Coalition Clean Baltic
FOR PROTECTION OF THE BALTIC SEA ENVIRONMENT

CCB review of Baltic Sea Region EU Member States' Implementation of the MSFD

2013

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Terminology

ASCOBANS: Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas

B: Biomass is the body weight of all the fish of one specific stock in the water. B does not differentiate age, gender etc. It is measured in tonnes.

BSAP: HELCOM Baltic Sea Action Plan

BMSY: Biomass (total weight of fish) that can support harvest of the MSY

BPA: Precautionary reference point for spawning stock biomass (SSB)

CCB: Coalition Clean Baltic

CFP: Common Fisheries Policy

DDT: Dichlorodiphenyltrichloroethane, pesticide dangerous for biodiversity

DE: Germany

Descriptor: Describes the problem and target in the Baltic Sea.

DK: Denmark

DN: Danish Society for Nature Conservation

EC: European Commission

EE: Estonia

ESEC: European Seas Environmental Cooperation. Cooperation among regional NGO networks: Seas At Risk, CCB, Mediterranean Information Office MIO, Black Sea NGO network

FANC: The Finnish Association for Nature Conservation (in Finnish: Suomen luonnonsuojeluliitto)

FCS: favourable conservation status (of the Habitats Directive habitats and species)

FI: Finland

FMSY: Fishing mortality consistent with achieving Maximum Sustainable Yield (MSY)

GES: Good Environmental Status is a target which the EU marine environments should reach by the end of 2020

HELCOM: known as the Helsinki Commission. The Name HELCOM is used as a reference to the Regional Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention)

IA: Initial Assessment completed by Member States

ICES: International Council for the Exploration of the Seas

Indicator: To monitor if target of descriptor is reached or not.

IUCN: International Union for the Conservation of Nature

JRC: Joint Research Centre – fisheries data collection

LV: Latvia

LT: Lithuania

MSY: Maximum Sustainable Yield

MSFD: Marine Strategy Framework Directive

MS: Member State of the European Union

NGO: non-governmental organisation

PCB: Polychlorinated biphenyl

PL: Poland

PSPC: Potential Smolt Production Capacity

RBM: River Basin Management Plans. In the Water Framework Directive is required that each member state must produce a plan for each of the river basin districts within its territory.

SAMBAH: Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise

SE: Sweden

SSB: Spawning Stock Biomass

SSBpa: Spawning Stock Biomass- Precautionary Approach

SSBmsy: Spawning Stock Biomass – Maximum Sustainable Yield

SSNC: Swedish Society for Nature Conservation

STEFC: Scientific, Technical and Economic Committee for Fisheries

TAC: The total allowable catch (TAC) is a catch limit set for a particular fishery, generally for a year or a fishing season.

WFD: Water Framework Directive

WWF: World Wildlife Fund

WWTP: Wastewater treatment plant

Abstract

Marine Strategy Framework Directive (MSFD) was adopted in 2008 to protect, maintain and restore EU's marine environment by improved management. The directive is aiming at Good Environmental Status (GES) of EU marine areas by 2020.

The first part of the implementation of the MSFD was to assess the current status of marine areas, define GES and environmental objectives as well as set indicators and targets. This CCBs report was made to evaluate Member States (MS) work with implementing MSFD and to review potential gaps between Baltic Sea Region Member States in the implementation process of MSFD. The Member States in question include Estonia, Latvia, Lithuania, Poland, Germany, Denmark, Sweden and Finland.

CCB NGOs, from all MS except Denmark, has taken part in this work. For the review a number of Descriptors were chosen from the MSFD for a deeper assessment; Biodiversity, Commercial fish species, Eutrophication and Marine litter. MS have been evaluated based on the GES definition, indicators and targets set for the each descriptor. Comparison of MS was done on basis of how well they meet the Commission decision on criteria and methodological standards on good environmental status of marine waters (2010/477/EU).

The ambition level of indicators were evaluated based on the targets, and if target has any legal force. Legal force can mean that targets values are set in other directives, national law or in HELCOM. This was used as criteria for targets also because when MS are implementing their own strategy, according to MSFD they must take into consideration values set in Water Framework Directive (WFD) for coastal areas and other important legislation. The MS indicators were ranked with the numbers between -2 to +2, on basis of criteria described in Methodology.

The assessment shows that the ambition level between MS is varying, and the reports sent to the Commission show huge variation in MS focus and interpretation of the Directive itself. There are for example some MS that have not developed enough indicators or do not have ambitious targets. Many Baltic MS have not reported indicators or targets for many of the descriptors at all and therefore made the evaluation process particularly difficult, however we still tried to assess their ambition level for drafted or preliminary developed indicators. The review also clearly shows that regional coherence is poor, a surprising fact considering the long tradition of environmental cooperation within HELCOM in our region.

In conclusion, some MS managed to get a better overall ranking than others, and the best examples were Sweden and Denmark. Germany is still in the process of developing functional indicators and targets and if their full work based on available drafts is finalised, Germany would receive a much higher score. However, none of the Baltic region MS including the above mentioned MS reaches an acceptable level of fulfilling the requirements of this important Directive.

1. Introduction

Marine Strategy Framework Directive (MSFD) (2008/56/EY), the environmental pillar of the wider Integrated Marine Policy, was adopted in June 2008. The MSFD was established because of the evident pressure on our oceans and the increasing demand of natural resources from our marine environments. The marine ecosystem is pushing the limit in which it can sustain and as a consequence the EU community must reduce the negative effects of human activities.

The marine environment is an invaluable asset which must be protected and restored when possible, with the goal to maintain biological biodiversity and secure dynamic and diverse ecosystems in our seas. The aim of the MSFD is to more effectively protect the marine environment across Europe. The objective is to reach Good Environmental Status of the EU marine waters by the end of year 2020 and to protect resources which are related to economic and social activities.

The European Marine Regions are divided on the basis of geographical and environmental criteria. MSFD requires all Member States (MS) to work together with other EU Member States and non-EU countries when developing strategies for their marine waters.[1]

HELCOM has for many years had a key role as a coordinator between the Baltic EU and non-EU countries cooperation. In the Ministerial meetings declarations and the Baltic Sea Action Plan (BSAP) of 2007, several years before the MSFD, established objectives and targets to reach a healthy Baltic Sea by the year 2021. The BSAP shares most of its focus and goals with the MSFD and the HELCOM cooperation has consequently and correctly been given a special task to coordinate the implementation of the MSFD.

The implementation process of the MSFD is divided into three phases; first is the Initial Assessment (IA) of the current state of the environment, definition of "*Good Environmental Status*"*-(GES),* setting of indicators and the establishment of environmental objectives (IA), the second phase is the implementation of monitoring program and third phase is implementation of the Program of Measures. Also a detailed cost-benefit analysis of the proposed program of measures is required. Member States are given a clear implementation schedule in the MSFD in order to achieve GES by 2020.

1.1 Objective of the report

The main objective is to evaluate Member States performance according to the MSFD requirements and ambitions and also link it to existing work, such as within HELCOM, from a NGO perspective.

CCB has chosen to review Member States performance of this Directive for two main reasons:

1. MSFD is the only coherent EU legislation aiming to push EU members to better manage our common seas, which is also CCBs ultimate goal
2. It is of utmost importance that NGOs learn more about this Directive and take part of Member States plans and consultations. Work with this review has increased awareness and capacity of several Baltic NGOs regarding MSFD

CCB has assessed the ambition level of Member States in first stages of MSFD implementation process. To stay focused on CCB prioritized areas and to limit the project, four different descriptors of MSFD were chosen; Biodiversity, Commercial fish species, Human induced eutrophication and Marine litter. For biodiversity only the species harbour porpoise, seals, salmonids and other fish

[1] http://ec.europa.eu/environment/water/marine/directive_en.htm

species were chosen. This limitation is very important to note and underline, as the report does claim to give a full picture of MS performance in all aspects. However the chosen areas do represent the key parts of this Directive in relation to the main threats and pressures on the Baltic Sea environment. The descriptors were chosen in cooperation with members from Baltic NGOs during a meeting held in Riga, 2013. The actual assessment of the each Member State has been done with the help of national NGO representatives. Member States that are included in this report are Estonia, Latvia, Lithuania, Poland, Germany, Denmark, Sweden and Finland.

The following is assessed for each chosen descriptor:

- proportion of EU criteria covered by Member States
- indicators and evaluation of target values of these indicators
- on what level is Good Environmental Status set and also
- Member State alignment with HELCOM, ICES and other directly related directives.

1.2 Material used for the evaluation

The report is completely based on the official Initial Assessments reported to EU and additional reports from responsible institutes used as resource material, however some MS NGOs had difficulties accessing official material. For example, Poland has not yet reported IA to the Commission, and the reason for this is that transposition into polish law took place only recently. Therefore the process started later, and the material used for this report is based on a draft version and additional data available.

In our evaluation, we have as a base reference used the EU Commission document: "On criteria and methodological standards on good environmental status of marine waters" (2010/477/EU). The purpose of this criteria document is that should be used by the Member States to assess the extent to which good environmental status is being achieved, and it is accompanied with references to applicable methodological standards as an annex. References to this EU document in this report are with names as EU criteria or EU indicator and made by numbering the indicators, e.g. EU indicator 5.1.2.

1.3 Methodology

In general, regardless of what method used, evaluating MS performance is more than difficult because of the huge differences in MS interpretation of the MSFD requirements and EU criteria and indicators. To some extent it is almost impossible and this in itself must be considered as a big problem for implementing this directive and making the regional coherence poor indeed.

Nevertheless we have tried and have used the following methodology. We need to remind the reader again that this report is only based on evaluating performance on four Descriptors (1,3,5,10) and only a selected part of Descriptor 1.

We compared the ambition level to implement the MSFD among Baltic MS in two parts. First, we evaluated their respective efforts reported at present on a descriptor level; that is, for descriptors 1 (only partly evaluated in this report), 3, 5 & 10. This part of the evaluation is based on the following *quantitative* components:

1. Quantitative evaluations of indicators and targets set. We used a blunt grade system, with grades from -2 to +2 to do this and motivations for different grades can be seen in Fig. 2. The grades are also illustrated in the Tables 1-3 and 5-7 by different colours, in accordance with a modified "traffic light system". An overall grade on a descriptor level for each MS was derived by taking the means of developed (and non-developed, graded -2) indicators and associated targets.

2. Comparisons of the number of indicators developed or drafted for each descriptor (also indicated in the quantitative evaluations, mentioned above).

The second part of the comparison is judging the overall ambition of MS. This part of the evaluation is based on the following *qualitative* components where we on a more general level discuss:

1. Comparisons of specific definitions of Good Environmental Status (GES) on a descriptor level. Primarily, we discuss how the definitions vary from the general definitions given on descriptor levels in the official text of the directive. We judge the definitions after how precise they are and if they are adjusted to regional environmental and social conditions and also if they are in accordance with best available scientific knowledge/advice.

2. Comparisons on how targets are set, that is at Interim or GES. Several MS have defined if the targets set are demonstrating GES or only interim values of GES, or both. In many cases such information is not given.

3. We also received and utilized comments from national NGOs from each country on the whether MS definitions of GES and the current state indicated in the Initial Assessment actually differ as a qualitative mark (this part proved to be very difficult as such this information is mostly lacking but in some cases we have received comments from national experts).

Finally, with the calculated means of the quantitative grades on the descriptors levels, we summed each score from the descriptors in the conclusion (see section 6.). Here we also highlight key points of what we believe are good examples and what should be included in descriptor 1, 3, 5 and 10. We also compare how the selection of developed indicators of different MS actually illustrates their respective definitions of GES. For each descriptor we try to highlight most ambitious initiatives (if such exist), by highlighting the MS that have the most developed or ambitious indicators and targets. At the same time we have to note the worst examples. We also suggest areas and indicators that we believe should be further considered in the work within the field of each descriptor to illustrate and finally achieve GES.

In the summary of each descriptor in section 2-5 we review each country and descriptor and pinpoint the most ambitious initiatives (if such exist), by highlighting the best examples. At the same time we have to note the worst examples and propose improvements of the MS work. We also propose areas and indicators that we believe what should be further considered in the work within the field of each descriptor to actually illustrate and finally achieve GES.

In all evaluation work, we have deemed an indicators and associated target(s) as ambitious if it has legal force, it is set according to already existing legislation (WFD, HD or Common Fishery Policy, CFP) and are in line with the instructions/guidance from the Commission (i.e. EU criteria), and from the Baltic regional body HELCOM (for some descriptors HELCOM has developed guidance on indicator and target level, so called core indicators, that are also related to ecological favourable status of the WFD) and for Descriptor 3 we have also considered guidance from ICES, i.e. member states have to follow that, but also targets set according to HELCOM.

We also include comments from national NGOs, and in some cases national experts.
The names of the national environmental-NGO personal that have provided the information on national levels are:

Elke Körner (Bund für Umwelt und Naturschutz), Germany

Janis Ulme (Friends of the Earth Latvia - Zemes Draugi), Latvia
Kristina Veidemane (Baltic Environmental Forum), Latvia
Edmundas Greimas (Lithuanian Fund for Nature), Lithuania
Toomas Liidja(Estonian Green Movement), Estonia
Maret Merisaar (Estonian Green Movement), Estonia
Mikołaj Koss (Hel Marine Station), Poland
Maria Staniszewska (Polish Ecological Club), Poland (Eutrophication Descriptor)
Emma Gabrielsson (The Fisheries Secretariat – FISH), Sweden & Denmark
Emma Sipilä (Finnish Association for Nature Conservation, Uusimaa region office), Finland

Figure 1. Grading System of the qualitative evaluation of Indicators and associated targets. This grading system is used for all descriptors. Mean values of MS indicated where the average qualitative level for indicators to illustrate Good Environmental Status (GES) in the range of -2 to +2.

We have graded the MS on a scale between -2 and +2, accordingly:	
-2: RED	No indicator is developed for the criterion
-1: ORANGE	Indicator(s) developed for the criterion but is deemed irrelevant/partly relevant (e.g. important species are missing) but too narrow to actually illustrate GES for this descriptor, alternatively; Indicator(s) developed and found to be relevant to illustrate GES for this descriptor; however, target(s) is (are) too modest (e.g. trends^ is not considered as ambitious enough).
0: GREY	Indicator(s) developed and found to be relevant to illustrate GES for this descriptor; however, target (s) is (are) not set although basic information for setting target(s) is available, alternatively; basic information for setting target(s) is lacking but there is no or modest indications that MS is striving to overcome this.
1: YELLOW	Indicator(s) developed and found to be relevant to illustrate GES for this descriptor.; however, basic information for setting target(s) is lacking but there are indications that the MS is striving to overcome this and it is deemed that targets finally is going to be set on an ambitious level; alternatively, targets are on an acceptable level but is recommended to be more ambitious.
2:GREEN	2: Indicator(s) developed and found to be relevant to illustrate GES for this descriptor and target(s) is (are) ambitious.
WHITE	Indicators that could not be evaluate at all since they were deemed to be irrelevant for the specific descriptor but more relevant to some other descriptor.

^Note: Descriptor 10 according to EU Criteria indicator(s) should involve trends when assessing state of GES for Marine Litter.

Qualitative and quantitative targets and difficulties when comparing GES

According to the MSFD, Member States have to set qualitative or quantitative targets for indicators. When comparing ambition of indicator targets it would be crucial to have quantitative targets. Quantitative targets are easier to handle instead of qualitative targets as all the limit values set in WFD, River Basin Management Plans and HELCOM are numerical values. The lack of quantitative targets can be interpreted as unwillingness from the MS to commit itself to reaching a certain level of an indicator. The lack of a quantitative target may also indicate a lack of knowledge

about the environmental context and actual effects in nature.

One part of the IA was to define Good Environmental Status. Member States have set either GES on the descriptor, indicator and/or target level, which make comparison of GES levels difficult.
As above mentioned for the Initial Assessment, Member States have to define Good Environmental Status.

The good status boundary of marine environment should be consistent with other directives in order to achieve good results. Figure 2 below shows an example from the Finnish IA outlining how good status could be set equally with other directives, in principle, the same approach should be used in all Member states.

Figure 2:

Directive	**Environmental status**				
MSFD	Good		Good status not achieved		
WFD (ecological status)	High	Good	Moderate	Poor	Bad
WFD (chemical status)	Good		Good status not achieved		
Habitats Directive	Favorable		Unfavorable	Bad	

Note: a translation, taken from Finnish IA

2. Descriptor 1: Biodiversity

The Commission decision of criteria and methodological standards on good environmental status of marine waters (2010/477/EU) gives some freedom for member states to prioritize aspects of biodiversity. This is because of the very broad scope of biodiversity. For our report we have chosen only a few species to evaluate MS performance. They are CCB priority species (harbour porpoise, seals, salmonids and other fish) and these were not prioritized by all countries. There is also wide diversity in GES descriptions, targets and indicators. The differences can be partly understood in eastern Baltic Sea countries with not so many recent records of harbour porpoise and seals. On the other hand, all member states should have done better work with fish biodiversity, because there are fish all over the Baltic Sea. In addition, our priority species are relatively well known and studied. Member states should work with them in any case because of the Habitats Directive, HELCOM and Common Fisheries Policy of the EU. That is why countries should have done better work than now, when they got only negative points for biodiversity (-1.1 – -2).

In general, the most ambitious countries according to our selection of key biodiversity criteria and indicators are Denmark and Sweden, despite the fact that they got a negative sum of points in our assessment**.** Trailing them are Finland and Poland. It must be noted that Germany, if finalising fully the ambitions noted on indicators and targets under development regarding biodiversity, will be the most ambitious Member State.

Estonia has received a low ranking with a score or -1.6. It had 6 indicators for our priority species and 9 other elements of biodiversity. No GES targets or indicators have been developed for porpoises and fish species but three for seals. Three interim indicators were developed for fish species, which is a positive sign. Estonia has done rather good work in seals, but more is needed for example with salmonids.

Latvia reported nothing for our priority species resulting in a score of -2. Latvia should put effort especially to salmonids, since Latvia has many important rivers for wild salmons. Recent findings regarding distribution of porpoise also indicate that this species must be taken into account also by Latvia.

Lithuania had only 2 priority species indicators (and 3 more for birds), so the points are low, -1.7. Lithuania do show some ambitious numeric targets for marine trophic and fish community indexes. It has not yet started work with marine mammals, because they don't have many of them in their short coast. However, as mentioned for Latvia, it seems likely according to new data that harbour porpoises also visit Lithuanian waters.

Poland has had problems in reporting the initial assessment to the Commission. However, if the Polish draft plans will be implemented, it will be better compared to the three smaller Baltic States: 14 indicators for priority species and 5 other for biodiversity resulting in the score -1.4. Poland must pay more attention to harbour porpoise and sea trout.

Germany has the national plan still under consultation. There were only 6 reported indicators for our priority species at this phase and thus a low score, -1.8. In addition, Germany also has a different way to express GES targets, so it is not easy to compare the German result to other countries. However, according to the national consultation draft, Germany is making lots of very detailed work: a total of 18 indicators for priority species and 64 for other biodiversity, far more than any other MS. If Germany can develop more indicators to GES target level, it will most likely become the best example MS regarding the biodiversity descriptor. Germany is planning for

numeric target values for marine mammals, but has today nearly nothing with fish biodiversity, which must be considered questionable for a country with fishery interests.

Denmark was the best country, alongside Sweden and scored -1.1. Denmark has performed better than other MS in relation to harbour porpoise and seals. Denmark had 13 indicators for marine mammals. However, strangely Denmark has reported nothing for fish biodiversity. Denmark has not done very well with the commercial fish descriptor 3 either. This is a severe gap for a country with big fishing fleet.

Sweden received score of -1.1 and has reported a total of 21 indicators for priority species. Sweden was especially strong in fish biodiversity. In fact Sweden was more active for fish species in biodiversity descriptor than commercial fish descriptor. Harbour porpoise is the biggest future challenge for Sweden in the Baltic Sea. Sweden has taken harbour porpoise better into account in the west coast than in the Baltic Sea.

Finland was the third MS with -1.3 points and 9 priority species indicators. Finland is still developing more indicators in 2014 and 2018. It should put more effort to ringed seal, salmon and in the future also harbour porpoise.

Proposals
Concerning to CCB key species, **harbour porpoise** needs more attention in all aspects in all countries (only 13 indicators from 3 countries). In the future there can be at least summer areas also in eastern parts of the Baltic Sea. Underwater voice studies should be continued, because the SAMBAH project gave important new information about the distribution of harbour porpoise. Countries should study also death causes and genetics of marine mammals. Member states should develop conservation measures (e.g. protected areas and minimized by-catch) to help the only Baltic Sea cetacean to come back.

Also seals are coming back to areas, where they have not been breeding for decades. There were 27 indicators from all countries, except Latvia and Lithuania. All the Baltic Sea countries should put more attention to especially current and future breeding and resting areas of seals. Health situation of seals is important to monitor because of new pollutants.

Key fish species should be taken into account in biodiversity, because all fish are not commercial fish (Descriptor 3). There were a total of 31 indicators, which is bigger amount than for harbour porpoise and seals. However, there is nothing reported from Latvia, Germany and Denmark on fish. It is remarkable that fish species had habitat and ecosystem indicators, more so than for marine mammals, so fish species give added value to the indicator set of descriptor 1. Regarding CCB priority species, there were big gaps with salmonids: not one MS has taken salmon into biodiversity indicators, but Sweden and Finland both use sea trout. This is a disappointment, because both of these salmonids are HELCOM core indicator species. Salmon is also a Habitats Directive species, and the EU Common Fisheries Policy is related to both of them. Salmonids are not taken into account properly in every country even in Descriptor 3 (commercial fish).

- Especially salmonids should be taken more seriously by all the countries in MSFD work. They need also conservation measures to achieve e.g. HELCOM targets (80 % of PSPC for wild salmon rivers).

In general, marine mammal indicators were used to usually cover population related indicators, whereas fish indicators are used to best cover habitats and ecosystem related indicators.

In **population targets and indicators** (criteria numbers 1.1 - 1.3) the usual minimum level is

favourable conservation status by the Habitats Directive.

- More numeric target values and timetables for population targets and milestones are needed, because favourable conservation status of the Habitats Directive is mainly a trend.

Habitat and **ecosystem indicators** (criteria numbers 1.4 - 1.7) were used much more with fish than marine mammals.

- Habitat and ecosystem indicators should be developed for marine mammals.

Compared to other EU Directives, MFSD has better elements for marine species than **WFD** biological quality elements. On the other hand, WFD has more detailed descriptions for fish high, good and moderate status targets than MSFD. Member states have usually used the **Habitats Directive** favourable conservation status as target in population and range, but habitat aspect was usually forgotten. However, there are no species without habitats.

- Member states should remember the third aspect of it the favourable conservation status of the Habitats Directive: that there should be enough habitats to sustain the populations..

It is astonishing to find that Member States are not using **HELCOM core indicators** more systematically in their MFSD work. Regarding marine mammals the situation is better than with fish, and the worst situation is with salmon and sea trout HELCOM indicators.

- Member states should make more use of HELCOM core indicators. They can give more coherence for the whole Baltic Sea and support implementation of BSAP.

To summarise, all member states should make GES and environmental targets more clear. In most cases countries have been very *qualitative*. We think that the most important need now is to develop also *quantitative* numeric targets.

