

English Summary

MSFD Programme of Measures for Marine Protection in the German Parts of the North Sea and the Baltic Sea

Report pursuant to Article 45h(1) of the
Federal Water Act



Die
Bundesregierung



Summary and English translation

Federal Ministry of the Environment, Nature Conservation,
Construction and Nuclear Safety

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Note on the German programme of measures:

The new measures proposed as part of the German programme of measures are the subject of ongoing internal coordination at the federal level and in the German states (*Länder*) and are subject to the availability of funding.

The programme's operationalisation provided for in the MSFD will, if necessary, be undertaken with consideration to a further impact assessment.

Note on the English summary

The English language translation is just for information. Only the official publication of the German version of the Programme of Measures is authentic. The official documents are available at <http://meeresschutz.info/berichte-art13.html>

The official Programme of Measures includes:

In the summary report¹:

- An executive summary.
- In Part I: a summary with general information on the procedures and methods for establishing the programme.
- In Part II: a programme of measures dedicated to the North Sea summarising the findings of the initial assessment, the environmental targets set in 2012, the contribution of existing measures to achieving the targets and the planned measures. The section includes an environmental report according to the provisions of the Federal Environmental Impact Assessment Act on strategic environmental assessment.
- In Part III: a programme of measures dedicated to the Baltic Sea summarising the findings of the initial assessment, the environmental targets set in 2012, the contribution of existing measures to achieving the targets and the planned measures. The section includes an environmental report according to the provisions of the Federal Environmental Impact Assessment Act on strategic environmental assessment.
- In the Annexes: an overview of the operational environmental targets under the MSFD (Annex 1), an overview of the existing and planned measures to achieve the environmental targets (Annex 2), an overview of selected national, European and international legislation (Annex 3), and the basis for determining the scope of the environmental assessment (Annex 4).

In Attachment 1 to the summary report²:

- Fact sheets for each of the proposed new measures providing detailed information on those measures.

In Attachment 2 to the summary report³:

- Background information on the applied approach on socio-economic assessments.

The English summary is a compilation of the following excerpts from the official Programme of Measures:

- Executive summary
- Part I
- Annex 1: Existing operational environmental targets pursuant to Article 45e WHG as the basis for the development of measures, as notified to the EU Commission in 2012.
- Annex 2: Overview of existing and new measures to achieve the environmental targets.
- from Attachment 1: Excerpts of the fields "measure description" and "implementation mode / instrument" of the fact sheets for the individual measures.

¹ http://meeresschutz.info/berichte-art13.html?file=tl_files/meeresschutz/berichte/art13msrl/massnahmen/MSRL_Art13_Massnahmenprogramm_Rahmentext.pdf

² http://meeresschutz.info/berichte-art13.html?file=tl_files/meeresschutz/berichte/art13msrl/massnahmen/MSRL_Art13_Massnahmenprogramm_An1_1_Massnahmenkennblaetter.pdf

³ http://meeresschutz.info/berichte-art13.html?file=tl_files/meeresschutz/berichte/art13msrl/massnahmen/MSRL_Art13_Massnahmenprogramm_An1_2_Soziooekonomische_Bewertung.pdf

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Executive summary

German marine protection policy aims at comprehensive and integrated management of human activities based on the ecosystem approach in order to achieve good environmental status in marine waters by 2020. An integrated management of ecologically sustainable uses requires coordination of all policy areas influencing the status of marine ecosystems, in particular fisheries, agriculture, shipping, energy generation, waste management, product design, chemicals policy, tourism and education. To this end, coordination of actions among the countries bordering the North and Baltic Seas is indispensable.

In their 2012 assessment of the German parts of the North and Baltic Seas, the Federal Government and the *Länder* concluded that marine waters were not at a good status, in particular concerning benthic habitats and species, fish, seabirds, phytoplankton and, especially in the Baltic Sea, marine mammals. The predominant pressures on both seas include, among others, eutrophication, fisheries, contaminants and litter.

The present programme of measures for the German parts of the North and Baltic Seas constitutes the final step in the first implementation cycle of the EU Marine Strategy Framework Directive. It is also to contribute to implementation of the objectives of the “*Entwicklungsplan Meer – Strategie für eine integrierte Meerespolitik*” (Marine development plan – Strategy for integrated marine policy) adopted by the Federal Government.

The programme considers the contribution to the achievement of MSFD objectives made by existing national measures under European environmental directives and as part of regional and international agreements. The 31 new measures for the 2016–2021 period focus on pressure sources at sea and include the following:

→ **Reduction of pollutant inputs**, including ship-borne emissions and discharges.

→ **Protection of marine biodiversity**, e.g. by means of spatial measures for the protection of marine species and habitats.

→ **Reduction of litter inputs** through a combination of measures relating to product design, waste management, removal actions and public awareness-raising.

→ **Reduction of underwater noise** through the development and application of noise mitigation measures, supported by noise mapping, a noise registry and biological threshold values.

The introduction of nutrients and contaminants from agricultural uses and other activities on land are well covered by the implementation of the Water Framework Directive, among other approaches. Management measures in Natura 2000 sites for the protection of species and habitats are covered by the Habitats Directive.

For river-borne **inputs of nutrients and contaminants** from land, it is expected that the updated River Basin Management Plans for the second management cycle 2015–2021 under the Water Framework Directive as well as the amended Federal Fertiliser Ordinance implementing the EU Nitrates Directive, and the amended Federal Ordinance on Installations for the Handling of Substances Hazardous to Water will contribute to improving the status of marine waters.

It is expected that the measures proposed in the MSFD programme of measures will have exclusively positive effects on the assets protected and environmental objectives set by statute, in particular with regard to water, wildlife/plants/biodiversity, terrestrial soils, landscape, air, cultural goods and material assets as well as human health. Moreover, it is expected that there will be positive transboundary effects. The magnitude of these impacts will depend on the detailed specification of the measures in the course of their implementation.

Part I: Summary



1. Rationale and objectives

With its Marine Strategy Framework Directive (MSFD)¹, the EU has created a legally binding framework under which the EU Member States take the necessary measures to achieve or maintain good environmental status (GES) of the marine environment by 2020 at the latest. To this end, the Member States develop a marine strategy for their marine waters in accordance with the plan of action set out by the MSFD in respect of each of the marine regions or sub-regions concerned. This marine strategy is to be reviewed and updated every six years within an adaptive management regime (Figure I.1). Member States sharing a marine region or sub-region cooperate to ensure that, within each such region or sub-region, their marine strategies and the measures required to achieve the objectives of the MSFD are coherent and coordinated.

The development of a programme of measures constitutes the third and final step in the first cycle of MSFD implementation (2012-2017). It builds on earlier, preparatory steps.

In 2012, as a first step, the EU Member States, and thus also Germany, carried out an initial assessment of their marine waters, determined a set of characteristics for good environmental status and established environmental targets.

The environmental targets bridge the gap between the current and the good environmental status respectively with a view to meeting the overall objective of the MSFD, i.e. to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest. The environmental targets form the basis for the development of measures. As a second step, monitoring programmes for the ongoing assessment of the marine waters' environmental status were established in 2014.

The European Commission's assessment of the Member States' 2012 reports has revealed a number of shortcomings in MSFD implementation.² Among other aspects, the Commission criticised the lack of a common level of aspiration within the marine regions going beyond existing determinations, as well as the lack of regional coherence. In its assessment of the German reports, the Commission criticised the GES description and the environmental targets as being not specific and lacking quantification. It also disapproved of the description of GES as lacking ambition and not going beyond existing legislation, especially with regard to marine biodiversity, the food web and sea-floor integrity. Intensive work towards improved MSFD implementation has been underway since 2014 at the national, regional and EU levels. This work includes a quantified and regionally coordinated definition of GES as a basis and reference for an ecosystem-based approach to managing human activities impacting on the marine environment.

On account of the increasing utilisation pressure on the German marine areas and the resultant impacts as well as the limits to the marine ecosystems' carrying capacity, there is a need for integrated management of human activities. The aim of the programme of measures for the German parts of the North and Baltic Seas is to reconcile marine ecosystem protection with

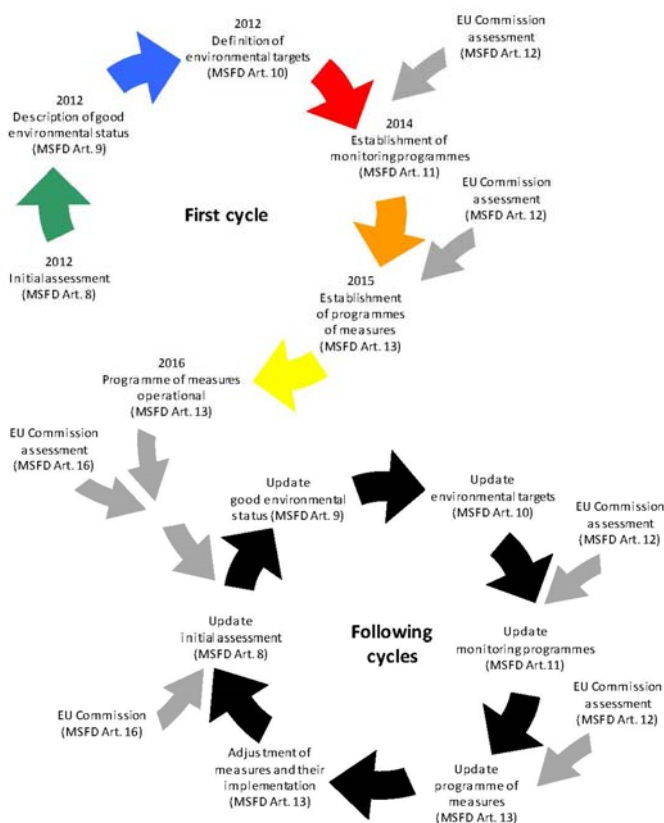


Figure I.1: MSFD cycles and implementation steps as set out in the plan of action pursuant to MSFD Article 5(2) (Source: UBA).

¹ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ L 164, 25.6.2008, p. 19–40.

² The Commission Report on the first phase of implementation of the MSFD, the Commission Staff Working Document and the detailed evaluation reports for Germany and the marine regions can be downloaded at: http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/implementation/reports_en.htm.

the sustainable and prudent use of marine waters. The programme of measures is based on existing knowledge. It describes measures to be taken in the 2016–2021 period in order to achieve good environmental status and environmental targets as defined in 2012.

The individual measures as part of the programme of measures were devised on the basis of the precautionary principle and the principles that preventive action should be taken, that environmental damage should, as a priority, be rectified at source and that the polluter should pay and they are based on an ecosystem-based approach to the management of human activities.

2. Background

The good status of the seas is an intrinsic value that must be preserved. It calls for the co-responsibility and cooperation of all maritime stakeholders – also with a view to the associated global ecological developments and efforts to mitigate climate change. This presents a need for an integrated German marine policy that ensures both the protection and a sustainable level of necessary human uses of marine waters, thus safeguarding the natural functions of such waters. The 2008 National Strategy for Sustainable Use and Protection of the Sea is an important component of Germany’s integrated marine policy. This strategy is tailored to strike the required balance between marine uses and conservation.

As was set out in the Federal Government’s 2011 “Marine development plan – Strategy for integrated marine policy”, the protection of seas and oceans must be advanced, as it is a prerequisite for the conservation and sustainable use of marine resources. Therefore, close linkages must be forged between integrated marine policy and the integrative implementation of the Marine Strategy Framework Directive. The programme of measures for the implementation of the MSFD, which is considered to be the environmental pillar of the EU’s integrated marine policy (Presidency Conclusions of the European Council, 14 December 2007), is to contribute to implementing the objectives of Germany’s marine development plan, which include the achievement of GES in the North and Baltic Seas by 2020, making them the cleanest and safest marine waters.

In Germany, the establishment of the programme of measures is governed by Article 45h of the Federal Water Act (WHG). Pursuant to WHG Article 45a(1), German marine waters are to be managed in a manner that

- prevents a deterioration in their status and
- maintains good environmental status, or

achieves it by 2020.

In order to achieve these management objectives, marine ecosystems in particular must be protected and preserved, and restored in areas where they have been adversely affected.

The programme of measures is a component of the national marine strategy for achieving GES in the German parts of the North and Baltic Seas. Good environmental status is defined with reference to marine biological diversity, non-indigenous species, commercially exploited fish and shellfish stocks, the food web, eutrophication, sea-floor integrity, hydrographical conditions, contaminants, marine litter and the introduction of energy (Table I.1).

The programme of measures is based on the 2012 assessment of the German parts of the North and Baltic Seas (WHG Article 45c, initial assessment pursuant to MSFD Article 8) and the environmental targets derived from this assessment in 2012 that are required to achieve GES (WHG Article 45e).³ In 2011, the public was given the opportunity to submit written comments on the draft reports on the initial assessment of the marine waters’ environmental status, on the determination of good environmental status, and on the establishment of environmental targets.⁴ The statements received in the course of this consultation were taken into account in the finalisation of the national reports submitted to the EU Commission in 2012. Where the statements provided suggestions for measures to be taken, these were taken into consideration in the development of the present programme of measures.

The seven overarching environmental targets (Table I.2) are further specified by operational targets and associated indicators. The operational targets reported to the EU Commission in 2012 (Annex 1) predominantly relate to managing human activities, such as reducing pressures and protecting biodiversity. As management targets they relate to concrete implementation measures within the meaning of MSFD Annex IV (2)(c). In many cases, their further specification and quantification is dependent on progress being made in determining quantified GES thresholds. For example, since 2012, target values for nutrient concentrations at the transition point from limnic to marine waters in the German parts of the North and Baltic Seas have been determined by modelling and agreed. In the context of HELCOM, the tonnage reduction in German nitrogen and phosphate inputs into the Baltic Sea has been determined.

In accordance with the decisions of the EU Commission, the Water and Marine Directors and the Joint Working Group of the Federal Government and the

³ See the national reports in accordance with Articles 8, 9 and 10 of the MSFD: <http://meeresschutz.info/index.php/berichte.html> (German language only).

⁴ See the synopsis of statements received with regard to the draft reports in accordance with Articles 8, 9 and 10 of the MSFD: <http://meeresschutz.info/index.php/stellungnahme.html> (German language only).

Länder on Water (LAWA⁵), the existing WFD measures were used as one basis for MSFD measures. Therefore, the WFD measures will not be presented in any detail in the MSFD programme of measures. For the purposes of coordination and standardised representation of national measures to achieve GES in coastal and marine waters, the catalogue of measures established for the Water Framework Directive (WFD) and the

EU Floods Directive was updated to include the measures for MSFD implementation. This approach once again highlights the linkage between WFD measures and the MSFD (LAWA-BLANO Catalogue of Measures⁶), with the WFD measures being implemented in accordance with WFD specifications. The numbering of the new MSFD measures continues that used in the Catalogue.

Table I.1: MSFD descriptors (D) for determining good environmental status in accordance with MSFD Annex 1, each preceded by a shortcut corresponding to the 2012 national report determining good environmental status. The colours correspond to the colours allocated to the seven overall national targets given in Table I.2 that are used to roughly assign the descriptors to environmental targets, with all environmental targets serving to achieve GES for descriptors 1, 4 and 6.

D1	<i>“Biodiversity”</i> : Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
D2	<i>“Non-indigenous species”</i> : Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.
D3	<i>“Status of commercially exploited fish and shellfish populations”</i> : Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.
D4	<i>“Food webs”</i> : All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
D5	<i>“Eutrophication”</i> : Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.
D6	<i>“Sea-floor integrity”</i> : Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
D7	<i>“Hydrographical conditions”</i> : Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
D8	<i>“Contaminants”</i> : Concentrations of contaminants are at levels not giving rise to pollution effects.
D9	<i>„Contaminants in food”</i> : Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.
D10	<i>“Marine litter”</i> : Properties and quantities of marine litter do not cause harm to the coastal and marine environment.
D11	<i>“Introduction of energy”</i> : Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

⁵ Decision on Agenda Item 3, No. 3 at the LAWA special session, 3-4 July 2014 in Husum, Germany.

⁶ <http://www.meeresschutz.info/berichte-art13.html>. BLANO - Federal/Länder Committee on the North and Baltic Seas (Bund/Länder-Ausschuss Nord- und Ostsee)

Table I.2: The seven overarching national environmental targets (UZ), each of which is further specified by a number of operational targets (see Annex 1), with all environmental targets serving to achieve GES for descriptors 1, 4 and 6. (Source: 2012 reports on environmental targets for the North Sea and the Baltic Sea).

UZ 1	Seas unaffected by eutrophication
UZ 2	Seas not polluted by contaminants
UZ 3	Seas with marine species and habitats unaffected by impacts of human activities
UZ 4	Seas with sustainable and environmentally sound use of resources
UZ 5	Seas without pressures from litter
UZ 6	Seas not impacted by the introduction of anthropogenic energy
UZ 7	Seas with natural hydromorphological characteristics

3. Methods

In terms of methodology, the programme of measures follows the recommendations developed as part of the Common Implementation Strategy for the MSFD as set out in the “Programmes of measures under the Marine Strategy Framework Directive – Recommendations for implementation and reporting” (hereinafter referred to as ‘*PoM Recommendations*’)⁷.

The establishment of the programme of measures is based on an inventory of existing measures, a qualitative assessment of the contribution made by the existing measures to achieving the operational environmental targets, and the identification and establishment of necessary new measures. The selection and assessment of measures is undertaken with reference to the pressures identified in the initial assessment carried out in 2012.

Annex 2 provides an overview of the relevant existing and new measures contained in the first MSFD programme of measures (2016–2021) established with a view to achieving set targets. The measures are listed by overall environmental target. The programme of measures, as well as the German marine strategies in general, apply an ecosystem-based approach to the management of human activities, ensuring that

the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while enabling the sustainable use of marine goods and services by present and future generations (*cf.* MSFD Article 1(3)).

A good environmental status of the North and Baltic Seas is also an important basis of the tourism sector, one of the most important economic sectors in coastal regions.

The further design and implementation of measures must have regard to governmental laws and jurisdictional rights established under international law, especially with respect to shipping, air traffic, military exercises and scientific marine research, as well as to uses agreed under international treaties, intergovernmental commitments, and legal obligations of government agencies. The limitations in the scope of application of the MSFD with regard to “activities the sole purpose of which is defence” also apply to the measures to be taken pursuant to WHG Article 45h. Due to their sovereign defence obligations, due regard is paid to the special characteristics of the German Federal Armed Forces.

⁷ Endorsed by the Marine Directors in Rome on 25 November 2014: <https://circabc.europa.eu/sd/a/0ee797dd-d92c-4d7c-a9f9-5dffb36d2065/GD10%20-%20MSFD%20recommendations%20on%20measures%20and%20exceptions%20-%20final.pdf>.

3.1 Inventory of existing measures

Existing measures are measures relevant for the achievement and maintenance of GES under the MSFD, that have been adopted under other policies and implemented (Category 1a) or that have been adopted under other policies but that have not yet been implemented or fully implemented (Category 1b).

Annex 3 to the official Programme of Measures gives an overview of the most significant national, EU and international legal bases considered in MSFD programming and which provide a framework for the process of implementation.

