

Final report of analysis of structure and requirements of assessment schemes used under MSFD, WFD, HD, BD, BWM Convention and HELCOM BSAP and proposals for harmonisation of approaches in reporting procedures for different directives (MSFD, WFD, HD and BD)

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List of abbreviations

BD – Birds Directive;

BISE – Biodiversity Information System for Europe;

BSAP – HELCOM Baltic Sea Action Plan;

BWM Convention – The International Convention for the Control and Management of Ships Ballast Water & Sediments;

CSWP – Commission Staff Working Paper;

D1-D11 – descriptors 1-11;

EC – European Commission;

EEA – European Environment Agency;

EQS – Environmental Quality Standards;

GES – good environmental status;

GES-REG – Good environmental status through regional coordination and capacity building;

HD – Habitats Directive;

IA – Initial Assessment;

ICES – International Council for the Exploration of the Sea;

JRC – Joint Research Centre;

MS – Member States;

MSFD – Marine Strategy Framework Directive;

NIS – non-indigenous species;

RBD – River Basin District;

RBMP - River Basin Management Plan;

SAC – Special Areas of Conservation;

SCI – European network of Sites of Community Importance;

SEIS – Shared Environmental Information System;

SPA – Special Protection Areas;

WFD – Water Framework Directive;

WG DIKE – Working Group on Data, Information and Knowledge Exchange;

WISE – Water Information System for Europe.

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1. Introduction

The assessment of the good environmental status of the marine environment under the Marine Strategy Framework Directive (MSFD, Directive 2008/56/EC) is interlinked to obligations under the other directives as well as to the HELCOM monitoring and assessment strategies and practices.

This report focuses on analysing the structure and requirements of the assessment schemes and approaches in reporting procedures used under different existing reporting instruments covering marine environment: the Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD), the Habitats Directive (HD), the Birds Directive (BD), the International Convention for the Control and Management of Ships Ballast Water & Sediments (BWM) and HELCOM Baltic Sea Action Plan (HELCOM BSAP). In particular on analysing the agreements concerning the assessment of the status of the marine environment in one of the EU's regional seas, the Baltic Sea and reporting the assessment results to EU. It includes comparison of the assessment and reporting requirements, defining interlinks and possible synergies in the assessment and reporting requirements and proposals for harmonisation of approaches in reporting procedures. The main focus of the analysis is on the requirements of the MSFD, which sets the overall framework for achieving the good environmental status in the marine environment.

The report has been produced within the project „Good environmental status through regional coordination and capacity building“ (GES-REG) under the work package 2 (analysis of the Initial Assessments). The aim of the report was to compile background information on the structure and requirements of assessment schemes of different legal frameworks of the EU and international policies.

2. Policy instruments

The MSFD cannot be read as a standalone legislative act as it is intended to complement a number of other European, regional and international instruments. In particular, it is intended to provide a regulatory platform for implementing the environmental objectives of the European Integrated Maritime Policy. How this complex relationship is intended to work in practice can be seen if we look at a number of examples of how the MSFD is linked to other instruments.

First and foremost, the MSFD is firmly linked to the European Habitats and Birds Directives which provide a legal basis for the designation of protected areas in sea areas under the jurisdiction of the Member States. The monitoring programmes for the ongoing assessment of the environmental status of marine waters implemented by Member States pursuant to the MSFD, for example, must be compatible with the relevant provisions for assessment and monitoring set down by the Habitats and Birds Directives. Similarly, the MSFD sets down a specific obligation on the Commission to report to the European Parliament and Council on the progress made by Member States in establishing marine protected areas having regard to the obligations that arise under EU and international law. From a multilateral treaty point of view, this linkage sits very comfortably with the position taken by the EU at a number of international fora regarding the need for the application of spatially based conservation measures to protect marine biodiversity in sea areas both within and beyond national jurisdiction. This approach is also fully consistent with the programme of work on halting the loss of marine and coastal biodiversity adopted by the Seventh Conference of the Parties to the 1992 Convention on Biological Diversity.

In light of the fact that one of the primary source of marine pollution is pollution from land-based sources, the regulatory structure established by the MSFD is closely interwoven with the WFD which requires Member States to achieve good ecological and chemical status in their terrestrial and coastal water bodies by 2015. The methodology and the criteria set down in the MSFD for the attainment of good environmental status (GES) builds upon existing obligations that arise under the WFD and similarly, the programme of measures adopted by Member States as part of their marine strategies to achieve GES must take into account relevant measures that have already been adopted under the WFD. These linkages are facilitated by the establishment of a number of new administrative structures at a European level, each tasked with overseeing the coordination of Member State actions under both Directives.

Perhaps the regulatory linkage that has the potential for the greatest controversy is the link between the MSFD and the European common fisheries policy (CFP). The latter policy provides for the adoption of a broad range of EU legal measures concerning, inter alia: the management of living aquatic resources; technical restrictions on the environmental impact of fishing; conditions of access to waters and resources for fishing vessels; a structural policy for the management of the fishing fleet in the Member States; as well as enforcement measures applicable to the fisheries sector. Moreover, the scope of the policy extends to aquaculture, the common organisation of the market in fishery products, bilateral relations between the EU and third countries, as well as general international relations on fisheries matters. In some instances, achieving the objectives of the MSFD may entail the adoption of additional fisheries management measures under the CFP with a view to maintaining or restoring fish stocks, as well as to ensure the structure and functioning of ecosystems. Indeed, one of the qualitative criteria for determining GES under the MSFD is focused on ensuring that the populations of all commercially exploited fish and shellfish are within safe biological limits and exhibit characteristics that are consistent with healthy stocks. Although the specification of such a criterion in the regulatory framework clearly establishes a firm bond between the MSFD and the CFP, it is important to emphasise that fishery management measures can only be taken by the EU institutions following the procedures set down by the Treaty on the Functioning of the EU for the adoption of fishery conservation measures. In other words, the MSFD does not give right for Member States to adopt unilateral conservation or management measures aimed at safeguarding fish stocks or marine ecosystems. On the contrary, the power of Member States in fisheries management is limited by the MSFD to making recommendations to the Commission when action cannot be taken at a national level and where EU measures are needed. Therefore the CFP was not included to the further analysis.

On the broader landscape of international law, the MSFD is aimed at contributing a number of obligations that arise under the 1982 United Nations Convention on the Law of the Sea (1982 UNCLOS) and also from Helsinki Convention 1992 and Convention on Biological Diversity and others that concern the state of marine environment and protection of biological diversity of the seas including: the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention) and Convention on Environmental Impact Assessment in a Transboundary Context. Although it is beyond the scope of this report to examine this linkage in any great detail, it should be mentioned that the UNCLOS requires that all states parties to convention protect and preserve the marine environment. The MSFD is therefore regionally unifying and standard setting

document that arises for all parties to the UNCLOS, to take all measures that are necessary to prevent, reduce and control pollution of the marine environment, as well as the more specific obligations restrain the transfer of damage or hazards from one area to another, or transform one type of pollution into another. The MSFD aims to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.

On a regional basis, the MSFD gives Member States direction(s) in meeting their obligations under several regional treaties applicable to the marine environment.

In addition, the countries surrounding the Baltic Sea have committed to international plan that they saw as necessary tool achieving the good status in Baltic Sea: the HELCOM Baltic Sea Action Plan, to restore the good ecological/environmental status of the Baltic marine environment by 2021. Although this document is not legally binding, it has the same objectives like MSFD and therefore fully supporting the implementation of MSFD and is therefore included into the further analysis. As part of the HELCOM Baltic Sea Action Plan all Baltic nations adopted the *Road Map Towards Harmonised Implementation and Ratification of the 2004 BWM Convention*, in which they all agreed to ratify the Convention no later than 2013 and to designate/identify clear national responsibilities for coordinating the national implementation of the Convention. BWM Convention requires parties to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. In light of non-indigenous species which is also a part of MSFD, BWM convention is also included to the further analysis.

The selection of policy instruments that are further analysed in this report is based on the linkages between MSFD and other policy instruments. The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. Therefore directives: HD and BD which are directly linked to MSFD and WFD which is closely related to MSFD were chosen. In addition BWM Convention which aims to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens was selected due to the MSFD non-indigenous quality descriptor for determining good environmental status which is currently quite uncovered sector in the environmental status assessments in Baltic Sea area. Finally the HELCOM BSAP was chosen due to the same objectives as MSFD.

2.1. Marine Strategy Framework Directive

The aim of the Marine Strategy Framework Directive is to ensure management of the human activities affecting the environment of the European seas, with protection and use of the seas in balance. The main goal of the MSFD is to achieve or maintain good environmental status (GES) in the Member State's marine environment by the year 2020.

For achieving the goal the Member States shall by 2012 develop marine strategies for their sea-areas, containing an Initial Assessment (IA) of the state of the environment, a definition of good environmental status and establishment of environmental indicators, targets and monitoring programmes.

Article 8 requires that Member States across a marine region or subregion shall make an Initial assessment of their marine waters, taking account of existing data where available. Initial assessment should comprise an analysis of the essential features and characteristics, and current environmental status of those waters, based on the indicative lists of elements set out in Annex III table 1 and 2, and covering the physical and chemical features, the habitat types, the biological features and the hydro-morphology; also an analysis of the predominant pressures and impacts, including human activity, on the environmental status of those waters which is based on the indicative lists of elements set out in table 2, and covers the qualitative and quantitative mix of the various pressures, as well as discernible trends, the main cumulative and synergetic effects, taking account of the relevant assessments which have been made pursuant to existing Community legislation and an economic and social analysis (ESA) of the use of those waters and of the cost of degradation of the marine environment.

According to **Article 9** by reference to the Initial Assessment, Member States shall, in respect of each marine region or subregion concerned, determine, for the marine waters, a set of characteristics for good environmental status, on the basis of the qualitative descriptors listed in MSFD Annex I. Member States shall also take into account the indicative lists of elements, in particular, physical and chemical features, habitat types, biological features and hydro-morphology and also take into account the pressures or impacts of human activities in each marine region or subregion (MSFD Annex III).

On the basis of the Initial Assessment, **article 10** requires Member States, in respect of each marine region or subregion, to establish a comprehensive set of environmental targets and associated indicators for their marine waters to guide progress towards achieving good environmental status in

the marine environment, taking into account the indicative lists of characteristics for setting environmental targets (MSFD Annex IV) and of pressures and impacts (MSFD Annex III table 2).

