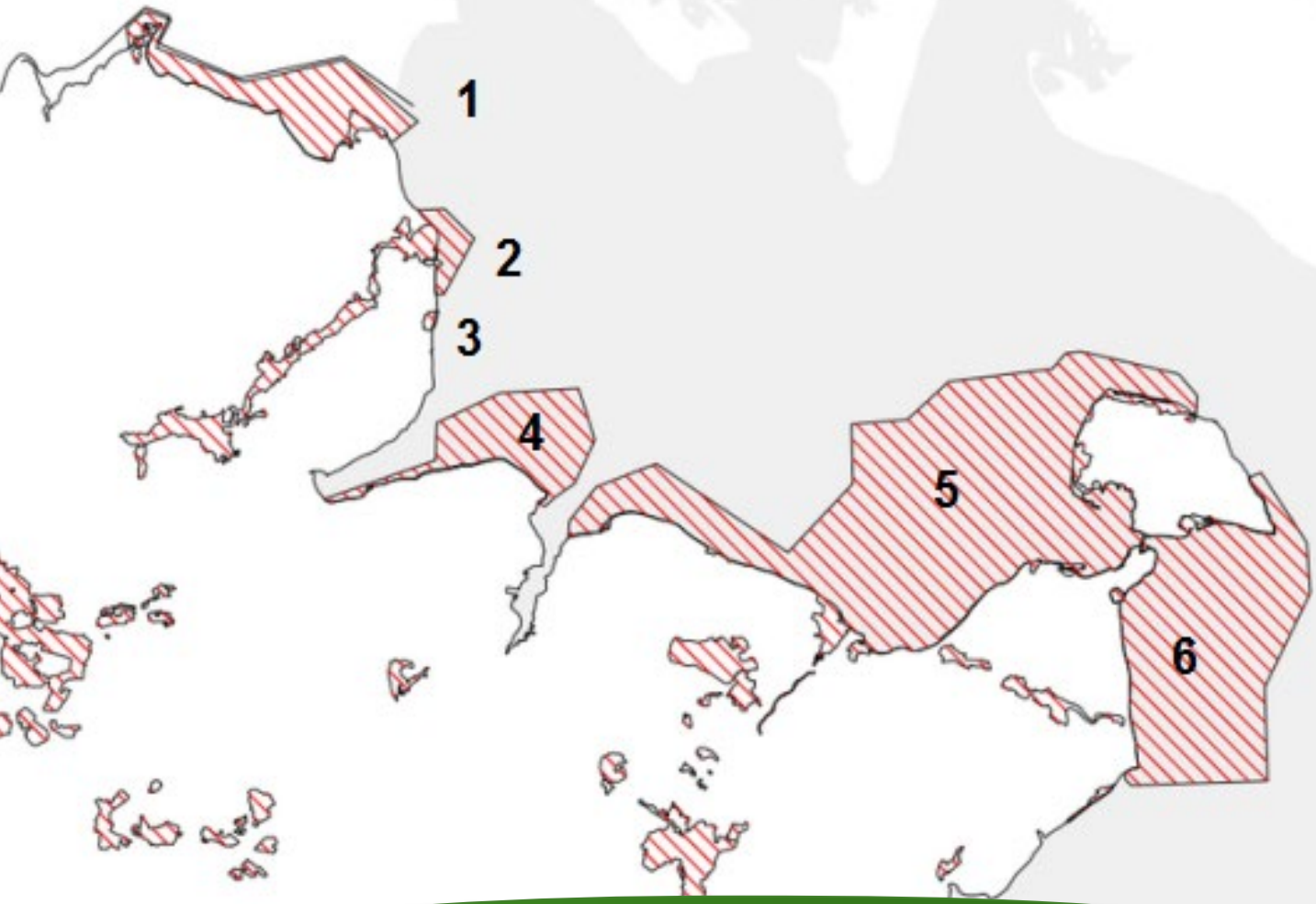

Legislation Issues Status Report

Legislation issues of mussel farming in the Baltic Sea

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Interreg Baltic Sea Region

Baltic Blue Growth

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SH Schleswig-Holstein
Ministry for Energy Transition, Agriculture, Environment, Nature and Digitalization

About

Baltic Blue Growth is a three-year project financed by the European Regional Development Fund. The objective of the project is to remove nutrients from the Baltic Sea by farming and harvesting blue mussels. The farmed mussels will be used for the production of mussel meal, to be used in the feed industry. 18 partners from 7 countries are participating, with representatives from regional and national authorities, research institutions and private companies. The project is coordinated by Region Östergötland (Sweden) and has a total budget of 4,7 M€.

Partners

- *Region Östergötland (SE)*
- *County Administrative Board of Kalmar County (SE)*
- *East regional Aquaculture Centre VCO (SE)*
- *Kalmar municipality (SE)*
- *Kurzeme Planning Region (LV)*
- *Latvian Institute of Aquatic Ecology (LV)*
- *Maritime Institute in Gdańsk (PL)*
- *Ministry of Energy, Agriculture, Environment, Nature and Digitalization of Schleswig-Holstein (DE)*
- *Municipality of Borgholm (DK)*
- *SUBMARINER Network for Blue Growth EEIG (DE)*
- *Swedish University of Agricultural Sciences (SE)*
- *County Administrative Board of Östergötland (SE)*
- *University of Tartu Tartu (EE)*
- *Coastal Research and Management (DE)*
- *Orbicon Ltd. (DK)*
- *Musholm Inc (DK)*
- *Coastal Union Germany EUCC (DE)*
- *RISE Research institutes of Sweden (SE)*

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Cover image: special protected areas (SPA) according to the Birds Directive in Schleswig-Holstein (hatched red) © LLUR

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1 Executive Summary

This status description summarises the actual legal framework for Baltic mussel cultivation. Mussel farmers are obliged to apply for a variety of permissions at various responsible authorities. Although aquaculture is an integral part of the common EU fishery policy, due to the principle of subsidiarity, a unified EU-permission system does not exist[1]. There is no single authority responsible for aquaculture. Several authorities are concerned with aquaculture matters, such as the authorities in charge of water management, nature protection or construction. The most important authorities with respect to aquaculture are the water authorities. The common concern is, that the impacts of mussel cultivation must not be contradictory to the implementation of EU Environmental Directives or their national implementations. Potential negative environmental impacts need to be avoided.

The legislation framework provided by the European Union relating to mussel aquaculture concerns environmental protection (water, marine habitats, wild birds), animal diseases and marine spatial planning. Besides the EU framework that needs to be implemented in national law by the Member States, the EU also provides directly enforceable law. The direct enforceable law related to Baltic mussel cultivation concerns production/ processing issues like animal by-products, EU funding, and organic production. Other EU law that might be relevant for certain types of mussel aquaculture or that touches blue mussel farming only on the edge (market for aquaculture products, aquaculture alien species, mussels for human nutrition and for animal feed) is mentioned in this status description but is not discussed in detail.

Although the EU legislation is already quite diversified, certain topics concerning mussel aquaculture are determined by the Member States additionally and particularly more in detail. In Germany, especially the nature conservation law is an important obstacle for gaining permission for mussel farming. Also the fisheries law and marine waterways legislation provide much more detailed information and specification of rules and permissions that are required for German Baltic mussel cultivation. Although marine aquaculture has not gone far from coast yet, the German offshore installations law provides the legal basis for the installation of mussel farms beyond the 12 nm limit in the German EEZ. The applicability of construction law for mussel culture is discussed in the literature and shows a major issue concerning marine aquaculture in Germany. Other German law that is relevant for mussel aquaculture but touches mussel farming issues only on the edge (maritime shipping law,vessel safety, insurance law, labour law and animal welfare law) is mentioned in this status description but is not discussed in detail.

The major legislation obstacle for Baltic mussel aquaculture is, that terrestrial law is not always well applicable on the water. There is a need for reconsideration of this law in terms of future marine development and especially concerning the EU Blue Growth strategy.

1 C. Hedley; T. Huntington (2009): Regulatory and Legal Constraints for European Aquaculture. Unter Mitarbeit von Ocean Law Information and Consultancy Services (UK), Poseidon Aquatic Resources Management (UK). p. 10

2 Introduction

Mussel farming in the Baltic Sea has so far not gone beyond experimental scale. The project aim of Baltic Blue Growth is to advance mussel farming in the Baltic Sea to full scale.

To prepare the ground for full-scale mussel farming, legal and regulatory aspects of mussel farming need to be clarified. The projects main output contains the status description on legislative procedures (covering especially the EU law) and additional law of the Member States (Germany and exemplary contributions of Sweden, Denmark and Latvia). As an important long-term objective, the practicable licensing guide for full scale mussel farming in the Baltic Sea is based on this report and on an empirical steering of the licensing process.

The licensing guide shall provide a clear procedure for potential investors as well as for authorities on necessary steps. The actual legal situation and thus, the theoretical basis for the licensing guide is provided by the here presented Legislation Issues Status Report.

The present paper presents a total case study for Germany (Schleswig-Holstein) and provided a general template to register all relevant law (EU, national, if relevant regional level) for all other partners. Poland and (in parts) Denmark used the standard template and added information for their country. The implementation of EU law in Latvia is presented as a table in Annex I. For Sweden, the implementation of EU law is presented in Annex II.

For the following status description it's assumed that the mussels are harvested for mussel meal and fodder purposes only. If production is targeted on mussels for human consumption or there is the intention to combine mussel production with finfish aquaculture (for instance in an IMTA), additional legal requirements have to be considered.

The Legislation Issues Status Report is divided in three major chapters, EU Framework Legislation, EU directly enforceable law, and other national law (not primarily EU guided). Each chapter generally describes the legislation relevance for Baltic mussel aquaculture, its resulting gaps and shortages for mussel culture, and the assistance provided by the EU, as well as an outcome information. The sub-chapters also provide information how the EU law was implemented in national law.

Regarding Baltic mussel aquaculture, the EU legislation provides a legislation framework for environmental protection (water, marine habitats, wild birds), animal diseases and marine spatial planning. Due to their function as framework legislation, EU Member States are obliged to implement all directives into national law. Therefore the Member States are free to interpret the EU framework and to design the national law according to their specific foci and needs.

Contrary to the framework legislation, the EU also provides directly enforceable law that is related to mussel aquaculture. Aspects of this law are production/ processing issues like animal by-products and organic production but also concern EU funding. Other relevant EU law that is only relevant for certain types of mussel aquaculture and touches mussel farming only marginally (market for aquaculture products, aquaculture alien species, mussels for human nutrition and for animal feed) is shortly mentioned in this report, but is not discussed in detail.

The already diversified EU legislation is completed by the national law of the Member States. In Germany, especially the nature conservation law, construction law, waterways legislation, and fisheries law concerns Baltic mussel farming. The most important permissions for Baltic mussel aquaculture premises are the fisheries permission and the river and shipping police permit. The legal basis for potential installations of mussel farms beyond 12 nm from the coast, is the German offshore installations law in the German EEZ. In Germany the maritime shipping law,vessel safety, insurance law, labour law and animal welfare law are also relevant for mussel aquaculture. However, these legal provisions touch mussel cultivation issues only on the edge and thus are just mentioned shortly in this status description.

3 Framework legislation of the EU

3.1 Water Framework Directive (EU-WFD)

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy[2]

The most important aims of the Water Framework Directive (Art. 4a) are the prevention of a further deterioration of the status of all bodies of surface waters and achieving good surface water status. Therefore the EU Member States shall protect, enhance and restore all bodies of surface water as well as guarantee a sustainable water usage.

Water is no commercial product. Water is a heritage that needs to be protected, defended and treated as such. The demand for water is increasing permanently, thereby creating a pressure on community waters. Although surface waters are natural renewable resources, the use of waters needs to be coordinated to ensure a future sufficient availability of high quality water.

From an environmental perspective, aquaculture affects and interacts with water, and therefore needs to be managed. On the other hand, from a production perspective aquaculture requires high quality water to guarantee health of farmed animals, as well as safe and high quality products. EU water conservation legislation is a key area of regulation for aquaculture business. The EU inland and coastal water policy is regulated by Water Framework Directive. The major intentions of the WFD are the prohibition of deterioration and the requirement for improvement.

To protect and restore clean water across Europe and ensure its long term, sustainable use, the Water Framework Directive was created. It determines environmental targets (Art. 4 WFD) that need to be implemented in national law by the Member States. The legislation placed clear responsibilities and accordingly, national authorities have to:

1. identify the individual river basins on their territory — that is, the surrounding land areas that drain into particular river systems (Art. 3 (1) WFD);

2. designate authorities to manage these basins in line with the EU rules (Art. 3 (2) WFD);

3. analyse the features of each river basin, including the impact of human activity and an economic assessment of water use (Art. 5 WFD);

4. monitor the status of the water in each basin (Art. 8 WFD);

5. register protected areas, such as those used for drinking water, which require special attention (Art. 6 WFD);

6. produce and implement ‘river-basin management plans’ to prevent deterioration of surface water, protect and enhance groundwater and preserve protected areas (Art. 13 WFD);

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OJ L 327, 22.12.2000, p. 1–73

7. establish programmes of measures including basic and supplemental measures (Art. 11 (2) WFD) to achieve Art. 4 objectives;

8. ensure the cost of water services is recovered so that the resources are used efficiently and polluters pay (Art. 9 WFD);

9. provide public information and consultation on their river-basin management plans (Art. 14 WFD).

The WFD aims to improve and protect the chemical (12 nm from baseline) and ecological status (1nm from baseline) of coastal waters. The chemical status classification is determined by a body of surface water in which concentrations of pollutants do not exceed the environmental quality standards established in Annex IX and X, and according to the Environmental Quality Standard (EQN) Directives from 2008[3] and 2013[4]. The ecological status classification is determined for each water body applying a range of biological quality elements, supported by hydromorphological and physicochemical quality elements (Annex V).

As all the measures to protect, defend and restore are costly, water services need to be charged. Article 9 of the WFD requires the Member State to recover the costs of water services, including environmental and resource costs. The Directive allows Member States to take the social, environmental and economic effects of water services into cost-recovery, as well as the geographic and climatic conditions of the regions affected into consideration. Member States are also allowed to exclude certain activities from the cost recovery requirement if these do not compromise the achievement of the WFD objectives.

[3] Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council
OJ L 348, 24.12.2008, p. 84–97

[4] Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy Text with EEA relevance
OJ L 226, 24.8.2013, p. 1–17

3.1.1 General content of the WFD with relevance to mussel aquaculture

If mussel aquaculture is established in the Member State territorial sea and not further than 12 nm away from the respective Member State baseline, WFD principles have to be respected.

The cultivation of bivalves such as blue mussels has potential effects on the aquatic ecosystem of the Baltic Sea (Tab. 1). Normative definitions of ecological status classifications (Annex V, WFD) help to define the potential impact of mussel farming on the environment with respect to WFD environmental targets. Any impact (whether positive or negative) of mussel cultivation on the aquatic environment depends on multiple factors, including farm location, methods used, and the sensitivity or vulnerability of the environment to possible pressures.

Expected major impact trough mussel farming is the

- anchoring
- shading
- accumulation of organic material
- change of currents
- introduction of chemicals (fuel and lubricants)
- disturbance of marine fauna (injury, noise)
- disturbance of landscape scenery

Tab. 1: Potential impacts of mussel cultivation according to the WFD normative definitions of ecological status classifications (Annex V, Tab. 1.2.4) for coastal waters

Descriptor	**Possible Impact by mussel farming**
Biological quality elements	
Phytoplancton (composition and abundance of phyto-planktonic taxa)	Diversity and Abundance may be influenced by mussel farming, because mussels feed on plankton and thus may influence the phyto-zooplankton intractions.
Macrophytes and angiosperms (levels of macroalgal cover and angiosperm abundance)	Floating mussel farms have shading effects on the seafloor.
Benthic invertebrate fauna (level of diversity and abundance of invertebrate taxa)	Organic input by sedimentation of faeces and pseudofaeces underneath mussel farms influences benthic invertebrate fauna.
Hydromorphological quality elements	
Tidal regime (freshwater flow regime and the direction and speed of dominant currents)	Not influenced by mussel farming / not applicable in the Baltic Sea.
Morphological conditions (Depth variation, structure and substrate of the coastal bed)	Mussel farms have the potential to contribute to smothering of the seabed by input of organic particulate matter ((pseudo-)faeces).
Physico-chemical quality elements	
General conditions (Temperature, oxygenation conditions, transparency, nutrient concentrations)	Dissolved and particulate matter (excretory products and (pseudo-)faeces) can cause de-oxygenation of the water column and the seafloor. Oxygen depletion of the sediment may lead to remineralisation of nutrients and thus, may contribute to nutrient enrichment.
Specific synthetic pollutants	Some impact at local scale due to contamination by hazardous substances during farming operation (lubricants, fuel), but unlikely to occur at sufficient scale at present to have significant impact.
Specific non-synthetic pollutants	Some impact at local scale due to contamination by hazardous substances during farming operation (lubricants, fuel), but unlikely to occur at sufficient scale at present to have significant impact.

3.1.2 Gaps and shortages for mussel aquaculture resulting from WFD

There are no explicit obligations by the WFD for aquaculture. Aquaculture industry must meet the aims of the WFD via the national legislation of the respective Member State.

Due to the invalid shellfish directive (79/923/EEC), shellfish waters are not explicitly protected in the EU.

Water charging policy for aquaculture varies considerably across Member States, ranging from no charging to high charges.

Permission for water use does not implicate any entitlement for sufficient water amount and quality.

The potential impact of mussel farms on the environment depends on the location and thus differs within EU Member States. Environmental impacts of aquaculture can not be generalised within a marine area and thus are often misunderstood, leading to a disproportionate use of the precautionary principle[5].

The impact assessments vary between EU Member States and thus my lead to differently strict, faster or expensive assessments.

Being a *framework* directive, positive aspects of mussel farming are not considered in the WFD. Improved water transparency through mussel filtration activity has advantages for other uses. Also the refuge for young fish in mussel farming areas is quite an environmental benefit.

The environmental service of mussel aquaculture is subject of the Baltic Blue Growth project and will be evaluated for its use as an additional to source related mitigation measure to Baltic eutrophication. The importance of mussel farming as a part of an IMTA (Integrated Multitrophic Aquaculture) or as a compensation measure in order to remove nutrients from the sea[6] is suggested as "industry good practise" in the EU commission staff working document on the application of the EU Framework Directives (WFD & MSFD) in relation to aquaculture.

[5] C. Hedley; T. Huntington (2009): Regulatory and Legal Constraints for European Aquaculture. Ocean Law Information and Consultancy Services (UK), Poseidon Aquatic Resources Management (UK). p 10

[6] European Commission (Brussels, 2016): COMMISSION STAFF WORKING DOCUMENT. On the application of the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) in relation to aquaculture. p.17

3.1.3 Assistance by EU guidelines

The Commission Staff Working Document (2016)[7] addresses the requirements of the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) in relation to aquaculture. It assists EU Member States and industry in the implementation of these EU laws and facilitates the development of sustainable aquaculture. This working document contains experiences and recommendations of different stakeholder groups concerning the WFD and the MSFD. It lists best practise recommendations for authorisation authorities and producers, including the demand for more transparency and public participation during licensing processes as well as the proposal for recognition of environmental services provided by extensive aquaculture (mussels, fish ponds).

This practical guidance facilitates the implementation of the WFD and MSFD in the context of the development of sustainable aquaculture through providing of:

- regulatory good practice and suggestions to national authorities about the requirements of the Directives in relation to aquaculture
- industry good practice and suggestions to aquaculture producers on what is expected of them and what they can expect from the implementation of the Directives
- information about the sustainability of EU aquaculture production and its compliance with relevant EU environmental legislation.

The document identifies five possible environmental effects of aquaculture:

- benthic impacts and nutrients
- disease and parasites
- chemical discharges
- escapees and alien species
- physical impacts, disturbance and predator control.

Concerning the *benthic impact* and *nutrient enrichment*, different possibilities are recommended to mitigate the environmental impacts. Mussel farming itself is regarded as a suitable measure in good industry practise and suggested as mitigation measure against the impacts of organic enrichment and nutrient input in fed aquaculture. Therefore mussels themselves are not regarded as "polluters" in terms of this guidance document. However, as mussels potentially have an impact on the surrounding environment, some suggestions also apply to mussel farming to reduce this respective potential impact.

As the level of emissions is related to the total farmed mussel population on the site, limitation of the site biomass and production level, as well as the control of stocking levels are potential mitigation measures to decrease the impact of mussel farming on the benthos and the nutrient regime of a certain location.

[7] European Commission (Brussels, 2016): COMMISSION STAFF WORKING DOCUMENT. On the application of the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) in relation to aquaculture.

Regulating authorities are requested to:

- improve the clarity on which parameters or data the industry should provide to show baseline loads
- improve the monitoring to quantify nutrient loads from different sources
- use mitigation practices (e.g. for effluent water quality) in the assessment of licences
- apply adequate flexibility in the regulatory framework (e. g. to facilitate the fallowing of sites)
- use modelling approaches to the location of new farms
- further consider the potential of a mass balance management approach for nitrogen and phosphorous
- discuss nutrient trading schemes (including co-location)

The mussel cultivation business is requested to:

- apply a sustainable site management that uses fallowing (timing, impacts, area), treatments, exclusion zones, where a break in the production cycle allows for recovery of the seabed
- apply monitoring to ensure that measured limits for nutrients and any EQS (environmental quality standards) are within those determined by the licence.

Concerning *disease* and *parasites* that threatens wild stocks in the surrounding environment, thereby affecting biodiversity and thus ecological status, also applies to shellfish culture as blue mussels are potentially infected with Marteiliosis (see Chapter 3.5 for details).
A recommended measure to reduce the impact of diseases concerning mussel culture is the implementation of area management plans that will reduce potential negative interactions between wild and farmed shellfish species, including as part of river basin management plans. These management plans may include the specification of the maximum production mussel biomass in an area; the coordination of fallowing periods to create effective disease breaks, as well as the consideration of the cumulative impacts of aquaculture and other operations). Producers are reminded about their duty to ensure that imported seed mussels must be free of diseases.

Concerning *chemical discharges* from mussel aquaculture, the document refers to the EU Environmental Quality Standards Directive (2008/105/EC)8 that lists priority substances and other chemical pollutants of high concern across the EU. The EQS Directive includes biota standards for several substances (Mercury, Hexachlorobenzene, ..).
Antifoulants on mussel vessels are probably the only relevant in mussel cultivation, because the application of medicines, biocides or feed additives is not practised in mussel farming. However, antifoulants like cybutryne and heavy metal (copper and zinc) compounds are of direct relevance to aquaculture operations. Mussel farmers are requested to favour alternative cleaning techniques over the use of antifoulants and chemical-based cleaning products.

[8] Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council. OJ L 348, 24.12.2008, p. 84–97 and amending Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy Text with EEA relevance. OJ L 226, 24.8.2013, p. 1–17

The environmental effect of *escapees* and *alien species* from mussel aquaculture is not relevant for the blue mussel cultivation in the Baltic Sea, because cultivated species are native to the environment. However, the import of seed mussels potentially introduces other species than mussels into the environment. The mussel industry is requested to follow existing codes of good practice or recommendations that address operational procedures at aquaculture units. In Germany it is prohibited to introduce seed mussels not originating from the Baltic Sea to prevent the introduction of alien species.

Concerning the *physical impacts, disturbance* and *predator control*, mussel aquaculture facilities such as longlines can have physical impacts due to their anchorage on the seabed, and thus could physically damage habitats on the seafloor. Proper site selection (avoiding locating on sensitive habitats) and mooring structure design can mitigate these impacts. Related to physical disturbance, mussel farming can also have an impact on seafloor integrity from increased sedimentation from mussel culture lines. These impacts can be controlled and mitigated by licensing procedures that identify an acceptable zone of impact and a further monitoring zone around the facility. For example, the area of these zones will be no more than a few 100 m^2 reflecting the current size of the longline system.
Farmed shellfish stocks will inevitably attract the attention of wild predators including fish, mammals (e.g. otters, seals), birds (eider ducks) or invertebrates (e.g. starfish, crabs). Predator control can be challenging since many predators are protected by EU Member States' and EU legislation, especially within designated sites of conservation interest. The predator control system should attempt to minimise the impact on biodiversity and the predators, and may take the form of exclusion from sites (e.g. seal nets, otter fences), deterrents (e.g. noise, fake predators), farm management strategies, site selection (e.g. avoiding known predator aggregation sites) or as a final resort, reducing predator numbers through licensed control methods (e.g. shooting).

3.1.4 Implementation of the WFD in national law: Germany and Schleswig-Holstein

The implementation of the WFD in national law is constituted in the German Act on Managing Water Resources (Federal Water Act (Wasserhaushaltsgesetz, WHG)[9]) and in the Acts of the federal states, for example the State Water Act of Schleswig-Holstein (Landeswassergesetz Schleswig-Holstein (WasG SH)[10]). The Federal States are responsible water management authorities.

WHG
The German Federal Water Act is valid in all German marine waters up to 200 nm. It defines the River Basin Districts (§ 7 WHG) and common principles for water management (§ 6 WHG) and for cost recovery of water services (§ 6a WHG). A framework for water uses is

[9] Wasserhaushaltsgesetz vom 31. Juli 2009 (BGBl. I S. 2585), das zuletzt durch Artikel 122 des Gesetzes vom 29. März 2017 (BGBl. I S. 626) geändert worden ist" Stand:Zuletzt geändert durch Art. 122 G v. 29.3.2017 I 626

[10] Wassergesetz des Landes Schleswig-Holstein (Landeswassergesetz) in der Fassung vom 11. Februar 2008. Neugefasst: 11.02.2008, Gültig ab: 21.12.2007, letzte berücksichtigte Änderung: mehrfach geändert (G v. 01.08.2016, GVOBl. S. 680). Fundstelle: GVOBl. 2008, 91

presented by principles for water use permission (§ 8 WHG). The possibility of water use without permission is matter of the federal states (§43 (1) WHG). The water use permission is granted for a specific purpose (§10 (1) WHG), it is time limited (§ 14 (2) WHG) and revocable (§ 18 WHG). It is up to the authority whether a permission will be granted or not (discretion, § 12 (2) WHG).
The WHG also defines management objectives for coastal (§ 44 WHG) and maritime waters (§ 45) under the premises of the WFD.

WasG SH

The state water act of Schleswig-Holstein describes the River Basin districts more in detail (§ 2a WasG SH). §3 WasG SH classifies water bodies into first level (e.g. federal water ways) and second level water bodies.

3.1.5 National implementation of the WFD in practice: Germany and Schleswig-Holstein

Article 1 describes the purpose of the WFD: the prevention of further deterioration of water bodies, a sustainable use of water and the protection and improvement of the aquatic environment. The environmental objectives that are defined by Art. 4, the central element of the WFD, are implemented in German law in § 27 WHG. Accordingly management objectives have been determined by § 44 and 45 WHG. § 29 WHG determines the period to achieve the environmental objectives in Germany.

The German Baltic Sea consists of four coastal waterbodys (according to their salinity):

- Type B1 oligohaline inner coastal waters
- Type B2 mesohaline inner coastal waters
- Type B3 mesohaline open coastal waters
- Type B4 meso-polyhaline open waters, seasonally stratified

These waterbodys have been divided into 44 surface waterbodys according to biological quality criteria (phytoplancton, macrophytes, angiosperms, macrozoobenthos, fish). The ecological status of each surface waterbody have been determined in 5 classes (from “very good” to “bad”) and the chemical status was determined in 2 classes (good and bad). The environmental status of each waterbody must not be deteriorated (§ 27 WHG). The potential of measures to deteriorate the water body has to be evaluated on a case by case basis. The European Court of Justice has judged a project in the river Weser and thereby delivered an approach how to expect a deterioration[11].

[11] JUDGMENT OF THE COURT (Grand Chamber), EuGH, vom 01.07.2015, Aktenzeichen C-461/13. Reference for a preliminary ruling — Environment — EU action in the field of water policy — Directive 2000/60/EC — Article 4(1) — Environmental objectives relating to surface waters — Deterioration of the status of a body of surface water — Project for the development of a navigable waterway — Obligation of the Member States not to authorise a project that may cause a deterioration of the status of a body of surface water — Decisive criteria for determining whether there is a deterioration of the status of a body of water.