Pursuant to WHG Article 45h(1) sentence 5 (MSFD Article 13(6) in conjunction with Article 13(4) and (5)), information on existing marine protected areas is published at <http://www.meeresschutz.info/index.php/berichte-art-136.html>.

The assessment of existing measures has shown that, overall, they are not sufficient to achieve the environmental targets and ultimately GES. Therefore, the programme of measures provides for an additional 31 new measures going beyond existing provisions. These include measures with regard to litter, noise and contaminant inputs from anthropogenic sources at sea and by air, as well as spatial measures for the protection of marine species and habitats. In addition to the new measures it will be necessary to ensure the implementation, intensity and effectiveness of existing measures under other policies and to strengthen these, as required.

The repertoire of the WFD catalogue of measures is available to address environmental targets with regard to river-borne inputs of nutrients and contaminants. The WFD measures also integrate the MSFD requirements for coastal waters and the Exclusive Economic Zone, e.g. in terms of target values for nutrient concentrations at the transition point from limnic to marine waters. The updated draft WFD management programmes for the second WFD management cycle (2015–2021) also provide for intensive efforts to be made to further the implementation of the WFD catalogue of measures for the purposes of the MSFD.

The Joint Working Group of the Federal Government and the Länder on Water (LAWA) has shown in its 2014 paper titled “*Empfehlungen zur koordinierten Anwendung der EG-MSRL und EG-WRRRL - Parallelen und Unterschiede in der Umsetzung*” (Recommendations for the coordinated application of the EU MSFD and the EU WFD – Parallels and differences in implementation) that many of the planned WFD measures can be expected to yield positive impacts on the status of marine waters. These measures therefore serve as a basis for the MSFD programme of measures, while their implementation and further development will be pursued through the existing WFD structures.

For this reason, the MSFD programme of measures only provides for some individual *Länder*-specific measures in the agricultural sector which is the main source of land-based nutrient inputs into the marine environment. The Nitrates Directive sets out basic requirements for reducing contaminant inputs from farming. The national implementation of the Nitrates Directive is currently under review while the German Fertiliser Ordinance and the Ordinance on Installations for the Handling of Substances Hazardous to Water are presently being amended. The needs of coastal and marine waters in accordance with the MSFD were integrated into this process.

Summary descriptions of the contribution of existing measures to achieving the environmental targets and GES are given in Sections II.2 and III.2 of the official Programme of Measures for each of the overall environmental targets.

3.2 New measures

New measures are additional measures to achieve and maintain GES which do not build on existing implementation processes regarding existing EU legislation or international agreements (Category 2b) or those that go beyond what is already required under these (Category 2a).

Identification and establishment of measures

The starting point for the identification and establishment of measures is a collection of potential measures, i.e. a “pool of measures”, compiled in national workshops. For the development of tangible measure proposals for the first MSFD programme of measures, these proposals are prioritised based on the following criteria:

- The measures’ feasibility and their potential degree of effectiveness for achieving the environmental targets.
- The measures’ coverage of operational targets, main drivers and main pathways.

Non-prioritised measures remain in the pool of measures with a view to a future update of the programmes of measures as part of the next MSFD implementation cycle.

The new measures draw on the options in terms of types of measures as set out in MSFD Annex VI. The measures are set out programmatically, which means that

- they may include several individual measures, combinations of measures and different modes of action (legal, technical, political, economic);
- they may include measures that can be implemented concurrently or consecutively to 1) directly influence behaviour, 2) prepare measures

influencing behaviour, and 3) promote measures at the international level;

- as part of the operationalisation of the programme of measures, they must be specified in greater detail and defined in terms of their spatial/geographic application by the end of 2016.

Technical feasibility and sustainability

For a period of one year, the proposed measures passed through numerous technical and political-level coordination processes both inside the water management and nature conservation authorities as well as cross-departmentally. However, a systematic and scientifically sound socio-economic assessment at the level of individual proposed measures has yet to be undertaken. Moreover, in order to ensure that the implementation of measures is technically feasible and cost-effective, it is planned that feasibility studies will be conducted for some of the measures in the context of their operationalisation.

MSFD Article 13(3) was transposed into national law with WHG Article 45h(2). Prior to the establishment or updating of the programmes of measures, impact assessments including cost-benefit analyses must therefore be conducted for the new measures. A detailed qualitative and quantitative impact assessment, including cost-effectiveness analysis and cost-benefit analysis, cannot be undertaken until such time as gaps in terms of research and development results have been filled and individual measures have been specified in detail and defined in terms of their spatial/geographic application as well as their intensity.

As part of the ongoing development of the programme of measures, by the end of 2016 the individual measures will be finalised as enforceable measures in agreement with the relevant ministries at the federal level and in the coastal *Länder*, and taking international agreements into account.

Thus a two-step process is being employed: As a first step, a highly simplified assessment of socio-economic impacts was undertaken (socio-economic pre-assessment) for the purposes of establishing the programme of measures. The actual socio-economic assessment, which must be undertaken prior to establishing concrete measures, can only be conducted at such a time as the measures have been specified at a sufficient level of detail. The results of the pre-assessment are documented in the fact sheets for each of the measures (Attachment 1 to the official Programme of Measures). The process and methodology

for the socio-economic assessment to be conducted prior to the final establishment of measures are described in Attachment 2 to the official Programme of Measures.

The socio-economic assessment has yet to be deepened, i.a. with regard to economic aspects of sustainability as well as with respect to legal issues.

Spatial protection measures

For many years now, Germany has actively engaged in pursuing effective marine biodiversity protection. With the entry into force of the European Directive on the conservation of natural habitats and of wild fauna and flora (Habitats Directive, 92/43/EEC) in 1992, the EU Member States have committed to creating a coherent network of protected areas, including marine protected areas. Together with the Special Protection Areas (SPAs) classified under the EU Birds Directive (2009/147/EC), the Special Areas of Conservation (SACs) designated under the Habitats Directive form the Natura 2000 system of protected areas. Germany has notified 43% and 51% of its marine waters in the North Sea and Baltic Sea respectively to the EU Commission for inclusion into the Natura 2000 system of protected areas (Figure I.2). Moreover, at present Germany is actively engaged in designating all marine protected areas under national law and in preparing management plans for these areas where this has not already been done.

Pursuant to the MSFD and WHG Article 45h, programmes of measures are to include spatial protection measures, contributing to coherent and representative networks of marine protected areas (MSFD Article 13 (4)). These include Special Areas of Conservation pursuant to the Habitats Directive, Special Protection Areas pursuant to the Birds Directive, and marine protected areas established under international or regional agreements. In Germany, the latter cover marine protected areas established under the OSPAR and HELCOM Conventions (which are largely congruent with protected areas under the Habitats and/or Birds Directives) as well as the recommendations of the OSPAR and HELCOM Conventions for the conservation of marine biodiversity. Spatial protection measures also cover the three Wadden Sea National Parks in Lower Saxony, Schleswig-Holstein and Hamburg as part of the Trilateral Cooperation on the Protection of the Wadden Sea (hereinafter referred to as “Trilateral Wadden Sea Cooperation”) (TWSC, 1982/2010). No designations of additional marine protected areas in accordance with MSFD Article 13(4) are currently envisaged in the programme of measures.

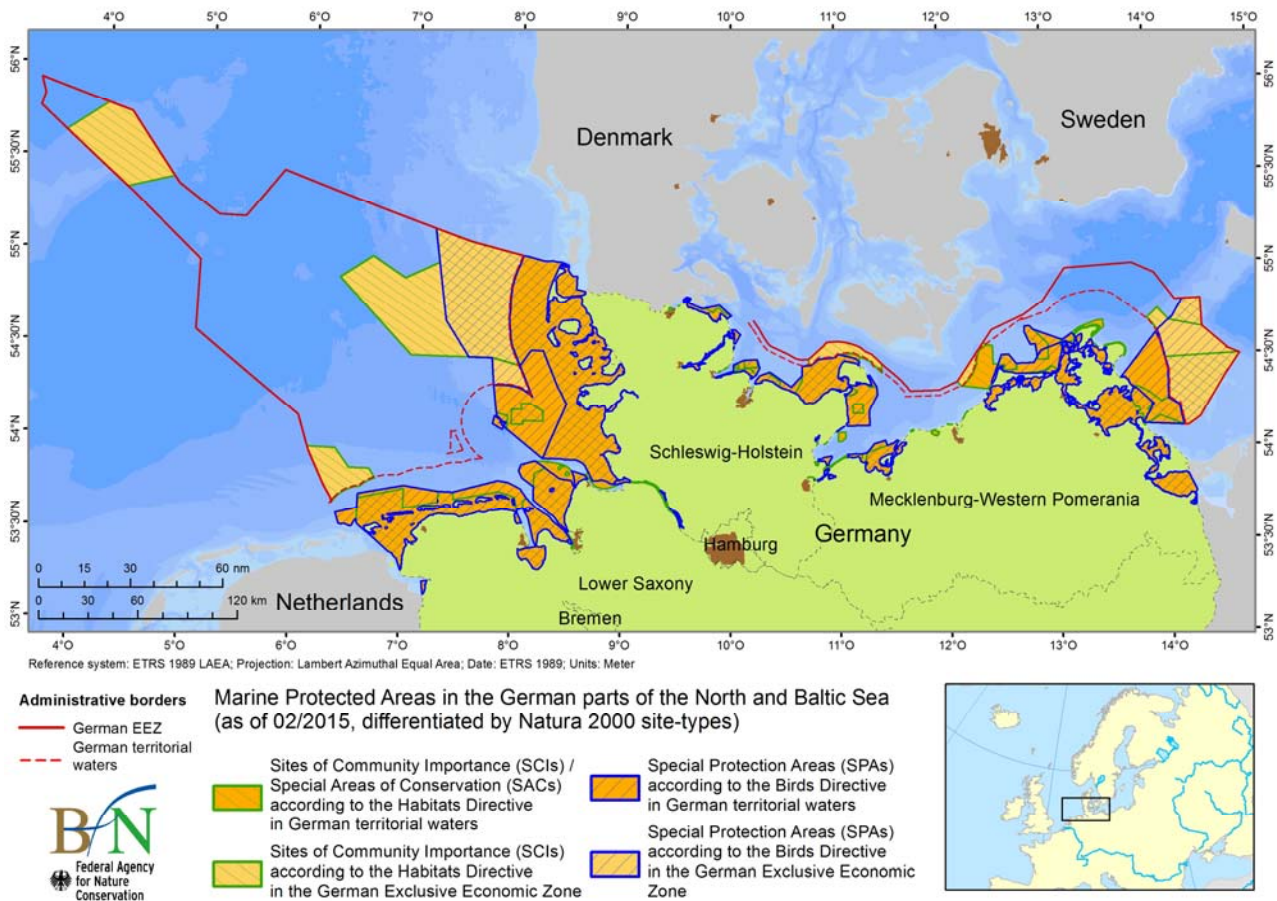


Figure I.2: Marine protected areas in the German North Sea and Baltic Sea (as notified to the EU Commission pursuant to MSFD Article 13(6))⁸

4. Achieving good environmental status by 2020

A summary assessment of the programme of measures based on existing studies and expert judgement has shown that the programmes' combined measures are well-suited to reducing the identified predominant pressures in pursuit of the environmental targets established in 2012 and the definition of good environmental status, and to strengthening water and bio-diversity protection in pursuit of achieving the set environmental targets.

Important steps for the detailed specification of the measures are their geographic localisation for application, their intensity, and temporal planning. These steps will be taken as part of the programme's operationalisation by the end of 2016, as provided for in the MSFD, and as part of the subsequent process of implementation. Currently available scientific information does not allow for a determination to be made as to the duration over and degree to which the ecosystems will react to the measures or regenerate as a result of the measures.

Moreover, some of the measures can only be implemented at the EU and international levels. The achievement of some of the environmental targets also requires cooperation and a joint approach to be taken on the part of the Contracting Parties to the OSPAR and HELCOM Conventions, both in terms of setting quantitative targets and in planning measures. The German Federal Government will actively continue its existing international commitment in this regard. Regional-level efforts will continue in accordance with the provisions of the Federal Water Act (WHG) to be taken into account in the national MSFD implementation.

For land-based pressures on German marine waters in the form of nutrient and contaminant inputs, the German *Länder* in 2009 availed of the opportunity provided for in the Water Framework Directive to extend the deadlines for WFD implementation for the purposes of a phased achievement of the objectives in the water bodies.

In accordance with MSFD Article 14, WHG Article 45g provides for possible extensions of deadlines as well as for exceptions from management targets. The Federal Government and the *Länder* have decided to not yet avail of any extensions of deadlines or of exceptions.

⁸ <http://meeresschutz.info/index.php/berichte-art-136.html>.

5. Regional coordination

The Contracting Parties to the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) and the Baltic Sea (HELCOM) have adopted recommendations, legally binding decisions (OSPAR) and other agreements aimed at reducing pressures arising from human activities and protecting species and habitats. The same is true for the Trilateral Wadden Sea Cooperation (TWSC) as a result of the Joint Declaration on the Protection of the Wadden Sea (1982/2010), the Ministerial Declarations adopted at the trilateral conferences, and the Trilateral Wadden Sea Plan.

This *acquis* of regional and coordinated measures under OSPAR, TWSC and HELCOM aims at improving the status of marine ecosystems. It is integral to national marine policy and was taken into account in the national planning of measures for MSFD and, for land-based sources, in the WFD management plans in the coastal *Länder*. Measures agreed under these regimes, which also support the achievement of GES under the MSFD, will thus continue to be implemented and are considered to constitute existing measures for the purposes of EU reporting. The inclusion of the regional *acquis* into the national programme of measures does not alter the regional measures' legal nature.

At an early stage (as of April 2014), Germany shared its first preliminary list of proposed new MSFD measures with the Contracting Parties to the OSPAR and HELCOM Conventions.⁹ The Contracting Parties' differing time schedules for planning measures are a challenge for early liaison and coordination. The process of coordination will therefore continue during the 2014/15 planning period and beyond. An essential element of the process of coordination is the analysis and assessment of the Contracting Parties' planned measures with a view to possibilities for alignment or joint approaches.

Germany actively supports coordination efforts under OSPAR and HELCOM with a view to:

- improved coordination of measures of national interest.
- continuously developing regional measures focussing on transboundary issues.
- developing joint proposals for measures in the competence of the EU or international authorities (e.g. IMO, river basin commissions) or third countries, and agreeing on a concerted regional approach to submitting such proposals to these institutions.
- taking into account these regional measures in the national MSFD programme of measures.

To this end, the coordination of environmental targets, especially those addressing transboundary environmental issues, by way of target agreements or the use of common methods for deriving coherent national environmental targets is indispensable.

On the status of regional coordination:

- For OSPAR, please refer to the joint documentation on regional coordination of measures¹⁰ as a regional basis for national reporting in accordance with MSFD Article 13(9) and the regional plan to improve adequacy and coherence of MSFD implementation¹¹. Moreover, OSPAR is developing a Measures and Actions Programme as a basis for future cooperation.
- For HELCOM please refer to the joint documentation of regional coordination of programmes of measures¹² as a regional basis for national reporting in accordance with MSFD Article 13(9) and the HELCOM work plan to improve regional coherence in moving towards Good Environmental Status¹³.

The assessment of transboundary impacts is documented in the fact sheet for each of the proposed new measures (Attachment 1 to the official Programme of Measures). The notification to affected countries of transboundary impacts is carried out as part of the strategic environmental assessment process.

⁹ By way of the Intersessional Correspondence Group for the MSFD (ICG MSFD) in the case of OSPAR and the Group for the Implementation of the Ecosystem Approach (GEAR) in the case of HELCOM.

¹⁰ <http://www.ospar.org/documents?v=34719>

¹¹ http://www.ospar.org/site/assets/files/33141/ospar_regional_plan_action_msfd_imp-1.pdf

¹² <http://helcom.fi/Documents/Baltic%20sea%20action%20plan/JointDocRegionalPoM.pdf>

¹³ <https://portal.helcom.fi/meetings/HELCOM%2036-2015-216/MeetingDocuments/2-9%20HELCOM%20work%20plan%20to%20improve%20regional%20coherence%20in%20moving%20towards%20GES.pdf>

6. Strategic Environment Assessment

Nationale SEA process

In accordance with Article 14b in conjunction with No. 1.9 of Annex 3 to the German Environmental Impact Assessment Act (*Gesetz über die Umweltverträglichkeitsprüfung, UVPG*), a Strategic Environmental Assessment (SEA) must be carried out for each of the two programmes of measures pursuant to WHG Article 45h for the North Sea and the Baltic Sea respectively. The aim of the SEA is to determine, describe and evaluate a programme's environmental impacts at an early stage and to contribute the results to the decision-making process.

From 10 July to 10 August 2014, approximately 360 authorities, institutions, environmental groups and users' associations were invited to submit written statements on the proposed assessment scope which was based on the preliminary list of necessary new measures. More than half of the 56 submissions received were in favour of the assessment scope. The assessment scope was amended in line with the feedback received and was finalised by the *Koordinierungsrat Meeresschutz* (coordination council for marine protection) as the basis for the SEA to be conducted. The assessment of the proposed new measures in terms of their impacts on protected assets other than those covered by MSFD/WHG, and the assessment of alternatives are documented in the fact sheets for each of the measures (Attachment 1 to the official Programme of Measures).

The environmental report pursuant to UVPG Article 14g is integrated into the official Programme of Measures as sections II.3 and III.3 for the North Sea and Baltic Sea respectively. The findings of the environmental report have been considered in the establishment of the programme of measures.

Transboundary consultation

It is the declared purpose of the programme of measures and the measures contained therein to exert a positive impact on the marine environment and to contribute to GES of marine waters in the marine region concerned. It can reasonably be expected that the programme of measures will also have a positive impact on marine waters in adjacent countries. This is particularly true for measures addressing activities, pressures and their impacts on ecosystem components moving beyond national jurisdictions.

At the start of its public consultation, Germany notified the programme of measures including the environmental report and an English summary to Denmark, the Netherlands, Poland, Sweden and the UK in accordance with UVPG Article 14j and Article 10 of the Espoo SEA Protocol. The other Contracting

Parties to the OSPAR and HELCOM Conventions were informed via the Espoo contact points.

Sweden participated in the transboundary consultation. Comments received confirmed the findings of the environmental report. No negative impacts on Swedish marine waters were found. The importance of continued regional coordination and cooperation in the context of HELCOM and OSPAR was highlighted. The comments received were welcomed and assessed. All concrete indications were taken into consideration in the finalisation of the programme of measures.

7. Public consultation

In the interest of providing early information to interested parties, stakeholder representatives of the economic and the environmental sectors were consulted as part of the scoping process for the Strategic Environmental Assessment (SEA) in July/August 2014 and were informed, for the first time, of the proposals for potential new measures. Moreover, representatives of government authorities as well as of environmental and users' associations engaged in an informal dialogue on the proposals for new measures at an event held on 6 October 2014. Other such dialogue events were held in 2015 at the invitation of the Federal Government and individual coastal *Länder*. Concerns voiced and pointers given in the course of these dialogues were taken into account in the development of the programme of measures.