When devising those targets and indicators, Member States shall take into account the continuing application of relevant existing environmental targets laid down at national, Community or international level in respect of the same waters, ensuring that these targets are mutually compatible and that relevant transboundary impacts and -features are also taken into account, to the extent possible.

Article 11(1) requires that all Member States establish and implement monitoring programs based on the characteristics, pressures and impacts indicated in MSFD Annex III. The monitoring programs should also follow the specifications of Annex V. In addition, the monitoring programs should be compatible with the environmental targets and associated indicators established by the Member States under Article 10.

Furthermore, Article 11 (1;2) requires that the Member States sharing a region or a sub-region shall ensure consistency and comparability of the monitoring programs and methods used in order to facilitate comparability of results. Article 11 (2) further requires that transboundary impacts and features are also considered whilst establishing and implementing the monitoring programs.

Moreover, the monitoring programs shall build upon and be compatible with relevant provisions of European Union legislation, including Birds (BD: 2009/147/EC), Habitats (HD: 92/43/EMC), Water Framework (WFD: 2000/60/EC) and Environmental Quality Standards Directives (EQS: 2008/105/EC), Common Fisheries Policy (Council Regulation 199/2008 regarding data collection management and use on fishing sector) and international agreements, for example Convention on the Protection of the Marine Environment of the Baltic Sea (1992).

2.2. Water Framework Directive (WFD)

The aim of the Water Framework Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater, with the aim of achieving good status of all bodies of water at the latest by the year 2015.

According to Article 4 EU water policy aims to:

- (a) prevent further deterioration and protect and enhance the status of water resources;
- (b) promote sustainable water use based on a long-term protection of available water resources;

- (c) enhance, protect and improve the aquatic environment through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;
- (d) ensure the progressive reduction of pollution of groundwater and prevent its further pollution;
- (e) contribute to mitigating the effects of floods and droughts.

For achieving the goal, the Member States shall perform a number of actions:

- ♣ according to Article 3, identify the individual river basins lying within their national territory and assign them to individual river basin districts (RBD) and identify the appropriate competent authority for the application of the rules of this Directive within each river basin district;
- ♣ according to Article 5 and 6, characterise river basin districts in terms of pressures, impacts and economics of water uses, including a register of protected areas lying within the river basin district;
- ♣ carry out, jointly and together with the European Commission, the intercalibration of the ecological status classification systems (paragraph 1.4, Annex V);
- ♣ according to Article 8, make operational the monitoring networks;
- ♣ based on sound monitoring and the analysis of the characteristics of the river basin, identify a programme of measures for achieving cost effectively the environmental objectives of the WFD;
- ♣ according to Article 13 and in accordance to information detailed in Annex VII produce and publish River Basin Management Plans (RBMPs) for each RBD including the designation of heavily modified waterbodies;
- ♣ according to Article 9, implement water pricing policies that enhance the sustainability of water resources;
- ♣ according to Article 4, make the measures of the programme operational;
- ♣ implement the programmes of measures and achieve the environmental objectives.

The WFD Article 2 sets categories of surface waters and their definitions. With regard to seas, coastal and transitional waters have been defined as:

- ⤴ coastal waters means surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.
- ⤴ transitional waters are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.

For management units surface waters including coastal and transitional water are split in smaller units - water bodies which are essential for management tasks. For identifying coastal and transitional water bodies, a range of factors shall be looked at and described. As the ecological characteristics of surface waters vary according to their different physical regimes, the water bodies are assigned to a physical type. In the case of coastal waters, stretches of open coast are often continuous (unless divided by transitional waters). Subdivisions may follow significant changes in substratum, topographies. When defining transitional waters the setting of boundaries between transitional waters, freshwaters and coastal waters must be ecologically relevant. Transitional waters are usually characterised by their morphological and chemical features in relation to the size and nature of the inflowing rivers, the salinity is generally lower than in the adjacent coastal water due to substantial influence of freshwater flow. If riverine dynamics occur in a plume outside the coastline because of high and strong freshwater discharge, the transitional water may extend into the sea area. For larger rivers the influence of freshwater is likely to extend into coastal waters.

For each type, reference conditions must also be described based on biological quality elements that exist, or would exist, at high status. That is, with no or very minor disturbance from human activities. Additionally, criteria for the physicochemical and hydromorphological quality elements at high status must also be established. The objective of setting reference condition standards is to enable the assessment of ecological quality against these standards.

The definition of the quality status for transitional waters covers five biological elements: phytoplankton, macroalgae, benthic invertebrates and fish. For coastal waters the fish is excluded as classification criteria. The quality status is defined in five classes: high, good, moderate, poor or bad. It is determined whether a quality element is affected by very minor, slight or moderate anthropogenic influences. A most critical issue in implementing the WFD will be setting the borders

between the high, good and moderate classes, as this determines whether management action is necessary.

The WFD sets the requirements for water monitoring and establishing monitoring network. Depending on the purpose, different monitoring programmes (surveillance, operational or investigative) shall be set up. The Member States shall monitor parameters which are indicative of the status of each relevant quality element. In selecting parameters for biological quality elements Member States shall identify the appropriate taxonomic level required to achieve adequate confidence and precision in the classification of the quality elements. Estimates of the level of confidence and precision of the results provided by the monitoring programmes shall be given in the river basin management plan.

2.3. Habitats Directive (HD)

The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, introducing robust protection for those habitats and species of European importance. In applying these measures Member States are required to take account of economic, social and cultural requirements and regional and local characteristics (Article 2).

The provisions of the Directive require Member States to introduce a range of measures including the protection of species listed in the Annexes; to undertake surveillance of habitats and species (Article 11) and produce a report every six years on the implementation of the Directive (Article 17).

Member States shall also report to the Commission on derogations from the provisions of Articles 12, 13, 14 and 15 (that require establishing a strict protection system for the species listed in Annex IV of the Directive) every two years.

The habitat types listed in Annex I of the Directive and species listed in Annex II, are to be protected by means of a network of sites. Each Member State is required to prepare and propose a national list of sites for evaluation in order to form a European network of Sites of Community Importance (SCIs). Once adopted, these are designated by Member States as Special Areas of Conservation (SACs), and along with Special Protection Areas (SPAs) classified under the EC Birds Directive, form a network of protected areas known as Natura 2000. The information about Natura 2000 sites is updated according to the need or every six years.

The Habitats Directive introduces for the first time for protected areas, the precautionary principle, which is that projects can only be permitted having ascertained no adverse effect on the integrity of the site (Article 6). Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest. In such cases compensation measures will be necessary to ensure the overall integrity of network of sites. As a consequence of amendments to the Birds Directive these measures are to be applied to SPAs also. Member States shall also endeavour to encourage the management of features of the landscape to support the Natura 2000 network.

2.4. Birds Directive (BD)

The main aim of this Directive is to protect all species of naturally occurring birds in the wild state in the European territory of the Member States to which the directive applies. It covers the protection, management and control of these species and lays down rules for their exploitation applying to birds, their eggs, nests and habitats (Article 1).

The provisions of the BD require Member States to take requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats for all wild bird species across their distributional range (Article 2) with the encouragement of various activities: creation of protected areas; upkeep and management in accordance with the ecological needs of habitats inside and outside the protected zones; re-establishment of destroyed biotopes; and creation of biotopes (Article 3).

Article 4 requires the identification and classification of Special Protection Areas for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance. (Together with SACs designated under the Habitats Directive, SPAs form a network of pan-European protected areas known as Natura 2000.)

Furthermore Birds Directive requires the establishment of a general scheme of protection for all wild birds (Article 5); restrictions on the sale and keeping of wild birds (Article 6); specification of the conditions under which hunting and falconry can be undertaken (Article 7) (Huntable species are listed on Annex II.A and Annex II.B of the BD); the prohibition of large-scale nonselective means of bird killing (Article 8).

Birds Directive include also procedures under which Member States may derogate from the provisions of Articles 5-8 (Article 9) — that is, the conditions under which permission may be given for otherwise prohibited activities.

Article 10 of the directive encourages research and any work required as a basis for the protection, management and use of the population of all species of bird referred to in Article 1. Particular attention shall be paid to research and work on the subjects listed in Annex V.

Birds Directive require Member States to set requirements to ensure that introduction of non-native birds does not threaten other biodiversity (Article 11). Member States shall forward to the Commission every three years, starting from 7 April 1981, a report on the implementation of national provisions taken under the Directive (Article 12.1). Report on derogations under the Birds Directive (Art. 9.3) should be delivered annually.

2.5. The International Convention for the Control and Management of Ships Ballast Water & Sediments (BWM Convention)

The provisions of the Convention for the Control and Management of Ships' Ballast Water and Sediments require Parties to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments at the same time enabling Parties to take, individually or jointly with other Parties, more stringent measures consistent with international law ensuring that ballast water management practices do not cause greater harm than they prevent to their environment, human health, property or resources, or those of other States.

This Convention shall apply to ships entitled to fly the flag of a Party and ships not entitled to fly the flag of a Party but which operate under the authority of a Party with exceptions mentioned in Article 3(2).

According to Article 4 (1) each Party shall require that ships to which this Convention applies comply with the requirements set forth in this Convention, including the applicable standards and requirements in the Annex, and shall take effective measures to ensure that those ships comply with those requirements. Furthermore Article 4 (2) states that each Party shall, with due regard to its particular conditions and capabilities, develop national policies, strategies or programmes for Ballast Water Management in its ports and waters under its jurisdiction that accord with, and promote the attainment of the objectives of this Convention.

This Convention requires Parties also to ensure that ports and terminals where cleaning or repair of ballast tanks occurs, have adequate reception facilities for the reception of sediments, taking into account the Guidelines developed by the International Maritime Organization (Article 5).

Moreover Article 6 calls for Parties individually or jointly to promote and facilitate scientific and technical research on ballast water management and monitor the effects of ballast water management in waters under their jurisdiction including observation, measurement, sampling, evaluation and analysis of the effectiveness and adverse impacts of any technology or methodology as well as any adverse impacts caused by such organisms and pathogens that have been identified to have been transferred through ships' ballast water. Furthermore each Party shall, to further the objectives of this Convention, promote the availability of relevant information to other Parties.

Convention requires ships to be surveyed and certified in accordance with the regulations in the Annex (Article 7 (1)) and may be inspected by port State control officers (Article 9) who can verify that the ship has a valid certificate, inspect the Ballast Water Record Book; and/or sample the ballast water. If there are concerns, then a detailed inspection may be carried out and “the Party carrying out the inspection shall take such steps as will ensure that the ship shall not discharge Ballast Water until it can do so without presenting a threat of harm to the environment, human health, property or resources.”