Table 4. Sum table of the averages of assessed biodiversity indicators (harbour porpoise, seals and fish)

	EE	LV	LT	PL	DE	DK	SE	FI
Porpoise	**-2**	**-2**	**-2**	**-1.6**	**-1.8**	**-1**	**-2**	**-2**
Seals	**-1.25**	**-2**	**-2**	**-1.6**	**-1.8**	**-0.4**	**-1**	**-1**
Fish	**-1.75**	**-2**	**-1.3**	**-1.25**	**-2**	**-2**	**-0.5**	**-1.1**
Sum of averages	**-1.6**	**-2**	**-1.7**	**-1.4**	**-1.8**	**-1.1**	**-1.1**	**-1.3**

Note: all details and explanations on each MS and each species can be found in Annex 1 tables 1-3

3. Descriptor 3: Commercially exploited fish and shellfish

Commercially exploited fishes species is an area where data and scientific research is relatively abundant compared to many other MSFD descriptors, and especially so in the Baltic Sea. And yet, when reviewing the MS work it we find a very wide range of approaches, and available ICES data is not always used. In some cases targets set are potentially in conflict with the CFP. Comparison between MS is difficult because of this range, but when adding things together three MS, Germany, Finland and Sweden, seem to have understood the rationale behind this MSFD descriptor better. The links to other important Directives such as WFD, and Habitat Directive is clearer. But all MS must improve on this descriptor, also the mentioned three MS. Even though HELCOM does not directly engage in fishery issues, there are targets and indicators set in the BSAP. Two important goals are the significance of healthy fish stocks showing a size, age and geographical distribution, and the salmon reproduction goal to reach 80% of the Potential Smolt Production Capacity. Both of these have been treated surprisingly poorly and not utilized as common ground for MS.

Estonia
Estonia has not proven to be very ambitious in relation to this descriptor, although according to national NGOs the knowledge is there. Estonia's is given the overall score of -0.75. Reasons for the low score are that Estonia has not developed enough indicators for EU criteria on reproductive capacity of the stocks, such as SSB. Only salmon smolt production as a secondary indicator is chosen. Regarding population age and size distribution Estonia has only chosen to refer to perch to monitor the development, but they have at least tried.

It is recommended to, beside salmon and perch, also include sea trout in the national monitoring programme. We also recommend that counting ascending salmons in salmon rivers should be complemented with targets of Potential Smolt Production Capacity (PSPC) for the Estonian salmon rivers (80% of PSPC is recommended by HELCOM). Furthermore we believe that more functional groups, also monitoring of pike and pikeperch should be included in the size and age criteria. Since Estonian waters are important areas for water fowl we also suggests that the HELCOM core indicator "Number of drowned mammals and water birds in fishing gear" should be included as an environmental D3 indicator.

Latvia
Latvia has received a combined score of -1.25 because of s series if gaps and missing indicators. Only 3 indicators are listed for the entire descriptor. When defining GES on criteria level some positive signs are shown since threshold F values for some commercial stocks in relation to 3.1.1, it is actually below current ICES recommendations on Fmsy. However, besides this criterion the ambition level is deemed to be poor. There are species missing and major challenges are lack of data and monitoring. However as mentioned, for this descriptor much data is provided by ICES and therefore there should be enough information to describe GES, develop indicators and targets, even in Latvia. Latvia hosts a large number of wild salmon rivers of all Baltic MS, and with salmon stocks in bad shape, the ambition level for this species should be much higher to be acceptable and

Lithuania
Lithuanian ambition is deemed to be poor, with many gaps in their reports and it is clear that implementing this directive is a big challenge for them; no indicators at all developed on SSB and recruitment and therefore they are graded low on these aspects. A total of only 3 indicators have been reported. Total score is -1.375 and that is the lowest of all MS. For example, Lithuania is missing salmon and this species is not included at all in Lithuanian indicators. As for Latvia, ICES data and proposals could be more utilized by the administration, and much work is needed to meet

the standards of the MSFD.

Poland
Poland has been very late in the reporting and has still not officially reported to the Commission, which might serve as a proxy for the willingness to participate in the implementation of this directive. It is very difficult to evaluate the ambition level of the Polish work, since most targets are set as trends and are only vaguely described. No proper primary indicators for criteria 3.2 or 3.3 are presented. Poland is given the score of -1,22. Poland also show a problematic view of basic scientific data e.g. it is clear that F of western Baltic cod has to be decreased (suggested level 0,25), however this is not supported by the Polish authorities according to targets set. Also, due to the documented high degree of misreporting salmon as sea trout (ICES WGBAST, 2012), which Poland has contested but been proven wrong, it is important to greatly improve fishing restrictions on sea trout in the Polish management.

Germany
If any country should be set as a role model for this descriptor, Germany is the only candidate with a score of 0.786. One problem is that they have chosen a parallel procedure when developing indicators, which is commendable for being more environmentally inclusive but also makes it difficult to compare with other MS. However, it is clear that in many aspects Germany is the most ambitious country of all, with many well thought out indicators. Importantly, Germany has also included indicators that reveal direct ecosystem effects (on non-target species and benthic communities), that are also relevant for D3. Two of them relate to marine spatial planning and effects by fishing activities on sea floor and benthic habitat. These are:

- Area in which benthic communities are not affected by fishing gear (bottom trawling); and,
- Spatial distribution of fishing activities.

Two other indicators are developed which are related to Biodiversity, EU legislation on discard ban and loosely to the EU criteria 3.3 (population age and size distribution). These are:
Discard rate of target and non-target species (Potentially problematic since discards should be eliminated for non-target species, thus label bycatch is appropriate); and,

- Diversity of survey-relevant species.

However, targets are not set for these indicators yet, which is also the case for several indicators under criteria 3.3 resulting in a lower score than possible if such targets are presented.

Denmark
Considering the size and annual catches of Danish fishing fleet, the work on this descriptor is a disappointment with an overall score of -1.11. Danish work on descriptor 3 seems to have been too hasty, only presenting 3 indicators. It is very difficult to assess the actual ambition level, since targets and indicators not always clearly connected. The indicators are also phrased in a very general way. To add to this, the selection of fish species in the IA represents an unclear picture of the situation.

Denmark has developed an indicator to secure that “the commercialization of all fish and seafood species are sustainable”. Even if such an ambition is commendable it is very difficult to evaluate how this actually is going to contribute to the marine environment, since it is very widely phrased and no specific targets are set.

The reasons for the low score for Denmark, besides the unclarities mentioned above, is that no indicators at all under criterion 3.3 is reported (Population age and size distribution). As mentioned before, it can’t be used as an excuse that information is not available, especially if no ambitions to remedy this is reported. Furthermore, Denmark has chosen to use of Bpa instead of Bmsy in relation to the reproductive capacity of the commercial stocks. This is highly questionable since the CFP states the SSBmsy target and Denmark will need to change this.

Denmark needs to improve by presenting indicators to estimate the overall impact of fishing - both the targeted and non- targeted - on stocks and the ecosystem as a whole to fulfil the intention of the MSFD. Also, the choice of indicators for environmental goals, which is calculated spawning stock biomasses for cod, herring, sandeel (*Ammodytes tobiatus/ Hyperoplus lanceolatus*) and plaice, are too limited and can be misleading especially for short-lived species.

Sweden
The Swedish work on this descriptor shows uncharacteristically low ambitions compared to other areas we have reviewed. The total score is -0.3 and Sweden has in total only developed six indicators. It is very difficult to evaluate the ambition of Sweden since so few actual targets have been reported. There are also a number of indicators that are defined as "to be potentially developed" and not all of them are reported to the Commission. These are "Index of ratio of harbour porpoise caught as bycatch in relation to fishing effort" that relate to 3.1 (Fishing mortality); and three indicators related to 3.3.1, 3.3.2 and 3.3.4, respectively (see Table 5 for definitions of these sub-criteria).

It is highly regrettable that Sweden has shown to be more committed to meet EU criteria 3.3, other than discuss these "to be potentially developed" criteria. Even if prerequisites in forms of scientific knowledge are not completely available, the inclusion of such indicators would prove the willingness to close such information gaps and indicators for population age and size distribution should be Sweden's priority to improve on.

Finland
Finland scores 0.09 overall for this descriptor. Finland has chosen a rather coastal oriented path judging from their selection of species. Ambition is often quite high although some more challenging indicators might have been developed. In some cases the indicator is set on a very ambitious level, and this requires knowledge on population status that today is missing. Finland is one of few MS setting indicators and pushing for monitoring of population age and size distribution and this is positive.

Criticism can be raised on how Finland interpret the PSPC for salmon as they still want to have different categorizations of salmon river based on the old Salmon Action Plan, basically giving different targets for different rivers depending on characteristics even though although such considerations are already included in the PSPC concept. Finland also receives a lower score on the fishing mortality indicator as Finland has chosen as F=0,46 as a target level, a contested number and not in line with current management plan.

On a criteria level Finland has also included MSY concerns and furthermore added some concerns of the need for migratory fish to have habitat to reproduce, the need for stocks to be sustainable without need of stocking activities and the fishing mortality of juvenile fish is as low as possible plus need for a selective fishing, accordingly.

Table 5. Indicators for Descriptor 3 Commercially exploited fish and shellfish. Only national indicators that match EU criteria are listed. The colouration of the cells illustrate qualitative grading of indicators and targets, accordingly (categorization for different grades, see below):

-2	-1	0	+1	+2

Indicators with no coloured cells are deemed to better fit under other descriptors and not included in the qualitative evaluation.

EU criteria	EE	LV	LT	PL x	DE x	DK	SE	FI
3.1. Level of pressure of the fishing activity								
Primary indicator - Fish mortality (F) (3.1.1).	Sprat ,herring (species missing) *X*	Herring (C & GoR) salmon, cod (flounder is missing) *GES*	Herring, sprat, cod (salmon missing) *X*	All commercial species *Interim*	All commercial species *Interim*	All commercial species *GES*	All commercial species *GES*	All commercial species cod (E, F=0.46) *GES*
	CPUE alien species *X*			Trends in F for all commercial species (salmon missing)				% of fish managed according to MSY *GES*
Secondary indicator - Catch/biomass ratio (3.1.2).		Smelt (missing species) GES			Both landing data *(Interim)* & surveys		Data poor commercial species *GES*	Zander, whitefish & perch *GES*
3.2. Reproductive capacity of the stock								
Primary indicator - Spawning stock biomass (SSB) (3.2.1)		Herring (C & GoR), sprat, cod (E), flounder, salmon, *GES*		Herring (C & W), sprat cod (E & W) (salmon & plaice missing) (trends)	All commercial species (species specific & for the whole commercial fish assembly)	All commercial species *GES*	All commercial species *GES*	Herring (BB) sprat *GES*
								Salmon PSPC in Tornionjoki & Simojoki *GES*
								Salmon PSPC in other rivers
Secondary indicator - Biomass indices (3.2.2)	Natural smolt production in salmon rivers				All commercial species (species specific & for the commercial fish assembly)		*GES*	
3.3. Population age and size distribution								
Primary indicators - Proportion of fish larger than the mean size of first maturation (3.3.1)	Perch *(missing species)* *X*		All commercial stocks *X*		see below *Interim*		Offshore species *UD*	Zander, whitefish and perch. *X*
- Mean maximum length across all species found in research vessel surveys (3.3.2)					see below *Interim*		Coastal species *UD*	Zander, whitefish and perch. (related to 3.3.1-3) *X*
- 95 % percentile of the fish length distribution observed in research vessel surveys (3.3.3)	All commercial species & perch (trends) *Interim*		All commercial species (trends) *X*	All commercial species (trends) *X*	All commercial species (related to 3.3.1-3 & 3.3.4) *Interim*		*UD*	
Secondary indicator - Size at first sexual maturation… (3.3.4).	Perch *(missing species)*				see above *Interim*		*UD*	
∑ indic.	**6**	**3**	**3**	**5 ***	**8 *†**	**3 †**	**6 †**	**9**
N grade Qual	**-0.75**	**-1.25**	**-1.375**	**-1.222**	**0.786[1)]**	**-1.111[2)]**	**-0.3[3)]**	**0.09**

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; **X** not reported to EU; † indicator not matching EU criteria included * Indicators not reported to EU are included. *UD* indicator under development.

[1)] for Germany, indicators not matching the EU criteria are also included, namely: “Area in which benthic communities are not affected by fishing gear”; “Spatial distribution of fishing activities; “Discard rate of target and non -target species”; and, “Diversity of survey-relevant species”. Neither of them are included in the grading since they are not reported to EC.
[2)] Denmark also includes one indicator not matching the EU criteria, namely: “The commercialization of all fish and seafood species are sustainable” (grade: 0).
[3)] Sweden also include two indicators under criterion 3.1, also listed as indicators under criterion 1.6.1 (Condition of the typical species and communities), namely: “Size Structure of fish community in Coastal Waters” and “Proportion of large individuals in the fishing community in offshore waters” (both graded as +1).

4. Descriptor 5: Eutrophication in the Baltic Sea

Eutrophication from land-based activities is a serious and major environmental problem in the Baltic Sea. Increased amount of nutrients lead to phytoplankton algae blooming and as a consequence reduce dissolved oxygen in the water body. The two nutrients mostly affecting Baltic Sea are phosphorus and nitrogen.

The Baltic Sea eutrophication is mainly caused by agricultural nutrient run-off from usage of fertilizers in the surrounding countries during the last 50 years. Annual total nutrient load to Baltic Sea is 600 000 tons of nitrogen and 30 000 tons of phosphorus. The biggest loader is Poland with 30% share of the total nutrient load. Approximately a quarter of the total nitrogen load comes as atmospheric deposition, from shipping and road traffic, agriculture and energy production.

Estonia
Estonia received medium ranking with **+0.375**, and is thereby ranked in third place.
The score shows that indicators and GES targets needs to be further developed to reach MSFD ambitions. Estonia has overall 11 indicators and they fulfil 5 out of 8 EU criteria associated indicators. GES and Interim targets were set for five indicators, within two EU associated indicator; *Nutrient- and Chlorophyll concentration*. Estonia has developed appropriate targets, but they still need to develop more indicators related to EU criteria.

Latvia
Latvia fulfils half of the EU criteria associated indicators and their score is **-0.375**, which is among low grades. They have overall 7 indicators and all of them are corresponding to four indicators within EU criteria, GES targets are set for 5 indicators and few of them have already been achieved. However they have not developed comparable indicators for rest of the EU indicators, particularly they need to develop indicators for criteria *(5.2.) Direct effects of nutrient enrichment*.

Lithuania
Lithuania has developed overall 10 indicators which all are within EU criteria and even 6 correspond to first EU indicator; Nutrient concentration. Lithuania has not defined any GES targets, but still the target level is set on appropriate level for most of the indicators. The score for Lithuania is low **-0.375**, because they have not developed corresponding indicators, especially related to flora species, for half of the EU indicators.

Poland
It is especially important for Poland to work hard on eutrophication due to large total nutrient load. The fact that Poland has not yet reported to EC should perhaps have disqualified them from this report as this must be judged as low interest in MSFD implementation. However when evaluating them based on the draft version of the initial evaluation, they are doing pretty good. They cover EU criteria very well and receive score of **+0.75**, which is enough for the second place, but again nothing of what Poland has done is official yet. They have altogether 11 indicators and all of them are within EU criteria and two of those have even GES target.

Germany
Germany has developed 5 indicators for eutrophication and they have the lowest score, just **-1.5**. The reason for low score is that they do not have enough indicators and they have only set Interim targets for the indicators, and ambitious targets for only two indicators. The German indicators only cover EU criteria *(5.1.) Nutrient levels*. After setting appropriate target values and more indicators their grade will improve a lot.

Denmark
Denmark is according to scoring **+1.12** the most ambitious MS. Denmark has in total 9 indicators and cover almost all EU criteria associated indicators, only one indicator *(5.1.2) Nutrient ratios* is not covered. They have also set ambitious GES targets for most of the indicators. They have done exemplary work effectively following the EU criteria. The main weakness is that Tot-P is not included.

Sweden
Sweden has a quite low grade, only **+0.125**. Sweden has developed 8 indicators of which all within EU criteria, and they have set ambitious GES targets to every indicator.
In order to have comprehensive marine strategy they must develop more indicators for the criteria *(5.2.) Direct effects of nutrient enrichment*, an area much better covered by other MS in the Baltic region.

Finland
Finland is on the positive side of ranking, with a score **+0.375**. They share the third place with Estonia. Finland has overall as many as 17 indicators and cover same amount of EU indicators as Denmark (7/8). They have set ambitious targets according to WFD and HELCOM thresholds for half of the indicators, however numerical target values are missing, which makes the score low. It is exceptional that Finland has not set any GES targets, while many other MS have.

Table 6. Indicators for Descriptor 5 Human induced eutrophication. Only national indicators that match EU criteria are listed. The coloration of the cells illustrate qualitative grading of indicators and targets, accordingly (categorization for different grades, see below):

-2	-1	0	+1	+2

EU criteria and associated indicators	EE	LV	LT	PL	DE	DK	SE	FI
5.1. Nutrients levels								
— Nutrients concentration in the water column (5.1.1)	GES/Interim	GES	x	x	Interim	GES	GES	x
— Nutrient ratios (silica, nitrogen and phosphorus), where appropriate (5.1.2)								x
5.2. Direct effects of nutrient enrichment								
— Chlorophyll concentration in the water column (5.2.1)	GES	GES	x	x		GES	GES	x
— Water transparency related to increase in suspended algae, where relevant (5.2.2)	x	GES	x	x		GES	GES	x
— Abundance of opportunistic macro-algae (5.2.3)				x		GES		
— Species shift in floristic composition such as diatom to flagellate ratio, benthic to pelagic shifts, as well as bloom events of nuisance/toxic algal blooms (e.g. cyanobacteria) caused by human activities	x			x/GES		GES		x

(5.2.4)								
5.3. Indirect effects of nutrient enrichment								
— Abundance of perennial seaweeds and seagrasses (e.g. fucoids, eelgrass and Neptune grass) adversely impacted by decrease in water transparency (5.3.1)	x	x	x	x		GES	GES	x
— Dissolved oxygen, i.e. changes due to increased organic matter decomposition and size of the area concerned (5.3.2).				x		GES	GES	x
∑ indic.*	**11**	**7**	**10**	**11**	**5**	**9**	**8**	**17**
N grade Qual	**0.375**	**-0.375**	**-0.375**	**0.75**	**-1.5**	**1.12**	**0.125**	**0.375**

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; ***also indicators outside EU criteria included

5. Descriptor 10: Marine Litter

The Commission decision of criteria and methodological standards on good environmental status of marine waters (2010/477/EU) for Descriptor 10: Marine litter is quite broad. Stating that GES is reached when "Properties and quantities of marine litter do not cause harm to the coastal and marine environment". Furthermore, the Commission notes that variability in the distribution of litter, and the difficulty in tracking litter from its place of origin but emphasizes the importance of developing indicators with reference to micro-particles and where there is notable impact on marine life.

The Commission also states that it understands that there is a need for indicators to be further developed and that the MS should use experience from other areas that have more data i.e. the North Sea. However, with this in mind the ambition level of the MS in the Baltic Region varies quite a lot. Although all of the MS in the Baltic Region mention the lack of data and information about marine litter- some countries were much more ambitious when drafting indicators and targets that can be developed into functional indicators and targets in the near future. Also, in accordance with HELCOM core indicators- Marine Litter is still not a core indicator but a candidate indicator which is being developed in the next project of CORESET II, so unfortunately the Baltic MS do not have a regional framework to use a guideline when developing their indicators for the MSFD.

Germany

Overall- the most ambitious MS according to our grading system for Marine Litter is Germany. Germany has 4 indicators and has many other drafted indicators that are being developed. They received a total score of **-0.5**. They need to be more specific as to where they will monitor macro-plastics, as well as the selecting an indicator species for ingested litter/ entanglement in litter. They are also lacking an indicator to understand the trends, amount, and distribution of micro-particles, which is a challenge for all MS. German target to reduce the amount of litter by 10% is very ambitious. Furthermore their definition of GES is based on the descriptor level and should be developed further. Finally, a definite link between their definition of GES and the indicators and targets reported should be made more evident. The indicators developed are listed as interim.

Sweden

Following Germany with a minimal gap in development is Sweden with a score of **-0.75**. Sweden has only developed 1 indicator that is functional and applicable in the Baltic Sea, this is part of the reason for a lower grade than Germany. However, Sweden has developed indicators and targets that cover EU criteria and is developing indicators and targets for micro-particles, water-column and impacts of marine litter on marine life. These drafted targets where mentioned in the Swedish reporting. Their definition of GES at the descriptor level is a copy of the EU MSFD definition, but their definitions on the criteria and indicator level are not. Swedish NGOs stress the need for long-term funded projects and a more ambitious goal for the reduction of litter by 2020. The indicators developed are listed as GES.

Denmark

Denmark follows Sweden with a score of **– 1.0** and has developed 3 indicators that we have graded. However, the indicators that are established are very vague and do not go into very specific details. Because of this Denmark has received a lower score although it has developed more indicators than Sweden. Many of the indicators and targets are non-functional and need to be developed from research/data collection targets to targets used to reduce litter. Denmark has mentioned the need to develop targets for micro-particles. Denmark's GES definition is on the descriptor level but does include aspects of maritime activities and invasive species which, is good. The indicators developed are listed as interim.

All these MS (Germany, Denmark, and Sweden) have drafted or preliminarily developed indicators

for 10.1 "*Characteristics of litter in the marine and coastal environment*". However, these MS (Germany, Denmark and Sweden) have not been very ambitious in developing an indicator/target for 10.2 "*Impacts on litter of marine life"*, they have all preliminary stated that they would like to use data or research on the Fulmar to do stomach analysis but it is known that this bird species is not as common in the Baltic Sea as in the North Sea- therefore we would like to see other indicator species used in understanding the impact of marine litter on marine life. Germany has for this indicator preliminarily drafted two indicators that involve entanglement of birds found dead or alive- which could be an indicator that can be applied to all areas of the Baltic Region.

Finland
Finland is next in line with a score of **-1.50**. Finland has preliminary drafted indicators and targets for 10.1 but has no drafted indicator for 10.2 for these reason they received a lower score. Furthermore, Finland's indicators and targets are quite vague and hard to quantify. Their definition of GES is at the descriptor and criteria level but also includes impacts on maritime activities but however needs to be further developed. The indicators that are reported are listed as interim. Indicators must be developed for impacts on marine life and micro-particles.

Estonia
Estonia received a score of **-1.75** as many of indicators and targets are not developed or functional or they are direct copies of the EU Commission Decision. Estonia has not defined GES for descriptor 10. Estonia has not reported the indicators or targets as GES or interim. Estonian NGOs mention the need for more monitoring and understanding of marine litter.

Poland
Poland has also received a score of **-1.75** although they have not officially reported anything to the EU. They have preliminary drafted 1 indicator but as mentioned have not reported anything to the EU. They have not defined GES for descriptor 10. Poland has not reported the indicators or targets as GES or interim. Polish NGOs stress the need to develop more than 1 indicator for marine litter.

Latvia and **Lithuania** both received a score of **-2.00.** Neither Latvia nor Lithuania have reported any drafted targets or indicators for descriptor 10. They have not defined GES. Although it is a known fact that data is scarce in the field of Marine Litter- this does not excuse the very low ambitions of these countries. In order to achieve GES by 2020 for Marine litter – all MS in the Baltic Region must coordinate and communicate when developing indicators that can be used between countries and in the entire Baltic Region.

General coherence between Baltic Region MS is not very good. There are big differences in ambition and development of indicators/targets for Descriptor 10. Those countries with the lowest ambition/worst examples must develop indicators/targets together with the MS that have already begun to draft indicators/targets that can be functional as soon as possible in order to reach GES by 2020. All MS in the Baltic Region should be able to develop and analyze the same indicators for the region by using similar targets- if this is done there will be larger degree of coherence within the region.

- **Overall** the grade span for Descriptor 10: Marine litter- ranges from -2.0 to -0.5.

This means that there is a very large gap between MS in the Baltic Region. Furthermore, this means that there are overall no MS that are on track to reach GES by 2020 for Marine Litter (as all the scores are negative and all countries are the process of developing functional indicators and targets). This is a bad sign, as the MS have known about this goal and the MSFD timeline since 2008.

Overall **best example** for Descriptor 10 is Germany.