To prevent further deterioration of waterbodies, the national authorities have clear responsibilities:

Identification of river basins, their managing authorities, features and monitoring

According to Article 3, River Basin Districts (RBD) need to be identified and their responsible authorities need to be assigned. In Germany two RBD have been identified for the Baltic Sea: The Schlei/Trave RBD and the Warnow/Peene RBD (§7 (1) WHG and § 2a WasG SH and § 130 LWaG MV).
Schleswig-Holstein is responsible for the RBD Schlei/Trave management due to its geographical distribution. The State Water Act of Schleswig-Holstein describes the responsibilities of the different state authorities in detail in §105 and following. In Schleswig-Holstein, the supreme water authority (Ministry of Energy, Agriculture, the Environment and Rural Areas (MELUR)) is responsible for the functional and political overall management of the WFD ("Flussgebietsbehörde"). The superior water authority is the State Agency for Agriculture, Environment and Rural Areas (Landesamt für Landwirtschaft, Umwelt und ländliche Räume, LLUR), it develops technical and scientific fundamentals but has, in the field of water management, no classical administrative function. Lower water authorities are the district county commissioners and independent town mayors. The lower water authorities are usually in charge of granting permissions for the use of water (§ 8 WHG).

To achieve the environmental targets of Article 4 (WFD) (prevention of further deterioration and the development of a good environmental status until 2015, at the latest until the foreseen expiring date of the WFD in 2027), the RBD environment needs to be evaluated and described. The characteristics of each RBD and the economical analysis of its water use (Article 5, WFD) represents the basis for water status monitoring programmes (Article 8, WFD) and cost recovery for water services (Article 9, Annex III, WFD).

In Schleswig-Holstein the description and evaluation of the RBD Schlei/Trave has been reported to the EU12 and monitoring programmes are performed by the Bund/Länder measuring program13.

Registration of protected areas

In the RBD Schlei/ Trave, four categories of protected areas have been identified as follows:

I – waterbodies used for water withdrawel for human usage (17 out of 19 groundwater bodies are protected areas)

II – bathing waters (212 bathing areas (206 in Schleswig-Holstein and 6 in Mecklenburg-Vorpommern)

III – the complete RBD Schlei/ Trave is recognised as nutrient sensitive area and the management program concerns the complete RBD, therefore no separate areas have been identified.

[12] Ministerium für Landwirtschaft, Umwelt und ländliche Räume Schleswig-Holstein; Ministerium für Landwirtschaft,Umwelt und Verbraucherschutz Mecklenburg-Vorpommern (2004): Flussgebietseinheit Schlei/Trave Bericht über die Analysen nach Artikel 5 der Richtlinie 2000/60/EG.

[13] http://www.blmp-online.de

IV – habitat and bird protected areas have been identified (See more details in Chapters 3.3 and 3.4)

No water bodies for economically important species have been identified. Although listed in the River Basin Management Plan, the fish and shellfish waters are not further explicitly protected due to the invalid fish (78/659/EEC[14]) and shellfish (79/923/EEC[15]) directives and to invalid national regulations (FMGVO[16]).

Establishment of 'river-basin management plans' and programmes of measures (basic and supplemental measures)

Member States must develop a program of measures (Annex VI, WFD) to achieve the environmental targets (Article 11, WFD) and they must develop a management plan for each RBD (Article 13, WFD). For the RBD Schlei/Trave a program of measures17 have been developed for each management period according to §§82 - 85 WHG.
Public information and consultation is realised by the river basin district advisory board and eleven working groups (8 Baltic Sea working groups in Schleswig-Holstein: Flensburg Fjord, Schlei, Eckernförde Fjord, Baltic-Probstei, Wagrien Fehmarn, Baltic-Neustädter Bucht and Trave Mittel- & Unterlauf).
The most important work of the working groups was the implementation of measures to achieve Article 4 of the WFD.
Strategic goals of the WFD public relations work have been informing and motivating of all active stakeholders, the publication of WFD goals and the improvement of acceptance for water protection. The target group of this public relations work consists of authorities, water and ground associations, interested persons from other associations like agriculture, nature protection, sport, angling, etc.; as well as media and politicians.

Cost recovery of water services (efficient use of resources/ polluters pay principle)

Pursuant to the polluter pays principle, water-pricing policies of the EU Member States must provide adequate incentives for users to use water resources efficiently and the disaggregated water uses must contribute to recovery of the costs of water services. § 6a (WHG) describes the principles for water service and water use in Germany.

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[14] Council Directive 78/659/EEC of 18 July 1978 on the quality of fresh waters needing protection or improvement in order to support fish life. OJ L 222, 14.8.1978, p. 1–10 (invalid)

[15] Council Directive 79/923/EEC of 30 October 1979 on the quality required of shellfish waters OJ L 281, 10.11.1979, p. 47–52 (invalid)

[16] Landesverordnung über die Qualität von Fisch- und Muschelgewässern (Fisch- und Muschelgewässerverordnung – FMGVO) 4. Juli 1997, Textnachweis ab: 01.01.2003, Fundstelle: GVOBl. 1997, 361; Stand: letzte berücksichtigte Änderung: § 1 neu gefasst (LVO v. 9.8.2007, GVOBl. S. 379) (invalid)

[17] Ministerium für Landwirtschaft, Umwelt und ländliche Räume Schleswig-Holstein; Ministerium für Landwirtschaft,Umwelt und Verbraucherschutz Mecklenburg-Vorpommern: Maßnahmenprogramm (gem. Art. 11 EG-WRRL bzw. § 36 WHG) der Flussgebietseinheit Schlei/Trave (FGE Schlei/Trave). Ministerium für Landwirtschaft, Umwelt und ländliche Räume Schleswig-Holstein; Ministerium für Landwirtschaft,Umwelt und Verbraucherschutz Mecklenburg-Vorpommern (2015): Maßnahmenprogramm (gem. Art. 11 EG-WRRL bzw. § 82 WHG) FGE Schlei/Trave 2. Bewirtschaftungszeitraum 2016 – 2021.

Although mussel culture in Schleswig-Holstein is a use of water (according to §§ 8 & 9 WHG and § 11 WasG SH), no explicit water use permission is needed for German Baltic mussel farming on longlines[18] due to its compatibility with goals of the WFD and the MSFD. Each case is evaluated by the supreme fishery authority of Schleswig-Holstein (MELUND).

However, mussel culture installations potentially alter/ remove coastal protection installations. Therefore an authorisation is required at the MELUND as supreme coastal protection authority according to § 77 (1) WasG SH. The same is applicable if installations (on the coast or in coastal waters) potentially put the coastal protection at risk. For instance at the North Sea (Waddensea area) such an authorisation is required for smartfarm units for mussel cultivation. Although this has not yet been a subject in the Baltic Sea, it is the responsibility of the lower water authorities to decide whether this authorisation is required in the Baltic Sea as well.

3.1.6 National implementation of the WFD (contributions of project partners)

3.1.6.1 Poland

Consolidation of the Polish legislation with the EU environmental law has its progress since 2001. Transposition of the Water Framework Directive (WFD) and regulation of the water resources management is in line with the principle of sustainable development, for the management and use of the water bodies and water protection, which is Poland achieved trough the major Act on Water Law[19] River Basin Management Plan (RBMP[20]) is tool set by the WFD for achievement of environmental objectives and decisions in relation to the water management, as well as sectors of economy, where fishing sector and aquaculture are included.

In jurisdictional sense, implementation strategy that imposes WFD in Poland has no administrative borders rather strategies of the province or administration body is part of the main Strategy of Water Management in Poland.

Devoted authority for creation of the Water management plans and long-term strategies for water resources management, thus for the River Basin Management Plans (RBMP), is National Water Management Authority, under the auspice of the Ministry of Environment. Art. 114, paragraph 1 of the Water Law lays detailed scope of RBMP, whose preparation is defined by the Regulation of the Council of Ministers of 18 June 2009[21].

Nevertheless, new Act on Water Law [22](2017) will come to the force and replace the current Law from 1 January 2018.

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[18] According to M. Momme, Fischereireferent in Schleswig-Holstein for coastal fishery, mussel fishery and fish economy.

[19] The Water Law, 18 July 2001 (Ustawa z dnia 18 lipca 2001 r. - Prawo wodne)

[20] Act of 18 July 2001 on Water Law (OJ of 2005 No. 239, item 2019)

[21] Rozporządzenie Rady Ministrów z dnia 18 czerwca 2009 r. w sprawie szczegółowego zakresu opracowywania planów gospodarowania wodami na obszarach dorzeczy (Dz. U. 2009 Nr 106 poz. 882)

[22] Published in Polish Journal of Laws on 23 August 2017

Significant change from the previous Act, with relevance for the aquaculture, includes changes in Water management system and creation of a new administrative authority "Wody Polski" to deal with matters of the Act, as well it will be the responsible authorities water permit issuing, acceptance of a water law notification, issuance of a water assessment and other decisions governed by the Act.

According to the researches and attempts in testing this type of aquaculture in the Polish water, mussels farming appeared to be feasible in this area of the Baltic Sea Region considering its simple, flexible and cost-effective methods for balancing negative effects of eutrophication generated from nutrient leakage from agriculture and other human activities. On another hand, mussels cannot be expected to become dominant product in Poland since the salinity level slow down the growth and cause only small sized mussels production.

Regardless of the place, according to Study of Spatial Development of Polish Sea Areas[23] (2015), mussels farming require previous determination and commitment of finding its final market (i.e. feed, gas from biomass or chowder). While biggest interest by the Study was found in improving the environmental status of marine waters in line with the EU environmental regulations.

Following the same Study of Spatial Development of Polish Sea Areas (2015) another possibility for mussel farming was identified in the open sea, as co-located use of the area with wind farms, in which case careful analysis in terms of legal, organizational and technical aspects is requested.

3.1.6.2 Denmark

With the implementation of the EU WFD the Danish government created the Law of Water Planning1, which describes the division of Danish water districts, responsibilities of different authorities and supervision of the general environmental goals.

To achieve the goals of the WFD the Danish waters have been divided into water areas, each under different municipal authority. Each municipality present goals specific to these water areas, which are set to be achieved by the year 2021. In each water area a basic analysis of environmental factors, i.e. endangered species, nutrient flow etc., has been conducted with the purpose of creating a fundamental understanding of the environmental status of the different areas. These form the foundation of the Danish Water Area Plans2, which have the sole purpose of describing environmental factors in the area, so that environmental improvement, in accordance with the WDF, is more achievable.

In accordance with Danish law no. 439, §13, the Danish water bodies, i.e. streams, lakes, transitional waters, coastal waters and groundwater, must as a minimum reach a good environmental condition. Improving the environmental quality of the water bodies is a key goal in Danish law, and is reached with a number of governmentally described methods, with a main focus on compensating for nutrient fluxes from farmland, for example by using retention ponds etc. Although mussels have been recognised for improving water clarity, the use of mussels as nutrient biofilters in water bodies is not yet a governmentally approved

[23] http://www.umgdy.gov.pl/?p=6341

mitigation tool for removal of excess nutrients. And thus, the production of mussels in Danish waters are, as of now, still only categorised as business in the fishing industry.

Production of mussels in coastal zones and fjords in Denmark is subject to legislation no. 1693[24], wherein it is described that the water body, in which mussels are either harvested from bottom cultures or from suspended production facilities such as longlines etc., must be tested for toxic algae. Furthermore, the microbiological conditions must also be monitored, to ensure less health risks when the mussels are fished or harvested and sold.

Acquiring a license for mussel production on longlines or SmartFarm systems require that the chosen area for production is reviewed for possible disturbances on protected species, in accordance with Natura2000 law. In legislation no. 1693 of 15/12/2016[25] specific production areas for mussel farming on longlines and SmartFarm systems is defined. Most fjords in Denmark are open for mussel production, as long as the requirements for microbiological and algae testing are met. Thus, acquiring licenses for mussel production in these areas are normally given, if the environmental pre-analysis concludes no disturbances to protected plants and animal species. In Denmark, the production of mussels on longlines or SmartFarm systems are recognised as more sustainable methods of production than harvesting from wild populations because mussels grown in the water column will give a minimal risk on bottom ecosystems, and will furthermore have a higher growth rate with higher percentages of meat. Thus, it is in governmental interest to create a green conversion and increase mussel production in the water column[26].

Permission for mussel fishing on both longlines, SmartFarm systems and from wild populations may be restricted, if fishing takes place in or near Natura2000 areas, where significant, negative effects on certain species or habitats are unavoidable. Fishing for mussels require an official approval from the Danish Agricultural Agency, and at present a total of 45 vessels have license for industrial fisheries of mussels[27]. The fishery in a specific area require a permit for a quota of mussels. The permit to licences are, however, dependant on the conservation of eelgrass and reefs, and thus, mussel fishing is distributed along specific depth zones, with the aim of having little to no impact on existing eelgrass populations.

The production of mussels as Integrated Multitrophic Aquaculture in eutrophic waters is expanding in Denmark and becoming an increasingly used method for nutrient removal. One of the greatest challenges is, as of now, to have the IMA mussels approved for consumption - or feed sales, as the mussels rarely reach quotas on minimum measurements[28]. IMA mussels have now been approved for compensation use in mariculture, and the final legislation is expected in early spring, 2018.

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[24] Miljø- og Fødevareministeriet, *Muslingebekendtgørelsen,* BEK nr. 1693, 15/12/2016

[25] Miljø- og Fødevareministeriet, *Muslingebekendtgørelsen,* BEK nr. 1693, 15/12/2016

[26] Ministeriet for Fødevarer, Landbrug og Fiskeri, *Målsætninger og forvaltningsprincipper for muslingeskrab og øvrig muslingeproduktion i Natura 2000 områder,* 20/06/2013

[27] Miljø- og Fødevareministeriet, *Fiskeri efter blåmuslinger*, Landbrugsstyrelsen, 2017

[28] DTU, Aarhus Universitet m.fl., *Vækst i blå biomasser – kortlægning af potentialer og udfordringer i værdiskabelse af tang og skaldyr,* 2016

3.1.7 WFD and mussel aquaculture - outcome information

The major aim of the WFD is the prohibition of further deterioration of waters and also the achievement of the Good Environmental Status (GES). Mussel culture may not counteract these target attainments of existing EU WFD legislation.

Although the EU guidance document regards mussel cultivation as potential mitigation measure to reduce the environmental nutrient enrichment originating from fish aquaculture, mussel cultivation itself can also have a significant impact on the aquatic habitat.

The use of water is to be charged by the Member States. In Germany, mussel cultivation needs no explicit water use permission according to the national water legislation. However, mussel farming must be assessed for its potential environmental impact and to clarify if the farming is complying with WFD principles, on a case by case basis. This is generally evaluated during the fisheries permission procedure (See Chapter 5.3 *Fisheries Law*).

Mussel farming needs an installation permission from the coastal protection authority.

3.2 Marine Strategy Framework Directive (MSFD)

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 (Text with EEA relevance)[29]

To protect and restore European marine water and to ensure its long term, sustainable use, the Marine Strategy Framework Directive (2008/56/EC) was created. Having a broadly similar approach, the Marine Strategy Framework Directive applies to marine waters, beyond coastal waters covered by the WFD. The Directive aims to achieve Good Environmental Status (GES) of EU marine waters by 2020 and therefore to protect natural resources for marine-related economic and social activities.

The directive establishes a water management approach based on European marine regions and sub-regions on the basis of geographical and environmental criteria. One of the four regions is the Baltic Sea. All EU Member States are required to develop a strategy for their marine waters. Due to the adaptive management approach, the Marine Strategies must be kept up-to-date and reviewed every 6 years.

Each Member State needs to evaluate its environmental status. If the good status (GES) is not achieved yet, environmental objectives must be defined. According to these objectives, respective measures are designed to fulfil the requirements for GES following the precautionary principle and the principles that preventive action should be taken. Any environmental damage should, as a priority, be rectified at source and the polluter should pay.

3.2.1 General content of the MSFD with relevance to mussel aquaculture

Marine aquaculture will become increasingly important and EU water conservation legislation is a key area of regulation for aquaculture business. The EU Marine Strategy Framework Directive is applicable in marine waters and marine aquaculture like mussel cultivation must respect its principles. Mussel cultivation must comply to the environmental objectives and accordingly also to the GES achievement.

Because of the improved water quality, the MSFD is beneficial for aquaculture. Also "Sustainable aquaculture contributes to delivering GES under MSFD. The natural filtration feeding of shellfish also leads to improvements in water clarity, as demonstrated by mussel farms in the Baltic."30

However, farming animals (even if extractive) in Baltic waters has a potential impact on the environment. Therefore the significance and the extend of this potential impact has to be

29 OJ L 164, 25.6.2008, p. 19–40

30 COMMISSION STAFF WORKING DOCUMENT On the application of the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) in relation to aquaculture. Brussels, 18.5.2016 Page 13.

evaluated prior to new farm installations. The Baltic Sea is a hugely diverse ecosystem, and therefore neither short term nor long term consequences resulting from aquaculture environmental impacts can be generalised across the marine area. Site selection is a crucial factor that determines the significance and the extend of any potential impact. The MSFD lists quality descriptors that help define the Good Environmental Status (GES) and on which mussel aquaculture may have an impact (Tab. 2)31. Also the indicative list in the MSFD Annex III help to define pressures and impacts on the ecosystem by mussel culture.

The substantial characteristics and impacts of mussel cultivation are either operational or caused by the system.

Expected major impact trough mussel farming is the

- anchoring
- shading
- accumulation of organic material
- change of currents
- introduction of chemicals (fuel and lubricants)
- disturbance of marine fauna (injury, noise)
- disturbance of landscape scenery

Environmental impact assessment (EIA) (2011/92/EU) and strategic environmental assessment (SEA) (2001/42/EC) directives allow environmental concerns to be taken into account at an early stage in the planning process, thus avoiding or minimising negative impacts. Hence, aquaculture plans, programmes or projects fall under the SEA and EIA directives.
According to the EIA Directive (Annex II, 1 (f)), intensive fish farming needs an environmental impact assessment. However, no such assessment is needed for musselculture due to its extractive character.

[31] According to the commission staff working document (2016).

Tab. 2: Potential impacts of mussel cultivation according to the MSFD descriptors

Descriptor	Possible Impacts
Biodiversity	(small) If unmanaged, parasites (*Marteilia refringens)* may have localised effects on biodiversity. The shifting of organic load from the water column to the benthic habitat may even have local positive effects on benthic species abundance and diversity close to the farm.
Non-indigenous species	(no/small) Farmed mussels are native to the Baltic Sea. However, mussel cultivation may itself be affected by invasive species such as sea squirts (*Didemnum sp.*). Farming infrastructure offers a habitat for species in the need for hard substrate. Thus, the provided hard substrate (farm material) may support the settlement and survival of invasive species.
Commercial fish & shellfish	(no/small) Diseases and parasites may have localised effects on wild commercial shellfish.
Foodwebs	(Small) Diseases and parasites may have localised effects on foodwebs. Mussel cultivation may decrease water turbidity and thus increase water transparency through filtration activity. Mussel metabolic products such as faeces or pseudofaeces accumulate beneath mussel farms. Food webs therefore may be influenced by shifting of organic load from from the water column to the benthic habitat.
Eutrophication	(Small) No additional feed is used in mussel culture. The environmental balance is negative and counteracts eutrophication. However, local increased bacterial oxygen demand due to the enriched benthic organic load can occur but remains small scale with only temporary effects.
Sea floor integrity	(small) Impact at local scale. Insufficient water depths and low currents lead to siltation.
Hydrographical conditions	(Small) Impact at local scale due to formation of small scale features including eddies.
Contaminants	(Small) Some impact at local scale due to contamination by hazardous substances during farming operation (lubricants, fuel), but unlikely to occur at sufficient scale at present to have significant impact.
Fish & seafood contaminants	(small) Impacts are assessed using regulatory limits set within food safety legislation.
Marine litter	(small) Mussel culture may be a source of marine litter. Buoyancy materials, lines, nets other farm equipment potentially gets lost during heavy weather or farming operation.
Underwater energy	(small) Some impact at local scale close to cages, but unlikely to occur at sufficient scale at present to have significant impact.

3.2.2 Gaps and shortages for mussel aquaculture resulting from MSFD

There are no explicit obligations by the MSFD for aquaculture. Aquaculture industry must meet the national legislation of the respective Member State.

The magnitude of mussel culture impacts in comparison with impacts from other sources (e.g. agricultural run-off) has not been assessed so far. It is also difficult to estimate the proportionate scale of these impacts in relation to the overall impacts on the environment from other anthropogenic activities together with Common Fishery Policy.

National WFD and MSFD interpretation of measures to reduce Baltic nutrient load differ between European Member States. Definite principles and commitments have been agreed in the Helsinki Convention to protect Baltic marine environment. In detail: Germany does not allow any "nutrient trading" with mussel cultivation so far, any environmental pollution must be remedied at source with the polluter pays principle. Mussel cultivation could reduce the local nutrient load but not at the source of the eutrophication, which is mostly diffuse.

3.2.3 Assistance by EU guidelines

The Commission Staff Working Document (2016) addresses the requirements of the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) in relation to aquaculture. It assists EU Member States and industry in the implementation of these EU laws and facilitate the development of sustainable aquaculture.

This practical guidance facilitates the implementation of the WFD and MSFD in the context of the development of sustainable aquaculture through providing of:

- regulatory good practice and suggestions to national authorities about the requirements of the Directives in relation to aquaculture
- industry good practice and suggestions to aquaculture producers on what is expected of them and what they can expect from the implementation of the Directives
- information about the sustainability of EU aquaculture production and its compliance with relevant EU environmental legislation.

(For details about the guidance document see Chapter 3.1.3.)

3.2.4 Implementation of the MSFD in national law: Germany and Schleswig-Holstein

In Germany, management of marine territorial waters belongs to the federal state authorities and the EEZ waters are managed by the federal government. The responsible MSFD implementation authorities are the Federal supreme water authorities (e.g. in Schleswig-Holstein the MELUND). However, the implementation of the MSFD requires an authority cooperation and measures coordination among the Federal States and thus, the Federal and

State Committee on the North Sea and Baltic Sea (BLANO32) was established. The BLANO has taken on responsibility for coordination and liaison with regard to MSFD implementation.

In Germany, the MSFD is implemented by law33 in §§ 45a-l of the Federal Water Act (WHG) to a large extent. To achieve the environmental objectives, other law such as the Recycling and Waste Management Act (KrWG[34]), the State and Federal Nature Conservation Acts (BNatSchG[35] and LNatSchG[36]), the EIA Act (UVPG[37]) and the Federal Water Way Act (WaStrG[38]) has also been adapted, but only marginally.

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32 Bund/Länder-Ausschuss Nord- und Ostsee (BLANO)

33 „Gesetz zur Umsetzung der Meeresstrategie Rahmenrichtlinie sowie zur Änderung des Bundeswasserstraßengesetzes und des Kreislaufwirtschafts- und Abfallgesetzes“ vom 06.10.2011, BGBL I Nr. 51, 1986.

34 Kreislaufwirtschaftsgesetz vom 24. Februar 2012 (BGBl. I S. 212), das durch Artikel 1 des Gesetzes vom 27. März 2017 (BGBl. I S. 567) geändert worden ist" Stand: Zuletzt geändert durch Art. 4 G v. 4.4.2016 I 569 Hinweis: Änderung durch Art. 1 G v. 27.3.2017 I 567 (Nr. 15) textlich nachgewiesen, dokumentarisch noch nicht abschließend bearbeitet
The major aim of waste policy is the avoidance and the recycling of waste. The KrWG controls German waste management and recycling to support a considerate handling of natural resources and to protect humans and the environment during waste production and management. It defines principles to avoid, recycle and dispose waste.

35 Bundesnaturschutzgesetz vom 29. Juli 2009 (BGBl. I S. 2542), das zuletzt durch Artikel 19 des Gesetzes vom 13. Oktober 2016 (BGBl. I S. 2258) geändert worden ist. Stand: Zuletzt geändert durch Art. 19 G v. 13.10.2016 I 2258
The German Nature Conservation Act defines principles to protect, to manage and to develop nature and landscape to ensure its long term biological diversity, ecosystem functioning and beauty. Besides species and territorial protection standards, the BNatSchG determines regulations for landscape planning, compensation schemes, biotope network, marine conservation, recreation, and also for participation in decision-making procedures. The BNatSchG is amended by the Federal Nature Conservation Law (LNatSchG). Responsible authority is the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Federal Environment Agency and the Federal Agency for Nature Conservation.

36 Gesetz zum Schutz der Natur (Landesnaturschutzgesetz - LNatSchG) Vom 24. Februar 2010. Gültig ab: 01.03.2010 Fundstelle: GVOBl. 2010, 301

37 "Gesetz über die Umweltverträglichkeitsprüfung in der Fassung der Bekanntmachung vom 24. Februar 2010 (BGBl. I S. 94), das zuletzt durch Artikel 2 des Gesetzes vom 30. November 2016 (BGBl. I S. 2749) geändert worden ist" Stand: Neugefasst durch Bek. v. 24.2.2010 I 94 Zuletzt geändert durch Art. 2 G v. 30.11.2016 I 2749
The Environmental Impact Analysis Law controls the assessment of an environmental compatibility of projects and plans that have a potential significant impact on the environment. To achieve a sufficient environmental precaution, standardised principles are needed. Therefore an environmental impact assessment and the strategic environmental assessments evaluate potential environmental impacts early and comprehensively. The respective results of EIA and SEA are respected by all authorities concerning the legitimacy of project and plans.

38 "Bundeswasserstraßengesetz in der Fassung der Bekanntmachung vom 23. Mai 2007 (BGBl. I S. 962; 2008 I S. 1980), das durch Artikel 6 Absatz 42 des Gesetzes vom 13. April 2017 (BGBl. I S. 872) geändert worden ist" Stand: Neugefasst durch Bek. v. 23.5.2007 I 962; 2008, 1980; zuletzt geändert durch Art. 6 G v. 5.7.2016 I 1578. Hinweis: Mittelbare Änderung durch Art. 2 G v. 18.7.2016 I 1666 (Nr. 35) noch nicht berücksichtigt. Änderung durch Art. 4 Abs. 118 G v. 18.7.2016 I 1666 (Nr. 35) noch nicht berücksichtigt. Änderung durch Art. 2 G v. 23.12.2016 I 3224 ist berücksichtigt. Änderung durch Art. 6 Abs. 42 G v. 13.4.2017 I 872 (Nr. 22) ist berücksichtigt.

The WHG determines the marine management in Germany in the following paragraphs:
§45a management goals for marine waters (Art. 1 (1-2) MSFD)

Marine areas must be managed to prevent a further deterioration of the environmental status and the good environmental status must be protected or achieved until 2020 at latest.

Therefore marine ecosystems shall be protected, preserved or restored and negative human impacts shall be avoided.

§45b status of marine waters (Art. 1 (3) MSFD)

The environmental status need to be defined on an ecosystem based approach. The status of marine ecosystems shall be ecologically diverse, dynamic, not polluted, healthy, productive and sustainably used.

Marine ecosystems shall function without limitation and shall be capable to respond to human-induced environmental changes. Marine species and habitats shall be protected and the reduction of biodiversity shall be avoided. Human inputs shall neither compromise marine ecosystems, nor biodiversity, human health or legitimate uses of the sea.

§45c initial assessment (Art. 8 MSFD)

This assessment must have been reported to the EU until the 15th July 2012.

It must address:

- general characteristics of marine areas

- major impacts and their consequences for the marine environmental

- economic and social analysis of marine uses and the cost analysis in case of a further deterioration.

§45d description of good marine environmental status (Art. 9 MSFD)

The competent authorities must define the good environmental status for marine waters according to Annex I of the MSFD until the 15th July 2012. Annex I lists type specific reference conditions for coastal waters that comply to a very good ecological status and the highest ecological potential.

§45e definition of environmental targets (Art. 10 MSFD)

According to the initial assessment, intermediate targets (with time limits) and single targets to achieve a good environmental status need to be defined including specific indicators. All targets need to be compatible on a national, a community's and an international level.

§45f monitoring programmes (Art. 11 MSFD)

According to the initial assessment and the defined environmental targets, monitoring programmes shall be established until 15th July 2014. The monitoring programmes consist of the permanent determination, description and evaluation of the marine environmental status, including the regular evaluation and actualisation of environmental targets.

