to fleet segments TM VL1218 and TM VL2440 are used for fishing sprat and Baltic herring in the Baltic Sea. Compared to earlier years, cod fishing has lost its importance as fishing grounds are farther away and fishing is not profitable. Therefore there are no vessels specialised on cod fishing at the moment. Vessels that were used for cod fishing before are fishing now for sprat and Baltic herring or have been removed from the fleet. Combined, vessels of segments TM VL1218 and TM VL2440 make up only 2% of the total number of vessels, but their total engine power and gross tonnage make up 21% and 25% of the fleet respectively. Total landings by the Baltic Sea trawling fleet was 48 932.7 tonnes, which corresponds to 67.4% of all landings by Estonian marine fishing vessels in 2016.

Fleet segment VL40XX

Length class VL40XX comprises of distant water trawling vessels used for fishing various regulated and non-regulated species in the Atlantic Ocean. Five vessels in length class VL40XX make up to 31% of the total engine power and 59% of the total gross tonnage of the whole fleet. Total landings by these vessels were 12 027.4 tonnes, which is 16.6% of all landings by Estonian marine fishing vessels in 2016.

Table 2. Main fisheries and total landings in year 2016.

DCF fleet segment	National segment	Main fishing area(s)	Target species	Main gear	Total landings (t)
PG VL0010	4S2	Baltic Sea, coastal	European perch, Baltic herring, smelt, European flounder	FYK, FPN, GNS	3 960.8
PG VL1012			Baltic herring	FPN	7 630.7
TM VL1218	4S1	Baltic Sea	Baltic herring, sprat	OTM, PTM	860.4
TM VL1824				OTM	10 810.8
TM VL2440				OTM	37 261.5
VL40XX	4S3	NAFO, NEAFC, SVA, GRL	Northern prawn, redfish, cod, Greenland halibut, American plaice	OTB	12 027.4
Total					**72 551.6**

Link with fisheries

Commercial fishery in Estonia is based on the system of individual transferrable quotas (ITQ) and individual transferrable effort (ITE), allocated to companies, i.e. fishing rights owners, based on their 3-year historical fishing rights. In case of ITE, national limits on gears in order

to limit fishing effort are set by national scientific advice, and the total number is divided between fishing rights owners based on their 3-year historical fishing rights. It is allowed to swap given year's fishing quotas with other companies or with other countries. A company has the right to waive or sell its historical fishing rights. If the fishing rights owner has not paid for its current year allocation then the owner will not be granted a fishing permit and the allocated quantity is divided between other applicants. If a fishing permit has not been issued or catches have not been reported under the fishing permit for a three consecutive years, the fishing rights owner loses its historical fishing rights allocation.

Fishing is allowed only if a relevant fishing permit is issued, irrespective whether fishing for regulated or non-regulated species. There are two types of fishing permits: fisherman's fishing permit and fishing vessel's fishing permit. Fishing vessel's fishing permit is issued for a specific fishing vessel and that vessel must have a valid fishing licence.

Fisherman's fishing permit is in use in coastal fisheries, where ITE system is in use and allowed fishing effort - the type and number of fishing gears – is marked on a fishing permit. Fishing permits are issued to a fishing rights owner and permit is not directly linked with a specific vessel, because not all fishing is conducted with fishing vessels (for example ice-fishing in winter, fishing in shallow waters). Since coastal fishing uses mostly passive gears, regulating effort through vessel kW and GT is not relevant in this kind of fisheries. However, vessels that are used must have a valid fishing licence.

Estonia has fishing opportunities in the Baltic Sea, in the NAFO and NEAFC Regulatory Areas, and shrimp fishing days in the Svalbard area. In addition, Estonia's distant water fishing vessels fish for non-regulated species in the Barents Sea and NAFO. In coastal fishery, most of the target species are non-regulated on EU-level, but regulated by national effort limitation scheme (ITE).

Baltic Sea fisheries

The evolution of Estonia's initial fishing opportunities (as adopted with the EU TAC regulation) in the Baltic Sea is shown below in chart 1. There were no changes in the Atlantic salmon fishing opportunities compared to year 2015 as a roll-over was implemented. Both cod fishing opportunities and sprat continued to decline as in previous years. Subdivision 25-27, 28.2, 29 and 32 Baltic herring is the only fishing opportunity which has steadily increased since 2013.

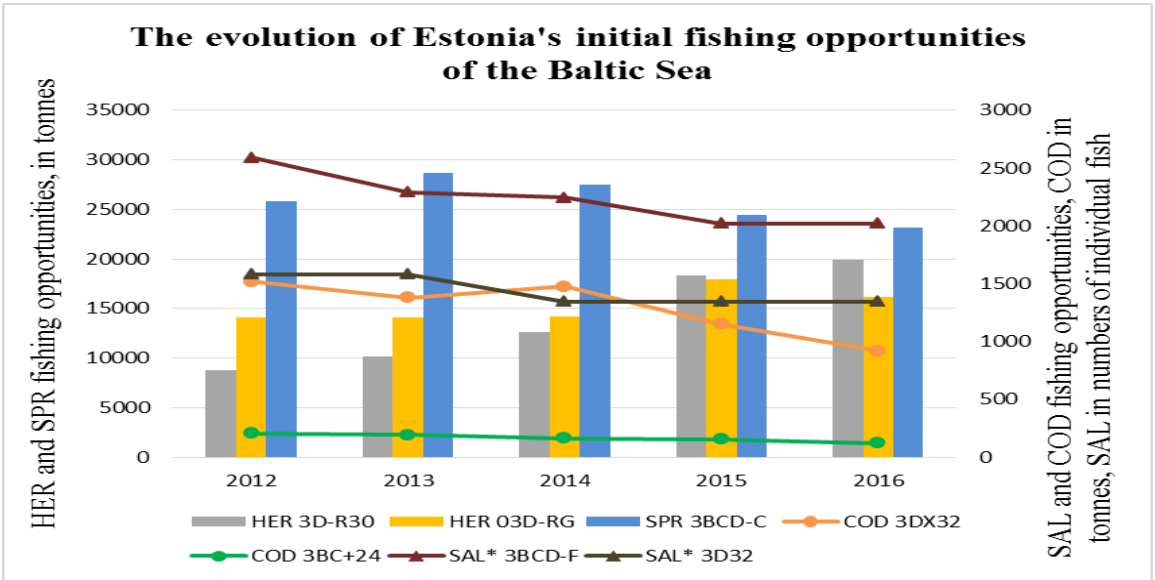

Chart 1. Estonia's initial fishing opportunities in the Baltic Sea in the years 2012-2016.