However, although Germany has received the highest score for this descriptor it does not mean it is on track to reach GES for Marine litter by 2020. Germany as well as all the other MS in the Baltic Region must increase their level of ambition tremendously if they are to have functional indicators for marine litter in the near future that can help the MS reach GES by 2020 and hopefully both EU level work within HELCOM related to litter this will be greatly improved and added directly into all MS programme of measures. Overall least ambitious countries for Descriptor 10 are Latvia and Lithuania.

All MS in the Baltic Region seem to agree that data and information to establish valuable targets and indicators is missing. It is important to try to develop targets and indicators that need minimal data in order to be applicable to reach GES for Marine litter. All Baltic MS agree that they must decrease the amount of litter in the Baltic Sea, but there is no overall agreement as to how much or what % of litter should decrease per year. HELCOM is working on establishing core indicators for Marine Litter, hopefully these indicators will help those Baltic MS that have not developed any indicators or targets in the correct direction. In conclusion, coordination and communication between MS is a necessity, as is coordinating and streamlining their work with HELCOM.

Table 7: Comparison of EU criteria and indicators covered by MS for Descriptor 10: Marine Litter in the Baltic Sea

-2	-1	0	+1	+2

EU criteria and associated indicators	EE	LV	LT	PL	DE*	DK	SE*	FI
10.1. Characteristics of litter in the marine and coastal environment								
— Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source (10.1.1)	X *number & quality (needs to be more ambitious)*	*(no indicator developed)*	*(no indicator developed)*	X *number & quality (needs to be more ambitious)*	Interim *volume & category (needs to be more ambitious)*	Interim *Data /Reference levels (needs to be more ambitious)*	Needs developed for Baltic SEA *(needs to be more ambitious)*	Interim *number & quality (needs to be more ambitious)*
— Trends in the amount of litter in the water column (including floating at the surface) and deposited on the sea-floor, including analysis of its composition, spatial distribution and, where possible, source (10.1.2)	X *number & quality water column (needs to be more ambitious)*	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	*Water column/surface (needs to be more ambitious)*	Interim *number & quality water column (needs to be more ambitious)*	GES *number & quality (needs to be more ambitious)*	Interim *number & quality (needs to be more ambitious)*
— Trends in the amount, distribution and, where possible, composition of micro-particles (in particular micro-plastics) (10.1.3)	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	*(ind. being developed)*	*(ind. being developed)*	*(ind. being developed)*	*(ind. being developed)*
10.2. Impacts of litter on marine life								
— Trends in the amount and composition of litter ingested by marine animals (e.g. stomach analysis) (10.2.1).	X *Sea fauna (more specific/better ind. species needed)*	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	Interim *number & quality (better ind. species needed)*	X *Fulmar/bird species (better ind. species needed)*	**X** *No species decided (better ind. species needed)*	*(no indicator developed)*
∑ indic.	**1**	**0**	**0**	**0**	**4†**	**3**	**2**	**3†**
N grade Qual	**-1.75**	**-2**	**-2**	**-1.75**	**-0.5** [1)]	**-1.0**	**-0.75**	**-1.5** [2)]

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; **X** not reported to EU; † indicator not matching EU criteria included * Indicators not reported to EU are included.

[1)] Germany also included indicators not matching the EU criteria specifically: "Number of entangled birds in breeding colonies" (*grade*:*1*); "Dead found entangled birds and other indicator species" (*grade*:*1*);

[2)] Finland also included one indicator not matching the EU criteria, specifically: "Amount of collected litter" (*grade*: *-1*).

6. Conclusions

6.1 Main findings

Summarised scores for all Member States on all evaluated descriptors

	EE	LV	LT	PL	DE	DK	SE	FI
D1	-1.6	-2.00	-1.7	-1.4	-1.8	-1.1	-1.1	-1.3
D3	-0.75	-1.25	-1.375	-1.222	0.786	-1.111	-0.3	0.09
D5	0.375	-0.375	-0.375	0.75	-1.5	1.12	0.125	0.375
D10	-1.75	-2.0	-2.0	-1.75	-0.5	-1.0	-0.75	-1.5
Average	**-0.93**	**-1.40**	**-1.36**	**-0.90**	**-0.75**	**-0.52**	**-0.50**	**-0.58**

1. Baltic EU Member States show low ambitions and poor quality of work in almost all cases and have definitely not fulfilled the expectations with a comprehensive and sustainable management of the marine environment. CCB has ranked MS work with grades: -2, -1, 0 , +1, +2 . The level and the span is evaluated and the results are:

D 1 - Biodiversity: Porpoise -2 to -1 , Seals -2 to -0,4 , Fish -2 to -0,5 (Overall -2 to -1,1).
D 3 – Commercial fish species -1,38 to +0,78
D 5 – Eutrophication -1,5 to +1,12
D 10 Marine litter -1,75 to -0,5

Ranking is mainly negative or zero which means: "Indicators developed is irrelevant/partly relevant but to narrow" or "Indicator developed and relevant but targets too modest" or if evaluations is "zero" the "Indicator developed and relevant, but targets not set although basic info for setting targets are available"

The level +1 ,which means "Indicator developed and found relevant for GES, but basic info to set targets is lacking, but there is indications that the MS try to overcome this" has only been reached by a few MS

2. Surprisingly the HELCOM targets and goals are often simply not included as a base level, and decided key species etc not mentioned in some cases. The already established targets and indicators within HELCOM should of course be minimum standard for all Baltic EU Member States

3. Lack of a coherent view of Baltic MS for most of the descriptor indicators. The scoring span between Baltic EU MS is too big. Such big differences in ambition levels cannot be accepted if an ambitious GES, or already decided ambitions within HELCOM, shall be reached.

We see great need for improved coordination and cooperation among Baltic MS, perhaps by simply giving one country a lead/coordinating role in developing targets and useful indicators for a certain area/descriptor.

4. We want the Commission to take a greater responsibility for next steps to ensure better coherence etc. but we must also acknowledge the fact that many supporting documents and guidelines provided by the Commission or for example from ICES have come too late to help and improve MS work.

5. The overall appropriate comment and finding on implementation of this important directive so far is that Baltic MS seem unwilling to take full responsibility for proper management of the environment and natural resources of the Sea. At the same time the activities to utilize and harvest marine resources are expanding. However we hope, and believe, that MSFD implementation can be improved by 2015 and especially cooperation and development of joint indicators and common goals and targets.

6.2 Coherence within the Baltic Sea Region and connections to HELCOM agreements

Baltic MS have defined GES for descriptors in very diversified ways. GES have sometimes been set on Indicator-level, but different countries using various indicators, which make comparability low. Target levels for GES have been set in some cases, but many times also as interim values, or no level has been set.

This makes it extremely difficult to compare Baltic MS ambition level, when it comes to GES, and especially evaluate the real impact of GES-standards set on the marine environment.

As clearly stated by the Commission, the MSFD should be in line with other directives and legislation and furthermore have added effects in our mutual efforts to improve the marine environment.

Descriptor 1 - Biodiversity

We have assessed CCB priority marine species (Harbour porpoises, seals, salmonids and other fish species) as test species for the descriptor 1.

HELCOM Core indicators and agreements

HELCOM has developed 13 Core indicators related to marine biodiversity. But Baltic EU Member states, and in parallel HELCOM contracting parties, have to a low degree applied HELCOM agreed core indicators for biodiversity descriptor in MSFD. This implies low coherence and coordination between Baltic countries. Highest coherence you find population abundance/distribution of marine mammals, where 5 Baltic Sea countries use this indicator, while other indicators have only been used by 1-3 countries.

HELCOM platform has not been used very much to develop GES for biodiversity, which indicate that implementation of HELCOM agreements will not get very much support from GES activities in the Baltic region. It also reflects poor quality for many Baltic countries to develop high quality GES on biodiversity.

HELCOM target values for viable populations of species - not applied in GES

HELCOM BSAP has for wild salmon populations set as the target attainment of at least 80% of the PSPC (Potential Smolt Production Capacity) and for some very weak salmon populations of at least 50% of the PSPC, by 2015.

Salmon is a commercial fish species in the Baltic Sea, but also an EU Habitat species that shall reach favourable conservation status. HELCOM targets for wild salmon have a direct link to the implementation of the Habitat & MSFD directives in Baltic Sea.

No Baltic EU country has applied the HELCOM targets for wild salmon under the biodiversity descriptor. But under descriptor 3, Commercial fish species, six Baltic countries has “Fish mortality” for all commercial fish species (including salmon), 3 countries have SSB as indicator for

salmon. But only two countries (FI,EE) has followed the HELCOM approach for salmon and developed indicators for smolt production in rivers (Finland applied this in spite of having a constant derogation of all fish species from the Habitat Directive). Fish mortality and SSB are indicators for salmon in commercial fisheries, but such indicators are far from enough to safeguard the Habitat Directive goals for all wild Baltic salmon populations. This clearly shows that many Baltic EU countries don't follow the HELCOM agreements on targets already set up, which should have been used as minimum standard for GES.

Viable populations of Habitat Directive species (Harbour porpoises, seals) – not getting attention enough

Some Baltic countries have not developed any descriptors indicators for important marine species (harbour porpoises, seal species), that also have the status as Habitat Directive species. These countries believe they don't have these species in their marine waters, which is an underestimation of the real situation. Management plans for marine Habitat Directive species is necessary, to safeguard Favourable conservation status, and it is highly relevant to develop such concepts to fulfil ambitions of the MSFD.

It is surprising that Baltic countries have not used the baseline data and monitoring systems for marine Habitat Directive species, which was reported for the last six-year period according to Habitats Directive in June 2013, also for the MSFD work on marine biodiversity.

Some examples:

Four countries (EE,LV,LT,FI) have paid no attention to porpoises. New data from the SAMBAH project suggests that porpoises also inhabit Gulf of Finland and coastal areas of Eastern Baltic, which show that these countries need to develop population indicators.

Other observations

Fish biodiversity within GES holds very poor quality for Baltic region countries. All Baltic countries have received low ranking.

This section must be developed by most countries and receive clear GES-targets, because fish species, represent crucial components in the marine ecosystem, and also represent important society values for commercial and recreational fisheries. Especially surprising was that Germany and Denmark, important fishing nations, and countries making good work with marine mammals diversity, performed poorly on fish biodiversity.

Descriptor 3 – Commercial fish

First of all, it must be stated that the fact that information is missing so that indicators cannot be developed is a poor excuse, especially for Descriptor 3 for which ICES has so good possibilities to provide material and function as a discussion partner.

HELCOM agreements related to descriptor 3

HELCOM has had a main responsibility to coordinate the development and implementation of the MSFD among the Baltic States. Therefore it is alarming that targets set in the HELCOM Baltic Sea Action Plan (2007) are not covered in the EU criteria. Most importantly an EU criterion for spatial distribution of fish within the sea, and age/size distribution for fish stocks that should be included; it should include references to the HELCOM target that especially cod should be found within its natural geographical distribution area in Baltic proper and on HELCOM decision that all commercial fish stocks will exhibit a population age and size distribution for a healthy stock, by

2020.

Also, the socio-economic importance of coastal fish species is highlighted in the HELCOM BSAP agreements and as suggested by ICES (2014), there would also be important to include indicators for species that are managed on a national/regional level. International cooperation for monitoring of coastal fishes is already practised to meet the challenges of BSAP and the MSFD, e.g. the HELCOM Fish-Pro II project (http://helcom.fi/helcom-at-work/projects/fish-pro) and this effort is not only relevant for the descriptors D1 and D4, but also for D3 since these species also often are of at least local commercial importance. Especially when they are clearly linked to the human behaviour in commercial fishery; e.g. spatial estimates of impact on habitat due to fishing activities; indirect impact on non-targets species due to their ecological association with target species; and/or, direct impact on target species being caught as bycatch. HELCOM has a developed a core indicator on "Number of drowned mammals and water birds in fishing gear" which should be used by all MS, especially in the southern Baltic where the degree of wintering waterfowl caught in gillnets is significant.

Baltic countries ambition level
Judging the different GES ambitions of MS only as indicated by the choice of indicators and targets, Germany and to some extent also Finland differ from the other MS in that they have higher ambitions of fulfilling the criteria listed by the Commission. These countries have developed the largest spread of indicators (although Finland lacks indicators for several criteria) and even though the targets are not always developed, the selection of indicators reveals that they have the ambition to fulfil the objectives indicated by the EU criteria.

To conclude, the ambition level in achieving GES is deemed as highest for Germany. Finland has partly showed being ambitious although there are still species to be included and targets to be developed. Sweden has partly showed ambition (3.1 and 3.2) but performed poorly in relation to EU criteria 3.3. Denmark reveals a large inconsistency between ambition level on a descriptor level and what is indicated by their selection of indicators and targets. Latvia, Estonia and Poland show some ambitions, although too many targets are set as trends and in the Estonian case the species selection is far too narrow and GES definitions on criteria levels are clearly substandard. Lithuania needs extra considerations as their ambition levels, both in view of GES definitions and set targets of indicators which are deemed to be unacceptable.

There are examples that stick out that may be in conflict with other regulations such as Denmark's decision, regarding reproductive capacity of all the commercial stocks, not to set biomass targets according to SSBmsy but to SSBpa across the board (or actually to Bpa, precautionary approach). Setting target as Bpa is not in accordance with already agreed legislation of achieving SSBmsy for European stocks by 2020 (i.e. CFP). This must simply be changed and aligned with CFP. Some other MS has done this as well but only in special cases (e.g. when Fmsy trigger is missing etc).

Descriptor 5 – Eutrophication

HELCOM agreements related to descriptor 5

HELCOM has developed 7 core indicators related to marine eutrophication. Many core indicators have in this case been applied by MS. Examples of gaps in applying HELCOM indicators are e.g. only half of HELCOM countries have incl. oxygen concentration/oxygen-free areas as indicators and a few the aspect of Lower depth distribution of macrophytes. Such indicators should be applied by all Baltic MS.

Baltic EU MS, also HELCOM contracting parties, have a moderate to relative high degree applied

HELCOM core indicators for eutrophication. As eutrophication is the major environmental problem for the Baltic Sea, high requirements for application of HELCOM and EU indicators is important, which mean that many Baltic countries must strengthen their work to develop indicators better.

Baltic countries ambition level
Out of the descriptors we have assessed, Descriptor D 5 is definitely the descriptor with highest coherence and ambition level from MS, but there is still a need to strengthen MS work on some aspects.

Nutrient and chlorophyll concentrations and water transparency indicators have been addressed by almost all countries. This reflects also that these parameters have the base for the calculation of country nutrient reduction target agreed upon within HELCOM.

Six countries have Tot-N and Tot-P as indicators, and these are the parameters for the nutrient reduction goals within HELCOM. But it is remarkable that target values for nutrient concentrations have not been set by all HELCOM countries, as HELCOM has already agreed on such values. The same concern is valid for water transparency and chlorophyll, where HELCOM has set standards.

Applications of other EU indicators are more disparate, even though most countries have included some indicators on direct effect/indirect effects of nutrient. The coherence with EU criteria is relatively high.

Descriptor 10 – Marine litter
The coordination of the descriptor for Marine litter for Baltic Sea Region EU MS has so far been minor or non-existing. All MS in the Baltic Region seem to agree that data and information to establish valuable targets and indicators is missing In this particular case it would have most appropriate to coordinate and work towards joint indicators.

HELCOM has an intention of developing an action plan and developing Marine Litter into a core indicator by latest 2015 as well as developing an overall goal to reduce marine litter over time. This is in line with the EU MSFD as well as what each MS should strive towards. These ambitions, if fully implemented, can provide coherent views from the Baltic region to reduce marine litter, but the ambition level is today unclear.

6.3 Summary of ambition level for Baltic EU MS

Estonia

Estonia received an overall score of -0.93 and has not been very ambitious in relation to Descriptor 1: Biodiversity, Descriptor 3: Commercial Fish and Descriptor 10: Marine Litter. Estonia has not defined GES for Marine Litter, and has no GES targets or indicators for Biodiversity for Harbour porpoise. They have not developed enough indicators for Descriptor 3 for the EU criteria on reproductive capacity of stocks, such as SSB.

However, Estonia has been more ambitious when developing indicators and targets for Descriptor 5: Eutrophication, where they have developed appropriate and functional targets, but some indicators need complementary work. Overall, Estonia needs to develop more appropriate targets and

indicators that fulfill GES. Communication and coordination between MS in the Baltic Region is key.

Latvia

Latvia has received an overall score of **- 1.4**, it is clear that implementation of the MSFD and the development of targets and indicators has been a challenge. Latvia has not been very ambitious at all when developing indicators and targets for Descriptor 1: Biodiversity and Descriptor 10: Marine Litter. Latvia has reported minimal or no indicators or targets for these descriptors. They have not defined GES for either of these descriptors.

Latvia has also had very low ambition for Descriptor 3: Commercial Fish and Descriptor 5: Eutrophication. Latvia has set some GES targets for Eutrophication and Commercial fisheries but major species are missing and comparable indicators need to be developed.

In conclusion, Latvia needs to develop many more indicators and targets that are applicable to achieve GES and must communicate and coordinate with other Baltic MS to reach regional goals. Special focus must be given to salmonids in Latvia considering as many as 10 wild salmon stocks that spawn in Latvian rivers.

Lithuania

Lithuania has received an overall score of **-1.36**, and implementation of the MSFD so far and the development of targets and indicators is not acceptable. Lithuania has been the least ambitious when developing indicators and targets for Descriptor 1: Biodiversity and Descriptor 10: Marine Litter. Lithuania received very low scores for both of these Descriptors.

Lithuania has also done less than satisfactory work for descriptor 3: Commercial fish and Descriptor 5: Eutrophication. Not many indicators or targets have been developed that are efficient, and Lithuania has a great many details to improve before reaching an acceptable level of implementation of the MSFD. Overall, as for most Baltic MS, Lithuania must coordinate and communicate with other MS in the Baltic region to develop indicators and targets that are applicable to achieve GES.

Poland

Poland received and overall score of **-0.90**, based on still not reported drafts. Poland has shown the least effort when developing indicators and targets for Descriptor 10: Marine Litter, where more indicators and targets need to be developed and Poland needs to more clearly define GES on descriptor and indicator levels.

Poland has developed more indicators and targets for Descriptor 1: Biodiversity, Descriptor 3: Commercial Fish and Descriptor 5: Eutrophication. Although they have not reported on MSFD to the Commission, but their drafted targets for these three descriptors are functional and developed and some are quite ambitious, especially in relation to Eutrophication.
Poland must report to the EC as soon as possible in order to participate officially in the implementation of the MSFD. Poland should also communicate and coordinate with neighboring

MS in the Baltic Region to develop indicators and targets in areas where they need the most assistance.

Germany

Germany has received an overall score of **-0.75** Germany has not done well in developing and also reporting targets and indicators for Descriptor 5: Eutrophication as well as for Descriptor 1: Biodiversity. The reason for the low scores is simply that they have not developed enough indicators or targets that were reported, but when considering available drafts circulated for consultations it seems that Germany can and will do a lot better if drafted work is implemented.

Germany has been somewhat more ambitious when they developed indicators and targets for Descriptor 10: Marine Litter. Germany must further link GES for Marine litter from the descriptor to indicator and target levels, as well as develop indicators for micro-particles. Germany has been quite ambitious when developing Descriptor 3: Commercial Fish as it has developed targets and indicators that are related to ecosystem effects, and they receive the highest score of any MS in the Baltic Region for this Descriptor.

Overall it has been difficult to compare Germany to other MS as they have chosen a parallel procedure when developing indicators, which has been more environmentally inclusive but difficult to compare to other MS. Therefore, Germany must communicate and coordinate its goals and aims so that other MS can cooperate together to reach GES.

Denmark

Denmark has received an overall score of **-0.52.** Denmark has been the least ambitious when developing indicators and targets Descriptor 3: Commercial Fish. Denmark has to be more ambitious when developing indicators for fish species for both of the Descriptor 3 and descriptor 1: Biodiversity. Further, their definition of GES for Descriptor 3 and relation to indicators and targets is very vague and hard to quantify.

Denmark has been more ambitious when developing indicators and targets for Descriptor 10: Marine Litter. However, many of the indicators mentioned are vague and data collection targets. Denmark needs to develop targets and indicators that actually aim to decrease marine litter. Denmark has been the most ambitious in developing indicators and targets for Descriptor 5: Eutrophication, where it received the highest score and it has covered most of the EU Criteria. They have set ambitious targets and defined GES.

Overall, Denmark needs to be more specific in certain areas of its reporting and needs to develop indicators and targets that are applicable, as they have in Descriptor 5.

Sweden

Sweden received an overall score of **-0.50** which is the highest combined score of all the MS in the Baltic Sea Region. When compared to other Baltic MS, Sweden has been very ambitious when developing indicators and targets for Descriptor 1: Biodiversity. In relation to Biodiversity they have done good work with fish species but need to also focus more on harbour porpoise as recent

information indicate relative high density of porpoises n Swedish waters in Baltic proper (if they are to reach GES for all species listed.)

Sweden has been less ambitious when developing indicators and targets for Descriptor 10: Marine litter, where only 1 indicator is applicable to the Baltic Sea. Although Sweden does define GES on the descriptor and criteria level, it must develop more functional indicators in the Baltic Sea. Sweden has been least ambitious when developing indicators and targets for Descriptor 3: Commercial Fisheries and Descriptor 5: Eutrophication. For both descriptors they must develop more indicators and report more targets. Although Sweden has reported many drafted or "to be potentially developed" targets and indicators these must be further developed in order to reach GES.

Overall, Sweden has received the highest score as they are reported the most consistently for the Descriptors that we reviewed, and they have also defined GES in a way that is consistent with descriptor, criteria and in some cases indicators. Sweden has also mentioned many drafted indicators that are being developed and we urge Sweden to continue to develop these into functional indicators that will help Sweden reach GES for 2020. Sweden should also communicate and coordinate with MS in the Baltic Region.

Finland

Finland received an overall score of **-0.58** and has been least ambitious when developing targets and indicators for Descriptor 1: Biodiversity and Descriptor 10: Marine Litter, where they mention the need for more indicators to be developed. Finland lacks ambition when developing indicators for Biodiversity in relation to harbour porpoise, ringed seal and salmon (Descriptor 1). Finland has however, included fish biodiversity indicators in both Descriptor 1 and Descriptor 3 – Commercial Fisheries, which is important, and show relative high ambitions. Marine litter has not been a prioritized descriptor.

Finland has been more ambitious when developing indicators and targets for Descriptor 3: Commercial Fish and Descriptor 5: Eutrophication. In relation to commercial fish Finland is pushing for monitoring of population age and size distribution, which supports HELCOM goals. However, in relation to eutrophication, Finland must set some clear GES targets, which are now missing.

Overall, Finland should communicate and coordinate with other MS in order to prioritize areas that need to be developed further.

Annex 1 Detailed Report on each Descriptor

Descriptor 1: Biological diversity - Biodiversity of fauna in the Baltic Sea

The first descriptor of the Marine Strategy Framework Directive is biodiversity as defined as by the MSFD: "*Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions*."

The biodiversity of the Baltic Sea is unique, because of its brackish water – a mix of salty ocean water and fresh water from numerous rivers. The Baltic Sea is the second largest brackish water sea in the world, only the Black Sea is bigger.

The Baltic Sea is a relatively young system and the current state has only been prevailing during the last 4 000 years. This relatively small, shallow, dark and cold sea has few species compared to most high seas. Due to the young age of the sea, there is some specific genetic biodiversity, but only a few endemic species evolved. The Baltic Sea is unique, but species poor ecosystem comprising of flora and fauna of both freshwater and marine origin, but also of some glacial relicts.

The Baltic Sea is a semi-closed sea. The connection to the North Sea through the Danish Straits and the Sound is narrow. Big pulses of new saline water are essential for marine species, but not usual. There is pronounced latitudinal gradient in both temperature and salinity, being colder and less saline in the northern parts and warmer and more marine in the southern parts. There is more salinity and marine species in southwest and more freshwater species in northeast and river estuaries. The marine species usually have their northernmost distribution in the Quark area.