The Federal Water Way Law defines water ways. It also controls their use, maintenance, building and the respective rules and permissions.

§45g extension of time / exceptions from management targets (Art. 14 MSFD)

If due to natural causes the achievement of environmental targets is impossible, time limits can be extended and exceptions from management targets may be allowed if caused by:

- actions managed outside of this law,

- natural causes,

- higher force,

- changes of physical characteristics of the marine environment due to measures in sense of common good.

§45h programme of measures (Art. 13 MSFD)

According to the initial assessment and the environmental targets, a programme of measures has to be defined until the 31st December 2015 following Annex VI of the MSFD. The programme of measures include spatial protection measures, the description of reasons for measures, eventually extensions of time and exceptions.

Measures need to be evaluated by a cost-benefit analysis. All measures must comply with measures of other law (national and international). The measures must be performed until the 31st December 2016.

§45i public involvement (Art. 19 MSFD)

The drafts of the initial assessment and the description of the environmental status must have been published until the 15th October 2011. The monitoring programme must have been published until the 15th October 2013 and the drafts o fthe programme of measures until the 31st March 2015. Within six month after publishing, the public can make their views known in writing their formal position to the competent authority.

§45j review and update of status description (Art. 17 MSFD)

The initial assessment, the description of the environmental status, the monitoring programme and the programme of measures must be reviewed and updated every 6 years.

§45k authority coordination (Art. 6 MSFD)

Measures to achieve the good environmental status need to be coordinated among national and international authorities. Authorities shall use organisation units to fulfil this task.

§45l responsibilities in the EEZ and the continental shelf

In the German EEZ and on the continental shelf, the BMUB[39] together with the BMEL[40], BMVI[41] and the Federal Ministry of Finance are competent authorities.

[39] Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit)

[40] Federal Ministry of Food and Agriculture (Bundesministerium für Ernährung und Landwirtschaft)

[41] Federal Ministry of Transport and Digital Infrastructure (Bundesministerium für Verkehr und digitale Infrastruktur)

3.2.5 National implementation of the MSFD in practice: Germany and Schleswig-Holstein

In marine municipalised areas (bays, harbours, fjords), the district authorities are competent authorities. In coastal areas up to 12 nm the federal state is responsible and further than 12 nm in the EEZ, the federal government is responsible. Due to the not yet existing aquaculture installations in coastal waters outside marine municipalised areas (bays, harbours, fjords), the theoretically existing executive control bodies are not in charge yet. Accordingly, this results in a lack of staff and equipment to fulfil this task in the case of installations of aquaculture premises in not municipalised areas.

The initial German Baltic Sea environmental assessment from 201242 revealed that the GES is not achieved yet. Accordingly, seven environmental objectives have been determined for the marine region of the Baltic Sea following the requirements of the United Nations Convention on the Law of the Sea (UNCLOS, 1982), the Convention on Biological Diversity (CBD, 1992), the Helsinki Convention (HELCOM, 1992), as well as the European regulations on wild birds (2009/147/EU) and on the conservation of natural habitats and of wild fauna and flora (92/43/EWC), the Federal Act for the Protection of Nature (BNatSchG), the EU WFD (2000/ 60/EU) and the EU regulation on environmental quality standards in the field of water policy (2008/105/EU).

Environmental objectives for the German Baltic Sea:

- Seas unaffected by eutrophication
- Seas not polluted by contaminants
- Seas with marine species and habitats unaffected by impacts of human activities
- Seas with sustainable and environmentally sound use of resources
- Seas without pressures from litter
- Seas not impacted by the introduction of anthropogenic energy
- Seas with natural hydromorphological characteristics

Eutrophication is one of the major Baltic Sea problems that contribute to GES non-achievement. Germany for example has committed to reduce its nutrient disposal into the Baltic Sea by 240 tons of phosphorus and 5.620 tons of nitrogen until 2016 (HELCOM 2007).

Measures to achieve the GES were reported to the EU in 201643 including an English summary44. Measures no. 401 to 431 in this catalogue are concerning the implementation of

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[42] Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (Hg.) (2012): Umsetzung der Meeresstrategie-Rahmenrichtlinie. RICHTLINIE 2008/56/EG zur Schaffung eines Ordnungsrahmens für Maßnahmen der Gemeinschaft im Bereich der Meeresumwelt (Meeresstrategie-Rahmenrichtlinie). Festlegung von Umweltzielen für die deutsche Ostsee nach Artikel 10 Meeresstrategie-Rahmenrichtlinie.

[43] LAWA-BLANO Maßnahmenkatalog (WRRL, HWRMRL, MSRL), 2015

[44] 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. English Summary. Hg. v. BMUB, 2016

the MSFD. Four measures are planned to achieve the first environmental target (Baltic sea without interference by anthropogenic eutrophication) mainly by the reduction of pollution sources. In Germany, mussel cultivation is not regarded as a suitable measure for nutrient reduction to achieve GES in the Baltic Sea because it is not source related. The GES of each water body (subunits of water types/ marine regions) needs to be achieved.

Cumulative effects must be considered.

In Germany, the import of seed mussels from other seas than the Baltic Sea is prohibited to protect the environment from introduction of invasive species.

Compensation measures must be performed in the same water body.

Sediment does belong to the water body and thus, needs to be protected as well.

The Schleswig-Holstein aquaculture strategy45 defined principles for future sustainable Baltic aquaculture.

Achievement of environmental goals and mussel aquaculture

- Seas unaffected by eutrophication

No nutrient input from farming. Use of multitrophic farming methods to compensate nutrient input.

- Seas not polluted by contaminants

Creation of optimal production circumstances and a confident use of medicals (with measures to avoid or at least to reduce the use of medicals). The use of medicals must be documented according to existing law.

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

- farming of exclusively endemic species

- animal health and animal welfare must be respected at all production stages

- no aquaculture in nature conservation areas

- location priority outside Natura 2000 areas

- Seas with sustainable and environmentally sound use of resources

The use of water resources need to be minimised with the best available technique.

- Seas without pressures from litter

...

- Seas not impacted by the introduction of anthropogenic energy

The use of energy and raw material need to be minimised with the best available technique.

- Seas with natural hydromorphological characteristics
-

[45] Ministerium für Energiewende, Landwirtschaft, Umwelt und ländliche Räume. Strategie zur Entwicklung einer nachhaltigen Aquakultur in Schleswig-Holstein (2014)

3.2.6 National implementation of the MSFD (contributions of project partners)

3.2.6.1 Poland

Marine Strategy Framework Directive (MSFD) was transposed to the Polish legislation in 2012, through the Water Management Act (1229/2001), with later consolidation, in October 2012 to the Act 145/2012.

Responsible authority for the implementation of the Directive in Poland is the Ministry of the Environment Protection, together with the Ministry of Agriculture and Rural Development, and the Ministry of Transport, Construction and Maritime Economy. Whereas responsibility for the transposition of the Articles 8 and 9 of the Directive is Chief Inspectorate for Environmental Protection, and for consolidation of the Article 10 responsible was President of the National Water Management Authority.

The Institute of Meteorology and Water Management (IMWM) and Maritime Institute – National Research Institute (MN-NRI) did scientific support in preparation of the general provisions of the Articles 8 and 9, while Articles 8 and 9 in respect to ichtyofauna was done by National Marine Fisheries Research Institute (NMFRI).

It is very difficult to evaluate the ambition level of the Polish work, since most targets are set as trends and are only vaguely described.

3.2.7 MSFD and mussel aquaculture – outcome information

Baltic mussel aquaculture has to respect the requirements of the MSRL. However, no particular MSFD permission is needed, because permission for mussel aquaculture in the German Baltic Sea according to the water legislation and to the environmental conservation legislation covers the issues of the MSFD.

3.3 Habitats Directive

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora[46]

The Habitats Directive is one of the principal rules for European nature conservation and is set out on the conservation of natural habitats and of wild fauna and flora (Art. 2). It established a strict system of nature conservation, covering animal and plant species and habitat types of European importance.

Major measures to achieve the favourable conservation status is the establishment of a coherent European ecological network of special areas of conservation called Natura 2000 (Art. 3). The Natura 2000 network is the largest ecological network in the world. It includes special areas of conservation designated by Member States under the current Directive and also special protection areas classified pursuant to the "Wild birds" Directive 2009/147/EC. These Natura 2000 conservation areas host the natural habitat types and species listed in Annex I and II, respectively. The conservation status needs to be monitored (Art. 11) and results need to be reported to the EU every six years (Art. 17). Annex III describes the criteria for Natura 2000 areas in detail. Annex IV lists animal and plant species of community interest in need of strict protection according to Art. 12 and 13.

Special areas of conservation have been designated in three stages. Following the criteria set out in the annexes, each Member State must draw up a list of sites hosting natural habitats and wild fauna and flora. On the basis of these lists the Commission adopted a list of sites of Community importance for each of the nine EU biogeographical regions (two regions concern the Baltic Sea: the Boreal region and the Continental region). Six years thereafter the sites of Community importance must have been designated as special areas of conservation by the Member States.

EU Member States must take all necessary measures to guarantee the conservation of habitats in special areas of conservation. Therefore, any plans and projects not directly connected with or necessary to the management of the Natura 2000 site, need an appropriate assessment of its implications for the site in view of the site's conservation objectives (Art. 6). Every six years, Member States must report on the measures they have taken pursuant to the Directive. The Commission must draw up a summary report on the basis thereof.

3.3.1 General content of the Habitats Directive with relevance to mussel aquaculture

Shellfish aquaculture with no external supply of feed or medicine, depends entirely on natural processes for production and supply of feed. It is carried out in the natural environment as a natural component of the ecosystem. The goods and services of shellfish to the environment are:

- filtration
- nutrient regeneration

46 OJ L 206, 22.7.1992, p. 7–50

- providing food for higher trophic levels (birds)
- providing habitat for (epi)benthic species.

"Extensive aquaculture also acts as an instrument in nature management and conservation, thereby invoking positive effects on maintenance goals."[47] However, animal farming interacts with the environment and so does mussel aquaculture. Respective effects on the environment are highly specific to the site and depend on the environmental and rearing conditions.

There factors that influence the ultimate impact of mussel aquaculture are:

- the location of the farm
- the methods used
- the sensitivity, resistance and resilience of the environment.

The possible impact of mussel farming can be classified in two main categories:

- habitat loss or degradation and modification of the communities present on it
  - infrastructures and installation of facilities
  - use of equipment and tools (e.g. for harvesting), which may cause a direct physical impact on habitats and communities.
  - increased levels of suspended sediments
  - organic enrichment of sediments
  - increased turbidity
  - nutrient enrichment of water may alter the conditions on which some communities and pelagic species depend and cause their displacement from the site.
- disturbance and displacement of species.
  - construction and the operation of aquaculture farms (noise and light during management activities)
  - control predation
  - biological interactions between the farmed species and the species occurring in the site (attraction of species that have the potential to disturb/replace protected birds)

Marine habitats in terms of the Habitats Directive that might be influenced by mussel culture are:

- Sandbanks which are slightly covered by sea water all the time
- *Posidonia* beds
- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Lagoons
- Large shallow inlets and bays

[47] EC (2012): Guidance on Aquaculture and Natura 2000. p 22

- Reefs
- Marine 'columns' in shallow water made by leaking gases

with *Posidonia* beds and lagoons being priority habitat types.

To assess the implications of mussel farming in respect of the site's conservation objectives, an appropriate assessment is required in Natura 2000 conservation areas (Art. 6). The assessment must be made case by case and is legally binding. The conclusions should enable the competent authorities to determine whether or not mussel cultivation would adversely affect the integrity of the site concerned. Therefore it must consider all the potential pressures and impacts on the sites' conservation interests, by focusing on the species and habitats that have justified the site's designation as a Natura 2000 site and all the elements that are essential to the functioning and the structure of that site.

It must be decided whether mussel farming is likely to have a significant effect on the Natura 2000 site. The EU guidance document[48] helps to evaluate the potential impact of mussel farming.

3.3.2 Gaps and shortages for mussel aquaculture resulting from the Habitats Directive

The appropriate assessment is a knock out criterion for mussel cultivation in a Natura 2000 site. It is costly and time consuming. If it cannot be ascertained that there will be no adverse effects on the integrity of the Natura 2000 sites, even after the introduction of mitigation measures or conditions in the development permit, then mussel farming cannot be approved unless the derogation procedure under Article 6 (4) is invoked. This derogation procedure is again costly and for commercial mussel farming only applicable if no priority habitat types occur in this site.

Protected animals pose a risk at mussel farming because they naturally forage on mussels. Otters (*Lutra lutra*) feed mainly on fish but may also feed on mussels. Resettlement and stringent protection measures lead to an increasing otter population.

3.3.3 Assistance by EU guidelines

The EU provided guidance for sustainable aquaculture activities[49] mainly focuses on the implementation of the provisions of Art. 6(3) and 6(4) of the Habitats Directive and is designed to contribute to a better understanding of the conservation objectives of the sites. It promotes best practices that illustrates how nature protection provisions can be compatible with sustainable aquaculture development.

The document describes shortly the state-of-the-art of European aquaculture, including the Baltic Member States that represent app. 7,7 % of the EU aquaculture production (volume).

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[48] EC (2012): Guidance on Aquaculture and Natura 2000. Sustainable aquaculture activities in the context of the Natura 2000 Network. Guidance document on aquaculture activities in the Natura 2000 Network. For musselculture on longlines and rafts see chapter 3.2.2 p 27 and following.

[49] EC (2012): Guidance on Aquaculture and Natura 2000. Sustainable aquaculture activities in the context of the Natura 2000 Network. Guidance document on aquaculture activities in the Natura 2000 Network. For musselculture on longlines and rafts see chapter 3.2.2 p 27 and following.

Blue mussels represent No.3 of the top ten species cultivated in the EU with 14 % of all aquacultural production (volume). Important mussel producing countries are Spain, the Netherlands, France, Italy, Ireland and UK. Besides aquaculture business in other Natura 2000 areas, it describes shellfish farming in the sea and lists shellfish rafts and longlines as well as intertidal and bottom culture systems for mussel culture. The document explicitly mentions IMTA as a form of sustainable aquaculture because IMTA may reduce the environmental impacts directly through the uptake of dissolved nutrients by primary producers (e.g. macroalgae) and of particulate nutrients by suspension feeders (e.g. mussels). Filter-feeding mussels are regarded as natural nutrient-strippers by removing phytoplankton from the water. Molluscs can therefore have a positive effect on water quality in coastal areas and are well suited to polyculture.

The document also describes the major aims and intentions of the Habitats Directive, the Birds Directive and the respective Natura 2000 network that was developed. Aquaculture is practised in many Natura 2000 sites and examples of win-win coexistence are described. Aquaculture systems can be compatible with sensitive habitats and can provide environmental benefits and services and thus can be fully compatible with the preservation of the sites natural values. For example shellfish culture is regarded as systems that can provide ecosystem services through the removal of inorganic nutrients from eutrophic ecosystems (bioextraction). Mussels are cultured and harvested as a method of water quality management in areas with diffuse nutrient inputs, or are cultured in combination with fish farming (IMTA), to compensate for nutrient enrichment through the metabolism of fish feed.

The most important part of the document describes the potential impacts of aquaculture on the environment. All types of aquaculture interact with the environment, and mussel aquaculture is no exception. Potential effects of mussel culture are highly site specific and depend on the environmental, hydrographic and rearing conditions, as well as to the type of cultured organisms and the production method, management practices, etc. Even under similar farming and environmental conditions, mussel farming impacts on a given site are generally not directly transferable to another site. The document describes the need for a case by case approach and explains this demand on the different factors influencing the potential environmental impact of mussel farming (site; species; method; and sensitivity, resistance & resilience of the habitat; as well as the assimilative and carrying capacity of the ecosystem).

The major context of the guidance document is to understand the potential effects on habitats and species protected under the Nature Directives (Habitats and Birds Directive). The document describes the main interactions between mussel farming (rafts and longlines) and the natural environment and indicates possible effects on habitats and species of EU interest, thereby recommending mitigation measures that can be applied to avoid or reduce the effects or negative impacts.

Potential impacts may be classified in two main categories:

- Habitat loss or degradation and modification of the communities present on it
  - habitats effected: wild mussel reef communities, polychaete reefs, seagrass beds, sandbanks, maerl beds and seaweed beds
  - increased levels of suspended sediments
  - organic enrichment of sediments
  - Biogeochemical change in water (dissolved oxygen levels, nutrients)
  - overgrazing (exceeded carrying capacity)

- Disturbance and displacement of species
  - maintenance and harvesting of suspended grown bivalves has little direct impact
  - Predator control
  - Alien species

Recommended mitigation measures:
- appropriate farming location
- areas with good water exchange
- adequate dimensioning of the farm
- using predictive models that allow estimating footprints of benthic loading

3.3.4 Implementation of the Habitats Directive in national law: Germany and Schleswig-Holstein

The Implementation of the Habitats Directive in National Law is constituted in the German Federal Act for the Protection of Nature (§§ 31 – 36, 44 BNatSchG), the Federal Regulation for the Protection of Species (BArtSchV[50]), the Federal Water Act (WHG), the Federal Nature Protection Act (§§ 22 – 27 LNatSchG), the Federal Biotope Protection Regulation (BiotopV[51]) and the State Water Act (WasG SH).

3.3.5 National implementation of the Habitats Directive in practice: Germany and Schleswig-Holstein

The development of Schleswig-Holstein mussel aquaculture must not counteract the target attainments of the Habitats Directive.

1. *Designation of protected areas*

§ 32 BNatSchG and §22 LNatSchG (Annex 2) implement Article 3 of the Habitat Directive in national law and thereby established a coherent ecological network of special areas of conservation.

Fig. 1 shows the conservation areas in terms of Habitat Directive.

Baltic natural habitat types and their actual status[52] in Schleswig-Holstein relevant for mussel cultivation are:

- Sandbanks which are slightly covered by sea water all the time (favourable status, stable)

[50] "Bundesartenschutzverordnung vom 16. Februar 2005 (BGBl. I S. 258, 896), die zuletzt durch Artikel 10 des Gesetzes vom 21. Januar 2013 (BGBl. I S. 95) geändert worden ist". Stand: Zuletzt geändert durch Art. 10 G v. 21.1.2013 I 95

[51] Landesverordnung über gesetzlich geschützte Biotope (Biotopverordnung) Vom 22. Januar 2009. Gültig bis: 18.02.2019. Fundstelle: GVOBl. 2009, 48. Stand: letzte berücksichtigte Änderung: § 1 geändert (Art. 7 Ges. v. 27.05.2016, GVOBl. S. 162)

[52] Erhaltungszustand der Lebensraumtypen des Anhangs I der FFH-Richtlinie in der kontinentalen biogeografischen Region, Ergebnisse in Schleswig-Holstein für den Berichtszeitraum 2007 - 2012(LLUR)

- Estuaries (unfavourable/inadequate status, stable)
- Mudflats and sandflats not covered by seawater at low tide (unknown status)
- Lagoons (unfavourable/bad status, stable)
- Large shallow inlets and bays (favourable status, improving trend)
- Reefs (favourable status)
- Annual vegetation of drift lines (unfavourable/bad status, stable)

Baltic marine species and their actual conservation status[53] in Schleswig-Holstein relevant for mussel cultivation are:

- Phoca vitulina (Seehund) (unfavourable/inadequate status, improving trend)
- Phocoena phocoena (Schweinswal) (unfavourable/bad status, stable)
- Halichoerus grypus (Kegelrobbe) (unfavourable/inadequate status, improving trend)
- Lutra lutra (Fischotter) (favourable status, stable)

If mussel cultivation is expected to significantly affect the protected species, regulations according to §44 BNatSchG have to be considered (as this paragraph implements Art. 12 of the Habitats Directive (92/43/EEC)), even if the cultivation area is outside of a Natura 2000 area. Mussel farming can be forbidden, if significant adversely affects for the habitat conservation objectives and conservation value are expected.

The habitat conservation areas require management plans. These plans describe a possible use and also the exclusion of uses of the area.

2. *Monitoring and reporting of conservation status*

According to Article 11 (Monitoring of habitats and all species listed in Annex I, Annex II, IV and V) the habitats conservation status must be observed regularly. The monitoring started in Schleswig-Holstein in 2001 with the first report in 2007 and the actual report was published in 2013.

3. *Appropriate Assessment*

If mussel cultivation is expected to significantly affect the environment of a Natura 2000 area, a habitat assessment according to §34 BNatSchG and §25 LNatSchG (Schleswig-Holstein) has to be performed, even if the cultivation area is outside of a Natura 2000 area. Mussel farming can be forbidden, if significant adversely affects for the habitat conservation objectives and conservation value are expected.

[53] Erhaltungszustand der Arten der Anhänge II und IV der FFH-Richtlinie in der kontinentalen biogeografischen Region, Ergebnisse in Schleswig-Holstein für den Berichtszeitraum 2007 - 2012(LLUR)

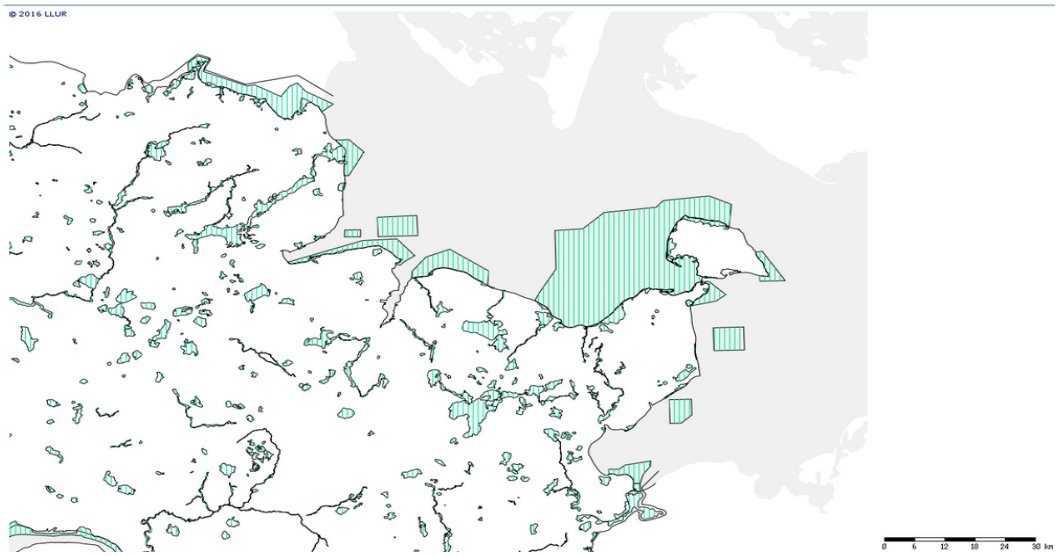

Fig. 1: Habitat protective areas in Schleswig-Holstein (hatched green) ©LLUR

3.3.6 National implementation of the Habitats Directive (contributions of project partners)

3.3.6.1 Poland

Polish legislations do not separate Birds and Habitats Directive. It is rather commonly covered in the Environmental Protection Act and Nature Conservation Act[54].

European, national and regional sustainable development goals are implemented at the local level in individual communes, which are responsible for the management of natural resources. The fundamental legal document that determines the tasks and duties of communes, such as those related to water and environmental management is the Act on Local Self-Government[55]. Responsibility for Coordination and implementation of the plans is the Ministry of the Environment in collaboration with the General Environmental Protection Administration, the Chief Environmental Protection Inspectorate, the National Water Management Authority and the State Forests National Forest Holding. Nevertheless, supervision of the existing parks and protected landscape areas are responsibility of the Ministry of the Environment, while the key roles in supervising functioning (i.e. implementation of the conservation plans) of the Natura 2000 sites are General Director of Environmental Protection and Regional Directors.

In regard to the monitoring, authority responsible to conduct monitoring under the provision of the Habitats and Birds Directive is National Environmental Inspectorate.

Nevertheless, based on Oceana (2017) analysis of the official documents on achieving and maintaining Good Environmental Status (GES) by 2020, developed under the framework of the MSFD, that were provided by the Member States to the EC, it shows different status of the protected areas in Polish waters. In realm to the Programmes of Measures (PoMs), which are

[54] Nature Conservation Act (Journal of Laws 2004 no. 92, item 880).
[55] Act of 8 March 1990 on Local Self-Government (Journal of Laws 1990 no. 16, item 95)

operational aspect of the Directive[56], Poland is in the group of the MS that didn't deliver

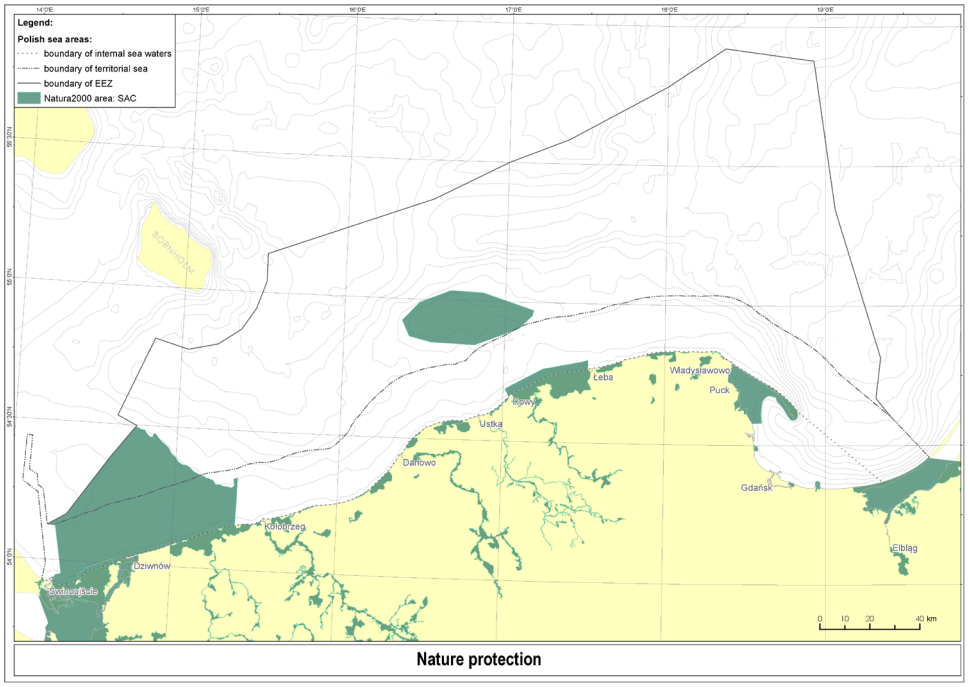

Fig. 2: Habitats Directive areas in Poland (Source: Maritime Institute in Gdansk)

Programme.

Total conservation area under the Habitats Directive, in case of Poland, is well covered (Oceana, 2017) in terms of coverage of marine protection, and it is presented in the fig. 2.

3.3.7 Habitats Directive and mussel aquaculture - outcome information

There is no explicit permission needed for mussel culture according to the Habitats Directive. However, marine habitats might be influenced by mussel culture and thus, mussel farming in Natura 2000 conservation areas and in their vicinity requires an appropriate assessment including the consideration of an impact on strictly protected species. In Germany, the need of the respective assessment is examined in a picky back procedure of the national water and nature conservation authorities.

An appropriate assessment is cost and time consuming and thus in Schleswig-Holstein, mussel farmers are recommended/well advised to install their farms outside of Natura 2000 conservation areas according to the Schleswig-Holstein Aquaculture Strategy[57].

[56] Article 5.2 of the Directive sets deadline for development of the PoMs by the end of 2015 with delivery time to the EC by March 2016 (article 13.9). PoMs should then enter into operation by 2016 at the latest (article 5.2 (b)

[57] MELUR (2014): Strategie zur Entwicklung einer nachhaltigen Aquakultur in Schleswig-Holstein. p. 11

3.4 Birds Directive

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds[58]

The Birds Directive controls the protection of wild birds and their habitats in the EU and furthermore controls the establishment of bird protection areas.

The European Union has introduced policies to reverse the declining trend of European wild bird populations through banning certain practices, and introducing protective and habitat management measures. The Birds Directive is one of the principal rules for European nature conservation and is set out on the conservation of wild birds. It established a strict system of nature conservation, covering a lot of bird species of European importance. The Birds Directive is valid for the birds, their eggs, nests and habitats (Art.1). It controls the protection, management, regulation and the use of wild bird species.