Landings of regulated species and total landings in 2016 by the Baltic Sea coastal and trawling fleets are shown in the table 3 below. Baltic herring is an important species both for the coastal and Baltic Sea trawling segment as 76% of all landed quantities of coastal fleet and 51% in Baltic Sea trawling fleet are Baltic herring. Catches of the Atlantic salmon and cod by trawl fishery have been marginal. All of the cod caught was received from the ICES subdivisions 28, 29 and 32. Atlantic salmon was received only by coastal fleet segment PG VL0010 from the ICES subdivisions 28, 29 and 32. As can be seen from the table 3, the dependence on EU-level regulated species is marginal only in the fleet segment PG VL0010. Other Baltic Sea fleet segments specialize on the exploitation of the EU-level regulated species – mostly sprat and Baltic herring.

Table 3. Total landings of regulated species in the Baltic Sea fisheries in the year 2016 (in tonnes).

DCF fleet segment	COD	HER	SAL	SPR	Total landings in the Baltic Sea
PG VL0010	1.9	1 286.8	6.8	0.4	3 960.8
PG VL1012	0	7 577.7	0	0	7 630.7
TM VL1218	0	394.5	0	465.9	860.4
TM VL1824	0	6 363.3	0	4 350.5	10 810.8
TM VL2440	0.1	18 146.4	0	18 870.2	37 261.5
Total	**1.9**	**33 768.7**	**6.8**	**23 686.9**	**60 524.2**

Overall, 81.5% of HER 3D-R30, 91.2% of HER 03D.RG, 93% of SPR, 0.2% of COD 3DX32, 0 % of COD 3BC+24, 39.9% of SAL 3BCD-F and 54.7 % of SAL 3D32 Estonia's year 2016 quotas (final quota after quota swaps with other Member States) were exhausted.

Concerning species targeted by coastal fleet, which are not regulated at the EU-level, according to the 2016 report from the University of Tartu Estonian Marine Institute, there haven't been considerable changes in the state of main targeted fish stocks compared to previous years and a general recommendation is not to increase fishing effort. Therefore, the number and type of fishing gear allowed to use in coastal fishery in the year 2016 was mostly the same as in year 2015. Catches of some of the main non-regulated (at EU-level) species compared to catches of Baltic herring and total catches by coastal fleet (PG VL0010 and PG VL1012) together with Baltic herring quota allocated for coastal fleet in years 2012 - 2016 is shown in chart 2 below. As can be seen from the chart 2 below, total catches are substantially impacted by the quota and catches of Baltic herring.

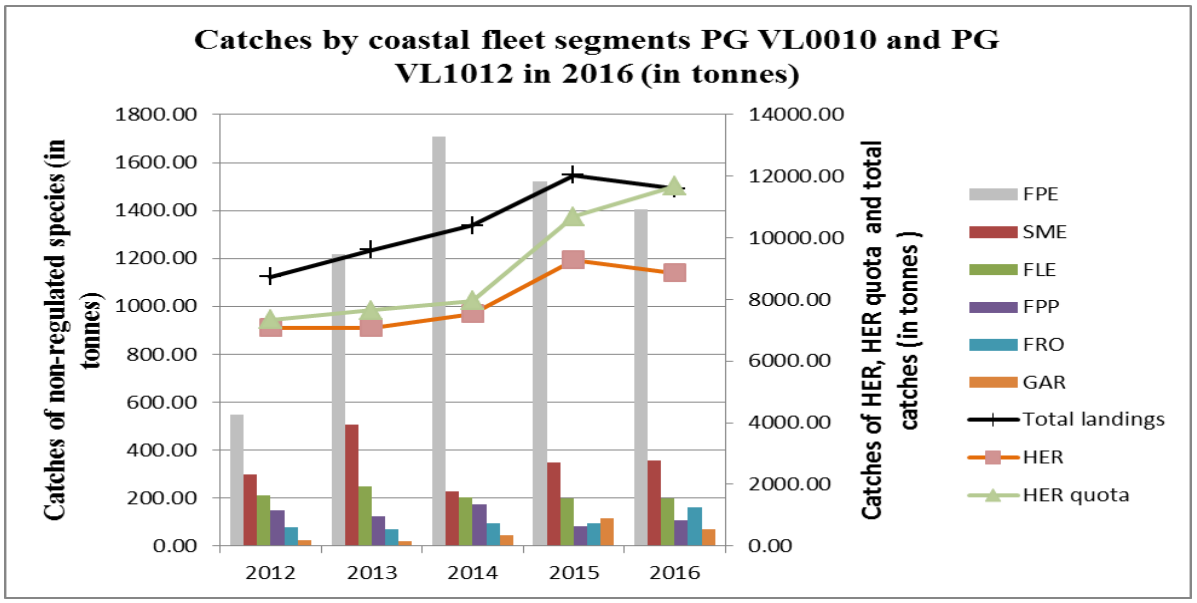

Chart 2. Catches of main non-regulated (at EU-level) species and HER and total catches by coastal fleet (PG VL0010 and PG VL1012) together with HER quota allocated for coastal fleet in years 2012 – 2016.

Distant water fisheries (VL 40XX)

After several years of reductions in NAFO 3L Northern prawn quota the quota was finally put under moratoria in 2015. That together with the continuing moratoria of NAFO 3M Northern prawn means that there was no shrimp fishing in NAFO RA by Estonian fishing vessels in 2015. Thus, fishing for non-regulated species (mostly Northern prawn in the Barents Sea), cooperation for quota swaps and charter agreements have become more important for Estonia's distant water fishing fleet. The proportion between Estonia's own initial fishing opportunities and total landings in 2016 is shown in the table 4 below. The biggest difference in Estonia's own fishing opportunities and actual landings is in NEAFC RA, where Estonia owns various small fishing opportunities, most of them for deep sea species. Estonia has not used these fishing opportunities since 2007 as the allocated quantities are too small to conduct targeted fishing. These fishing opportunities have been exchanged for fishing opportunities in the NAFO RA. Most of the landed quantities from NEAFC RA and Svalbard area come from Northern prawn (79% out of total landed quantity of 8 729 tonnes). Overall, 98% of RED 3LN, 41% of RED 3M, 99% of COD 3M, 100% of GHL 3LMNO, 98% of SKA 3LNO, 68% of WIT 3NO and 0% of SQI 3 and 4 Estonia's year 2016 quotas in NAFO RA (final quota after quota swaps with other Member States) were exhausted.

Table 4. The comparison between total landed quantities (both regulated and non-regulated species) and the amount of Estonia's own initial fishing opportunities in distant water fleet segment in year 2016 (Svalbard shrimp fishing days are excluded from the comparison).

Area	Estonia's fishing opportunities (t)	Total landings (t)
NAFO	3 044	3 283
NEAFC and SVA	335	8 729
East-Greenland	0	15

The evolution of Estonia's fishing opportunities is shown below. As can be seen from chart 3, there have not been any relevant changes in fishing opportunities compared to the year 2015, except the quota of witch flounder, which doubled compared to year 2015. Estonia's redfish fishing opportunity in NAFO 3LN increased in 2015 by 49 % compared to that of 2014, but remained the same as 2015 in 2016. The fishing opportunity of Greenland halibut in NAFO 3LMNO decreased slightly. Both important NAFO RA shrimp fisheries (3M and 3L) continued to be under moratoria in 2016. In NEAFC RA, the quota fluctuations have been biggest for RED 51214D and MAC 2CX14- stocks.