One example of geographic variations in the Baltic Sea is the Baltic fish community. The species diversity varies considerably depending on region. In the north and the east, species with a freshwater evolutionary background dominate the systems, whereas in the south and the west, marine species becomes more abundant. If including the Kattegat, roughly 100 fish species frequent the Baltic Sea of which approximately 70 are marine species.

The resilience of the Baltic Sea is low. There are few keystone species. Food-webs are based on relatively few species. Despite the low species diversity, the number of individuals can still be considerable with a few species making up the biomass. This makes the ecosystem highly vulnerable to pressures affecting the balance.

The biodiversity of the Baltic Sea is sensitive also because the sea is heavily stratified. Heavy saline water goes to bottom, but surface water is fresh. There is not much vertical mix between oxygen-rich surface and the almost oxygen-depleted sea bottoms. The problem is that there are now big bottom areas with virtually zero oxygen, and these areas are nowadays nearly dead.

The catchment area of the Baltic Sea is four times bigger than the sea itself. There are lots of human activities causing many pressures and a great deal of stress to the sea and the coast, like nutrient flow, fishing, pollution, traffic, oil spills and other problems. That is why the biodiversity of the Baltic Sea has been declining in the last decades. In addition to these problems and pressures that have grown since the early parts of the last century, there are also new problems like climate change and increased risks of the spread of invasive alien species.

Priority species in this report
Descriptor 1 for Biodiversity in the MSFD has very broad scope and it is very general in nature. That is why we have taken into closer assessment only some priority species.

CCB has focused on the decline of species such as; harbour porpoise, seals, salmon and sea-trout. They have been key species reflecting changes in the Baltic Sea. They are also especially important species for people. They have a special place in history. They represent species that many associate with the sea and water. They are also better known and studied than many other species.

The harbour porpoise (*Phocoena phocoena*) is the only one whale species breeding in the Baltic Sea. It has become regionally extinct in northern parts of the Baltic Sea after World War II. The main reasons have been heavy winters, pollution and fisheries by-catch. The harbour porpoise is protected by the Habitats Directive and ASCOBANS agreement with so-called Jastarnia Plan (Recovery Plan for Baltic Harbour Porpoise). In addition, there is an important ongoing research project called SAMBAH (Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise). The project is studying the current abundance, distribution and high density areas of porpoise in the Baltic proper with new acoustic technology.

In the Baltic Sea there are three seal species: grey seal (*Halichoerus grypus)*, ringed seal (*Pusa hispida)* and harbour seal (*Pusa vitulina*). Their populations crashed in the last century because of hunting, pollution (e.g. PCB and DDT), diseases, and fisheries by-catch etc. Due to many directives and plans, as the EU Habitats Directive, HELCOM and other action plans, the populations and areas of seals are growing slowly. However, it seems that there are new harmful substances (e.g. flame retardants) coming to threat seals again. There is also conflict between fisheries, and some countries have started hunting of seals again. One new problem is climate change: Seals are going to lose areas covered in ice, which are important for successful reproduction for northern grey and ringed seal populations.

It is important to take fish species into account in biodiversity descriptor, because all fish are not commercial fish (Descriptor 3). Our priority species in this assessment are salmon and sea trout.

Salmon *(Salmo salar)* and sea trout *(Salmo trutta)* are anadromous fish. They migrate from the sea to rivers to spawn in fresh water. That is why they have suffered from changes both in sea and in rivers. The status of several salmon and sea trout populations is worrying, although large differences between geographical areas exist. Direct or indirect anthropogenic impacts are the main causes for this. For example, the construction of waterpower plants and dams has destroyed crucial habitats for spawning and growth. Fishing and human-induced eutrophication have also changed compositions of biota.

The number of salmon rivers in the Baltic Sea region is estimated to have been in the range of 80–120. Today, salmon is only found in about 40 of these rivers: mainly 13 rivers in the Gulf of Bothnia and 27 in the Main Basin.

However, due to EU Habitats Directive, and greening of the EU Common Fisheries Policy, HELCOM and other international and national action plans, some river populations of salmonids are now coming back. Since 2003, the total wild salmon production in the Main Basin and in the Gulf of Bothnia has increased by 60 %, and with these continuous improvements it might seem like salmon is doing quite well. Even so it is important to note that the status of the individual river stocks vary considerably also between years. Today, the bulk of the Baltic salmon originates in the Bothnian Bay – roughly 90 % of all salmon smolts come from there and 75 % of the total comes from two rivers: Torne River (itself providing for approximately 50 % of all produced smolt) and

Kalix River.

In the Main Basin, the status of the rivers are more varied, and in the Gulf of Finland the salmon production has remained on a historically low level and measures to stop poaching in, for example, Estonian rivers should be taken, although they show some signs of recovery. Furthermore, although the natural smolt production has gradually increased during the past decades, the overall abundance of salmon at sea (so-called pre-fish abundance) has declined gradually the last decades. This is likely to be a result of the extreme low survival of smolts entering the open sea, the so-called post-smolt survival.

The general situation of commercial fish species is described in the Descriptor 3. There are comments of most important criteria and indicators for wider fish biodiversity in this chapter. These biodiversity indicators also cover salmonids in some cases, but this topic is discussed more in depth in the chapter about Descriptor 3: Commercial fish.

It is useful to use CCB priority species as test examples, because they are found in all areas of the Baltic Sea together. For example, harbour porpoise and harbour seal are more usual in south, but the best salmon rivers and ringed seal populations are in north**.** Furthermore, mammals indicators are used to usually cover population related indicators, whereas fish indicators are used to best cover habitats and ecosystem related indicators.

Member State ambitions to Descriptor 1

Harbour porpoise

Table 1. Indicators for Descriptor 1 Biodiversity about harbour porpoise. Only national indicators matching the EU criteria are listed. The colouration of the cells illustrate qualitative grading of indicators and targets, accordingly (categorization for different grades, see below):

-2	-1	0	+1	+2

EU criteria and associated indicators	EE	LV	LT	PL X	DE X	DK	SE X	FI
1.1. Species distribution								
Distributional range (1.1.1)					UD	Occurrence in disrtribution range	UD	
Distributional pattern (1.1.2)								
1.2. Population size								
Population abundance and/or biomass (1.2.1)				Pop. growth X	UD	Population growth GES	UD	
1.3. Population condition								
Population demographic characteristics (1.3.1)				Pop. growth rate X Blubber thickness X Gestation X	Population devolopment By-catch rate Discard rate	Pop. growth rate GES Gestation GES Blubber thickness GES By-catch GES	UD	
Pop. genetic structure (1.3.2)								
1.4. Habitat distribution								
Distributional range (1.4.1)								
Distributional pattern (1.4.2)								
1.5. Habitat extent								
Habitat area (1.5.1)								
Habitat volume (1.5.2)								

1.6. Habitat condition								
Condition typical species and communities (1.6.1)								
Relative abundance and/or biomass (1.6.2)								
1.7. Ecosystem structure								
Composition & proportions of ecosystem components (1.7.1)								
∑ indic.	**0**	**0**	**0**	**4**	**3**	**6**	**0**	**0**
N grade Qual	**-2**	**-2**	**-2**	**-1.6**	**-1.8**	**-1.0**	**-2**	**-2**

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; **X** not reported to EU; † indicator not matching EU criteria included * Indicators not reported to EU are included. UD = under development.

In eastern Baltic Sea countries, the harbour porpoise has been a rarity during last decades, so it has not been prioritized. For example, Latvia has not reported on harbour porpoise as this species have not been seen in the country's waters. However, the SAMBAH project has now shown that their range is wider than was earlier known. SAMBAH has showed presence of harbour porpoise in Latvia and Lithuania. Also the distribution range in Sweden is now larger than what was known before the project. We think that all countries should have a harbour porpoise population indicator, because there is always a possibility of migration or seasonal occurrence areas in all countries.

Poland has indicators for harbour porpoise population dynamics, but no targets yet, because of lack of information. However we think that Poland is very important country for harbour porpoises, so more targets and indicators are needed.

Germany has planned many and very detailed targets for harbour porpoise, but they have not reported them yet to the Commission, except some connected to fisheries bycatch. Under national public hearing there are good candidate targets like distribution at least 70–90 % of the long time used habitats, population size min. 80 % of the capacity of the Baltic Sea, medium density (0,3–1 individuals per square km). Germany is monitoring anthropogenic mortality of marine mammals and causes of death for dead whales that are found stranded. Germany target aims at reducing adverse effects of fisheries by-catch, but targets should be more detailed.

Denmark is the far best country in harbour porpoise: 6 indicators with good targets. Denmark wants for example to reduce unintentional by-catches below 1, 7 % of the population size, which is good.

Sweden has not taken harbour porpoise as well into account in Baltic Sea as compared to the western coast population. The most important things are not reported or they are under development. The SAMBAH project shows that underwater recording of porpoise sonar sounds are better methodology than visual sightings or estimations by stranded porpoises, so this work should be continued. Swedish NGOs *Swedish Society for Nature Conservation* (SSNC) calls for target values, which must be higher than the current population.

Genetic structure needs special studies for this species because of little data, so nobody has listed it. However, this should be monitored, because there are three populations in the Baltic Sea having genetical and morphological differences. This data collection could be done at least from porpoises found dead.

Habitat and ecosystem indicators are not reported from harbour porpoise at all. It seems that member states don't have seen them relevant indicators for porpoise yet.

Seals

Table 2. Indicators for Descriptor 1 Biodiversity for seals. Only national indicators matching the EU criteria are listed. The colouration of the cells illustrate qualitative grading of indicators and targets, accordingly (categorization for different grades, see below):

-2	-1	0	+1	+2

EU criteria and associated indicators	EE	LV	LT	PL X	DE X	DK	SE	FI
1.1. Species distribution								
Distributional range (1.1.1)	GES				UD	GES	GES	GES
Distributional pattern (1.1.2)	GES				UD	GES	GES	GES
1.2. Population size								
Population abundance and/or biomass (1.2.1)	GES			Pop. growth X	UD	GES	GES	GES
1.3. Population condition								
Population demographic characteristics (1.3.1)				Pop. growth X Gestation X Blubber thickness X	Population devolopment By-catch rate Discard rate	Pop. growth rate GES Gestation GES Blubber thickness GES	Pop. growth rate GES Gestation GES Blubber thickness GES	
Pop. genetic structure (1.3.2)								
1.4. Habitat distribution								
Distributional range (1.4.1)								
Distributional pattern (1.4.2)								
1.5. Habitat extent								
Habitat area (1.5.1)					UD	GES		GES
Habitat volume (1.5.2)								
1.6. Habitat condition								
Condition typical species and communities (1.6.1)								
Relative abundance and/or biomass (1.6.2)								
1.7. Ecosystem structure								
Composition & proportions of ecosystem components (1.7.1)								
∑ indic.	**3**	**0**	**0**	**4**	**3**	**7**	**6**	**4**
N grade Qual	**-1.25**	**-2**	**-2**	**-1.6**	**-1.8**	**-0.4**	**-1.0**	**-1**

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; **X** not reported to EU; † indicator not matching EU criteria included * Indicators not reported to EU are included. UD: under development

Distribution and numbers of seals should be a really basic thing for most Member States to evaluate because it is included in both the Habitats Directive and HELCOM core indicators. Seals are easier to monitor than for example harbour porpoise. In HELCOM there is a special Seal Working Group, and HELCOM Copenhagen Ministerial Conference put special attention to ringed seal.

That is why all except Latvia and Lithuania, who do not have not so many seals yet, have some indicators for them. However, also they should develop seal indicators, because they are going to get more seals in the future.

Denmark has done the best work with developing indicators and targets for seals, followed by Sweden and Finland.

Estonia has population targets for grey seal, but not ringed seal in Gulf of Riga. The *Estonian Green Movement* wants more attention to be placed on ringed seal conservation targets.

Poland is monitoring population dynamics, gestation frequency and blubber thickness of seals, but without targets.

Germany is planning many seal indicators, but they are still under development. Germany has reported now only indicators connected to fisheries bycatch.

Denmark is the best country in seal biodiversity in our assessment. It is monitoring harbour seals in current and also in potential new areas, which is good. Denmark aims at get harbour seals to favourable conservation status of the Habitats Directive and then keep it stable.

Sweden has all three Baltic seal species. Sweden has not reported target population sizes and distribution range GES criteria yet. The explanation is that Sweden is planning a new seal management plan. Swedish NGOs *Swedish Society for Nature Conservation* (SSNC) want to get the historical areas back. SSNC claims for favourable conservation status and growth rates connected to carrying capacity of ecosystem.

In Finland the basic target is favourable conservation status, which is not achieved by ringed seal. Finnish NGOs Finnish Association for Nature Conservation (FANC) and WWF Finland have claimed for more specified indicators especially for threatened ringed seal population in the Gulf of Finland population. Monitoring, for breeding areas, is important for the future. Seals are losing breeding ices due to climate change, and they need peaceful islands and appropriate beaches.

Germany has health condition and unwanted by-catch control in interim targets, but no target values. Blubber thickness is mentioned also by Denmark (to have it normal) and Sweden (with exact numeral targets for grey seals with baseline data from 2004). Sweden has also pregnancy rate targets for grey seals. Denmark wants harbour seal populations fluctuations to be normal.

It is strange that Estonia and Finland have not reported any population or health condition indicators, despite it being easy to collect information from dead seals. In Latvia and Lithuania even dead seals have not been very numerous yet. However, fertility and nutrition condition of seals are also HELCOM core indicators, so all member states should begin monitoring.

Salmon, sea trout and other fish in Biodiversity Descriptor

Table 3. Indicators for Descriptor 1 Biodiversity for salmonids and other fish. Only national indicators matching the EU criteria are listed. The colouration of the cells illustrate qualitative grading of indicators and targets, accordingly (categorization for different grades, see below):

-2	-1	0	+1	+2

EU criteria and associated indicators	EE	LV	LT	PL X	DE X	DK	SE	FI
1.1. Species distribution								
Distributional range (1.1.1)								
Distributional pattern (1.1.2)								
1.2. Population size								

Population abundance and/or biomass (1.2.1)				Key fish X			Key fish coast GES	
1.3. Population condition								
Population demographic characteristics (1.3.1)				Fish size index: open sea *Interim*, Same in coast X			Size structure key species coast Status of sensitive species offshore	Immature trout, whitefish & pikeperch in coast catch GES Sea trout fry compared to potential GES Fishing pressure of sea trout
Pop. genetic structure (1.3.2)								
1.4. Habitat distribution								
Distributional range (1.4.1) Distributional pattern (1.4.2)								
1.5. Habitat extent								
Habitat area (1.5.1)							Key species coast	
Habitat volume (1.5.2)								
1.6. Habitat condition								
Condition typical species and communities (1.6.1)			Shannon index X				Large fish % and biomass Length distribution in outer waters Size structure of coast fish, and predators (coast and offshore) Fish populations structure coast. Diversity in fish community	
Relative abundance and/or biomass (1.6.2)				Flounder stock in 24,25,26 X Key fish abundance coast X			Important functional fish communities coast GES and offshore	Whitefish and flounder fry in shallow sea-bottom GES
1.7. Ecosystem structure								
Composition & proportions of ecosystem components (1.7.1)	Marine Trophic Index Interim Size of fish Interim Predator fish index Interim		Marine Trophic Index X	Predatory fish abundance coast X			Trophic level of fish community in coast GES	Fish in endangered habitats X
Σ indic.	**3**	**0**	**2**	**6**	**0**	**0**	**15**	**5**
N grade Qual	**-1.75**	**-2**	**-1.3**	**-1.25**	**-2**	**-2**	**-0.5**	**-1.1**

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target

to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; **X** not reported to EU; † indicator not matching EU criteria included * Indicators not reported to EU are included.

Salmon and sea trout are not mentioned many times in biodiversity indicators, but they are also commercial fish species (see also Descriptor 3). However, salmon is one of the Habitats Directive species with favourable conservation status target. Sea trout is not in the Habitats Directive, but it is monitored by ICES. We think that salmon and sea trout should be managed together, especially since there has been such a high degree of salmon being caught and reported as sea trout.

There have been projects and plans such as the HELCOM SALAR project, EU Salmon Action Plan and management plan which are under the decision making process in the EU. HELCOM has targets for the level of PSPC (Potential Smolt Production Capacity) of 80% that shall be reached by all wild salmon rivers. In addition, ICES makes TAC recommendations for fisheries for both salmon and sea trout.

Salmon smolt production and survival is a HELCOM core indicator but nobody reported it in biodiversity indicators.

Abundance of sea trout spawners and parr is a HELCOM core indicator, but only Finland and Sweden have reported something especially for sea trout biodiversity. Finland is the best country regarding sea trout. Finland is monitoring for example sea trout juveniles caught in coastal fisheries (target: declining trend), sea trout migratory fry compared to potential (target level 50 %) and fishing pressure. Trout is one of Swedish key species also.

Poland and some other countries are using fish various size indexes. In open waters the Polish target is to get the mean value statistically significantly higher than the mean value calculated for the reference period 2000-2008. In coastal areas GES for size index is not defined.

Abundance of "key" fish species is mentioned by Poland and Germany, but it is not clear if they refer only to HELCOM key species (perch and flounder, *Platichthys flesus*). In Poland they refer also to predatory fish. Indicators like "key fish species" should be determined clear, because they may vary from Members State and organization to another. CCB recommends all the Member States to include at least salmonids in the key fish species.

Sweden has different key species: trout, eel *(Anguilla anguilla)*, and perch (*Perca fluviatilis)*. They are related to abundance, biomass, size structure and habitats, but without targets. Sweden is also developing many indicators for size structures and biomass of fish community.

Poland is monitoring flounders and predatory fish in coastal areas. GES is not set because of lack of data. Flounder stocks were not evaluated in Initial Assessment.

Finland is trying to keep whitefish (and flounder) fry in shallow sand-bottoms in favorable level, and it aims at reducing the loss of endangered habitats for fish. These indicators need more development in future work.

Estonia and Germany are using Marine trophic index, Estonia aims to no falling trend and watches especially size and proportion of predatory fish in fish community (lack of rising trend). Estonia is also watching at maximum size of all species in monitoring catches, but no GES target. Also Lithuania has numeric values indicator for marine trophic and fish community indexes. Lithuania has used Shannon Divers index for fishes, which is a best practice to all countries. However, in Lithuanian papers there are no details about species. Poland has interim size index targets for key fish for sea but not for coastal area.

It is important that fish are included also in the Descriptor 1, not only Descriptor 3 (commercial fish). The far best fish biodiversity indicator work has been done in Sweden, and the next three are Finland, Poland and Lithuania. On the other side, big fishing countries Denmark and Germany have not used fish biodiversity descriptors enough and not as much as other MS.

Additional remarks and NGO comments of each member state ambition for Descriptor 1

Table 4. Sum table of the averages of assessed biodiversity indicators (harbour porpoise, seals and fish)

	EE	LV	LT	PL	DE	DK	SE	FI
Porpoise	**-2**	**-2**	**-2**	**-1.6**	**-1.8**	**-1**	**-2**	**-2**
Seals	**-1.25**	**-2**	**-2**	**-1.6**	**-1.8**	**-0.4**	**-1**	**-1**
Fish	**-1.75**	**-2**	**-1.3**	**-1.25**	**-2**	**-2**	**-0.5**	**-1.1**
Sum of averages	**-1.6**	**-2**	**-1.7**	**-1.4**	**-1.8**	**-1.1**	**-1.1**	**-1.3**

The Baltic Sea biodiversity is relatively well known. All countries have good enough knowledge to develop both indicators and targets. Therefore lack of knowledge is not acceptable as an excuse.

About our priority species it is noteworthy, that they are Habitats Directive or ICES species. Member States should monitor the conservation status (population, distribution, habitat and future) of Habitats Directive species. They have to make a report to the European Commission in six years periods by Article 17 of the Habitats Directive. The deadline for Habitats Directive reports for years 2007–12 was June 2013. That is why Member States should have both baseline data and monitoring system for these species also for MSFD work. (The lack of baseline and other information is bigger problem for many other things in biodiversity and other criteria and indicators, like marine litter.) That is why it is surprising, that there still are gaps in criteria and indicator work in Member States with these indicators.

Estonia has done its best work in seals. Estonian NGOs *Estonian Green Movement* say that also fertility of seals could easily be monitored as well in Estonia. We think that in the future also harbour porpoise should be taken into account in Estonia.

The tables show that **Latvia** covers none of our biodiversity criteria. Of special importance would be to develop indicators for salmon and sea-trout, as Latvia is the Baltic country with most wild salmon rivers (10 wild salmon rivers, many of them with weak populations).

Lithuania is the only one having even numeric values indicator for marine trophic and fish community indexes, which is a best practice for all others. In addition, *Lithuanian Fund for Nature* thinks that these threshold values trophic index of fish population and diversity (Shannon) index for fish population are ambitious enough. There have not been many porpoises and seals yet in Lithuania. On the other hand, we think that anthropogenic mortality of marine mammals should be monitored, because every year dead grey seals are washed upon the shore.

Poland has a new candidate indicator never used in the Baltic Sea before: size index target for fish. Polish Mikołaj Koss at the Hel Marine Station claims for more attention to harbour porpoise. Also by-catch of marine mammals and should be monitored and there should be also measures for this (like development and introduction safe alternative fishing gear, usage of pingers for harbour

porpoise etc.). More work for salmon and sea-trout is needed, too. Sea-trout and salmon needs also actions to get more spawners and parr (like ban on catching fish on the way to spawning grounds; adjusting fish-paths on majority of Pomeranian region's rivers.)

Germany has national draft under public consultation. That is why the points according to reported criteria are low (-1.8). If all planned becomes true, it can become as good as Denmark, but it has the same gap: fish biodiversity. In sea mammals is covering most of the criteria. In general, Germany has done most detailed work in many cases with numeric targets for marine mammals. We want still more action oriented targets, like % of the marine area protected against anthropogenic activities (e.g. 50 % areas more to the NATURA 2000 network).

Denmark is the best in our biodiversity set with Sweden, despite even it is below 0 (-1.1). It has done better work with mammals than fish biodiversity. *Danish Society for Nature Conservation* (DN) wants develop also the conservation of the harbour porpoise: Danish Baltic stocks (Kattegat and Baltic stock) are critically endangered and the target must therefore be significantly larger populations (e,g. doubling the current population size in next 10 years). Also more potential breeding sites are needed for harbour seal. In general, DN wants also to have stronger coordination with e.g. NATURA 2000 network and fisheries policy in MSFD work. DN stresses that habitats are essential for species, and species should be in the long run maintained in a natural population size in its natural habitat.

Sweden is, even though a score below -1, the most ambitious country together with Denmark in our selection of biodiversity indicators. Sweden has a done good work especially with fish. With marine mammals some important targets are still missing, so *Swedish Society for Nature Conservation* (SSNC) has lots of detailed proposals for them. SSNC claims that more attention is needed for harbour porpoise. The current number of Baltic Sea porpoises is not enough to fulfil favourable conservation status of the Habitats Directive and GES of the MFSD. For seals GES is when they are commonly found in their entire old geographical range. In addition, in the population growth GES also carrying capacity of the ecosystem should be taken into account etc.

Finland was third in our biodiversity assessment (-1.3). It has reported that it is developing indicators in 2014 and 2018. The monitoring program is coming to public hearing this spring, and this process can lead to inclusion of new indicators. The biggest gap in Finland is harbour porpoise, which has been classified as regionally extinct in the national Red Book. However, Finnish Association for Nature Conservation (FANC) claims to attention for it, because it can come back to Finland due to climate change. Concerning seals more detailed work is needed for ringed seal especially in Gulf of Finland, where it is most endangered.

With **harbour porpoise** and **seals** it is quite natural, that countries with the biggest populations of them have taken them into account in their MSFD work – and received the highest points in our assessment for these species. However, because these species are coming back to all the Baltic Sea, all counties should put more attention to them. In addition, member states should develop also habitat and ecosystem targets, indicators and measures for marine mammals. Because there aspects were big rarities, all counties got negative points in our assessment.

On the other hand, all the Baltic Sea countries have the same possibilities to make targets and indicators for **fish biodiversity**. That is why it is astonishing that fish biodiversity was a clear disappointment: all countries got bad numbers. Especially surprising was that Germany and Denmark, countries making good work with marine mammals, were very bad in fish biodiversity. On the other hand, Germany was the best in commercial fish, but Denmark was poor also with them (see chapter 3). We are waiting for better work especially with HELCOM core targets for example like salmon and sea trout in the future from all the countries.

Comparison of definition of GES in Baltic Sea countries
There was very wide diversity in GES descriptions and the way to present environmental targets between the countries. This is partly due to very wide scope and general nature of Descriptor 1, which is not strictly defined even in the MFSD and guidelines from the Commission.

Estonia has reported some numeric GES values for seals, but it should work more with conservation targets for them. It has not used harbour porpoise yet. There is a need to set more fish targets, too.

Latvia didn't use our priority species in GES and targets, but it has also big gaps in the other biodiversity aspects as well.

Lithuania has a bit more narrow scope in GES, because marine mammals are not included in the Lithuanian GES and targets yet, partly because they have not been usual there yet. Lithuania has done the best biodiversity work with birds. The use of fish indexes in habitats and ecosystems is a good try, but Lithuania should tell what species have taken into account.

Germany has a special reporting problem. On the other hand it has very general reported GES description with references to directives and other agreements. On the other hand, in the national (yet unreported) planning there seems to be very detailed things under development. That is why Germany has very good possibilities to develop very detailed targets in the future work.

Denmark has done GES definition on criteria level resembling much the level of the Habitats Directive favourable conservation status, despite this that Directive is not referred to! In species it has targets for marine mammals, but not fish. Denmark should develop more numeric value targets.

Sweden has GES descriptions, criteria and indicators. From our priority species mammals and fish are used, but harbour porpoise better in the west coast than in the Baltic Sea. Sweden has good possibilities to make more measurable targets during the process.

Finland has described the general GES targets in species, habitat and ecosystem levels in a qualitative way. Some indicators are still under development by 2014 and 2014. In these phases Finland should make more quantitative targets.

To sum up, all member states have lots of work to do in making GES and environmental targets more clear. In most cases countries have been very *qualitative*. We think that the most important need now is to develop also *quantitative* numeric targets.

Recommendations and best practices

Harbour porpoise needs more attention in all aspects in all countries. The distribution is far larger than before the SAMBAH project was expected. In the future there can be at least migration or seasonal occurrence areas also in eastern parts of the Baltic Sea. Harbour porpoise needs more monitoring (also underwater acoustic monitoring, like SAMBAH project, not only visual records) and conservation measures (protected areas and minimized by-catch). Causes of death and genetic diseases/abnormalities from dead porpoises should be studied.

Seals are coming back to countries and areas, where they have not been breeding for decades. All the Baltic Sea countries should begin to monitor and develop indicators for them. More attention is needed to breeding areas of seals, because they need new areas due to population growth and

climate change (loss of breeding ice in the future). The health of seals is an in important to monitor because of new pollutants.

Key fish species should be determined more clearly, because they may vary from Members State and organization to another. CCB recommends all the Member States to include at least salmonids in the key fish species. Many countries are using biodiversity indexes.

In **population** GES targets and indicators the normal minimum level is favourable conservation status by the Habitats Directive. NGOs have claimed more numeric target values, because favourable conservation status is a mainly a trend. When using the favourable conservation status, member states should always remember that there are three aspects to keep in mind: population, distribution range and habitat. The member states have used usually the two first (population and range), but the the third – the habitat in long-run future – aspect is usually overlooked or forgotten.

More **habitat** and **ecosystem** indicators should be developed for marine mammals. Presently, these types of indicators are used more for fish than for porpoises or seals.

HELCOM core indicators should be used more in the MSFD work in member states, for example for salmon and sea trout.

Member states have used mainly **qualitative** GES descriptions, criteria and indicators. The MSFD work gives now new possibilities to develop more operational and practical **quantitative** conservation targets and measures for marine biodiversity. This can be the added value of the MSFD for biodiversity.

Descriptor 3: commercially exploited fish and shellfish

Baltic fish and fisheries

Overall, the Baltic species diversity is relatively low as earlier described in the Biodiversity chapter of this report (Descriptor 1) and only a few endemic species have evolved over time. This is also consistent with the composition of the Baltic Fish community although the species diversity varies considerably depending on region. Under this descriptor primarily fish of commercial importance and the fisheries targeting these species are considered. We have defined "commercial species" as fish species important in the Baltic fishery and for which the International Council for the Exploration of the Sea (ICES) gives advice for (by ICES referred to as Category 3 species, ICES 2014). Additionally, some species that regionally are of commercial importance are discussed and since these species mainly are caught in coastal waters, we refer to them as "coastal species" (by ICES referred to as Category 1 species, ICES 2014).

Baltic commercial fish species

Both biomass and commercial landings of Baltic fish are totally dominated of three species, namely cod (*Gadus morhua*), herring (*Clupea harengus*) and sprat (*Sprattus sprattus*); altogether these species make up more than 80 % of the biomass and more than 90 % of nominal landings. Although these species are currently abundant in the Baltic Sea, stock sizes have historically fluctuated considerably. Cod of the Eastern population is labelled as *vulnerable* by both HELCOM and IUCN due to the impending threat of synergistic effects of eutrophication and climate change (HELCOM 2013). For the different Baltic stocks of cod, sprat and herring, as well as for plaice (*Pleuronectes platessa*) and salmon (*Salmo salar*), there are EU fishing limits (total allowable catches, TACs). ICES is also providing advice on fishing limits for several Baltic flatfish species on an annual basis, i.e. Baltic flounder (*Platichthys flesus*), turbot (*Scophthalmus maximus),* Brill (*Scophthalmus rhombus*) and dab (*Limanda limanda*). ICES also do assessment work on sea trout (*Salmo trutta*) and European eel (*Anguilla anguilla*). According to CCB and many scientists, but also to the European Parliament (20130906IPR18862), fishing for eel should, without exceptions, be stopped since this species is severely threatened due to overfishing in combination with high mortality of migrating individuals in turbines of hydropower plants. The status of the species is now considered as *critical* according to red lists of both HELCOM and the International Union for Conservation of Nature (IUCN, HELCOM 2013). Considering sea trout, it is crucial to include this species in the salmon management since these species in many cases utilize the same rivers for reproduction (although sea trout also spawn in many smaller rivers and creeks where no salmon exist) and also are caught in the same fisheries. One example of the need for a joint management of the species is the high amount of salmon that have been reported as sea trout in the Polish pelagic long-line fishery during the last years (ICES WGBAST, 2012).

Baltic coastal fish species

In coastal areas mainly freshwater species dominate commercial catches, such as perch (*Perca fluviatilis)* pikeperch (*Sander lucioperca*), whitefish (*Coregonus lavaretus*) and different species of cyprinids. Depending on the biological conditions and cultural reasons also other species are of regional importance, such as vendace (*Coregonus albula*) in the northern part of the sea (the Bothian Bay) and smelt (*Osmerus eperlanus*) in the Gulf of Riga.

Even though there are regional differences in the fish community within the sea, the most important commercially exploited species are shared by most (if not all) the Baltic members states. This is one of the reasons why the newly established regional management body BALTFISH (consisting of fishery ministers and fishery agencies from the Baltic MS) have such an important role in the co-management of Baltic stocks by the Baltic MS and the Commission, in line with the regionalised

ambition of the revised CFP. In comparison with other sea regions fishing can also be comparably selective, and mostly directed to a single or a few target species. This is rather unique and naturally of advantage when dealing with the implementation new legislation, such as the discard ban in Baltic fisheries which will be enforced for all commercial species (all flatfishes but plaice excluded) from next year (2015, 2013/889/EU).

Baltic fisheries
The Baltic fishing fleet has been slimmed down during the last decade counting the number of vessels. The bulk of Baltic commercial fishes are caught by relatively large vessels, usually trawlers. These trawlers are today catching larger proportions of the catch and it has been a shift from mainly demersal trawlers to large pelagic trawlers, mainly targeting sprat. Gillnets and longlines are not as commonly used in the offshore fishery anymore, however, fixed gears are still used in the coastal fishery. Also trapnets play an important role regionally (especially in salmonid fishing, STECF 2011).

Aquaculture is indirectly linked to fisheries and not a large sector in the Baltic Sea today. However, as a part of the new CFP, a renewed focus on this sector has given many stakeholders high hopes to increase aquaculture also within the region. Such a development may be highly questionable from an environmental point of view, most importantly since the sea is already highly eutrophic but also due to the increasing threat of alien species which presently includes a substantial proportion of the Baltic species assembly and this whole sector is something that the MSFD implementation must take into account.

ICES has together with Joint Research Centre (JRC) been requested by the Commission to develop indicators for Descriptor 3. Several working groups have been created and ICES has produced a report providing guidance for the implementation of Descriptor 3 (commercially exploited fish and shellfish) which is available on the ICES website (http://www.ices.dk/news-and-events/themes/Pages/MSFD%20Documents.aspx). They have also provided the background information to the Commission guidance paper on good environmental status (GES) of marine waters (2010/477/EU). In this paper some *primary indicators* are given which should be used for fish stocks for which scientific knowledge of e.g. Fishing mortality (F) and Spawning Stock Biomass (SSB) are known. For those stocks for which such analytical assessments are not available a set of *secondary indicators* is presented. See table 5 for the specific indicators.

ICES have continued the discussion on both operational and concept indicators of GES and development and test of new assessment methodologies are currently being conducted. Besides further development of secondary indicators, ICES are also reviewing existing indicators, and developing new and integrated CFP and MSFD indicators. They are also looking into a selection of environmental indicators to facilitate setting of targets as well as the evaluation of these targets (Germany is the only MS at present to have presented environmental indicators that relate to fisheries, see more below).

In many ways ICES has responded to the new challenge of meeting the requests related to the MSFD, and especially to EU criteria 3.1 and 3.2 they have acted in a responsible and constructive way. For example might SSBmsy values for several stocks, for which such information currently is lacking, currently be on its way. Also alternative methodologies to calculate Fmsy and SSBmsy values is currently being discussed which might further improve the assessments of commercial stocks (e.g. method suggested by Froese & Sampang [2013] were discussed in the ICES "Workshop to draft recommendations for the assessment of Descriptor D3 [WKD3R]", held in Copenhagen January 2014, ICES 2014). The ICES work related to criteria 3.3., that illustrates GES on the basis of size and age structure, is only in an initial state and it is crucial that MS try to sped up this work since such information is not only needed to meet the ambition of this directive, but also to meet

challenges in the parallel processes of e.g. developing multi-species management plan for the Baltic Sea and provide basic information for implementation of the impending discard ban in commercial fisheries (will be fully implemented in the Baltic Sea region in 2015). Another problem is that not all countries are equally active/have the same capacity in the ICES work. For example, in the workshop mentioned above there was no representation from Latvia, Lithuania or Estonia.

ICES are providing different monitoring methods and assessments of Baltic stocks themselves but they are also dependent on information provided by MS. Additionally, most Baltic MS has developed monitoring programmes (using mainly multi-mesh gillnets) and have rigid data on coastal species, such as perch, pike, pikeperch and cyprinids and there is also regional cooperation developed under the HELCOM Fish-Pro II project (http://helcom.fi/helcom-at-work/projects/fish-pro). Coastal species are relevant for other descriptors (D1 – Biodiversity and D4 – Food webs) but also for D3, since many of these species are regionally commercially exploited and there is an acknowledged need to manage such stocks.

Table 5. Indicators for Descriptor 3 Commercially exploited fish and shellfish. Only national indicators that match EU criteria are listed. The colouration of the cells illustrate qualitative grading of indicators and targets, accordingly (categorization for different grades, see below):

-2	-1	0	+1	+2

Indicators denoted with no coloured cells are deemed to better fit under other descriptors and not included in the qualitative evaluation.

EU criteria	EE	LV	LT	PL x	DE x	DK	SE	FI
3.1. Level of pressure of the fishing activity								
Primary indicator - Fish mortality (F) (3.1.1).	Sprat ,herring (species missing) *X*	Herring (C & GoR) salmon, cod (flounder is missing) *GES*	Herring, sprat, cod (salmon missing) *X*	All commercial species *Interim*	All commercial species *Interim*	All commercial species *GES*	All commercial species *GES*	All commercial species cod (E, F=0.46) *GES*
	CPUE alien species *X*			Trends in F for all commercial species (salmon missing)				% of fish managed according to MSY *GES*
Secondary indicator - Catch/biomass ratio (3.1.2).		Smelt (missing species) GES			Both landing data *(Interim)* & surveys		Data poor commercial species *GES*	Zander, whitefish & perch *GES*
3.2. Reproductive capacity of the stock								
Primary indicator - Spawning stock biomass (SSB) (3.2.1)		Herring (C & GoR), sprat, cod (E), flounder, salmon, *GES*		Herring (C & W), sprat cod (E & W) (salmon & plaice missing) (trends)	All commercial species (species specific & for the whole commercial fish assembly)	All commercial species *GES*	All commercial species *GES*	Herring (BB) sprat *GES*
								Salmon PSPC in Tornionjoki & Simojoki *GES*
								Salmon PSPC in other rivers
Secondary indicator - Biomass indices (3.2.2)	Natural smolt production in salmon rivers				All commercial species (species specific & for the commercial fish assembly)		*GES*	
3.3. Population age and size distribution								
Primary indicators - Proportion of fish larger than the mean size of first maturation (3.3.1)	Perch *(missing species) X*		All commercial stocks *X*		see below *Interim*		Offshore species *UD*	Zander, whitefish and perch. *X*
- Mean maximum length					see below		Coastal	Zander,

across all species found in research vessel surveys (3.3.2)					*Interim*		species *UD*	whitefish and perch. (related to 3.3.1-3) *X*
- 95 % percentile of the fish length distribution observed in research vessel surveys (3.3.3)	All commercial species & perch (trends) *Interim*		All commercial species (trends) *X*	All commercial species (trends) *X*	All commercial species (related to 3.3.1-3 & 3.3.4) *Interim*		*UD*	
Secondary indicator - Size at first sexual maturation… (3.3.4).	Perch *(missing species)*				see above *Interim*		*UD*	
∑ indic.	**6**	**3**	**3**	**5 ***	**8 *†**	**3 †**	**6 †**	**9**
N grade Qual	**-0.75**	**-1.25**	**-1.375**	**-1.222**	**0.786[1)]**	**-1.111[2)]**	**-0.3[3)]**	**0.09**

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; **X** not reported to EU; † indicator not matching EU criteria included * Indicators not reported to EU are included. *UD* indicator under development.

[1)] for Germany, indicators not matching the EU criteria are also included, namely: "Area in which benthic communities are not affected by fishing gear"; "Spatial distribution of fishing activities; "Discard rate of target and non -target species"; and, "Diversity of survey-relevant species". Neither of them are included in the grading since they are not reported to EC.

[2)] Denmark also includes one indicator not matching the EU criteria, namely: "The commercialization of all fish and seafood species are sustainable" (grade: 0).

[3)] Sweden also include two indicators under criterion 3.1, also listed as indicators under criterion 1.6.1 (Condition of the typical species and communities), namely: "Size Structure of fish community in Coastal Waters" and "Proportion of large individuals in the fishing community in offshore waters" (both graded as +1).

Comparison of GES by different Baltic MS

GES on descriptor level

All countries have given some kind of definition on GES on a descriptor level. These definitions are in most cases copies or different versions of the way the Commission has phrased it themselves:

"Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock."

Germany has refined the GES description of the directive by defining fishing at safe biological limits accordingly "for all commercial exploited fish and shell fish species of the Baltic Sea the fishing mortality is smaller than the respective target value (Fmsy), the Spawning Stock Biomass (SSB) is higher than the Bmsy-trigger and the stocks of the exploited species have a age and size structure which contains all age and size classes close to the natural population".

Denmark however, has chosen a more general definition compared to the EU definition, and in the criteria made but also added a general ambition to have sustainable commercialization of marine products.

GES on criteria and indicator levels

Five of the member states have defined GES for EU criteria 3.1.and 3.2, namely: EE, LV, DE, SE and FI the latter three of these countries have also defined GES for EU criterion 3.3. On a criteria level Finland has also included MSY concerns and furthermore added some concerns of that need of migratory fish to have habitat to reproduce, the need for stocks to be sustainable without need of stocking activities and the fishing mortality of juvenile fish is as low as possible plus the need for a selective fishing. Noteworthy is that the definitions by Estonia on a criteria level are extremely vague and obscure and actually it is hard to see if whether they are at all relevant or not.

Germany are the MS that has been most ambitious when it comes to define GES on indicator levels (all except for 3.3.1 and 3.3.4, which they also are committed to develop GES definitions for when

further information is derived); Sweden have developed GES indicator definitions for all criterion except those under 3.3 (however a some indicators under 3.1 might also be relevant for 3.3, se discussion below); Estonia has partly developed GES definitions on an indicator level, however with a poor species selection. Lithuania is the only country that has reported GES definitions on an indicator level but not on a criteria level and targets set for these indicators reveal a obvious lack of ambition since in several cases GES are defined as *status quo* or at the best as increasing trends – which is not acceptable. On the contrary, Finland has not defined any GES definitions on an indicator level but only at criteria level.

EU Criteria 3.1. Level of pressure of the fishing activity criteria

In relation to 3.1 all MS that have reported to EC (except Denmark) have set GES in relation to that fishing mortality (F) should not be above Fmsy (judging from the Latvian threshold F values for commercial stocks it is actually below current ICES recommendations on Fmsy which is also corresponding to the revised Common Fishery Policy (CFP). There is a practical challenge to implement this principle to all stocks since they are depended on each other so that fishing pressure on one stock will influence the size development of interlinked species (easiest illustrated in e.g. a predator-prey relationship). Accordingly it is difficult, if not even possible, to manage all commercial stocks at SSBmsy levels simultaneously. It is however possible to manage them *at above SSBmsy levels*, which ought to be the target and is in line with international agreements (Johannesburg Summit 2002 and in line with the United Nations Fish Stocks Agreement, UNFSA). This would increase the likelihood that important biological and ecological functions of certain key species are maintained. For example are such considerations needed when setting F-levels for the Baltic cod populations which have a central role in the Baltic ecosystem, an issue that sadly has been neglected when ICES has suggested Fmsy for the Eastern cod when given their multi species advice for the Baltic Sea (ICES 2013).

At this stage in the MSFD work, we think that the Fmsy ambition is at an acceptable level, as can be seen in our qualitative grading of the indicators, but we strongly urge the Baltic MS to show higher ambitions in the future. Especially if targets should denote GES ambitions it is central that F values are set with the ambition to achieve SSB levels clearly above MSY. This would not only secure the state of the stocks but additionally provide larger catches with less effort (Crilly & Esteban 2012). Most countries have listed F values according to Fmsy for all commercial species with the exception for Lithuania (not salmon, +1), Poland (not salmon, +1) and Latvia (not cod, +1). Although Estonia has only chosen to set F targets for sprat and herring and have they are still graded +2 since other commercial species play a minor role in the fishery. The Estonians have included an indicator about catches of alien fish species in Estonian waters, which seems somewhat irrelevant and we have chosen not to include this indicator in the overall D3 grading of Estonia, since it might be somewhat misplaced. Yet, since the indicator is relevant for Descriptor 2 (Non-indigenous species) this information might also be used for D3 for synergistic effects. Finland is not receiving the highest grade (+2) for the F indicator since they have set target value for eastern cod at 0.46, which is not very ambitious and not in line with the current management plan for the eastern cod population (the ICES single species advice of F=0.46 is highly questionable and is currently being challenged by e.g. Swedish researchers, Michele Casini, Swedish University of Agricultural Sciences, pers comm. 2013).

For the secondary indicator ("Catch and biomass ratio"), Latvia, Germany, Sweden and Finland have developed indicators so far. Latvia are graded low (-1) since they only include one species (smelt); Sweden has neither defined methodology or threshold values (graded 0); Finland have are ambitious considering coastal species but have not included off-shore species (therefore only graded +1); Germany has developed both species specific indicators and indicators for the whole fish community although targets are still missing (graded +1).

Sweden has also listed two indicators under this criterion on size distributions of fish as a consequence of fishing which we commend but believe are more relevant to list under criteria 3.3, see discussion below.

EU Criteria 3.2. Reproductive capacity of the stock

For this criteria, Estonia, Lithuania and Poland have proven to have low ambitions; Lithuania has not managed to develop a single indicator under this criteria and Poland has only set target values as trends and has not included some important species. Setting targets as trends is by us deemed as not being ambitious, since they reveal very little information about the long-term goal of GES for the marine environment. Estonia has only developed one *secondary* indicator relating to natural production of smolt in salmon rivers to secure salmon populations. The indicator is graded with +1 since we believe that it should be better defined in relation Post Smolt Production Capacity (PSPC) for Estonians salmon rivers.

Germany is the far most ambitious MS (having both species specific indicators and indicators for the whole fish community, graded +2), followed by Sweden (have not defined neither methodology nor threshold values for 3.2.2, thereby graded 0); Finland (although not having SSB target for cod, or developed any indicator under 3.2.2) for these criteria. Denmark however, has included all commercial species but has chosen not to set biomass targets according to SSBmsy but to SSBpa (or actually to Bpa, precautionary approach) and is therefore not rewarded with the highest grade. Setting target as Bpa is not in accordance with already agreed legislation of achieving SSBmsy for European stocks by 2020 (i.e. CFP). Even though it has been recommended to use Bpa by e.g. the Commission, this should be deemed as an unambitious level and the argument that there is a lack of information to reach Bmsy levels is not valid. Other countries around the world (such as Australia, New Zealand and the United States) apply fisheries management based on MSY and have developed proxies to MSY which are much more suitable to sustainable fisheries management than the so called "precautionary" approach as defined by ICES, which is, in fact, is not precautionary. SSBmsy is set not only to secure population but to maximize catches, for which it often demands higher biomass levels. However, at this stage Bpa and Bmsy and their equivalents (SSBpa and SSBmsy) are for many Baltic stocks set at similar levels. As illustrated by Froese, R. and A. Sampang (2013) a proxy for SSB_{msy} is often of considerable larger magnitudes than SSB_{pa}; often twice the size. However, in most cases for the Baltic stocks neither SSBpa nor SSBmsy have been developed yet, and therefore the discussion might appear to be only academic. Yet, it is important that MS choose SSBmsy to push for the urgent development of Bmsy trigger for harvesting Baltic fish according to the MSY principle, or above as we strongly urge for, and in accordance to the revised CFP. Latvia has also used the Bpa concept but has only set it for one single spawning-stock biomass (SSB) target (i.e. herring in Gulf of Riga) and is graded with 0. Germany also refers to Bpa in cases when Fmsy trigger does not exist, however, clearly states that Bmsy thresholds should be used for those stocks managed according to the MSY-principle.

Finland has developed two different indicators for PSPC of salmon rivers. One indicator is for the salmon rivers, Tornionjoki and Simojoki, and for those the target is set at 80 % of PSPC, which is in line with the HELCOM recommendations. However, other targets are set for other salmon rivers in the second indicator (50% or 75%, depending on categorization of salmon river) which we strongly criticize. Since the ecological status and capacity to produce smolt in a river is already included when setting PSPC values, such considerations should not be taken again, as in the Finnish case. The second indicator is therefore graded as -1.

EU Criteria 3.3. Population age and size distribution

Changes in age and size distribution among Baltic fish species are perhaps one of the most illustrative ways of detecting the actual state of the fish stocks, and should not be neglected as it

seems to be by several MS. During the last decades the condition (length-weight relationship) of sprat and herring have changed considerably, mainly due to increased competition for food but especially since sprat has become more abundant during periods of low cod abundance (Österblom et al. 2007). Recently, the individuals of the eastern Baltic cod population have been found to be meagre, especially larger individuals seems to be in bad condition (MIR 2013). A mismatch in spatial overlap between cod and sprat has primarily been considered as a major reason for this. However, new information indicates that the occurrence of sprat is may be high enough in areas where cod are most abundant (i.e. southern Baltic Sea) and that there are other additional factors behind the poor body condition of eastern cod. These factors might be related the spread of deoxygenated bottoms (as a result of eutrophication) which result in decreasing abundance of benthic prey for cod (e.g. benthic invertebrates) in combination with limited benthic areas for cod to dwell in due to low oxygen levels (Stefan Neuenfeldt, National Institute of Aquatic Resources, Technical University of Denmark, pers. comm. 2014)."

Even if the reasons for changes in age of size distribution are not fully understood, as in the eastern cod example described above, it is evident that it is very important to monitor these parameters. However, it is clear that most Baltic MS have shown to be incapable in handling this criterion. Germany may be an exception and has developed the broadest set of indicators, although specifics targets have not been determined yet. Both Lithuania and Poland have chosen some indicators for which data are gathered from surveys with research vessels and therefore it is strange that they have chosen not to develop indicators to other survey-related criteria since they already plan to collect the material. Again, targets set as trends are given a lower grade on the scale we applied. The Finnish seem to have chosen a proper selection of fish species to describe age and size development of coastal species but offshore species are totally missing. This is regrettable since the conditions of both herring and sprat have shown disturbing trends during the last decade.

Estonia is only studying trends in perch. Overall it is worrying that no other species besides perch, have been listed by any MS which will be used to monitor genetic effects of exploitation (that is, e.g. changes of mean size and age of first reproduction due to intense fishing), although several MS gave developed monitoring programmes in which information on this for other species should be able to be retrieved (3.3.4). Germany has not listed the specific choice of species that will be included (therefore both countries are graded 0). We strongly recommend cod as a monitoring species since the scientifically proven decreasing size (and condition) at maturity of this main predatory fish might both be due historical overfishing but also reflect other aspects of bad harvesting pattern; that is, selection and overexploitation of too small individuals. Since cod is a main fish in large parts of the Baltic Sea, it should be a joint responsibility.

Latvia, Sweden and Denmark have not developed any indicators at all under criteria 3.3. Denmark and Sweden have not developed any indicators on basis that the overall scientific knowledge available to describe GES for age and size distributions of Baltic commercial fish stocks is not yet available. We considered this too reveal low ambition levels and stress that there are several other examples were indicators are developed for which neither threshold values nor exact methodologies are set. Furthermore, both countries conduct scientific surveys of both coastal and off-shore fish populations and in many cases basic data on the current state on size and age distributions already exist even though threshold targets for GES are not defined. Nevertheless, we would like to acknowledge that Sweden has developed indicators under EU criterion 3.1 that relate to criterion 3.3 as well, namely: "Size Structure of fish community in Coastal Waters" and "Proportion of large individuals in the fishing community in offshore waters" (both graded as +1), although we find it strange that they have not listed these indicators under 3.3. Instead, Sweden has listed indicators for 3.3.1, 3.3.3, and 3.3.4 that potentially can be developed.

As mentioned earlier, ICES has not started to asses any Baltic stock yet, on basis of age and size

structure of populations. To make it possible to reach GES for Baltic fish stocks, and to develop true sustainable fisheries management, such considerations must be taken into account in the future. In particular because the problem with a non-balanced size structure of the Baltic cod, sprat and herring stocks such information is highly needed. It is therefore the responsibilities of both Baltic MS and the Commission to push for such a development, and to prove their commitment to develop relevant indicators!

Additional remarks and NGO comments of each MS ambition for Descriptor 3.

It is obvious that the different MS has taken the challenge of developing indicators and targets for D3 very differently. They also have had very different approaches and therefore comparisons have been difficult to make. Even though the grading exercise in Table 2 might be a little blunt it has definitively indicated large differences among the countries. However, it is evident that there is a still a lot to improve even for those countries that performed the best (Germany and partly Finland), especially when it comes to setting ambitious threshold values.

However, it is clear that Germany, Sweden and Finland have understood (or accepted) the ratio behind the directive in an clearer way than the other MS: more references to other directives, i.e. the Water Framework Directive (WFD) and the Habitat Directive (HD) in their Initial Assessment and background documents, where also GES is discussed more in comparison to the other MS, see also special section below on GES. Some specific comments on the MS are:

Estonia:
Estonia has not proven to be very ambitious in relation to this descriptor, although according to national NGOs the knowledge is already there. It is also recommended by the *Estonian Green Movement* (EGM) to, beside salmon and perch, also include sea trout in the national monitoring programme. They also recommend that counting ascending salmons in salmon rivers should be complemented with targets of Potential Smolt Production Capacity (PSPC) for the Estonian salmon rivers (80% of PSPC is recommended by HELCOM). Furthermore they believe that to include more functional groups, also monitoring of pike and pikeperch should be included in the size and age criteria. Since Estonian waters are important wintering areas for water fowl and therefore EGM also suggests that the HELCOM core indicator "Number of drowned mammals and water birds in fishing gear" should be included as an environmental D3 indicator.

Latvia:
Latvia has in when it comes to defining GES on criteria level proved some ambition and judging from the Latvian threshold F values for some commercial stocks in relation to 3.1.1, it is actually below current ICES recommendations on Fmsy. However, besides this criterion the ambition level is deemed to be poor. There are however species missing. As noted by both *Friends of the Earth Latvia* and *Baltic Environmental Forum* major challenges are lack of data and monitoring. However, for this descriptor much data is provided by ICES and therefore there should be enough information to describe GES, develop indicators and targets, even in Latvia. Latvia hosts the largest numbers of wild salmon rivers of all Baltic MS, and with salmon stocks in bad shape, the ambition level for this species should be much higher to be acceptable.

Lithuania:
Lithuanian ambition is deemed to be poor and it is clear that implementing this directive is a big challenge for them; no indicators at all developed on SSB and recruitment and therefore they are graded low on these aspects. As pointed out by *Lithuanian Fund for Nature*, salmon is not included at all in Lithuanian indicators. As for Latvia, ICES data and proposals could be more utilized by the administration.

Poland:
Poland has been very late in the reporting and still have not reported, which might serve as a proxy for the willingness to participate in the implementation of this directive. It is also very difficult to evaluate the ambition level of the Polish work, since most targets are set as trends and are only vaguely described. As noted in the Polish IA, it is clear that F of western Baltic cod has to be decreased (suggested level 0,25), however it is not supported by the Polish authorities according to targets set. Also, due to the documented high degree of misreporting salmon as sea trout (ICES WGBAST, 2012) which is unregulated in Poland, it is important to include fishing restrictions on sea trout in the Polish management.

Germany:
If any country should be set as a role model for this descriptor, it should be Germany. One problem though is that they have chosen a parallel procedure when developing indicators, which is commendable for being more environmentally inclusive but also makes it difficult to compare with other MS. However, it is clear that in many aspects Germany is the most ambitious country of all, with well thought out and most numbers of indicators. Importantly, Germany has also included indicators that reveal direct ecosystem effects (on non-target species and benthic communities), that are also relevant for D3. Two of them relate to marine spatial planning and effects by fishing activities on sea floor and benthic habitat. These are:

1. Area in which benthic communities are not affected by fishing gear (bottom trawling); and,
2. Spatial distribution of fishing activities.

Two other indicators are developed which are related to Biodiversity, EU legislation on discard ban and loosely to the EU criteria 3.3 (population age and size distribution). These are:
Discard rate of target and non -target species (It is however regrettably that Germany has does not use the term bycatch instead of discard. If actually is meant, the target must be set as zero considering the implementation of the discard ban); and,

- Diversity of survey-relevant species.

However, targets are not set for these indicators yet, which is also the case for several indicators under criteria 3.3.

Denmark:
Overall one might wonder if not the Danish work on Descriptor 3 has been too hasty. It is very difficult to assess the actual ambition level, since targets and indicators not always are clearly connected; also the indicators are phrased in a very general way. As noted by the *Danish Society for Nature Conservation* (DSNC) the selection of fish species in the IA represent a too flimsy basis to give a picture of the situation. Besides the two indicators discussed above, Denmark has also developed an indicator to secure that "the commercialization of all fish and seafood species are sustainable". Even if such an ambition is commendable it is very difficult to evaluate how this actually is going to contribute to the marine environment, since it is very widely phrased and no specific targets are set. Furthermore, the DSNS notes that relevant indicators to estimate the overall impact of fishing - both the targeted and non- targeted - on stocks and the ecosystem as a whole has to be developed to fulfil the intention of the MSFD. They also criticize Denmark for not including any indicators on age and size distributions.

DSNC is also critical to the usage of Bpa instead of Bmsy and strongly urge that stocks are managed at levels above SSBmsy. Furthermore, they think that, the choice of indicators for environmental goals, which is calculated spawning stock biomasses for cod, herring, sandeel (*Ammodytes tobiatus*/ *Hyperoplus lanceolatus*) and plaice, are too limited and can be misleading especially for short-lived species. They also critique Denmark for not having any indicators at all under criterion 3.3. (Population age and size distribution). They claim that there is no excuse that information is not available but it must be made on the best available knowledge level and

continuous improvements as sufficient data are collected.

Sweden
The Swedish work on this descriptor has been uncharacteristically low ambitious. This might be due to that the responsible agency in Sweden at the time for reporting on indicators and targets were subjected to a major reorganization. This can also be exemplified in the consultation, when e.g. environmental NGOs only had one opportunity to and large parts of the documents were not ready to be evaluated at that point in time. Sweden has in total only developed six indicators and it is still very difficult to evaluate the ambition of Sweden since so few actual targets have been reported. There are also a number of indicators that are defined as "to be potentially developed" and not all of them are reported to the Commission. These are "Index of ratio of harbour porpoise caught as bycatch in relation to fishing effort" that relate to 3.1 (Fishing mortality); and three indicators related to 3.3.1, 3.3.2 and 3.3.4, respectively (see Table 5 for definitions of these sub-criteria). It is highly regrettable that Sweden has not shown to be more committed to meet EU criteria 3.3, other than discuss these "to be potentially developed" criteria – even if prerequisites in forms of scientific knowledge are not completely available, the inclusion of such indicators would prove the willingness to achieve such information.

As noted by the *Swedish Society for Nature Conservation* (SSNC), the decision of always describing threshold values as GES, and never interim, might prove to be counterproductive since many changes in nature takes a considerable amount of time. They stress that solving some problems, such as: distribution and abundance of harbour porpoise; marine littering; chlorophyll ratio; levels of dioxin in fish, will take considerably more time than one implementation cycle of the directive. They also believe that among the proposed indicators, a by-catch index catches of harbour porpoises is good but could be even better if it also includes the monitoring of by-catch of seabirds and seals which should be possible to assess if camera surveillance (CCTV) is used. For identification of the different species specific software for cameras are available. The indicator is particularly important because current reporting is unsatisfactory.

WWF in Sweden stress that aspects of an ecosystem approach in the BS fisheries should be clearer; that is to further include indicators assessing fish community composition, distribution of species, occurrences of threatened and/or unique species of stocks (populations) in relation to a reference situation. Furthermore, they believe that the management ambitions should be beyond MSY and also include effects on associated species; different gears and fishing techniques should be ranked after their environmental effects and effects on bottom habitats due to fishing activities ned to be better defined.

Finland
Finland has chosen a rather coastal oriented path judging from their selection of species. Ambition is often quite high although some more challenging indicators might have been developed. However, in some cases the indicator is set on a very ambitious level, and as noted by Finnish Association for Nature Conservation (FANC), it might be difficult to actually be able to assess fishing mortality for specific age groups of pikeperch, whitefish and perch since that requires profound knowledge on population status that today is missing. However, FANC thinks that it is important to develop also conservation targets to common species like pikeperch, perch and pike. As mentioned above, criticisms can be raised on how Finland is interpret the PSPC as they still want to have different categorizations of salmon river, although such considerations are already included in the PSPC concept.

On a criteria level Finland has also included MSY concerns and furthermore added some concerns of that need of migratory fish to have habitat to reproduce, the need for stocks to be sustainable without need of stocking activities and the fishing mortality of juvenile fish is as low as possible

plus the need for a selective fishing, accordingly: “
3.1 Fishing effort for any commercial species does not exceed the limit where MSY is achieved.
3.2 Natural reproduction capacity of fish-stocks is good and there are enough spawning females to secure normal reproduction of the stock. Supply of reproduction areas is adequate to secure diversity and survival of migratory fish so that stocks stand fisheries without rearing; and
3.3 There are no significant trends or changes in fish stock structure, which would be due to strong fishing pressure, which is aimed especially at small or little individuals, and which can reduce the production of populations. Fish can mostly spawn at least once before strong fishing pressure.”

Judging the different GES ambitions of MS only as indicated by the choice of indicators and targets, Germany and to some extent also Finland differentiate from the other MS in that they have higher ambitions of fulfilling the criteria listed by the Commission. These countries have developed the largest spread of indicators (although Finland lack indicators for 3.2.2, 3.3.3, and 3.3.4.) and even though the targets are not always developed the selection of indicators reveals that they have the ambition to fulfil the objectives indicated by the EU criteria.

Since there still are so many targets that are not decided it is not possible to definitely say whether one or more countries exceeds in ambition. For many targets information are still needed from ICES, for example of SSBmsy levels for several stocks, although Bmsy-triggers often already exist. However, since the responsibility to secure the added effects of the MSFD is on the MS, it is important that they develop indicators according to all criteria also to push for ICES to acquire or refine the knowledge needed for targets to be set. The approach by Germany (and to some extent also by Sweden) to include also other aspects of commercial fishing (on habitat and associated species) is commendable and should be set as an example also for the other MS. Finland has also showed similar tendencies as they are stressing the need to protect habitat for diadromous fish. The Finnish should have credit for this although it is a pity that they not show higher ambitions in PSPC (we call 80 % of PSPC in all salmon rivers, see earlier discussion).

Denmarks’ ambition level in relation to this descriptor cannot be described otherwise than as a big disappointment. Considering the scientific resources in the country (DTU Aqua, ICES HQ etc.) it is stunning that they only has developed three indicators in total, of which one (…commercialization of sustainable fisheries…) is described in such an general way so it becomes more or less impossible to evaluate. The same is valid for Poland who also holds advance research capacity within the country (for example the expertise in the National Marine Fisheries Research Institute, MIR.); and has in many cases chosen targets set as trends which makes it very difficult to assess any potential changes in their maritime work. Estonia and Latvia show some willingness to fulfil the directive many criteria are not covered at all and the species selection fro other criteria are deemed to be too thin to actually being reliable to assess the status of the environment. Lithuania shows the least ability and ambition to implement the directive, which is highly regrettable. It is to some extent understandable that the ambition level is not at the same level as for the more wealthy MS (e.g. Germany and Sweden). However, since ICES actually can be of help in many aspects (guidance, help with monitoring and analyses) this explanation is not really justified for the work of this descriptor.

Some countries have set all their targets as GES, namely Sweden, Finland (most indicators) and Denmark (at least for the two indicators matching the EU criteria). This might seem admirable but at the same time it can be criticized for not being realistic since some changes in nature take longer time than seven years (GES should be 2020 and targets were reported 2013). Germany has several indicators as interim targets for achieving GES, although information on target status in relation to GES is not always given. Poland (although not reported), Estonia, Latvia and Lithuania have with a few exceptions not indicated the target status in relation to GES at all, which makes it impossible to evaluate how these countries relate targets to their GES ambitions. Furthermore, even though most

countries have continuously running monitoring programmes on coastal fishes several MS (Denmark, Latvia, Lithuania) have chosen not to include, or only marginally include, this information to describe GES, which is not acceptable.

To conclude, the ambition level in achieving GES is deemed as highest for Germany. Finland has partly showed being ambitious although there are still species to be included and targets to be developed. Sweden has partly showed ambition (3.1 and 3.2) but performed poorly in relation to EU criteria 3.3. Denmark reveals a large inconsistency between ambition level on a descriptor level and what is indicated by their selection of indicators and targets. Latvia, Estonia and Poland show some ambitions, although too many targets are set as trends and in the Estonian case the species selection is far too narrow and GES definitions on criteria levels are clearly substandard. Lithuania needs extra considerations as their ambition levels, both in view of GES definitions and set targets of indicators which are deemed to be unacceptable.

Proposals

First of all, it must be stated that the fact that information is missing so that indicators cannot be developed is a poor excuse, especially for Descriptor 3 for which ICES has so good possibilities to provide material and function as a discussion partner to develop suitable indicators and targets levels, also on national levels. Furthermore, decisions are always based on the best available knowledge and if this knowledge is found to be of substandard quality, it is the responsibility of the MS to adjust this and not to dodge the problem by not developing any indicator at all, which has often been the case especially under the EU criterion 3.3. which relate to population age and size distribution of fish. Basic information to fulfil the obligations under EU criterion 3.3 needs to be gathered and analysed so that the quality aspects of multi-annual plans (MAPs) for the European stocks in accordance with the revised CFP (2013) can be met. Furthermore, there is still a need to improve the stock specific information on data poor species and as suggested by ICES (2014) and alternative methods need to be tested (e.g. the methods developed by Froese & Sampang, 2013).

As clearly stated by the Commission, the MSFD should be in line with other directives and legislation and furthermore have added effects in our mutual efforts to improve the marine environment. HELCOM has had a main responsibility to coordinate the development and implementation of the directive among the Baltic States. Therefore it is alarming that targets set in the HELCOM Baltic Sea Action Plan (2007) are not covered in the EU criteria. Most importantly an EU criterion for spatial distribution of fish within the sea should be included; it should include references to the HELCOM target that especially cod should be found within its natural geographical distribution; since other factors, such as eutrophication of the sea and degree of oxygenated benthic areas probably also affect the potential for spatial distribution of cod, this illustrate the complexity of the system and the need to have overarching approach in the work of the directive. Also, the socio-economic importance of coastal species is highlighted in the BSAP and as suggested by ICES (2014), there would also be important to include indicators for species that are managed on a national/regional level. International cooperation for monitoring of coastal fishes is already practised to meet the challenges of BSAP and the MSFD, e.g. the HELCOM Fish-Pro II project (http://helcom.fi/helcom-at-work/projects/fish-pro) and this effort is not only relevant for the descriptors D1 and D4, but also for D3 since these species also often are of at least local commercial importance.

Germany and to some extent Sweden have included indicators that both reflect the fishery induced effects on target species, non-target species (bycatch), and habitat. Such considerations are also taken in descriptors D1 (biodiversity), D4 (food webs) and D6 (sea floor integrity) but it creates synergistic values to also include the same indicators for D3. Especially when they are clearly linked to the human behaviour in commercial fishery; e.g. spatial estimates of impact on habitat due

to fishing activities; indirect impact on non-targets species due to their ecological association with target species; and/or, direct impact on target species being caught as bycatch. HELCOM has a developed a core indicator on "Number of drowned mammals and water birds in fishing gear" which should be used by all MS, especially in the south where the degree of wintering waterfowl caught in gillnets is significant.

An additional factor on both undersized individuals of target species and of unwanted species is the so called unaccounted discard, which is the mortality of these individuals during the fishing event, although they are not landed on the boat. This mortality might be considerable, especially in the demersal trawling fishery, at occasions of the same magnitude as the assessed discard during the last years (ICES 2013, Surronen et al. 2005), for which now there is a ban for (2013/889/EU) and efforts must be made to reduce this unaccounted discarding.

As earlier described, the Baltic fishery has today shifted towards larger fishing vessels, mostly trawls. An ambitious indicator, which we promote, is to consider different ecological impacts of different fishing techniques and allocate fishing resources to those techniques that have the least negative impact on the Baltic environment. A proper assessment via Environmental Impacts Assessments (IAs) of different gears and techniques has to be made.

Commercial fishing on coastal fish species can at least regionally be substantial and indicators for coastal species are in some cases (e.g. Finland, Sweden, Germany) included under Food webs and/or Biodiversity, Descriptors 1 and 4. Since many coastal species also are of commercial importance in the Baltic region, these should also be listed under Descriptor 3.

Finally, we strongly believe that fisheries management must be more integrated with the planning and management of other sectors sharing aquatic space and resources. One impending example is the current development of aquaculture within the sea. The discharge of nutrients from the aquaculture sector must be included in MS reports of total levels of nutrient discharge (relevant to D5). Furthermore it is important that additional nutrients discharges are minimized. We therefore suggest that this is covered on an indicator level with targets that all fish used as fodder in the Baltic Sea Region should have been caught within the region. There should also be indicators developed to show the improvement of the ratio of wild caught fish/fish food from other sources (e.g. vegetable sources, yeast etc).

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Descriptor 5: Eutrophication in the Baltic Sea

Eutrophication is when nutrients from land-based activities increase amount of phytoplankton alga blooming and as a consequence reduce dissolved oxygen in the water body. It is a serious problem in the entire Baltic Sea. The two nutrients mostly affecting Baltic Sea are phosphorus and nitrogen. According to WWF ca 80% of nutrients come from land-based activities which consist of sewage, industrial and municipal waste and agricultural run-off.

The Baltic Sea eutrophication is mainly caused by major usage of fertilizers in the surrounding countries during the last century. Annual total nutrient load to Baltic Sea is 600 000 tons of nitrogen and 30 000 tons of phosphorus. The biggest loader is Poland with 30% share of the total load. Approximately a quarter of the total nitrogen load comes as atmospheric deposition, from shipping and road traffic, agriculture and energy production.

There are several reasons why the Baltic Sea is sensitive for eutrophication; it is a semi-closed brackish water area, seawater changes through narrow Danish Straits and Sound which can make water turnover last 30 years and vertical salinity stratification of water masses prevents vertical mixing of the water. **[1]**

Eutrophication causes the death of marine organism and plants; it affects the entire food chain. When dissolved oxygen is reduced, many plants die and then organisms that rely on this nutrition have less nutritional sources. Human are part of food chain therefore oxygen depletion also affects the sea food available for us. In the Baltic Sea eutrophication can be seen as increase in phytoplankton primary production, growth of short-lived macro-algae, turbidity in the water which decrease light penetration, reduce colonization depth of macro-algae and seagrasses (e.g. bladder wrack), changes in dominance of various species groups, increase sedimentation of organic matter to seabed, hypoxia and loss in benthic animals and fish.

In their latest report, HELCOM assessed the eutrophication status 2007-2011and concluded that almost the entire Baltic Sea was eutrophicated. Only the Bothnian Bay, coastal areas of Orther Bucht (DE), and the outer coastal Quark (FI) were the only areas assessed as being in good ecological status. For the open sea areas, the only difference between this assessment and the assessment for years 2001-2006 seems to be the status of the Swedish waters in the northern Kattegat which had good status in 2001-2006 and are now affected by eutrophication. **[2]**

Comparison of Member State ambitions related to Descriptor 5

MS alignment with EU criteria
In Commission decision on criteria and methodological standards on good environmental status of marine waters (2010/477/EU); is criteria and associated indicators set for all eleven descriptors. For Descriptor 5;Human induced Eutrophication is minimized, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency, there is three criteria and 8 associated indicators set.

Table 6. Indicators for Descriptor 5 Human induced eutrophication. Only national indicators that match EU criteria are listed. The coloration of the cells illustrates qualitative grading of indicators and targets, accordingly (categorization for different grades):

-2	-1	0	+1	+2

EU criteria and associated indicators	EE	LV	LT	PL	DE	DK	SE	FI
5.1. Nutrients levels								
— Nutrients concentration in the water column (5.1.1)	GES/Interim	GES	x	x	Interim	GES	GES	x
— Nutrient ratios (silica, nitrogen and phosphorus), where appropriate (5.1.2)								x
5.2. Direct effects of nutrient enrichment								
— Chlorophyll concentration in the water column (5.2.1)	GES	GES	x	x		GES	GES	x
— Water transparency related to increase in suspended algae, where relevant (5.2.2)	x	GES	x	x		GES	GES	x
— Abundance of opportunistic macro-algae (5.2.3)				x		GES		
— Species shift in floristic composition such as diatom to flagellate ratio, benthic to pelagic shifts, as well as bloom events of nuisance/toxic algal blooms (e.g. cyanobacteria) caused by human activities (5.2.4)	x			x/GES		GES		x
5.3. Indirect effects of nutrient enrichment								
— Abundance of perennial seaweeds and seagrasses (e.g. fucoids, eelgrass and Neptune grass) adversely impacted by decrease in water transparency (5.3.1)	x	x	x	x		GES	GES	x
— Dissolved oxygen, i.e. changes due to increased organic matter decomposition and size of the area concerned (5.3.2).				x		GES	GES	x
∑ indic.*	**11**	**7**	**10**	**11**	**5**	**9**	**8**	**17**
N grade Qual	**0.375**	**-0.375**	**-0.375**	**0.75**	**-1.5**	**1.12**	**0.125**	**0.375**

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; *also indicators outside EU criteria included

Qualitative assessment of chosen EU criteria

The assessment of ambition level is done separately for every EU criteria. Grading is done following; the indicator target is on appropriate level if it is set according to WFD, River Basin

Management plan, HELCOM limit values or national law.

5.1. Nutrients levels

In October 2013 in HELCOM Copenhagen Ministerial meeting was the latest Country Allocated Reduction Targets (CARTs) set for CCB priority indicators Total Nitrogen (Tot-N) and Total Phosphorus (Tot-P).
From the CARTs can be seen that nutrient levels between the Baltic Sea Member States is varying a lot. For example reduction target for Tot-P for Denmark is 38 tons, whereas for Lithuania it is 1470 tons.

Nutrient concentration in the water column, is probably one of the most important indicators for eutrophication in the Baltic Sea. This can be easily monitored quantitatively, and it has a direct link to the political goals for nutrient reductions (CARTs) for both nitrogen and phosphorus, that has been agreed by all Baltic Sea governments within HELCOM, including Russia, a non-EU country. CARTs are important directional targets, based on latest knowledge. From the member states Estonia, Lithuania, Poland, Denmark, Finland and Germany has Tot-N and Tot-P as indicators, but Latvia and Sweden do not. Notable is that Denmark has included total nitrogen, but not phosphorus; maybe phosphorus concentration is no longer that significant in Danish marine areas.

Estonia has been progressive and included Dissolved Nitrogen (DIN) and Phosphorus (DIP) as well, even though indicators are still under development. DIN and DIP are important indicators, as they determine the capacity of spring algal blooming. Nitrogen is considered to be the limiting factor causing the speedy sedimentation of plankton biomass. If the ratio of winter DIN/DIP is smaller than 16:1, then the danger of summer algal blooming is bigger due to excess phosphorus. Also Lithuania and Poland have included DIN and DIP.
Germany and Finland have not included dissolved nutrients, but many other indicators related to nutrients; e.g. atmospheric deposition.
Nutrient concentration grading is done differently; if Tot-N or Tot-P does not exist, but some other conc. indicator exist the grade is -1, and if both or one of those exist grade is +1 or +2, depending if target is GES/Interim or not.
Ambitions levels for nutrient concentration has been set quite high for most countries, but target values must be finalized for all Baltic countries.
For the second associated indicator: '*Nutrient ratio*' only Finland has a corresponding indicator; *The molar ratios of P and N*, but the indicator is still underdevelopment therefore the grade is 0.

5.2. Direct effects of nutrient enrichment

Chlorophyll-A concentration in the water column and Water transparency related to increase in suspended algae are primary indicators within this criterion that all member states cover. Estonian target for indicators Chlorophyll and for phytoplankton biomass is set on appropriate level and last of those have achieved Estonian GES in two bays along Gulf of Finland, however more frequent sampling on pelagic sea is needed in order to get reliable baseline data, therefore grade for Estonia is +1. The Secchi depth indicator gets +2, because indicator has achieved GES on five different areas along BS. Latvian targets for indicators Chlorophyll and for phytoplankton biomass as well as for Secchi depth are on coastal waters set according to WFD and counted as ambitious, and along sandy coast is Latvian GES achieved for phytoplankton biomass and Secchi depth. When it comes to offshore waters, targets are set close to the ambitious HELCOM targets, so therefore the grade is +2. Lithuanian target for both Chlorophyll-A concentration and Secchi depth are much higher than HELCOM targets, so apparently the grade is +2.
Polish target is for Chlorophyll- A is ambitious but just below HELCOM recommendations, but for Secchi measurements they have very ambitious targets, much higher than in HELCOM, which make the grade +2.
The ambition level of Denmark for both Chlorophyll concentration and Water transparency is high

(+2), while it is set according to WFD. For monitoring of water transparency they have chosen Secchi depth measurement as all the other member states.
Swedish target for Chlorophyll concentration in most of marine areas correspond to HELCOM target values and target for indicator phytoplankton biomass in coastal waters is according to law. As well the target for Secchi depth in coastal waters is set according to law, and from values set for offshore waters are close to HELCOM targets, therefore grade is +2 for both.

Finland has set targets for both Chlorophyll and Secchi depth based on the WFD and HELCOM threshold values, which is why both are graded as +2.

Chlorophyll concentration has been an important parameter used in the NEST model when calculating and deciding on the Nutrient Reduction Quotas within HELCOM, so all countries should include GES targets and monitoring for this indicator. Improvements are needed for Estonia. Latvia, Poland and in Finland which should set GES /Interim targets and Germany must include these primary indicators in their final strategy.
Water transparency (Secchi depth) has also been very important parameter used in the NEST model and being the only parameter with long time-series when calculating and deciding on the Nutrient Reduction Quotas, and should therefore also be included, which Baltic countries have done.

Other indicators within this criteria are *Abundance of opportunistic macro-algae (5.2.3) and Species shift in floristic composition such as diatom to flagellate ratio, benthic to pelagic shifts, as well as bloom events of nuisance/toxic algal blooms (e.g. cyanobacteria) caused by human activities (5.2.4)*.
The first one of these is covered by Poland and Denmark. Poland has set target for proportion of the biomass of long-lived species to the total biomass of macrophytes as > or = 0.80, which is above the 0.60 from 2010-2011, but it is hard to evaluate if it is ambitious while it is not known according to what it is set, why the grade is +1. Danish target for density of annual algae in open marine waters is corresponding to WFD targets on coastal areas.

Corresponding indicator for the last EU indicator within this criterion has been set by four member states. Estonia has three indicators; share of annual species in phyto benthos; depth distribution of phyto benthos and depth distribution of *Fucus Vesiculosus* and targets for them have already achieved GES, therefore grade is +2. Poland has two indicators corresponding to this indicator; taxonomic index of phytoplankton and multimetric index of macrozoobenthos. Grading is difficult while the first one does not have a target and the baseline for second one is not clear.
Danish indicators have a qualitative target; *No significant changes may occur in the plankton algae* composition in relation to the natural occurrence of species and groups of species as a result of the human-induced input of nutrients, and here again grading is difficult while the target for indicators is just a sentence phrased in a general way.
Finland has set following qualitative target; *Decrease in number of harmful algal blooms and concentration of harmful substances* for indicator *'The concentration, species composition and extent of cyanobacteria and dinoflagellate blooms*'. Both Denmark and Finland will receive -1 because trend is not counted as ambitious and the targets are not related to Helcom or WFD.

5.3. Indirect effects of nutrient enrichment
This EU criteria includes two associated indicators; *Abundance of perennial seaweeds and sea grasses (e.g. fucoids, eelgrass and Neptune grass) adversely impacted by decrease in water transparency (5.3.1) and Dissolved oxygen, i.e. changes due to increased organic matter decomposition and size of the area concerned (5.3.2)*. Almost all member states have indicator for this criteria. For the first indicator have only Estonia, Denmark, Sweden and Finland set targets, and Estonian target has even achieved GES. The reason why half of the MS have not set target is unclear. The Danish Society for Nature Conservation (DN) states that for the multi-annual macro-

algae and seagrass, the indicators should be complemented with eelgrass distribution and density. Latvia and Sweden have included Benthic Quality Index, which is also giving long-term data on oxygen status.
The last indicator is covered by Sweden, Denmark, Finland and Poland.
Finland has only set trend as target so grade will be -1. Denmark gets an +2 while the target is set according to HELCOM > 2mg l-1, and also Sweden is very ambitious also while they have set oxygen concentration target for Bothnian Sea, Bothnian Bay and for the whole North Sea, which is not set even in HELCOM, so the grade will be +2. Poland gets +1 while the targets are below HELCOM targets.**[2]**

Ambition levels of different countries are not so obvious on the indirect effect of nutrient enrichment, even though most countries e.g have included "abundance of perennial seaweeds and sea grasses". Here there is a need to a coherent approach so Baltic countries indicators and monitoring will give satisfactory information to evaluate the situation for the whole Baltic Sea. As eutrophication is the major environmental problem for the Baltic Sea, very high ambitions should be set up for GES and indicators also related to indirect effects of nutrients.

Additional remarks and NGO comments of each MS ambition for Descriptor 5

Estonia covers most of the EU criteria and indicators, and the ambition level is pretty high, due to that several targets are set on appropriate level and some of them have already achieved own GES level, even though some indicators need more frequent sampling on pelagic sea. In other words those targets set according to WFD have achieved GES on coastal areas, but the offshore is not so well researched in order to put ambitious targets. Therefore Estonia should put effort on pelagic sampling to get an appropriate picture of the current status.
One thing that confuses is that Estonian GES target for TN and TP are the same GES=>or=0.67, even-thought the HELCOM targets between these are usually varying a lot at least for DIN and DIP 3.8 µmol l-1, 0.59 µmol l-1.
Estonian Green Movement states that it is noteworthy that the allowed deviation from baseline in eutrophication indicators is considered to be 50%. This number could be smaller, e.g 25%, but the proposal is probably related to the limited financial possibilities or political will to deal with the causes of eutrophication, including the water protection measures in agriculture.
Overall Estonian indicators and targets are set on ambitious level.

Latvia covers the same four EU indicators with **Lithuania**, and their target level is also corresponding. Therefore comparison of these two MS is relevant in this section, and also because they basically share the same marine areas. Latvia has only decided to use indicators for dissolved nutrients and left indicators for the total nutrient input out, whereas Lithuania has decided to set indicators for dissolved nutrients and total nutrient concentration as well as for average total nutrient concentration in summer. None of the other member states cover EU indicator (5.1.1) as well as Lithuania, that is why it is also graded as +2, even though targets are not GES and therefore might be too ambitious, and not able to be achieved in 2020.
Targets for indicator Chlorophyll concentration is for both countries on an appropriate level. Latvia has targets for both Chlorophyll and phytoplankton biomass in coastal areas according to WFD, and phytoplankton biomass in some coastal areas have even reached Latvian GES.
What it comes to ambition level of Lithuania it has set Chlorophyll concentration targets for both annual and summer.
For indicator Secchi depth are Lithuanian targets higher than HELCOM **[2]**, which makes the target again very ambitious (+2), whereas Latvian targets for coastal areas are according to WFD and offshore targets do not reach HELCOM targets **[2]**.
Lithuania do not have any GES targets, but target values are very ambitious. Maybe GES targets are

not set because they are too ambitious and not capable to reach by 2020.
With regard to the Latvian strategy they must include Tot-N and Tot-P in their list of indicators, and also more indicators related to direct effects of nutrient enrichment on species.

Poland has not yet reported Initial Assessment to EU so the evaluation is difficult. According to the material received from national NGO, it seems that Poland is going to have very ambitious plan, where they are trying to follow HELCOM coreset indicators and targets. They also cover 7 / 8 EU indicators, and the preliminary indicators and targets are set well, for nutrient concentration targets are set for both dissolved nutrients and total nutrient concentration, which is considered ambitious. Overall the ambition for Eutrophication stays below GES (subGES), but while the GES for MSFD Strategy is not defined yet, we can assume that it is subGES according to WFD.

Germany is not that ambitious what it comes to Eutrophication it covers 1/3 EU criteria, but within the criteria there are more indicators than others have, and all the targets for them are set on appropriate level. Still they receive overall grade -1.5 which is the lowest among MS.
Germany has many indicators which are not official yet, but if these will be and appropriate targets will be set for them, they will pass easily other countries in this grading.
They state that in its report specific targets will continuously be updated in line with HELCOM. To date reduction targets are under revision under within the HELCOM TARGREV- Project
Despite the significant reduction of nutrient inputs since the 1990s, the eutrophication effects in the German Baltic Sea have not yet significantly decreased. Therefore, the achievement of good ecological status under the WFD and of good environmental status with regard to eutrophication according to MSFD require more ambitious reduction efforts.
It is necessary to check whether the current plans and measures will be sufficient to achieve the objectives under the WFD, MSFD and HELCOM.

Denmark covers 7/8 EU indicators and overall they have 9 indicators. (5.2.4) and (5.3.1) have both two corresponding indicators. They have set ambitious targets according to WFD for most of the indicators which makes Denmark the most ambitious Member State.

Swedish indicators cover 5 EU-indicators and all the targets are GES targets and are set according to some law or directive. The weakness in the list of indicators is that Total nitrogen and Total phosphorus is not included and for three EU indicators no corresponding indicators have been determined, even though Sweden should have the baseline data to set those. The grade for Sweden is 0.125, only because they do not cover enough EU indicators.

Finland covers 7 / 8 EU indicator, and also they have developed more indicators. Basic rule in the Finnish indicator target is that they are set according to WFD or HELCOM threshold values. Notable is that in comparison to other Nordic countries is that Finland has not determined any GES targets, it is because there are many indicators under development and to be able to up-to-date targets GES targets are not yet set. Overall when Finland develops indicators and puts targets for those it will have the strategy on same ambitious level as Denmark.
The main NGOs WWF and FANC in Finland both gave their statement on IA current status, GES definition, environmental objectives and indicators. WWF stated following; It would be important to set indicator raising power in the nutrient removal process, as well as assessment and minimizing of nutrient inputs from single industrial plants. FANC is on the same line with this evaluation that it is good that WFD limit values are used in coastal areas, and HELCOM values on open sea, but those should not restrict the work too much. Finland should invest on the formation of new indicators also including anoxic bottoms. In addition, it must be remembered that the existing commitments concerning limit values are at the minimum level, which should be at least achieved. This new marine management plan should include new targets above the former ones.

Ambition level for MS is graded according to how well their indicators cover EU criteria and indicators and also if they have developed relevant indicators outside EU criteria. According to this table Denmark is the most ambitious MS, they cover all the EU criteria and have set appropriate GES targets for all the indicators, which means that they are really focusing to achieve GES in their marine areas by 2020. Poland gets the second place, even their work and indicators is on half way According to grading on shared third place is Finland and Estonia, covering all the EU criteria and having appropriate indicators and targets associated to those. In order to be more ambitious Finland still needs to develop GES targets and Estonia needs to develop more indicators.

MS alignment with HELCOM ambitions

HELCOM has a key role when establishing limits for nutrient loads and reducing eutrophication in the Baltic Sea. They established programme called Baltic Sea Action Plan in order to maintain and improve status of BS by 2021. In 2007 the strategy was adopted by all states on BS catchment area and EU. BSAP is crucial in order to develop effective measures and action to reduce human impacts to the BS. The objectives of the strategy for eutrophication are following; Concentrations of nutrients close to natural levels, clear water, natural level of algal blooms, natural distribution and occurrence of plants and animals and natural oxygen levels. **[3]**
HELCOM established a CORESET- project to enable follow-up effectiveness of BSAP. Core indicators include indicators that are crucial for evaluating the status of Baltic Sea.
Member states within this evaluation together cover all core indicators set for Eutrophication in CORE EUTRO process, indicators include two biodiversity core indicators which are detected useful in evaluation of eutrophication.**[4]**

- Water transparency (Secchi depth)
- Concentration of dissolved inorganic nitrogen
- Concentration of dissolved inorganic phosphorus
- Concentration of chlorophyll a
- Oxygen concentration
- State of soft-bottom macro- zoobenthos (BD indicator)
- Lower depth distribution limit of macrophytes (BD indicator)

Alignment of MS to WFD when describing GES

According to the MSFD, the assessment of eutrophication in marine waters needs to take into account the assessment for coastal and transitional waters under the EU Water Framework Directive (WFD, 2000/60/EC). In WFD status of waters is divided in ecological status and chemical, whereas in MSFD it is the same. According to WFD ecological status can be High, Good (MSFD=Good), Moderate, Poor and Bad (MSFD=Good status not achieved), but the chemical status is defined same way as MSFD.
From the members states all other except Lithuania use target values from WFD for several indicators. Even though we agreed when deciding on evaluation criteria for this report that WFD target values are ambitious, it is hard to know if some MS have WFD targets that are '*Moderate*' and correspond to MSFD '*Good status not achieved*'.

Comparison of GES by different MS
What it comes to the ambition level of definition of Good Environmental Status all the MS have defined GES, but the level is varying a lot. MS have defined GES on criteria, indicator and descriptor level.

Descriptor level GES for **Sweden**, **Finland** and **Poland** is phrased same way as in the directive;

'*Human-induced eutrophication is minimized, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters*.' In Polish case it is comprehensible that there is a general GES description, because the baseline is in many cases not clear, or the data has been unreliable, so it can be difficult to define GES for Eutrophication and that is also why the targets are not yet defined as GES targets.

German GES definition for descriptor; '*GES is reached***,** *when the good ecological status according to the WFD is achieved and the Eutrophication status according to the integrative HELCOM-Eutrophication assessment HEAT is at least good*. *A further adjustment of the assessment techniques and results for the MSFD is needed*', is focusing in the importance of WFD and HELCOM-Eutrophication assessment HEAT.

Also **Danish** definition '*Nutrient supply does not lead to unwanted changes in the volume, density and composition of marine flora*. *Nutrient concentrations in the water column in the open Danish waters corresponds to the level of protection in Danish coastal waters as a result of the Water Framework Directive*.' is also emphasizing importance of WFD.

In addition have MS defined GES on criteria and indicator level. Estonia, Latvia, Germany, Denmark, Sweden and Finland have all defined GES on criteria level.
Almost the same MS have defined GES on indicator level, but Finland and Lithuania differs. Some of them have set quantitative thresholds and some have qualitatively described GES for every indicator.

For the MS following EU criteria associated indicators *Abundance of opportunistic macro-algae, Species shift in floristic composition* and *Dissolved oxygen* or at least one of those is missing from the GES definition. Lithuania has not included none of the three indicators in their GES definition and they have also missed *Nutrient ratios*. Estonia and Latvia are missing *Dissolved oxygen* and Latvia also *Abundance of opportunistic macro-algae*. Sweden and Finland have not included *Abundance of opportunistic macro-algae* and *Species shift in floristic composition*.

Denmark is using three EU criteria associated indicators in their GES definition; *Nutrient concentration, Water transparency* and *Dissolved oxygen*. The sentences are phrased in a general way, which makes them unspecific.

German GES definition on criteria and indicator level is too weak for appropriate assessment. GES definition does not include threshold values for indicators, but as referring to the descriptor level GES definition Germany is following WFD threshold in coastal waters and Helcom HEAT thresholds in offshore waters.

GES set on indicator level is easier to monitor, but also more effective, than to set GES on descriptor or criteria level. Finland and Poland should definitely set GES on indicator level, to be able to follow up the progress of marine strategy. Denmark and Germany should also set quantitative thresholds for indicators level GES, not only refer to such.

Proposals and recommendations
It is absolutely necessary for all Baltic EU Member states to have clear GES and threshold or target values for nutrient (N and P) levels. All Baltic EU members have this as an indicator, but target values have not been set for, which must be made to have a coherent GES for the whole Baltic Sea. Nutrient levels should also always be set as Tot-N and Tot-P, as the agreed HELCOM nutrient reduction goals are decided in this way (minimum requirements). CCB recommends that Latvia and Sweden include indicators for Tot-N and Tot-P, because those also include DIN and DIP and it is needed in order to reduce the total amount of nutrients in marine areas. And also Denmark should include Tot-P, at least for giving info for Baltic-wide assessments in the future.

CCB also recommends that all the MS set the target value for water transparency according to Secchi depth targets, set for the Baltic Sea sub basins, agreed by HELCOM HOD 39/2012 and with national background information updated by HELCOM GEAR 3/2013.

References:

[1] Noren Gunnar, Eutrophication of Baltic Sea-the unsolved problem, available online: http://www.ccb.se/documents/Noren.pdf
[2] HELCOM Thematical Assessment: Eutrophication in the Baltic Sea 2007-2011
[3] HELCOM BSAP, available online: http://helcom.fi/baltic-sea-action-plan
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Descriptor 10: Marine Litter

Marine Litter: Descriptor 10

Descriptor 10 of the MSFD is Marine Litter and goal/definition is "Properties and quantities of marine litter do not cause harm to the coastal and marine environment".

Marine litter according to the United Nations Environmental Program (UNEP) is also known as marine debris or marine garbage and is defined as any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment (UNEP, 2005).

Marine litter consists of items that have been made or used by people and deliberately discarded into the sea and surrounding areas (beaches, rivers, etc.), or material that has accidently been lost at sea such as fishing gear, cargo etc. Marine litter can be: fishing gear, fishing nets, food containers, rubber, glass, wood, sanitary-and sewage related litter, clothing and many other things (these are just a few examples). Micro-pollutants and micro-particles such as micro-plastics area also included in marine litter.

Marine Litter found on beaches and in the water along the Baltic Sea coastlines each year is a major environmental problem. The status of marine litter in the Baltic Sea is relatively unknown. Traces of plastic microfibers have been found to be abundant in the Baltic Sea, however the origin of such micro-particles, as well as marine litter in general, is difficult to determine because of the fact that marine litter knows no boundaries. It can travel across the seas and end up far from its origin. The Baltic Sea is an inland sea and all marine (macro and micro) litter that ends up in the sea will stay their whether it comes from land or sea.

Reporting from all the different countries in the Baltic Sea basin is scarce. There is a general absence of comparable and reliable data on marine litter issues. Furthermore, prevention, reduction and control of marine litter are based on different assessment methods or no specific method at all, and yielded incomparable results and no known reductions in marine litter. There are no statistically based monitoring programs that can be compared between Member States. However, there is dispersed information collected with different practices depending on the reporting organization or authority. Most of the information available has been gathered by NGOs and municipalities, one example is the MARLIN project from Keep Sweden Tidy.

Some of the main problems with marine litter are:

- Marine litter poses a threat to wildlife due to entanglement and ingestion
- Poses a socio-economic impact towards sectors such as: aquaculture, agriculture, fisheries, shipping, and tourism and leisure activities due to loss of amenity
- Plastic particles, whether microscopic or larger, can have a range of effects on the marine life. As an example of the effects of larger particles, various species, like fish-catching birds, are worldwide commonly found dead with plastic particles in their stomachs. Recent studies have discovered that plastic micro-particles, like those found in Baltic seawater, enter into and accumulate in animals such as zooplankton, blue mussels and may thus have significant food-web consequences
- Marine litter has negative effects on various ecosystem services
- Marine litter has a profound effect on the ecosystem level by affecting the maintenance of biodiversity, habitat and resilience.
- Negative economic impact due to clean-up costs on beaches and water intake pipes

Causes of these problems:

- Deliberately leaving litter on beaches, close to rivers, throwing litter into sea etc. by people
- Ghost-nets *(fishing nets lost or deliberately left at sea by fishermen)*
- Loss of fishing gear, cargo, material, etc., from ships during bad weather/storms
- Cleaning products with micro-plastics, household items that are degraded, and boat paint

Qualitative Grading of the MS ambition in establishing GES Illustrated by Descriptor 10

Descriptor 10 – Marine Litter is a very difficult descriptor to assess because no country has been able assesses a baseline in their initial assessment for any of the criteria listed by the EU since there is not enough data or poor data. Therefore it has been nearly unmanageable to set threshold values, or baselines to establish Good Environmental Status for Marine Litter.

The Commission decisions on criteria and methodological standards on good environmental status of marine waters (2010/477/EU); has established criteria and associated indicators set for all eleven descriptors. For Descriptor 10: Marine litter there are *two* criteria and *four* associated indicators set.

Table 7: Comparison of EU criteria and indicators covered by MS for Descriptor 10: Marine Litter in the Baltic Sea

-2	-1	0	+1	+2

EU criteria and associated indicators	EE	LV	LT	PL	DE*	DK	SE*	FI
10.1. Characteristics of litter in the marine and coastal environment								
— Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source (10.1.1)	X *number & quality (needs to be more ambitious)*	*(no indicator developed)*	*(no indicator developed)*	X *number & quality (needs to be more ambitious)*	Interim *volume & category (needs to be more ambitious)*	Interim *Data /Reference levels (needs to be more ambitious)*	Needs developed for Baltic SEA *(needs to be more ambitious)*	Interim *number & quality (needs to be more ambitious)*
— Trends in the amount of litter in the water column (including floating at the surface) and deposited on the sea-floor, including analysis of its composition, spatial distribution and, where possible, source (10.1.2)	X *number & quality water column (needs to be more ambitious)*	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	*Water column/surface (needs to be more ambitious)*	Interim *number & quality water column (needs to be more ambitious)*	GES *number & quality (needs to be more ambitious)*	Interim *number & quality (needs to be more ambitious)*
— Trends in the amount, distribution and, where possible, composition of micro-particles (in particular micro-plastics) (10.1.3)	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	*(ind. being developed)*	*(ind. being developed)*	*(ind. being developed)*	*(ind. being developed)*
10.2. Impacts of litter on marine life								
— Trends in the amount and composition of litter ingested by marine animals (e.g. stomach analysis) (10.2.1).	X *Sea fauna (more specific/better ind. species needed)*	*(no indicator developed)*	*(no indicator developed)*	*(no indicator developed)*	Interim *number & quality (better ind. species needed)*	X *Fulmar/bird species (better ind. species needed)*	**X** *No species decided (better ind. species needed)*	*(no indicator developed)*

∑ indic.	1	0	0	0	4†	3	2	3†
N grade Qual	-1.75	-2	-2	--1.75	-0.5 [1)]	-1.0	--0.75	-1.5 [2)]

GES: indicator target is final and aiming to Good Environmental Status (GES) of marine areas by 2020; **Interim** target to achieve by 2020 to later on achieve GES; **X** indicator exist, but GES/Interim target not set; **X** not reported to EU; † indicator not matching EU criteria included * Indicators not reported to EU are included.

[1)] Germany also included indicators not matching the EU criteria specifically: "Number of entangled birds in breeding colonies" (*grade*:*1*); "Dead found entangled birds and other indicator species" (*grade*:*1*);

[2)] Finland also included one indicator not matching the EU criteria, specifically: "Amount of collected litter" (*grade*: *-1*).

As shown in table 7 two countries Latvia and Lithuania, have not reported any draft, initial indicators or targets. Furthermore, Poland has not reported anything at all to the EU so our grading is relative to all drafted documents provided by our Poland NGO partners. All other countries have preliminary reported some drafted indicators and/or targets but none of the reported targets are functional until earliest 2015. Judging from the reporting chart above, Germany, Denmark and Sweden are the most ambitious countries in the Baltic Sea region tackling the Marine Litter descriptor. Although, of course none of the countries have set functional indicators yet- these countries have at least defined, published and reported preliminary indicators and some targets that they hope to develop into functional indicators and targets to reach Good Environmental Status.

EU Criteria 10.1 Characteristics of litter in the marine and coastal environment

Under criteria 10.1 the EU has developed three indicators that should be developed to assess the trends in the amount of litter that is found either on the shore/coastline (10.1.1), floating marine litter in the water column/sea-floor (10.1.2), and micro-particles (10.1.3). None of the MS that are part of this review received the highest score of +2 (green) when evaluating Descriptor 10, because none of the indicators/targets that the MS have reported are functional or operational nor are the fully developed. Of the three indicators for Criterion 10.1., Germany, Denmark, Sweden, and Finland have all preliminarily reported some indicators/targets for these areas to the EU. For indicator 10.1.1 these countries (DE, DK, SE, and FI) all received the score of 0 (gray) as they have reported or mentioned that they are in the moment fully developing these indicators as soon as possible, but that their targets are non-functional or they need to develop the indicator further to be functional in the Baltic Sea.. Poland has only preliminarily developed an indicator 10.1.1 and received a score of -1 (orange) as they need to further develop targets and report to the EU. For 10.1.2 only Sweden received +1 (yellow) for this target as it is ambitious but needs to incorporate threshold values. Denmark and Finland received a score of -1 (orange) for 10.1.2 as their targets being developed as monitoring targets and have not been fully developed. Germany received a score of 0 (gray) for 10.1.2 however; Germany needs to be more specific as to where they will monitor litter (sea-floor, water column, shoreline etc). The MS that have reported for 10.1.1 and 10.1.2 still need to be much more ambitious in setting goals not only to understand the trends of marine litter on coastlines/shores or in the water column/sea-floor/shoreline but also an indicator should be established to understand how to monitor where marine litter originates from, and the activity which produces the litter, but also targets to reduce litter and impact of litter. Estonia, Latvia and Lithuania have *not* preliminarily developed or reported targets for 10.1.1, 10.1.2 and 10.1.3, for this reason they have all received the lowest score of -2 (red) for these targets.

No MS have preliminary reported indicators or targets for ***micro-particles*** (10.1.3) and in particular micro-plastics. Therefore all MS received a score of -2 (red). Germany, Denmark, Sweden and Finland have all mentioned in their paper reports that they have some drafted indicators and target which are under development to quantify the amount of micro plastics in the water column and sediment. Finland and Sweden mentioned that they both are interested in using methods that involve Water Pumps and Waste Water Treatment Plants (although no methods are developed yet). Sweden is however, the only country that mentions other types of methods to quantify micro

plastics such as: *Manta trawl* – which is a net specifically designed to take surface samples, and *CPR (Continuous Plankton Recorder*). This indicator is specifically of importance since the long-term effects of micro-particles on marine life have not been evaluated. Therefore, it is very important to try to understand the trends, and where and how micro-particles enter into the water, but also how they are ingested or absorbed by marine life. We understand that there is a desperate need for data in this area in order to establish targets, indicators to be based on threshold values.

EU Criteria 10.2 Impacts of litter on marine life

Under criteria 10.2 the EU has developed one indicator that should be developed to assess the trends in amount and composition of ingested marine litter by marine animals (10.1.2).

Germany, Denmark, and Estonia have also included indicators that quantify or qualify the amount of marine litter that is found ingested by marine fauna, and in some cases these MS want to use Fulmars as an indicator species. Denmark and Estonia received a score of -1(orange) for this indicator as it is not functional and no method is established, Estonia has simply copied the text from the EU commission and therefore a score of -1 is given. Germany receives a score of 0 (grey) for the indicator developed that involves Fulmars- as we believe that a better indicator species should be chosen. It is important to note that although the Fulmar has been used as an indicator species in the North Sea, it may be not a relevant indicator species in the Baltic Sea since this bird rarely visits the shores of Baltic Sea, it is therefore necessary to research other indicator species that are more reliable for data analysis such as mussels, herring, or sprat (SWAM, 2012). Germany has also developed two other indicators that do not fit into any of the indicators but they evaluate the impacts litter on marine life. Specifically they have preliminarily defined "Number of entangled birds in breeding colonies" and "Dead found entangled birds and other indicator species" as indicators they want to develop into with functional threshold targets. These two indicators- both received a score of +1 (yellow) as they are ambitious targets that use a different method that documents the impacts of litter on marine life, and which possibly should be adopted by all the MS to evaluate the impact of macro-plastics on marine life.

All MS must increase their level of ambition to have functional indicators for latest 2015 for all of the indicators listed for descriptor 10. Poland, Latvia and Lithuania must be able to produce preliminary targets that can be developed into functional targets as soon as possible in order to stay on schedule with the other countries. Although all countries surrounding the Baltic Sea have commented on the lack of data, some countries have been more ambitious when trying to set up preliminary targets. Germany, Sweden and Denmark have all set preliminary or developmental targets for each of the indicators. Overall, Germany has received the highest score in relation to D. 10 with a score of- 0.5., although many of the indicators could be combined into one indicator or target and possibly more focused, they have also developed other ambitious targets to evaluate the impacts of marine litter on marine life- and this should be rewarded. Sweden has also developed indicators and targets that are measurable but need to further develop targets that can be applied in the Baltic Sea.

In accordance with other Initiatives:

According to HELCOM indicators for Marine Litter have not been developed yet because this descriptor is classified as a **Candidate Indicator** which means that the issue or descriptor is being developed into a core indicator in the next phase of the project. These indicators include indicators where there is no common understanding of the concept, but there is a need for it to be addressed. Candidate indicators include litter, noise and phytoplankton and are being developed into Core indicators by the HELCOM CORESET II project from 2013-2015 where at the end of 2015 the HELCOM HOD will consider adding these candidate indicators (that have then been developed into

core indicators) to the final set of core indicators. Furthermore, the HELCOM Ministerial Declaration from October 2013 addresses the fact that marine litter (macro-to-micro level) in the Baltic Sea is becoming a serious problem. The declaration states that "*WE AGREE to prevent and reduce marine litter from land- and sea-based sources, causing harmful impacts on coastal and marine habitats and species, and negative impacts on various economic sectors, such as fisheries, shipping or tourism, and to this end DECIDE to develop a regional action plan by 2015 at the latest with the aim of achieving a significant quantitative reduction of marine litter by 2025, compared to 2015, and to prevent harm to the coastal and marine environment";* and more specifically:

24 (B). WE AGREE that the regional action plan on marine litter should allow to:

- *Carry out concrete measures for prevention and reduction of marine litter from its main sources with the aim of achieving significant quantitative reductions focusing inter alia on working with industry to reduce or phase out microbeads in certain products in the market*
- *Develop and test technology for removal of microplastics and nanoparticles in municipal waste water treatment plants by 2020 and inter alia work with industry to ban the use of microplastics and on the assessment of the use of nanoparticles within the production process (e.g. in cosmetics);*
- *Utilize existing networks to address marine litter issues;*
- *Develop common indicators and associated targets related to quantities, composition, sources and pathway of marine litter, including riverine inputs, in order to gain information on long-term trends, and carry out the monitoring of the progress towards achieving the agreed goals and to gain an inventory of marine litter in the Baltic Sea as well as scientific sound evaluation of its sources. Where possible, the harmonized monitoring protocols based on the recommendations of the EU Technical Subgroup on Marine Litter will be used;*
- *Identify the socio-economic and biological impacts of marine litter, also in terms of toxicity*

HELCOM has an intention of developing an action plan and developing Marine Litter into a core indicator by latest 2015 as well as having the overall goal to reduce marine litter over time. This is in line with the EU MSFD as well as what each MS should strive towards.

Additional remarks and NGO comments of each MS ambition for Descriptor 10

It is clear that the different MS have all had a challenge in developing indicators and targets for D10 that are applicable and ambitious. All of the MS mention that there is a lack of data and knowledge in the field of marine litter. As you can see in Table 7 D. 10 although all of the countries mentioned a lack of information some of the countries have been able to set indicators and targets without vast knowledge on the subject. It is evident that some countries are more ambitious than others.

Although some of the MS have not reported any preliminary targets for Marine litter (such as Latvia or Lithuania) they have been actively involved in NGO work regarding this descriptor. Specifically- **Project MARLIN** – which is coordinated by Keep Sweden Tidy (Håll Sverige Rent) where FEE Latvia (Foundation for environmental education in Latvia), Keep the Archipelago Tidy Association- Finland), and HEM (Keep the Estonian Sea Tidy) are all actively involved in Beach clean-ups and also in collecting data on reference beaches and coasts to be used in developing targets for decreasing Marine Litter. Following is a summary of NGO comments from each country addressing Descriptor 10- Marine Litter.

- **Estonia**: Baseline Value should be 0 (zero) Marine litter , and that regular analysis of

stomach contents of fish is needed from monitoring catches, as well as understanding who/whom/what is the biggest culprit to Marine litter. One of the practical problems is, that local governments do not want to spend money on garbage collection and transportation from the beaches in their administration, so there are rules (number of visitors per day) to claim a coastline as a public beach that needs waste management service. Registered numbers of people visiting the beach are often smaller than actual number of people that go. Passenger vessels on the Baltic Sea already have strict rules that ban any littering on the sea.

- **Latvia**: FEE Latvia feels that Marine litter is an issue that is very important for future work and lobby work towards monitoring programmes. Through their involvement in Project MARLIN they have data that confirms that there is a big problem with plastic making up at least 50% of the total litter amounts gathered.

- **Lithuania**: No comment

- **Poland**: More than 1 indicator should be used to address Marine litter. Needs to be developed

- **Germany**: Marine litter is a very ambitious target and they want to reduce the amount of litter 10% every year.

- **Denmark:** DN (Danish Society for Nature Conservation) understands that there is a lack of knowledge when it comes to Marine Litter- but believes this gap of knowledge can be filled when collecting data to establish targets. The ambition to have 0 input of marine litter into the marine environment is very ambitious, however knowing that this can never be the case since accidents do occur (illegal or accidental/storms). It is not unrealistic to set a target for 2020 that is to reduce 50% of marine litter found in the water column, beaches and in biota. Now is the time that all MS have a chance to do something together effectively and in a coordinated manner to address the problem of marine litter.

- **Sweden:** Håll Sverige Rent (Keep Sweden Tidy) as well as SSNC (Swedish Society for Nature Conservation) both understands that there is a need to develop the targets for these specific indicators. HSV and SSNC both address the need to have reference beaches not only in North Sea but also in the Baltic Sea as marine waste is just as much of an issue in the Baltic Sea. SSNC believes that 50% reduction of marine litter by 2020 should be a minimum measure for GES. They also believe that only the indicator that involves micro-particles in the water column in important to develop, not the other methods that mentioned by Sweden in relation to micro-particles. HSV and SSNC want to stress that long-term funded and new projects are needed in order to see that the goals of Descriptor 10 are met. The targets for these indicators should be finalized no later than July 2015.

- **Finland:** Baseline data is very poor and this is the reason why indicators are so poor. Finland specifically wants to focus on amount of micro-particles from Waste Water Treatment Plants (although no methods have been developed presently).

Comparison of GES by different Baltic MS

The MS have defined, or not defined Good Environmental Status for Descriptor 10 very differently or not at all. Some of the MS have phrased GES in a very general way or just re-phrased the EU

definition of GES for marine litter. Because of this it is important to also include the GES definition with the level of ambition that we have interpreted from the indicators and targets the MS have reported in order to compare the overall ambition of Descriptor 10. It is also important to include if the indicator status developed by the MS is interim or GES as seen in Table 7.

Some of the MS have not defined GES for Descriptor 10 at all, such as Estonia, Latvia and Lithuania. Other MS such as Germany, Denmark and Poland define GES only at the descriptor level and Sweden and Finland have defined GES but also on criteria level.

For Sweden and Poland the definition at the descriptor level is simply a re-phrasing of the EU definition:

" Properties and quantities of marine litter do not cause harm to the coastal and marine environment"

Germany has defined GES for descriptor 10 as "*when litter and decomposition products have no hazardous impact on marine life and habitats. Furthermore, litter and their decomposition products shall not foster the immigration and distribution of non-indigenous species."* Denmark has similarity included a definition that includes non-indigenous species as well as impacts on maritime activities "*Marine waste and its degradation products do not have a detrimental impact on marine ecosystems and species, and does not support the spread of non-indigenous species. Marine waste and its degradation products must not have an adverse material socio-economic impact on marine industries and professions related to the marine area including tourism*." Finland also mention maritime activities in their definition of GES ad the descriptor level as "*Amount of litter is on a level which does not cause physical or chemical harm to the organism, communities or recreation use and does not cause economic losses to the business activity*."

Judging by just the definition of GES – Denmark seems to be the most ambitions as it includes both the negative impacts of marine litter, but also the elements of its influence on spreading non-indigenous species, and its detrimental impact on socio-economic areas (tourism, maritime activities etc.).

Another measure in ambition of GES for Descriptor 10 is by the MS choice of indicators and targets. Overall Germany, Denmark, Sweden and to some extent Finland stand out of the MS in that they have developed the most indicators and targets and have also tried to fulfil the criteria listed by the EU. These countries have developed the most indicators – Germany has at this stage developed 4, Denmark 3, Sweden 2 and Finland 3 to their associated targets. Although some of the targets are not always developed there selection of indicators reveals that they are on the right track in order to meet the requirements by the EU criteria.

Germany and Finland have developed some indicators that do not match the EU criteria however; in Germany's case they are relevant to reaching GES for Descriptor 10. So it is good to see that the Germany is also using their own MS knowledge to develop indicators.

Furthermore, only Germany, Denmark, Sweden and Finland have labelled their indicators as interim, or GES. This is also interesting as there is not much data in the marine litter field. Because of the lack of information it would be better to list these indicators/targets as interim until they are completely developed and functional- and then they can be given the label of GES.

Overall, the ambition level of achieving GES is highest in Germany. Sweden, and Denmark have also shown to be somewhat ambitious in developing the indicators for Descriptor 10. It is obvious that all of the countries have to evaluate marine litter together in order for countries that have not

developed indicators to be able to also meet GES at a timely fashion. Unfortunately, although there is a lack of data Latvia, Lithuania, and to some degrees Poland and Estonia's ambition is very low and it is unfortunate that these countries have not realized the importance of reaching GES for marine litter as all the other MS in the Baltic region have.

Proposals

In conclusion- Descriptor 10- Marine Litter is a descriptor that needs indicators and targets to be developed and functional as soon as possible. All MS are responsible according to the MSFD to produce and develop these targets to be able to achieve GES. Some countries are ahead of others and it may be wise to coordinate between MS so that the targets for Marine Litter are able to be met in a feasible and realistic timeframe. Those MS that have not developed or need help in developing indicators and targets should seek help from the MS that have already started developing their indicators. It is also important to use data that is available now, instead of planning on collecting data for the next years to establish baselines to indicators by 2015- instead it is suggested to be more ambitious when establishing targets and indicators so that GES can be met by 2020 for Marine litter.

Germany has been able to establish indicators and targets for all of the EU criteria and this country has been the most ambitious MS in the Baltic region to reach GES by 2021 for Descriptor 10. It would be wise of the other MS in the Baltic region to coordinate with Germany and to adapt these indicators/targets that have been preliminarily developed.

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Annex 2 Member States reporting status on first stages of MSFD implementation in the Baltic Sea Region

Latvia has reported IA to EC. The draft reports were available for commenting at the web page of the competent authority for these tasks, i.e., the Latvian Institute of Aquatic Ecology. The reports were presented during a number of events, including the annual maritime day organized on May 18, 2012. The Ministry of the Environmental Protection and Regional Development has established the Marine Environmental Board consisting of stakeholders from different authorities and relevant NGOs. Amongst 18 Members, 2 Environmental NGOs are delegated to represent environmental concerns of the society. The Marine Environmental Board also reviewed draft IA report..

Denmark has reported both and Initial Assessment and a Social Economic analysis, as well as a Environmental Goals Report. They have broken down each area. Furthermore, NGOs have been able to comment on the reporting and the indicators so they are involved in the process.

Sweden has reported an Initial Assessment and final Environmental Report. They divided the reporting in Part 1 and Part 2 of Good Marine Environmental Report. NGOs have been involved in commenting after the Sweden submitted the report, but as said in the next section according to survey of NGO involvement, they were only able to participate in the end of reporting process. And there was only one opportunity for NGOs to comment, at the time the text was not at all ready, although lengthy, and the deadline very short. After this single round, there has not been much involvement of NGOs in Sweden in an organized way.

We should also mention that the first work of the directive (IA and establishing indicators and targets) were conducted during a period which was very turbulent as the whole Swedish marine administration were reorganized, that is at the time of creation of SWAM.

Finland has reported all parts of IA to EC. All the indicators have been decided, but the targets are still under development. One reason why Finland has not developed numerical target values for IA, is because there are many indicators under development and if target values need to be changed it will first require a bureaucratic process of a new governmental approval. Monitoring programme should be ready July 15, 2014. The draft for monitoring programme is under development and a public hearing is scheduled sometime in either April or May 2014. This is also a reason why for some of the indicators have been hard to evaluate. NGOs voiced their comments about the IA during a public hearing in 2012. Now the Finnish Association for Nature Conservation and WWF Finland are represented in the main working group preparing the program and two subgroups. FANC regional offices are also in regional working groups preparing the MSFD, WPD and Floods Directive plans at the same time before the public hearings schedule for between October 201 and March 2015.

Poland and Germany: *Special Cases in reporting*

Poland has not submitted the IA nor the Determination of GES to EC .They exist only as draft versions and are being processed by the Ministry of Environment. The authorities have chosen a Marine Director and are implementing MSFD into Polish law. The time for social consulting until March 21, 2013, this was mostly by e-mail or mail. There were no meetings organized. All in all NGOs involvement was rather small. One reason is because the authorities have other projects waiting in line, among which is the MSFD. It will be submitted once it is ready, but the authorities are very reluctant to provide information, especially to NGOs.

Germany has reported the IA (assessment, GES and environmental targets reports) in time. NGOs initiated a dialogue with the relevant agencies in an early stage via round tables. NGOs were

involved actively from the beginning and handed in joint statements during the public participation phase. Germany conducts the MSFD implementation in line with the directive as follows: The associated indicators used in article 8-10 were developed on the basis of the indicators determined by the European Commission (2010/477/EU, 29 criteria and 56 indicators). They serve as parameters for the description of the GES. After the determination of environmental targets, which will be achieved via the programme of measures, further indicators will help to provide evidence of the progress. The framework concept for the monitoring programme, which is under public consultation, describes the monitoring programme. An indicator list was published, which is a list of feature related headings, however this was not a part of the public consultation.

Annex 3 - ESEC survey on Initial Assessment quality and public consultation

MSFD required member states to have a public discussion related to Initial Assessment in 2012. After the public consultations European Seas Environmental Cooperation (ESEC), of which CCB is a member, conducted a survey for member states NGOs. The aim was to find out if national NGOs were satisfied with the quality of the reports. They got 30 responses from NGOs in 16 countries and one from an international NGO. The main findings were the following:

Eight out of 31 NGOs did not participate in the public consultation at all, reasons behind this were that the process had not started yet or it was delayed, and also lack of human resources. Most of the NGOs also reported that their county only involved NGOs in the end of the process, while in Netherlands they were involved entire time. When it comes to the IA, half of the respondents were happy with the level, and half thought that there were lots of data gaps in the report. On a scale from 1(poor) to 5(ambitious) almost half of the respondents gave 3 for GES description, but none gave 5. Targets setting did not receive good grade either; 52% of the respondents found target setting poor or below average. Financial resources and lack of knowledge and capacity among NGOs were the main concerns in the implementation process for NGOs.

In relation to participation of Baltic Sea States, there were three specific questions used in the survey, which may add some value to this evaluation. All of the BS countries responded, except Latvia, Lithuania and Poland. The first However question of interest is; *At what stage in the process were NGOs and other stakeholders involved*? The answer between MS was divided to two options: 1) At starts of reporting process,or 2) At the end of reporting process. All the MS responded at the beginning except Sweden, which was involved at the end.

The second question is: *If the description of GES in your country's marine strategy is sufficiently ambitious*, and here they could rate their answers from 1-5; 1=poor, 3=average and 5=ambitious. All the other MS gave answer between 3 and 4, except Estonia which gave 2 for their GES description. The same number range was used in the third question; *Are the environmental targets set by your country's marine strategy sufficiently ambitious?* Here again answers were between 2 and 4, but notable is that Estonia had given 2 and 4, which means that opinions between NGO can vary a lot. Latvian, Lithuanian and Polish NGOs did not participate in the survey at all.