All endemic birds are protected by this Directive. Specially protected bird species are listed in Annex I of the Birds Directive, these species are:

- in danger of extinction,
- vulnerable to habitat change,
- in small numbers or restricted local distribution, or
- in need of particular attention because of the specific nature of their habitat.

For these birds, special protected areas have been established with conditions favourable to their survival, situated in the birds' natural area of distribution (i.e. where they naturally occur). These areas are mostly breeding grounds, but are also resting and hibernation grounds of endemic and migratory birds.

EU Member States must develop measures to maintain or restore the populations of endangered species to a level, which is in line with ecological, scientific and cultural requirements, while taking into account economic and recreational needs. These measures must be set in place to preserve, maintain or re-establish a sufficient diversity and area of habitats for all bird species by:

- designation of protected areas (Annex I)
- limited hunting periods of some bird species (Annex II)
- prohibition of activities that directly threaten birds (killing, capture or trade, destruction of nests) (exclusions listed in Annex III)
- sustainable hunting management (Annex IV)
- protection, management and use of all species of birds (Annex V)

3.4.1 General content of the Birds Directive with relevance to mussel aquaculture

58 OJ L 20, 26.1.2010, p. 7–25

Bird protected areas are included in the Natura 2000 network. Therefore the requirements for mussel culture according to the Habitats directive are already discussed there (see Chapter 3.3.1).

3.4.2 Gaps and shortages for mussel aquaculture resulting from Birds Directive

Certain wild species, protected by this Directive can pose a significant problem for musselculture in many areas because of their predation on life stocks.

Protected birds like Common Eider (*Somateria mollissima*) that are foraging mainly on blue mussels, potentially decrease the mussel production. Also Common Scoters (*Melanitta nigra*) and Long tailed Ducks (*Clangula hyemalis*) potentially pose a risk on mussel farming because both duck species feed preferentially on blue mussels up to a shell length of 40 mm (Mendel 2008[59]).

Due to successful environmental protection these birds have a stable or even increasing population, thereby creating a permanent and increasing pressure on mussel lifestock.

However, according to the Appendixes II and III of this Directive, hunting of all three duck species and marketing of Eiders and Long tailed Ducks is theoretically possible in most Baltic Member States.

3.4.3 Assistance by EU guidelines

The EU provides guidance for hunting under the Birds Directive, Cormorants and also reporting on derogations. The EU also provides guidance for sustainable aquaculture activities[60]. The latter mainly focuses on the implementation of the provisions of Art. 6(3) and 6(4) of the Habitats Directive and is designed to contribute to a better understanding of the conservation objectives of the sites. It promotes best practices that illustrates how nature protection provisions can be compatible with sustainable aquaculture development.

(For details about the guidance document see Chapter 3.3.3.)

[59] Mendel, Bettina (2008): Artensteckbriefe von See- und Wasservögeln der deutschen Nord- und Ostsee. Verbreitung, Ökologie und Empfindlichkeiten gegenüber Eingriffen in ihren marinen Lebensraum. Bonn: Bundesamt für Naturschutz (Naturschutz und biologische Vielfalt, 59).

[60] EC (2012): Guidance on Aquaculture and Natura 2000. Sustainable aquaculture activities in the context of the Natura 2000 Network. Guidance document on aquaculture activities in the Natura 2000 Network. For musselculture on longlines and rafts see chapter 3.2.2 p 27 and following.

3.4.4 Implementation of the Birds Directive in national law: Germany and Schleswig-Holstein

The Implementation of the Birds Directive in National Law is constituted in the German Federal Act for the Protection of Nature (§§ 31 – 36 BNatSchG), the Federal Regulation for the Protection of Species (BArtSchV[61]), and the Federal Hunting Act (BJagdG[62]), the Schleswig-Holstein State Hunting Act (LJagdG SH[63]) and in the Schleswig-Holstein Federal Nature Protection Act (§§ 22 – 27 LNatSchG).

3.4.5 National implementation of the Birds Directive in practice: Germany and Schleswig-Holstein

The development of Schleswig-Holstein mussel aquaculture must not counteract the target attainments of existing EU wild birds protection Directive.

Bird species on wintering/resting grounds potentially affected by mussel cultivation (SPA):

- *Alca torda* (Razorbill/ Tordalk; SPA 4)
- *Anas penelope* (Wigeon/ Pfeifente; Status: RL "R" SH; SPA 3, 6)
- *Anas platyrhynchos (*Mallard duck/ Stockente; SPA 7)
- *Anser albifrons* (Greater White Fronted Goose/ Bläßgans, SPA 5)
- *Anser anser* (Greylag/ Graugans; SPA 1, 3)
- *Aythya ferina* (Pochard/ Tafelente; SPA 2)
- *Aythya fuligula* (Tufted Duck/ Reiherente; SPA 2, 3, 5, 6, 7)
- *Aythya marila* (Greater Scaup/ Bergente; SPA 3, 5, 6, 7)
- *Bucephala clangula* (Goldeneye/ Schellente; SPA 1, 2, 3, 4, 7)
- *Clangula hyemalis* (Long-tailed Duck/ Eisente; SPA 1, 4, 5, 6, 7)
- *Cygnus cygnus** (Whooper Swan/ Singschwan; SPA 1, 2, 3, 5)
- *Cygnus olor* (Mute Swan/ Höckerschwan; SPA 1)
- *Fulica atra* (Black Coot/ Bläßhuhn; SPA 2, 6, 7)
- *Gavia stellata* (Red-throathed Diver/ Sterntaucher; SPA 4)

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61 Bundesartenschutzverordnung vom 16. Februar 2005 (BGBl. I S. 258, 896), die zuletzt durch Artikel 10 des Gesetzes vom 21. Januar 2013 (BGBl. I S. 95) geändert worden ist. Stand: Zuletzt geändert durch Art. 10 G v. 21.1.2013 I 95

62 "Bundesjagdgesetz in der Fassung der Bekanntmachung vom 29. September 1976 (BGBl. I S. 2849), das zuletzt durch Artikel 1 des Gesetzes vom 1. November 2016 (BGBl. I S. 2451) geändert worden ist". Stand: Neugefasst durch Bek. v. 29.9.1976 I 2849; zuletzt geändert durch Art. 1 G v. 1.11.2016 I 2451

63 Jagdgesetz des Landes Schleswig-Holstein (Landesjagdgesetz - LJagdG -) Vom 13. Oktober 1999. Textnachweis ab: 01.01.2003. Fundstelle: GVOBl. 1999, 300. Stand: letzte berücksichtigte Änderung: §§ 4, 17, 29, 30 und 37 geändert (Art. 3 Ges. v. 27.05.2016, GVOBl. S. 162)

- *Larus minutus* (Little Gull/ Zwergmöwe; SPA 5)
- *Melanitta nigra* (Common Scoter/ Trauerente; SPA 1, 4, 5, 6, 7)
- *Mergus merganser* (Goosander/ Gänsesäger, Status: RL 3 SH; SPA 2)
- *Mergus serrator* (Red-breasted Merganser/ Mittelsäger; Status: RL 3 SH, SPA 1, 3)
- *Phalacrocorax carbo* (Cormorant/ Kormoran; SPA 2)
- *Pluvialis apricaria** (Eurasian Golden-Plover/ Goldregenpfeifer; SPA1)
- *Podiceps auritus** (Slavonian Grebe/ Ohrentaucher; SPA 1, 4)
- *Podiceps cristata* (Great Crested Grebe/ Haubentaucher; SPA 4)
- *Podiceps grisegena** (Red-Necked Grebe/ Rothalstaucher; SPA 4)
- *Somateria mollissima (*Common Eider, Eiderente; Status RL 3 SH; SPA 1, 2, 3, 4, 5, 6,7)

(*strictly protected according BArtSchV § 2, Annex I)

Fig. 3: Special protected areas (SPA) according to the Birds Directive in Schleswig-Holstein (hatched red) © LLUR

Measures for wild bird protection and management in Schleswig-Holstein:

I. Designation of protected areas According to § 32 BNatschG and §22 LNatschG (Annex 2)

Schleswig-Holstein is the so called "turntable for bird migration" and thus, besides breeding grounds on land also huge marine areas for bird protection have been established[64]. Seven special protected areas have been established in the Schleswig-Holstein Baltic Sea (Fig. 3): The Flensburg Fjord (1), the Schlei (2), the lake Schwansen (3), the Bay of Eckernförde (4), the eastern Kiel Bight (5), the Baltic Sea east of Wagrien (6) and the coast of the Brodtener Ufer (7).

II. Limited hunting periods of some bird species (Annex II)
Bird species that may be hunted are listed in § 2 (1) 2. BJagdG.

III. *Prohibition of activities that directly threaten birds (killing, capture or trade, destruction of nests) (exclusions listed in Annex III)*
§44 BNatschG describes the prohibition of activities that directly threaten birds. No exclusions are made in the Federal State Nature Conservation Law (LNatSchG) of Schleswig-Holstein.

IV. *Sustainable hunting management (Annex IV)*
§4 BArtSchV presents a forbidden hunting practises list to guarantee a sustainable hunting management.

V. *Protection, management and use of all species of birds (Annex V)*

[64] ca. 740 000 ha marine area for bird protection in Schleswig-Holstein (Romahn, Katrin S. (2008): Europäischer Vogelschutz in Schleswig. Arten und Schutzgebiete. Flintbek: Landesamt für Natur und Umwelt des Landes Schleswig-Holstein (Schriftenreihe LANU SH / Natur, 11).

According to § 1 BArtSchV, birds are especially protected and strictly protected.

According to § 7 (1) BNatSchG, all European birds are protected within the meaning of the Birds Directive. A red list of species in danger of extinction or particularly endangered species has been represented.[65] Reports exist that evaluate the ecological description of areas particularly important to migratory species on their migratory routes and as wintering and nesting grounds.[66] The status of European birds in Germany is recorded regularly with data on the population levels of bird species.[67] The report Vögel in Deutschland 2013 presents a comprehensive overview of up-to-date population sizes and trends of breeding bird species and regular wintering waterbirds in Germany.

3.4.6 National implementation of the Birds Directive (contributions of project partners)

3.4.6.1 Poland

Similarly to the Habitats Directive, sustainable development goals of the Birds Directive are implemented at the local level in individual communes, which are responsible for the management of natural resources. Legal document that determines the tasks and duties of communes is the Act on Local Self-Government[68]. Responsibility for Coordination and implementation of the plans is the Ministry of the Environment in collaboration with the General Environmental Protection Administration, the Chief Environmental Protection Inspectorate, the National Water Management Authority and the State Forests National Forest Holding.

The regulation from October 2008, on the provision of information on the environment and its protection, public participation in environmental protection and on environmental impact assessment, concerning the protection of species is fulfilled trough the following regulations:

- Regulation of the Minister of the Environment on the protection of animal species[69]

- Regulation of the Minister of the environment on the protection of the species of plants[70]

- Regulation of the Minister of the Environment on the protection of species of fungi[71]

- Regulation of the Minister of the Environment on the list of non-native species of plants and animals, which in the case of release into the environment can threaten native species or natural habitats[72]

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65 Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands (2009). Bonn: Bundesamt für Naturschutz (Naturschutz und biologische Vielfalt, H. 70).

66 (Romahn, Katrin S. (2008): Europäischer Vogelschutz in Schleswig. Arten und Schutzgebiete. Flintbek: Landesamt für Natur und Umwelt des Landes Schleswig-Holstein (Schriftenreihe LANU SH / Natur, 11).

67 Sudfeldt, C., R. Dröschmeister, W. Frederking, K. Gedeon, B. Gerlach, C. Grüneberg, J. Karthäuser, T. Langgemach, B. Schuster, S. Trautmann, J. Wahl (2013): Vögel in Deutschland. Hg. v. DDA, BfN, LAG VSW. Münster.

68 Act of 8 March 1990 on Local Self-Government (Journal of Laws 1990 no. 16, item 95)

69 Journal of Laws, item 2183, December 2016

70 Journal of Laws, item 1409, October 2014

71 Journal of Laws, item 1408, October 9, 2014

72 Journal of Laws, item 1260, September 2011

- Regulation of the Minister of the Environment on the species of animals dangerous to life and health of people[73]

Composition of the MPA networks reveals failure to meet needs in coverage for certain habitats of species, including seabirds, which would prevent the achievement of GES for their networks of MPAs. The distribution of the Special Protected Areas in line with the Birds Directive is presented in the Fig. 4.

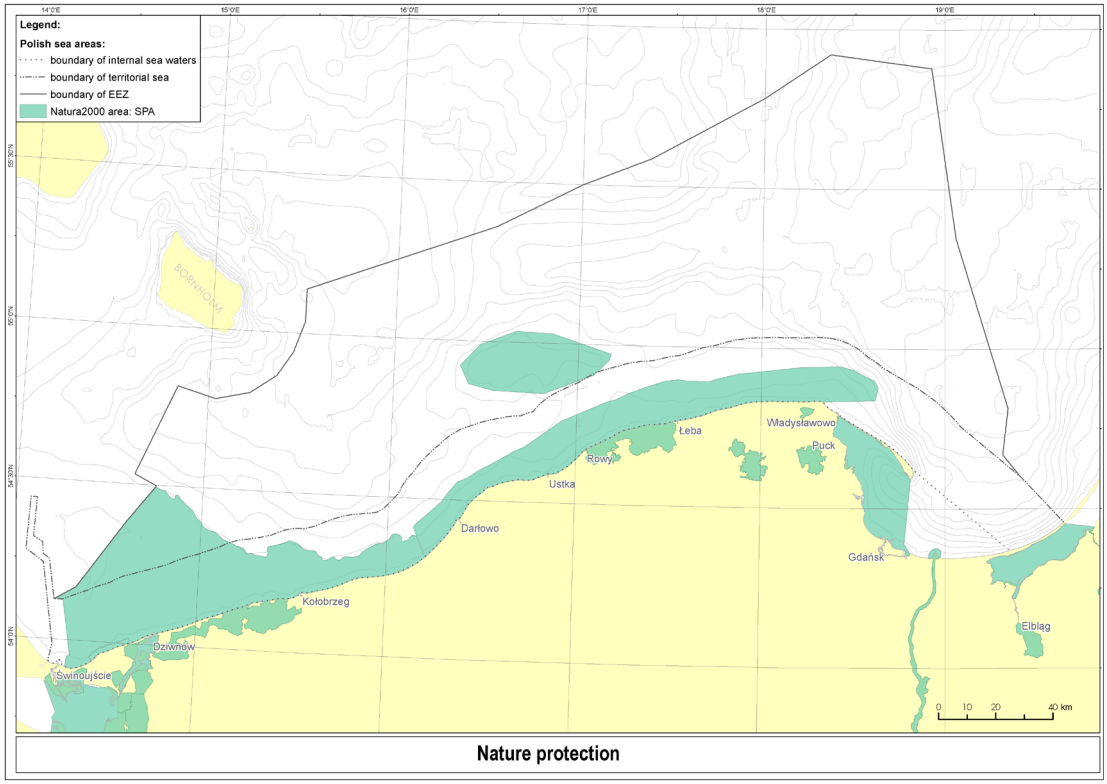

Fig. 4: Special Protected Areas according to the Birds Directive (Source: Maritime Institute in Gdansk)

3.4.7 Birds Directive and mussel aquaculture - outcome information

There is no explicit permission needed for mussel culture according to the Birds Directive. However, marine habitats might be influenced by mussel culture and thus, mussel farming in Natura 2000 conservation areas and in their vicinity requires an appropriate assessment. In Germany, the need of the respective assessment is examined in a picky back procedure of the national water and nature conservation authorities.

An appropriate assessment is cost and time consuming and thus in Schleswig-Holstein, mussel farmers are recommended/well advised to install their farms outside of Natura 2000 conservation areas according to the Schleswig-Holstein Aquaculture Strategy[74].

[73] Journal of Laws, item 1037, August 2011
[74] MELUR (2014): Strategie zur Entwicklung einer nachhaltigen Aquakultur in Schleswig-Holstein. p. 11

3.5 Aquatic Animal Disease Directive

Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals[75]

The Aquatic Animal Disease Directive sets out:

- animal health requirements for the sale, import or transit of aquaculture animals (farmed fish and shellfish);
- minimum measures to increase general awareness and prevent disease;
- minimum measures in the event of a suspected, or established, outbreak of disease.

3.5.1 General content of the Aquatic Animal Disease Directive with relevance to mussel aquaculture

The Directive aims to increase the awareness of the competent authorities, aquaculture production businesses operators and others related to this industry, concerning diseases of aquaculture animals. The animal health requirements must be applied for the placing on the market and the imports of aquaculture animals and products thereof.

The EU Directive validity ends 20/04/2021 it is succeeded by the new EU Animal Health Law[76] that streamlined the huge number of legal acts into a single law.

The provisions of Directive 2006/88/EC are applicable to molluscs at all their life stages reared in a mollusc farming area, including any aquatic animal from the wild intended for a mollusc farming area.

Minimum control measures in the event of a suspicion or outbreak of certain diseases
Control measures must be taken when the presence of a disease is proven or suspected, enabling immediate and effective actions to prevent the spread of the disease. Diseases are classified in exotic (diseases of special importance which have never been detected in the EU) and non-exotic diseases (important diseases that have been detected in the EU).

Preventive measures

- authorisation or registration of aquaculture production businesses (Art. 4 & 5)

(in cases of aquaculture production businesses which place mussels in small quantities of primary products on the market solely for human consumption[77] only registration is required)

Mussel farmer fulfills minimum requirements regarding traceability (Art. 8), implementation of good hygiene practices (9) and risk-based health surveillance (Art. 10)

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75 OJ L 328, 24.11.2006, p. 14–56

76 Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law') (Text with EEA relevance). Official Journal of the European Union, L 84, 31 March 2016

77 in accordance with of Article 1(3)(c) of Regulation (EC) No 853/2004

- establishment of a register of aquaculture production businesses and authorised processing establishments

National authorities must maintain an up-to-date and publicly[78] available register of authorised mussel farms (Art. 6, Annex II). Official controls on aquaculture production businesses and authorised processing establishments shall be carried out by the competent authority (Art. 7, Annex II B).

- obligation for mollusc farming areas to implement a risk-based surveillance scheme to detect increased mortalities and diseases (Part II Annex IV)

Placing on the market and imports
Directive 2006/88/EC governs any placing on the market within each Member State, between different Member States and imports into the European Union. In general terms, this means that mussels and mussel products from the EU and from non-EU countries must broadly fulfil similar animal health requirements before they can be moved (in cases of non-exotic diseases).

Health status of Member States and other EEA Countries, zones or compartments
It is necessary for competent authorities to know the health status of Member State and other EEA Countries, zone or compartment from where the aquatic animals are sourced and of the area of destination. Disease prevention measures must be in place when aquaculture animals are transported (Art. 13).

Farmed shellfish must be healthy. They require an animal health certificate only when they are introduced into a Member State, zone or compartment declared disease-free or subject to surveillance, or eradication programme and intended for farming and restocking purposes or further processing before human consumption, unless they are dispatched as unprocessed or processed products (Art. 14). Imported shellfish must comply with EU animal health requirements. The EU may decide to inspect the farms they come from (Chapter IV, Art. 22). Farm owners and vets must immediately report any increase in mortality or suspicions of a disease to the relevant authority (Art. 26). National authorities must notify other EU countries and the European Commission as well as Norway, Iceland, Switzerland and Liechtenstein within 24 hours of a disease being confirmed (Art. 27). If a disease is suspected, control measures are taken, such as conducting laboratory tests and the introduction of containment measures (Chapter V, Section III & IV).

In cases of confirmed Marteiliosis the authorities (according to Art. 32):

- officially declare the farm is infected;
- establish a containment area, with protection and surveillance zones;
- ban the restocking and movement of the mussels unless authorised by the competent authority[79].

[78] The website will be established in Germany soon according to the requirement of the 2008/392/EC: Commission Decision of 30 April 2008 implementing Council Directive 2006/88/EC as regards an Internet-based information page to make information on aquaculture production businesses and authorised processing establishments available by electronic means (notified under document number C(2008) 1656)

[79] The implementation into national law is decisive. Therefore the movement of infected mussels to diagnostic institutes, other infected businesses, a purification center or for immediate slaughtering is approvable. More information is provided by the Implementing Commission Regulation (EC) No 1251/2008. (Commission Regulation (EC) No 1251/2008 of 12 December 2008 implementing Council Directive 2006/88/EC as

EU countries must satisfy specific requirements, e. g. surveillance programmes, before being given disease-free status. Commission experts, accompanied by national officials, may carry out on-the-spot inspections.

The Aquatic Animal Disease Directive lists diseases and susceptible species (Annex IV, Part II). Blue mussels (*Mytilus edulis*) are susceptible for infection with *Marteilia refringens*. Marteiliosis is listed as a notifiable aquatic animal diseases by this Directive and by the OIE (World Organisation for Animal Health).

Marteilia refringens is a unicellular parasite affecting the digestive system of oysters and also blue mussels, *Mytilus edulis,* as well as Mediterranean mussels (*M. galloprovincialis*). These parasite infections are directly related to high water temperature and low salinity. Enclosed farming areas are especially susceptible. The parasite can survive outside the host from several days up to 2–3 weeks, depending on the environmental conditions[80].

The Aquatic Animal Disease Directive is accomplished by the Commission Implementing Decision (EU) 2015/1554, which is more or less a handbook for diagnosis of diseases including mandatory requirements for surveillance and diagnostic methods[81]. This handbook lists minimum requirements for diagnostic and eradication measures of diseases. Annex 1 Part 4 concerns Marteiliosis.

3.5.2 Gaps and shortages for mussel aquaculture resulting from Aquatic Animal Disease Directive

The legislation does not apply to wild shellfish or shellfish for fishmeal (Art. 2). Nevertheless, these shellfish categories might also be infected and contribute to an infection of other shellfish in the same area. However, in all Member States , only the national implementation of the EU Directive into national law is legally binding. Speaking more specifically, in Schleswig-Holstein the only applicable law is the Fish Disease Prevention Regulation (Fischseuchenverordnung (FischSeuchV[82])).

In case of aquaculture premises as soon as *M. refringens* has been detected by approved diagnostic methods, an outbreak of Marteiliosis has to be declared officially and the containment measures (e. g. restricting of movement, “ban”) have to come into force , even if there was no mortality observed. Only if an dispatch centre and purification centre (authorised processing establishment) is available, the placing on the market of mussels can continue. Such centres must be approved by the competent authorities.

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regards conditions and certification requirements for the placing on the market and the import into the Community of aquaculture animals and products thereof and laying down a list of vector species)

[80] ICES (Hg.) (2012): Marteiliosis of oysters caused by *Marteilia refringens*. Revised and updated by Tristan Renault and Susan E. Ford. ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish. Leaflet No. 19

[81] Commission Implementing Decision (EU) 2015/1554 of 11 September 2015 laying down rules for the application of Directive 2006/88/EC as regards requirements for surveillance and diagnostic methods (notified under document C(2015) 6188) (Text with EEA relevance) OJ L 247, 23.9.2015, p. 1–62.

[82] Fischseuchenverordnung und Verordnung zur Änderung der Verordnung über anzeigepflichtige Tierseuchen vom 24. November 2008 Official publication: Bundesgesetzblatt Teil 1 (BGB 1); Number: 554; Publication date: 2008-11-28; Page: 02315-02326

Increased mortality rates need to be reported to the authorities. Increased mortality in mussel farms using suspended longlines might be difficult to observe, because dead mussels are likely to be overgrown or to drop down. Mussel lines are usually submerged and not observed regularly (compared to fish pens).

If an outbreak of Marteiliosis or other diseases is reported, it is uncertain how to control this disease adequately. The EU Commission itself says, that "the eradication of Marteilia refringens is considered to be impossible in most cases[83]".

3.5.3 Assistance by EU guidelines

The EU published a guidance document[84] on the animal health requirements for placing on the market, import and transit of aquaculture animals according to Council Directive 2006/88/EC and Commission Regulation (EC) No 1251/2008[85]. This document is mainly directed at competent authorities and aquaculture production businesses, exporters and importers of aquaculture animals and products thereof in the Member States and in third countries.

It describes rules resulting from the Animal Disease Directive and its implementing regulation on the detection of Marteiliosis (susceptible species (e.g. *Mytilus edulis*) and vector species[86] (other molluscs such as cockles (*Cerastoderma edule*), sand gaper (*Mya arenaria*), quahogs (*Mercenaria sp.*) and venus clams (*Venerupis sp.*)).

The major principle of the market rules is that mussels that are intended to be moved to another Member State (declared marteiliosis free) must originate from a zone that was declared as "Marteiliosis free". This is also the case for the introduction of vector species that potentially carry Marteiliosis.

Whether a planned movement of mussels is in compliance with the animal health rules will mainly be determined by three factors:

1. The health status at the place of destination (declared free of, or under surveillance or under an eradication programme of Marteiliosis?)
2. The species in question (susceptible species or vector species?)
3. The health status at the place of origin (declared free of, or under surveillance or under an eradication programme of Marteiliosis?)

Part A of Annex III to Directive 2006/88/EC gives an overview of the possible movement options for mussels intended for farming and restocking, depending on the health status at the place of origin, including the circumstances in which certification is required. However, also

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[83] Annex I, Part 4, 1.22 (Commission Implementing Decision (EU) 2015/1554)

[84] EU (2010): GUIDANCE DOCUMENT on the animal health requirements for placing on the market, import and transit of aquaculture animals according to Council Directive 2006/88/EC and Commission Regulation (EC) No 1251/2008.

[85] Commission Regulation (EC) No 1251/2008 of 12 December 2008 implementing Council Directive 2006/88/EC as regards conditions and certification requirements for the placing on the market and the import into the Community of aquaculture animals and products thereof and laying down a list of vector species (Text with EEA relevance). OJ L 337, 16.12.2008, p. 41–75

[86] Listed in Annex I of EC/1251/2008.

exceptions from these rules are possible, for example if mussels pass a quarantine they may be introduced into a disease free zone without health status certifications. The Commission decision 2008/946/EC [87] describes detailed rules for quarantine. Mussels shall be quarantined for at least 90 days (Art. 13 (3) 2008/946/EC).

Concerning the aquatic animal health status certification, the guidance document lists notification requirements through the TRACES system:

- mussel movements between Member States must be notified if animal health certificate is required
- mussel movements between Member States must be notified if mussels are intended for restocking purposes

Concerning the placing on the market, rules are split into 6 groups (concerning the intended use of the mussels) and the guidance document summarises the resulting rules in a table (Tab. 3):

1. aquaculture mussels intended for farming
2. aquaculture mussels intended for restocking
3. wild mussels for farming
4. aquaculture mussels for processing before human consumption
5. Mussels for dispatch centres, purification centres and similar businesses
6. Ornamental aquatic animals (so far not relevant for blue mussel farming).