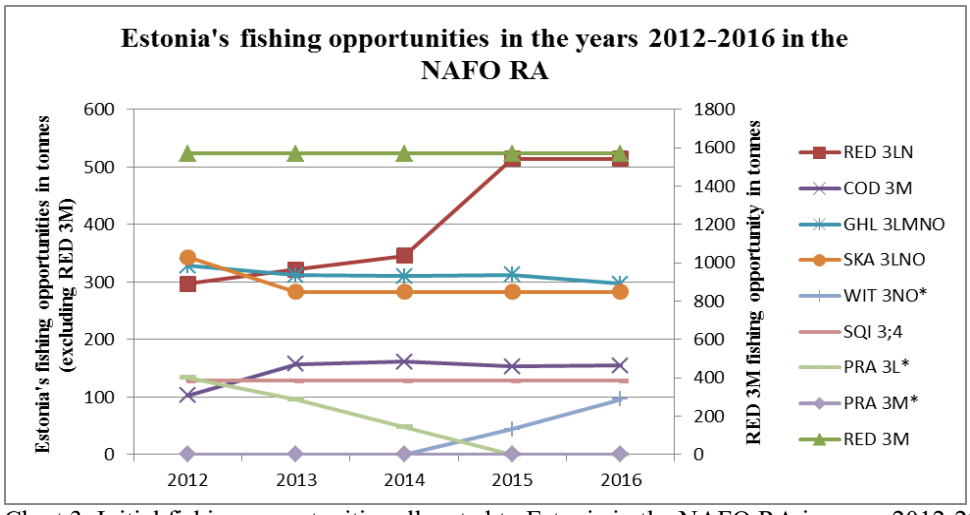

Chart 3. Initial fishing opportunities allocated to Estonia in the NAFO RA in years 2012-2016.

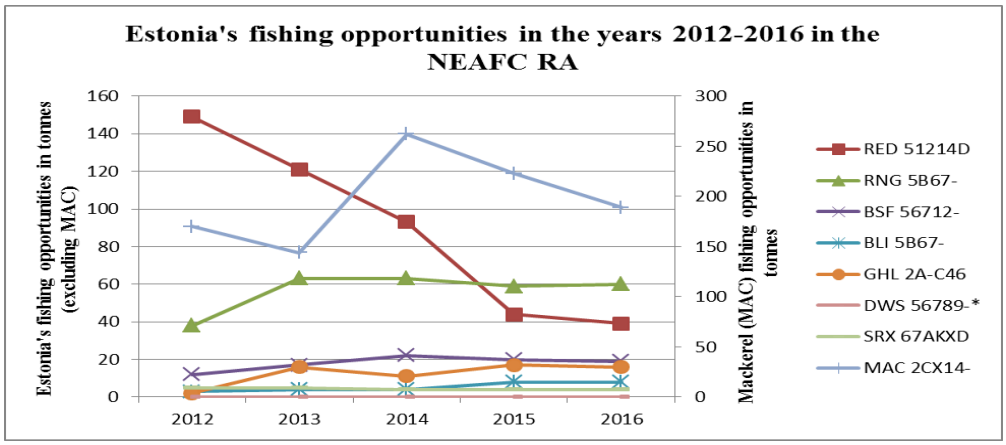

Chart 4. Initial fishing opportunities allocated to Estonia in the NEAFC RA in years 2012-2016.

Over the period of last five years (2012-2016) the main changes in target species has been the increasing importance of shrimp fisheries in the Barents Sea and Svalbard areas because of the moratoria of PRA 3M and 3L in NAFO RA. Catches of Northern prawn in the Barents Sea have increased steadily during the period of 2012-2016 and it is the most important species in catch volume making 50% of all fleet segment VL 40XX catches in years 2015 and 2016. Catches and their composition in NAFO RA are affected by various factors. This is also the reason why the landed quantities of main target species have been fluctuating considerably over the five year period. Landed quantities of the main species during 2012-2016 is shown below in chart 5.

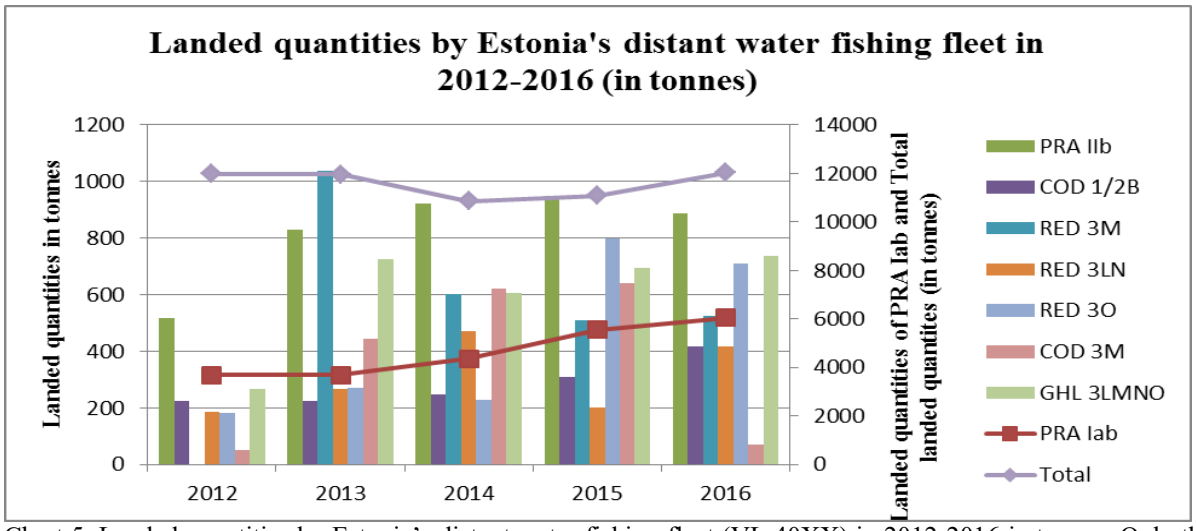

Chart 5. Landed quantities by Estonia's distant water fishing fleet (VL 40XX) in 2012-2016 in tonnes. Only the most important stocks are shown together with the total landed quantity.

Developments in fleet

By the end of 2016, there were 1 557 vessels in the Estonian marine fishing fleet. The total number of vessels has increased compared to 2015 because of entries of new vessels into length class VL0010. In all other length classes the number of vessels remained the same.