Parties shall co-operate in the detection of violations and the enforcement of the provisions of this Convention (Article 10) nevertheless all possible efforts shall be made to avoid a ship being unduly detained or delayed (Article 12).

This Convention also requires Parties to undertake, directly or through the International Maritime Organization and other international bodies, as appropriate, in respect of the control and management of ships' ballast water and sediments, to provide support for those Parties which request technical assistance to train personnel; to ensure the availability of relevant technology, equipment and facilities; to initiate joint research and development programmes; and to undertake other action aimed at the effective implementation of this Convention and of guidance developed by the organization related thereto (Article 13).

2.6. Other instruments: HELCOM Baltic Sea Action Plan (BSAP)

The HELCOM Baltic Sea Action Plan (HELCOM BSAP, HELCOM 2007) is a programme developed by the contracting parties of HELCOM to restore the good ecological /environmental status of the Baltic marine environment by 2021. As such it is an agreement between all the coastal

states of the Baltic Sea and EU, though not legally binding. As such, it involves also the only non-EU member state with Baltic shore line into the work. It implements the ecosystem approach to the management of human activities. The HELCOM BSAP aims to address all the major environmental problems of the Baltic Sea through the four segments, expressed as goals: a sea unaffected by eutrophication, unaffected by hazardous substances, favourable conservation status of biodiversity and with environmentally friendly maritime activities.

The biodiversity goal means, that biodiversity is restored and maintained and all elements of the marine food-webs occur at normal abundance and biodiversity. These goals are divided into three levels: landscape (ecosystem), community and species level, reflecting the Convention of Biological Diversity. These levels reflect the ecological objectives of 'natural marine and coastal landscapes', 'thriving and balanced communities of plants and animals' and 'viable populations of species'.

The BSAP is based on a set of 'ecological objectives', reflecting an agreed vision of a healthy marine environment, with 'diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable human activities'. In order to make the ecological objectives operational, concrete targets are to be set jointly, as well as indicators developed in order to follow the progress toward these targets.

In the biodiversity segment of the action plan, the contracting parties have committed to several tasks, such as developing marine spatial planning principles, assessing the ecological coherence and implementing management plans for the Baltic Sea Protected Areas (including Natura 2000 and Emerald sites), developing a classification system for marine habitats and updating the Red List of Species and Habitats/Biotopes. The tasks shall be done jointly between the Baltic countries.

HELCOM has taken the decision to revise its existing monitoring programmes, aiming at joint monitoring fully supporting the indicator-based assessment approach and monitoring of the implementation of the Baltic Sea Action Plan. The revised programme is to be cost-effective, and in line with other international monitoring and reporting requirements. The revision is to take place by 2013.

The progress toward the BSAP commitment is followed through the 'Holistic Assessment of the Ecosystem Health of the Baltic Sea', which is updated periodically. The Holistic Assessment builds on four thematic assessments representing each of the segments, based on information provided by the ecological indicators. The Initial Holistic Assessment was published in 2010 (HELCOM 2010).

In 2010 HELCOM decided to establish, for those HELCOM Contracting States being also EU-Member States, the role of HELCOM as the coordinating platform for the regional implementation of the EU Marine Strategy Framework Directive (EU MSFD) in the Baltic Sea including striving for harmonised national marine strategies for achieving good environmental status according to the HELCOM Baltic Sea Action Plan and the EU MSFD; and (HELCOM 2010b).

2.7. Comparison of the policy instruments

Marine Strategie Framework Directive is a EU level comprehensive legal framework with focus to attain or maintain GES.

BSAP is aimed as an effecient tool to achieve the purpose of the MSFD having the closest time scale to MSFD when comparing to other frameworks, this legally not binding document sets the aim to restore the good ecological/environmental status of the Baltic Sea marine environment by 2021. As part of the HELCOM Baltic Sea Action Plan all Baltic nations adopted the *Road Map Towards Harmonised Implementation and Ratification of the 2004 BWM Convention*, in which they all agreed to ratify the Convention no later than 2013 and to designate/identify clear national responsibilities for coordinating the national implementation of the Convention.

When comparing the assessment areas the BSAP is directly covering the Baltic Sea area. WFD partly overlaps with MSFD in particular covering coastal waters which is defined in WFD as surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters. Other frameworks like HD, BD and BWM apply under states' juristication of Baltic Sea area covering listed habitat types and species. BWM apply to ships that are entitled to fly the flag of a Party and ships not entitled to fly the flag of the Party but which operate under the authority of a Party also outside the Baltic Sea area.

Assessment units are differing form each other quite a lot. MSFD are assessing the marine environmental status in whole national marine area, while WFD is dividing assessment units to river basin districts which is defined in WFD as the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under MSFD Article3(1) as the main unit for management of river basins. HD requires member states to establish network of special areas of conservation composed of sites hosting natural habitats listed in Annex I and the habitats of the species listed in Annex II of the directive.

BD is using assessment units which consist of species mentioned in Annex I – III of the directive. As the BWM is assessing ships' ballast water and sediments the assessment units are distributed by ship construction year and by ballast water capacity.

The assessment under policy instruments are based on different characteristics and sets of elements which are listed in the directives, however there are some fields where the overlapping with MSFD partly or fully exists (see more detailed analysis in chapter 3).

Evaluation of the environmental status of marine waters is given quite differently. If MSFD is evaluating the status based on the average of all the results then WFD status is based on the quality element that has the worst ecological status. HD and BD have similar way on evaluating the status by the occurrence of the community important habitat types or species listed in the directives' annexes. BSAP is evaluating the status based on the implementation status of the recommendations.

Different policy instruments aim to achieve good environmental status of the marine environment when all the objectives are achieved (Figure 1). Terminology used to define this desired status under different policy instruments differ in the linguistic, but also in the way it is defined. While the main aim of all of those instruments is to distinguish between the status when all objectives are achieved and status when it is not achieved yet the methodological differences in determining this boundary conditions may cause some problems in actual comparison of the assessment results and aggregating those to the regional scale.

MSFD	GES		Sub-GES		
WFD	High	Good	Moderate	Poor	Bad
HD	Favourable		Unfavourable-Inadequate		Unfavourable-Bad

Figure 1. Schematic illustration of the classification of the status of marine environment into different quality classes under Marine Strategy Directive, Water Framework Directive and Habitat Directive. Main quality classifications (desired/undesired) are indicated in green and red colours (Figure from HELCOM 2013).

In the following table different existing policy instruments covering marine environment are compared to each other (Table 1).

Table 1. Comparison of the main features of different policy instruments.

Directive	MSFD	WFD	HD	BD	BWM	BSAP
Time scale	to 2020	to 2015	-	-	-	to 2021
Assessment area	Sea area	Coastal waters	nine biogeographical regions (Alpine, Atlantic, Black Sea, Boreal, Continental, Macaronesian, Mediterranean, Pannonian and Stepic)	territory of Member States	a) ships entitled to fly the flag of a Party; b) ships not entitled to fly the flag of a Party but which operate under the authority of a Party	Baltic Sea Area
Assessment unit	assessment covering national marine area, nested approach used	divided to river basin districts	special areas of conservation composed of sites hosting natural habitats listed in Annex I and the habitats of the species listed in Annex II	species mentioned in Annex I – III including their eggs, nests and habitats	distributed by ship construction year by ballast water capacity.	assessed as one area
Basis for the assessment	based on 11 qualitative descriptors	based on quality elements listed in WFD annex V	based on criteria set out in Annex III and the appearance of species listed in Annex IV	based on occurrence of species listed in annexes I - III	harmful aquatic organisms and pathogens	Based agreed preliminary indicators
How is it assessed?	based on the average of all the results	based on the quality element that has the worst ecological status („One out, all out“)	based on the occurrence of the community important habitat types or animal- and plant species listed in this directive annexes	based on the occurrence status of the species listed in annexes I – III		based on the implementation status of the recommendations
How is the status classification presented?	good environmental status (GES) or not good environmental status (non-GES)	Divided into 5 ecological classes: high, good, moderate, poor, bad	Protected sites of community important habitat types and/or animal- and plant species	List of species that need protection		Via implementation status: if implemented; if ongoing; if not implemented

3. Environmental targets and indicators

3.1. Indicators to be produced according to MSFD

Marine Strategy Framework Directive requires Member States, in respect of each marine region or subregion, to establish a comprehensive set of environmental targets and associated indicators for their marine waters so as to guide progress towards achieving good environmental status in the marine environment. In doing so, they shall take into account the pressures and impacts, of which an indicative list is set out in Annex III of the Directive. When devising the targets and indicators, it shall be ensured that they are compatible with the relevant existing targets laid down by other existing Community, national or international legislation (Article 10).

Development of indicators describing GES of the Baltic Sea is to be done jointly between the Baltic Sea countries – in practice the collaboration is done through the work within HELCOM.

GES indicators have been determined in the Commission Decision 477/2010/EU.

Actual, operational indicators to be used for reporting and assessment are developed by countries and are based on national data and monitoring traditions. Attempt for the harmonisation for the Baltic Sea area is done through the HELCOM CORESET process where the core set of environmental indicators under different topics of BSAP is developed and agreed among member states (HELCOM 2013).

3.2. Synergy with other obligations

The Marine Strategy Framework Directive is broad and covers several indicators. However, it is stated that there is a need to prioritize and select among those listed. HD has the most overlap with MSFD, especially on habitat level but dealing only with listed priority habitats.

In general there is mainly wider overlap for species distributions, population sizes, habitat distribution and condition, with the exception that WFD does not cover habitats at all. BSAP does not use species distributions, but to some extent looks at population sizes (certain species). MSFD is the only that fully includes population genetic structure, although it could be included for HD in population condition assessments. MSFD is the only that fully includes ecosystem level descriptors, although partly this is also included in HD. MSFD includes much more than

the other legal documents on non-indigenous species, both concerning abundances and impacts. BSAP, HD and WFD have no NIS descriptors at all. BD, BWM and WFD have no descriptors related to fishing pressure or fish stocks. BSAP, MSFD and WFD are quite overlapping regarding descriptors describing direct effects of nutrient enrichment as well as effects of contaminants. These are to a minor extent also covered by HD but not at all part of BD.

3.2.1. Biodiversity

Water Framework Directive covers some of the GES indicators of MSFD descriptor 1 (biodiversity) for costal waters (Table 2). According to the biological quality elements set out in WFD Annex V (1.1.4.) WFD is assessing composition and abundances of phytoplankton, other aquatic flora and benthic invertebrate fauna, in case of phytoplankton also biomass is assessed mainly as indicators of human pressure (in the Baltic Sea case this is mainly Eutrophication). Previously mentioned elements cover MSFD D1 species distribution, distributional range, population size, population abundance and biomass indicators.

Habitat Directive is undertaking surveillance of the conservation status of the natural habitat types listed in Annex I of the directive and species of wild fauna and flora listed in Annex II. Site assessment criteria for assessing at national level of the relative importance of sites for each natural habitat type in Annex I are (Annex III):

- ⤴ natural habitat types of community interest, in particular degree of representativity of the natural habitat type on the site;
- ⤴ area of the site covered by the natural habitat type in relation to the total area covered by that natural habitat type within national territory;
- ⤴ degree of conservation of the structure and functions of the natural habitat type concerned and restoration possibilities;
- ⤴ global assessment of the value of the site for conservation of the natural habitat type concerned.

Those site assessment criterias will cover the following MSFD D1 indicators: habitat distribution, distributional range, distributional pattern, habitat extent, habitat area, habitat

condition, condition of the typical species and communities of the habitat and their relative abundance and/or biomass.

Site assessment criteria for assessing at national level of the relative importance of sites for each species in Annex II are (Annex III):

- ⤴ size and density of the population of the species present on the site in relation to the populations present within national territory;
- ⤴ degree of conservation of the features of the habitat which are important for the species concerned and restoration possibilities;
- ⤴ degree of isolation of the population present on the site in relation to the natural range of the species;
- ⤴ global assessment of the value of the site for conservation of the species concerned.

Those species assessment criterias will cover the following MSFD D1 indicators: species distribution and distributional range, distributional pattern within distributional range, area covered by the species, population size, population abundance and/or biomass and population condition. Also those criterias cover partly population demographic characteristics and genetic structure.

Habitat Directive site and species assessment criterias together will partly cover some of the ecosystem level descriptors: ecosystem structure; composition and relative proportions of ecosystem components and connectivity consideration.

Birds directive Article 10 requires that Member States to encourage research and any work required (according to Annex V) as a basis for the protection, management and use of the population of all species of naturally occurring birds in the wild state in the European territory of the Member States to which the Treaty applies. For that Members States shall:

- ⤴ make national lists of species in danger of extinction or particularly endangered species, taking into account their geographical distribution;

- ⤴ make list and ecological description of areas particularly important to migratory species on their migratory routes and as wintering and nesting grounds;
- ⤴ make list of data on the population levels of migratory species as shown by ringing;
- ⤴ make assessments of the influence of methods of taking wild birds on population levels;
- ⤴ develop or refine ecological methods for preventing the type of damage caused by birds;
- ⤴ determine the role of certain species as indicators of pollution;
- ⤴ study the adverse effect of chemical pollution on population levels of bird species.

Previously mentioned will cover MSFD D1 indicators species distribution and population size. Also those assessments will partly cover habitat distribution, habitat condition and connectivity consideration.

The International Convention for the Control and Management of Ships Ballast Water & Sediments does not cover any of the MSFD biodiversity descriptors.

As the HELCOM BSAP aims to address all the major environmental problems of the Baltic Sea through the four segments, expressed as goals: a sea unaffected by eutrophication, unaffected by hazardous substances, favourable conservation status of biodiversity and with environmentally friendly maritime activities, the biodiversity goal partly overlaps with some of the MSFD biodiversity indicators.

BSAP preliminary indicators: trends in trophic structure and diversity of species (e.g. caught in scientific surveys); trends in the number of threatened and/or declining species; abundance, trends and distribution of Baltic seal species and Baltic harbour porpoise; number of rivers with viable populations of Baltic sturgeon; and spawning stock biomass of western Baltic cod and eastern Baltic cod will partly cover MSFD species level biodiversity indicators: population size and population abundance and/or biomass.

BSAP preliminary indicators: designated BSPAs, Natura 2000 and Emerald site area as percentage of total sub-region area; percentage of important migration and wintering areas for birds within the Baltic Sea area which are covered by the Baltic Sea protected areas (hereinafter

BSPA), Natura 2000 and Emerald sites; percentage of marine and coastal landscapes in good ecological and favourable status; percentage of endangered and threatened habitats/biotopes' surface covered by the BSPAs in comparison to their distribution in the Baltic Sea; and trends in spatial distributions of habitats within the Baltic Sea regions will partly cover MSFD habitat level biodiversity indicators: habitat distribution and distributional range.

BSAP preliminary indicators: percentage of all potentially suitable substrates covered by characteristic and healthy habitat-forming species such as bladderwrack, eelgrass, blue mussel and stoneworts; trends in abundance and distribution of rare, threatened and/or declining marine and coastal biotopes/habitats included in the HELCOM lists of threatened and/or declining species and habitats of the Baltic Sea area; trends in the number of threatened and/or declining species; Abundance, trends and distribution of Baltic seal species compared to the safe biological limit (limit reference level) as defined by HELCOM HABITAT; abundance, trends, and distribution of Baltic harbour porpoise; number of rivers with viable populations of Baltic sturgeon; spawning stock biomass of western Baltic cod and eastern Baltic cod compared to precautionary level (Bpa) as advised by ICES and/or defined by EC management plans; number of salmon rivers with viable stocks; and trends of salmon smolt production in wild salmon rivers will partly cover MSFD biodiversity indicators: habitat condition and the condition of typical species and communities indicators.

In conclusion, HD has the most overlap with MSFD biodiversity indicators covering almost every indicator except two habitat level indicators and one ecosystem level indicator (resilience consideration) though other ecosystem level indicators are only covered partly.

Table 2. MSFD Biodiversity indicators synergy with other obligatory frameworks.

Level	Biodiversity indicators	WFD	HD	BD	BWM	BSAP
Species	Species distribution	X	X	X		
	Distributional range	X	X			
	Distributional pattern within the distributional range (where appropriate)		X			
	Area covered by the species (for sessile/ benthic species)		X			
	Population size	X	X	X		(X)
	Population abundance and/or biomass (as appropriate)	X	X			(X)
	Population condition		X			
	Population demographic characteristics		(X)			
	Population genetic structure (where appropriate)		(X)			
Habitat	Habitat distribution		X	(X)		(X)
	Distributional range		X			(X)
	Distributional pattern		X			
	Habitat extent		X			
	Habitat area		X			
	Habitat volume, where relevant					
	Habitat condition		X	(X)		(X)
	Condition of the typical species and communities		X			(X)
	Relative abundance and/or biomass, as appropriate		X			
	Physical, hydrological and chemical conditions					
Ecosystem	Ecosystem structure	(X)	(X)			
	Composition and relative proportions of ecosystem components	(X)	(X)			
	Connectivity consideration		(X)	(X)		
	Resilience consideration					

3.2.2. Non-indigenous species

Only Birds Directive include MSFD descriptor 2 (non-indigenous species). BD article 11 requires Member States to see that any introduction of species of bird which do not occur naturally in the wild state in the European territory of the Member States does not prejudice the local flora and fauna. This will partially cover MSFD non-indigenous species indicator impacts of non-indigenous invasive species at the level of species, habitats and ecosystem (Table 3).

Table 3. MSFD Non-indigenous species indicators synergy with other obligatory frameworks.

Level	Non-indigenous species indicators	WFD	HD	BD	BWM	BSAP
Species	Abundance of non-indigenous species, in particular invasive species				X	
	Trends in abundance, temporal occurrence and spatial distribution in the wild of non-indigenous species, particularly invasive non-indigenous species, notably in risk areas, in relation to the main vectors and pathways of spreading of such species				X	
Ecosystem	Ratio between invasive non-indigenous species and native species in some well studied taxonomic groups (e.g. fish, macroalgae, molluscs) that may provide a measure of change in species composition (e.g. further to the displacement of native species)				X	
	Impacts of non-indigenous invasive species at the level of species, habitats and ecosystem, where feasible			(X)		

3.2.3. Commercially exploited fish and shellfish

Only BSAP includes MSFD descriptor 3 (commercially exploited fish and shellfish). BSAP preliminary indicators: spawning stock biomass of western Baltic cod and eastern Baltic cod compared to precautionary level (Bpa) as advised by ICES and/or defined by EC management plans; and fishing mortality level of western Baltic cod and eastern Baltic cod, compared to precautionary level (Fpa) as advised by ICES and/or defined by EC management plans will partly cover MSFD indicators: fishing mortality and spawning stock biomass (Table 4).

Table 4. MSFD commercially exploited fish and shellfish indicators synergy with other obligatory frameworks.

Level	Commercially exploited fish and shellfish indicators	WFD	HD	BD	BWM	BSAP
Ecosystem	Fishing mortality					(X)
	Ratio between catch and biomass index					
	Spawning Stock Biomass					(X)
	Biomass indices					
	Proportion of fish larger than the mean size of first sexual maturation					
	Mean maximum length across all species found in research vessel surveys					
	Mean maximum length across all species found in research vessel surveys					
	Size at first sexual maturation, which may reflect the extent of undesirable genetic effects of exploitation					

3.2.4. Food web

Only BSAP includes MSFD descriptor 4 (food web). BSAP preliminary indicators: trends in trophic structure and diversity of species (e.g. caught in scientific surveys); abundance, trends and distribution of Baltic seal species compared to the safe biological limit (limit reference level) as defined by HELCOM HABITAT; and abundance, trends, and distribution of Baltic harbour porpoise will cover MSFD indicators: abundance/distribution of key trophic groups/species; and abundance trends of functionally important selected groups/species (Table 5).

Table 5. MSFD food web indicators synergy with other obligatory frameworks.

Level	Food web indicators	WFD	HD	BD	BWM	BSAP
Ecosystem	Productivity (production per unit biomass) of key species or trophic groups					
	Performance of key predator species using their production per unit biomass					
	Proportion of selected species at the top of food webs					
	Large fish					
	Abundance/ distribution of key trophic groups/species					X
	Abundance trends of functionally important selected groups/species					X

3.2.5. Eutrophication

WFD covers some of the GES indicators for MSFD descriptor 5 (eutrophication) for costal waters (Table 6). According to the biological quality elements set out in WFD Annex V (1.1.4.) WFD is assessing composition, abundance and biomass of phytoplankton and composition and abundance of other aquatic flora and according to physico-chemical quality elements WFD is assessing oxygenation and nutrient conditions. Previously mentioned elements will cover MSFD indicator: nutrients conditions in the water column; water transparency related to increase in suspended algae; abundance of opportunistic macroalgae; and will partly cover: 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; and dissolved oxygen, i.e. changes due to increased organic matter decomposition and size of the area concerned.

Also BSAP covers some of the eutrophication indicators. BSAP preliminary indicators: winter surface concentrations of nutrients reflecting the ecological objective “Concentrations of nutrients close to natural levels“; summer Secchi depth reflecting the ecological objective “Clear water“; chlorophyll a concentrations reflecting the ecological objective “Natural level of algal blooms“; depth range of submerged vegetation reflecting the ecological objective “Natural distribution and occurrence of plants and animals“; and area and length of seasonal oxygen depletion reflecting the ecological objective “Natural oxygen levels” will cover MSFD

indicators: chlorophyll concentration in the water column; water transparency related to increase in suspended algae; abundance of perennial seaweeds and seagrasses (e.g. Fucooids, eelgrass and Neptune grass) adversely impacted by decrease in water transparency and dissolved oxygen, i.e. changes due to increased organic matter decomposition and size of the area concerned; and will partly cover MSFD indicator: nutrients concentration in the water column.

Table 6. MSFD eutrophication indicators synergy with other obligatory frameworks.

Level	Eutrophication indicators	WFD	HD	BD	BWM	BSAP
Ecosystem	Nutrients concentration in the water column	X				(X)
	Nutrient ratios (silica, nitrogen and phosphorus), where appropriate					
	Chlorophyll concentration in the water column	(X)				X
	Water transparency related to increase in suspended algae, where relevant	X				X
	Abundance of opportunistic macroalgae	X				
	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)				
	Abundance of perennial seaweeds and seagrasses (e.g. Fucooids, eelgrass and Neptune grass) adversely impacted by decrease in water transparency	X				X
	Dissolved oxygen, i.e. changes due to increased organic matter decomposition and size of the area concerned	(X)				X

3.2.6. Sea-floor integrity

WFD covers some of the GES indicators for MSFD descriptor 6 (sea-floor integrity) for costal waters (Table 7). According to the hydromorphological quality elements set out in WFD Annex V (1.1.4.) WFD is assessing: depth variation; structure and substrate of the coastal bed; and structure of the intertidal zone; and according to biological elements composition and abundance of aquatic flora and benthic invertebrate fauna. Previously mentioned elements will cover MSFD indicators: presence of particularly sensitive and/or tolerant species; and multi-metric indexes

assessing benthic community condition and functionality, such as species diversity and richness, proportion of opportunistic to sensitive species; and will partly cover type, abundance, biomass and areal extent of relevant biogenic substrate.

Habitat Directive is undertaking surveillance of the conservation status of the natural habitat types listed in Annex I of the directive and species of wild fauna and flora listed in Annex II. Site assessment criteria for assessing at national level of the relative importance of sites for each natural habitat type in Annex I are (Annex III):

- ⌘ natural habitat types of community interest, in particular degree of representativity of the natural habitat type on the site;
- ⌘ area of the site covered by the natural habitat type in relation to the total area covered by that natural habitat type within national territory;
- ⌘ degree of conservation of the structure and functions of the natural habitat type concerned and restoration possibilities;
- ⌘ global assessment of the value of the site for conservation of the natural habitat type concerned.

Those site assessment criterias will cover MSFD sea-floor integrity indicators: extent of the sea bed significantly affected by human activities for the different substrate types; and partly cover type, abundance, biomass and areal extent of relevant biogenic substrate.

Site assessment criteria for assessing at national level of the relative importance of species in Annex II are (Annex III):

- ⌘ size and density of the population of the species present on the site in relation to the populations present within national territory;
- ⌘ degree of conservation of the features of the habitat which are important for the species concerned and restoration possibilities;
- ⌘ degree of isolation of the population present on the site in relation to the natural range of the species;

▲ global assessment of the value of the site for conservation of the species concerned.

Those site assessment criterias will cover MSFD sea-floor integrity indicators: presence of particularly sensitive and/or tolerant species; and parameters describing the characteristics (shape, slope and intercept) of the size spectrum of the benthic community.

BSAP preliminary indicators: percentage of all potentially suitable substrates covered by characteristic and healthy habitat-forming species such as bladderwrack, eelgrass, blue mussel and stoneworts; and trends in abundance and distribution of rare, threatened and/or declining marine and coastal biotopes/habitats included in the HELCOM lists of threatened and/or declining species and habitats of the Baltic Sea area will cover MSFD D6 indicator extent of the seabed significantly affected by human activities for the different substrate types; and partly cover type, abundance, biomass and areal extent of relevant biogenic substrate.

Table 7. MSFD sea-floor integrity indicators synergy with other obligatory frameworks.

Level	Sea-floor integrity indicators	WFD	HD	BD	BWM	BSAP
Habitat	Type, abundance, biomass and areal extent of relevant biogenic substrate	(X)	(X)			(X)
	Extent of the seabed significantly affected by human activities for the different substrate types		(X)			X
Ecosystem	Presence of particularly sensitive and/or tolerant species	X	X			
	Multi-metric indexes assessing benthic community condition and functionality, such as species diversity and richness, proportion of opportunistic to sensitive species	X				
	Proportion of biomass or number of individuals in the macrobenthos above some specified length/size					
	Parameters describing the characteristics (shape, slope and intercept) of the size spectrum of the benthic community		X			

3.2.7. Hydrographical condition

Habitat Directive is undertaking surveillance of the conservation status of the natural habitat types listed in Annex I of the directive and species of wild fauna and flora listed in Annex II. Site

assessment criteria for assessing at national level of the relative importance of sites for each natural habitat type in Annex I are (Annex III):

- ⤴ natural habitat types of community interest, in particular degree of representativity of the natural habitat type on the site;
- ⤴ area of the site covered by the natural habitat type in relation to the total area covered by that natural habitat type within national territory;
- ⤴ degree of conservation of the structure and functions of the natural habitat type concerned and restoration possibilities;
- ⤴ global assessment of the value of the site for conservation of the natural habitat type concerned.

Those site assessment criterias will cover partly MSFD hydrographical condition indicator: spatial extent of habitats affected by the permanent alteration (Table 8).

BSAP preliminary indicator: trends in abundance and distribution of rare, threatened and/or declining marine and coastal biotopes/habitats included in the HELCOM lists of threatened and/or declining species and habitats of the Baltic Sea area will partly cover MSFD indicator: spatial extent of habitats affected by the permanent alteration.

Table 8. MSFD hydrographical condition indicators synergy with other obligatory frameworks.

Level	Hydrographical condition indicators	WFD	HD	BD	BWM	BSAP
Habitat	Extent of area affected by permanent alterations	X				
	Spatial extent of habitats affected by the permanent alteration	X	(X)			(X)
	Changes in habitats, in particular the functions provided (e.g. spawning, breeding and feeding areas and migration routes of fish, birds and mammals), due to altered hydrographical conditions		(X)			

3.2.8. Contaminants

WFD covers one GES indicators for MSFD descriptor 8 (contaminants) for costal waters (Table 9). According to the chemical and physico-chemical quality elements set out in WFD Annex V (1.1.4.) WFD is assessing: pollution by all priority substances identified as being discharged into the body of water; and pollution by other substances identified as being discharged in significant quantities into the body of water. Previously mentioned indicators will cover MSFD indicator: concentration of the contaminants, measured in the relevant matrix (such as biota, sediment and water) in a way that ensures comparability with the assessments under Directive 2000/60/EC.

BSAP list of substances or substance groups of specific concern to the Baltic Sea and preliminary indicators: indicators for ecological objectives “Concentrations of hazardous substances close to natural levels”; “All fish safe to eat”; “Healthy wildlife”; and “Radioactivity at pre-Chernobyl levels” will cover MSFD contaminants indicators: concentration of the contaminants, measured in the relevant matrix (such as biota, sediment and water) in a way that ensures comparability with the assessments under Directive 2000/60/EC; and levels of pollution effects on the ecosystem components concerned, having regard to the selected biological processes and taxonomic groups where a cause/effect relationship has been established and needs to be monitored.

Table 9. MSFD contaminants indicators synergy with other obligatory frameworks.

Level	Contaminants indicators	WFD	HD	BD	BWM	BSAP
Ecosystem/habitat	Concentration of the contaminants, measured in the relevant matrix (such as biota, sediment and water) in a way that ensures comparability with the assessments under Directive 2000/60/EC	X				X
	Levels of pollution effects on the ecosystem components concerned, having regard to the selected biological processes and taxonomic groups where a cause/effect relationship has been established and needs to be monitored	X				X
	Occurrence, origin (where possible), extent of significant acute pollution events (e.g. slicks from oil and oil products) and their impact on biota physically affected by this pollution	X				

3.2.9. Contaminants in fish and other seafood indicators

MSFD GES descriptor 9 (contaminants in fish and other seafood) indicators (Table 10) are only covered by BSAP. BSAP preliminary indicators for ecological objectives “concentrations of hazardous substances close to natural levels” & “all fish safe to eat” and “radioactivity at pre-Chernobyl levels” will cover MSFD indicator: actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels.

Table 10. MSFD contaminants in fish and other seafood indicators synergy with other obligatory frameworks.

Level	Contaminants in fish and other seafood indicators	WFD	HD	BD	BWM	BSAP
	Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels					X
	Frequency of regulatory levels being exceeded					

3.2.10 Marine litter and energy, including underwater noise

None of the MSFD GES descriptor 10 (marine litter) and 11 (energy, incl underwater noise) indicators are covered by any regulation (Tables 11 and 12).

Table 11. MSFD marine litter indicators synergy with other obligatory frameworks.

Level	Marine litter indicators	WFD	HD	BD	BWM	BSAP
	Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source	No synergies with other obligatory frameworks				
	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					
	Trends in the amount, distribution and, where possible, composition of micro-particles (in particular microplastics)					
	Trends in the amount and composition of litter ingested by marine animals					

Table 12. MSFD energy, including underwater noise indicators synergy with other obligatory frameworks.

Level	Energy, incl underwater noise indicators	WFD	HD	BD	BWM	BSAP
	Proportion of days and their distribution within a calendar year over areas of a determined surface, as well as their spatial distribution, in which anthropogenic sound sources exceed levels that are likely to entail significant impact on marine animals measured as Sound Exposure Level (in dB re $1\mu\text{Pa}^2 \cdot \text{s}$) or as peak sound pressure level (in dB re $1\mu\text{Pa}_{\text{peak}}$) at one metre, measured over the frequency band 10 Hz to 10 kHz	No synergies with other obligatory frameworks				
Continuous low frequency sound	Trends in the ambient noise level within the 1/3 octave bands 63 and 125 Hz (centre frequency) (re $1\mu\text{Pa}$ RMS; average noise level in these octave bands over a year) measured by observation stations and/or with the use of models if appropriate					

3.3. The assessment

3.3.1. Assessment obligations in the MSFD

According to Article 8 in the MSFD: in respect of each marine region or subregion, Member States shall make an Initial Assessment of their marine waters. The Initial Assessment shall comprise of a) an analysis of the essential features and characteristics, and current environmental status, b) an analysis on the predominant pressures and impacts and c) an economic and social analysis of the use of those waters and the cost of degradation. While preparing the assessments, the Baltic Member States shall do their best to ensure that the assessment methodologies are consistent across the sub-region, and that transboundary features are taken into account.

Traditional assessments have typically assessed biodiversity elements, species and habitats individually – basing on a number of criteria that leads to a judgement of the overall condition. In these cases the individual species and habitats are most often considered to be under threat,

needing conservation action. The holistic approach adopted in the concept of GES in the MSFD focuses also on the dynamic interactions of the species and habitats concerned (JRC 2010).

The geographical scale of the assessment has an effect on its outcomes. For an ecologically relevant assessment, the scale should reflect the range of the species/habitat in question. In practice this might lead to several geographical units. Geographical units should reflect the levels at which the policies are applied, and also relate to the more strict geographical descriptions of the other legal requirements.

3.3.2. Synergy with other obligatory assessments

Similarly to the MSFD, also the Habitats Directive, the WFD and the HELCOM BSAP include requirements of regular assessments of the environmental state (Table 13). The status assessment includes biological features in all of the above, but physical and chemical features only in the HELCOM PSAP and the WFD, in addition to the MSFD. On the other hand, the habitat types are naturally a strong part of the Habitat Directive assessment, but missing completely in the requirements of the WFD. The MSFD, Habitats Directive, WFD, Birds Directive and the BSAP all include a component on determining the predominant pressures and impacts in the assessment. The economic and social analysis of the cost of degradation of the environment included in the MSFD is also partly covered in WFD as well as BSAP.

The holistic assessment of HELCOM BSAP resembles the assessment required in the MSFD in the sense that they both include both the marine and coastal areas and require assessing status, pressures and impacts and their cumulative effects, as well as economic and social aspects. Taking also into account article 6 in the MSFD requiring regional cooperation, these assessments can be tightly linked. The HELCOM biodiversity assessment so far was based on the BEAT assessment tool, which was used in the Initial Holistic Assessment, and is under further development.

Table 13. Assessment obligations in the MSFD covered by the other directives and policies, according to the legal analysis.

Assessment obligations MSFD	WFD	HD	BD	BWM	BSAP
1. Characteristics of the marine waters:	(X)				
♣ Physical and chemical features	(X)				X
♣ Habitat types		X			X
♣ Biological features	X	X	X		X
♣ Other features	(X)	X			X
2. Identification of the predominant pressures and impacts	X	X	X		X
3. An economic and social analysis of the marine water use and of the cost of degradation of the marine waters	X	X	X		X
4. Continuous assessment and regular updating of targets through monitoring programmes	X	X	X		X

4. Harmonisation of approaches in reporting procedures for different directives (MSFD, WFD, HD, BD)

4.1. Marine Strategie Framework Directive

MSFD reporting requirements for Member States can be considered to centre around reporting on the following articles, which are repeated on a six-year cycle starting 2012: 1) Article 8 – initial assessment (IA); 2) Article 9 – determination of Good Environmental Status (GES); 3) Article 10 – environmental targets; 4) Article 11 – monitoring programmes; 5) Article 13 – programme of measures.

The Directive itself provides little specific guidance on reporting formats to be adopted. Article 19(3) indicates that Member States shall provide the Commission with access and use rights in respect of the data and information resulting from the initial assessments and from the monitoring programmes; these data and information need also to be made available to the European Environment Agency (EEA) and need to be compliant with the INSPIRE Directive (2007/2/EC).

On the basis of the range of reporting, it can be expected that the nature of information to be reported under the Marine Directive will include a mixture of text reports (e.g. transposition), assessment information (e.g. initial assessments), data and maps (e.g. initial assessments, monitoring data) and metadata (e.g. monitoring programmes).

The Commission, together with the EEA and its member countries and third countries, is developing a Shared Environmental Information System (SEIS) to improve the collection, exchange and use of environmental data and information across Europe. SEIS aims to create an integrated web-enabled, EU-wide environmental information system, by simplifying and modernizing existing information systems and processes. For water-related directives, this is manifested in the Water Information System for Europe (WISE) and for biodiversity directives in the Biodiversity Information System for Europe (BISE). Reporting into these systems is handled via the EEA's ReportNet system which acts as a reporting management service. The content of reports for each Directive is defined in a set of reporting obligations which are

translated into ‘reporting sheets’, each giving guidance on the information and data needed and its format.

In keeping with Commission policy, the WISE system will form the main platform for technical reporting under the MSFD, with a specific module (WISE-Marine) developed to handle the information and data. This approach is familiar to Member States in their reporting under the related Water Framework Directive and other water directives.

Although as mentioned above there is a mechanism in the Marine Directive (Art. 24(2b)) to adopt formal reporting formats, a more informal route for developing reporting requirements via a set of ‘reporting sheets’ is being followed, as is done for related directives (e.g. Water Framework, Habitats and Birds Directives). These reporting sheets have been developed through consultation with Member States via the Working Group on Data, Information and Knowledge Exchange (WG DIKE), under the guidance of the Marine Directors. This approach offers greater flexibility in the reporting framework, as the sheets can more easily be amended in the light of experience in implementing the Directive, without recourse to legal mechanisms. The approach agreed by WG DIKE (September 2011) was therefore to develop a 'reporting package', the set of reporting sheets and associated specific guidance on their completion. The question of what constitutes a “minimum reporting requirement” and how this information is made available to the EU still needs clarification through the DIKE process. This involves the question whether detailed information (e.g. “sub-programme level”) is subject to formal reporting (i.e. in need of compatibility with XML reporting schemata) or is made available to the EU Commission as part of the distributed supporting documentation that Member States refer to alongside their formal reporting of general and Monitoring Programme information. This latter approach provides much more flexibility and reduces reporting effort while ensuring that the desired information is available. Still this approach also requires a structured presentation of the information and an agreement on the common core elements of fact sheets in order to provide a comparable approach at regional and national level.

MSFD Article 11 provides legally-binding requirements for Member States to establish and implement coordinated monitoring programmes for the ongoing assessment of the environmental status of marine waters. Member States are to notify the Commission of their monitoring

programmes by 15 October 2014. Reporting to the Commission on MSFD monitoring programmes is a formal requirement of the directive (Art. 11(3)). The key aim of this reporting is to provide sufficient information for the Commission to undertake its Article 12 assessment effectively. This will enable the Commission to verify that the monitoring programmes comply with the requirements of the Directive, particularly in relation to whether they will enable environmental status and progress with targets to be assessed, cover all relevant aspects (e.g. of MSFD Annex III), and are sufficiently coordinated, coherent and consistent with the monitoring programmes of neighbouring states in the same marine region/subregion.

The reporting therefore needs to include information about what will be monitored, where, with what spatial resolution and temporal frequency, and with what methodologies. The detail of what is to be reported is to be based on the 10 agreed questions for reporting in Annex 3 of the *Recommendation* (Recommendations for implementation and reporting) which in turn are directly linked to the requirements of the Directive (particularly Article 11 and Annex V). It is consequently helpful to both the Member States and the Commission to discuss and agree upon the contents and format of these reports and the means of making this information available in order to help ensure they are well suited to the needs of the Article 12 assessment.

However, in developing this requirement for reporting to the Commission it is helpful also to consider the broader needs of Member States and others for information on the monitoring programmes:

- a. For national purposes to support development and implementation of monitoring programmes, including use at policy level and for technical delivery;
- b. For stakeholders and the public, to inform them of the programmes;
- c. For neighboring countries and regional organizations (e.g. Regional Sea Conventions) to foster cooperation within the (sub)region;
- d. For EU level to inform the Commission and others of the Member State implementation.

Consideration of these broader needs could help develop better synergies between the reporting to the Commission and other needs, where there is some commonality in requirements. These

aspects were further considered in previous discussions with WG DIKE on decentralized reporting and joint documentation, in order to develop more effective and efficient reporting systems.

4.1.1. Proposed structure, content and format for a Reporting Sheet

A structure and content for reporting has been developed with Member States via WG DIKE as a Reporting Sheet. As set out in the Recommendation, this is to be centred on the 10 key questions for reporting and is divided into three sections:

- a) General questions
- b) Programme-level questions
- c) Sub-programme-level questions

The proposed questions under Article 11 make links to reporting on Articles 8, 9, 10 and (in future) 13 as the monitoring programmes are closely associated to these articles; the reporting can consequently make use of information reported by Member States in 2012 under Articles 8, 9 and 10, such as established structures and term lists. This will have the advantage of enabling links to be made in the reporting database between Article 11 and these previous articles, and also in reuse of structures with which Member States are already familiar.

It is therefore proposed that reuse is made of:

- a) Relevant xml schemas (e.g. geographic boundaries);
- b) Relevant term lists (e.g. lists of pressures, functional groups, habitat types), updating these where needed;
- c) Relevant aspects defined by Member States (e.g. specific indicators, environmental targets).

Data and information from the monitoring programmes are to be made available to the Commission and the EEA according to MSFD Article 19(3). Whilst there is a separate process of WG DIKE, via its Technical Sub-Group, for forward implementation of Article 19(3) (e.g. to define which data/data sets are most suitable to aggregate at (sub)regional) scales, how they will be accessed), it is appropriate to make initial links to Article 19(3) through some generic questions, whilst leaving the detail on specific datasets (e.g. metadata) to this associated process.

A key issue for structuring the reporting sheet is to define what constitutes a 'programme' and a 'sub-programme' as this influences significantly the consistency of reporting across Member States and the level of detail and variation reported under each section of the Reporting Sheet.

In order to ensure consistency between Member States in how the reporting on monitoring programmes is structured and to facilitate their assessment under Article 12, an agreed common set of programmes should be used. WG DIKE discussed a proposal that there should be a 'programme' to address each of the Descriptors, i.e. one for eutrophication, one for contaminants, litter etc. For the biodiversity descriptors (D1, 3, 4, 6) it was recognised that it may be more appropriate to structure reporting in another way, e.g. around seabed and water column habitats, and around birds, mammals, fish, reptiles and pelagic cephalopods, to reflect the inter-relationships of these descriptors. The WG DIKE Drafting Group wished to separate monitoring for Descriptor 3 (commercial fish and shellfish) from the other biodiversity monitoring (D1, 4 and 6) because the necessary data will mostly be collected through the CFP DC-MAP (Data Collection Multi-Annual Programme); however data from this D3 programme would also contribute to assessments for Descriptors 1, 4 and 6.

Using this agreed structure at Programme level, it is proposed to have flexibility at sub-programme level to reflect the likely range of requirements within each Descriptor and across the (sub-)regions. Each programme will consequently contain a number of sub-programmes, the number varying depending upon the complexity of the Descriptor, the extent that GES has already been achieved, the (extent of) Member State marine waters, the (variety of) associated activities, pressures and measures and the environmental targets which have been set.

To facilitate comparison between Member States at sub-programme level it is proposed to assign sub-programmes to one or more topics:

- a) aspects of ecosystem state/impact (to assess if GES has been met and whether environmental state is changing);
- b) the pressures upon the ecosystem that can cause impacts on environmental state (e.g. to assess if environmental targets are being met);
- c) the activities and uses of the marine environment which may be giving rise to the pressures, and

- d) the measures which are in place to address pressures and impacts (to assess whether the measures are effective in managing the activities) (recognising that new measures implemented for MSFD in 2016 would not be addressed in monitoring programmes established in 2014 and that, in 2014, the process of identifying existing measures relevant for MSFD implementation will still be under way).

There remains some uncertainty as to whether what constitutes a 'sub-programme' needs further guidance, so as to give greater consistency in how they are reported by each Member State (e.g. the number per Programme). This is also relevant for ensuring that decentralised documentation is structured in a manner that allows linking up with the required sub-programme level information. An initial perspective is that the sub-programme should encompass a common methodology for the elements it is addressing; in this sense it may thus equate to a single indicator. For example, where monitoring addresses multiple species or habitats using a particular technique these could be grouped as a single sub-programme, but where different techniques are used (e.g. remote sampling versus in-situ sampling), these may be better expressed as different sub-programmes.

The purpose of general questions section of the reporting sheet is to:

- a) Ask general questions that do not relate to a specific monitoring programme, such as the overall adequacy of the monitoring programmes for assessing progress towards GES and achievement of the targets, and to describe how the monitoring programmes will be able to identify new and emerging issues.
- b) Identify any gaps in coverage of the monitoring programmes and explain how and when these will be addressed.

The purpose of programme-level questions section of the reporting sheet is to:

- a) Ask questions that are specific to each programme, but apply generally to all of its sub-programmes;
- b) This includes aspects on the adequacy of the programme for assessment against GES and progress with targets, (optional) links to (existing) measures and to existing monitoring programmes for other policies.

The information collected in this section of the reporting sheet aims to describe the individual monitoring programmes in a more detailed and systematic manner than the general questions, with the intention that all questions are typically relevant to each programme.

For each monitoring programme there are fields for a general description and metadata about the programme, including the organisation (Competent Authority) responsible for its delivery.

The main purpose of the monitoring programmes is to provide data to enable an assessment of environmental status in relation to what is defined as GES and to enable assessment of progress on the environmental targets set to achieve GES. Each monitoring programme is therefore assigned to a GES descriptor (or several for biodiversity topics), and potentially to particular criteria and/or GES characteristics (indicators). It is also necessary to link the monitoring programme to the features (e.g. species, habitats) and/or pressures to which it is relevant. Lastly, many programmes will also aim to provide data in relation to particular environmental targets and this linkage should be indicated.

Because the GES descriptors and criteria (Art. 9), ecosystem features and pressures (Art. 8), and environmental targets and associated indicators (Art. 10) are already reported, good use should be made of existing data structures in the reporting system (MSFD database) to enable linkages to be made from the Article 11 reporting. This can be achieved through reuse of term lists and, where appropriate, already reported information (e.g. geographical assessment areas, lists of targets, etc).

The purpose of sub-programme-level questions section of the reporting sheet is to:

- ⤴ Ask questions that are specific to each sub-programme;
- ⤴ This will typically address the specific aspect or features being addressed and the methods, spatial resolution and temporal periodicity of the monitoring.

It is common to consider monitoring programmes as addressing different needs (e.g. assessment of environmental state/impacts, pressures, activities and effectiveness of measures). For any particular Descriptor, it is possible that these differing types/purposes of monitoring may be needed in combination in order to meet the overall needs for the Descriptor and associated targets.

A monitoring programme may thus have multiple sub-programmes associated with it and each may, for example have different frequencies of sampling and methodologies. At this level it is possible to capture some of the different methodologies and give an indication of the level of effort, e.g. density of stations in the assessment area, or the number of surveys that are performed over a 6-year reporting period.

Because it is possible that some monitoring surveys will collect data of relevance to several Descriptors (e.g. plankton monitoring for use in D1, D4 and D5), there is a need to cross reference the sub-programme to other Programmes. In this way it is only reported once, but clearly associated to several Descriptors.

Regarding quality elements or topics for assessment, the directive provides structure to the Article 8 assessment through the indicative set of ecosystem characteristics in Table 1 and the indicative set of pressures listed in Table 2 of Annex III.

Whilst Annex III of the Directive can be considered to provide the elements for assessment of marine waters, the objectives for what needs to be achieved are expressed in the definition of GES (Art. 3(5)) and further elaborated in the 11 Descriptors of GES (Annex I of the Directive). The COM Decision (2010) provides the criteria and a set of indicators which are to be used to assess whether GES has been achieved or maintained.

A key link between the elements for assessment and the objectives and criteria for assessment is provided in the Commission Staff Working Paper (CSWP, 2011). Annex 5 of the CSWP further elaborates on these linkages, by providing a relationship between pressures, impacts and state, as expressed through the Decision criteria and indicators. The integrated table presented in this Annex 5 has consequently been used as the basis to define a set of reporting sheets for Article 8 reporting, and thus provide the overall structure for reporting on different quality aspects of the marine waters. In this way, the proposed structure for MSFD reporting is:

- ✧ Clearly based on the requirements of the Directive (as set out in Annex III);
- ✧ Closely associated with the objectives to be achieved, as defined in the GES
- ✧ Descriptors (Annex I) and the criteria and indicators for their assessment (COM Decision); and

- ✧ Builds upon the linkages between pressure, impact and state, and the structure expressed in Annex 5 of the CSWP.

The set of reporting sheets:

Reporting sheets relating to Characteristics (MSFD Annex III Table 1)

1. Physical and hydrological features (topography, bathymetry, temperature, ice cover, currents, upwelling, wave exposure, mixing, turbidity, residence time, salinity) [Chemical features - are incorporated into the pressure/impact sheets (nutrient and oxygen levels as 'nutrient enrichment' and pH, pCO₂ as 'marine acidification')]
2. Habitats (predominant seabed and water column habitats, and special habitat types including their associated communities of phytoplankton, zooplankton, angiosperms, macro-algae and bottom fauna)
3. Biological features at level of functional groups (fish, mammals, seabirds, reptiles, cephalopods)
4. Biological features at level of individual species (fish, seabirds, mammals, reptiles, other, genetically modified forms)
5. Ecosystems
6. Non-indigenous species inventory
7. Other features – other features or characteristics (typical to region/subregion; habitats in particular areas (e.g. intense/specific pressures; protected areas)) [Other features – chemicals are treated as a 'pressure/impact' (hazardous substances)]

Reporting sheets relating to Pressures and impacts (MSFD Annex III Table 2)

1. Physical loss
2. Physical damage
3. Other physical disturbance – underwater noise
4. Other physical disturbance – marine litter
5. Interference with hydrological processes
6. Contamination by hazardous substances, systematic and/or intentional release of substances
7. Acute pollution events
8. Nutrient and organic matter enrichment

9. Biological disturbance – microbial pathogens
10. Biological disturbance – non-indigenous species
11. Biological disturbance – extraction of species, including non-target species
12. Marine acidification

Reporting sheets relating to Economic and social analysis

1. Human activities and uses of marine waters
2. Ecosystem services assessment or alternative approaches
3. Cost of degradation

4.2. Water Framework Directive

The reporting requirements of the WFD are specified in Articles 3 and 15. Article 3 requires MS to provide information to the European Commission on the identification of River Basin Districts (RBD) and Competent Authorities, whilst Article 15 requires information to be provided to the Commission on:

1. The analysis carried out according to Article 5;
2. Monitoring programmes;
3. River Basin Management Plans.

Article 18 of the Directive requires the Commission to publish reports on the implementation of the Directive and to submit them to the European Parliament and to the Council. In this report we look in more detail the reporting requirements of the monitoring programmes concerning coastal waters.

Annex V of the WFD sets out the minimum requirements for establishment of surface water surveillance, operational and investigative monitoring programmes, it is up to individual MS to develop the programmes, ensuring that the network of sites, parameters indicative of the quality elements and monitoring frequencies are sufficient to provide a comprehensive and coherent overview of surface water status within each RBD.

Information to be provided under WFD regarding coastal waters:

1. for each river basin district/Sub-unit the data of total surface area of coastal waters (km²)/number of coastal water bodies is required;
2. For each category of water body (rivers, lake, transitional and coastal waters) the following data are required:
 - ⤴ Number of types per water category (national or RBD);
 - ⤴ A list of types and a short description (<300 characters) of each type.
3. For each surveillance and operational monitoring programme and for each
4. surface water category (rivers, lakes, coastal and transitional), the following data are required:
 - ⤴ Intended start date (if it differs from 22 December 2006);
 - ⤴ Total number of monitoring sites and frequency to be (or expected to be) monitored for each quality element;
 - ⤴ List of Priority Substances and other substances discharged in significant quantities to be monitored.

Quality elements for monitoring coastal waters (WFD Annex V (1.1.4.)):

1. Biologicelements:
 - ⤴ Composition, abundance and biomass of phytoplankton
 - ⤴ Composition and abundance of other aquatic flora
 - ⤴ Composition and abundance of benthic invertebrate fauna
2. Hydromorphological elements supporting the biological elements:
 - ⤴ Morphological conditions
 - ⤴ depth variation
 - ⤴ structure and substrate of the coastal bed
 - ⤴ structure of the intertidal zone
3. Tidal regime
 - ⤴ direction of dominant currents
 - ⤴ wave exposure
4. Chemical and physico-chemical elements supporting the biological elements
 - ⤴ General:
 - i. Transparency

- ii. Thermal conditions
- iii. Oxygenation conditions
- iv. Salinity
- v. Nutrient conditions
- ^ Specific pollutants:
 - i. Pollution by all priority substances identified as being discharged into the body of water
 - ii. Pollution by other substances identified as being discharged in significant quantities into the body of water.

In addition summary text should be provided for each RBD.

The Water Information System for Europe– WISE – is comprised of data and information collected at EU level by various institutions or bodies which has previously either not been available or been stored in a number of different places. Member States have agreed to provide data under the WFD to WISE. WISE will be contributing as a building block to the Shared Environmental Information System (SEIS) which will cover data and information of all environmental themes. Furthermore, it is clear that the geo-referenced information management within WISE will be consistent with and building on INSPIRE.

The EEA has a central role in the management of WISE due to its role as EU data centre for water. The reporting services (Reportnet) of the EEA will be used and further developed towards the needs of WISE. The EEA is acting as a WISE operator (with the assistance of DGs Environment, JRC and Eurostat) and is responsible for the provision and operation of the WISE infrastructure at EU level.

Data should be provided in XML format and schemas are being developed and agreed to facilitate this under the auspices of Working Group D. Geospatial data should be provided as Shapefiles or in GML format (GML is a requirement under the INSPIRE Directive).

It was decided to prepare and agree guidance documents for the different reporting requirements using the format of reporting sheets. These reporting sheets are informal arrangements between the Member States and the Commission and thus are not legally binding. It is voluntary

commitment by the Member States to submit this information to WISE. Current experiences show that this approach results in a similar or even higher success rate in comparison to past legally binding reporting requirements.

4.3. Habitats Directive

Article 17 section 1 of the Habitats Directive states “Every six years from the date of expiry of the period laid down in Article 23, Member States shall draw up a report on the implementation of the measures taken under Habitats Directive. This report shall include in particular information concerning the conservation measures referred to in Article 6 (1) as well as evaluation of the impact of those measures on the conservation status of the natural habitat types of Annex I and the species in Annex II and the main results of the surveillance referred to in Article 11. The report, in accordance with the format established by the committee, shall be forwarded to the Commission and made accessible to the public.

The EU Water Framework and Marine Strategy Framework Directives use the terms ‘Good Ecological Status’ and ‘Good Environmental Status’ which relate to ‘Favourable Conservation Status’ although the definitions are different and assess different aspects of biodiversity. Clearly in many instances the same data will be used for reporting under two or more directives and Member States are encouraged to develop links between work for reporting under all three directives. Work is also ongoing at EU-level to ensure synergies in definition of the various concepts.

In general, all habitat types listed on Annex I and species listed on Annexes II, IV & V of the Habitats Directive should be reported for each biogeographical or marine region in which they occur by each Member State. A checklist of habitat types and species covered by the Habitats Directive and their occurrence per biogeographical region and Member State is available from the Article 17 Reference Portal. According to those checklists information from HD will be reported in the Biodiversity Information System for Europe (BISE). Reporting into this system is handled via the EEA’s ReportNet system which acts as a reporting management service.

4.4. Birds Directive

Article 12 of the Birds Directive states that:

1. Member States shall forward to the Commission every three years, starting from 7 April 1981, a report on the implementation of the national provisions taken under this Directive.
2. The Commission shall prepare every three years a composite report based on the information referred to in paragraph 1. That part of the draft report covering the information supplied by a Member State shall be forwarded to the authorities of the Member State in question for verification. The final version of the report shall be forwarded to the Member States.

In early 2008 however it was agreed to start exploring a new system of bird reporting within the Expert Group of Reporting under the nature directives, which would improve the quality of reporting and deliver data on the actual state and trends of bird populations, similar to the reporting under Article 17 of the Habitats Directive. This would involve:

- ⤴ A change from a primarily process-based exercise towards an outcome-oriented one, dealing primarily with status and trends of bird populations,
- ⤴ A change from a 3-year to 6-year reporting cycle, reasonably synchronised with the reporting under Article 17 of the Habitats Directive, so that information is available in policy-relevant cycles and can give strong input to the overall biodiversity debate.

Between 2008 and 2011, the new reporting format under Article 12 was developed jointly by Member States, the Commission and contracted experts, to be used for a first reporting round under the new system by the end of 2013. This new format includes two parts:

1. A general reporting format, where some general progress reporting is retained but in a simplified manner, including basic facts and web-links to other sources for detailed information about e.g. legal transpositions and research or work done for the protection, management and use of bird populations. Textual reporting is kept to a minimum.
2. A format for reporting on the size and trend of individual bird species' populations and distributions, including sections for reporting on the main threats and pressures affecting species for which special protected areas (SPAs) have been classified, as well as their coverage by the SPA network and conservation measures taken for them.

The Reference Portal contains reference documents and checklists for the reporting under Article 12 of the Birds Directive and Article 17 of the Habitats Directive, as well for the Standard Data Forms (SDFs) for the individual Natura 2000 sites. Birds Directive requires reporting according to reporting formats and habitats and species check lists uploading the report together with the relevant files to Reportnet, which acts as a reporting management service.

4.5. Comparison of the reporting requirements under different directives

MSFD, WFD and HD have the six-year reporting cycles which are not in accordance to each other, however BD is changing from a three-year to six-year cycle to synchronise the reporting with the reporting under Article 17 of the HD starting the new system by the end of 2013.

For water-related directives (WFD), data is collected in the Water Information System for Europe (WISE) and for biodiversity directives (HD and BD) in the Biodiversity Information System for Europe (BISE). In keeping with Commission policy, the WISE system will also form the main platform for technical reporting under the MSFD, with a specific module (WISE-Marine) developed to handle the information and data.

Reporting into these systems is handled via the EEA's ReportNet system which acts as a reporting management service. The content of reports for each Directive is defined in a set of reporting obligations which are translated into 'reporting sheets', each giving guidance on the information and data needed and its format.

MSFD it self provides little specific guidance on reporting formats to be adopted. Article 19(3) indicates that Member States shall provide the Commission with access and use rights in respect of the data and information resulting from the initial assessments and from the monitoring programmes; these data and information need also to be made available to the European Environment Agency (EEA) and need to be compliant with the INSPIRE Directive (2007/2/EC). On the basis of the range of reporting, it can be expected that the nature of information to be reported under the MSFD will include a mixture of text reports (e.g. transposition), assessment information (e.g. initial assessments), data and maps (e.g. initial assessments, monitoring data) and metadata (e.g. monitoring programmes). Under WFD the data should be provided in XML format and schemas are being developed and agreed to facilitate this under the auspices of

Working Group D. Geospatial data should be provided as Shapefiles or in GML format (GML is a requirement under the INSPIRE Directive). HD and BD requires reporting according to reporting formats and habitats and species check lists uploading the report together with the relevant files to Reportnet.

4.6. General recommendations from the analysis of reporting requirements under different policy instruments

- ⤴ For descriptors already partly covered by reporting requirements by other instruments existing methods, indicators and data collection schemes should be used. Duplication of effort in data collection, data analysis and reporting procedures should be avoided as much as possible.
- ⤴ Data sets used for reporting under different obligations should be harmonised and of equal quality. Different origin and quality level of basic assessment data could be a source of mismatch of the assessment results covering similar topics under different legal instruments. So the harmonized data collection and data handling procedures should be ensured on national level.
- ⤴ Difference in timing of the reporting under different instruments may be a source of different interpretation of assessment results. As difference in timing of the reporting may cause cases where new data is included in the assessment procedures carried out for different reporting requirements and so the final assessment results may have mismatch in the conclusions. This should be taken into account when assessment results are formulated.
- ⤴ Differences in assessment techniques and methodology between different policy instruments should be harmonised (e.g. MSFD – WFD – HD). Especially methodological basis for assessment of different indicators should be harmonized both on national and sea basin level. Intercalibration of assessment schemes should be organized.

Summary

The comparative analysis between MSFD and other different existing reporting instruments covering marine environment showed some similarities in structure and requirements of assessment schemes.

Similarly to the MSFD, also the Habitats Directive, the WFD and the HELCOM BSAP include requirements of regular assessments of the environmental state. The status assessment includes biological features in all of the above, but physical and chemical features only in the HELCOM BSAP and the WFD, in addition to the MSFD. On the other hand, the habitat types are naturally a strong part of the Habitat Directive assessment, but missing completely in the requirements of the WFD. The MSFD, Habitats Directive, WFD, Birds Directive and the BSAP all include a component on determining the predominant pressures and impacts in the assessment. The economic and social analysis of the cost of degradation of the environment included in the MSFD is also partly covered in WFD as well as BSAP.

Different policy instruments aim to achieve the status of the marine environment when all the objectives are achieved however the terminology used to define this desired status under different policy instruments differ in the linguistic, but also in the way it is defined. While the main aim of all of those instruments is to distinguish between the status when all objectives are achieved and status when it is not achieved yet the methodological differences in determining this boundary conditions may cause some problems in actual comparison of the assessment results and aggregating those to the regional scale.

Comparison of the reporting requirements showed differences in timing of the reporting under different directives, however the same six-year reporting cycles are used. In addition all the reporting under the directives is carried out via European Environment Agency's ReportNet system which acts as a reporting management service. The content of reports for each Directive is defined in a set of reporting obligations which are translated into 'reporting sheets', each giving guidance on the information and data needed and its format.

When comparing the reporting requirements under different policy instruments some general recommendations for harmonisation would be that descriptors already partly covered by reporting requirements by other instruments existing methods, indicators and data collection schemes should be used. In addition duplication of effort in data collection, data analysis and reporting procedures should be avoided as much as possible and data sets used for reporting under different obligations should be harmonised and of equal quality. Furthermore difference in timing of the reporting under different instruments should be taken into account when assessment results are formulated. Moreover differences in assessment techniques and methodology between different policy instruments should be harmonised.

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