Pursuant to WHG Article 45i(1) sentence 1 No. 2, by 31 March 2015 the draft programme of measures including the SEA environmental reports and the supplementary fact sheets for each of the measure (Attachment 1 to the official Programme of Measures) were published at www.meeresschutz.info and publicly displayed at the offices of the Federal and *Länder* authorities involved. The general public was given the opportunity to comment in writing on the drafts between 1 April and 30 September 2015.

In support of the written hearing, the public had access to a background document containing information on the process adopted for implementing the economic requirements of the Marine Strategy Framework Directive (MSFD) regarding the cost-effectiveness analysis and the impact assessment, including the cost-benefit analysis, of measures (Attachment 2 to the official Programme of Measures).

By September 30, a total of forty submissions had been received. These were assessed by the Federal Government and the coastal *Länder* in the context of editorial meetings held in November/December 2015 to finalise the programme of measures. A synopsis of the submissions received and their handling on the part of the Federal Government and the *Länder* was prepared for the general public.

8. Coordination and implementation

Annex 3 to the official Programme of Measures gives an overview of the most significant national, EU and international legal bases which provide a framework for MSFD planning of measures and for the process of implementation.

The national sovereign responsibility for MSFD implementation and the execution of measures in the North and Baltic Seas principally rests with

- the coastal *Länder* Hamburg, Lower Saxony, Mecklenburg-Vorpommern and Schleswig-Holstein for coastal waters¹⁴ (seaward to 12 nautical miles), and with
- the Federal Government for the Exclusive Economic Zone and the continental shelf including the seafloor and its subsoil (seaward of the 12 nm zone).

The coastal *Länder* named above, Bremen and the Federal Government have agreed to jointly implement the MSFD in the entire German section of the North and Baltic Seas. To this end, the Federal/*Länder* Committee on the North Sea and Baltic Sea (BLANO) was established which, as the national competent authority, has taken on responsibility for coordination and liaison with regard to MSFD implementation. BLANO, as delivery authority for the programme of measures, is also in charge of conducting the SEA process.

Consultations between government departments within the Federal Government and among the *Länder* governments represented in BLANO are used to formally coordinate the programme of measures.

Potential delivery authorities/organisations for the various proposed new measures are given in the fact sheets. The programme of measures will be implemented in keeping with the shared responsibilities between the federal government and *Länder* governments in Germany. Due to the federal structure it has been necessary to define the spatial scope of measures and to determine which of the Federal/*Länder* partners intends to implement the individual measures.

9. Structure of the programme of measures

In accordance with WHG Article 45a, the German waters of the North Sea and the Baltic Sea are managed

separately. Therefore provision is made for a separate programme of measures each for the North Sea (Part II) and the Baltic Sea (Part III) while Part I summarises general information of equal relevance to the North and Baltic Seas on fundamental principles of and procedural steps in the establishment of the programmes of measures. Part I takes its orientation from the “guiding questions” for the general overview section of the summary report to be submitted to the EU and serves to answer these questions.¹⁵

In their structure, the programmes of measures follow the seven overall environmental targets (Table I.2). For the purposes of structuring reporting information on MSFD Article 13, the EU Commission aggregates existing and new measures under a predefined set of Key Types of Measures (KTMs) for MSFD (Table I.3) which are based on predominant pressures and protection needs. The numbering of MSFD KTMs (No. 26-39) has been set to continue from that of the WFD KTMs (No. 1-25).¹⁶

The environmental reports with regard to the programmes of measures for the North and Baltic Seas pursuant to UVPG Article 14g are integrated into the respective programme of measures. Part II for the North Sea and Part III for the Baltic Sea each have separate sections for planning measures (II.2 and III.2) and the environmental report (II.3 and III.3).

The Annexes to the official Programme of Measures

- report the environmental targets established in 2012 (Annex 1) for information purposes,
- provide an overview of the new and existing measures for the purposes of national reporting pursuant to MSFD Article 13(9) (Annex 2),
- summarise selected national, European and international (regional and global) legal bases considered for the MSFD programme of measures (Annex 3), and
- report the established scope of the strategic environment assessment in relation to protected assets (Annex 4) for information purposes.

Supplementary information on the programme of measures is contained in the fact sheets for the planned new measures (Attachment 1) and the background document for the socio-economic assessment (Attachment 2). Where no additional indicators are listed for measures in their fact sheets, the indicators associated with the appropriate environmental targets as set out in the 2012 reports on environmental targets for the North and Baltic Seas¹⁷ apply.

¹⁴ Coastal waters are defined in Article 3(2) WHG and comprise the coastal sea (a 12 nautical mile strip extending from the baseline) as well as waters on the landward side of the baseline up to the coastline at mean high water level or to the seaward demarcation of the surface water-courses.

¹⁵ See Section 3.4.1 of the *PoM Recommendations*.

¹⁶ See *PoM Recommendations* for the complete catalogue of Key Types of Measures for MSFD and WFD.

¹⁷ 2012 reports on the establishment of environmental targets for the German parts of the North and Baltic Seas pursuant to MSFD Article 10, www.meeresschutz.info/berichte.html.

Table I.3: Key Types of Measures (KTMs) for MSFD established for the purposes of EU reporting pursuant to MSFD Article 13(9), supplementing the WFD KTMs. (Source: PoM Recommendations)

No.	Additional Key Types of Measures (KTMs) for MSFD reporting
26	Measures to reduce physical loss ¹ of seabed habitats in marine waters (and not reported under KTM 6 in relation to WFD Coastal Waters)
27	Measures to reduce physical damage ² in marine waters (and not reported under KTM 6 in relation to WFD Coastal Waters)
28	Measures to reduce inputs of energy, including underwater noise, to the marine environment
29	Measures to reduce litter in the marine environment
30	Measures to reduce interferences with hydrological processes in the marine environment (and not reported under KTM 6 in relation to WFD Coastal Waters)
31	Measures to reduce contamination by hazardous substances (synthetic substances, non-synthetic substances, radionuclides) and the systematic and/or intentional release of substances in the marine environment from sea-based or airbased sources
32	Measures to reduce sea-based accidental pollution
33	Measures to reduce nutrient and organic matter inputs to the marine environment from sea-based or air-based sources
34	Measures to reduce the introduction and spread of non-indigenous species in the marine environment and for their control
35	Measures to reduce biological disturbances in the marine environment from the extraction of species, including incidental non-target catches
36	Measures to reduce other types of biological disturbance, including death, injury, disturbance, trans-location of native marine species, the introduction of microbial pathogens and the introduction of genetically-modified individuals of marine species (e.g. from aquaculture)
37	Measures to restore and conserve marine ecosystems, including habitats and species
38	Measures related to Spatial Protection Measures for the marine environment (not reported under another KTM)
39	Other measures

¹ Measures relating to placement of infrastructure and landscape alterations that introduce changes to the seafloor substratum and morphology and hence permanent loss of marine habitats.

² Measures which address other types of sea-floor disturbance (e.g. bottom fishing, gravel extraction) which can change the nature of the seabed and its habitats but which are not of a permanent nature.

Annexes



Annex 1 – Existing operational environmental targets pursuant to WHG Article 45e as the basis for the development of measures, as notified to the EU Commission in 2012

Operational Environmental Targets		
	Baltic Sea	North Sea
UZ 1	Seas unaffected by eutrophication	
1.1	Nutrient inputs from rivers need to be further reduced. Reduction targets have been specified in the programmes of measures as part of the WFD management plans.	Nutrient inputs from rivers need to be further reduced. Reduction targets have been specified in the programmes of measures as part of the WFD management plans.
1.2	Nutrient inputs by transboundary transport from other marine areas need to be reduced. Efforts to achieve this must be made as part of regional cooperation arrangements under HELCOM.	Nutrient inputs by transboundary transport from other marine areas need to be reduced. Efforts to achieve this must be made as part of regional cooperation arrangements under OSPAR.
1.3	Atmospheric nutrient inputs need to be further reduced.	Atmospheric nutrient inputs need to be further reduced.
UZ 2	Seas not polluted by contaminants	
2.1	Contaminant inputs from rivers need to be further reduced. Reduction targets have been specified in the programmes of measures as part of the WFD management plans.	Contaminant inputs from rivers need to be further reduced. Reduction targets have been specified in the programmes of measures as part of the WFD management plans.
2.2	Atmospheric contaminant inputs need to be further reduced.	Atmospheric contaminant inputs need to be further reduced.
2.3	Contaminant inputs from marine sources need to be reduced. This applies particularly to gaseous and liquid inputs, but also to solids.	Contaminant inputs from marine sources need to be reduced. This applies particularly to gaseous and liquid inputs, but also to solids.
2.4	Inputs of oil and oil products and mixtures to the sea need to be reduced or avoided. This applies to illegal, permissible and unintentional inputs. Inputs from shipping are permissible only if they comply with the stringent conditions of the MARPOL Convention; to achieve greater reductions, efforts should be made to amend the MARPOL Annexes.	Inputs of oil and oil products and mixtures to the sea need to be reduced or avoided. This applies to illegal, permissible and unintentional inputs. Inputs from shipping are permissible only if they comply with the stringent conditions of the MARPOL Convention; to achieve greater reductions, efforts should be made to amend the MARPOL Annexes.
2.5	Concentrations of contaminants in the marine environment and resultant pollution effects need to be reduced and good environmental status re-established.	Concentrations of contaminants in the marine environment and resultant pollution effects need to be reduced and good environmental status re-established.
UZ 3	Seas with marine species and habitats unaffected by impacts of human activities	
3.1	There are adequate zones for retreat and resting – as regards both space and periods of time – for ecosystem components. To protect marine life from anthropogenic disturbance, for example, areas and periods of time where fishing is prohibited and/or restricted (no-take zones and no-take times based on the CFP rules) are established (cf. for example, MSFD Recital 39).	There are adequate zones for retreat and resting – as regards both space and periods of time – for ecosystem components. To protect marine life from anthropogenic disturbance, for example, areas and periods of time where fishing is prohibited and/or restricted (no-take zones and no-take times based on the CFP rules) are established (cf. for example, MSFD Recital 39).

Operational Environmental Targets		
	Baltic Sea	North Sea
3.2	The structure and function of food webs and marine habitats are not further altered as a result of by-catch, discards or bottom-trawled fishing gear. Efforts are made to restore ecosystem components damaged as a result of past impacts. The functional groups of biological features (MSFD Annex III, Table 1) or their food sources are not jeopardised.	The structure and function of food webs and marine habitats are not further altered as a result of by-catch, discards or bottom-trawled fishing gear. Efforts are made to restore ecosystem components damaged as a result of past impacts. The functional groups of biological features (MSFD Annex III, Table 1) or their food sources are not jeopardised.
3.3	If, taking into account the impact of climate change, the appropriate habitat needs of species that are either locally already extinct or in such decline as to be endangered at population level are guaranteed and the causes of endangerment for these species are eliminated in large enough marine areas, endeavours to re-establish the species or to stabilise the species' populations are undertaken. Re-introduction projects already in place, such as for the sturgeon species (<i>Acipenser oxyrinchus</i>), will be concluded once the species has been introduced successfully.	If, taking into account the impact of climate change, the appropriate habitat needs of species that are either locally already extinct or in such decline as to be endangered at population level are guaranteed and the causes of endangerment for these species are eliminated in large enough marine areas, endeavours to re-establish the species or to stabilise the species' populations are undertaken. In the North Sea, species that are locally extinct or in such decline as to be endangered include, for example, the European sea sturgeon (<i>Acipenser sturio</i>), the Helgoland population of the European lobster (<i>Homarus gammarus</i>), and the European flat oyster (<i>Ostrea edulis</i>).
3.4	Anthropogenic structures and activities do not endanger the natural distribution (including migration) of species for which ecologically unhampered migration corridors are key habitats.	Anthropogenic structures and activities do not endanger the natural distribution (including migration) of species for which ecologically unhampered migration corridors are key habitats.
3.5	The total number of unintentionally and intentionally introduced new species approaches zero. Preventive measures have been implemented to minimise (unintentional) introduction. New species' arrivals are identified promptly so that, where necessary, immediate measures that are likely to be successful can be put in place. The signing and implementation of existing regulations and conventions are crucial in this respect.	The total number of unintentionally and intentionally introduced new species approaches zero. Preventive measures have been implemented to minimise (unintentional) introduction. New species' arrivals are identified promptly so that, where necessary, immediate measures that are likely to be successful can be put in place. The signing and implementation of existing regulations and conventions are crucial in this respect.
UZ 4	Seas with sustainable and environmentally sound use of resources	
4.1	All commercially exploited stocks are managed according to the maximum sustainable yield (MSY) approach.	All commercially exploited stocks are managed according to the maximum sustainable yield (MSY) approach.
4.2	Stocks of fished species have an age and size structure in which all age and size classes continue to be represented and which approximately reflects natural conditions.	Stocks of fished species have an age and size structure in which all age and size classes continue to be represented and which approximately reflects natural conditions.
4.3	Fishing does not adversely affect the other ecosystem components (non-target species and benthic biocoenoses) to such an extent as to jeopardise the achievement or maintenance of their specific good environmental status.	Fishing does not adversely affect the other ecosystem components (non-target species and benthic biocoenoses) to such an extent as to jeopardise the achievement or maintenance of their specific good environmental status.
4.4	Illegal, unreported and unregulated (IUU) fishing, as defined in EC Regulation 1005/2008, approaches zero.	Illegal, unreported and unregulated (IUU) fishing, as defined in EC Regulation 1005/2008, approaches zero.

Operational Environmental Targets		
	Baltic Sea	North Sea
4.5	Within the protected areas in the German Baltic Sea, conservation goals and objectives have priority. The special public interest in extraction of non-living resources for coastal protection must be taken into account and such extraction may only be considered following the comprehensive consideration of alternatives.	Within the protected areas in the German North Sea, conservation goals and objectives have priority. The special public interest in extraction of non-living resources for coastal protection must be taken into account and such extraction may only be considered following the comprehensive consideration of alternatives.
4.6	Use or exploration of non-living resources does not damage or significantly disturb the ecosystem components of the German Baltic Sea, especially sensitive, declining and protected species and habitats. Special attention must be paid to the breeding, rearing, moulting, overwintering and migration periods as well as breeding and feeding grounds and resting areas of the species in question.	Use or exploration of non-living resources does not damage or significantly disturb the ecosystem components of the German North Sea, especially sensitive, declining and protected species and habitats. Special attention must be paid to the breeding, rearing, moulting, overwintering and migration periods as well as breeding and feeding grounds and resting areas of the species in question.
UZ 5	Seas without pressures from litter	
5.1	Continual reduction of inputs and reduction of existing levels of litter lead to a significant reduction in litter that has a harmful effect on the marine environment on beaches, at the sea surface, in the water column and on the seabed. ¹	Continual reduction of inputs and reduction of existing levels of litter lead to a significant reduction in litter that has a harmful effect on the marine environment on beaches, at the sea surface, in the water column and on the seabed. ¹
5.2	Levels of litter in marine organisms (especially microplastics) that are proven to be harmful are tending towards zero in the long term. ²	Levels of litter in marine organisms (especially microplastics) that are proven to be harmful are tending towards zero in the long term. ²
5.3	Other adverse ecological effects (such as entanglement and strangulation in items of litter) are reduced to a minimum.	Other adverse ecological effects (such as entanglement and strangulation in items of litter) are reduced to a minimum.
UZ 6	Seas not impacted by the introduction of anthropogenic energy	
6.1	The anthropogenic sound input from impulsive signals and shock waves does not cause physical damage (such as a temporary shift in hearing threshold of harbour porpoises ³) or significant disturbance to marine organisms.	The anthropogenic sound input from impulsive signals and shock waves does not cause physical damage (such as a temporary shift in hearing threshold of harbour porpoises ³) and significant disturbance to marine organisms.
6.2	Inputs of noise caused by continuous, especially low-frequency, broadband sound have no adverse effects spatially or over time, such as significant (substantial) disturbance (displacement from habitats, masking biologically relevant signals, etc.) or physical damage to marine organisms. Since shipping is the predominant source of continuous noise inputs, reducing the share of shipping in background noise impacts should be considered as a specific operational target.	Inputs of noise caused by continuous, especially low-frequency, broadband sound have no adverse effects spatially or over time, such as significant (substantial) disturbance (displacement from habitats, masking biologically relevant signals, etc.) or physical damage to marine organisms. Since shipping is the predominant source of continuous noise inputs, reducing the share of shipping in background noise impacts should be considered as a specific operational target.
6.3	The anthropogenic input of heat has no negative impact spatially or over time, and does not exceed agreed limit values. In marine coastal waters rise in sediment temperature does not exceed 2K at a depth of 30cm and in the EEZ rise in sediment temperature does not exceed 2K at a depth of 20cm.	The anthropogenic input of heat has no negative impact spatially or over time, and does not exceed agreed limit values. In the Wadden Sea rise in sediment temperature does not exceed 2K at a depth of 30cm and in the EEZ rise in sediment temperature does not exceed 2K at a depth of 20cm.

Operational Environmental Targets		
	Baltic Sea	North Sea
6.4	Electromagnetic and electrical fields of anthropogenic origin are so weak as to not affect orientation, migratory and foraging behaviour of marine organisms. The values measured at the sediment surface do not affect the geomagnetic field ($45 \pm 15 \mu\text{T}$ in Europe). The cables and technology used largely avoid generating electromagnetic fields.	Electromagnetic and electrical fields of anthropogenic origin are so weak as to not affect orientation, migratory and foraging behaviour of marine organisms. The values measured at the sediment surface do not affect the geomagnetic field ($45 \pm 15 \mu\text{T}$ in Europe). The cables and technology used largely avoid generating electromagnetic fields.
6.5	Light impacts at sea caused by human activities have no adverse effect on the marine environment.	Light impacts at sea caused by human activities have no adverse effect on the marine environment.
UZ 7	Seas with natural hydromorphological characteristics	
7.1	The sum of physical interventions does not bring about permanent change to hydrographical conditions in the affected marine and coastal waters that would have an adverse effect on the marine environment. Physical interventions include, for example, the erection of structures such as bridges, barges, dams, and wind turbines, the laying of pipelines and cables, as well as the deepening of shipping channels.	There is a natural equilibrium in the (sub-) catchment areas of the tidal flats. The substrate components present and their dynamic equilibrium display a typical composition. There is a natural variability in salinity.
7.2	The overall impact on hydrological processes has no adverse effects on marine ecosystems.	The overall impact on hydrological processes has no adverse effects on marine ecosystems.
7.3	Changes to habitats and in particular to habitat functions (e.g. spawning, breeding and feeding areas or migration routes/flyways for fish, birds and mammals) due to anthropogenically altered hydrographical conditions do not, individually or cumulatively, endanger species and habitats or cause a decline in populations.	Changes to habitats and in particular to habitat functions (e.g. spawning, breeding and feeding areas or migration routes/flyways for fish, birds and mammals) due to anthropogenically altered hydrographical conditions do not, individually or cumulatively, endanger species and habitats or cause a decline in populations.