The development of the fleet in last 13 years since the joining with the EU in May 1, 2004, is given below in charts 6 to 8. Although the number of vessels has increased over the period of 2004-2016, the total gross tonnage and engine power have decreased considerably due to the exit of larger trawling vessels from the fleet and replacing them with small coastal fishing vessels with length under 12 m and using passive gears. By length classes, the number of vessels has decreased in all length classes and stabilised in recent years, except in length class VL0010. As can be seen from the charts 6 to 8 below, the most stable vessel length class over

the 13 year period have been VL1012 and VL1824 (corresponding to DCF fleet segments PG VL1012 and TM2440), where only minor changes have occurred by all three characteristics. Sharpest decline in the number of vessels, engine power and gross tonnage have taken place in the Baltic Sea trawling fleet length classes VL1218 and VL2440 and also in the distant water fleet VL40XX. The main drivers behind the decline in those length classes have been both economic and environmental as to better adjust with smaller fishing opportunities and to ensure profitability.

During 2016, 22 vessels (3770 kW, 2476 GT) were deleted from the fleet, 1 from DCF fleet segment TM VL2440 (221 kW, 117 GT), 19 from DCF fleet segment PG VL0010 (170 kW, 24 GT) and 2 from DCF fleet segment VL40XX (3379 kW, 2335 GT). Total of 41 vessels (3953 kW, 3255 GT) entered the fleet in 2016, most of them, 38 vessels (172 kW, 28 GT), into DCF fleet segment PG VL0010. One vessel was registered in DCF fleet segment TM VL2440 (221 kW, 117 GT) and two vessels in VL40XX (3560 kW, 3110 GT).

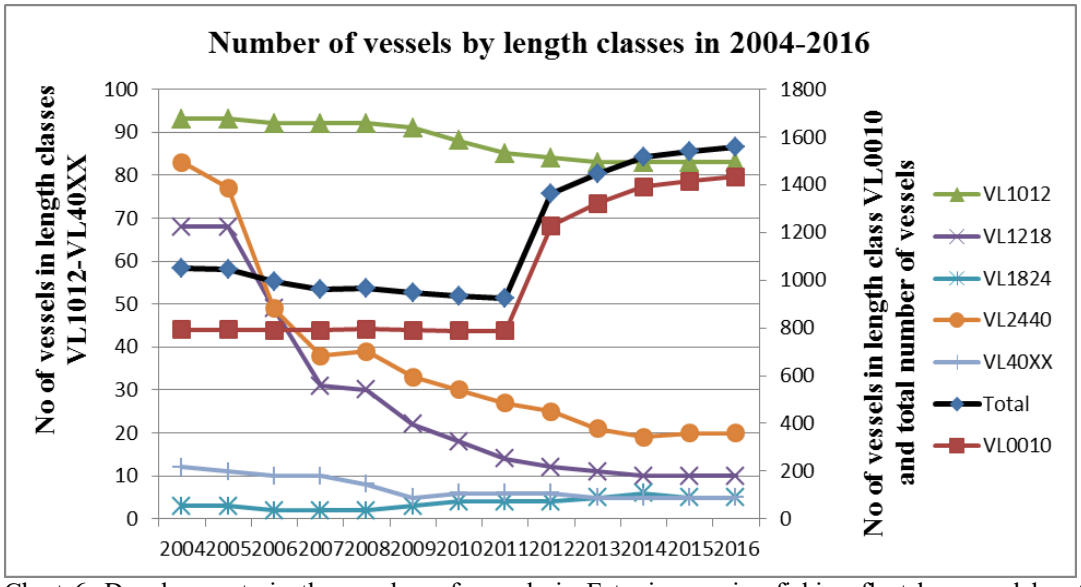

Chart 6. Developments in the number of vessels in Estonian marine fishing fleet by vessel length classes in 2004-2016.

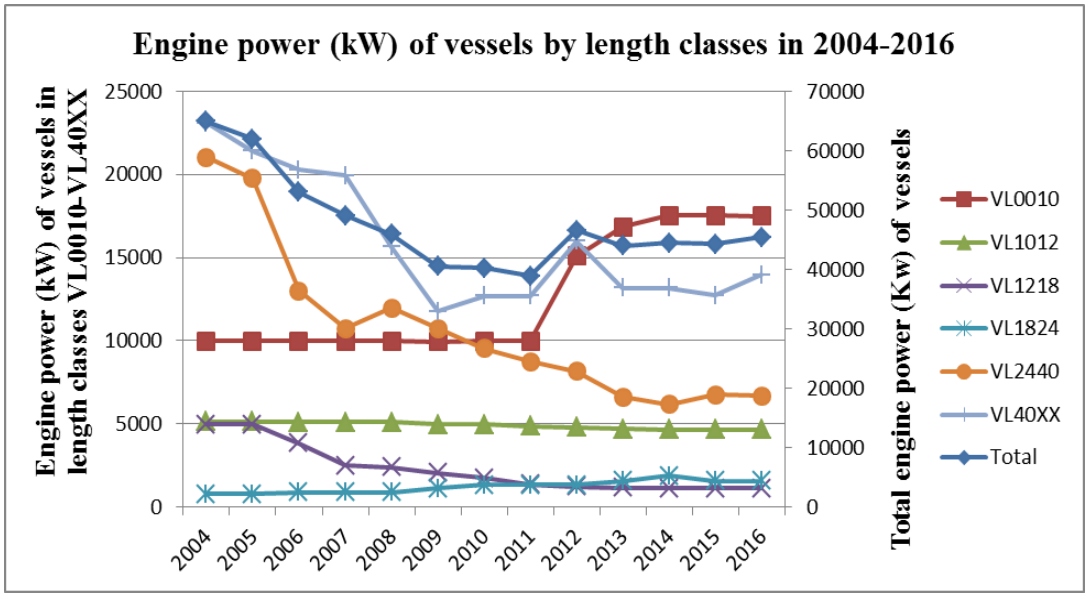

Chart 7. Developments in the main engine power of vessels in Estonian marine fishing fleet by vessel length classes in 2004-2016.

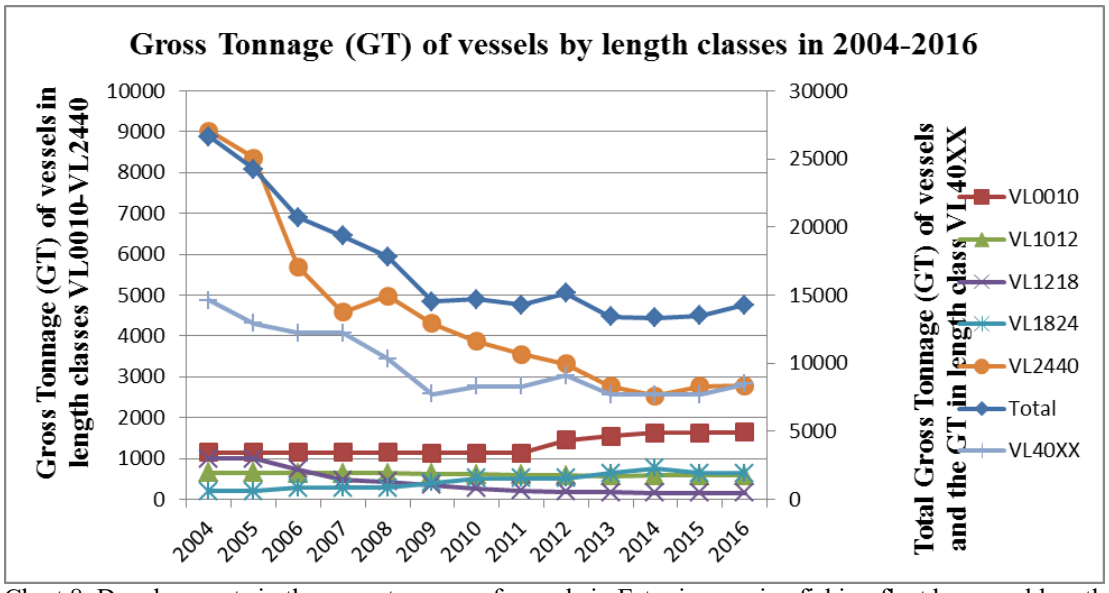

Chart 8. Developments in the gross tonnage of vessels in Estonian marine fishing fleet by vessel length classes in 2004-2016.

Section B

Effort reduction schemes and impact on fishing capacity of effort reduction schemes

Estonia adheres to numerous effort control and reduction schemes established by legal acts of national, EU or RFMO level. For example, different seasonal/regional temporary fishing restrictions, establishing yearly list of vessels allowed to fish for cod in the Baltic Sea and vessels allowed to fish in the Gulf of Riga. Every year, temporary fishing restrictions for the effort reduction are enforced in the Baltic Sea coastal and trawl fisheries to ensure sustainable use of fishery resources. In Svalbard fishing area, the number of shrimp fishing days and the number of vessels that may fish at the same time in the area, are limited.

National fishing capacity reduction schemes have been used for reducing fishing capacity and consequently fishing effort. Between 2006 and 2014, total of 62 (16998 kW and 7312 GT) vessels were removed from Estonia's fishing fleet with public aid. Most of them, 60 vessels, were removed from the Baltic Sea trawling fleet, out of which 16 belonged into length class VL1218 and 44 into length class VL2440. No vessels were removed with public aid from the length class VL1824. Other two vessels out of the total of 62 vessels were removed from the distant water fleet VL40XX. Effort reduction schemes did not include coastal fleet segments, length classes VL0010 and VL1012, as fishing in coastal fishery is regulated by ITE system.

Taking into account the long-term dynamics of the relevant fish stocks, no further decommissioning schemes are foreseen as fishing capacity has generally reached the targets set by National Fishing Effort Adjustment Plans and there is no structural overcapacity.

Section C

Compliance with entry/exit scheme and with level of reference

As in previous years, in 2016, Estonia followed the entry-exit scheme as foreseen under the common fisheries policy. Every entry into the fleet register or increase in tonnage and/or engine power is compensated by the removal of at least equal quantity of capacity from the fleet. The fishing capacity of a vessel deleted from the register with public aid cannot be replaced. All entries of a new vessel into the fleet and all capacity increases have been compensated by the removal of an equivalent or larger capacity from the fleet. Since the

accession to the European Union in 2004, Estonia has always been in compliance with the reference levels.

Table 5. Compliance with the entry/exit scheme and with level of reference in year 2016.

	Management of the entry/exit scheme in 2015	**GT**	**kW**
1	**Fleet ceiling on 01/01/2014 according to Annex II of the European Parliament and the Council Regulation (EU) No 1380/2013**	**21 677**	**52 566**
2	Capacity of the fleet on 01/01/2016	13 471	44 308
3	Entries of vessels of more than 100 GT financed with public aid	0	0
4	Other entries or capacity increases (not included in 3 & 5)	3258,01	4945,9
5	Increases in tonnage GT for reasons of safety	0	
6	**Total entries (3 + 4 + 5)**	3258,01	4945,9
7	Exits financed with public aid*	348	716
8	Other exits (not included in 7)	2476,33	3770,14
9	**Total exits (8)**	2476,33	3770,14
10	Power of engines replaced with public aid conditional to power reduction		0
11	**Capacity of the fleet on 31/12/2016 (2+6 - 9)**	14 253	45 484
12	**Fleet ceiling on 31/12/2016**	**21 329**	**51 850**

* All exits with public aid were finalised on 2014, thus they do not reflect in total exits of 2016 (line 9).

Section D

Summary of weaknesses and strengths of fleet management system and plans for improvements

The main strength of the Estonian fleet management system is the system of transferable fishing concessions in the form of both ITQ and ITE, which allows owner of the fishing rights to decide when to fish or give the right to someone else, thus helping to optimize the use of fishing opportunities and to help to balance fishing opportunities with the fishing capacity. Allocation of quotas based on historical fishing rights give a certain stability regarding long-term investments. This is also an initiative for the companies to use the optimal number of vessels in order to utilize their fishing possibilities in economically reasonable way. Some technical and administrational issues that complicate data checks between different national registers can be seen as weakness of the fleet management system and different solutions for this are being analysed.

General level of compliance with fleet policy instruments

Entry/exit scheme is fully applied and the fleet ceiling set for the Estonian fishing fleet has not been exceeded.

Section E

Changes of the administrative procedures relevant to fleet management

There were no major changes in the administrative procedures concerning Estonia's fleet management in year 2016.

Section F

Application of the balance indicators

For the calculation of the balance indicators the Guidelines of the 02.09.2014 document COM(2014) 545 final are used. Where appropriate, a traffic light system for visualising the results is used. Under the DCF, the data on expenditure, income and capital value for distant water fleet segment (length class VL40XX) is not included as the number of active vessels in this length class is too small and it is not possible to cluster the segment with other fleet segments. Thus, the calculations of economic indicator for the length class VL40XX will not be presented in this report and are submitted separately.

As was referred to in Section A, there is currently one clustered fleet segment, which is formed due to a small number of vessels. TM VL1824 is clustered with TM VL2440 to form a segment TM VL2440. Clustering is possible as vessels in both of these length classes fish in the same area, for the same species and they use the same gear. One vessel in length class VL1218 is excluded from the calculations as this vessel is harvesting only agar-agar (*Furcellaria lumbricalis*). In case the data is available, a time period of 5 years is used for calculating the indicators.

In general, it is important to stress that vessels belonging to the same fishery (i.e. fishing in the same area, for the same species/stocks, using similar gear) should be analysed together as dividing them into smaller subsets (e.g. based on DCF fleet segments) might distort the results, especially in case the number of vessels is relatively low.

Biological sustainability indicators

The calculation of biological sustainability indicators is based on the latest data available on STECF JRC web-page (http://stecf.jrc.ec.europa.eu/reports/balance), therefore, the calculations cover only years up to 2014. There is no data for the years 2015 or 2016 available on this web-page. When comparing different tables on the STECF JRC web-page (for example 2014-06_STECF 14-09 - Balance indicators_all tables_JRC90403.zip and 2015-10_EWG 15-17 - SHI supplementary data.xlsx, which were used for compiling previous years' annual reports with the most recent document 2016-10_EWG 16-09 - Balance indicator table.xlsx), it shows that there are, in some cases, different SHI and SAR values in the tables. The cause of differences remains unclear and therefore the quality and reliability of the data is questionable. Nevertheless, the tables containing the latest data have been used for the given analysis.

Sustainable Harvest Indicator, SHI

Sustainable Harvest Indicator is given for each DCF fleet segment. 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.

When discussing the results of SHI, it is important to stress that, with reference to the report on the assessment of balance indicators for key fleet segments and review of national reports on Member States efforts to achieve balance between fleet capacity and fishing opportunities by the Joint Research Centre (STECF-15-15), before 2020, an SHI indicator above 1 may reflect political decisions to reach F_{MSY} not immediately, but by 2020, as long as the target to reach F_{MSY} in 2020 can be achieved.

Table 6. Sustainable Harvest Indicator for each DCF fleet segment in period of 2010-2014.

DCF fleet segment	2010	2011	2012	2013	2014
PG VL0010	1.0	0.8	0.6	0.5	0.7
PG VL1012	1.0	0.8	0.6	0.5	0.7
TM VL1218	1.3	1.2	1.1	1.2	1.0
DTS VL1218	1.0	0.8	0.6	0.6	0.7
TM VL1824	1.3	1.2	1.1	1.3	1.1
DFN VL2440	-[1]	-[1]	-[1]	-[1]	-[1]
TM VL2440	1.3	1.2	1.1	1.3	1.1
DTS VL2440	3.9	-[1]	3.7	-[1]	-[1]
VL40XX	-[2]	-[2]	-[2]	-[2]	-[2]

[1] DCF segment DFN VL2440 is a redundant segment as drift nets are banned in the Baltic Sea according to the Council Regulation (EC) 2187/2005. There was only one vessel in DTS VL2440 during 2013-2014 and no vessels since 2015.
[2] Insufficient data.

As can be seen from table 6, all fleet segments have had values above 1 on a period of 2010-2014. According to the document 2016-10_EWG_16-09_-_Balance_indicator_table.xlsx, concerning fleet segments PG VL0010 and PG VL1012, less than 40% of the fleet segment's annual landed value came from assessed stocks, which is an indication that the SHI value is unrepresentative. The explanation seems relevant for fleet segment PG VL0010, which targets various species, including EU-level regulated species like Baltic herring and Atlantic salmon. While Baltic herring makes 32% of total landed quantity in fleet segment PG VL0010, then in first sale values it makes only 5.8%, which means that PG VL0010 does not depend on Baltic herring fishery. At the same time 99% of fleet segment PG VL1012 landings are of Baltic herring and it makes 97% of first sales value. Thus, the above mentioned reference that less than 40% of the PG VL1012 annual landed value came from assessed stocks seems to be incorrect. Most of the Baltic herring caught by fleet segment PG VL1012 was caught from the Gulf of Riga (28-1). According to the ICES advice for year 2016, Baltic herring stock in the Gulf of Riga is in a good condition, spawning-stock biomass has been above the MSY $B_{trigger}$ since the end of 1980s. The remaining problem is high fishing pressure, which has been above F_{MSY} in recent years.

Vessels of fleet segments TM VL1218, DTS VL1218, TM VL1824, TM VL2440 and DTS VL2440 belong all to the Baltic Sea trawling fleet. Three main stocks targeted by these fleet segments are sprat, Baltic herring in Subdivisions 25-29 and 32, and Baltic herring in the Gulf of Riga. Based on the ICES advice for year 2016, two species of concern for the Baltic Sea trawling fleet are Baltic herring in the Gulf of Riga, which was discussed above, and sprat. While sprat's spawning-stock biomass (SSB) remains above the MSY Btrigger, the fishing mortality has fluctuated between F_{MSY} and F_{lim} in recent years and in 2014 was above F_{lim}, thus referring to an unsustainable harvesting of sprat. At the same time, five year classes of 2009–2013 were at or below the average, but the 2014 year class is estimated to be very strong.

In both cases, Baltic herring stock in the Gulf of Riga and sprat, the sustainable management of stocks is foreseen with the new multi-annual plan which came into effect mid-July 2016 (Regulation (EU) 2016/1139 of the European Parliament and of the Council of 6 July 2016 establishing a multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks, amending Council Regulation (EC) No 2187/2005 and repealing Council Regulation (EC) No 1098/2007). Thus, the target to reach F_{MSY} in 2020 is achievable.

According to the guidelines, in case of SHI, if more than 60 % of the value of the catch is made up of stocks for which values of F and Fmsy are unavailable the indicator is deemed to be unavailable. In such case, Member States should use available assessment information about one or more species that for reasons of historical abundance or consistency could be considered as indicators of the impact of fishing on an ecosystem. Primary stock harvested by vessels belonging to segment VL40XX during 2012-2016 was Northern prawn (PRA) in the NEAFC waters (Barents Sea) and in the Svalbard area. Main stocks harvested by distant water fishing fleet in the NAFO RA were redfish (RED) in 3M, cod in 3M and Greenland halibut (GHL) in 3LMNO.

Concerning Northern prawn in the ICES Subareas I and II, the stock has always been exploited far below F_{msy} according to the year 2016 advice from the ICES (Source: http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/pand-barn.pdf).

According to the recent scientific advice for NAFO stocks (Source: https://www.nafo.int/Science/Stocks-Advice), COD 3M SSB is estimated to be well above B_{lim}, but the current F is considered not to be sustainable. Keeping that in mind, year 2017 TAC was set lower than F_{lim}. RED 3M stock has increased since 1996 and has remained at a relatively high level in recent years. Fishing mortality has remained stable at low level since the late 1990s. This has led to a provisional marginal increase of RED 3M TAC to 7000 tonnes. Concerning GHL 3LMNO, Management Strategy was adopted in 2010 and it will be in force initially until 2017, which is the basis for setting TACs.

Stocks-at-risk indicator, SAR

The Stocks-at-risk (SAR) indicator should give an indication whether a fleet or a fleet segment catches stocks that are considered to be at risk. In that assessment, only stocks at risk that make up for more than 10% of the segment's landed quantities, or from which the segment takes more than 10%, are taken into account. SAR data was taken from the table 2016-10_EWG 16-09 - Balance indicator table.xlsx and the most recent data is available for year 2014. As can be seen from the table 7 below, throughout the observed five years (2010-2014) the only fleet segment that is considered to catch stocks at risk is PG VL0010. As more specific data on SAR calculation and SAR stocks is missing from the JRC web-page, it is difficult to analyse SAR values indicated in the table 7. It is probable, that two SAR stocks in 2013 in fleet segment PG VL0010 were the Atlantic salmon and Gulf of Riga Baltic herring, and in year 2014 Gulf of Riga Baltic herring. The Atlantic salmon is received by fishermen as a bycatch in small amounts, and most of the quota is utilized that way. The problems for the fleet segment PG VL0010 may arise when the Atlantic salmon quota is further cut. Baltic herring is less valuable species compared to most other species, and different species are caught at different seasons, therefore the dependence on Baltic herring in fleet segment PG VL0010 is not relevant. Other fleet segments are considered to be in balance.

Table 7. Fleet segments with SAR indicator valued at 1 in years 2010-2014.

DCF fleet segment	Stocks-at-risk				
	2010	2011	2012	2013	2014
PG VL0010	1	1	2	2	1
PG VL1012	0	0	0	0	0
TM VL1218	0	0	0	0	0
DTS VL1218	0	0	0	0	0
TM VL1824	0	0	0	0	0
DFN VL2440[1]	-	-	-	-	-
TM VL2440	0	0	0	0	0

DTS VL2440	0	0	0	0	0
VL 40XX[2]	-	-	-	-	-

[1] See footnote 1 of the table 6.
[2] See footnote 2 of the table 6.

Economic indicators

Economic indicators are calculated for the period of 2011-2015 as the DCF data for 2016 is not yet available. Two indicators are calculated: return on investment (ROI) showing long-term viability of the fleet and ratio between current revenue and break-even revenue showing short-term viability. For the calculation of ROI indicator, an interest rate of a low risk long term investment has been calculated based on the arithmetic average of Lithuanian and Latvian low risk long term investment interest rates according to the European Central Bank as no harmonised long-term interest rate is available for Estonia.

Return on investment, ROI

Table 8 shows, using a traffic light system, the values of ROI and the indicator in four Baltic Sea segments. As can be seen from the table, fleet segments PG VL0010 and PG VL1012 have shown the most stable and profitable economic results in the long term. The value of ROI of fleet segment TM VL1218 has been fluctuating over time the most compared to other fleet segments. This can be explained by the small amount of vessels in a segment TM VL1218, which means that individual results may affect sharply the whole segment. Considerably large number of inactive vessels in segment TM VL1218 affects the economic results too. In the long run, it is expected that segment TM VL1218 should become more stable as, for example, in the early 2017 one inactive vessel was removed from the fleet. Although ROI value in fleet segment TM VL2440 has been low for the whole period under preview, it has been always positive and in recent years shows increasing trend.

Concerning both Baltic Sea trawling segments – TM VL1218 and TM VL2440 - it is important to note that most of the fish landed by trawlers is owned by producer organisations in charge of the whole chain from catches to processing to exports, therefore their profits are generated at the export stage and not at the moment of landing. Also, as Baltic sea trawling fleet has been historically more dependent on the eastern market, then the Russian embargo may have affected the economic results together with the overall economic standstill.

Table 8. Values of ROI and indicator in length classes VL0010, VL1012, VL1218 and VL2440 in years 2011-2015. According to the Guidelines, green values indicate that extraordinary profits are being generated, orange values indicate possible lack of long-term viability and red indicate possible economic over-capitalisation. * DTS VL1218 and TM VL1218 have been clustered together into TM VL1218, and vessels of length classes VL1824 and VL2440 have been clustered together to form a segment TM VL2440.

Segment	Year	2011	2012	2013	2014	2015
PG VL0010	**ROI**	10.57	18.18	10.49	6.71	2.88
PG VL0010	**Indicator**	5.03	13.48	6.90	4.06	1.71
PG VL1012	**ROI**	6.14	12.01	22.75	7.6	16.49
PG VL1012	**Indicator**	0.60	7.31	19.16	4.95	15.32
TM VL1218	**ROI**	3.67	6.28	1.20	-5.29	4.6
TM VL1218	**Indicator**	-1.87	1.58	-2.39	-7.94	3.43
TM VL2440	**ROI**	1.52	0.56	2.00	2.83	1.9
TM VL2440	**Indicator**	-4.02	-4.14	-1.59	0.18	0.73
	low risk long term interest rate	**5.54**	**4.7**	**3.59**	**2.65**	**1.17**

Ratio between current revenue and break-even revenue

For the calculation of BER, opportunity cost of capital is excluded from the calculation, therefore, the indicator shows only the short-term viability of the Baltic Sea fishing fleets. According to the Guidelines, ratio greater than 1 indicates that in short-term the income is sufficient for covering variable and fixed costs, indicating that the segment is profitable. Ratio below 1 can indicate that insufficient income is generated to cover variable and fixed costs. Negative ratio means that variable costs exceed current revenue, indicating that the more revenue is generated, the greater the losses will be.

As can be seen from the chart 9 below, during the period of 2011-2015, only once has the ratio been negative and not once between 1 and 0. This indicates that in short term, all Baltic Sea fleets, both coastal and trawl, are profitable. When comparing ratios of ROI and BER, then some general similarities can be seen in the developments in different length classes. For example in 2013, both in short-term (BER) and in long-term (ROI), the indicators suggest that the length class VL1012 is the most profitable. Also, in 2014, both in short-term (BER) and in long-term (ROI), the indicators in the length class VL1218 were negative and recovered considerably in 2015.

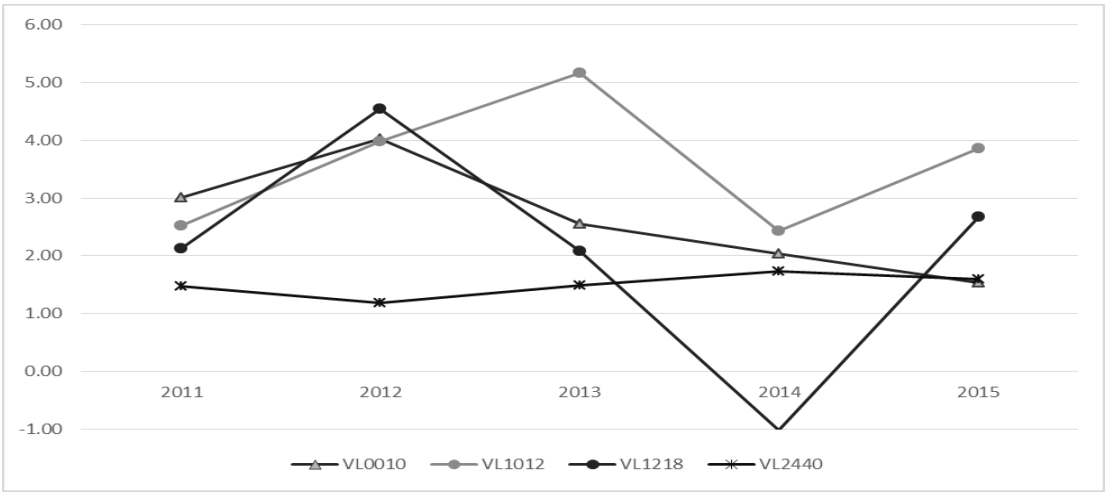

Chart 9. Ratio between current revenue and break-even revenue for years 2011-2015.

<u>Vessel use indicators</u>

The proportion of inactive vessels has been calculated for length classes VL1218-VL40XX only as in coastal fisheries (VL0010 and VL1012) different vessels are used depending on the season, directed species and fishing gear used. For example, Baltic herring is targeted by coastal fisheries during a relatively short spring season and some of those vessels are not used in other fisheries throughout the year. In addition, fishing in coastal fisheries is an important way to diversify economic activities in peripheral areas and is not always the main economic activity for fishers. Therefore, it is not reasonable to calculate the proportion of inactive vessels in coastal fleet segments PG VL0010 and PG VL1012. For the same reasons the results of the calculation of vessel use indicator in fleet segments PG VL0010 and PG VL1012 should be taken with caution.

Inactive Fleet Indicator

The number of active fishing vessels in length classes VL1218-VL2440 has decreased from 36 in 2012 to 31 in 2016. There were 4 inactive vessels in year 2016 in fleet segment VL1218. The number of active vessels in length class VL40XX has been stable during last 5 years, staying between 4 and 6 vessels and in 2016 there were 5 active vessels and one inactive vessel, which was removed from the fleet in the first half of the year.

Vessel Utilisation Indicator

For calculation of vessel utilisation indicator, only active vessels, which have had at least one day at sea during a year, are included. For data comparability reasons an observed maximum activity level was chosen for calculations instead of theoretical. The ratio between the average effort per vessel in a fleet segment and the observed maximum effort actually exerted by a vessel in kWdays was calculated in length classes VL1218, VL1824, VL2440 and VL40XX.

Table 9 shows that the number of average fishing days has fluctuated in all fleet segments. According to the Guidelines, it is considered normal that 10 % or less of the vessels in a fleet segment are inactive. In 2016, 5 vessels were inactive and only two vessels in segment had less than 10 fishing days. Both of those vessels belonged to the fleet segment TM VL1218. The situation has stabilised and become more homogenous concerning active vessels in length class VL40XX in recent years. Low minimum fishing days value (166 FD) is due to a new vessel entering the fleet in mid-year.

Table 9. Minimum, maximum and average fishing days (FD) in fleet segments TM VL1218, TM VL1824, TM VL2440 and VL40XX in years 2012-2016.

	VL1218			**VL1824**			**VL2440**			**VL40XX**		
Year	**Min FD**	**Max FD**	**Av FD**	**Min FD**	**Max FD**	**Av FD**	**Min FD**	**Max FD**	**Av FD**	**Min FD**	**Max FD**	**Av FD**
2012	9	80	56	103	199	141	7	187	129	4	284	204
2013	42	87	60	70	140	105	8	151	80	162	265	230
2014	1	56	28	83	149	119	15	147	108	283	326	306
2015	1	103	47.5	35	151	123.5	5	179	129.6	292	348	323
2016	7	74	37	89	147	119	86	152	112	166	331	274

The calculation of ratio between the average effort and the observed maximum effort in kWdays for different fleet segments in the period of 2012-2016 is shown in chart 10 below. The Guidelines suggest that ratio below 0.7 should be considered as showing structural overcapacity. The ratios of two length classes – VL40XX and VL1824 have been over 0.7 the whole period of 2012-2016. Also, the ratio has been over 0.7 for the last three years in length class VL2440, which means that the fleet has stabilized and fishing opportunities are used more efficiently. The ratio of VL1218 has been below 0.7 the whole period, which indicates that vessels in this fleet segment are not sufficiently harnessed in fishing activities.

There are several reasons why the ratio is low for length class VL1218. Number of average fishing days in length class VL1218 is considerably lower than that in VL1824 and VL2440 because these vessels are smaller and the usage of those vessels is more dependent on the weather conditions (e.g. ice, storms), thus they are less effective than larger trawlers. The difference in the number of fishing days varies considerably in length class VL1218. For example, the minimum fishing days in length classes VL1824, VL2440 and VL40XX make 60%, 56% and 50% of the maximum fishing days, respectively. At the same time, the minimum fishing days in length class VL1218 is only 9% of the maximum.

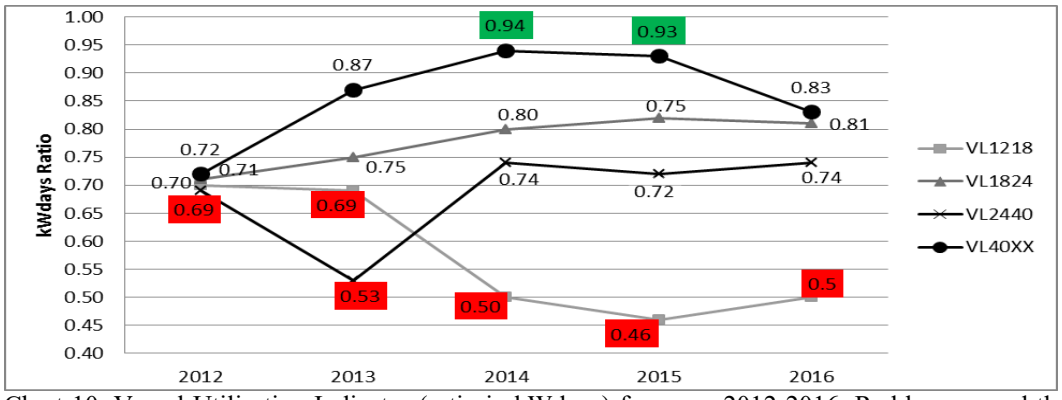

Chart 10. Vessel Utilisation Indicator (ratio in kWdays) for years 2012-2016. Red box around the number may indicate a substantial under-utilisation and green box largely homogenous level of activity in the fleet segment according to the Guidelines.

For fleet segments PG VL0010 and PG VL1012, the vessel use indicator is given in GTdays. The indicator is low in those segments as fishing is often not the only economic activity and, in case of segment PG VL1012, the main target species is Baltic herring, which is harvested mostly on a relatively short period in spring. Also, fishing in shallow waters can be done without a vessel and fishing in the winter time is generally made without a vessel due to the ice coverage. Large heterogeneity of the vessel use in the segment has a considerable impact on the vessel use ratio especially in PG VL0010. This has been stressed also by STECF (STECF-13-28) that a low vessel utilisation rate for smaller vessels would be expected.

Table 10. Vessel use indicator in GTdays for segments PG VL0010 and PG VL1012 in 2012-2016.

DCF fleet segment	2012	2013	2014	2015	2016
PG VL0010	0.2	0.27	0.19	0.19	0.24
PG VL1012	0.3	0.27	0.34	0.57	0.48