The Guidance document also lists basic principles for the import and transit of mussels into the Community from third countries resulting from the Aquatic Animal Disease Directive and its implementing regulations and summarises it in Tab. 4. These rules also distinguish between the intended use of the mussels:

I. mussels for farming/ relaying

II. mussels for closed facilities (ornamental aquatic animals)

III. mussels for human consumption

[87] 2008/946/EC: Commission Decision of 12 December 2008 implementing Council Directive 2006/88/EC as regards requirements for quarantine of aquaculture animals (notified under document number C(2008) 7905) (Text with EEA relevance). OJ L 337, 16.12.2008, p. 94–101

Tab. 3: Overview of the rules governing placing on the market (p.10 guidance document)

	a.	b.	c.	d.	e.	f.
	Aquaculture animals intended for farming, relaying areas, put and take fisheries and open ornamental facilities	*Aquaculture animals intended for restocking*	*Wild aquatic animals intended for farming, relaying areas, put and take fisheries, open ornamental facilities*	*Aquaculture animals intended for further processing before human consumption*	*Live molluscs and crustaceans intended for dispatch centres/ purification centres*	*Ornamental aquatic animals from/to closed facilities*
1. Which movements require certification?	Art. 5 of Regulation (EC) No 1251/2008	Art. 5 of Regulation (EC) No 1251/2008	Art. 5 of Regulation (EC) No 1251/2008	Art. 6 of Regulation (EC) No 1251/2008	Art. 7 of Regulation (EC) No 1251/2008	None
2. Which model certificate to use?	Part A of Annex II to Regulation (EC) No 1251/2008			Part B of Annex II to Regulation (EC) No 1251/2008		None
3. General animal health requirements	Art. 15(1) and (2) of Directive 2006/88/EC Part II.1 of model certificate	Art. 15(4) of Directive 2006/88/EC Part II.1 of model certificate	Art. 15 of Directive 2006/88/EC Part II.1 of model certificate	Part II.1 of model certificate		Art. 21 of Directive 2006/88/EC Art. 4(2) of Regulation (EC) No 1251/2008
4. Transport requirements	Art. 13 of Directive 2006/88/EC Part II.4 of model certificate			Art. 13 of Directive 2006/88/EC Part II.3 of model certificate		Art. 13 of Directive 2006/88/EC
5. Requirements for species susceptible to the listed non-exotic diseases[10]	Art. 16 of Directive 2006/88/EC Part II.2 of model certificate	Art. 15(4) and 16 of Directive 2006/88/EC Part II.2 of model certificate	Art. 20 of Directive 2006/88/EC Part II.2 of model certificate Decision 2008/946/EC	Art. 18 of Directive 2006/88/EC Part II.2 of model certificate	Art. 19 of Directive 2006/88/EC Part II.2 of model certificate	Art. 21 of Directive 2006/88/EC Art. 4(1) of Regulation (EC) No 1251/2008
6. Requirements for vector species to the listed non-exotic diseases[10]	Art. 17 of Directive 2006/88/EC Part II.3 of model certificate Decision 2008/946/EC	Art. 15(4) and 17 of Directive 2006/88/EC Part II.3 of model certificate Decision 2008/946/EC	None	None	None	None
7. Additional guarantees	Model certificate laid down in Annex III of Commission Decision 2004/543/EC as regards SVC, BKD, IPN and GS (only when destined for Member States with additional guarantees)[11]			None	None	None
8. Requirements on aquaculture animals leaving areas subject to disease control measures, including eradication programmes	To be laid down by Competent authority of MS as a part of the control measures. Art. 8(1) and (2) of Regulation (EC) No Regulation (EC) No 1251/2008 Part II.5 of model certificate set out in Part A of Annex II to Regulation (EC) No 1251/2008			To be laid down by Competent authority of MS as a part of the control measures. Art. 8(2), (3) and (4) of Regulation (EC) No Regulation (EC) No 1251/2008 Part II.4 of model certificate set out in Part B of Annex II to Regulation (EC) No 1251/2008		None

Tab. 4: Overview over the import and transit rules (guidance document p. 14-15)

	i. Intended for farming, relaying, put and take fisheries and open ornamental facilities (import and transit)	**ii. Intended for closed ornamental facilities** (import and transit)	**iii. Intended for human consumption**	
			import	**transit** (applicable to live aquaculture animals, fish eggs and uneviscerated fish, see Article 16 of Regulation (EC) No 1251/2008)
1. Which third countries may aquaculture animals be imported from?	Countries/territories listed in Annex III to Regulation (EC) No 1251/2008[(b)]	Fish of susceptible species[(a)] : countries/territories listed in Annex III to Regulation (EC) No 1251/2008[(b)] Fish of non-susceptible species, Molluscs and Crustaceans: Countries/territories being members of the World Organisation for Animal Health (OIE)	Countries/territories listed in list drawn up in accordance with Article 11(1) of Regulation (EC) No 854/2004. (Currently: Commission Decision 766/2006/EC	Countries/territories listed in list drawn up in accordance with Article 11(1) of Regulation (EC) No 854/2004. (Currently: Commission Decision 766/2006/EC)
2. Which model certificate?	Part A of Annex IV to Regulation (EC) No 1251/2008	Part B of Annex IV to Regulation (EC) No 1251/2008	Regulation (EC) No 2074/2005: Appendix IV to Annex VI for fishery products, Appendix V to Annex VI for live bivalve molluscs, echinoderms, tunicates and marine gastropods[(c)]	Part C of Annex IV to Regulation (EC) No 1251/2008
3. General animal health requirements	Part II.1 of the model certificate	Part II.1 of the model certificate	None	None
*4. Requirements on species susceptible to the listed **exotic** diseases*	Part II.2 of the model certificate	Part II.2 of the model certificate [(a)]	Part II.2.1 of the model certificate	Part II.2.1 of the model certificate set out in Appendices IV and V to Annex VI to Regulation (EC) No 2074/2005

*5. Requirements on species susceptible to the listed **non-exotic** diseases*	Part II.4 of the model certificate	Part II.3 of the model certificate	Part II.2.2 of the model certificate	Part II.2.2 of the model certificate set out in Appendices IV and V to Annex VI to Regulation (EC) No 2074/2005
*6. Requirements on vector species to the listed **exotic** diseases*	Part II.3 of the model certificate	None	None	None
*7. Requirements on vector species to the listed **non-exotic** diseases*	Part II.5 of the model certificate	None	None	None
8. Additional guarantees	Part II.7 of the model certificate as regards SVC, BKD, IPN and GS (only when destined for Member States with additional guarantees)	Part II.5 of the model certificate as regards SVC, BKD, IPN and GS (only when destined for Member States with additional guarantees)	None	None
9. Transport and labelling requirements	Part II.6 of the model certificate	Part II.4 of the model certificate	Part II.2.3 of the model certificate	Part II.2.3 of the model certificate set out in Appendix IV and V to Annex VI to Regulation (EC) No 2074/2005

Further information about the Aquatic Animal Disease Directive is provided on the EU Commission Food Safety web page[88].

The Friedrich-Loeffler Institut (German Federal Institute for Animal Health, the National Reference Laboratory), the EURL (European Union Reference Laboratory)[89], the OIE (World Organisation for Animal Health) and the ICES published guidance documents to detect marteiliosis in mussels[90]. They describe the clinical pathology, the aetiological agent, control measures and legislation, as well as diagnostic methods such as different screening techniques for the pathogen.

88 http://ec.europa.eu/food/animals/live_animals/aquaculture_en

89 http://www.eurl-mollusc.eu/Main-activities/Tutorials/Marteilia-refringens

90 Friedrich Loeffler Institut, Bundesinstitut für Tiergesundheit (Hg.) (2014): Infektion mit *Marteilia refringens*. Amtliche Methodensammlung des FLI.

After coordination with the competent authorities of the Federal States, the Federal Ministry of Food and Agriculture published implementation instructions for the German FischseuchV[91]. These instructions pronounces unclear or contentious parts.

3.5.4 Implementation of the Aquatic Animal Disease Directive in national law: Germany and Schleswig-Holstein

The Directive entered into force on 14 December 2006 and EU Member States had to incorporate it into national law by 1 May 2008. In Germany, the Directive was implemented in the Fish Disease Prevention Regulation (FischSeuchV[92]) in November 2008. This Regulation lays down provisions on the prevention of freshwater fish disease, mussel disease and to the creation of unpolluted fish farms and areas.

Any appearance of animal diseases is reported to the Federal Ministry of food and agriculture electronically by using the "TierSeuchenNachrichten (TSN)". The diseases are published in the Animal Disease Information System[93] (TierSeuchenInformationsSystem-TSIS).

3.5.5 National implementation of the Aquatic Animal Disease Directive in practice: Germany and Schleswig-Holstein

Concerning the cultivation of blue mussels, the FischseuchV, the Federal Animal Health Act (Tiergesundheitsgesetz (TierGesG[94])), the Animal Disease Notification Regulation (TierseuchenanzeigeVerordnung (TierSeuchAnzV[95])) and the Schleswig-Holstein State Animal Health Implementation Act (AG TierGesG[96]) and the Animal Disease Fund Regulation (TierseuchenfondsVO[97]) are applicable.

§1 (12b) TierSeuchAnzV lists *Marteilia refringens* as notifiable disease.

The FischSeuchV aims to control fish diseases in German waters (with exceptions but these are not relevant for mussel aquaculture). Implementing Art. 4 of the EU Directive 2006/88/EC, aquaculture production business must be authorised by the competent authority according to § 3 FischSeuchV. The possibility to circumvent the authorisation requirement (Art. 4 (4)) by only registration is described in §6, but is not applicable for mussel farming.

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91 Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz (BMVEL) (2011): Ausführungshinweise zur Fischseuchenverordnung.

92 Fischseuchenverordnung und Verordnung zur Änderung der Verordnung über anzeigepflichtige Tierseuchen vom 24. November 2008 Official publication: Bundesgesetzblatt Teil 1 (BGB 1); Number: 554; Publication date: 2008-11-28; Page: 02315-02326

93 https://tsis.fli.de/

94 Tiergesundheitsgesetz vom 22. Mai 2013 (BGBl. I S. 1324), das zuletzt durch Artikel 6 des Gesetzes vom 17. Juli 2017 (BGBl. I S. 2615) geändert worden ist

95 Verordnung über anzeigepflichtige Tierseuchen in der Fassung der Bekanntmachung vom 19. Juli 2011 (BGBl. I S. 1404), die zuletzt durch Artikel 3 der Verordnung vom 3. Mai 2016 (BGBl. I S. 1057) geändert worden ist

96 Gesetz zur Ausführung des Tiergesundheitsgesetzes (AG TierGesG) Vom 16. Juli 2014, GVOBl. 2014, 141

97 Landesverordnung über die Meldung des Tierbestandes und die Beiträge zum Tierseuchenfonds (TierseuchenfondsVO) Vom 10. Februar 2015, GVOBl. 2015, 66

In authorised mussel aquaculture premises aquatic animal health surveillance has to take place according to Annex III (Part B) of the EU Directive 2006/88/EC (§7 FischSeuchV). The Directive recommends surveillance and inspections on mollusc-farming areas by dividing the farm health status into different categories with different risk levels (according to the infection status).

The FischSeuchV requires the farm manager to record all mussel movements and products thereof into and out of the farm, to record increased mortality and also the results of the results of the risk-based animal health surveillance (§ 8 FischSeuchV). The farmer also must apply good hygiene praxis. The compliance of the aquaculture premise with animal health principles of the EU Directive (2006/88/EU) is controlled by the responsible authorities (§ 9 FischSeuchV).

Implementing Art 14 (2006/88/EU), the FischseuchV requires an animal health certificate of the farmed mussels (§ 13 FischSeuchV) if they are introduced into a Member State, zone or compartment declared disease-free or subject to surveillance, or eradication programme and intended for farming and restocking purposes or further processing before human consumption, unless they are dispatched as unprocessed or processed products. The blank form of the certificate is presented in Annex 2 (FischseuchV). The blank form also includes data for transport of mussels which is required according to §18 FischseuchV and Art. 13 2006/88/EC).

In the case of an infection with *Marteilia refringens*, the control measures acc. §§ 22-27 of the FischSeuchV come into force, according to the requirements of Art. 38 & 39 of the EU Directive 2006/88/EC.

Mussel farming areas are classified into six categories: I disease free; II (under surveillance), III (not suceptible), IV (eradication program), V (infected). The mussel farm can be declared as category I area (after carrying out a surveillance or eradication programme), but this is optional. In this case, more frequent observations and laboratory controls are needed (according to requirements of the Commission Implementing Decision (EU) 2015/1554). These additional laboratory analyses cause expenses that must be covered by the farmer. Mussel farms are usually category III businesses. If Marteiliosis is neither reported nor suspected, mussel surveillance is carried out by routine controls (clinical inspections).

In the case of a suspected infection laboratory observation is required. This observation is carried out by the veterinary authority which also cover the costs in such case. The laboratory samples are analysed in the Landeslabor Schleswig-Holstein. The Friedrich Loeffler Institute[98] (FLI) on Riems island needs to confirm the primary disease outbreak. If examination methods to detect and confirm an outbreak of Marteiliosis are not provided in the Landeslabor Schleswig-Holstein, other laboratories are called in such as the IFF CUX of the Laves in Niedersachsen[99].

Aquaculture premises infected with Marteiliosis must kill all infected animals immediately on instruction by the competent authority (§22 (1) 1. FischSeuchV). Such animal loss are possibly financially compensated according to §15 TierGesG. Because mussel farmers do not contribute to the Animal Diseases Fund in Schleswig-Holstein (§2 TierseuchenfondsVO), compensation payments are made by the Federal State (§20 TierGesG).

[98] https://www.fli.de

[99] https://www.laves.niedersachsen.de/wir_ueber_uns/institute_fachdezernate/institut-fuer-fische-und-fischereierzeugnisse-cuxhaven-73492.html

However, no mussel diseases (according to the list in Annex IV, Part II 2006/88/EC) were recorded in the Baltic Sea yet.

In the Baltic Sea no disease free areas have been determined, so the outbreak of a disease must be reported to neighbouring countries only in cases of exotic diseases.

3.5.6 National implementation of the Aquatic Animal Disease Directive (contributions of project partners)

3.5.6.1 Poland

Requested consolidation of the Directive in Poland was transposed trough the Animal Protection Act[100] of August 1997. The Act lays down regulation of vertebrates of the fresh and marine waters. Responsible authority in the Ministry of Agriculture and Food Economy, where Minister determines by way of resolution the conditions procedure and method of the grant of permissions.

In terms of aquaculture, as well as cultivation of the mussels, animal disease is not specifically laid down in the Polish legislation.

3.5.7 Aquatic Animal Disease Directive and mussel aquaculture - outcome information

Mussel farmers need to be registered and authorised according to the Aquatic Animal Disease Directive.

Requirements:

- record of all mussel movements and products thereof into and out of the farm
- record of increased mortality
- record of the results of the risk-based animal health surveillance
- application of good hygiene praxis

Mussel disease Marteiliosis as well as unexplained high mortalities of mussels must be reported to the responsible authority.

[100] OJ No 111, Item 724(1997); No 106, Item 668 (1998)

3.6 Maritime Spatial Planning Directive

Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning[101]

Whereas space is generally limited, user interests tend to increase. The competition for maritime space by different purposes (nature conservation, energy production, aquaculture and other growth areas) requires an integrated planning and management approach to create synergies between different activities and to avoid potential conflict. The extend of maritime purposes and uses often is theoretically and practically not limited by visible boundaries. This also highlights the need of a trans-boundary collaboration.

Therefore the EU developed an approach to ocean management and maritime governance in the Integrated Maritime Policy for the European Union ('IMP') to support the sustainable development of European maritime areas. The IMP uses the maritime spatial planning as a tool to enable authorities and stakeholders to apply a coordinated, integrated and trans-boundary approach that will contribute to a sustainable development and growth of the maritime and coastal economies and the sustainable use of marine and coastal resources.

3.6.1 General content of the Maritime Spatial Planning Directive with relevance to mussel aquaculture

As the EU is not competent in spatial planning, the Directive 2014/89/EU was adopted to implement maritime spatial planning into national policy.

According to this Directive, Member States are obliged to develop national maritime spatial plans. Thereby, "Member States shall consider economic, social and environmental aspects to support sustainable development and growth in the maritime sector, applying an ecosystem based approach, and to promote the coexistence of relevant activities and uses" (Art. 5, 2014/89/EU).

Article 8 (2014/89/EU) explicitly mentions the determination of areas for aquaculture:

"1. When establishing and implementing maritime spatial planning, Member States shall set up maritime spatial plans which identify the spatial and temporal distribution of relevant existing and future activities and uses in their marine waters, in order to contribute to the objectives set out in Article 5.

2. In doing so and in accordance with Article 2 (3), Member States shall take into consideration relevant interactions of activities and uses. Without prejudice to Member States' competences, possible activities and uses and interests may include: aquaculture areas [...]".

Because each EU country will be free to plan its own maritime activities, a set of minimum common requirements makes maritime spatial planning more compatible in shared seas. Therefore Member States with bordering waters shall cooperate in maritime spatial planning and management of the shared seas (Art 11, 2014/89/EU).

101 OJ L 257, 28.8.2014, p. 135–145

Fig. 5: Maritime Spatial Planning in the Baltic Sea Region (November 2017) © http://www.msp-platform.eu/

3.6.2 Gaps and shortages for mussel aquaculture resulting from Maritime Spatial Planning Directive

The EU Directive 2014/89 does not determinate any areas of priority, reservation or suitability, it only presents the framework for a spatial planning in the Member States.

Although the EU Directive suggests the determination of areas for marine aquaculture, in most European Countries no such areas are defined yet. Thereby creating an aggravated space competition with existing uses already taken into account for marine spatial planning. In theory, marine aquaculture is possible everywhere. Practically it is not, because it needs special environmental conditions such as a sufficient water depth and clean waters.

Even if special areas would be designated for aquaculture in maritime spatial plans, mussel farmers would not benefit from it concerning the permission procedures. All required permissions and the complete bureaucracy would still be necessary.

Also the relatively long validity of spatial plans until they are repeatedly verified, hinders aquaculture development to be taken into account for marine spatial planning.

Maritime spatial planning is still at its very beginning and therefore difficult to to realise in the Member States, because (compared to spatial planning on land) hardly any authority hierarchy exists to perform a multidimensional maritime spatial planning.

3.6.3 Assistance by EU guidelines

There are no existing EU guidelines so far.

However, an assistance mechanism for MSP to provide administrative and technical support to EU countries in implementing the MSP legislation was launched in 2016: the European MSP Platform.

The European MSP Platform is an information and communication gateway designed to offer support to all EU Member States in their efforts to implement Maritime Spatial Planning (MSP). This project manages a website[102] featuring information on existing MSP practices, processes and projects, a question and answer service, technical studies and a focal point service for EU countries. It is the central knowledge exchange forum, that will allow officials, planners and other stakeholders interested in MSP to build on what is already available, avoid duplication of efforts, assist in capacity building and foster development of new practices.

[102] http://www.msp-platform.eu/

3.6.4 Implementation of the Maritime Spatial Planning Directive in national law: Germany and Schleswig-Holstein

In Germany, the Federal Spatial Planning Act (Raumordnungsgesetz (ROG)[103]) was established in 2008. The ROG regulates the sustainable spatial development, bringing the requirements of social and economic development in balance with the natural environment.

The ROG presents guidelines and principles for spatial planning in Germany. All spatial plans, except the EEZ spatial plan, are created by the federal states themselves. Following federalism principles, the state development plans (eg. Landesentwicklungsplan of Schleswig-Holstein or Landesentwicklungsprogramm Mecklenburg Vorpommern) are drafted separately for each federal state according to the State Planning Act (Landesplanungsgesetz[104]). Each federal state also develops regional plans that are more detailed and allow planning at a higher resolution. No regional plans are established for maritime areas yet.

Spatial planning is applied in the German EEZ (12 – 200 nm) according to the UNCLOS (10. December 1982) principles (§1 (4) ROG). Therefore the EEZ maritime spatial plan was established in 2009 by the Federal Ministry of Transport and Digital Infrastructure (BMVI) with the collaboration of the Federal Maritime and Hydrographic Agency (BSH) for the Baltic Sea and for the North Sea.

Since 2010 maritime spatial planning also exists in territorial waters of Schleswig-Holstein and 2005 in Mecklenburg-Vorpommern, respectively. The federal states are responsible for the maritime spatial plans of territorial waters (0-12 nm). Whereas regional plans allow a detailed planning on land, maritime spatial planning is not regarded closer than the state development plans so far.

The state development plans are legally binding for public authorities that are concerned in licensing processes. Each plan is applicable for 15 years and should be revised and adjusted after half of the time.

The development of maritime spatial planning is based on expert contribution of the different state resorts claiming interest in the use of marine areas.

Regarding the EEZ or the territorial waters, the Federal Maritime and Hydrographic Agency (BSH) or the Federal State respectively are responsible to balance user interests in accordance to existing EU law (e. g. MSFD and WFD) and national law.

According to the contribution of experts and the application of use interests, responsible authorities claim different category areas.

Such areas (§8 (7) ROG) are either priority areas, reservation areas or suitability areas (Tab. 5).

Priority areas are areas that are designated for certain space prominent functions and/or uses, thereby excluding other space prominent uses in this area that are incompatible with the preferential use.

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[103] Raumordnungsgesetz vom 22. Dezember 2008 (BGBl. I S. 2986), das zuletzt durch Artikel 124 der Verordnung vom 31. August 2015 (BGBl. I S. 1474) geändert worden ist". Stand: Zuletzt geändert durch Art. 124 V v. 31.8.2015 I 1474

[104] Gesetz über die Landesplanung (Landesplanungsgesetz - LaplaG) in der Fassung der Bekanntmachung vom 10. Februar 1996. Textnachweis ab: 01.01.2003. Fundstelle: GVOBl. 1996, 232

Reservation areas are areas with certain space prominent functions or uses that have to be considered especially during the weighting with competing space prominent uses.

Suitability areas are areas in which space prominent measures or uses (regarded after §35 building law code BauGB) without other opposite space prominent interests, while these measures and uses are excluded in other areas.

Concerning maritime spatial planning, only priority and reservation areas are determined so far (Fig. 6). Maritime suitability areas are not determined yet. Suitability areas are legally bound by terms of the German Construction Law (BauGB), which is only minimally applicable in maritime areas (only in municipalised areas (see Chapter 5.2 for more details)).

There are no existing Aquaculture installations, experiences or intentions for aquaculture in the German EEZ so far. Determination of areas for aquaculture are theoretically possible, but due to lacking experiences and future aquaculture development trends, no priority or reservation areas have been defined yet.

3.6.5 National implementation of the Maritime Spatial Planning Directive in practice: Germany and Schleswig-Holstein

In Germany, aquaculture is regarded as a future economic factor. The potential for aquaculture installations that are compatible with the natural environment and landscape should be exploited.

Although the installation of mariculture is not yet foreseeable, a framework for future developments must be established. To create effects of synergy in terms of space and use, mariculture shall be developed at existing installations without safety and ease interruption of maintenance and shipping. Offshore wind energy parks are often regarded as possible marine co-use areas. Wind energy is produced above the surface and aquaculture happens below surface. The theoretical co use of anchorage and space exploitation are the potential benefits of a multi-use of an existing area. Yet, today this is only theoretically possible.

Neither in the German EEZ, nor in German territorial waters marine areas are determined for marine aquaculture so far. The main reason are the lacking experiences for Baltic Marine Aquaculture and its actually low economic importance.

Tab. 5: Maritime spatial planning in the German Baltic Sea

	Priority area § 8 Sec.7 (1) ROG	**Reservation area** § 8 Sec.7 (2) ROG
Schleswig-Holstein territorial waters (0-12nm)	- Windpark (Beta Baltic/ GEOFReE)	- nature and landscape - tourism
Mecklenburg-Vorpommern territorial waters (0-12nm)	- environmental protection and landscape care - wind energy (and testing) - navigation - coastal protection	- environmental protection and landscape care - wind energy - navigation - coastal protection - raw material production - tourism - fishery - wires/pipelines
EEZ (12-200 nm)	navigation wind energy pipelines / cable corridors	

In Schleswig-Holstein because of the scale of the state development plan, only uses with a space requirement greater than 20 ha are considered relevant for spatial planning at sea. Actual aquaculture operations are too small to be considered for maritime spatial planning.

For the integration of aquaculture suitable areas into the state development plan the state planning department (at the moment part of the Federal State Chancellery, in the near future part of the Ministry of the Interior, Rural Areas and Integration) needs a technical report with the respective space requirements and consequences from the responsible authority (in Schleswig-Holstein the Ministry of Energy, Agriculture, the Environment, Nature and Digitalization).

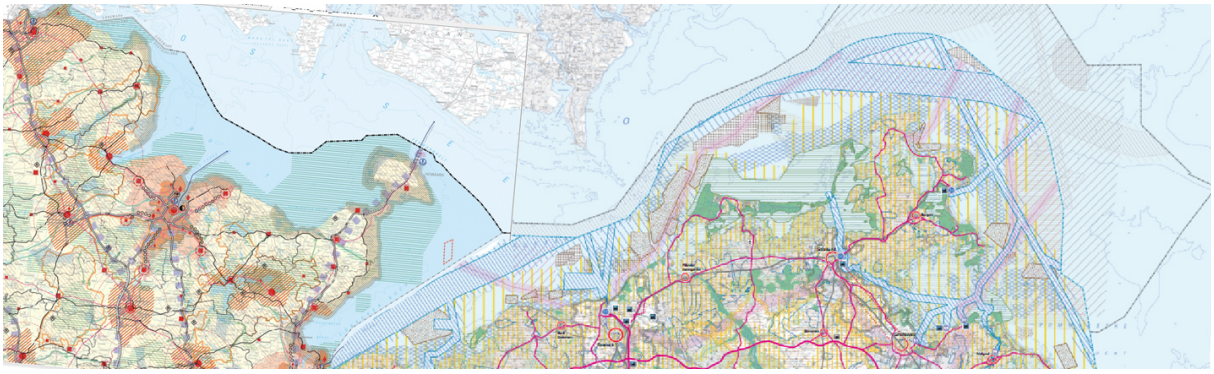

Fig. 6: Maritime spatial planning in German territorial waters of Schleswig-Holstein and Mecklenburg-Vorpommern (adjusted copy of both regional plans)

[Landesentwicklungsplan Schleswig-Holstein vom 13.07.2010 (LEP; Amtsbl. Schl.-H. 2010 Seite 719) and Landesentwicklungsraumprogramm Mecklenburg-Vorpommern vom 27.05.2016 (LEPLEP-LVO;GVOBl. M-V 2016, S. 322)]

3.6.6 National implementation of the Maritime Spatial Planning Directive (contributions of project partners)

3.6.6.1 Poland

In Poland there is no Maritime Spatial Plan (MSP) officially adopted so far. However the draft plan is under preparation for the whole PL EEZ and territorial sea, this process is led by the Maritime Office in Gdynia.

Nevertheless, a legal base for MSP was established in Poland in 2003 and amended in 2005. The main Act is the Act[105] on Sea Areas of Poland and Maritime Administration of March 21st 1991[106]. Supporting laws to the MSP Directive implementation are: Ministerial Ordinance on Required Scope of MSPs in their textual and graphic parts[107]; and Act on access to information on environment and its protection, public participation in environmental protection and on environmental impact assessment[108], likewise international legislations (UNCLOS, IMO, CBD, EU Directives etc).

In order to implement Directive 2014/89/EU, the polish Parliament has adopted changes on this Act on 4th September 2015, regarding inter alia, MSP procedure in Poland. The new law is already in force.

Responsible authority for adoption of the plan is Ministerial consisted primarily from Minister responsible for Maritime Economy who cooperates with the Minister for Regional Development, Minister of Agriculture and Fisheries, Minister of Culture and National Heritage, Minister of the Environment, Minister of internal affairs, transport, water

[105] Ustawa z dnia 21 marca 1991 r. o obszarach morskich Rzeczypospolitej Polskiej i administracji morskiej
[106] Regulation on the MSP Chapter 9 (articles 37a and 37b) and in Chapter 8 (article 37, par. 4)
[107] Rozporządzenie Ministra Transportu, Budownictwa i Gospodarki Morskiej i Ministra Rozwoju Regionalnego z dnia 5 sierpnia 2013 r. w sprawie planów zagospodarowania przestrzennego polskich obszarów morskich
[108] Ustawa z dnia 3 października 2008 r. o udostępnianiu informacji o środowisku i jego ochronie, udziale społeczeństwa w ochronie środowiska oraz o ocenach oddziaływania na środowisko

management, and the Minister of National Defense. The drafts of the plans are prepared by the territorially competent Directors of Maritime Offices.

MSP regulations apply to the whole Polish sea area, i.e. the internal waters, territorial sea and EEZ.

Management plans for several Polish marine NATURA 2000 areas were prepared by the maritime administration. The plans were elaborated with intensive collaboration with stakeholders from early stage of preparation, and the drafts were submitted in 2015 for approval of the Minister of the Environment. Their current status is unknown.

3.6.7 Maritime Spatial Planning Directive and mussel aquaculture - outcome information

There most relevant outcome information for the mussel farmer concerning the Maritime Spatial Planning Directive is that the interest for aquaculture suitability areas (as well as reservation or priority areas) must be reported to the national planning authorities. The planning authorities undertake no site selection themselves, but have to consider recommendations of scientific reports of expert groups, that must be handed in directly at the planning authority. No application for areas results in no consideration in maritime spatial planning!

In Germany, neither in the North Sea, nor in the Baltic Sea, aquaculture is not considered in maritime spatial planning so far. This fact is a disadvantage to possible aquaculture entrepreneurs and investors. The lack of consideration of aquaculture in maritime spatial planning discriminates blue growth against other uses already considered (nature conservation, wind energy, shipping). There is a significant need for aquaculture to apply for consideration in maritime spatial planning.

4 Directly enforceable EU law with relevance to mussel aquaculture

4.1 Animal by-Products Regulation

Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002[109]

The Animal by-Products Regulation defines public health and animal health rules for animal by-products (ABP) (entire bodies or parts of animals which are not intended for human consumption) and derived products (items obtained from processing of ABP). These rules are designed for risk prevention and minimisation to human and animal health and for a safe food and feed chain (Art. 1).

4.1.1 General content of the Animal by-Products Regulation with relevance to mussel aquaculture and the production of mussel meal

The regulation applies to animal products that may be destined for human consumption or for the generation of products of animal origin but, pursuant to an (irreversible) operator decision, are destined for another purpose than human consumption. Hence, mussels that are not intended for human consumption apply to the EU regulation on ABP (Art. 2) and must respect its rules. The regulation however does not apply to empty shells of shellfish (without soft tissue and flesh) (Art. 2 (2f)).

The rules apply for the complete manufacturing chain of ABP and derived products (Art. 4 (2)).

Mussel and mussel meal producers must keep a record of the products they despatch, transport or receive, along with the required documentation (Art. 21) (commercial documents and health certificates).

Mussel and mussel meal producers must inform national authorities of the products and premises they use during the manufacturing chain. The manufacturing chain must meet hygiene standards (Art. 25) and requires formal approval.

EU Member States competent authorities approve (Art. 24) and register (Art. 23) establishments that handle mussels and the mussel meal. They also draw up and make public up-to-date lists of these establishments (Art. 41).

Every national website should show the regrouping of ABP activities that require approval.

To ensure that producers collect, identify and transport their products without delay and treat, use or dispose of them according to the rules, EU Member States carry out official checks (Art. 4 (3), Art. 45).

109 OJ L 300, 14.11.2009, p. 1–33

Mussel meal may be used as fish feed at the end of the manufacturing chain (Art. 14 (d (i)), Art. 31). Mussel meal is categorised as fish meal (Annex I (7) 142/2011/EU).

Depending on the level of health risk they pose to the public or animals, ABPs are classified in three categories (Art. 7 (1)), determining their disposal or recovery. Mussel meal belongs to category III (small risk) (Art. 10 (I))

The regulation EU/142/2011[110] implements the Animal by-Products Regulation (EC/1069/2009) in practise. It provides forms for the commercial document and health certificates.

Annex IV of the Regulation EU/142/2011 describes detailed requirements for processing enterprises (waste water treatment; special requirements like the presence of an installation to check the presence of packaging material or metallic pieces; hygiene and processing requirements; standard and alternative processing methods)

4.1.2 Gaps and shortages for mussel aquaculture resulting from Animal by-Products Regulation

Mussel meal may be used as animal feed. However, if it is intended for such, additional EU law needs to be respected. The EU Regulation EC/767/2009[111] controls the use of mussel meal as fish feed (See Chapter 4.4.4 for details).

4.1.3 Assistance by EU guidelines

EU provides a guidance document on the implementation of the certification procedures established in Commission Regulation EU/142/2011[112]. This document handles some frequently asked questions but represents no guidance document for the implementation of the ABP Regulation in practise.

Germany published a guidance document for the production of feed stuff[113].

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[110] Commission Regulation (EU) No 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive Text with EEA relevance. OJ L 54, 26.2.2011, p. 1–254

[111] Regulation (EC) No 767/2009 of the European Parliament and of the Council of 13 July 2009 on the placing on the market and use of feed, amending European Parliament and Council Regulation (EC) No 1831/2003 and repealing Council Directive 79/373/EEC, Commission Directive 80/511/EEC, Council Directives 82/471/EEC, 83/228/EEC, 93/74/EEC, 93/113/EC and 96/25/EC and Commission Decision 2004/217/EC (Text with EEA relevance) OJ L 229, 1.9.2009, p. 1–28

[112] Commission Regulation (EU) No 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive Text with EEA relevance. OJ L 54, 26.2.2011, p. 1–254

[113] Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz (BMVEL); Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (2012): Leitfaden zur Kennzeichnung von Einzelfuttermitteln und Mischfuttermitteln. 2. Aufl.

4.1.4 National implementation of the Animal by-Products Regulation in practice: Germany and Schleswig-Holstein

As national legislation, the Animal by-Products Disposal Act (Tierische Nebenprodukte-Beseitigungsgesetz (TierNebG)[114]), its implementation regulation (Tierische Nebenprodukte-Beseitigungsverordnung (TierNebV)[115]) and the Animal by-Products Penalty Ordinance (Tierische Nebenprodukte-Bußgeldverordnung (TierNebBußV[116])) supplement the application of the European Regulations. Responsible authority is the German Federal Ministry of Food, Agriculture and Forestry. Responsible authorities must control the implementation of the Animal by-Product Regulation (EC/1069/2009) and the compliance of the respective rules (§12 TierNebG).

The producer must report his name, address and the ABP intended for transport to the responsible authority (Veterinary Authority) before starting the business (§ 7 TierNebG, §7 TierNebV). Authorised enterprises are registered by the authority using a registration number and authorisation number (each 11 figured). The lists of authorised/ registered enterprises are published in the Federal Gazette (§ 26 TierNebV).
For each ABP a triplicate (blueprints) of commercial documents is required with copies for the producer, for the carrier and for the recipient (original copy) (§ 9 TierNebV). Details are provided in Annex 1 TierNebV:

The commercial document must contain:

> "**Commercial Document for material of category / derived products of category 3**
> (delete as appropriate)
> "Not for human consumption" ... [serial number]
> species (*Mytilus sp.*)
>
> delivering enterprise: signature:
> Name
> Address / Stamp
> authorisation / registration number
> Date of delivery to carrier
>
> carrier enterprise: signature:
> Name
> Address/ stamp
> authorisation / registration number
>
> recipient enterprise: signature:
> Name

[114] Tierische Nebenprodukte-Beseitigungsgesetz vom 25. Januar 2004 (BGBl. I S. 82), das zuletzt durch Artikel 1 des Gesetzes vom 4. August 2016 (BGBl. I S. 1966) geändert worden ist. Stand: Zuletzt geändert durch Art. 1 G v. 4.8.2016 I 1966

[115] Tierische Nebenprodukte-Beseitigungsverordnung vom 27. Juli 2006 (BGBl. I S. 1735), die zuletzt durch Artikel 391 der Verordnung vom 31. August 2015 (BGBl. I S. 1474) geändert worden ist. Stand: Zuletzt geändert durch Art. 391 V v. 31.8.2015 I 1474

[116] Tierische Nebenprodukte-Bußgeldverordnung vom 22. Dezember 2005 (BGBl. I S. 3712), die zuletzt durch Artikel 1 der Verordnung vom 7. Mai 2009 (BGBl. I S. 1044) geändert worden ist. Stand: Zuletzt geändert durch Art. 1 V v. 7.5.2009 I 1044

address/ stamp
authorisation / registration number
Date of delivery at recipient"

Packages, containers and cars for transport or storage must be colour coded according to the Regulation EU/142/2011. Packages of mussel meal (category III) must have green signs.

Temporarily storation, treatment, processing or disposal of animal by-products needs to be authorised (§7 TierNebV).

The authorisation is costly and the costs are determined by the relevant schedule of fees.

As soon as the producer (irreversibly) decided that the mussels are not intended for human consumption, mussels are ABP according to the EU regulation. Mussels and mussel meal are category III products and therefore veterinary authorities and official veterinarians are responsible authorities. Baltic responsible veterinary authorities in Schleswig-Holstein are the districts Schleswig-Flensburg, Rendsburg-Eckernförde, Plön, Ostholstein and the district-free cities Flensburg, Kiel and Lübeck.

To ensure that mussel meal producers collect, identify and transport their products without delay and treat, use or dispose of them according to the rules, official controls including sampling are carried out (§5 TierNebG).

4.1.5 National implementation of the Animal by-products Regulation in practice (contributions of project partners)

4.1.5.1 Poland

Polish authority responsible for implementation of the directive, likewise labelling, is the Ministry of Agriculture and Rural Development. In July 2007 was established law on food labelling as Regulation of the Minister of Agriculture and Rural Development[117], and was amended in January 2015[118].

Food labelling is also regulated by the Polish Food Safety Law[119] and its amendment from January 2010 as Modification to the Polish Food Safety Law of 2006[120]. EU Law was also amended to reflect European Council Regulation 1169/2011 on consumer information relating to food products.

The Law of Food Safety in consolidation with the EU regulations consists following aspects:

- Implementation of the Directive in regard to the food safety,

- Competent administrative bodies and research institutions in regard to the food safety,

  – Regulates relations with other national legislations.

[117] Polish Journal of Law 2007, No. 137, pos. 966
[118] Polish Journal of Law 2015, pos. 29
[119] Polish Journal of Law 2006, No 171, pos.1225
[120] Polish Journal of Law 2010, No 21, pos. 105

4.1.6 Animal by-products Regulation – outcome information

Mussel farmers and processors need to be registered and authorised at/ by the responsible veterinary authority. Commercial Documents must be carried along to guarantee product (mussel) traceability. Mussel meal packages must be colour coded (green).

4.2 Organic Products Regulation

Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91[121]

The Organic Production Regulation lays down a legal framework for organic products, containing basic objectives and general principles for organic farming. It also illustrates the rules on production, labelling, controls and trade with non-EU countries. It applies from the 1st January 2009. General objectives of the Organic Production Regulation include respecting of natural cycles and environmental, plant and animal health protection. The related Commission Regulation EC/889/2008[122] of 5 September 2008 provides detailed rules for the implementation of Council Regulation EC/834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control of farmed mussels as well as of processed mussel products.

4.2.1 General content of the Organic Production Regulation with relevance to mussel aquaculture

Marine aquaculture production is a relatively new line of business in organic farming. The breeding and husbandry of aquatic organisms (aquaculture) has become increasingly important, also with regard to sea fisheries production, which must be distinguished from it.

The aim of organic aquaculture is to safeguard the production of prime quality products while minimizing the strain on the aquatic environment. Detailed Community legislation has been in effect since 1 July 2010. As in organic farming in general,welfare oriented husbandry takes top priority here, too.

The Organic Production Regulation aims at a fair competition between producers and greater confidence in these products among consumers by harmonised rules on production, labelling and control of organic products. The Regulation objectives focus on sustainable aquaculture and production quality, which must meet consumers' needs, as well as specific farming principles, the processing of organic food and organic animal feed.

The Regulation concerns inter alia aquaculture products, either processed or unprocessed and intended for human consumption or animal feed.

Organic Production rules:

- genetically modified organisms (GMOs) are prohibited in all their forms (Art. 9 EC/834/2007)
- treatment by ionising radiation is prohibited (Art. 10)

121 OJ L 189, 20.7.2007, p. 1–23

122 Commission Regulation (EC) No 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control. OJ L 250, 18.9.2008, p. 1–84

- the operating of organic and non-organic agricultural production, requires the separation of animals and land of both production types (Art.11)

Production rules for mussel aquaculture:

- the animals' origin – mussels must have been born and reared in organic holdings (Art. 15a);
- husbandry practices (qualified personnel; husbandry practices must meet the developmental, physiological and behavioural needs of mussels; minimise negative environmental impact..) (Art. 15b)

  Art. 15e (i): Mussels must receive all their nutritional requirements from nature,
  Art. 15e (ii): They must be grown in waters which meet the criteria for Class A or Class B areas as defined in Annex II of Regulation EC/854/2004[123] and
  Art. 15e (iii): mussels must be grown in areas of high ecological quality[124] as defined by Directive 2000/60/EC .

  According to the implementation regulation, mussel production areas must be located in areas that locations that are not subject to contamination by products or substances not authorised for organic production, or pollutants that would compromise the organic nature of the products (Art.6b (1) EC/889/2008). Organic and non-organic production units shall be separated adequately (Art.6b (2)). If the yearly production exceeds 20 tonnes, an appropriate assessment has to be carried out (Art.6b (3)) based on Annex IV of the council Directive 85/337/EEC[125].
  Mussel farmers have to design a sustainable management plan and to keep it up to date (Art.6b (4)). The management plan must include effects on the environment, environmental monitoring measures, measures to reduce the environmental impact, data on repair and maintenance of technical installations. The mussel farmer is required to use renewable energy and to develop a concept for waste reduction (Art.6b (5)). The protection against predators must meet the requirements of the Habitate Directive 92/43/EEC.
  Cultured mussels must be endemic to the area (Art. 25d). Mussel farming must be species appropriate (Art. 25f). The be located where water flow, depth and water-body exchange rates are adequate to minimize the impact on the seabed and the surrounding water body (Art. 25g (3a)).

- the prevention of disease (Art. 15f EC/834/2007) by e.g. optimal growing conditions through appropriate site selection, optimal design of the holdings and the application of good husbandry and management practices.

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[123] Class „A" if mussels contain at maximum 230 *E.coli* per 100 g mussel meat and shell fluid (according to 2073/2005/EC, OJ L338, p1, 22/12/2005)
Class „B" if mussels contain at maximum 4600 *E.coli* per 100 g mussel meat and shell fluid.

[124] „are no, or only very minor, anthropogenic alterations to the values of the physico-chemical and hydromorphological quality elements for the surface water body type from those normally associated with that type under undisturbed conditions. The values of the biological quality elements for the surface water body reflect those normally associated with that type under undisturbed conditions, and show no, or only very minor, evidence of distortion. These are the type-specific conditions and communities." (general definition of ecological quality „High status" Table 1.2, p. 52, 2000/60/EC)

[125] Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment. OJ L 175, 5.7.1985, p. 40–48

The prevention of disease is described in the Implementation Regulation (Art. 25s EC/889/2008). Therefore the measures for disease prevention must meet the requirements of the Animal Disease Regulation (2006/88/EC). The notifiable mussel disease is Marteiliosis (infection with *Marteilia refringens*). Mussel farms are inspected once every two years by qualified aquaculture animal health service. Cleaning and disinfection of holding systems and equipment is obligatory.

- cleaning and disinfection, involving the exclusive use of products authorised by the Commission (including product application limits) (Art. 15g EC/834/2007).

Mussel farmers that convert their business into organic farming must comply with a conversion period during which organic practices must be respected. The Regulation lays down rules governing this conversion period. Mussel cultivation areas need a transition period of 3 months (Art. 38a (d) EC/889/2008).

The sixth section of the Implementation Regulation (EC/889/2008) presents specific production rules for molluscs. In clearly identifiable mussel culture areas it is possible to practise polyculture (Art. 25n EC/889/2008). Seedlings for mussel culture must originate from organic production mussel culture areas (Art. 25o). The stocking density must not exceed the density used for non-organic shellfish in the locality. Sorting, thinning and stocking density adjustments shall be made according to the biomass and to ensure animal welfare and high product quality (Art. 25p). Biofouling on mussels must be removed by physical means or by hand and where appropriate returned to the sea away from mussel farms. Mussel are preferably cultured on mussel ropes (Annex XIIIa Section 8, EC/889/2008) but can also be produced on the bottom, if no significant environmental impact is caused at the collection and growing sites (Art. 25q).

Fig. 7: EU logo on organic food products, obligatory for al pre packaged products since 1.7. 2012

Labelling of organically produced mussels

Labelling, advertising or commercial documents may use terms such as ‘eco’ and ‘bio’ to describe organic products, ingredients, or raw materials. The labelling must be clearly visible on the packaging and must contain a reference (code number) of the eco inspection body that certifies the product concerned. The European logo (Fig. 7) (see Part A of Annex XI, EC/889/2009 for model) makes organic products easier to be identified by the consumers and it gives a visual identity to the organic farming sector. The use of the logo and correct labelling is obligatory for all organic pre-packaged food produced within the European Union (Art. 57, EC/889/2009). The code number of the competent eco inspection body and details about the origin of the aquacultural raw materials of the products can be found next to the EU organic farming logo in the form of "EU agriculture", "Non-EU agriculture" and "EU/Non-EU agriculture" or the name of a country where all of the products raw materials (at least 98 %) have been produced in. The code number consists of the acronym identifying the Member State (ISO 3166), and organic production term (BIO or ÖKO) and the three digit reference

number of the eco inspection body (Art. 58, EC/889/2009). The code number must be visible in the same field of view like the logo.
Organic mussel farmers, processors and traders, must comply with strict EU requirements if they want to use the EU organic logo or label their products as organic.

Controls
Compliance with the Organic Production Regulation provisions is guaranteed by a strict system of controls based on Regulation (EC) No 882/2004[126] as well as precautionary and control measures drawn up by the Commission with controls at every stage of the organic chain. This system guarantees the traceability of food in accordance with the Food Safety Regulation ((EC) No 178/2002[127]).

The type and frequency of controls are determined depending on the risk of infringement. Every operator (farmer, processor, trader) is checked at least once a year (Art.65 EC/889/2009). Controls will be organised by authorities appointed by EU countries that may delegate control duties to accredited bodies, but they remain responsible for the supervision of the controls carried out and the granting of exemptions. Eco inspection bodies issue certificates for the controlled producer (Art. 29 EC/834/2007; Art 68 and Annex XII of EC/889/2009). The list of authorities and control bodies must be kept up to date and reported to the Commission (the latest list of bodies or authorities responsible for control was published in 2014). For bivalve mollusc production inspection visits take place before and during maximum biomass production (Art. 79c).

Each operator involved in the marketing of an organic product before it is placed on the market must be controlled. Certified operators receive certification. In cases of irregularities, the authority must ensure that products at issue are not labelled according to this Regulation.

The Implementation Regulation (EC/889/2009) presents control requirements in its Title IV.

According to Art. 63 and 79a (EC/889/2009) the producer must deliver a detailed description of his facility and the measures to ensure compliance with the organic production rules. The description must also contain precautionary measures to be taken in order to reduce the risk of contamination by unauthorised products or substances and the cleaning measures.

The producer must report his:

- name and address
- location of production (land and sea facilities)
- type of practises/ products
- declaration of commitment to apply the Organic Production Regulation (EC/834/2007)
- date of transition (if applicable)
- name of eco inspection body

[126] Corrigendum to Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules (OJ L 165, 30.4.2004) OJ L 191, 28.5.2004, p. 1–52

[127] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31, 1.2.2002, p. 1–24

- results of the appropriate assessment
- sustainable management plan
- description of the mussel production system

to the responsible authority.

4.2.2 Gaps and shortages of the Organic Production Regulation

The production rules do not sufficiently take into account evolving consumer and citizen concerns and expectations; labelling rules are complicated; weaknesses in the control system and in the trade regime have been identified. The legislation is complex and entails a high level of administrative burden which is stopping small farmers from joining the Union's organic scheme.

Therefore, the Organic Production Regulation is currently subject to a proposal[128] to repeal and replace it with a regulation that seeks to simplify the legislation, clarify certain rules and address certain weaknesses in the control system. The proposal aims at improving the legislation by (1) removing obstacles to the sustainable development of organic production, (2) guaranteeing fair competition for farmers and operators and allowing the internal market to function more efficiently, (3) maintaining or improving consumer confidence in organic products. Around the release date of this report, there was a strong ongoing discussion about the upcoming new Organic Production Regulation.

4.2.3 Assistance by EU guidelines of the Organic Production Regulation

There exists guidance for the import of organic products from non EU countries. No explicit guidance for EU organic producers.

The Corporate Design Manual for the uniform use of the German Bio-Siegel provides guidelines on the usage of signs, graphic indications and samples (e.g. on the option „adjusted colours“ or „transparent background“). It is available from the Bio-Siegel Information Service and can also be downloaded from the website www.biosiegel.de.

[128] EC (2014): Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on organic production and labelling of organic products, amending Regulation (EU) No XXX/XXX of the European Parliament and of the Council [Official controls Regulation] and repealing Council Regulation (EC) No 834/2007. COD 2014/0100.

4.2.4 National implementation of the Organic Production Regulation in practice: Germany and Schleswig-Holstein

The Organic Production Regulation is implemented in German law by the Organic Farming Act (Öko-Landbaugesetz (ÖLG)[129]), the Eco Labelling Act (Öko-Kennzeichengesetz (ÖkoKennzG)[130]), the Eco Labelling Regulation (Öko-Kennzeichenverordnung (ÖkoKennzV)[131]) and the Regulation on the Accreditation of Eco Inspection Bodies (ÖLG-Kontrollstellen-Zulassungsverordnung (ÖLGKontrollStZulV)[132]).

Organic Farming Act
The Organic Farming Act (ÖLG) pools specific executive functions in organic farming in Germany, whilst increasing the effective implementation of the EU legislation governing organic farming. It serves to clarify and supplement the changes in EU legislation in the area of organic farming (publication of records and certificates of organic companies).

Regulatory areas of the Organic Farming Act:

- Reporting duties

Inspection bodies are required to notify the competent authority for the respective holding of established irregularities or violations as defined in the EU legislation governing organic farming (§ 5 ÖLG).

Each inspection body must keep a list of the businesses it inspects and publish this list on the Internet for the competent authorities, economic operators and consumers (§ 5 ÖLG). The inspection bodies are not only required to provide the competent authorities with the necessary information for these inspections, but are also obliged to inform each other.

- Delegation of tasks from the Federal States to the private inspection bodies

In Germany the controls are carried out by state supervised eco inspection bodies (§ 3 ÖLG). German Federal Agency for Agriculture and Food (BLE) is responsible for the authorisation and its withdrawal of private state supervised eco inspection bodies (§§ 2 & 11 ÖLG). In Schleswig-Holstein the responsible authority is the MELUR with the unit for food, consumer products and feed.

- Compulsory checks in away-from-home consumption

Community catering establishments, such as restaurants, staff canteens and large-scale catering establishments, are, if they commercially market organic products, subject to the

[129] Öko-Landbaugesetz vom 7. Dezember 2008 (BGBl. I S. 2358), das zuletzt durch Artikel 4 Absatz 94 des Gesetzes vom 18. Juli 2016 (BGBl. I S. 1666) geändert worden ist. Stand: Zuletzt geändert durch Art. 4 Abs. 94 G v. 18.7.2016 I 1666

[130] Öko-Kennzeichengesetz in der Fassung der Bekanntmachung vom 20. Januar 2009 (BGBl. I S. 78), das zuletzt durch Artikel 404 der Verordnung vom 31. August 2015 (BGBl. I S. 1474) geändert worden ist. Stand: Neugefasst durch Bek. v. 20.1.2009 I 78; zuletzt geändert durch Art. 404 V v. 31.8.2015 I 1474

[131] Öko-Kennzeichenverordnung vom 6. Februar 2002 (BGBl. I S. 589), die durch Artikel 1 der Verordnung vom 30. November 2005 (BGBl. I S. 3384) geändert worden ist. Stand: Geändert durch Art. 1 V v. 30.11.2005 I 3384

[132] ÖLG-Kontrollstellen-Zulassungsverordnung vom 7. Mai 2012 (BGBl. I S. 1044), die durch Artikel 144 des Gesetzes vom 29. März 2017 (BGBl. I S. 626) geändert worden ist. Stand: Geändert durch Art. 144 G v. 29.3.2017 I 626

inspection and labelling provisions of the EU legislation governing organic farming (§ 6 ÖLG).

- Provisions regarding penalties and fines

Violations of the EU legislation governing organic farming are liable to one-year imprisonment or a fine of up to € 30,000. This applies especially to the unlawful use of indications referring to organic production methods in the labelling and advertising of organic products (labelling) (§ 12 ÖLG).

The code number scheme for the authorised German eco inspection body is “DE-ÖKO-000”. "DE" means Germany, "000" represents the three-digit control body code number (§ 2 (2) 3 ÖLG; Art. 27 Abs. 10 EU Organic production regulation 834/2007).

List of authorised control bodies for mussel aquaculture:

- **Lacon GmbH (DE-ÖKO-003)**
  Privatinstitut für Qualitätssicherung und Zertifizierung ökologisch erzeugter Lebensmittel
  Moltkestraße 4, 77654 Offenburg
  Telefon: 07 81/ 96679 200, Fax: 07 81/ 96679 300
  E-Mail: lacon@lacon-institut.org Internet: www.lacon-institut.com
- **ABCERT AG (DE-ÖKO-006)**
  Kontrollstelle für ökologisch erzeugte Lebensmittel
  Martinstraße 42 - 44, 73728 Esslingen
  Telefon: 07 11/ 35 17 92 0; Fax: 07 11/ 35 17 92 200
  E-Mail:info@abcert.de, Internet: www.abcert.de
- **Grünstempel**® - Ökoprüfstelle e.V. (DE-ÖKO-021)
  EU Kontrollstelle für ökologische Erzeugung und Verarbeitung landwirtschaftlicher Produkte
  Windmühlenbreite 25d; 39164 Wanzleben
  Telefon: 03 92 09 - 6968-0; Fax: 03 92 09 - 6968-11
  E-Mail: info@gruenstempel.de, Internet: www.gruenstempel.de
- **ÖKOP** Zertifizierungs GmbH (DE-ÖKO-037)
  Schlesische Straße 17d; 94315 Straubing
  Telefon: 094 21/ 96 10 90; Fax: 094 21/ 96109-29
  Mail:biokontrollstelle@oekop.de, Internet: www.oekop.de
- **GfRS** Gesellschaft für Ressourcenschutz mbH (DE-ÖKO-039)
  GfRS - Gesellschaft für Ressourcenschutz mbH
  Prinzenstraße 4; 37073 Göttingen
  Telefon: 05 51/ 37 07 53 47 oder 05 51/ 48 87 731; Fax: 05 51/ 58 774
  E-Mail: postmaster@gfrs.de, Internet: www.gfrs.de

Eco Labelling Law
All processed and non-processed aquaculture products for human consumption or feedstuffs, which fall within the scope of EC rules and regulations for organic production, may be labelled with the Bio-Siegel (§ 1 ÖkoKennzG).

Neither foods nor feedstuffs which have been enriched with vitamins and mineral substances may be labelled with the Bio-Siegel. Aquaculture products produced during the transition period to organic farming also may not be labelled with the Bio-Siegel.

The label may be used on the basis of the Eco Labelling Act in its version published on 20 January 2009. With respect to usage criteria, the Eco Labelling Act refers to the requirements provided for by European Union legislation on organic farming (Regulation (EC) No. 834/2007). Products that show the Bio-Siegel must have been produced and prepared

according to the respective rules and must be part of the control procedure of an approved eco inspection body.

In cases of infringement or misuse of the Bio-Siegel, the Eco Labelling Law provides rules regarding fines and sanctions (§ 3 ÖkoKennzG).

The German Bio-Siegel may be shown in addition to the EU Bio Logo (Fig. 8) including the inspection body code and the designation of origin.

Fig. 8: German Bio Siegel (established in 2001), only applicable additionally to the EU-logo on organic products

Eco-labelling Regulation
This regulation provides details on the layout and usage of the Bio-Siegel. Every product labelled with the German Bio Siegel has to be registered prior to placing on the market at the Bio-Siegel information service and has to fulfil the requirements of the organic products labelling act.

The Bio label must be graphically designed as follows (§ 1 ÖkokennzV):

1. minimum size of 10 mm;
2. maximum size of 33 mm;
3. size is measured from the outer left to the outer right corner of the green frame;
4. maximum width may only be used to an extent where the size of the Bio-Siegel „B“ does not exceed 60 % of the largest letter contained in the product title;
5. if the minimum size is used, the „60% rule“ need not be observed;
6. in case of a coloured background, the Bio-Siegel, in its original colour, must be surrounded by a white contour of the same size as the green frame;
7. the spatial relation of words and graphic elements must not be modified

Regulation on the Accreditation of Eco Inspection Bodies
In order to guarantee a high consumer protection level and fair competition between the inspection bodies on the basis of a sound inspection quality, the BMEL has established detailed criteria for the accreditation of private inspection bodies on a federally harmonised legal basis by adopting the Regulation on the Accreditation of Eco Inspection Bodies.

The producer and the eco inspection body conclude an inspection contract (§ 5 ÖkoKontrollStZulV). The producer thereby accepts the EU organic products legislation and the standard control program of the eco inspection body (§ 5 ÖkoKontrollStZulV). Control costs must be covered by the controlled producer (§ 10 ÖLG). The inspection is mainly a procedure control but can be supplemented by the final product control and/or plant and ground samples.

Most organic farms in Germany have joined associations like Bioland and Demeter (the largest and oldest organic associations) or Naturland, Biokreis, Bundesverband Ökologischer Weinbau (Federation for Organic Viticulture, ECOVIN), Gäa, Ecoland, Biopark and the Verbund Ökohöfe. In 2002, representatives from organic farming associations, organic food

processors and organic trade founded the OrganicFood Industry Federation (Bund Ökologischer Lebensmittelwirtschaft, (BÖLW) as the umbrella organisation of the entire organic sector. Some of the guidelines of German organic farming associations are stricter than the EU organic farming legislation.

4.2.5 National implementation of the Organic Production Regulation in practice (contributions of project partners)

4.2.5.1 Poland

The organizational system of organic farming in Poland is regulated by the Act on Organic Farming[133] (June 2009). Other core Polish acts are: Act of 30 August 2002 on the conformity assessment system[134].

Control System of Organic Agriculture and Certification In Poland have been delegated to certification bodies, authorized and supervised by the designated competent authority. The organic agriculture and distribution market is composed of the following State and private institutions:

- The Minister of Agriculture and Rural Development, authorizes certifying units to conduct controls and issue certificates;
- Agricultural and Food Quality Inspection in Poland, supervises certifying units;
- Organic production supervision.

Agricultural and Food Quality Inspection cooperates, among others, with the following State institutions:

- Office of Competition and Consumer Protection;
- Veterinary Inspection regarding fodder production;
- State Plant Health and Seed Inspection;
- Polish Accreditation Centre – a body accrediting certifying units;
- Private authorized certifying units accredited regarding organic farming, in accordance with Standard PN-EN ISO/IEC 17065: 2013-03 General requirements concerning units handling product certification systems.

4.2.6 Organic Production Regulation – outcome information

Mussels (intended for food or mussel meal production) from Baltic marine aquaculture may be certified organic according to EU law as well as according to private organic associations.

The certification process requires registration, the approval of the farm and an adequate labelling of the products.

[133] Journal of Laws No. 116, item 975
[134] Journal of Laws of 2010, No. 138, item 935

4.3 EMFF Funding - Regulation

Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund and repealing Council Regulations (EC) No 2328/2003, (EC) No 861/2006, (EC) No 1198/2006 and (EC) No 791/2007 and Regulation (EU) No 1255/2011 of the European Parliament and of the Council[135]

The EMFF is the fund for the EU's maritime and fisheries policies for 2014-2020 with a total budget of € 6.5 billion. It is one of the five European Structural and Investment (ESI) Funds which complement each other[136]. The fund aims at supporting of fishermen during transition period to sustainable fishing. It supports e.g. coastal communities, finances projects along European coasts and aims at facilitating to access financing.

The fund is used to co-finance (national funding) projects. The Member States were allocated a part of the total fund, based on its fishery industry size. The Member States develop operational programs to state their particular funding intention. These programs need EU Commission approval. After approval, the responsible Member States authorities decide independently how to spend the money.

Responsible authorities for the EMFF for Baltic Sea mussel aquaculture are:

- Danish AgriFish Agency, Denmark
- Bundesministerium für Ernährung, Verbraucherschutz und Landwirtschaft Referat 613, Germany[137]
- Fisheries Department Kalamajandusosakonna juhataja, Põllumajandusministeerium, Estonia
- Ministry of Agriculture, Latvia
- Ministry of Agriculture, Lithuania
- Departamentu Rybołówstwa, Poland
- Ministry of Agriculture and Forestry, Finland
- Swedish Board of Agriculture and Fisheries, Game Management and Reindeer Husbandry - Ministry of Enterprise and Innovation, Sweden

4.3.1 General content of the EMFF with relevance to mussel aquaculture

The EMFF supports projects that promote sustainable aquaculture by granting subsidies or credits for investments for hardware (boats, engines, gear), human resources (health, safety, training) or collective projects (concerning innovation, advisory services, partnership between scientists and fishermen).

135 OJ L 149, 20.5.2014, p. 1–66

136 The funds are: the European Social Fund (ESF), the European Regional Development Fund (ERDF), the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF). The fifth fund, the Cohesion fund (CF) is more or less a „special case“ and strictly speaking not an ESI fund. (Svenja Wachhorst, Email 8.6.2017)

137 In Germany the Federal States are responsible for the use of the funds. As „superior authority“ the Federal Ministry BMEL coordinates actions around the EMFF operational program and the reporting to the European Commission. (Svenja Wachhorst, Email 8.6.2017)

The EMFF contributes to sustainable aquaculture, to a consistent framework for the Integrated Maritime Policy and to a balanced and inclusive territorial development of aquaculture areas. European mussel aquaculture will have more investment to promote blue growth, innovation and competitiveness. Two out of six EMFF Union priorities are related to mussel aquaculture:

- 2nd Union Priority: Environmentally sustainable, resource efficient, competitive aquaculture to make this industry green, economically viable and competitive, while providing EU consumers with healthy and highly nutritional products.
- 5th Union Priority: Fostering marketing and processing through improved market organisation for fishery and aquaculture products and through improved processing and marketing sectors in particular in Outermost Regions.

The EMFF seeks to promote innovative aquaculture with high growth potential, such as offshore and non-food aquaculture (for example producing mussels for fish food). Also multifunctional aquaculture is an opportunity to diversify the income of aquaculture enterprises through complementary activities (such as environmental services, direct sale or educational activities).

4.3.2 Gaps and shortages for mussel aquaculture resulting from EMFF

Relatively short time span of the fund.

Application procedures to check the project eligibility and whether it meets the relevant selection criteria and investment priorities are potentially bureaucratic and time consuming. Although the red tape is aimed to be cut, the EMFF still requires a set of financial decisions, reporting, monitoring and evaluation procedures.

In many Member States or regions (e.g. Schleswig-Holstein in Germany) the financial resources of the aquaculture priority axis seem too small to effectively support the relatively high project investment costs of marine aquaculture.

4.3.3 Assistance by EU guidelines

The EMFF webpage[138] provides good information and also a link to the guidelines of relevant topics such as aquaculture and Natura 2000 areas. The EMFF leaflet[139] shortly describes the funding possibilities for fishermen (small fishery with vessel length less than 12m). Guidance for application procedures is provided by the Member States themselves.

4.3.4 Implementation of the EMFF Funding Regulation in national law: Germany and Schleswig-Holstein

The European Commission adopted German investment packages for the maritime, fisheries and aquaculture sectors (€284.6 Mil, including €219.6 Mil of EU funds) because its operational program promotes resource-efficient, innovative, competitive and knowledge-based fisheries and aquaculture.

[138] https://ec.europa.eu/fisheries/cfp/emff_en

[139] EC (2017): Support from the European Maritime and Fisheries Fund (EMFF). Opportunities for small-scale coastal fishermen.

Approximately one third of the German operational program allocation (30,1 %) is aimed to be spend to support aqua-environmental measures, and productive investments in aquaculture and innovation, thereby including the fostering of environmentally sustainable, resource-efficient, innovative, competitive and knowledge-based aquaculture. It also supports marketing measures and the processing of fishery and aquaculture products

The operational program[140] includes a SWOT analysis of the German aquaculture sector which is in consensus with the German national aquaculture strategy plan. The program also includes the identification of needs on basis of the SWOT analysis and the evaluation of specific needs concerning jobs, the environment, climate change mitigation and adaptation and promotion of innovation.

4.3.5 National implementation of the EMFF in practice: Germany and Schleswig-Holstein

The German operational program is the basis for the State program, setting details about the planned application of the EMFF. The Schleswig-Holstein State program " Fisheries and Aquaculture" implements the support of fisheries, aquaculture and marine conservation from 2014 until 2020. The execution of projects is possible up to 3 years after ending of the funding period.

The main intentions of the Schleswig-Holstein State program "Fisheries and Aquaculture" are:

- regional support and implementation of the CFP (Common Fishery Policy),
- conservation of the active local inshore and coastal fisheries and the reduction of their environmental impact,
- the sustainable development of North Sea and Baltic Sea fishery areas,
- the development and security of jobs in the fisheries and aquaculture sector
- the support of marine conservation and the protection of aquatic fauna and flora

In Schleswig-Holstein aquaculture funding according to principles of the 2nd Union Priority is possible for:

- productive investments in aquaculture (improvement of amount and quality, reduce environmental impact, diversification of products or species
- new sustainable aquaculture producers
- innovations in aquaculture (animal welfare, animal health)
- transition of traditional aquaculture into ecological production
- compensation payments for environmental services of aquaculture business (program for freshwater fishponds only)

[140] http://ec.europa.eu/fisheries/cfp/emff/doc/op-germany_de.pdf

In Schleswig-Holstein funding according to principles of the 5th Union Priority (aquaculture products) is possible for:

- measures to improve production and marketing of local fishermen
- marketing measures (new markets, improvement of quality and value, direct marketing, promotion for sustainable fishery and aquaculture)
- investments for fish processing business (improvement of working conditions, reduction of energy use and environmental impact, improvement of product quality) (only for small/medium sized business up to 250 employees with a total turnover <€ 50 Mio)

In the recent funding period, one of the funded projects is the Competence Network Aquaculture (KNAQ[141]), that aims at supporting the extension of sustainable aquaculture in Schleswig-Holstein. Therefore the Ministry of Energy, Agriculture, the Environment and Rural Areas supported the KNAQ project with approximately € 500 000 (three years project period). Requirements like the access to space, finance, an adequate scale of production, skills and expertise as well as the access to markets are the first step into aquaculture business. KNAQ provides the guidance for the first level of consultancy as a part of the consultancy portfolio provided by the Chamber of Agriculture of the federal state Schleswig-Holstein. KNAQ provides consultancy and guidance in the national aquaculture sector free of charge for all interested professionals with a current and/or future residency in Schleswig-Holstein.

4.3.6 National implementation of the EMFF Funding Regulation (contributions of project partners)

4.3.6.1 Poland

Since the accession of Poland to the EU, in 2004, funding from the Financial Instrument for Fisheries Guidance of the EU have been available for the modernization of the fisheries and aquaculture sector. Instrument that regulates basis for application for funding is the *Sectoral Operational Programme – Fisheries and Fish Processing 2014-2020*, which outlines priorities and categorizes according to precise goals. Funds for the aquaculture sector were available and heavily used in the scope of fish aquaculture. According to the EMFF country reports for 2013 (EC_FISH, 2017), 38 % of the total EMFF Poland OP was allocated for the on land aquaculture.

The Agency for Restructuring and Modernizing Agriculture of the Ministry of Agriculture and Rural Development is responsible for carrying out projects on the protection and development of aquatic resources, fish breeding and rearing, processing and marketing fish products.

In contrary to the fish breeding and rearing aquaculture whose funds are earmarked to increase the profitability of fisheries, improve operational conditions and product quality, reduce impact on the environment, and develop new technologies, mussels aquaculture is not widespread neither feasible in the whole area of Polish waters.

For the aquaculture sector, responsibility to promote application for funds is on the Ministry of Maritime Economy and Inland Waterways (Department of Fisheries) and the Agency for

[141] http://www.knaq-sh.de/en.html

Restructuring and Modernization of Agriculture. Implementation of the EMFF in Poland, is define trough the multi annual aquaculture strategy 2014-2020. Considering that mussels farms do not exist at Polish sea area, main objective of the Operational Program is not directly related on the mussels, while can be transposed indirectly from the aim of the fund on considerable emphasis on aquaculture providing environmental services (EC EMFF, 2017)

In general provision, main authority for process of preparation of the Operational Program (OP) is the Minister responsible for fisheries, accompanied Marine Fisheries Inspectorates, NGOs and environmental protection, academics and the Minister of Maritime Affairs, responsible for the Integrated Maritime Policy.

Consultancy for the Minister, in terms of allocation of funds for particular priorities, specific objectives and actions of multi annual aquaculture strategy 2014-2020, as well as elaboration of the rules of granting financial assistance, is consisted of the representatives of institutions involved in the creation and implementation of OP 2014-2020 and the institution responsible for collecting fisheries data under the Common Fisheries Policy. In Poland responsible institutions is Director of Fisheries Department in Ministry responsible for fisheries, which is currently, Ministry of maritime economy and inland waterways.

4.3.7 EMFF and mussel aquaculture - outcome information

The EMFF has in general the potential to support mussel aquaculture financially and by improvement of knowledge. Structures (networks, marketing measures) developed by funding through the EMFF help to improve the development of sustainable aquaculture such as mussel farming. However, the financial resources for an effective support of marine aquaculture are too small and the bureaucratic hurdles are too high.

4.4 Other European Law

Besides the already listed European law, also other law is relevant for mussel aquaculture in Europe. The law concerning the market for fishery and aquaculture products and the Alien Species Regulation have to be taken into consideration. In the case of mussel production for human consumption or for animal feed, the EU hygiene standards and the Feed Regulation, respectively, have to be considered.

4.4.1 Regulation of EU market for fishery and aquaculture products

Regulation (EU) No 1379/2013 of the European Parliament and of the Council of 11 December 2013 on the common organisation of the markets in fishery and aquaculture products, amending Council Regulations (EC) No 1184/2006 and (EC) No 1224/2009 and repealing Council Regulation (EC) No 104/2000[142]

In the context of the reform of the common fisheries policy (CFP), the regulation revises the aims and instrument of the common organisation of the markets of fishery and aquaculture products.

The regulation covers 5 main areas (professional organisations; marketing standards; consumer information; competition rules; market intelligence).

It sets out a number of specific objectives for professional organisations including the promotion of sustainable fishing and the reduction of discards. The rules and structure of production and marketing plans are provided in a subsequent implementing regulation[143].

Common marketing standards are established for fishery products regardless of whether their origin is from within or outside of the EU.

The EU Regulation aims at providing the best available information for consumers of fishery and aquaculture products (listed in Annex I c (molluscs) & d (products of molluscs)). Therefore the labelling of fishery and aquaculture products is indispensable. Regardless of the intention of use of the product, labels of fishery and aquaculture products must indicate:

- locally accepted species name and its scientific name;
- the production method;
- location of farming
- status of frosting/defrosting;
- expiration date.

4.4.1.1 Implementation in German law

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OJ L 354, 28.12.2013, p. 1–21

143 Commission Implementing Regulation (EU) No 1418/2013 of 17 December 2013 concerning production and marketing plans pursuant to Regulation (EU) No 1379/2013 of the European Parliament and of the Council on the common organisation of the markets in fishery and aquaculture products (OJ L 353, 28.12.2013, pp. 40-42)

The present regulation is implemented in the Fish Products Labelling Act (Fischetikettierungsgesetz – FischEtikettG[144]). In particular, this law lays down provisions relating to labelling and standards of fish products. The regulation on the labelling of fish (Fischetikettierungs- Verordnung[145]), adopted under the Fish Labelling Act contains provisions on trade names, details on the indication of the production and the exceptions from the labelling obligation.

4.4.1.2 Implementation in other EU Member States - contributions of project partners

4.4.1.3 Poland

In regard to the market for fishery and aquaculture regulation of the EU Reg. 852/2004 and EU Reg. 853/2004, in Poland it is transposed within the Act on Food Safety and Nutrition of the August 2006. In the Act are stated:

- General rules for all food business operators on the hygiene of foodstuffs,

- Specific rules on the hygiene of unprocessed and processed products of animal origin for business operators. Annex 3 Specific requirements. Section VIII: Fishery products

- Requirements and procedures necessary to ensure food safety and nutrition in accordance with reg. 178/2002 and regulates the health requirements of food and food contact materials - not covered by the regulations of the European Union

In regard to the Veterinary and Market Law, regulations are provided in the:

- Protection of Animal Health and Control of Infectious Animal Diseases Act of March 2004. Which in terms of the aquaculture regulates

- ☐ Veterinary requirements for taking up and pursuit of the business driving aquaculture production business or a processing plant or the subjection of aquaculture animals slaughtered in the fight against infectious diseases of these animals,
- ☐ Rules the control of infectious animal diseases, including zoonoses,
- ☐ Act Implements to the Polish legislation the Council Directive 2006/88/EC

- Product of Animal Origin Act of 16th of December 2005

- ☐ Competent authorities responsible for hygiene and control of animal origin products
- ☐ Requirements for animal origin product placed on the market,
- ☐ Requirements for the products not regulated in the reg. 853/2004

[144] Fischetikettierungsgesetz vom 1. August 2002 (BGBl. I S. 2980), das zuletzt durch Artikel 1 des Gesetzes vom 20. Oktober 2015 (BGBl. I S. 1736) geändert worden ist. Stand: Zuletzt geändert durch Art. 1 G v. 20.10.2015 I 1736

[145] Fischetikettierungsverordnung vom 15. August 2002 (BGBl. I S. 3363), die zuletzt durch Artikel 1 der Verordnung vom 5. November 2015 (BGBl. I S. 1926) geändert worden ist. Stand: Zuletzt geändert durch Art. 1 V v. 5.11.2015 I 1926

- Regulation of Veterinary Identification Number of 15th of December 2016

  ☐ Methods of establishing veterinary identification number for entities producing or selling animal origin products

- Agriculture Retail Trade Act of 16th of November 2016

  ☐ Market, tax and veterinary conditions for direct selling from agriculture/ aquaculture farm

- Regulation for Direct Selling of 30th of September 2015

  ☐ Veterinary conditions for direct selling of animal origin products e.g. selected fish products produced on fish farms

- Regulation of Conditions for the Recognition of Marginal, Localized and Limited Activity of 21st of March 2016

  ☐ Veterinary conditions for marginal, localized and limited selling of animal origin products e.g. selected fish products from fish farms

4.4.2 Aquaculture Alien Species Regulation

Council Regulation (EC) No 708/2007 of 11 June 2007 concerning use of alien and locally absent species in aquaculture[146]

Although mussels are endemic to the Baltic Sea and are not subject of this Regulation in particular, mussel farming in other areas has been threatened by invasive species (biofouling of e.g. tunicates (*Didemnum sp.*)). Therefore the Alien Species Regulation needs consideration to raise concern about this topic. Invasive species are suspected to be a key cause for biodiversity loss (genetic changes, deterioration or modification of habitats, spreading pathogenic agents and parasites, replacing native species in the ecological niche which they occupy). Therefore only endemic species are allowed to be cultivated. The cultivation of foreign species in the Baltic Sea (open water) is not approvable.

This regulation aims to create a framework governing aquacultural practices in order to ensure adequate protection of the aquatic environment from the risks associated with the use of non-native species and locally absent species in aquaculture[147].

Based on the voluntary alien species rules originating from the International Council for the Exploration of the Sea (ICES) and the European Inland Fisheries Advisory Commission (EIFAC), this Regulation covers all aquatic alien species (introduced or translocated) including any part that might survive and reproduce for their use in aquaculture in the European Union (EU). It applies to all types of aquacultural installation and it lays down

[146] OJ L 168, 28.6.2007, p. 1–17

[147] http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:l28179&qid=1491387542117&from=EN&isLegissum=true

special provisions relating to closed aquaculture facilities (list of these facilities must be reported and kept up to date).

The EU Member States must take all appropriate measures to avoid adverse effects on biodiversity resulting from the movement of aquatic organisms for aquaculture purposes and from the spreading of those organisms. They shall monitor and inspect aquaculture activities to make sure that closed aquaculture facilities comply with the Regulations requirements and that the transport prevents any alien species escapes.

The Aquaculture Alien Species Regulation requires permission for any movement of an alien aquatic organism to an aquaculture facility. In the case of non-routine movements, environmental risk assessments must be carried out. Member States likely to be affected by a movement of marine organisms must be informed and send their comments to the Commission, which will confirm, cancel or amend the permit. The Member States must keep a public available register of introductions and translocations containing all the information relating to them. In the case of an introduction of alien species, a specific monitoring must be carried out for at least two years following the organisms' release into their new environment, to assess whether the impacts were accurately predicted or if there are additional or different impacts.

4.4.2.1 *Implementation in German law*

The EU Regulation 708/2007 is directly enforceable, Schleswig-Holstein has the duty to implement this regulation completely without any scope for action by the Federal Administration.

Schleswig-Holstein implemented the Alien Species Regulation in the Aquaculture Species Regulation (Aquakulturartenverordnung (AquakulturArtVO)) in 2010. German Closed Aquaculture Facilities are registered[148] and the register is kept up to date. Applications for species movements have not been recorded yet but would be published on the webpage[149].

[148] https://www.portal-fischerei.de/bund/aquakultur/einfuehrung-gebietsfremder-arten-in-der-aquakultur/verzeichnis-aquakulturanlagen/

[149] https://www.portal-fischerei.de/bund/aquakultur/einfuehrung-gebietsfremder-arten-in-der-aquakultur/register-der-einfuehrungen-und-umsiedlungen/

4.4.2.2 Implementation in other EU Member States - contributions of project partners

4.4.2.3 Poland

Regulation of the EU in regard to the alien species in the Polish legislation is recognized in aspect of the environmental protection trough the Nature Conservation Act[150] of April 2004. Regulation concerns introduction of alien fungi, plants and animals and on import, keeping, breeding, offering applicable for the mussels farming, is regulated in the Article 3 of the Act on Inland Fishery[151] of April 1985. The Act states:

- Permission is required for introduction, as part of restocking, of foreign species of fish. Introduction of foreign species of fish that is listed in the register of species considered as non-native does not require a permission. (...) Ministry responsible for fishing defines for sale and selling alien species posing a threat to the native biodiversity.

Fishery sector in inland waters, condition of transfer for restocking of fish species into non-native area. (...) If negative impacts on the environment of introduction of fish species that does not require the permission have been observed, Ministry responsible for fishing can prohibit introduction/transfer of these fish species or define actions to eliminate negative effects. The purpose is to preserve biodiversity.

- The Ministry can also change or withdraw the permission if negative effects on the environment or on other fish populations have been observed.

- If there is no negative effect on the environment or other fish populations, the permission can be extended in time without assessing the environmental risk.

- Ministry responsible for fishing defines through a regulation a list of non-native fish species and conditions of introduction of species that do not require permission. The purpose is to preserve biodiversity and prevent from negative effects of foreign species introduction. A national register of applications for non-native fish species is available from the Ministry.

- Introduction of foreign species of fish that requires permission without the permission or against conditions defined in permission is prohibited.

- Preserving and rebuilding of fish stock, except species covered by Act on nature conservation, is ensured by rational management of resources such as actions to restore resources and relations between their elements, according to sustainable development principles.

– Restocking cannot cause reduction or loss of biodiversity in live water stock.

[150] Dz.U. z 2013 r. poz. 627
[151] Dz.U.1985.21.91

4.4.3 EU hygiene package on food hygiene legislation

The aims of the EU hygiene package (Regulations 178/2002, 852,853 & 854/2004)[152] are:

- Food safety controlled at EU level
- Standardised food safety
- Implementation of hygiene management system according to the HACCP principles for all producers
- Food hygiene documentation
- Registration and approval of food businesses

The Regulation (EC) No 178/2002 provides the basis for the assurance of a high level of protection of human health and consumers' interest in relation to food, taking into account in particular the diversity in the supply of food including traditional products, whilst ensuring the effective functioning of the internal market. It establishes common principles and responsibilities, the means to provide a strong science base, efficient organisational arrangements and procedures to underpin decision-making in matters of food and feed safety (Art. 1 (1)). This Regulation is designed to guarantee the quality of food, whether for human or animal consumption. It strengthens the rules on the safety of food and feed in the EU. It also sets up the European Food Safety Authority (EFSA), which provides support for the scientific testing and evaluation of food and feed.

No foods dangerous to health or unfit for consumption may be put on sale. If any unsafe food or feed is part of a batch it is assumed that the whole batch is unsafe. The food legislation applies at all stages of the food chain, from production, processing, transport and distribution to supply. Therefore food businesses must:

- guarantee the traceability of food, feed and food-producing animals at all stages of production and distribution,
- immediately withdraw food or feed from the market, or recall products already supplied, if these are considered to be harmful to health,
- inform the appropriate authorities, and consumers where necessary.

The Authority provides scientific and technical support to the European Commission and EU countries in all areas impacting on food safety. It is also responsible for coordinating risk assessments, identifying emerging risks and advising on crisis management.

[152] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31, 1.2.2002, p. 1–24
Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs. OJ L 139, 30.4.2004, p. 1–54
Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin. OJ L 139, 30.4.2004, p. 55–205
Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption. OJ L 139, 30.4.2004, p. 206–320

Regulation (EC) No 852/2004 on the hygiene of foodstuffs that entered into force on 20 May 2004[153]. The EU seeks to ensure the hygiene of food at all stages of the production process, from the primary production stage (mainly farming, hunting or fishing) to the final consumer. The Regulation and its annexes define a set of food safety objectives that firms working with food must meet.

The key principle is that everyone working in the food business must ensure hygienic practices at every stage of the production process. The most important information of this regulation and therefore the basis of the food law is, that the food producer is primarily responsible for the food safety. Annex I to the Regulation covers activities connected with primary production (i.e. farming, hunting or fishing), and includes the transport, handling and storage of primary products and the transport of live animals.

The regulation lists all parts of the HACCP (hazard analysis and critical control points) system. The food sector business (other than those involved in arable or livestock farming, hunting or fishing) must apply the HACCP principles. The regulation aims at identification of critical control points and monitoring procedures, the establishment of corrective measures, the implementation of procedures to check whether measures are working effectively

All businesses in the food sector must be approved and all premises registered with the appropriate authority according to EU legislation.

Regulation (EC) No 853/2004 on the specific hygiene rules for food of animal origin entered into force the 20.5.2004. It aims to ensure a high level of food safety and public health. It complements Regulation (EC) No 852/2004 on the hygiene of foodstuffs, whose rules mainly cover the approval of operators in the sector. The regulation's rules apply to unprocessed and processed products of animal origin. They generally do not apply to food that contains both products of plant origin and processed products of animal origin.

European Union (EU) countries must register and, where necessary, approve establishments handling products of animal origin.

The regulation's rules for food of animal origin cover these main sectors: meat, shellfish, fish, egg and milk and their products. In line with traditional production methods, the regulation enables national food authorities to grant special conditions for hygiene rules in each sector[154]. The rules for shellfish and fishery products cover everything from production and harvesting to equipment, facilities, processing and transport.

Regulation (EC) No 854/2004 on the organisation of official checks on products of animal origin intended for human consumption applies from 20.05.2004. It lays down specific rules for organising official checks on food intended for human consumption.

EU Member States are required to approve premises that comply with EU food hygiene rules and give each one a code to indicate the types of products involved. Food business must offer every assistance to inspectors carrying out the checks. This includes providing access to all buildings and to any documentation or records requested. Audits of good hygiene practice

[153] However, the EU hygiene regulation application started the 1.1.2006.

[154] Nevertheless, national special conditions are very limited and thus, are only used seldom. National hygiene regulations are mostly used to regulate production of the so called „small amounts".

have to be carried out. Responsible authorities must perform special HACCP procedures (to check if the food producer follows the hygiene regulations principles). Food inspectors must check the involved staff at all production stages (not every employee must be examined).

The legislation covers different types of food and therefore also live bivalve molluscs. Concerning live mussels – producing areas must be classified according to water cleanliness. This determines the mussel marketing possibility (fresh, treated in a purification centre or cooked).

The EU hygiene package is not only relevant for mussels for human nutrition but also for mussels used for animal nutrition. Also the water quality conditions according to Regulation EC/854/2004 are subject of the Organic Production Regulation (see Chapter 4.2) and therefore are also relevant for mussels intended for mussel meal (if labelled organic).

Mussels produced for human consumption can be used as feed, but this has to be in accordance with the Animal by-Products Regulation (EC/1069/2009). The irreversible operator decision to declare food stuff as animal by-product needs approval and registration at the responsible veterinary authority, as well as commercial documents and a colour code on the packages (see Chapter 4.2 for details).

4.4.3.1 *Implementation in German law*

Hygiene Regulation for Food of Animal Origin (Tierische Lebensmittel Hygieneverordnung (Tier-LMHV)[155]) aimes at implementation of the EU hygiene package.

The TierLMHV regulates businesses that are not directly recognised by the EU regulations due to the small amounts that are produced. E.g. § 3 determines rules for the marketing of small amounts of mussels directly to the consumer or food business.

However, the national regulation content is adapted to the EU food law principles.

Annex 1, Number 1 and 3 defines rules for the mussel vessel (protection of mussels from pollution, high temperature differences and physical damage) and for the quality of mussels concerning freshness, storage, packaging and the amount of allowed biotoxins.

4.4.3.2 *Implementation in other EU Member States - contributions of project partners*

4.4.3.3 *Poland*

Polish legal Act in compliance with EU regulations on hygiene is Act on Food and Nutrition safety, from 25 August 2006. The Act comprehensively regulates the conditions necessary to ensure food safety (Section 1 of the Art.1) so called “from farm to table”.

[155] Tierische Lebensmittel-Hygieneverordnung vom 8. August 2007 (BGBl. I S. 1816, 1828), die zuletzt durch Artikel 140 des Gesetzes vom 29. März 2017 (BGBl. I S. 626) geändert worden ist. Stand: Zuletzt geändert durch Art. 140 G v. 29.3.2017 I 626

4.4.4 Feed Regulation

Regulation (EC) No 183/2005 of the European Parliament and of the Council of 12 January 2005 laying down requirements for feed hygiene (Text with EEA relevance)

Regulation (EC) No 767/2009 of the European Parliament and of the Council of 13 July 2009 on the placing on the market and use of feed, amending European Parliament and Council Regulation (EC) No 1831/2003 and repealing Council Directive 79/373/EEC, Commission Directive 80/511/EEC, Council Directives 82/471/EEC, 83/228/EEC, 93/74/EEC, 93/113/EC and 96/25/EC and Commission Decision 2004/217/EC (Text with EEA relevance)[156]

Mussels intend for use as animal feed has a high potential regarding the production of small mussels in areas of lower salinity. Mussel meal is listed in the Annex Part C of the Catalogue of feed materials [157] as a potential ingredient for animal feed (No 10.8.1 "mollusc meal: Product produced by heating and drying whole or parts of molluscs including squid and bi-valves.").

There are different types of feed: feed materials, feed additives, compound feed including pet food and also medicated feed. So far, there has been no feed type determined for the project mussels. As the area of feed stuffs is very diverse and specialised, only the basis for the development of feed stuffs is described in this report (Feed Regulation EC/767/2009). Further specification of feed stuffs originating from or containing mussel meal needs further legislation consideration.

The Feed Hygiene Regulation (EC/183/2005) requires feed business operators to comply with obligations relating to hygiene and traceability and the registration and approval of their establishments. The objective is to achieve a high level of protection of human and animal health, notably by ensuring that feed is safe and of good quality.

The Feed Hygiene Regulation applies to the activities of feed business operators, starting with primary production of feed up to and including its placing on the market and imports of products intended for animal nutrition from third countries. This also includes the feeding of food-producing animals and also mussels in the case of mussel production for animal feed.

Feed business operators responsible for the primary production of feed (mussel farmers) must take the measures necessary to prevent, eliminate or reduce feed safety hazards during the production, preparation, cleaning, packaging, storing and transport of these products (Annex I). These operators must keep records relating to measures put in place to control contamination hazards.

Feed business operators other than at the level of primary production of feed must adopt appropriate measures to guarantee the safety of the products that they manufacture, transport or use. These measures are detailed more precisely than those concerning the primary production of feed (Annex II) and chiefly concern facilities and equipment used by the operators, staff training, the organisation and monitoring of different stages of production, and the documents which the operators must keep. Feed business operators other than at the level

[156] OJ L 35, 8.2.2005, p. 1–22
OJ L 229, 1.9.2009, p. 1–28

[157] Commission Regulation (EU) No 68/2013 of 16 January 2013 on the Catalogue of feed materials Text with EEA relevance. OJ L 29, 30.1.2013, p. 1–64

of primary production of feed must apply HACCP principles (hazard analysis and critical control points) and must keep documents demonstrating that they respect these principles.

Feed business operators are responsible for any infringement of the law governing feed safety. They must register their establishments with the competent authority of their Member State, and they must provide the authority with up to date information and cooperate with it in the event of controls.

Businesses in the food sector must be approved by the competent authority and may not operate without such approval. The competent authority of each Member State must keep a list of approved establishments. When an approved establishment no longer complies with the requirements governing its activities, the approval may be temporarily suspended or revoked.

The Feed Regulation (EC/767/2009) entered into force on 21 September 2009. It lays down rules on the placing on the market and use of feed for food-producing animals or pets, as well as it lays down labelling, packaging and presentation requirements.

The regulation covers any substance or product, including additives, whether processed, partially processed or unprocessed, intended to be used for oral feeding to animals.

It applies independently of and without having any effect on other EU rules in the field of animal nutrition, concerning:

- medicated feeding stuffs,
- undesirable substances,
- transmissible spongiform encephalopathies (such as BSE),
- animal by-products not intended for human consumption,
- genetically modified food and feed,
- the traceability and labelling of genetically modified organisms,
- additives,
- the production and labelling of organic products.

According to this regulation, mussel meal for animal feed must comply with safety and marketing requirements. In particular, it must

- be safe,
- not have a direct adverse effect on the environment or animal welfare,
- be sound, genuine, unadulterated, fit for its purpose and of merchantable quality,
- be labelled, packaged and presented in accordance with the applicable legislation.

Mussel meal for animal nutrition must not contain materials which are restricted or prohibited from being placed on the market. It must be possible to trace the feed at all stages of production, processing and distribution. Feed business operators must be able to identify who has provided them with feed, a food-producing animal, or any substance intended to be or likely to be incorporated into the feed.

Feed which is or is likely to be placed on the market in the EU must be labelled or identified in such a way that it can be traced. This regulation established general provisions for the labelling and presentation of all feed, such as the obligation to indicate:

- the type of feed,
- the name and address of the feed business operator,

- the batch or lot reference number,
- the net weight,
- the list of additives used,
- the moisture content.

The labelling and presentation must be clearly legible and indelible. It must not mislead the user concerning the intended use or characteristics of the feed.

The European Commission has published further advice to assist companies and authorities in this respect including Guidelines on the distinction between feed materials, feed additives, biocidal products and veterinary medicinal products; as well as the Code of good labelling practice for pet food.

Feed materials and compound feed must be placed on the market in sealed packages and containers. However, certain feed may be placed on the market in bulk or in unsealed packages or containers. This includes:

- feed materials,
- mixtures of grain and whole fruit,
- deliveries of compound feed between producers,
- feed in the form of blocks or licks.

4.4.4.1 Implementation in German law

German Feed law is constituted in the Food and Feed Law Code (Lebensmittel- und Futtermittel Gesetzbuch (LFGB)[158]).

The LFGB includes all production and processing stages of the Food-Value-Chain and applies to food, feed as well as to consumer goods and cosmetics. The major principle of the LFGB in agribusiness is the product traceability in all processing steps.

The Feed Regulation (Futtermittelverordnung (FuttMV)[159]) is the major legislation of the feed law in Germany. Besides explicit rules concerning the quality, the marketing and the use intention of feed stuffs, it controls federal and state administrative responsibilities.

4.4.4.2 Implementation in other EU Member States - contributions of project partners

4.4.4.3 Poland

Law in Poland laying down the procedures concerning EC Food Safety regulation is General Food Law[160]). It specifies, in Article 3, section 1, executive and administrative provisions

[158] Lebensmittel- und Futtermittelgesetzbuch in der Fassung der Bekanntmachung vom 3. Juni 2013 (BGBl. I S. 1426), das durch Artikel 10 des Gesetzes vom 10. März 2017 (BGBl. I S. 420) geändert worden ist. Stand: Neugefasst durch Bek. v. 3.6.2013 I 1426; Zuletzt geändert durch Art. 1 V v. 24.11.2016 I 2656 Hinweis: Änderung durch Art. 10 G v. 10.3.2017 I 420 (Nr. 12) textlich nachgewiesen, dokumentarisch noch nicht abschließend bearbeitet

[159] "Futtermittelverordnung in der Fassung der Bekanntmachung vom 29. August 2016 (BGBl. I S. 2004). Stand: Neugefasst durch Bek. v. 29.08.2016 I 2004

[160] Dz. Urz. UE L 31 z 1.02.2002

regulating food in general, and their safety in particular; definition includes all the stages of production, processing and distribution of food and feed manufactured for farm animals or used to feed farm animals, stages of production, processing and distribution, etc.

5 Mussel aquaculture in the Baltic Sea – Relevant National Law

5.1 Nature Conservation law

5.1.1 Nature conservation law - Case example Germany and Schleswig-Holstein

Besides the rules according to the Habitats and Birds Directives, the German nature conservation impact and compensation rules as well as the biotope protection have to be respected on the German Federal territory and thus as well in marine areas.

Responsible nature conservation authorities (§3 BNatSchG, §2 LNatSchG)

in the German territorial sea (12 nm) are:

- the Ministry of Energy, Agriculture, the Environment and Rural Areas (MELUND) as the supreme nature conservation authority;
- the State Office of Agriculture, Environment and Rural Areas (LLUR) as superior nature conservation authority
- county commissioners, independent town mayors as lower nature conservation authorities;

and in the German EEZ (12 – 200 nm) is:

- the Federal Agency for Nature Conservation (BfN)[161].
-

5.1.2 Nature Conservation law Germany and Schleswig-Holstein - content with relevance to mussel aquaculture

Impact and compensation measures
The general protection of nature and landscape is warranted by the Federal Nature Conservation Act (BNatSchG). Any project firstly hast to to avoid adverse effects on the environment and, secondly, in case of unavoidability, to balance or to substitute the adverse effects by means of nature conservation or landscape management measures. In the case of unavoidability and impossible compensation measures, compensation charges have to be paid. The last consequence is the prohibition of a plan or project in order to protect ecosystem goods such as ground, water, air, climate, animals and plants as well as their interaction.

[161] BfN (2017): Herausforderung Meeresnaturschutz Die Abteilung Meeresnaturschutz II 5 des BfN. Online verfügbar unter https://www.bfn.de/fileadmin/BfN/meeresundkuestenschutz/Dokumente/Positionspapiere/Meeresnaturschutz-Positionspapier-2017-03-22-digitaleVersion.pdf.

Mussel aquaculture as a floating aquaculture system is not an environmental interference with nature per se. To fulfil the fact of an environmental interference, the cultivation method, the size of the mussel culture as well as the intended area has to be taken into consideration to decide whether compensation measures/money for the planned shellfish culture are applicable or not.

Concerning the production technique, floating mussel cultivation is no environmental interference because §14 (1) BNatSchG refers to the seafloor, not to the water column[162]. However, the mussel farm anchorage alters the use of this habitat and thus indeed generates an effect. Also the accumulation of faeces and pseudofaeces underneath mussel culturing lines represent an effect. The effect needs a consequence to be regarded as a significant environmental interference. Possible consequences of effects are either an ecosystem deterioration or landscape view impairment.

The evaluation of the mussel cultivation effect on the affected ecosystem is only possible on a case by case basis and with sufficient scientific knowledge. The impairment of the landscape view bases on aesthetic perception and thus, is rather subjective. However, large floating mussel cultivation installations are recognised as foreign objects and may indeed therefore adversely affect the view.

If mussel cultivation is regarded as an environmental interference, effects (impact on ecosystem goods and landscape view) have to be avoided according to § 15 (1) BNatSchG.

Avoidance of accumulation of organic material on the seafloor may be achieved by periodical fallows. The alteration of the landscape view might be avoided by submergence of the mussel lines or by moving further away from the coast where the farm is hidden on account of the earth's curvature.

If the avoidance measures are not applicable, compensation measures need to be carried out (§ 15 (2) BNatSchG).

The mussel farmer needs to plan the compensation measures (§17 (4) Nr. 2 BNatSchG). Balancing methods need to take place in the area of the environmental interference (the same water body). Substitution measures may take place in the same affected ecosystem. The German Baltic Sea ecosystem is divided in two areas: the western Baltic Sea (D 72) and the eastern Baltic Sea (D 73). The responsible authority defines the appropriate, reasonable compensation measure.

Possible compensation measures are either the installation of reefs, the rehabilitation of contaminated sites, renaturation of installations or measures according to § 82 WHG (program of measures according to the WFD).

If the environmental interference could neither be avoided nor compensated, compensation charges (§ 15 (3) BNatSchG and § 9 (4) LNatSchG) have to be paid. These are either calculated according to the average compensation costs including management and personal costs or calculated according to the duration and intensity of the interference.

The prohibition of mussel farming may only be allowed if nature conservation interests carry greater weight than the interests of others. Other interests are for instance private interests or State interests. In particular, the Federal Government and Federal State interest in sustainable

[162] Czybulka, Detlef (2012): Die Eingriffsregelung nach deutschem Naturschutzrecht im Meeresbereich. In: Zeitschrift für Europäisches Umwelt- und Planungsrecht 10 (5).

aquaculture production (represented in the German National Strategy Plan for Aquaculture[163] and Federal State Strategy Plan for Aquaculture[164], respectively) needs to be taken into account in the consideration of the permission process.

Although the relevance of an environmental interference by mussel aquaculture has to be evaluated on a case by case basis, mussel cultivation is expected to require permission according to nature conservation law (§17 (1) BNatSchG). Accordingly, mussel farmers have to hand in a written application for permission to the responsible authority (§17 (3) BNatSchG; §11 (3) LNatSchG). The application must include (§17 (4) BNatSchG):

- location, type, extent and temporal process of the project, as well as,
- planned measures for avoidance or compensation of adverse effects on the ecosystem and landscape view.

The application must enable the responsible authority to evaluate the environmental impact of mussel farming technique and farm size at the intended location. Hence, the mussel farmer has to describe potential physical (hydro-morphology, sedimentation, noise), chemical (organic load and oxygen demand of the sediment, content of nutrients and hazardous substances) and biological (presence of biotope types, plants, animals; aquatic fauna and flora) characteristics of mussel farming on the ecosystem prior to installation of the farm. The responsible authority may require (to be justified) an expert opinion to evaluate the impact of mussel farming.

Biotope protection
The German Nature Conservation Law includes requirements for biotope protection that are more detailed than the protected ecosystem types according to the EU Directive 92 / 43 / EEC (Annex I). § 30 (2) No. 6 BNatSchG in conjunction with §21 LNatSchG determine a list of protected biotopes. These biotopes are specified (size and definition) in detail according to § 1 of the biotope protection Regulation (BiotopV). Measures that may lead to destruction or other significant or adverse deterioration of these biotopes are prohibited.

Biotopes relevant for Baltic mussel culture are:

- seagrass beds and marine macrophytes areas (seafloor areas below sea level with perennial or periodically spatial seagrass abundance or other macrophytes with large leafs; Minimum size: 10.000 m²) [habitat types according to the EU Habitat Directive: sandbanks (1110), Large shallow inlets and bays (1160), reefs (1170)]
- reefs (natural or biogenic hard substrates, or closed rock fields rising up topographically from the seafloor. Minimum size: 1.000 m².) [habitat type “reef (1170)” according to the EU Habitat Directive]
- Baltic sublittoral sandbanks (sandy elevations without or with very little vegetation that always are covered with water and are significantly surrounded by deeper water. Minimum size: 10.000 m²) [habitat type “sandbank (1110)” according to the EU Habitat Directive]

[163] BRD (2014): Nationale Strategieplan Aquakultur Deutschlands. basierend auf dem Beschluss Nr. 36 der Agrarministerkonferenz vom 27.04.2012 erstellt. Online available at: https://www.portal-fischerei.de/bund/aquakultur/strategieplan-aquakultur/

[164] MELUR (2014): Strategie zur Entwicklung einer nachhaltigen Aquakultur in Schleswig-Holstein. Online verfügbar unter https://www.schleswig-holstein.de/DE/Fachinhalte/F/fischerei/aquakultur.html.

- mudflats with boring megafauna
- marine/ coastal species rich gravel, coarse sand and grinded mussel shell areas (low vegetated, faunal species rich seafloor areas and periodically flooded coastal strip consisting of gravel, coarse sand and grinded mussel shells, as well as dead plant material and wash margin vegetation. Minimum size: 10.000 m²) [habitat types according to the EU Habitat Directive: annual wash margin (1210), perennial wash margin (1220), cliffs (1230)]

The biotope types are characterised in the charting key[165] and its charting explanations[166] for legally protected biotopes of Schleswig-Holstein.

5.1.3 Gaps and shortages for mussel aquaculture resulting from Nature Conservation law

The impairment of the landscape view bases on aesthetic perception and thus, is rather subjective.

The German Federal Compensation Regulation[167] on compensation measures exists only in draft version.

The average compensation costs are difficult to calculate.

5.1.4 Other National Nature Conservation law (contributions of project partners)

5.1.4.1 Poland

Legal basis in Poland for the DG Environmental Protection provisions are embarked in The Act on sharing information about the environment and its protection, public participation in environmental protection and environmental impact assessment[168] (3 October 2008).

Other legal Acts for Environmental protection in Poland are: The Act on Environmental Law (27 April 2001)[169]; The Act on the Nature Conservation (16 April 2004)[170]; The Act on

[165] LLUR (Hg.) (2016): Kartieranleitung und Biotoptypenschlüssel für die Biotopkartierung Schleswig-Holstein. mit Hinweisen zu den gesetzlich geschützten Biotopen sowie den Lebensraumtypen gemäß Anhang I der FFH-Richtlinie. Kartieranleitung, Biotoptypenschlüssel und Standardliste Biotoptypen, 2. Fassung (Stand: Juli 2016). https://www.schleswig-holstein.de/DE/Fachinhalte/B/biotope/biotopkartierung.html.

[166] SH (April/2015): Erläuterungen zur Kartierung der gesetzlich geschützten Biotope in Schleswig-Holstein (nach § 30 BNatSchG i. V. m. § 21 LNatSchG). https://www.schleswig-holstein.de/DE/Fachinhalte/B/biotope/biotopkartierung.html.

[167] BRD (19.04.2013): Verordnung über die Kompensation von Eingriffen in Natur und Landschaft. Bundeskompensationsverordnung (BKompV), vom Entwurf. Fundstelle: Referat N I 5 - 70302/1.

[168] Journal of Laws of 2016, item 353

[169] Journal of Laws of 2017, item 519

[170] Journal of Laws of 2016, item 2134

preventing the damages to nature and their compensation (of 13 April 2007)[171]; the Act on the National Community Eco-management and Audit Scheme (EMAS) (of July 15, 2011)[172].

The Act on the Nature Conservation (16 April 2004) set Regulations concerning protected areas, listed below:

- Regulation of the Minister of Environment of 12 January 2011 on the special protection areas for birds[173]
- Regulation of the Minister of the Environment of 13 April 2010 on natural habitats and species of Community interest, as well as the criteria for selection of areas eligible for recognition or designation as a Natura 2000 areas[174]
- Regulation of the Minister of the Environment dated February 17, 2010 on the preparation of a draft plan of protective tasks for the Natura 2000 area[175]
- Regulation of the Minister of the Environment dated 30 March 2010 on the preparation of a draft protection plan for the Natura 2000 area[176]
- Regulation of the Minister of Environment of 12 May 2005 on the preparation of a draft protection plan for the protection of national parks, a nature reserves and nature parks, making changes in this plan and conserving resources, and creations of nature[177]
- Regulation of the Minister of the Environment dated 30 March 2005 on the kinds, types and subtypes of nature reserves[178]
- Regulation of the Minister of the Environment dated 30 March 2010 on detailed ways and forms for the submission of information about wildlife compensation[179]

According to the Act of 2008, the group of specialized nature protection bodies includes:

– central government administrative body - the General Director for Environmental Protection (appointed by the President of the Council of Minsters out of persons selected in open and competitive recruitment process, on the motion of the Minister competent for environmental protection – article 126 section 1 of the Act of 2008);

– local government administrative bodies in voivodeships, i.e. – 16 regional directors for environmental protection (appointed by the General Director for Environmental Protection – article 130 section 1 of the Act of 2008).

[171] Journal of Laws of 2014, item 1789
[172] Journal of Laws, item 1060
[173] Journal of Laws, item 133, as amended
[174] Journal of Laws of 2014, item 1713
[175] Journal of Laws, item 186, as amended
[176] Journal of Laws, item 401, as amended
[177] Journal of Laws, item 794
[178] Journal of Laws, item 533
[179] Journal of Laws, item 402

5.1.4.2 *Denmark*

In 1992, Denmark signed a participation agreement on the Convention of Biodiversity, meaning that the country is obligated to follow a set of guidelines in conservation and promotion of biodiversity on a national scale. Several of the guidelines have been implemented in the Danish Nature Conservation Law1, which, amongst other things, dictates means of control of invasive species which pose a threat to the distribution of natural species in Denmark.

The EU habitat directive have been implemented in Danish legislations by using the appendix species as a way of determining conservation needs in terrestic and aquatic environments. In addition, the Danish government has released several legislations regarding environmental protection via restrictive approval of either polluting business or nutrient flux from farm lands23, specifically focusing on protecting marine eco systems.

Denmark has taken membership in another convention, the HELCOM convention, with focus on marine spatial planning and conservation. Thus, Denmark has obligations which, to some extent, are sought to be implemented in the Danish law.

For mussel production on longlines or SmartFarm permissions for production of mussels can only be obtained if an EIA demonstrate no impact on the appointed species and habitats.

For mussel fisheries, the protection of certain appendix species may be relevant. For example, Denmark has a broad distribution of porpoises on a national scale, where disturbances during establishment of mussel farms or in harvest might have a negative effect on the species' breeding and fouraging habits. Therefore, such industries may not take place in areas where porpoise might reside. An environmental analysis of the specific area is conducted prior to production approval to ensure no such risks may occur. Other restrictions are found in The Danish Nature Conservation Law on monuments of historic value, such as ship wrecks, where mussel fishing may not take place near such structures.

The governmentally approved zones for trawl or dredging fisheries are established to prevent a negative distribution of both eelgrass and reef, both of which are used as indicators of the water quality of the specific marine area.

5.1.5 Nature Conservation law and mussel aquaculture - outcome information

Mussel aquaculture needs permission according to nature conservation legislation.

Potential adverse effects on the ecosystem (sediment alteration beneath mussel farms) need to be evaluated on a case by case basis.

The potential unavoidability of adverse effects from mussel aquaculture on the marine environment needs compensation (balancing and or substitution measures).

5.2 Construction Law

5.2.1 Construction law: Case example Germany and Schleswig-Holstein

German building law is distinguishable in construction planning law and building law. The construction planning law is area related and is formalised in the German Building Code (Baugesetzbuch (BauGB)[180]). The building law is object related and is matter of the Federal States. In Schleswig-Holstein the Federal building regulation (Landesbauordnung (LBO)[181]) controls conditions for an approval of building projects. The building law, a special regulatory law (compared to the general police and regulatory law), serves at hazard prevention. The LBO general clauses first of all concern particularly life, health and natural livelihoods as objects of protection, that might be compromised by constructional systems.

5.2.2 Construction law Germany and Schleswig-Holstein - content with relevance to mussel aquaculture

To be applicable for mussel aquaculture, the construction law requires the mussel farm to be a "constructional system". The Federal State building law covers the whole territory of Schleswig-Holstein including the sea floor. According to § 1 LBO, constructional systems have to be attached to the bottom and have to be constructed by building products. Each mussel farm is constructed by building products (e.g. lines, anchors, buoys) and is also attached to the sea floor via anchoring. Theoretically the building law is applicable to mussel culture. However, in the literature[182] the submerged line systems for mussel cultivation are not regarded as constructional systems and the building law is not applicable.

Nevertheless, the building code (BauGB) also requires consideration. The BauGB requires the mussel farm as well to be a "constructional system" and therefore to be attached to the bottom and to be land law relevant. Whereas the mussel farm anchorage is indisputably attached to the sea floor, the relevance concerning land law is inconclusive.

Mussel farm installations in municipalised areas are land law relevant. Coastal waters as unincorporated areas are not municipalised and therefore not relevant for urban development. Mussel aquaculture in federal waterways are not land law relevant. Although mussel farms may also be installed in incorporated areas such as fjords and bays with an according land law

180 Baugesetzbuch in der Fassung der Bekanntmachung vom 23. September 2004 (BGBl. I S. 2414), das zuletzt durch Artikel 6 des Gesetzes vom 20. Oktober 2015 (BGBl. I S. 1722) geändert worden ist. Stand: Neugefasst durch Bek. v. 23.9.2004 I 2414; Zuletzt geändert durch Art. 6 G v. 20.10.2015 I 1722

181 Landesbauordnung für das Land Schleswig-Holstein (LBO). Gültig ab: 01.05.2009. Fundstelle: GVOBl. 2009, 6

182 Mühlbauer, Florian (2016): Entwicklung und Zulassung von Aquakulturaktivitäten in der deutschen Ostsee unter besonderer Berücksichtigung geltender Nachhaltigkeitsvorgaben. 1. Auflage. Aachen, Aachen: Shaker Verlag (Berichte aus der Rechtswissenschaft). pp 277& 279

relevance, they are regarded in literature[183] as “bagatelle systems” without relevance for urban development.

Aquaculture facilities are no constructional systems in terms of the LBO and therefore do not require an authorisation according to the Construction Law. However, related aquaculture facilities on shore require Construction Law consideration.[184]

5.2.3 Construction law Germany and Schleswig-Holstein - gaps and shortages

The building law as matter of the Federal States is treated very differently between the States. Probably due to the so far low economic relevance, the construction law applicability concerning mussel aquaculture is yet inconclusive and needs further elaboration.

5.2.4 Other National Construction law (contributions of project partners)

5.2.4.1 Poland

In context of the construction activities, matter of design, maintenance and demolition of buildings and definition of the principles of public administration bodies in those aspects, relevant act in Poland is the Building Law Act of 7 July 1994.

5.2.5 Construction law – outcome information

The construction law is not applicable for mussel aquaculture outside municipalised areas. Mussel farms in incorporated areas are regarded as bagatelle systems.

[183] Mühlbauer, Florian (2016): Entwicklung und Zulassung von Aquakulturaktivitäten in der deutschen Ostsee unter besonderer Berücksichtigung geltender Nachhaltigkeitsvorgaben. 1. Auflage. Aachen, Aachen: Shaker Verlag (Berichte aus der Rechtswissenschaft). pp 281& 279

[184] MELUR: Entwicklung und Förderung einer nachhaltigen Aquakultur an der schleswig-holsteinischen Ostseeküste. Genehmigungsleitfaden für Investoren. https://www.schleswig-holstein.de/DE/Fachinhalte/F/fischerei/aquakultur.html. p. 14

5.3 Fisheries Law

Fisheries law is an emerging and specialized area of law. It concerns different fisheries management approaches such as catch shares and others.

5.3.1 Fisheries law: Case example Germany and Schleswig-Holstein

The fisheries laws exist both at the Federal level, including provisions on sea and coastal fisheries (Federal Fisheries Act (Seefischereigesetz (SeeFischG))[185], Federal Fisheries Regulation (Seefischereiverordnung (SeefiV)186), Federal Fisheries Penalty Regulation (Seefischereibußgeldverordnung187)) and at the State level (State Fisheries Act (Landesfischereigesetz (LFischG)[188]), the Implementation Regulation on the State Fisheries Act (Landesverordnung zur Durchführung des Landesfischereigesetzes (LFischG-DVO)[189]) and the Inshore Fisheries Regulation (Küstenfischereiordung (KüFO))[190]) with legal provisions on inland water fisheries and territorial waters (within 12 sm zone).

The Federal Ministry of Food and Agriculture (BMEL) is the German responsible authority concerning fisheries. On the international level it advocates the preservation of living marine resources, for example the protection of the marine environment.

The Schleswig-Holstein supreme fisheries authority is the Ministry of Energy, Agriculture, the Environment, Nature and Digitalization (MELUND), the superior fisheries authority is the State Office of Agriculture, Environment and Rural Areas (LLUR), no lower authorities for fisheries or aquaculture exist in Schleswig-Holstein.

185 Seefischereigesetz in der Fassung der Bekanntmachung vom 6. