

English Summary

DRAFT

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

Report according to section 45h(1) of the Federal Water Act

Implementation of Article 13 Marine Strategy Framework Directive

For public consultation: 1 April – 30 September 2015

<http://www.meeresschutz.info/oeb-anhoerung.html>

Summary

The aim of the German marine policy is a comprehensive and integrated management of human activities based on the ecosystem approach in order to achieve good status of the marine waters by 2020. An integrated management of ecologically sustainable uses requires coordination of all policy areas with influence on the state of the marine ecosystems, in particular fisheries, agriculture, shipping, generation of energy, waste management, product design and chemicals policy. To this end, coordination of action among the coastal states of the North and Baltic Seas is indispensable.

The initial assessment in 2012 of the state of the marine environment of the German parts of the North and Baltic Seas concluded that marine waters were not in a good status, in particular concerning benthic habitats and species, fish, seabirds, phytoplankton and, in particular in the Baltic Sea, marine mammals. Main pressures on both seas include among others eutrophication, fisheries, contaminants and litter.

In 2012, Germany set up seven overarching environmental targets, specified by 30 operative targets and multiple associated indicators. These action-oriented targets were set for guiding measures to reduce pressures on the sea and to take conservation measures in order to move towards achieving and maintaining a good environmental status of the national marine waters.

The Federal Government and the Governments of the states of Bremen, Hamburg, Mecklenburg-Vorpommern, Niedersachsen and Schleswig-Holstein have drafted a programme of measures for the period 2016-2021 based on and structured along the national environmental targets.

The programme of measures takes into consideration the contribution which existing national measures, adopted in the context of European environmental legislation as well as regional and international agreements, make to the achievement of good environmental status under the MSFD.

Existing measures were not considered sufficient to achieve or maintain good environmental status of the German parts of the North Sea and Baltic Sea. For the first management period 2016 – 2021, 31 new measures (in the meaning of EU reporting category 2a and 2b) were proposed for closing existing gaps. The focus in the first management cycle is on pressure sources at sea and includes:

- the reduction of inputs of contaminants, including ship-borne emissions and discharges
- the protection of marine biodiversity, e.g. by means of spatial measures for the protection of species and habitats
- the reduction of inputs of litter through a combination of measures relating to product design, waste management, aftercare and public awareness raising
- the reduction of the introduction of underwater noise through development and application of noise mitigation measures, supported by noise mapping, a noise register and the development of biological limit values.

A list of the proposed measures is given in **Annex 1** to this document.

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. Management measures in Natura 2000 areas for the protection of species and habitats are well covered by the Habitats Directive.

For waterborne inputs of nutrient 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 will make an important contribution to the improvement of marine waters. These measures will be reported under the WFD, making a clear link to the MSFD. It

is also expected that the current revisions of the Federal Fertilisation Ordinance, implementing the Nitrates-Directive, and of the Federal Ordinance on Installations for Handling of Substances Hazardous to Water will contribute to improving the status of marine waters.

It is expected that the Programme of Measures will have exclusively positive effects on protected assets, in particular water; species, habitats and biodiversity; soil; landscapes; air; cultural goods and material assets as well as human health. It is expected that it will have positive transboundary effects, in particular on neighbouring waters or sub-basins. The degree of the positive effects depends on the following substantiation of the measures in order to prepare their implementation by end of 2016.

The environmental report according to section 14g of the Federal Environmental Impact Assessment Act, which assesses the environmental impact of the proposed programme, is integrated into the programme of measures. As the programme of measures is targeted towards the protection of water, species, habitats, biodiversity and human health, its effects on those protected interests is part of the reasoning for each measure and included in the programme section. The environmental report therefore focuses on the effects on the additional protected assets (terrestrial soil, landscape, air, climate, cultural goods and material assets) and interactions between all protected assets. **Annex 2** to this document presents the information from the environmental report.

The draft programme of measures includes

- general information on the procedures and methods for establishing the programme (Part I).
- a programme dedicated to the North Sea, including the environmental report according to section 14g of the Federal Environmental Impact Assessment Act (Part II).
- a programme dedicated to the Baltic Sea, including the environmental report according to section 14g of the Federal Environmental Impact Assessment Act (Part III).
- an attachment with fact sheets for each of the proposed new measures providing more detailed information on those measures (Addendum 1). The fact sheets include SEA-specific information on the environmental impacts and assessed alternatives for each measure.

The draft programme of measures and fact sheets are available for public consultation according to section 45i Federal Water Act at <http://www.meeresschutz.info/oeb-anhoerung.html> from 1 April to 30 September 2015. Background information on the socio-economic analysis (Addendum 2) complements the public consultation and is available at <http://www.meeresschutz.info/oeb-anhoerung.html>.

The proposed new measures are subject to continued consultation in the federal and state governments and to securing financing. The federal and state governments reserve the possibility to include additional e.g. state-specific measures in the programme following the conclusion of the ongoing consultations.

In the context of the MSFD only measures will be reported to the EU Commission in 2016 for which at least one coastal state or the federal government commit to their implementation in the relevant marine region. New measures relates to title of the measures as described in the fact sheet. A decision which federal or state partner will implement which measure (component) will be taken in December 2015.

The individual measures for the execution of the programme will be finalised within the given timeframe of the MSFD followed by the operationalisation of the programme envisaged by the MSFD, if necessary taking into account additional impact assessment information.

Proposed new measures presented for public consultation in accordance with section 45i Federal Water Act (WHG)

No.	Title of measures	Application		Mode of implemen- tation
		North Sea	Baltic Sea	
Environmental target 1: Seas unaffected by eutrophication				
UZ1-01	Agricultural cooperation project on reducing direct inputs into coastal waters via drainage systems	X		economic technical
UZ1-02	Strengthening the assimilative capacity of estuaries, using the example of the river Ems	X		technical
UZ1-03	Promoting measures to reduce NO _x inputs from shipping	X	X	legal technical political economic
UZ1-04	Support the designation of a NECA in the North and Baltic Seas	X	X	legal technical political economic
Environmental target 2: Seas not polluted by contaminants				
UZ2-01	Criteria and incentive systems for environmentally friendly ships	X	X	legal technical political economic
UZ2-02	Requirements for the discharge and disposal of scrubbing waters from exhaust treatment on board ships	X	X	legal technical political
UZ2-03	Preventing and combating marine pollution – improving maritime emergency preparedness and response	X	X	legal technical
UZ2-04	Management of dumped munitions	X	X	technical political economic
Environmental target 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	X	X	legal technical political
UZ3-02	Measures to protect migratory species in marine areas	X	X	legal technical political
Enviornmental target 4: Seas with sustainable and environmentally sound use of resources				
UZ4-01	Continue to raise public awareness of sustainable, ecosystem-compatible fisheries	X	X	legal political
UZ4-02	Support for certification process for blue mussel fisheries in Lower Saxony	X		technical
UZ4-03	Blue mussel management plan in the Wadden Sea National Park of Lower Saxony	X		legal technical

No.	Title of measures	Application		Mode of implemen- tation
		North Sea	Baltic Sea	
UZ4-04	Sustainable and sound use of non-living sublittoral resources for coastal protection (North Sea)	X		technical political
UZ4-05	Environmentally sound management of marine sand and gravel resources for coastal protection in Mecklenburg-Western Pomerania (Baltic Sea)		X	technical political
Environmental target 5: Seas without pressures from litter				
UZ5-01	Including the topic “marine litter” in learning goals, teaching plans and materials	X	X	technical political
UZ5-02	Modification/substitution of products in a comprehensive life-cycle approach	X	X	legal technical political economic
UZ5-03	Avoiding the use of primary microplastic particles	X	X	legal political economic
UZ5-04	Reducing inputs of plastic litter e.g. plastic packaging, into the marine environment	X	X	legal economic
UZ5-05	Measures relating to lost and abandoned fishing nets and gear	X	X	legal political economic
UZ5-06	Establishing the fishing for litter approach	X	X	political
UZ5-07	Removing existing marine litter	X	X	political
UZ5-08	Reducing amounts of plastic litter through local regulatory provisions	X	X	legal
UZ5-09	Reducing emissions and inputs of microplastic particles	X	X	legal technical political economic
Environmental target 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 on relevant species	X	X	legal technical political
UZ6-02	Establishment of a register for impulsive noise and shock waves and of standardised mandatory reporting requirements	X	X	technical
UZ6-03	Noise mapping of German marine areas	X	X	technical
UZ6-04	Development and application of noise mitigation measures for the North and Baltic Seas	X	X	legal technical political
UZ6-05	Development and application of threshold values for the introduction of heat	X	X	legal
UZ6-06	Development and application of ecologically sound lighting of offshore installations and accompanying measures	X	X	legal technical
Environmental target 7: Seas with natural hydromorphological characteristics				
UZ7-01	System for hydromorphological and sedimentological information and analysis	X	X	technical

From the programme of measures: environmental report

(Source: sections II.3 and III.3 of the programme of measures)

3.2 Assessment framework

Under section 14f(1) of the Environmental Impact Assessment Act (UVPG), the planning authority must lay down the framework for the strategic environmental assessment, including the scope of the report and the level of detail it should contain. Section 14f(2) UVPG stipulates that authorities concerned and where relevant other stakeholders must be involved in establishing the scope of the assessment.

In July 2014, the Federation-Länder Committee for the North and Baltic Seas (Bund-Länder Ausschuss Nord- und Ostsee, BLANO) proposed an assessment framework for the strategic environmental assessment. From 10 July to 10 August 2014, around 360 authorities, institutions, environmental groups and users' associations were invited to present written opinions on the proposed framework. More than half of the 56 submissions agreed with the framework. The assessment framework was amended in line with the feedback and laid down by the coordinating council for marine protection on 13 October 2014, taking references to additional information into account.

The starting point for this assessment are the individual new measures considered for inclusion in the programme of measures and the programme as a whole. This environmental report covers both the effects of the programme of measures in the planning area of the German parts of the North Sea and Baltic Sea and its transboundary effects.

This environmental report must reflect the scope and level of detail laid down for the programme of measures in accordance with section 45h of the Federal Water Act (WHG). These measures and their respective level of detail are therefore the decisive factors for the environmental assessment.

Insofar as further decisions and actions are needed to implement the new measures laid down in the programme of measures pursuant to section 45h WHG, the impacts of these decisions and actions must be assessed in the administrative procedures which may be necessary at different planning levels (tiering in accordance with section 14f(3) UVPG).

The specific form the individual implementing measures take is thus a matter for the succeeding planning or approval level. Consequently, quantification or precise localisation of the environmental effects is not part of the environmental report for the programme of measures pursuant to section 45h of the Federal Water Act (WHG).

This environmental report focuses on the following:

- Current status and development of the environment if the programme of measures is not implemented
- Effects of the measures on the protected assets under WHG and UVPG
- Assessment of alternatives
- Comments on the future monitoring strategy

3.3 Environmental protection objectives

Environmental protection objectives give information on the environmental status being aimed for (environmental quality objectives). In the 2012 initial assessment drawn up pursuant to the Marine Strategy Framework Directive (MSFD) the environmental protection

objectives of Germany's coastal and marine waters are set by the description of 'good environmental status' as defined under section 45d WHG in relation to the descriptors marine biological diversity, non-indigenous species, state of commercially exploited fish and shellfish stocks, the food web, eutrophication, sea-floor integrity, hydrographical conditions, contaminants, contaminants in food, marine litter and the introduction of energy. (see part I). These targets form the basis for the management of marine waters. The description of 'good environmental status' was arrived at after considering and comparing the goals of international, EU and national agreements and regulations addressing marine protection, on the basis of which Germany acknowledged certain principles and committed to pursuing certain targets.

The common thread for drawing up the programme of measures for the German parts of the North Sea and Baltic Sea under the MSFD are the seven overarching "environmental targets" laid down under section 45e WHG, and the operative environmental targets which further specify them. These targets are management objectives. The environmental targets under the MSFD bridge the gap between the current status and a 'good' environmental status in order to achieve the directive's primary objective of achieving or maintaining good environmental status in the marine environment by 2020 at the latest. The MSFD targets mainly focus on the regulation of human activities, reduction of pressures and the conservation of biological diversity.

The selection of environmental protection objectives is based on the description of good environmental status for coastal and marine waters. Other environmental quality objectives are based on national planning law and other special legislation, or on international, EU and national agreements, regulations and plans (see Annex 3). Consideration is only given to environmental protection objectives that have a bearing on the protected assets under the SEA Directive and the probable significant effects on the marine environment, and which have a spatial relevance and degree of abstraction appropriate to the programme. Selection is therefore limited to a few overarching objectives.

On this basis, the following environmental protection objectives are used for assessing the effects of the programme of measures (Table II.2 and III.6). Other objectives are derived from EU law and international conventions as listed in Annex 3.

Table II.6 and III.6 Environmental protection objectives in relation to protected assets

Protected assets	Environmental protection objectives
Humans and human health	• Protection of humans from harmful environmental impacts, such as air pollution, noise, pollutants, germs (section 1 Federal Immission Control Act (BImSchG), Bathing Water Directive, Drinking Water Directive) • Permanent protection of the recreational value of nature and landscape (section 1(1)(3) in conjunction with section 1(4)(2), Federal Nature Conservation Act (BNatSchG), Bathing Water Directive) • Securing long-term flood control (sections 72 – 81 Federal Water Act (WHG))
Animals, plants, biological diversity	• Creation of a biotope network to ensure enduring conservation of native species and their habitats/continuity of rivers (sections 20(1) and 21 BNatSchG) • Protection of wild plants and animals, their communities, biotopes and living sites in order to safeguard the functioning of natural

Protected assets	Environmental protection objectives
	systems (section 1(3)(5) BNatSchG, sections 31 to 36 BNatSchG, Habitats Directive, Birds Directive) • Permanent safeguarding of biological diversity including facilitating the exchange between populations, migrations and resettlement (section 1(1)(1), section 1(2) BNatSchG)
Soil	• Sparing use of land (section 1a Federal Building Code (BauGB)) • Protection or restoration of the natural functions of the soil (section 1 Federal Soil Protection Act (BBodSchG)) • Consideration of the useful functions of soil as a site for agriculture and silviculture (section 1 BBodSchG in conjunction with section 2(2)(3)(c) BBodSchG)
Water (surface waters/coastal and marine waters)	• Achieving and maintaining a good ecological status (section 27 WHG) • Achieving and maintaining a good chemical status (sections 72 - 81 WHG) • Achieving and maintaining a good status for marine waters (section 45a(1)(2) WHG) • Securing long-term flood control (sections 72 – 81 WHG)
Water (Groundwater)	• Achieving and maintaining a good chemical status (section 47 WHG) • Achieving and maintaining a good quantitative status (section 47 WHG)
Climate and air	• Reduction of greenhouse gas emissions (Energy Concept of the Federal Government 2010) • Protection of areas with positive effects on the climate (section 1(3)(4) BNatSchG)
Landscape	• Permanent safeguarding of the diversity, characteristics and beauty of the landscape (section 1(1)(3) BNatSchG)
Cultural goods and other material assets	• Preservation of aboveground archaeological, cultural and architectural monuments and historical cultural landscapes (Länder legislation on monument preservation, Article (1) Malta Convention, section 1(4)(1) BNatSchG) • Preservation of below-ground archaeological, cultural and architectural monuments and archaeological sites (Länder legislation on monument preservation, Article 1 Malta Convention, section 1(4)(1) BNatSchG) • Protection of property and material assets serving the public good, for instance through prevention of harmful water run-off (section 73 WHG), air pollution and noise (section 1 BImSchG).

3.4 Current environmental status, including environmental characteristics and environmental status in the case of non-implementation, and environmental problems

Subject of the assessment

The environmental report must deal with environmental characteristics, the current environmental status and the main environmental problems as part of a status analysis which takes relevant historical pressures into account.

The status analysis must deal with the protected assets referred to in section 2(1) sentence 2 of the Environmental Impact Assessment Act (UVPG), as it is the basis for projecting and assessing the probable significant environmental effects.

Alongside the current status the report must also examine how the environmental status will evolve if the programme of measures prescribed in section 45h WHG is not implemented. This projected development is the point of reference for the environmental status anticipated once the programme of measures is underway. Unlike the assessment of current status, the projection of the environmental development in the case of non-implementation of the programme of measures includes the anticipated effects of other plans and programmes, and must also take interactions between the different protected assets into consideration.

Environmental characteristics

North Sea

The North Sea is one of the most biologically productive marginal seas of the North-East Atlantic. The UNESCO World Heritage Site Wadden Sea, the glacial meltwater valley *Elbe-Urstromtal* and Doggerbank are key ecologically effective morphological structures with their own various species and habitats, and typical features of the German part of the North Sea. Like many parts of the entire North Sea coastline, Germany's North Sea coasts are densely populated. Human activities have a major influence on the quality of the marine waters and marine species and habitats – and hence also on biological diversity. Pressures include nutrient and pollutant inputs, marine litter, underwater noise in the marine environment and fisheries through bottom-trawling and biological disturbance of target and non-target species, the food web and benthic communities.

The rivers Elbe, Weser, Ems and Eider issue into German coastal waters. The German exclusive economic zone (EEZ) borders those of Denmark, the Netherlands and Great Britain. The German part of the North Sea belongs to Region II 'Greater North Sea' of the OSPAR marine area.

Baltic Sea

The Baltic Sea is an intracontinental sea. The Little Belt, Great Belt and the Sound connect the Baltic with the Kattegat, which is connected to the North Sea via the Skagerrak. The shallow waters of the straits mean there is only minimal water exchange with the North Sea.

The Baltic's low salinity make it a brackish water sea. Its salt content is particularly influenced by the high level of fresh water introduced by rivers. Rivers issuing into the coastal waters include the Schwentine, Trave, Warnow, Peene and Oder. Due to the small overall marine area, in many places Germany's EEZ is only a few nautical miles wide. The German part of the Baltic Sea is bordered by the EEZs of Denmark, Sweden and Poland and belongs to the HELCOM region 'southern Baltic' along with Arkona Basin, Bornholm Basin, Mecklenburg Bight, Kiel Bight and Little Belt.

Like many parts of the entire Baltic Sea coastline, Germany's Baltic coasts are densely populated. Human activities have a major influence on the quality of the marine waters and marine species and habitats – and hence also on biological diversity. Pressures include nutrient and pollutant inputs, marine litter, underwater noise in the marine environment, and fisheries through gillnet fishing and biological disturbance of target and non-target species, the food web and benthic communities.

Current status of the German parts of the North Sea and Baltic Sea

The assessment of the current status of the German parts of the North Sea and Baltic Sea is based on the initial assessment of 2012 compiled in accordance with section 45c WHG. The table below summarises the results for the different characteristics of the marine ecosystem.

The assessment of the German parts of the North Sea and the Baltic Sea found that biotope types, phytoplankton, fish fauna, macrophytes, macrozoobenthos, seabirds, and - in the Baltic Sea in particular - marine mammals, do not have a good environmental status. No statements were possible for the status of zooplankton, nor were studies undertaken regarding pressures on marine waters from non-indigenous species or microbial pathogens. Excessive concentrations of pollutants, nutrients and litter mean that the marine waters also fail to achieve a good environmental status with regard to their chemical and physical characteristics. Underwater noise has particularly negative impacts on marine mammals.

Table: Results of the initial assessment 2012 on the status of, and pressures on, the ecosystem components of the German parts of the North and Baltic Seas (Source: Table II.1 and III.1 of the programme of measures)

Biological ecosystem components	Results of the initial assessment 2012 (updated to incorporate the 2013 Habitats Directive report)	
	North Sea	Baltic Sea
Biotope types	Status: Overall, the biotopes in the German part of the North Sea do not have a good environmental status. Not all the habitats protected under the Habitats Directive have achieved a favourable conservation status. According to OSPAR, the Trilateral Wadden Sea Cooperation (TWSC) and the Red Lists, it must be assumed that the dominant and special biotope types are endangered. The mudflats of the German part of the North Sea have a favourable ecological status. Pressures: The biotope types are assumed to be exposed to excessive pressures overall. Benthic communities cannot compensate for the impacts of the various anthropogenic uses such as bottom-trawling fishery and nutrient enrichment.	Status: Overall, the biotopes in the German part of the Baltic Sea do not have a good environmental status. Not all the habitats protected under the Habitats Directive have achieved a favourable conservation status. According to HELCOM and the Red Lists, it must be assumed that the dominant and special biotope types are endangered. Pressures: It is assumed that the biotope types are exposed to excessive pressures overall. Benthic communities cannot compensate for the impacts of the various anthropogenic uses such as bottom-trawling fishery, large-scale sediment removal and uses which cause siltation.
Phyto-plankton	Status: Overall, the phytoplankton in the German part of the North Sea does not have a good environmental status. The ecological status of the phytoplankton in coastal waters pursuant to the Water Framework Directive (WFD) is 'moderate' to 'poor'. Studies by OSPAR and the TWSC class the German part of the North Sea as a 'problem area' or 'potential problem area' with regard to eutrophication. Pressures: Nutrient enrichment, inputs of anorganic and organic pollutants, biological disturbance and the impacts of climate change are the main pressures affecting phytoplankton.	Status: Overall, the phytoplankton in the German part of the Baltic Sea does not have a good environmental status. The ecological status of the phytoplankton in coastal waters pursuant to the WFD is 'moderate' to 'poor'. HELCOM assesses the status of Baltic Sea waters off the German coast as ranging from 'very good' to 'bad'. Pressures: Nutrient enrichment and the impacts of climate change are the main pressures affecting phytoplankton.
Zooplankton	Status: The zooplankton in the German part of the North Sea cannot be assessed due to a lack of scientifically validated assessment methods. Pressures: Nutrient enrichment, inputs of anorganic and organic pollutants, biological disturbance and the impacts of climate change are the main pressures affecting zooplankton.	Status: The zooplankton in the German part of the Baltic Sea cannot be assessed due to a lack of scientifically validated assessment methods. Pressures: Nutrient enrichment and the impacts of climate change are the main pressures affecting zooplankton.

Biological ecosystem components	Results of the initial assessment 2012 (updated to incorporate the 2013 Habitats Directive report)	
	North Sea	Baltic Sea
Macrophytes	Status: Overall, macrophytes in the German part of the North Sea do not have a good environmental status. The ecological status pursuant to the Water Framework Directive (WFD) of coastal water macrophytes is predominantly 'moderate' to 'poor'. The TWSC has found that seagrass meadows are failing to reach their natural range. Pressures: Nutrient enrichment is the main pressure for macrophytes.	Status: Overall, macrophytes in the German part of the Baltic Sea do not have a good environmental status. The ecological status pursuant to the Water Framework Directive (WFD) of coastal water macrophytes is predominantly 'moderate' to 'poor'. HELCOM assesses the status of Baltic Sea waters off the German coast as 'moderate' to 'bad'. Pressures: Nutrient enrichment, large-scale substrate removal and bottom-trawling fishery are the main pressures for macrophytes.
Macro-zoobenthos	Status: Overall, macrozoobenthos in the German part of the North Sea do not have a good environmental status. The ecological status pursuant to the Water Framework Directive (WFD) of coastal water macrozoobenthos is predominantly 'moderate'. The TWSC does not assess macrozoobenthos. OSPAR considers macrozoobenthos as a parameter in the assessment of eutrophication, but as yet no statement can be made as current data is insufficient. Of 1,241 MZB species analysed, the latest Red List (Rachor et al., in print) lists 15.7% as endangered or extinct. The data is insufficient for a good third of all the species occurring and therefore the threat to them cannot be assessed. Pressures: It is difficult to attribute changes directly to individual pressures. Nutrient enrichment and bottom-trawling are the main pressures for macrozoobenthos.	Status: Overall, macrozoobenthos in the German part of the Baltic Sea do not have a good environmental status. The ecological status pursuant to the Water Framework Directive (WFD) of coastal water macrozoobenthos is predominantly 'moderate' or worse. HELCOM assesses the status of Baltic Sea waters off the German coast as 'moderate' to 'very good'. Pressures: Nutrient enrichment, bottom-trawling fishery and large-scale substrate removal are the main pressures for macrozoobenthos.
Fish	Status: Overall, fish in the German part of the North Sea do not have a good environmental status. Assessments under the Habitats Directive, by OSPAR and the International Council for the Exploration of the Sea (ICES) class the status of many species as 'unfavourable' to 'bad'. Of the 109 species on the latest Red List of Germany's endangered species of fish and cyclostomata, 31 occur in the German part of the North Sea. The OSPAR Red List contains 19 species which are also found in Germany. Furthermore, it can be assumed that the age and size structure of some commercially fished populations do not fulfill the criteria for a good environmental status. Pressures: The impacts of fishery, climate change and nutrient enrichment are the main pressures for the development of fish populations and for species distribution and composition.	Status: Overall, fish in the German part of the Baltic Sea do not have a good environmental status. Latest assessments under the Habitats Directive, by HELCOM and ICES have found that fish fauna are exposed to major pressures. However, improvements in the populations are becoming apparent. Of the 93 species on the latest Red List of Germany's endangered species of fish and cyclostomata, 17 occur in the German part of the Baltic Sea. The HELCOM Red List (2007a) contains 10 species which are also found in Germany. Furthermore, it can be assumed that the age and size structure of some commercially fished populations do not fulfill the criteria for good environmental status. Pressures: The impacts of fisheries, climate change and nutrient enrichment are the main pressures for the development of fish populations and for species distribution and composition.
Marine mammals	Status: Overall, marine mammals in the German part of the North Sea do not have a good environmental status, but there are positive developments. OSPAR assesses the status of seals and grey seals as 'good', that of harbour porpoises as 'moderate'. The TWSC conservation targets for seals are considered to have been achieved. The 2013 assessment pursuant to	Status: Overall, marine mammals in the German part of the Baltic Sea do not have a good environmental status. HELCOM assesses the current status of the harbour porpoise, grey seal and seal as 'bad'. The 2013 assessment pursuant to the Habitats Directive assessed the status of harbour porpoises as 'unfavourable – bad' and that for seals and grey seals as 'unfavourable –

Biological ecosystem components	Results of the initial assessment 2012 (updated to incorporate the 2013 Habitats Directive report)	
	North Sea	Baltic Sea
	the Habitats Directive put the overall status for seals and grey seals as 'favourable' and that for harbour porpoises as 'unfavourable – inadequate'. Moreover, the German Red Lists classify marine mammals as endangered. Pressures: Fishery, inputs of anorganic and organic pollutants and underwater noise are the main pressures on the populations and range of marine mammals.	inadequate'. Moreover, the German Red Lists classify marine mammals as endangered. Pressures: Fishery, inputs of anorganic and organic pollutants and underwater noise are the main pressures on the populations and range of marine mammals.
Sea birds	Status: Overall, seabirds in the German part of the North Sea do not have a good environmental status. There is no uniform procedure for assessing the status of seabirds. However, along the coasts, detailed records have been kept on seabirds for a long time. By and large, the TWSC assesses the status of seabirds as 'bad'. Pressures: Fishery, shipping, litter and hunting are the main pressures on the occurrence and species composition of seabirds. Existing studies conclude that a number of ecologically sensitive species do not have a good environmental status.	Status: Overall, seabirds in the German part of the Baltic Sea do not have a good environmental status. There is no uniform procedure for assessing the status of seabirds. However, along the coasts, detailed records have been kept on seabirds for a long time. Pressures: Fishery, shipping, construction works, sand and gravel extraction, litter and hunting are the main pressures for the occurrence and species composition of seabirds. Existing studies conclude that a number of ecologically sensitive species do not have a good environmental status.
Non-indigenous species and microbial pathogens	The non-indigenous species and microbial pathogens throughout the German part of the North Sea cannot yet be assessed due to a lack of scientifically validated assessment methods.	The non-indigenous species and microbial pathogens throughout the German part of the Baltic Sea cannot yet be assessed due to a lack of scientifically validated assessment methods.

Projection of the environmental status in the case on non-implementation of the programme of measures

This projection focuses mainly on the period up to the end of 2021. In 2021, the programmes of measures pursuant to section 45h of the WHG must be updated.

The projection in sections II.2 and III.2 of the expected development of the status of the German part of the North and Baltic Sea indicates that if the programme of measures is not implemented, further degradation or no improvement can be expected for the protected assets animals, plants and biodiversity and water. In keeping with the 2012 environmental targets under the MSFD and the definition of good environmental status, the measures contained in the programme are well-suited to reducing the identified main pressures, and to strengthening water body and biodiversity conservation. Should the programme of measures not be implemented these benefits would not be effected and good environmental status in the German part of the North and Baltic Sea would not be achieved.

For the protected assets humans and human health, soil (terrestrial), climate, landscape (terrestrial) and cultural goods and material assets, non-implementation would have a largely neutral effect. The planned measures support the environmental protection objectives listed in Table II.7 and III.7, but are not a causative factor for achieving them.

For the protected asset air, non-implementation of the programme of measures would mean no improvement, possibly even further degradation of air quality. The emission reductions achieved through the measures would help significantly improve air quality in general and particularly in a local context (e.g. in ports), and can thus also help protect humans from harmful environmental impacts.

3.5 Description of probable significant impacts on the environment from implementation of the programme of measures.

The effects on the protected assets listed in the UVPG must be reviewed both with regard to the individual new measures and with regard to the programme of measures as a whole.

The effectiveness of the individual new measures and the programme as a whole for achieving the goals of the WHG, that is the protection of water, animals, plants and biological diversity and humans and human health, is described in the fact sheets and summarised in the justification in sub-sections of II.2 and III.2 of the programme of measures. Under the protected asset 'water', impacts on the sea-floor and the subsoil beneath are also covered. All measures are expected to help improve the environmental status of these protected assets and hence have positive effects. No negative effects on the protected assets are expected.

The following description also looks at the protected assets named in the UVPG: soil, air, climate, landscape, cultural goods and other material assets. Interactions between all the protected assets are also investigated, including the chain of effects and indirect impacts such as problems being transferred from one environmental asset to another as a result of a particular measure. Interactions between the WHG protected assets and those under the UVPG were also studied.

The assessment investigates both positive and negative effects.

The matrix included in the specified assessment framework (cf Annex 4 of the programme of measures) records (as at October 2014) the protected assets under the UVPG which need to be studied because they are expected to experience either positive or negative effects. The planned measures laid down in the programme of measures (as at March 2015) deviate from this list (see the explanation under II.3.6 and III.3.6. below (review of alternatives)).

Transboundary effects must be presented separately.

The SEA must identify, describe and evaluate impacts on the environment. On the other hand, socio-economic effects, i.e. uses and economic aspects, are not part of the SEA. These aspects are the subject of a corresponding impact assessment under section 45h(2) WHG. Further information on this can be found in section I.3.2. of the fact sheets in Addendum 1 and in the background document on the socio-economic assessment in Addendum 2.

Environmental effect of individual plan components

The assessment of environmental impacts shows that all impacts on the assets protected under the Environmental Impact Assessment Act (UVPG) are expected to be positive. The effects of the individual measures are documented in the respective fact sheets (Addendum 1).

The expected effects of the planned measures to achieve the environmental targets of the MSFD are summarised below. Like the programme of measures, this summary is structured based on the overarching environmental targets of the MSFD. The specific effects depend on the way the proposed measures are shaped and on the exact form and scope of implementation.

- Environmental target 1: Seas unaffected by eutrophication

The four measures envisaged to achieve this environmental target (cf sections II.2.1 and III.2.1) have positive effects on the protected asset soil, as nutrient inputs are reduced. In addition, the measures are expected to have a positive effect on air quality, and indirectly on

the protection of human health. One measure (UZ1-02) also has a positive effect on landscape, as silt deposits resulting from floods are reduced.

In addition, positive interaction between assets is expected, in particular between water (sea), air, soil and marine biodiversity.

- Environmental target 2: Seas not polluted by contaminants

The four measures laid down to achieve this environmental target (cf sections II.2.2 and III.2.2) will have positive effects on the protected assets air, soil and landscape, as inputs will be reduced. Some measures are also expected to have a positive effect on cultural goods and material assets because they help to avoid pollution (UZ2-01).

Positive interaction is expected between water (sea), soil and landscape and animals, plants and biological diversity. To what extent the anticipated effects will materialise depends on the specific shape of the individual measures.

- Environmental target 3: Seas with marine species and habitats unaffected by impacts of human activities

The measures to achieve environmental target 3 (cf sections II.2.3 and III.2.3) will have hardly any impact on the protected assets. The measure for the protection of migratory species has positive effects on the landscape (terrestrial), to the extent that it improves the protection of species that live partly or fully in a terrestrial habitat and are characteristic for the landscape. Positive interactions between the protected assets are to be expected for the measures.

- Environmental target 4: Seas with sustainable and environmentally sound use of resources

There is a similar assessment for the measures under environmental target 4 (cf sections II.2.4 and III.2.4). Two of the five planned measures will affect protected assets, in this case positive effects on landscape, cultural goods and material assets through improved coastal protection (UZ4-04 and UZ4-05). Positive interactions are expected between the protected assets water (sea) and animals, plants and biological diversity.

- Environmental target 5: Seas without pressures from litter

The nine measures planned to achieve this environmental target (cf sections II.2.5 and III.2.5) are mainly expected to have positive effects on the soil and landscape (both terrestrial). Lower waste volumes reduce pressures on the landscape and pollution of the soil resulting from problematic waste. Depending on the exact shape they take, some measures could also reduce energy consumption and thus have some climate effects (UZ5-04 and UZ5-08). The measures also help avoid pollution of wrecks, for example, which has a positive effect on cultural goods and material assets (UZ5-05).

In general, positive interaction is expected between the benefits for all protected assets.

- Environmental target 6: Seas not impacted by the introduction of anthropogenic energy

The six measures envisaged to achieve this environmental target (cf sections II.2.6 and III.2.6) are expected to have very little impact on protected assets, except for positive effects on the cultural goods and material assets due to lower noise inputs (UZ6-01 and UZ6-04).

Interactions between assets are not to be expected.

- Environmental target 7: Seas with natural hydromorphological characteristics

The relevant measure (cf sections II.2.7 and III.2.7) will have no impacts on the protected assets.

Environmental effect of the overall programme

As already described, the effects of the programme of measures as a whole on the protected assets named in the UVPG are exclusively positive.

In particular for soil and landscape (terrestrial), positive effects are to be expected as pressures are further prevented. To a lesser extent, the same applies to the protected asset air.

At present, the significance of the positive effects on the climate cannot be determined. Positive effects arise from two measures for reducing emissions of climate-relevant substances (environmental target 1: UZ1-03 and UZ1-04), and from two measures which may lead to lower energy use, depending on the form they take and on the ecobalance of the options available (environmental target 5: UZ5-04 and UZ5-08).

Cultural goods and other material assets are expected to experience positive effects from two measures to reduce pollution (UZ2-01 and UZ5-05) and two others to reduce noise emissions (UZ6-01 and UZ6-04).

Many of the measures are expected to generate positive interactions, in particular, for instance, reciprocal benefits arising from improved water quality and better species, habitats and biodiversity conservation. Improvements in air quality, terrestrial soil and landscape will impact positively on marine water quality and biodiversity.

Transboundary environmental effects

The declared purpose of the programme of measures is to help achieve a good environmental status of the marine waters of the North-East Atlantic, in particular the North Sea, and the Baltic Sea with regard to marine biodiversity, non-indigenous species, state of commercially exploited fish and shellfish stocks, the food web, eutrophication, sea-floor integrity, hydrographical conditions, contaminants, contaminants in food, marine litter and the introduction of energy. The programme takes into account the environmental targets of other organisations, e.g. OSPAR, TWSC and HELCOM.

All the measures may have positive effects on the marine environmental status beyond the borders of Germany's marine waters. However, details of these will only become apparent after the measures have been further specified and implemented.

Measures relating to human activities and their consequent pressures, which are not restricted to Germany's marine waters and which are primarily to be pursued at regional or international level, are expected to have a far-reaching positive influence on the status of the North and Baltic Seas. Such measures include those concerning inputs and emissions from shipping (UZ1-03, UZ1-04, UZ2-01, UZ2-02). However, the extent of these positive effects hinges on the success of efforts to implement international measures.

Other measures that may have a positive transboundary effect are those aimed at species and habitat conservation. For instance, measures for the conservation of migratory species can have a positive effect on the status of ecosystems in the waters of North Sea or Baltic Sea countries located in the range of a particular migratory species: its populations spend part of their life-cycle in those areas and are important for the ecosystems of the region (UZ3-02). The same is true of terrestrial species (migratory birds and bats) which may benefit

from appropriate measures to minimise the impacts of spatial planning and illumination of offshore installations (UZ6-06).

The reduction of inputs from both land and marine sources, e.g. nutrients and contaminants introduced via rivers or air, and of litter and noise in the marine environment, may also lead to reduced transboundary inputs via sea currents and atmospheric deposition, and hence also have a positive impact on the marine waters of other North Sea and Baltic states.

The significance of potential transboundary effects cannot yet be gauged. For the North Sea, initial expectations are that these significant positive effects are especially likely in the adjacent marine waters of Denmark, Great Britain and the Netherlands, and for the Baltic Sea in the waters of Denmark, Sweden and Poland, or the HELCOM subregion 'southern Baltic' which encompasses the Arkona Basin, the Bornholm Basin, Mecklenburg Bight, Kiel Bight and Little Belt.

3.6. Review of alternatives

Section 14g(2)(8) UVPG stipulates that the environmental report must include a short description of the reasons for selecting the options reviewed and how the environmental impact assessment was carried out.

At the least, the zero alternative must be described. The options reviewed in the course of drawing up the programme of measures should be named. Although not mandatory, a description of the alternatives that could have been looked into is highly desirable. These might include alternatives relating to need, planning and location. The justification must make it clear why alternatives were rejected.

The review of alternatives must be documented in the relevant fact sheet (Addendum 1) for each new measure. The results of the reviewed alternatives can be summarised in relation to the planned measures as follows.

The zero alternative was rejected for all measures with the argument that it would not be possible to achieve the steering effects or the operative environmental targets pursuant to section 45e WHG intended with the measures. Ultimately the purpose of each of the measures is to contribute to achieving the environmental targets laid down under section 45e WHG.

Some alternatives proposed regulatory requirements instead of voluntary standards (e.g. UZ1-01, UZ4-01). These were rejected because it was felt concrete legal requirements in such a context would be difficult to communicate to stakeholders and virtually impossible to implement.

In other cases (e.g. UZ5-03, UZ5-09) a bundle of measures was adopted made up of both regulatory and public relations measures. Regulation was seen here as playing a complementary role rather than being an alternative option.

In the case of some measure components (e.g. as part of UZ1-03, UZ2-02) based on international cooperation, a national approach was considered as an alternative but rejected on the basis that national measures are less effective.

Technical reasons were cited as justification for the lack of alternatives for measures relating to environmental target 6 (Seas not impacted by the introduction of anthropogenic energy).

In the case of some measures, especially those for the environmental target 5 'Seas without pressures from litter', it must be stated that possible alternatives will only become apparent during implementation – particularly through feasibility studies (e.g. UZ1-02, UZ2-01, UZ5-

02, UZ5-04, UZ5-05, UZ5-07, UZ5-08 and UZ5-09). This means that there are no alternatives to the new measures explicitly envisaged in the programme of measures.

The assessment framework adopted on 13 October 2014 contains a list of the measures planned at that time. (cf Annex 4 of the programme of measures). The new measures laid down in the programme deviate from this list for the following reasons:

- Some measures were dropped after it was decided that land-based inputs should be managed under the programme of measures pursuant to section 82 WHG (implementation of the Water Framework Directive).
- Some measures were further defined and renamed in order to more clearly identify their contribution towards the environmental targets under section 45e WHG.
- For the sake of consistency, some measures listed in the assessment framework of 13 October 2014 were consolidated.
- Some measure proposals were postponed because administrative consultations had not been concluded. Where appropriate, they may be forwarded at a later stage in the context of the public consultation.
- Some measures were rejected either because no proof of their efficacy could be produced or because the measures proved to be impossible to realise politically.
- Some new measures were added as part of the concurrent and ongoing planning.

3.7 Difficulties in compiling information

The SEA only draws on information that could be obtained without unreasonable effort. The assessment was carried out with the level of knowledge available at the time.

The identification and evaluation of the environmental effects were based on an expert opinion. Projections were made to describe the effects of the individual measures on the assets protected under the Environmental Impact Assessment Act (UVPG).

There were thus no significant difficulties in the process of compiling information.

3.8 Planned monitoring measures

According to section 14m UVPG, significant effects of the programme on the environment must be monitored. The purpose of this monitoring is to identify unforeseen negative impacts at an early stage in order to be able to take suitable remedial measures.

Monitoring predominantly covers environmental effects that the SEA found are likely to be significantly influenced by the programme of measures. Monitoring measures therefore focus on environmental effects on the protected assets water, (marine) animals, plants and biological diversity.

The effects on these assets are monitored through the German Marine Monitoring Programme (BLMP). The programme is used both for monitoring according to the MSFD (section 45f WHG) and for current national and international monitoring activities to meet the requirements of e.g. the WFD, Habitats and Birds Directives, CFP, HELCOM, OSPAR and TWSC. Monitoring is carried out by federal and Länder authorities according to their responsibilities.

The BLMP is an instrument used to continuously assess the progress made towards achieving a good environmental status of marine waters with regard to marine biodiversity, non-indigenous species, state of commercially exploited fish and shellfish stocks, the food web, eutrophication, sea-floor integrity, hydrographical conditions, contaminants,

contaminants in food, marine litter and the introduction of energy. The programme is continuously updated and adapted in line with the development of indicators for the assessment.

Monitoring activities also serve to review the effectiveness of measures and to make potential adjustments to measures in the context of the periodic updates of the MSFD programme of measures. The monitoring further helps to identify and address emerging problems.

For an overview of the parameters and elements of monitoring under the BLMP as at October 2014, see Germany's reports according to Article 11 (3) MSFD, which are available at: <http://www.meeresschutz.info/index.php/berichte-art11.html>.

3.9 General, non-technical summary

For the German parts of the North Sea and Baltic Sea a regionally coordinated programme of measures must be established by 31 December 2015 according to section 45h of the Federal Water Act (WHG), which implements Article 13 of the Marine Strategy Framework Directive (MSFD).

According to section 45a WHG a good environmental status of Germany's marine waters is to be achieved by 2020.

The programme for the management of marine waters in the period 2016-2021 for the North and Baltic Seas presented in section II.2 focuses on the following environmental issues:

- Reducing inputs of substances, in particular from anthropogenic sources in the sea
- Protection of marine biodiversity, including through spatial measures for the protection of marine species and habitats
- Reducing marine pollution caused by litter
- Reducing underwater noise

Pursuant to section 14b in conjunction with Annex 3, no. 1.9 of the UVPG a Strategic Environmental Assessment (SEA) must be carried out for the programme of measures for the North Sea and for the Baltic Sea according to section 45h Federal Water Act.

The purpose of the SEA is to identify the environmental effects of the programme, describe and evaluate them and feed this into the decision-making process. The results are summarised in this environmental report.

The assessment of environmental effects is based on the qualitative objectives of good environmental status for marine and coastal waters according to the MSFD and a range of overarching environmental protection objectives from national planning and other laws as well as international, EU and national agreements, regulations and plans.

The initial assessment drawn up in 2012 pursuant to section 45c WHG found that in general, the environmental status of the German parts of the North Sea and Baltic Sea is not good.

The impacts on the assets listed in the Environmental Impact Assessment Act must be assessed both for the individual measures and for the programme as a whole.

Transboundary effects must be described separately.

The programme of measures is geared towards improving the status of water and of animals, plants and biological diversity while taking the objectives on the protection of humans and human health into account. Assessing how the programme affects these protected assets is part of the planning of measures and shows exclusively positive effects.

The assessment of the other assets protected under the UVPG revealed that the individual measures have no or exclusively positive effects on the assets protected under the UVPG. The majority of positive effects relate to soil and landscape (both terrestrial), air, and cultural goods and material assets. Positive interactions between protected assets are expected for many measures. The extent to which these effects will materialise depends on the specific shape the measures take during implementation.

The effects of the programme as a whole on the assets protected under the UVPG will also be exclusively positive. Positive transboundary effects are expected as well, but cannot be quantified at this point in time.

In all cases, the alternative of non-implementation of measures was deemed not preferable because no contribution to target achievement would be possible in the case of non-implementation. Alternatives such as regulatory measures or, in some cases, action by the national state instead of international cooperation were considered ineffective and not useful, and thus rejected.

The compilation of information did not pose any significant difficulties, as use was made of available documents.

Monitoring the environmental effects of the programme of measures is predominantly carried out through the German Marine Monitoring Programme (BLMP). There is a set of instruments for ongoing identification, description and evaluation of the status of marine waters. These instruments help to evaluate the effectiveness of measures, identify potential new problems that threaten the status of marine waters, and initiate remedial measures.