¹ Task Group 10 recommends a generally measurable and significant reduction in marine litter by 2020, for example by 10% per year on coastlines from the date the programmes of measures begin.

² If the 10% per year reduction referred to in Footnote 5 were universally applied to all targets, a marked reduction in the level of plastic particles in fulmar stomachs would be seen from the beginning of the programmes of measures in 2016 (a cautious estimate of 30% of fulmars with more than 0.1 grams of litter in their stomachs between 2020 and 2030 would be enough to achieve the OSPAR objective - theoretically no bird would have more than 0,1 gram of plastic in its stomach by 2050).

³ Beginning of hearing damage in harbour porpoises at a single exposure level (SEL) of 164 dB re 1 mPa²s (unweighted) and a peak sound pressure level (SPL_{peak-peak}) of 199 dB re 1 mPa.

Annex 2 – Overview of existing and new measures to achieve the environmental targets

Given the multitude of processes for which specifications are being developed that will modify human activities impacting on nature conservation and environmental protection in the marine sphere, this overview is not exhaustive.

Both HELCOM and OSPAR are currently developing a joint documentation, to serve as a basis for national reporting in accordance with MSFD Article 13(9).

poMeasure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵					
						North Sea (N)		Baltic Sea (B)		existing		new	
						N	B	1a	1b	2a	2b		
UZ 1	Seas unaffected by eutrophication												
Construction or upgrades of wastewater treatment plants	1–7	1	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X	X					
Reduce nutrient pollution from agriculture	27, 30, 31, 41, 100	2	Nitrates Directive, WFD	Technical	Terrestrial	X	X	X					
Advisory services for agriculture	504, 506, 507	12	Nitrates Directive, WFD	Technical Policy driven	Terrestrial	X	X	X					

¹ The number sequence 901–933 given in brackets with the titles of measures refers to the reporting codes for existing measures that are not WFD measures. These measures are published, together with additional reporting information, in the list of existing measures at www.meeresschutz.info/berichte-art13.html. For electronic reporting pursuant to MSFD Article 13, the unambiguous “Measure Codes” shown in the web forms are generated based on the number sequence beginning with 900 and the numbers contained in the LAWA-BLANO Catalogue of Measures respectively: “M[No.]”.

² LAWA-BLANO Catalogue of Measures, www.meeresschutz.info/berichte-art13.html

³ Key Types of Measures (KTMs), see Table 4 (WFD) and Table 5 (MSFD) of the EU MSFD CIS Guidance 12, EU MSFD CIS Reporting on Programmes of Measures (Art. 13) and on exceptions (Art. 14) for the Marine Strategy Framework Directive (5.11.2015).

⁴ Spatial categories for the purposes of electronic reporting pursuant to MSFD Article 13 are: Terrestrial part of MS, Transitional waters (WFD), Coastal waters (WFD), Territorial waters, EEZ, Continental shelf beyond EEZ, Beyond MS Marine Waters. The “Territorial waters” category is not used in this table; “Coastal waters as per WHG” is used instead. Coastal waters are defined in WHG Article 3(2) and include the territorial waters (seaward from the baseline to 12 nautical miles) as well as the waters on the landward side of the baseline up to the coastline at mean high water or, in the case of surface waters, their seaward boundary. In this table, harbours are included in the “terrestrial” category.

⁵ **Existing measures are: Category 1.a:** Measures relevant for the achievement and maintenance of GES under the MSFD, that have been adopted under other policies and implemented; **Category 1.b:** Measures relevant for the achievement and maintenance of GES under the MSFD that have been adopted under other policies but that have not yet been implemented or fully implemented.

New measures are: Category 2.a: Additional measures to achieve and maintain GES which build upon existing implementation processes regarding other EU legislation and international agreements but go beyond what is already required under these; **Category 2.b:** Additional measures to achieve and maintain GES which do not build on existing EU legislation or international agreements. Source: EU MSFD CIS Guidance 10, Programmes of Measures under the Marine Strategy Framework Directive – Recommendations for implementation and reporting (25. November 2014); Guidance 12, EU MSFD CIS Reporting on Programmes of Measures (Art. 13) and on exceptions (Art. 14) for the Marine Strategy Framework Directive (5.11.2015).

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)	Baltic Sea (B)	existing		new	
						N	B	1a	1b	2a	2b
Drinking water protection measures	33	13	Nitrates Directive, WFD	Technical Policy driven	Terrestrial	X		X			
Research and improvement of knowledge base to reduce uncertainty	501, 503, 508	14	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X		X		
Upgrades or improvements of industrial wastewater treatment plants (including agricultural sector)	13, 14, 15	16	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X		X		
Measures to reduce sediment from soil erosion and surface run-off	28, 29	17	WFD	Technical	Terrestrial	X	X		X		
Natural water retention measures	65, 93	23	WFD, Floods Directive	Technical	Terrestrial Transitional waters Coastal waters	X	X		X		
Implementation of the MARPOL Convention (Annexes IV and VI) (901)		33	MARPOL Convention	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ Beyond MS marine waters	X	X	X			
Implementation of the Geneva Convention on Long-Range Transboundary Air Pollution (LRTAP) (Gothenburg Protocol) (902)		33	NEC Directive OSPAR, HELCOM	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		
Agricultural cooperation project on reducing direct inputs into coastal waters via drainage systems (UZ1-01)	401	33, 39	Nitrates Directive, WFD, NEC Directive, Habitats Directive OSPAR, CBD	Technical Economic	Terrestrial (Lower Saxony) Coastal waters (Lower Saxony)	X				X	

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)		existing		new	
						Baltic Sea (B)		1a	1b	2a	2b
Strengthening the assimilative capacity of estuaries, using the example of the river Ems (UZ1-02)	402	31, 33, 37, 39	WFD, Habitats Directive, Nitrates Directive OSPAR	Technical	Transitional waters (Ems estuary, Lower Saxony) Coastal waters (Ems estuary, Lower Saxony)	X					X
Promoting measures to reduce NO_x inputs from shipping (UZ1-03)	403	33	NEC Directive HELCOM Baltic Sea Action Plan	Legislative Technical Policy driven Economic	Terrestrial Transitional waters Coastal waters EEZ Beyond MS marine waters	X	X			X	
Supporting the designation of a Nitrogen Emission Control Area (NECA) in the North and Baltic Seas (UZ1-04)	404	33	NEC Directive HELCOM Baltic Sea Action Plan	Legislative Technical Policy driven Economic	Terrestrial Transitional waters Coastal waters EEZ Beyond MS marine waters	X	X			X	
UZ 2	Seas not polluted by contaminants										
Reduce pesticides pollution from agriculture	32	3	WFD	Legislative Technical	Terrestrial	X	X	X			
Research and improvement of knowledge base to reduce uncertainty	501, 502, 503, 508	14	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X		X		
Measures for the phasing-out of emissions, discharges and losses of priority hazardous substances or for the reduction of emissions, discharges and losses of priority substances	18, 36	15	WFD HELCOM Baltic Sea Action Plan	Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)	Baltic Sea (B)	existing		new	
						N	B	1a	1b	2a	2b
Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	8, 9, 10, 11, 12, 26, 35	21	WFD	Technical	Terrestrial	X	X	X			
Measures to prevent or control the input of pollution from mining	16, 24	36	WFD	Technical	Terrestrial	X	X	X			
Measures to reduce unregulated, diffuse inputs of substances, e.g. from sediment removal, potentially including subsequent treatment, recovery and disposal	101	4	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X	X			
Ongoing process of prioritisation of substances by the EU Commission (903)		15	WFD	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		
Ban on TBT and other substances hazardous to the marine environment (904)		31	EU chemicals regulations AFS Convention	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ Beyond MS marine waters	X	X	X			
Phase-out of mercury cells in the chloralkali industry (by 2010) and reduction in mercury discharges and emissions from chloralkali production (905).		31	OSPAR (Decision 90/3), HELCOM (Recommendation 23/6)	Legislative Technical	Terrestrial Transitional waters	X	X	X			
Measures as part of the implementation of the Industrial Emissions Directive (906).		31	Industrial Emissions Directive	Technical	Terrestrial	X	X	X			
Implementation of the Geneva Convention on Long-Range Transboundary Air Pollution (LRTAP) (Gothenburg Protocol, Aarhus Protocol) (907)		31	NEC Directive OSPAR, HELCOM	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)	Baltic Sea (B)	existing		new	
						N	B	1a	1b	2a	2b
Implementation of the MARPOL Convention (Annexes I, II, III, V and VI) (908)		31	MARPOL Convention	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ Beyond MS marine waters	X	X	X			
PSSA Wadden Sea and Baltic Sea (909)		32	IMO	Legislative Technical	Coastal waters EEZ	X	X	X			
Criteria and incentive systems for environmentally friendly ships (UZ2-01)	405	28, 29, 31, 33, 34	HELCOM MARPOL Convention	Legislative Policy driven Technical Economic	Terrestrial Transitional waters Coastal waters EEZ Beyond MS marine waters	X	X			X	
Requirements for the discharge and disposal of scrubbing waters from exhaust treatment on board ships (UZ2-02)	406	31	WFD, Sulphur Directive HELCOM, OSPAR CDNI, MARPOL Convention	Legislative Technical Policy driven	Terrestrial Transitional waters Coastal waters EEZ Beyond MS marine waters	X	X			X	
Preventing and combating marine pollution – improving maritime emergency preparedness and response (UZ2-03)	407	32	Bonn Convention (North Sea), HELCOM (Baltic); IMO OPRC, OPRC HNS	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X			X	
Management of dumped munitions (UZ2-04)	408	28, 31, 37	OSPAR, HELCOM	Technical Policy driven Economic	Terrestrial Transitional waters Coastal waters EEZ	X	X			X	

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)		existing		new	
						Baltic Sea (B)		1a	1b	2a	2b
UZ 3	Seas with marine species and habitats unaffected by impacts of human activities										
WFD measures to restore longitudinal continuity, as well as removal of barriers to migration and creation of functional fish migration aids, for upstream and downstream migration (910)	68, 69, 76	5, 37	WFD, Habitats Directive	Technical	Terrestrial	X	X		X		
Improving the structure of waters	70 – 75, 77, 82	6	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X		X		
Measures to reduce peak flows due to land use	64	7	WFD	Technical	Terrestrial	X	X	X			
Research and improvement of knowledge base to reduce uncertainty	501, 503	14	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X		X		
Measures to reduce or control adverse impacts resulting from other anthropogenic activities (support programmes)	505	40	WFD	Policy driven Economic	Terrestrial Transitional waters Coastal waters	X	X		X		
Ballast water treatment systems and management (911)		34	IMO BWM Convention, OSPAR, HELCOM, TWSC	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		
Implementation of Reg. (EU) No. 708/2007 concerning use of alien and locally absent species in aquaculture (912)		34	Reg. (EU) No. 708/2007	Legislative	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		
Implementation of Reg. (EU) No. 1143/2014 on the prevention and management of the introduction and spread of invasive alien species (913)		34	Reg. (EU) No. 1143/2007	Legislative	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)	Baltic Sea (B)	existing		new	
						N	B	1a	1b	2a	2b
Measures to prevent or control the adverse impacts of invasive alien species	94	18	WFD	Technical	Terrestrial Transitional waters Coastal waters		X		X		
Marine protected areas in the EEZ of the German North and Baltic Seas (914)		37	Habitats Directive, Birds Directive OSPAR, HELCOM, CBD	Legislative	EEZ	X	X		X		
Marine protected areas in the coastal waters of the German North and Baltic Seas (915)		37	Habitats Directive, Birds Directive OSPAR, HELCOM, TWSC, CBD	Legislative	Transitional waters Coastal waters	X	X	X			
Species and habitat protection (916)		27, 28, 37	Habitats Directive, Birds Directive, EIA Directive CBD	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		
Fisheries regulations as part of protected area ordinances and <i>Länder</i> fisheries acts (917)		27, 37	Habitats Directive, Birds Directive OSPAR, HELCOM	Legislative	Transitional waters Coastal waters	X	X	X			
Voluntary agreements for the protection of habitats and species (918)		37	Habitats Directive, Birds Directive OSPAR, HELCOM	Policy driven	Terrestrial Transitional waters Coastal waters	X	X		X		
Fisheries management measures in Natura 2000 sites in the EEZ (919)		27, 37	Habitats Directive, Birds Directive	Legislative	EEZ	X	X		X		
National action plan for sturgeon / Reintroduction of sturgeon (<i>Acipenser sturio</i>) (920)		37	Habitats Directive OSPAR, HELCOM CBD	Technical Policy driven	Terrestrial Transitional waters Coastal waters	X	X		X		
Reintroduction of lobster (<i>Homarus gammarus</i>) (921)		37	CBD	Technical	Coastal waters (Schleswig-Holstein)	X		X			

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵					
						North Sea (N)		Baltic Sea (B)		existing		new	
						N	B	1a	1b	2a	2b		
Position paper by the Federal Environment Ministry on the cumulative assessment of loon habitat loss due to offshore wind farms in the German EEZ of the North and Baltic Seas as a basis for an agreement between the Federal Agency for Nature Conservation and the Federal Maritime and Hydrographic Agency; Introduction of a new technically reasoned assessment method (922)		37	Birds Directive OSPAR	Legislative Technical	EEZ	X		X					
Approval process for developments (923)		27	Habitats Directive, Birds Directive, EIA Directive, WFD Federal Mining Act (BBergG), Offshore In- stallations Ordinance (SeeAnIV), Federal Wa- terways Act (WaStrG)	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X	X					
Maritime spatial plans at the federal (EEZ) and <i>Länder</i> levels (coastal waters) (924)		39	Marine Spatial Planning Directive, Federal Spatial Planning Act, Ordinance on Spatial Planning in the EEZ, <i>Länder</i> spatial planning acts, <i>Länder</i> spatial planning programmes	Legislative Technical Policy driven	Terrestrial Transitional waters Coastal waters EEZ	X	X		X				
Strategy for the protection from noise pollution of harbour porpoises during the construction of offshore wind farms in the German North Sea (Noise Abatement Strategy) (925)		28	Habitats Directive OSPAR, ASCOBANS	Legislative Technical	EEZ	X		X					
Inclusion of species and biotopes that define the value of an ecosystem in national MPA ordinances (UZ3-01)	409	26, 27, 37	Habitats Directive, Birds Directive OSPAR, HELCOM CBD	Legislative Technical Policy driven	Coastal waters (except Mecklenburg- Vorpommern) EEZ	X	X			X			
Measures to protect migratory species in marine areas (UZ3-02)	410	36, 37, 38	Habitats Directive, Birds Directive, WFD OSPAR, HELCOM CBD, Bern and Bonn Conventions	Legislative Technical Policy driven	Coastal waters (except Mecklenburg- Vorpommern) EEZ	X	X			X			

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)		existing		new	
						Baltic Sea (B)		1a	1b	2a	2b
						N	B				
UZ 4	Seas with sustainable and environmentally sound use of resources										
Implementation of the new Common Fisheries Policy (CFP) (926)		35	EU Common Fisheries Policy	Legislative	Coastal waters EEZ	X	X		X		
Implementation of the provisions of the <i>Länder</i> Fisheries Acts (927)		35	<i>Länder</i> Fisheries Acts	Legislative	Terrestrial Transitional waters Coastal waters	X	X	X			
Approval process for developments (923)		27	Habitats Directive, Birds Directive, EIA Directive, WFD Federal Mining Act (BBergG), Offshore Installations Ordinance (SeeAnIV), Federal Waterways Act (WaStrG)	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X	X			
Provisions under the Federal Nature Conservation Act and <i>Länder</i> Nature Conservation Acts, esp. Habitats Directive assessments of implications for Natura 2000 sites, species and habitat protection, and provisions for mitigation of and compensation for impacts (928)		27, 37	Habitats Directive, Birds Directive, EIA Directive, EU Eel Regulation (1100/2007) OSPAR, HELCOM	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X	X			
Strategy for the protection from noise pollution of harbour porpoises during the construction of offshore wind farms in the German North Sea (Noise Abatement Strategy) (925)		28	Habitats Directive OSPAR, ASCOBANS	Legislative Technical	EEZ	X		X			
Maritime spatial plans at the federal (EEZ) and <i>Länder</i> levels (coastal waters) (924)		39	Marine Spatial Planning Directive, Federal Spatial Planning Act, Ordinance on Spatial Planning in the EEZ, <i>Länder</i> spatial planning acts, <i>Länder</i> spatial planning programmes	Legislative Technical Policy driven	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)	Baltic Sea (B)	existing		new	
						N	B	1a	1b	2a	2b
Integrated Coastal Zone Management (929)		39	EU ICZM Recommendation	Technical Policy driven	Terrestrial Transitional waters Coastal waters	X	X		X		
Continue to raise public awareness of sustainable, ecosystem-compatible fisheries (UZ4-01)	411	20, 27, 35		Legislative Policy driven	Terrestrial	X	X				X
Fisheries measures (UZ4-02)	412	20, 26, 27, 35, 37, 38	EU Biodiversity Strategy, Habitats Directive, Birds Directive, CFP HELCOM, OSPAR	Legislative Technical Policy driven Economic	Coastal waters (except Mecklenburg-Vorpommern) EEZ	X	X			X	
Blue mussel management plan in the Wadden Sea National Park of Lower Saxony (UZ4-03)	413	27, 34, 35, 38		Legislative Technical	Coastal waters (Lower Saxony)	X					X
Sustainable and sound use of non-living sub-littoral resources for coastal protection (North Sea) (UZ4-04)	414	27	Habitats Directive, Birds Directive, Floods Directive, EIA Directive OSPAR, TWSC	Technical Policy driven	Coastal waters (Lower Saxony und Schleswig-Holstein)	X					X
Environmentally sound management of marine sand and gravel resources for coastal protection in Mecklenburg-Vorpommern (Baltic Sea) (UZ4-05)	415	27	Habitats Directive, Birds Directive, EIA Directive HELCOM	Technical	Coastal waters (Mecklenburg-Vorpommern)		X			X	

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)		existing		new	
						Baltic Sea (B)		1a	1b	2a	2b
UZ 5	Seas without pressures from litter										
Waste management (refund systems and recovery quotas for packaging, ban on landfilling of plastics, waste avoidance) (930)		29	Waste Framework Directive	Legislative Technical Economic	Terrestrial	X	X		X		
More stringent waste water treatment	4	1	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X		X		
Ban on dumping of waste on the high seas (931)		29	MARPOL Annex V High Seas Dumping Act	Legislative	EEZ Beyond MS marine waters	X	X	X			
Specifications for port reception facilities, garbage record books and waste management plans (932)		29	EU Directive 2000/59/EC HELCOM	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X	X			
Provisions on ship-generated waste: Port State Control, Special Areas pursuant to MARPOL Annex V (933)		29	MARPOL Convention	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X		X		
Including the topic “marine litter” in learning goals, teaching plans and materials (UZ5-01)	416	29	OSPAR, HELCOM	Technical Policy driven	Terrestrial	X	X			X	
Modification/substitution of products in a comprehensive life-cycle approach (UZ5-02)	417	29	OSPAR, HELCOM	Legislative Technical Policy driven Economic	Terrestrial Transitional waters Coastal waters EEZ	X	X			X	
Avoiding the use of primary microplastic particles (UZ5-03)	418	29	OSPAR, HELCOM	Legislative Policy driven Economic	Terrestrial	X	X			X	

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵			
						North Sea (N)		existing		new	
						Baltic Sea (B)		1a	1b	2a	2b
Reducing inputs of plastic litter, e.g. plastic packaging, into the marine environment (UZ5-04)	419	29	Waste Framework Directive, Packaging Waste Directive OSPAR, HELCOM	Legislative Economic	Terrestrial Transitional waters Coastal waters EEZ	X	X			X	
Measures relating to lost and abandoned fishing nets and gear (UZ5-05)	420	29, 37	Habitats Directive, Birds Directive, CFP OSPAR, HELCOM FAO, UNEP recommendations	Legislative Policy driven Economic	Terrestrial Transitional waters Coastal waters EEZ	X	X			X	
Establishing the “Fishing for litter” approach (UZ5-06)	421	29, 37	OSPAR, HELCOM	Policy driven	Terrestrial Transitional waters Coastal waters EEZ	X	X			X	
Removing existing marine litter (UZ5-07)	422	29, 37	OSPAR, HELCOM	Policy driven	Terrestrial Transitional waters Coastal waters EEZ	X	X			X	
Reducing amounts of plastic through local provisions (UZ5-08)	423	29		Legislative	Terrestrial	X	X			X	
Reducing emissions and inputs of microplastic particles (UZ5-09)	424	29	OSPAR, HELCOM	Legislative Technical Policy driven Economic	Terrestrial Transitional waters Coastal waters	X	X			X	
UZ 6	Seas not impacted by the introduction of anthropogenic energy										
Approval process for developments (923)		28	EIA Directive, Habitats Directive, Birds Directive Federal Mining Act (BBergG), Offshore Installations Ordinance (SeeAnIV), Federal Waterways Act (WaStrG)	Legislative Technical	Terrestrial Transitional waters Coastal waters EEZ	X	X	X			

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵				
						North Sea (N)	Baltic Sea (B)	existing		new		
						N	B	1a	1b	2a	2b	
Strategy for the protection from noise pollution of harbour porpoises during the construction of offshore wind farms in the German North Sea (Noise Abatement Strategy) (925)		28	Habitats Directive OSPAR, ASCOBANS	Legislative Technical	EEZ	X		X				
Thermal load plans	17	10 28	WFD	Technical Legislative Economic	Terrestrial Transitional waters Coastal waters	X	X	X				
Development and application of biological limit values for the impact of underwater noise on relevant species (UZ6-01)	425	28, 37	Habitats Directive Bern and Bonn Conventions incl. ASCOBANS	Legislative Technical Policy driven	Transitional waters Coastal waters EEZ	X	X				X	
Establishment of a registry for impulsive noise and shock waves and of standardised mandatory reporting requirements (UZ6-02)	426	28	OSPAR, TWSC, HELCOM	Technical	Transitional waters Coastal waters EEZ	X	X					X
Noise mapping of German marine areas (UZ6-03)	427	28	OSPAR, TWSC, HELCOM	Technical	Transitional waters Coastal waters EEZ	X	X					X
Development and application of noise mitigation measures for the North and Baltic Seas (UZ6-04)	428	28, 37, 38	Habitats Directive OSPAR, HELCOM Bonn Convention incl. ASCOBANS	Legislative Technical Policy driven	Transitional waters Coastal waters EEZ	X	X				X	
Development and application of threshold values for the introduction of heat (UZ6-05)	429	28, 34	WFD TWSC, OSPAR	Legislative	Transitional waters Coastal waters EEZ	X	X				X	
Development and application of environmentally sound lighting of offshore installations and accompanying measures (UZ6-06)	430	28	Habitats Directive, Birds Directive	Legislative Technical	Coastal waters EEZ	X	X					X

Measure per overarching environmental target (UZ) ¹	Catalogue of Measures No. ^{1,2}	KTM under WFD and MSFD ³	Consistency with selected EU Directives and international agreements	Mode of action	Spatial coverage ⁴	Region		EU measure category ⁵				
						North Sea (N)		existing		new		
						Baltic Sea (B)		1a	1b	2a	2b	
						N	B					
UZ 7	Seas with natural hydromorphological characteristics											
Approval process for developments (923)		26, 27, 37	EIA Directive, Habitats Directive, Birds Directive Federal Waterways Act (WaStrG)	Legislative Technical	Transitional waters Coastal waters EEZ	X	X	X				
Studies on climate change	509	24	WFD	Technical	Terrestrial Transitional waters Coastal waters	X	X		X			
System for hydromorphological and sedimentological information and analysis for the North and Baltic Seas (UZ7-01)	431	26, 27, 37	EIA Directive, WFD, Habitats Directive OSPAR, HELCOM	Technical	Transitional waters Coastal waters EEZ	X	X					X

Annex 3 – Summary of planned measures to achieve the environmental targets (Excerpts from the fact sheets for the individual planned measures)



UZ 1

Seas unaffected by eutrophication

UZ1-01

Agricultural cooperation project on reducing direct inputs into coastal waters drainage systems

Description of measure:

The aim of the measure is to minimise direct inputs via near-shore drainage systems into coastal waters.

The focus is on the establishment of an advisory board or committee dealing with eutrophication of local surface waters. This committee should include direct representatives of the farming community, the Chamber of Agriculture, the drainage boards, the scientific community and the advisory bodies. In this context, the priority is on cooperation between actors and on improvements in communicating existing approaches such as, for example:

- Widespread implementation of “good agricultural practice” or “best practice” in farming
- Achieving a high level of uptake of funded agri-environmental measures
- Better fertiliser use efficiency
- Adjustments in drainage management

The key issue therefore is the transfer of existing know-how, i.e. lack of implementation or incorrect implementation. In a preparatory initiative, the committee must explore the issues listed above in order to develop new advisory schemes. The following questions could offer an initial approach to dealing with the issues.

- What are the problems in / limits to present agricultural advisory services?
- How can farmers be encouraged to change their systems, where necessary?
- How can greater acceptance among farmers be achieved?
- How can farmers be involved in the development of joint objectives?
- How can a (project) space be created in which farmers can discuss problems and shortcomings without prejudging the results and in which they can be open to change without their fears creating conceptual barriers?

Workshops will be used to carry the findings forward and determine new advisory schemes. At the end of the initiative’s project term, the results will be communicated to the advisory bodies, implemented and permanently established.

Mode of action:

- Economic: Funds are to be made available with a view to fostering behavioural change (e.g. workshops, voluntary agreements).
- Technical: Following the conclusion of the initiative phase and in keeping with its outcomes, technical instruments (advice, support for storage and landspreading techniques etc.) may be offered/implemented where necessary.

UZ1-02

Strengthening the assimilative capacity of estuaries, using the example of the river Ems**Description of measure:**

Healthy estuaries are net importers of nutrients (from both land and sea) that are converted and broken down there by entering the food chain, or deposited together with similarly imported sediments on the estuarine floor. It is primarily due to anthropogenic interventions that this key ecosystem service (as well as others) is no longer available to the extent necessary. The aim of the measures proposed here is to mitigate the impacts of anthropogenic interventions.

In order to improve the ecological situation and to strengthen the Ems estuary water's capacity for self-purification, it is therefore necessary to first reduce the level of suspended solids (turbidity). This is to restore the ecosystem service of nutrient cycling in the estuary and reduce pollution (in terms of eutrophication) of coastal waters.

To this end, and also serving more far-reaching objectives, more in-depth feasibility studies will be conducted by the end of 2018 for the following approaches: a tidal sill at the Ems flood barrier, tidal control at the Ems flood barrier, and a tide retention basin at the Ems river. Based on the results of the studies, and using a comprehensive planning and evaluation system, a decision will be taken as to which one of the approaches, or which combination of them, will be pursued further with a view to implementation. The feasibility study on retention basins is supported by a full-scale pilot measure in an oxbow lake upstream of Papenburg. This approach, including the pilot measure, must be shown to be compatible with the safety and ease of ship traffic on the Dortmund-Ems Canal in the tidal section of the Ems up to Herbrum, and must not have unfavourable impacts on the maintenance of shipping lanes and harbours. The aim is to provide sufficient-quality proof, based on the validation of hydromorphological model results, that this variant, i.e. the one with the potentially largest area footprint, can achieve the set targets not only in the short term but also in view of the medium-term morphological development. In this context, management strategies required to maintain the retention basins in the long-term must also be developed.

As part of the new Rural Development Programme (*Programm zur Förderung der Entwicklung im ländlichen Raum, PFEIL*), which is currently being assessed by the EU Commission, the "Transitional waters and coastal waters" action will contribute to achieving WFD and MSFD objectives. The RDP action will support water management projects aimed at restoring good ecological status of transitional and coastal waters.

Mode of action:

- Technical

UZ1-03

Promoting measures to reduce NO_x inputs from shipping**Description of measure:**

Rule 13 of Annex VI to the MARPOL Convention regulates reductions of nitrogen oxide (NO_x) emissions from maritime shipping. The strictest reduction level (tier III) applies only to new-built ships in designated Nitrogen Emission Control Areas (cf. proposed measure UZ01-04 "Support the designation of a NECA in the North and Baltic Seas").

It is difficult to implement regional and national requirements for ships since they may be in conflict with the Convention on the Law of the Sea or distort competition, and therefore are hardly politically enforceable. Thus it is considered more effective to initiate additional NO_x reductions at EU and regional levels through voluntary activities and support systems.

A system of emission-dependent port fees is already in place; the World Port Climate Initiative (WPCI) introduced the Environmental Ship Index (ESI). Most of the larger German ports are members of the initiative. The ESI identifies ships with lower emission values than the legally required emission limits, relating to emissions of NO_x, SO_x, CO₂ (EEOI), and with installed electricity land connection on board, from which total points are calculated. Depending on the calculated points, ports can grant ships reductions on port fees.

Measures:

- 1) Introduction and/or support of refit programmes for ships (e.g. for LNG / dual-fuel engines, SCR systems)
- 2) Support for the development of land-based and mobile LNG infrastructure in ports
- 3) External electricity supply for seagoing ships in ports (e.g. support for the development of land-based power connections or power barges)
- 4) Examine the possibility to introduce a European NO_x fund (example Norway)
- 5) Support for/further development of existing concepts to link port fees to ship emissions (e.g. by including other emissions in the assessment)

Mode of action:

- Legislative
- Technical
- Policy driven
- Economic

To the best of knowledge there are currently no support programmes at national level that are specifically directed toward NO_x reductions by ships.

The establishment of a relevant support programme is to be decided at the level of the responsible departments.

Since effects of NO_x emissions are also relevant for areas near the coast (port cities) and since NO_x has negative impacts on human health (ozone formation, carcinogenicity, asthmatic reactions), it is possible to also consider support programmes at (coastal) *Länder* level.

UZ1-04

Support the designation of a NECA in the North and Baltic Seas

Description of measure:

Rule 13 of Annex VI to the MARPOL Convention regulates reductions of nitrogen oxide (NO_x) emissions from maritime shipping. The strictest reduction level (tier III) applies only to new-built ships in designated Nitrogen Emission Control Areas (NECA). In March 2014, the IMO Marine Environment Pollution Committee (MEPC) changed the date for the introduction of tier III: for new NECA designations, the date of introduction must be defined in the application (previously it was 2016).

Germany is already engaging with the establishment of a NECA in the North and Baltic Seas in the context of the HELCOM Maritime group (Baltic Sea) and the NECA North Sea Consultation Group. Bordering countries must submit the relevant applications to the IMO (MEPC) for adoption by the MEPC.

Measure:

Germany continues to support the finalisation and submission of NECA applications to IMO by the bordering countries. Care must be taken to ensure that the establishment of a NECA in the North and Baltic Seas does not lead to distortions of competition in relation to individual ports or to a modal shift towards road transport. In this context we refer to a study examining potential environmental impacts of such a modal shift.

As the draft application for the Baltic Sea (HELCOM) is outdated in parts, it may require updating.

Experiences with NECA implementation in the North Sea and the Baltic will be taken into account in the implementation of this measure.

Mode of action:

- Legislative
- Technical
- Policy driven
- Economic

Germany (under the aegis of the Federal Ministry of Transport) is already actively contributing to studies and draft applications for the designation of a NECA in the North and Baltic Seas. These activities take place in the context of the HELCOM Maritime group (Baltic Sea) and of the NECA North Sea Consultation Group established for this purpose at MEPC 60 (2010). The draft applications for the North and Baltic Seas are close to being finalised.



UZ 2

Seas not polluted by contaminants

UZ2-01

Criteria and incentive systems for environmentally friendly ships

Description of measure:

Due account of environmental criteria such as those of the *Blauer Engel* (Blue Angel) ecolabel scheme for seagoing ships owned or financed by public authorities and establishment of incentive systems for environmentally friendly ships.

The measure is composed of two components:

Component 1: It is possible on board ships to implement measures which go beyond legal requirements and to contribute to the reduction of environmental impacts (e.g. less air pollutants, less waste and effluent, reduction of the introduction of non-indigenous species, less release of contaminants to water, e.g. by means of environmentally sound antifouling coatings). The implementation of such voluntary measures can be promoted by granting a label (e.g. *Blauer Engel*). The ecolabels *Blauer Engel* for environmentally friendly ship design¹ and *Blauer Engel* for environmentally friendly ship operation² have been developed by the Federal Environment Agency jointly with experts and has been approved by the Environment Label Jury. Since a number of years they are known on the market and in the sector.

Measure: The environmental criteria (of the *Blauer Engel* or other ambitious ecolabel schemes) should be taken into account, as far as possible, in the purchase of new ships and the operation of ships owned by public authorities or financed by them, e.g. research vessels. The vessels should serve as a role model which is used to promote environmental protection measures.

Component 2: Incentive systems for the construction and the operation of environmentally friendly ships could provide additional incentives for ship owners to invest more in environmental protection on board. Various incentive systems already exist which, however, have only local effect or are introduced at international level with a limited number of selected parameters, e.g. focussed on NO_x, SO_x or CO₂ emissions.

Measure: Development of an integrative, internationally deployable incentive system which addresses requirements for environmentally friendly ship traffic, is applicable to all ship types of maritime transport and contributes to internalising external costs of the ship owner. An option could be to link up the incentive system with the *Blauer Engel* ecolabel so that more use is made of the ecolabel in other ship segments (beyond those stated under component 1).

Mode of action:

- Legislative
- Technical

¹ http://www.blauer-engel.de/de/produkte_marken/vergabegrundlage.php?id=278

² http://www.blauer-engel.de/de/produkte_marken/vergabegrundlage.php?id=278

→ Policy driven

→ Economic

The stated modes of action are implementation options.

Component 1:

The requirements for the *Blauer Engel* ecolabel for environmentally friendly ship design (environmental label 141) and *Blauer Engel* for environmentally friendly ship operation (environment label 110) are in place. So far, the grant of the label has not been linked to additional incentive systems.

Component 2:

Incentive systems still need to be developed and specified. A scheme for a new incentive system is currently being defined by a study.

UZ2-02

Requirements for the discharge and disposal of scrubbing waters from exhaust treatment on board ships

Description of measure:

Development of ambitious criteria for the discharge of washing waters from exhaust treatment systems (scrubbers) on board ships (component 1) and possibly further restrictions or prohibition of discharges in special sea areas (component 2) as well as regulation for professional disposal of residues from scrubbers in ports (component 3).

Background

According to Annex VI MARPOL Convention and EU Directive 2012/33/EU (Sulphur Directive) it is permissible to use exhaust treatment systems in order to achieve emission limit values for sulphur from ship fuels. Different techniques are in use or will be applied in the near future (because a stricter sulphur limit value applies for Sulphur Emission Control Areas such as North and Baltic Sea since 1 January 2015). Most systems (scrubbers) are wet treatment systems which use sea water (open scrubber) or fresh water together with lye e.g. NaOH (closed scrubber) in order to remove SO_x from exhaust gases. The removed SO_x mostly metabolises into sulphate and, in the use of open scrubbers, is discharged with the washing water into the sea where it is neutralised by the buffer capacity of the sea water. In ports, rivers, estuaries and also in the Baltic Sea, the buffer capacity of the surrounding water is lower than in non-impacted sea water. The treatment also removes other particles (heavy metals, particulate matter, PAHs etc) from exhaust gases. The contaminated water is conveyed through a cleansing system (which in closed scrubbers uses additional flocculants or other “active substances”), which separates solid matter (sludge) and liquid components. The washing water is discharged into the sea in compliance with the 2009 Guidelines for Exhaust Gas Cleaning Systems (IMO Resolution MEPC 259(68)). The sludge is caught in tanks and must be disposed of in ports. Since so far hardly any scrubbers are installed on board ships, ports are not yet ready to receive scrubber-sludge and possibly caught waste water from the closed-loop-mode of fresh water scrubbers.

As described, the use of wet scrubbers is allowed under MARPOL but it has not yet been conclusively legally clarified how the discharge of waste water relates to WFD and MSFD (requirements of non-deterioration and improvement of the environmental status). This is particularly valid for open scrubbers. However, Annex II of the Sulphur Directive establishes a provision which is implemented in Germany through Article 13(7) of the Marine Environmental Behaviour Ordinance.

According to the Convention on the collection, deposit and reception of waste generated during navigation on the Rhine and other inland waterways (CDNI), the discharge of “fluid residual” from scrubber processes is prohibited in inland waterways. This is also valid for seagoing shipping on inland waterways.

Concrete measures

Component 1:

Stricter international requirements for discharges of scrubbing waters from exhaust treatment systems of seagoing ships by amendment of IMO Guideline MEPC 259(68).

Preparatory work for component 1:

- Make available the data, which have been collected according to IMO Resolution MEPC 259(68) Annex III, for an assessment of the overall pressure on national marine waters.
- Examine which substances – including substances not covered by IMO Resolution MEPC 259(68) – are possibly contained in scrubbing water and potentially harmful to the environment. The findings should be assessed and, based thereupon, the criteria for discharges of scrubbing waters from exhaust treatment systems should be reviewed. If this results in the need for adjustment of the discharge conditions, Germany should promote their adaptation at international or, if appropriate, EU level.
- Review in particular whether an ecotoxicological assessment of additives in scrubbing water from exhaust treatment systems should be part of the conditions for allowing discharges to the sea.

Component 2:

Review whether discharges of scrubbing water should be restricted or prohibited.

Preparatory work for component 2:

It needs to be examined whether areas are to be expected in which impacts due to discharges of scrubbing water are particularly great, and, if so, where these will be. The findings should be assessed; on this basis, the criteria for the discharge of scrubbing water should be reviewed. If an adjustment of the discharge conditions proves to be necessary, Germany should promote such amendments at international or, if appropriate, EU level. Stricter standards may be reasonable and necessary, including at national level. Existing measures which under certain conditions can lead to discharge restrictions (CDNI, Federal Water Act, Marine Environmental Behaviour Ordinance, Port Ordinances) are to be taken into account. Strive for harmonised application criteria at EU and international level.

Identify the particularly sensitive sea areas which will be impacted in future by washing waters from scrubbers.

Component 3:

The responsible authorities develop regulations for professional disposal of residual matter from scrubbers in ports.

Preparatory work for component 3:

Develop approaches for handling sludge volumes arising in ports.

Mode of action:

- Legislative
- Technical
- Policy driven

It is necessary to undertake preparatory technical work relating to the introduction/updating of the legal conditions (waste water criteria, designation of sensitive areas, disposal systems).

It is necessary to adjust or develop international legal bases (e.g. MARPOL, scrubber guideline), regional instruments (agreements at the level of HELCOM, OSPAR and EU) and national laws, as appropriate.

Description of measure:

Improvement of maritime emergency preparedness and response by improving and expanding capacities to respond to pollution incidents at sea and in coastal areas.

Efforts to prepare for and combat marine pollution resulting from accidental, intentional or operational releases of water-polluting substances are among the most important measures to protect the marine environment. In the Federal Republic of Germany, a strategic approach developed jointly by the Federal Government and the governments of the coastal *Länder* of Bremen, Hamburg, Lower Saxony, Mecklenburg-Vorpommern and Schleswig-Holstein provides the basis for joint, coordinated actions. This involves the federal environment and transport ministries and the coastal *Länder*

environment ministries. The interior and health ministries perform further related tasks (ship fire-fighting, medical aid for injured persons). All tasks are coordinated by the Central Command for Maritime Emergencies (*Havariekommando*), which acts as centre of competence for maritime emergency preparedness and ensures uniform operational command in the event of complex emergency situations involving noxious substances.

The process of drafting a marine strategy for the German North and Baltic Seas involves an update and substantial enhancement of the strategic scheme of the Central Command for Maritime Emergencies. The purpose of this is to protect the marine environment even more sustainably against pollution by noxious substances (especially oil and paraffin). For the spheres of competence of the federal government and the coastal *Länder*, a new risk analysis is produced that identifies the current hazard status for the marine waters of the North and Baltic Seas and addresses new challenges posed to the protection of the marine environment against environmental hazards arising from marine pollution.

Measures for the direct modification of behaviour

- Advancement of aerial surveillance and of the prosecution of marine pollution in order to provide deterrence against illegal discharges of contaminants
- Intensification of remote-sensing activities to detect water pollution
- Examination of options to deploy drones for aerial surveillance of marine pollution

Preparatory measures

- Formulation and updating of a technical strategy for preventing and combating marine pollution in the areas of offshore wind farms (EEZ and coastal waters)
- Intensification of training for on-site operational personnel and their leaders
- Implementation of a new transportation strategy for the provision of the equipment needed to combat pollution incidents on shores and beaches
- Expansion of the provision of information about transports of hazardous substances, in accordance with the recommendation by the Independent Environmental Group of Experts (UEG) of the Central Command for Maritime Emergencies
- Conclusive examination of the use of dispersants as a last-resort response option, formulation of a corresponding technical strategy
- Intensified efforts to prevent marine pollution by means of preparedness measures (e.g. by maintaining rescue tug capacity and emergency moorings)
- Maintenance of the online Contingency Plan for Marine Pollution Control (www.vps-web.de) and regular updating of its technical platform
- Refinement of the techniques of pollution incident control, particularly the control of pollution events at night and in thick weather
- Updating the measures to find and handle oiled wildlife
- Development of new and improvement of existing technologies to combat marine pollution at sea and on shores and coasts, particularly for mechanical oil removal
- Introduction and execution of a marine monitoring programme to determine the consequences of pollution incidents and claim the costs from polluters
- Formulation and updating of a technical strategy for combating pollution incidents involving chemicals at sea (EEZ, coastal waters) and on shores and beaches
- Formulation and updating of a technical strategy for the disposal of pollutants at sea (EEZ, coastal waters) and on shores and beaches
- Formulation and updating of a technical strategy for post-incident decontamination of operational personnel and equipment

Measures to promote measures at international level

- Taking account of the decision adopted by the October 2014 Meeting of the Council of Ministers for the Environment to pursue the goal of a complete ban on ship-based discharges of paraffin and associated noxious oily mixtures and residues to the marine environment, measures are ini-

MARPOL Annex II with the following options: modification of existing criteria, formulation of new criteria, stricter ban on discharges of substances falling under category Y, introduction of rules for special areas as under MARPOL I, IV and V or fundamental revision as under MARPOL Annex V – complete ban on discharges of all substances in all categories with specifically regulated exceptions.

Mode of action:

- Legislative
- Technical

UZ2-04

Management of dumped munitions

Description of measure:

Current knowledge indicates that approx. 1.6 million tonnes of conventional armaments and approx. 5,000 tonnes of chemical armaments have been dumped and are still present in German marine waters. It is therefore important to register the types and extents of munitions-contaminated sites in a munitions register; this, in combination with archival information and the findings of further studies, provides a vital basis for further activities.

The measure comprises the following aspects:

- Measures to handle hazard situations:
 - Establishment of a national registration office for incidents involving warfare materials in marine-influenced areas at the German Maritime Safety and Security Center (MSZ) in Cuxhaven in fulfilment of the Nord IMK decision of 8 September 2011
 - Publication of uniform technical guidance documents
 - Development of new disposal methods with reduced environmental impact, in the context of research projects and with the goal of involving the private sector
- Measures to complete the situation picture, which at present is still patchy:
 - Intensification of archival research; initiative to carry out corresponding projects in cooperation with universities
 - In-depth studies of known munitions dumpsites and suspected areas
 - Establishment and continuous updating of a munitions register
 - Development of suitable methods for studies on environmental pollution by compounds typical of warfare materials and for the monitoring of environmental impacts, and initiation of such studies and monitoring where appropriate
- Measures for forward-looking assessment:
 - In concert with the above-mentioned measures to complete the situation picture, development of a systematic procedure for risk assessment and for prioritising munitions-contaminated sites

While ongoing activities to avert hazards to shipping are continued in the well-proven manner in cooperation among the responsible hazard control authorities of the Länder and the federal waterways and shipping administration, in future more attention is to be paid to environmental pollution aspects, which are similarly in the public interest.

Options to mitigate the hazard to marine mammals posed by acoustic emissions of blasts occurring during munitions clean-up activities are addressed by measures UZ6-01 and UZ6-04.

Mode of action:

- Technical
- Policy driven
- Economic



UZ 3

Seas with marine species and habitats unaffected by impacts of human activities

UZ3-01

Inclusion of species and biotopes that define the value of an ecosystem in national MPA ordinances

Description of measure:

Purpose of the measure: Adequate protection of threatened species / habitat types in the existing system of protected areas (pursuant to Article 13(6) MSFD) as a result of:

- Assessment as to whether existing legal provisions may need to be adapted, and consideration, as appropriate, in new legal provisions for protected areas if species/ habitat types are classified as threatened as per Criterion 2 (see below) and have not been adequately taken into account in the new provisions.
- Ensuring that these species/habitat types are given adequate consideration in the event of interventions and in approval processes in protected areas.

Species and habitat types are to be assessed for inclusion into the legal provisions if they meet all three criteria below:

- (1) They regularly occur in the area.
- (2) They have been classified as threatened.
- (3) The area can significantly contribute to the conservation of the species/habitat types concerned.

The review of the legislation and the final inclusion of species and habitat types into protected area regulations will be undertaken using a process yet to be defined, taking all interests into account.

re Criterion (1):

Species/ habitat types are taken to be “occurring in the area” if their occurrence has been confirmed by way of sightings or regular appearances in samples and surveys; habitat types are taken to be “occurring in the area” if their presence has been ascertained by way of mapping (following specific mapping instructions, where available).

re Criterion (2):

Species and habitat types are to be assessed as to their need for protection, and thus as to their potential inclusion in the relevant legal provisions, if they are

- currently (at the time of the measure being implemented in 2016) listed as threatened in accordance with national Red Lists in force (consideration of regionally and locally relevant categories: species and habitat types listed as endangered (level 3) as a minimum) or if they are listed as protected species in Annex IV of the Habitats Directive, Annex I of the Birds Directive, and/or if they are migratory species in accordance with Article 4(2) of the Birds Directive. Individual states may decide to apply other Red List categories.

In addition, the following should be taken into account:

- For the Baltic Sea: the currently valid HELCOM Red Lists of Baltic Sea species and habitat types (BSEP 140; BSEP 138; taking into account the CR, EN and VU categories)

→ For the North Sea: the currently valid OSPAR lists of threatened and/or declining species and habitats (taking into account all listed species and habitats).

A revision may be undertaken as part of the revision of the MSFD programme of measures in 2021, taking into account the requirement of achieving or maintaining good environmental status as a result of MSFD measures.

re Criterion (3):

The area can then significantly contribute to the conservation of those species and habitat types of which there is a relevant occurrence with functional significance for the species/habitat type. In the case of species of low abundance / habitat types that are rare or limited to few small areas, even rare or patchy occurrences at low abundance/density are to be considered as relevant to significantly contributing to the conservation of the species/habitat concerned. This is the case for most of the red listed species/habitat types. Where their functional significance is known this is to be taken into account; in keeping with the precautionary principle, relevant occurrences may be assumed to be of functional significance, as appropriate.

Large parts of the coastal waters of the North and Baltic Seas are protected under national park status. Pursuant to the Federal Nature Conservation Act (BNatSchG), one of the aims of national parks is to ensure the undisturbed progression, as far as possible, of natural processes in their natural dynamics. In accordance with the relevant *Länder* laws and ordinances, national park protection is also given to all naturally occurring species and habitats therein and their interactions. The MSFD measure has thus already been implemented in the national parks of the North and Baltic Seas.

The further design and implementation of measures must have regard to governmental laws and jurisdictional rights established under international law, especially with respect to shipping, air traffic, military exercises and scientific marine research, as well as to uses agreed under international treaties, intergovernmental commitments, and legal obligations of government agencies. In addition, tourism concerns are taken into account in further detailed design.

Mode of action:

→ Legislative

The instruments to be used are the legal provisions at the federal and *Länder* levels suited to achieving the set objectives.

UZ3-02

Measures to protect migratory species in marine areas

Description of measure:

Assessment of the possibility of including priority areas and reserve areas, following regional (for North and Baltic Seas) and national (between federal and *Länder* levels) coordination, that serve as migration corridors for migrating species between areas of ecological importance. Ideally these will form a habitat network in the sense of a coherent network of protected areas. The competent sectoral authorities are to transmit relevant information to the spatial planning procedures at the national and *Länder* levels.

As part of approval processes for developments in potential priority areas and reserve areas, special conservation provisions must then be considered for the following ecosystem components:

1. Marine mammals
2. Seabirds and coastal birds
3. Bats
4. Fish

Ideally the priority or reserve areas will form a habitat network as a coherent and representative network of protected areas. In as far as possible they should take into consideration the existing protected areas that are connected by corridors outside of protected areas.

The location of these corridors is determined by the migration routes between feeding, frequented, resting, rearing, breeding and moulting areas. Bird and bat species showing similar migration behaviour will be jointly considered, with the basic needs of the functional groups being taken into

account. The width of the corridors is determined by the pressures' impact radii resulting from uses in the corridors' vicinity. The impact radius is a function of a species' sensitivity or the sensitivity of the most sensitive species of a functional group relative to the individual pressure (including stress intensity). In the case of underwater noise, the impact radius is dependent on the source sound characteristics and the sensitivities of the species in question. With a view to improving the knowledge base, some preparatory studies are also part of this measure.

The corridors' alignment will be coordinated at the regional and EU levels as part of the process of updating the spatial structure plans, taking into account the provisions of the EU Directive on Marine Spatial Planning and corresponding regional agreements (some of which are currently under development). The HELCOM-VASAB and OSPAR Maritime Spatial Planning Working Groups may be used for regional coordination, as appropriate.

In addition to spatial planning and approval processes for developments, an assessment as to the applicability of i.a. the following additional provisions is to be undertaken for the purposes of protecting migratory species in these corridors, e.g. by way of voluntary agreements and management plans:

1. Marine mammals

- Avoidance of, or if this is not possible, reduction in noise pollution from airguns (seismic activities), construction-related noise, underwater explosions and military sonar which may impair migrations.
- Technical improvements to and further development of visible types of nets for use in migration corridors so as to minimise displacement; support for procurement/investment.
- Compulsory use of these techniques in migration corridors (incl. compliance checks).

2. Seabirds and coastal birds as well as other migratory birds

- Development and implementation of a scheme for temporary shut-downs of offshore wind farms.
- Development of an illumination scheme for offshore wind farms with a view to making them as unattractive as possible to birds while maintaining safety in air and ship traffic.
- Increasing the minimum height requirements above corridors for helicopters, small aircraft, ultra-light aircraft and unmanned aerial vehicles (except in the case of accidents and for rescue flights).

3. Bats

- Development and implementation of a scheme for the protection of the main migration routes of bats.

4. Fish

- Creation or adaptation of the legal basis (where necessary), requiring as part of planning approval processes the compulsory provision of state-of-the-art fish protection systems at industrial water intakes in marine waters of particular significance to migrating fish species. To this end, creation and further development of binding technical criteria that are ready-to-use and based on the state-of-the-art in science and technology (e.g. drawing on the standards and advisory guidelines published by the German Association for Water, Wastewater and Waste (DWA)).

Mode of action:

Mode of implementation:

- Legislative
- Technical
- Policy driven

Instruments:

- Voluntary agreements, marine spatial planning, administrative and legal provisions as well as federal and *Länder* laws (incl. provisions on fisheries and nature conservation, Federal Water Act, *Länder* Water Acts), the EU Regulation on cetacean bycatch, CFP, applications under international law (UNCLOS or IMO).
- R&D projects



UZ 4

Seas with sustainable and environmentally sound use of resources

UZ4-01

Continue to raise public awareness of sustainable, ecosystem-compatible fisheries

Description of measure:

Design and implementation of a programme (with the aid of EU funding) for public awareness work on the issue of “sustainable, ecosystem-compatible fisheries”, aimed at raising public awareness on this issue and providing relevant information.

To this end, suitable information and teaching materials as well as other, e.g. digital, materials are to be developed or advanced (see, for example, the online information on fish stocks fischbestaende-online.de) on the basis of the best available data and considering the current state of research.

In addition to private individuals, target groups will include, in particular, potential multipliers in schools, universities, adult education centres and other (public and private) providers of education. In addition, buyers for supermarket chains and restaurants are targeted as significant buyers.

Media to be used: In addition to print media (booklets, flyers, school books), digital media (internet, television) are to be used.

Priority topics:

- Impacts of different fishing methods on target species, non-target species, and the seafloor
- Ecosystem-compatible fishing gear and techniques
- MSY concept
- Economic aspects of sustainable, ecosystem-compatible fisheries
- Consumers’ ability to influence developments through conscious consumer behaviour

Mode of action:

- Legal: Means of education, e.g. curricula
- Policy driven: Means of education, public awareness raising

UZ4-02

Fisheries measures

Description of measure:

The following measures are planned:

A) Fisheries management measures in Natura 2000 sites in the EEZ of the North and Baltic Seas

The establishment of fisheries management measures in Natura 2000 sites in the EEZ follows the process set out in Articles 11 and 18 of the Regulation on the Common Fisheries Policy (CFP Regulation). To this end, the Federal Government, in consultation with the state governments of the coastal *Länder*, the fisheries affected and nature conservancy organisations, will draw up draft “joint recommendations” for necessary fisheries restrictions and surveillance and coordinate these with

neighbouring countries whose fisheries may be affected.

B) Considering the establishment of fisheries and aquaculture exclusion zones in offshore wind farms

The establishment of off-shore wind farms creates areas in which other uses are limited for reasons of safety. For these areas, an assessment will be made as to whether fisheries and aquaculture exclusion zones would contribute to meeting the environmental targets with regard to biodiversity protection and, if so, where such a contribution could be made.

C) Common Fisheries Policy

Under the Common Fisheries Policy, the Federal Government will take into consideration the achievement of the objectives of the Marine Strategy Framework Directive.

D) Support for the development and use of ecosystem-compatible and sustainable fishing gear

The Federal Ministries of Food and Agriculture (BMEL) and the Environment (BMUB), together with the *Länder* in charge of the coastal waters, and taking into account the duty under EU law to meet the landing obligations, will develop a joint programme to support and develop alternative/modified and economically viable fishing techniques designed to reduce bycatches of harbour porpoises and sea-birds, and will use the opportunities to support the fishing industry in converting to these techniques.

Mode of action:

Mode of implementation:

- A, B, C and D: Legislative
- D: Technical, and policy-driven where necessary; economic through economic/financial incentives, eco certification

Instruments:

- CFP Regulation, MSFD, Habitats and Birds Directives, EMFF and other support programmes/ funding
- Outside of the CFP: Federal legal provisions suited to meeting set targets.
- Submission to and negotiation of the joint recommendations by BMEL and BMUB as part of the regional cooperation pursuant to Articles 11 and 18 of the CFP Regulation in the competent EU fisheries committees (North Sea: Scheveningen Group; Baltic Sea: Baltfish Group).

UZ4-03

Blue mussel management plan in the Wadden Sea National Park of Lower Saxony

Description of measure:

Pursuant to a decision taken in the state parliament of Lower Saxony, the first blue mussel management plan came into force in 1999, covering five years. As part of the amendment in 2001 of the Law on the Wadden Sea National Park in Lower Saxony (NWattNPG) the management plan was incorporated into NWattNPG Article 9(2). Every five years it is adapted in line with current knowledge and further developed with regard to achieving the national park's conservation objectives. The following objectives and content will be integrated into the next management plan:

- Ensuring the ecological sustainability of mussel culture fishery
- Ensuring the development of eulittoral and sublittoral blue mussel beds and biocoenoses, e.g. by establishing no-use zones
- Compliance with Natura 2000 conservation objectives and MSFD objectives

Important measures to achieve these objectives are:

- Surveillance of fishing activities by the fisheries authority
- Fitting mussel cutters with black boxes
- Monitoring of the blue mussel population by the Lower Saxony Wadden Sea National Park administration
- Additional closures for the protection of blue mussel habitats (in addition to areas closed by law)

- Provisions as part of the NWattNPG
- Closed season for eulittoral cultured mussels (15 December to 31 March)
- Suspension of fishing if the area covered by eulittoral mussel banks declines to less than 1,000 hectares or if the total biomass of 10,000 tons declines by more than 10%
- Minimising the risk of introducing neobiota
- Animal and plant groups associated with mussel banks must not suffer permanent damage from fishing (e.g. oyster catchers, eider ducks, eelgrass).

Mode of action:

- Legislative
- Technical

UZ4-04

Sustainable and sound use of non-living sublittoral resources for coastal coastal protection (North Sea)

Description of measure:

The aim of this measure is the sustainable and sound use of non-living resources, including the minimisation in space and time of adverse impacts during and after extraction.

The extraction and use of sublittoral marine sediments for coastal protection purposes aims at mitigating adverse effects of storm tides and coastal erosion on human health, the environment, cultural heritage and economic activities (in so far as these are in the public interest).

Extractions may constitute interventions in nature and landscape necessitating spatial restrictions, compensation measures, substitution measures, or ecological coherence measures as appropriate.

Resources, such as sand, may be extracted at depth or at the surface and in areas with greater or lesser morphological dynamics.

In morphologically less dynamic areas, spatial impacts and thus also the loss of benthic biocoenoses can be minimised by using deep suction dredging which creates smaller, but deeper dredging pits than would be created by other extraction methods. The regeneration time for these deep pits, and thus the impact in time, is generally longer than for other methods.

Trailing suction dredging can minimise regeneration time as this impacts a greater area but removes material only from the surface. This method therefore entails a greater loss of benthic biocoenoses. Depending on local conditions, such as the predominant morphodynamics, sediment characteristics, and the presence of protected or endangered habitat types and species, the choice of one or the other of the methods given above allows for a locally adapted (ecologically optimised) approach to be taken and thus for a reduction in impacts on features (MSFD Annex III, Table 1).

Additional options for reducing adverse ecological effects include i.a. the management of the overall dredging areas as well as the restoration of ecological functions.

In order to minimise adverse impacts on the marine environment, generally the following conditions should be met:

- The most environmentally benign extraction method should be used, in accordance with local and economic conditions.
- Extraction should always be undertaken using faultless machinery and following relevant widely recognised codes of practice.
- In order to minimise the higher sound emissions at the start of dredging, machinery should be operated at as slow a speed as possible.
- In order to minimise transport-related sound and exhaust emissions, the distance between dredging location and deposit grounds should be as short as possible, taking account of other concerns of nature conservation and environmental protection.
- Turbidity plumes should be kept at a minimum during resource extraction.
- In order to minimise disturbance of mammals, seabirds and coastal birds, the timing and locations of extraction activities must take into account the relevant species-specific potential for disturbance, e.g. resting, moulting, reproductive and rearing periods.

- In order to restore benthic settlement and ecological functions, extraction sites must be kept free from sediment extraction during the ecologically required regeneration period following the end of extraction activities.
- In order to support regeneration, extraction sites must be managed in their totality, also taking into account cumulative pressures. An example would be the designation of extraction areas of a size sufficient to allow for the setting aside of sites within these areas in which no resource extraction will be undertaken, thus fostering faster ecological regeneration.
- Insofar as relevant ecological impacts can be expected, these will be recorded using monitoring programmes and studies in the extraction areas and evaluated with a view to further optimisation of practices and minimisation of adverse impacts.

Aspects specific to the state of Schleswig-Holstein:

- Given the anticipated sediment deficits in the Wadden Sea as a result of accelerated sea-level rise and its resultant negative consequences for coastal protection and nature conservation, coastal protection measures must not further increase the sediment deficit. Therefore, sediment removal from the Wadden Sea and the barrier islands and sandbanks is not permitted.

Aspects specific to the state of Lower Saxony:

- The legal protection of suitable foreshore sediment extraction sites is a strategic objective aimed at safeguarding coastal protection on sandy coasts as an element of general interest provision. This objective is included in the 2012 Spatial Planning Programme (*Landesraumordnungsprogramm*) for Lower Saxony, the Masterplan for Coastal Protection in Lower Saxony (*Generalplan Küstenschutz*) and the recommendation by the Government Commission on Climate Change on a strategy for climate change adaptation in Lower Saxony (*Empfehlung für eine niedersächsische Strategie zur Anpassung an die Folgen des Klimawandels*).

Mode of action:

- Technical
- Policy driven

UZ4-05

Environmentally sound management of marine sand and gravel resources for coastal protection in Mecklenburg-Vorpommern (Baltic Sea)

Description of measure:

Motive/objective:

The extraction and use of marine sediments in coastal waters of Mecklenburg-Vorpommern (sublittoral within the 12 nm zone) for coastal protection purposes aims at mitigating adverse effects of storm tides and coastal erosion on human health, the environment, cultural heritage and economic activities (in so far as these are in the public interest). Marine sediments are an indispensable component of the coastal protection strategy of the state of Mecklenburg-Vorpommern for the sandy sections of its retreating/levelled coasts that are subject to human use.

Limitations to the availability of sand and gravel not only affect human uses in coastal regions but also result in large-scale losses of or significant changes to other conservation assets defined in the MSFD. This includes, for example, habitats owing their existence to the maintenance of “natural” sediment transport processes on settled coastlines.

The extraction of marine sediments may impair the productive and functional capacity of the natural environment; such adverse impacts must be assessed in accordance with existing laws (e.g. transposed EU Directives, Federal Nature Conservation Act).

In accordance with existing legal obligations and taking into account HELCOM Recommendation 19/1, the aim of this technical measure is to minimise spatial and temporal impacts on the marine environment during and after sediment removal for coastal protection purposes and thus to contribute to improved protection of the ecosystems both within and outside of Mecklenburg-Vorpommern’s coastal waters. Having regard to the MSFD conservation objectives, integrated management aims at the sustainable and prudent exploitation of non-living resources inside and outside of protected areas in Mecklenburg-Vorpommern’s coastal waters. Sand and gravel extraction continues to be prohibited in national park areas and in areas designated as nature reserves in accordance with the Federal Nature Conservation Act in conjunction with the Nature Conservation Act Implementation

Law of the State of Mecklenburg-Vorpommern (*Naturschutzausführungsgesetz - NatSchAG M-V*).

Scope:

This fact sheet applies exclusively to coastal waters under the jurisdiction of the state of Mecklenburg-Vorpommern (Baltic Sea within the twelve-mile zone including the inner and outer coastal waters pursuant to WFD). Given the very limited sediment resources in the Baltic Sea under the jurisdiction of the state of Schleswig-Holstein, a strategic orientation to the (long-term) exploitation of e.g. sand for coastal protection purposes in Schleswig-Holstein would not be sustainable. Therefore, there are no general provisions for the extraction of non-living resources for coastal protection. The *Land* reserves the right to take individual decisions for coastal protection reasons.

Measures to reduce adverse impacts resulting from sand extraction:

Spatial impacts can generally be minimised by employing deep suction dredging (minimisation of area footprint and loss of benthic organisms). This necessitates a sufficient depth of the non-living resource to be exploited (sand/gravel). The regeneration time for benthic biocoenoses in these deep pits, and thus the impact in time, is generally longer than for other methods.

Trailing suction dredging can minimise regeneration time, i.e. facilitate timely recolonisation, as this impacts a greater area but removes material only from the surface. While this method initially entails a greater loss of benthic organisms compared to deep suction dredging, it nonetheless allows for the faster regeneration of benthic biocoenoses.

Depending on local conditions, such as sediment depths, morphodynamics, sediment characteristics, and the presence of protected or endangered habitat types and species, the choice of one or the other of the methods given above allows for a locally adapted (ecologically optimised) approach to be taken and thus for a reduction in impacts on features (MSFD Annex III, Table 1).

With a view to protecting benthic biocoenoses, an **overall concept for sustainable, environmentally compatible exploitation of non-living resources for the purposes of coastal protection is to be developed and implemented** in Mecklenburg-Vorpommern. Its aim will be to safeguard as best as possible the biotic communities living in and on non-living resources (sand and gravel); it will contain the following components:

- Using adapted sand extraction technology in accordance with widely recognised codes of practice
- Development and maintenance of a usage concept for deposits
- Ensuring shortest possible distances between dredging locations and deposit grounds
- Development and implementation of a sediment management concept

The objectives behind the measures' components are as follows:

Sand extraction technology:

- Timely regeneration of the excavator profile (levelling) as a result of hydrodynamic impacts (orbital movements generated by waves and currents)
- Timely start to coenosis regeneration (recolonisation of preferably small areas by non-stationary species)
- Maintaining marine ecosystem function (food source, water purification by species...)
- Minimisation of sound and exhaust emissions

Given the relatively shallow sediment depths at the Mecklenburg-Vorpommern coast, trailing suction dredging is the primary method employed for extraction.

Usage concept for marine deposits:

Depending on the depth of the sand layers suitable for beach nourishment, trailing suction dredging allows for multiple extractions of the same area of marine sand deposits. A usage concept for marine deposits, to be developed, should aim at:

- Ensuring as complete as possible a regeneration of the coenosis at the sites used for sand extraction (regeneration in terms of species and numbers of individuals as well as possible regeneration of the age structure of biocoenoses)
- Long-term conservation of the habitat type (maintain sediment cover)

- Minimisation of sound and exhaust emissions by ensuring shortest possible transport distances between dredging locations and deposit grounds

This is predicated on the availability of a sufficient number of extraction sites of sufficient size and spatial distribution.

Sediment management concept:

The sediment used for coastal protection (beach nourishment) is transported along and across the shore and is deposited at the natural or artificial endpoint of the physiographic unit. The aims of the sediment management concept are:

- To reduce the required usage of marine sands and to harness synergies arising in the course of using public funding for sediment extraction/deposition, e.g. in the context of channel deepening in ocean shipping lanes
- To reduce the dumping at sea of sediments and the associated adverse impacts on the marine environment

Where deposits are dredged multiple times (trailing suction dredging) the maintenance of the habitat type is to be ensured.

Mode of action:

- Technical



UZ 5

Seas without pressures from litter

UZ5-01

Including the topic “marine litter” in learning goals, teaching plans and materials

Description of measure:

Schools (primary/secondary schools, vocational schools, technical colleges, and others), educational institutions and non-school establishments are to foster an awareness of the impacts and long-term consequences of marine litter. In the area of non-school (vocational) education, the primary target should be those sectors that are linked with the seas as their work environment. To this end the topic of “marine litter” is to be included into learning goals, teaching plans and teaching materials. The manner in which the topic is addressed should also consider private vocational schools and companies training apprentices and thus go beyond formal educational institutions. The aim of creating heightened societal awareness, and especially heightened awareness among core target groups (children, youths, and potential polluters), of marine litter and the problems it creates in the marine environment, is to change attitudes towards litter and enable people to act in a more environmentally responsible manner and also to educate their peers. This could significantly reduce the input of litter into the marine environment. Educational institutions thus become multipliers for the achievement of MSFD objectives. As part of the development of the relevant learning modules, existing educational materials are to be compiled and best practice examples to be used.

Consideration should be given to the establishment of a web presence (e.g. as part of Meereschutz.info or a dedicated national environmental education website) where content/information is pooled and made available. When developing the educational modules, it is important to take account of the fact that German may not be the native language of some of those working in relevant jobs. Moreover, as part of the regional cooperation (e.g. OSPAR RAP ML) the materials should also be made available to international colleagues. Therefore, an English version should always be produced in addition to the German version.

Mode of action:

Mode of implementation:

- Technical
- Policy driven

Instruments:

Educational tools available to the *Kultusministerkonferenz* (conference of ministers of education):

- Adaptation of *Länder* curricula
- Adaptation of curricula, teaching goals and examination regulations of universities, polytechnics, technical colleges and vocational schools
- Inclusion of the topic in educational activities offered by pre-schools (under the aegis of the *Kultusministerkonferenz*)

Educational materials published by the BMUB (as part of the BMUB Educational Service, *Umwelt im Unterricht* (Environment in the Classroom) Section).

Description of measure:

The aim is to identify items of particular concern with regard to risks to the marine environment in the German parts of the North and Baltic Seas by assessing the findings of beach litter monitoring, contents of fulmar stomachs as well as results from pilot monitoring of other marine compartments and potential indicator species (e.g. investigations of stomach contents of pelagic and benthic fish; assessment of nests in seabird breeding colonies with regard to the presence of plastic litter and associated mortality from strangling).

There are three phases to this measure:

- Knowledge generation and feasibility studies
- Assessment of findings and deduction of measures
- Detailed specification of measures

Starting with the most frequently found items and those that are found in relevant quantities and are potentially particularly damaging for the marine environment of the North and Baltic Seas, an assessment is to be made as to the type and magnitude of threats associated with these items and as to whether changes (e.g. of materials used) or modifications (e.g. product characteristics) to the items concerned may be required to eliminate further threats to the marine environment. This also includes knowledge generation on the impacts of plastic waste containing, in particular, substances that are toxic or act as endocrine disruptors (e.g. additives such as plasticisers, or stabilisers containing heavy metals).

Building on the findings, and working in conjunction with the manufacturing industry, the most economical alternative is to be identified for each of the products concerned. Moreover, an assessment should be made as to what other instruments might be suited to instigate necessary changes to products.

Mode of action:

Modes of implementation:

- Legislative
- Technical
- Policy driven
- Economic

A three-stage approach is required:

- 1) Knowledge generation: Risk assessment of items of concern and their constituents, littering and leakages in material cycles considering the sea as a sink.
- 2) Generate consensus.
- 3) Define counter-measures.

Instruments:

For 1) & 2): Expert opinions, R&D projects

For 3): Legal provisions, voluntary agreements

Description of measure:

As a result of their intended use, primary microplastics enter wastewater streams and from there are transferred into surface and marine waters. In the regulatory sense, primary microplastics do not constitute waste within the meaning of Article 2(2) No. 9 of the Closed Substance Cycle Waste Management Act (KrWG) but are covered by other areas of law.

The measure concerns primary microplastics in products and applications, e.g. in cosmetics or in air blasting technology for scrubbing or deburring. The measure aims at preventing the deposition in the environment of primary microplastics by making their use subject to conditions, by examining potential bans on applications in an open environment, and by establishing alternative products. To this end, the instruments listed below will be employed.

Mode of action:

Modes of implementation:

- Legislative
- Policy driven
- Economic

Instruments:

- Voluntary commitment to avoiding the use of microplastics in cosmetics
- Voluntary commitment to avoiding the use of microplastics in cleaning products (incl. blasting media)
- Educational instrument: Informing consumers of the environmental impacts of plastic particles originating in products used by private end consumers to foster the use of environmentally friendly alternatives that are free of microplastics. An extensive public awareness campaign reaching all the way into schools is therefore an important communications tool (combination with measure UZ5-01).
- EU-wide regulatory measures.

UZ5-04

Reducing inputs of plastic litter, e.g. plastic packaging, into the marine environment

Description of measure:

In Germany there are functioning collection systems (incl. deposit-refund systems) as well as sophisticated standards for return and recovery of packaging waste. These measures are to be further developed. At the European level there appears to be a need both for an expansion of recycling requirements for packaging waste and for the rigorous implementation of waste management law.

In addition, potential measures and regulations for improvements to sustainable product and packaging design are to be examined with a view to facilitating and extending the use of ecologically appropriate packaging that is reusable and/or has a long service life.

Moreover, the development and extensive establishment in European ports of an ambitious "no-special-fee" system for plastic waste should be pursued so as to further minimise illegal dumping of ship waste into the marine environment.

Mode of action:

- Legislative: For example, exploring options for national measures to strengthen deposit-refund systems under the recyclables law; advancement of recovery requirements at European level. Germany supports the efforts and initiatives of the EU Commission on advancing closed substance cycle waste management, on reducing marine litter, on adapting Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues, and on development and extensive establishment in European ports of an ambitious "no-special-fee" system for plastic waste.
- Economic: For example, strengthening ecological incentives and steering effects of licence fees on packaging (as already implemented as part of Germany's "dual system") under the recyclables law; voluntary agreements on charging for plastic bags in particular; initiating a voluntary fund, e.g. with funds provided by the entities responsible for the products, to support collection campaigns along rivers and at sea.

Description of measure:

A reduction in fisheries waste may be achieved by a range of activities aimed at preventing, avoiding and managing lost fishing nets and other fishing gear:

- 1) Educational work in relevant circles, e.g. fishers and fisheries associations, producer cooperatives and fishery cooperatives in order to create an awareness of the issue (also see measure UZ5-01)
- 2) Development of systems and processes to avoid the loss at sea of nets and other fishing gear as well as of waste generated in the process of using and repairing nets and other fishing gear
- 3) Development of alternative nets/materials or modifications to gear resulting in a reduction of marine pollution with plastics and lowering the risk of long-term “ghost fishing” by lost nets
- 4) Creation and application of technical options for marking nets (for retrieval)
- 5) Creation of incentives (a deposit for example) for the collection and handing in of end-of-life nets and other fishing gear by fishers (both their own and those they caught/recovered at sea)
- 6) Assessment of the frequency of and reasons for lost nets (R&D project for scoping purposes and as a basis for the development of additional measures aimed at reducing net loss)
- 7) Recovery of lost nets and other fishing gear (taking into account those types of nets presenting a particularly high risk of “ghost fishing” and weighing up ecological and economic costs and benefits of colonisation by benthic organisms).

Mode of action:

Modes of implementation:

- Legislative
- Policy driven
- Economic

Instruments:

- Legislative and other provisions with reference to:
 - MARPOL Annex 5
 - UN Resolutions
 - FAO/UNEP guidelines on abandoned, lost or otherwise discarded fishing gear
 - Commission Regulation (EC) No 1805/2005 on the marking and identification of passive fishing gear and beam trawls
 - Regulations for the onshore reception and environmentally benign disposal of nets and other fishing gear in harbours
- Voluntary commitments
- Voluntary agreements/economic or financial incentives:
 - Voluntary agreements with fishers or establishment of a support programme for targeted collection and handing in of end-of-life nets and other fishing gear
- Educational instruments:
 - Providing information to fishers and fishing associations (awareness raising – also see measure UZ5-01)
- Conducting research, development and demonstration projects
- Collection campaigns

Description of measure:

“Fishing for Litter” initiatives – the aim of which is to remove litter from the marine environment and, in particular, to generate awareness in the fisheries sector and the general public as well as to obtain data on the marine litter problem where possible – should be supported and expanded as much as possible.

One aim of the “Fishing for Litter” initiative is to remove litter from the North and Baltic Seas. The litter trawled up as “by-catch” as part of fishing activities should be brought ashore, assessed for its composition where possible, and safely and properly disposed of on land. To this end, fishers are supplied with “big bags” for on-board collection. Participating fishers can then dispose of the litter onshore, safely and free of charge, e.g. in specially marked and lockable containers. This litter is then to be recorded in terms of quantities and composition so as to obtain information on the sources of litter. It is intended that fishers participating in the initiative can dispose of this “by-catch” litter in all participating harbours, not only in their home port. To this end, adequate on-board and onshore infrastructure must be at hand.

In addition, as part of this measure, the recycling/recovery potential of the marine litter collected is to be determined.

Moreover, through its public relations/awareness-raising components, the “Fishing for Litter” initiative will contribute to educational and information measures. This is to be achieved using, for example, information panels placed beside the containers, “Fishing for Litter” flags on participating vessels, information booklets, customised printing on “big bags” etc.

Mode of action:

Mode of implementation:

→ Policy driven

Instruments:

→ Voluntary commitments in accordance with OSPAR Recommendation 2010/19

→ Implementation of OSPAR Recommendation 2010/19; signing and implementation of OSPAR RAP ML and HELCOM RAP ML

→ PR work/awareness raising

Description of measure:

In addition to the indispensable preventive measures to prevent further marine litter from entering the marine environment, clean-up campaigns in rivers and marine compartments, e.g. beaches, coastlines, the water column and water surface, are to be undertaken where ecologically appropriate, with a view to removing litter from the marine environment. In this context, environmentally-friendly methods and instructions will be developed for future clean-ups in areas that are particularly difficult to clean. In addition, areas that are particularly affected by litter will be identified and regular clean-ups will be ensured. Moreover, where possible and meaningful in quantitative terms, the litter found should be assessed in terms of its quantities and composition, in keeping with established monitoring protocols (e.g. OSPAR marine beach litter survey guideline and ICES IBTS survey manual). It would be desirable to expand and intensify the existing European and international marine litter action days.

Mode of action:

→ Policy driven

Voluntary campaigns and agreements (e.g. beach cleaning by volunteers and environmental groups).

Germany-wide participation in international action days (e.g. International Coastal Cleanup Day, Let's Clean Up Europe).

Description of measure:

Review of introduction pathways and reduction of inputs of plastic litter from rivers, near-shore areas and beaches by way of redefining or intensifying municipal provisions, taking into account the polluter-pays principle. Such provisions include regulatory provisions in combination with awareness-raising, e.g. a tightening of conditions attached to planning permissions granted for events, conditions attached to leases on beaches, requirements for the organisation of and infrastructure for waste management (beach management), and fines imposed for infringements. These provisions should also include rules on shore and beach clean-ups, e.g. after events.

Mode of action:

- Legislative
- Policy driven

Legislative: Amendments to municipal statutes (e.g. on the use of beaches, events legislation, public order legislation, the right to use public spaces) and extension of existing provisions to other areas (e.g. management of beaches and riverbanks).

Description of measure:

As a result of their intended use, primary microplastics enter wastewater streams and from there end up in surface and marine waters. In the regulatory sense, primary microplastics do not constitute waste within the meaning of Article 2(2) No. 9 of the Closed Substance Cycle Waste Management Act (KrWG) but are covered by chemicals legislation.

Adding to the source-related measures UZ5-02 and UZ5-03, this measure addresses the need to develop and use cost-efficient microplastics retention systems to avoid their release into the aquatic environment.

There are several phases to this measure:

- Needs assessment, knowledge generation and feasibility studies
- Assessment of findings and deduction of measures
- Detailed specification of measures

When it comes to reducing the entry of plastics into watercourses, the focus is on improving the retention of plastics, including secondary microplastics and macroplastics, in combined sewer overflows, e.g. following heavy rainfall events. The need for improved microplastics retention in sewage treatment plants as well as the feasibility of, for example, improved systems for the retention of synthetic textile fibres in washing machines must also be assessed.

Furthermore, the entering into the environment of micropellets (plastic granules) and plastic powder resulting from improper handling in production, sales, storage, transport and further processing is to be minimised.

Moreover, there is a need to assess and develop, as required, solutions for other introduction pathways for microplastics, e.g. microplastics arising due to tyre abrasion (entering via run-off precipitation water) or from paints (via offshore industries).

Mode of action:

Modes of implementation:

- Legislative
- Technical
- Policy driven
- Economic

Instruments:

- R&D project with the following objectives: Assessment of existing and development of new cost-efficient retention systems for undesirable microplastics and synthetic textile fibres; assessment and development of solutions for additional introduction pathways for microplastics; quantification of sewage sludge as a source of microplastics.
- It is not yet possible to make a final determination of the instruments to be used to achieve potential improvements.
- However, building on the results of the R&D project,
 - possible legal provisions should be considered (nationally): To prevent the entry of microplastics into the environment by way of sewage sludge used as fertiliser, consideration should be given to the inclusion of relevant provisions into the Sewage Sludge Ordinance (AbfKlärV) (microplastics enter receiving streams as a result of erosion and from there they enter rivers and ultimately the sea); furthermore an assessment should be made as to whether changes may need to be made to the Waste Water Ordinance (AbwV) and possibly to the Ordinances on the Transport of Dangerous Goods for specific modes of transport.
 - possible economic/financial incentives for better retention of microplastics from municipal, industrial and shipborne wastewater should be identified.
- Initial voluntary industry commitments aimed at zero pellet loss are already in place (e.g. Plastics Europe/VCI) and should be expanded. Specifically, this means that binding conditions as well as incentives should be established for the plastics industry along the entire value chain, thus also addressing additional actors (transport, logistics, terminals and further processing in the supply chain).



UZ 6

Seas not impacted by the introduction of anthropogenic energy

UZ6-01

Development and application of biological limit values for the impact of underwater noise

Description of measure:

General: The biological relevance of anthropogenic noise emissions can only be demonstrated in terms of their impact on relevant species. The physical quantity causing this impact is the sound level received by the species. However, in order to regulate the pressure, it may also be necessary to define an acceptable limit for noise emission source levels.

A: Impulsive sound

The measure consists of the development and application of biological limit values for impacts arising from anthropogenic impulsive underwater noise emissions with a view to preventing adverse impacts on relevant species.

The development of limit values must take into account the temporal and frequency properties of the sound emissions. Impulse sound can compactly be described by, for example, the two sound levels, i.e. “single event sound pressure level” and “peak level”, in combination with “frequency”. Furthermore, the spectral depiction of received sound levels (e.g. in the form of 1/3 octave spectra) may be necessary for an assessment of the specific impact of impulsive sound on affected species. The physical impact on the species concerned can be expressed in terms of “sound pressure level received” or “total pressure level” for marine mammals and, additionally, in terms of “water particle motion” for fish. Where sufficient scientific evidence is not yet available, relevant R&D projects are to generate a reliable basis, and the precautionary principle is to be applied in case of interventions.

National or military security concerns as well as the full operational capability of the Federal Armed Forces must be taken into account.

The limit values thus derived are to be taken into account, in an appropriate manner, i.a. in the context of Measure UZ6-04, in protected areas under Article 13(6) MSFD, and in the context of approval processes for anthropogenic interventions.

B: Continuous sound

The aim is to understand and where necessary regulate, based on scientific knowledge, anthropogenic marine underwater noise emissions in order to effectively protect relevant species. However, given current knowledge gaps, the development and establishment of limit values for continuous sound necessitates more intensive prior research – compared to that required for impulsive sound – of the physical basis of sound propagation, the physiological basis of the auditory systems of relevant species (e.g. the influence of directional hearing), and the biological effects.

National or military security concerns as well as the full operational capability of the Federal Armed Forces must be taken into account. The measure therefore consists of an initial intensive research phase followed by the deduction and subsequent application of biological limit values for anthropogenic underwater noise emissions (continuous sound emissions) aimed at preventing adverse impacts on relevant species. Such impacts include, for example, masking effects and stress reactions

as well as behavioural changes that may result in habitat loss as a result of avoidance behaviour.

The development of limit values must take into account the temporal and frequency properties of the received sound levels. The received sound level and its frequency content determine whether a signal stands out against the ambient noise level of the sea.

While received sound levels above certain thresholds may trigger behavioural changes such as avoidance or cessation of critical activities (e.g. hunting behaviour, migration, reproduction), duration of exposure is considered to be the more critical determinant of stress. Furthermore, with regard to masking, suitable models that additionally take into account the sound characteristics of the masked biological sound signals have yet to be tested or advanced or even newly developed.

The limit values thus derived are to be taken into account, in an appropriate manner, i.a. in the context of Measure UZ6-04, in protected areas under Article 13(6) MSFD, and in the context of approval processes for anthropogenic interventions.

Insofar as international shipping is affected, Germany will not strive for individual national solutions but may draw up an application to the IMO, should the need arise.

Mode of action:

Modes of implementation:

- Legislative
- Technical
- Policy driven

Instruments:

- Application of biological limit values: Administrative regulations, guidelines, application to international organisations such as the IMO, as appropriate.
- Deduction of biological limit values: R&D projects

UZ6-02

Establishment of a registry for impulsive noise and shock waves and of standardised mandatory reporting requirements

Description of measure:

This measure provides for the establishment of a central noise registry which is to initially record all impulsive noise emissions subject to approval procedures. The impulsive noise emissions will be recorded in the noise registry including details on the location, time, duration and characteristics of the acoustic source, as well as the predicted and actual measured sound levels, where available. In terms of the longer-term perspective, the registry is to be designed in such a way as to also allow for the recording of noise emissions of longer duration (e.g. sonar, sediment removal), and possibly also shipping noise and other continuous sources of noise emissions. The aim of the registry is to make it possible to identify noise hotspots and thus to allow for the evaluation and cumulative assessment of impacts arising from multiple sources. In addition, it is to allow for the spatial and temporal control of noise emissions, where necessary, and contributes to noise emissions modelling in marine waters. Moreover, the registry is to serve as a basis for the development of technical, planning, and, where appropriate, also for legislative protection measures, and it is to introduce standardised binding reporting obligations. Measures for the protection of the marine environment and achievement of GES are to be planned and implemented on this basis.

In accordance with the recommendation issued by the TG Noise, entries made in the national noise registries are to be notified to a common European noise registry. The findings from the noise registry for German waters can be used for this purpose. Similarly, the German authorities can benefit from information supplied to the European noise registry by other countries bordering the North and Baltic Seas and can modify their monitoring strategies and forecasting models, if necessary.

Mode of action:

- Technical

Description of measure:

This measure comprises the design and establishment of a permanent monitoring network for underwater noise as well as the derivation of international standards for noise mapping, including the provision of suitable models for singular and cumulative assessments of regional noise pressures in German marine areas.

The intention is to establish a permanent monitoring network for underwater noise which may also allow for the recording of marine mammal signals. Hydrophones are to be installed year-round at several stations each in the North and Baltic Seas, either at mobile stations (buoys/remote systems) or as fixed installations. Criteria for site selection include representativeness, minimum possible impact from fishery activities, sufficient distance to strong noise emitters (construction sites, shipping lanes); however, site selection should also allow for areas of noise accumulation (such as shipping lanes) to be depicted. Monitoring should generally be continuous but this may also mean that measurements are taken at intervals. In how far monitoring may be limited to biologically relevant frequency spectra and whether it will be possible to immediately process the monitoring data has yet to be determined in the course of implementation. Aspects of cost, technically required maintenance intervals, EU requirements with regard to the extent of documentation as well as aspects of national security and national defence come into play here. The in-situ measurements serve to validate calculated (modelled) background noise pressure levels in the North and Baltic Seas that are based on i.a. suitable sound propagation models, AIS data and acoustic source descriptions. This is to allow for an evaluation of environmental condition and establish a basis for decisions to be taken on methodology. It will be possible to identify impact hotspots and develop suitable mitigation measures.

The establishment of a suitable monitoring network and systematic recording and documentation of underwater noise will provide baseline data that are essential to assessing environmental condition with regard to anthropogenic underwater noise emissions, to recognising and analysing trends and to deducing planning-based as well as regulatory protection measures, as appropriate. Information generated in the monitoring network will be entered into the noise registry (see Measure UZ6-02). The baseline data in the noise registry, and especially the data generated in the monitoring network, primarily serve to verify suitable models to be used for full-coverage noise mapping in the German waters of the North and Baltic Seas.

In accordance with the recommendation issued by the TG Noise, entries made in the national noise registries are to be notified to a common European noise registry. The findings from the noise registry and noise mapping in German waters can be used for this purpose. Similarly, the German authorities can benefit from information supplied to the European noise registry by other countries bordering the North and Baltic Seas and can modify their monitoring strategies and forecasting models, if necessary.

Mode of action:

→ Technical

Description of measure:**A: Impulsive sound**

Comprehensive noise mitigation measures will be developed with a view to reducing adverse anthropogenic impacts resulting from impulsive sound on relevant marine species in the North and Baltic Seas, and their implementation will be examined.

Differences in protection requirements between the various marine species and their populations will be taken into consideration. The measures are to be applied to all regions of the German marine areas. The special protection requirements of the various protected areas will be taken into account.

The measures include the assessment of all impulsive anthropogenic marine noise sources, such as shipping, resource exploration and exploitation, construction and operation of offshore installations, especially for energy generation, fisheries, military, contaminated site clean-up, and tourism.

National or military security concerns as well as the full operational capability of the Federal Armed Forces must be taken into account.

For Habitats Directive Annex species in particular, the measure will implement threshold values for the determination by competent authorities or applicants of what constitutes an offence (injury, killing, disturbance).

The measures also include the creation of low noise areas for marine species.

The limit values developed as part of Measure UZ6-01 and the knowledge gained as part of the Federal Environment Ministry's "Concept for the Protection of Harbour Porpoises from Sound Exposures during the Construction of Offshore Wind Farms in the German North Sea" form the basis for the specific noise mitigation measures to be developed under this measure.

Validated noise mitigation measures should also be implemented at the international level or at least at European level.

B: Continuous sound

As there are still many knowledge gaps in our understanding of the fundamentals of the physics of continuous sound and its impacts on the biotic marine environment, the measure comprises an initial phase of intensified research. In conjunction with the limit values developed in Measure UZ6-01, this research phase will be followed by the development and application of noise mitigation measures for anthropogenic underwater noise emissions (continuous sound emissions) aimed at preventing adverse impacts on relevant species. Ancillary research is to be carried out in order to analyse and improve, where necessary, the effectiveness of those measures.

Continuous and cumulative sources of noise can cause disturbance (displacement), changes in behaviour, and masking of biologically important signals and thus restrict the species' acoustic environment. Furthermore, depending on the sound level, frequency range, and duration of exposure, continuous sound can cause stress and even chronic impairment.

Noise mitigation measures can be designed to change sound levels, frequency ranges or the duration of exposure. While behavioural changes, such as avoidance or cessation of critical activities (e.g. hunting behaviour, migration, reproduction) can be triggered by received sound pressure levels above certain thresholds, another important determinant of stress is the duration of exposure. The received sound level and its frequency content determine whether a signal stands out against the ambient noise level of the sea. This is relevant for masking, amongst other impacts.

The aim is to reduce marine sound emissions of anthropogenic origin and to effectively protect relevant species, based on the findings gained under Measure UZ6-01 and other scientific knowledge. Possible concrete measures also include the creation of low-noise areas for marine species in accordance with UZ3-01.

Differences in protection requirements between the various marine species and their populations will be taken into consideration. The measures are to be applied to all regions of the German marine areas. The special protection requirements of the various protected areas will be taken into account.

The measures include the assessment of all continuous anthropogenic marine noise sources, such as shipping, resource exploration and exploitation, construction and operation of offshore installation, especially for energy generation, fisheries, military, contaminated site clean-up, and tourism.

National or military security concerns as well as the full operational capability of the Federal Armed Forces must be taken into account.

A targeted research focus includes the identification of the group of noisiest emitters. This can be achieved, for example, by providing a technical description of the top 10% of noise polluters. It is important to document the most significant noise contributions in order to take measures to mitigate noise emissions from individual sources and thus to effectively reduce underwater noise pressure.

For Habitats Directive Annex species in particular, the measure will implement threshold values for the determination by competent authorities or applicants of what constitutes an offence (injury, killing, disturbance).

Insofar as international shipping is affected, Germany will not strive for individual national solutions but may draw up an application to the IMO, should the need arise.

However, given current knowledge gaps, the development and establishment of limit values for continuous sound (see UZ6-01), which is to be undertaken prior to implementing noise mitigation measures, still requires intensive fundamental research.

Tourism concerns will be taken into account in the implementation of this measure.

Mode of action:

Mode of implementation:

- Legislative
- Technical
- Policy driven

Instruments: Guidelines, administrative regulations, application to international organisations such as the IMO

UZ6-05

Development and application of threshold values for the introduction of heat

Description of measure:

The main sources of heat discharge into coastal waters are cooling water (energy generation, production processes) and power cables. This can result in local temperature increases that decrease with increasing distance to the emission source. In turn, this may lead to certain species or certain developmental stages of species to avoid the area or to change their level of activity, and it may also result in changes in species assemblages including micro-organisms and human pathogens.

The application of threshold values for heat discharges is already being addressed, in part, as part of approval processes for developments.

Threshold values for heat discharges are in place for the discharge of cooling water (*cf. LAWA 2013 – Grundlagen für die Beurteilung von Kühlwassereinleitungen in Gewässer*) as well as for the installation of cables for offshore wind energy projects.

In addition, a thermal load plan, as agreed between the states of Lower Saxony, Hamburg and Schleswig-Holstein in 2008, is available for the tidal Elbe. An assessment should be made of the applicability of the plan's provisions to coastal and marine areas' temperatures, especially those in narrow fjords.

In the establishment of threshold values, special consideration will be given to convergences of significant heat gain areas with entry pathways for neobiota. Temperature-related impacts on micro-organisms and human pathogens must also be taken into account.

Mode of action:

- Legislative: Assessment as part of approval processes for developments

UZ6-06

Development and application of environmentally sound lighting of offshore installations and accompanying measures

Description of measure:

The aim of this measure is to ensure that light emissions emanating from offshore installations (e.g. oil and gas rigs, wind turbines, offshore transformer platforms, prospective/extraction platforms) are ecologically sound.

As a first step, the impacts of offshore light emissions on the marine environment are to be analysed and evaluated.

Based on this analysis, the development of necessary technical measures aimed at altering or, if necessary, reducing light emissions may be furthered and their feasibility assessed, as appropriate.

The implementation/application of suitable technical modifications to the requirements for marine navigation lighting can only be achieved through international cooperation on potential amendments

to existing standards for shipping (IALA) and air traffic, and their transposition into the relevant national provisions. The assessment of the feasibility of potential modifications should take account of the history to the provisions' evolution, as their ecological compatibility has already been discussed and examined as part of that process.

In addition to the above considerations, which primarily relate to external safety and visibility, i.e. the marking of potential navigational hazards, any modifications to operational lighting must take into consideration the requirements with regard to lighting for workers.

Modifications can only be applied by way of international cooperation (e.g. IALA and ICAO with respect to the marking of potential navigational hazards) and corresponding national and EU legislation (e.g. EU OHS Directive, German Federal Ordinance on OHS (ArbStättV), national OHS legislation, regulations of the *Berufsgenossenschaften* (statutory work accident insurance institutions), General Administrative Provision on marking potential navigational hazards to aircraft). Account must be taken of the fact that the principle of avoiding unnecessary light emissions for traffic safety had already been taken into account at the time the guidelines on the marking of potential navigational hazards to shipping and air traffic were developed.

Mode of action:

- Legislative
- Technical



UZ 7

Seas with natural hydromorphological characteristics

UZ7-01

System for hydromorphological and sedimentological information and analysis

Description of measure:

A system for hydromorphological and sedimentological recording, information and analysis for the German areas of the North and Baltic Seas will be designed, developed and implemented. As part of this measure, a coordinated tool to ensure the availability of information will be established and permanently provided. The system will merge up-to-date data from a range of sources and thus constitute a comprehensive basis for information on and the analysis of sea-floor integrity and sea-floor habitats in the German parts of the North and Baltic Seas.

Implementation will be stepwise:

1. Merging data sets on hydromorphology and sedimentology from existing information systems, incl. gap analysis.
2. Validation and analysis, incl. the closing of identified gaps in data. In a second step, the system's information is to be merged with data from other databases (habitat registry, sediment removal, dredging/deposition of dredged material), validated and analysed from the hydromorphological perspective.

This system for information and analysis will therefore constitute a basis for the regular assessment of environmental quality in the German parts of the North and Baltic Seas, including the effectiveness of protection measures.

Mode of action:

→ Technical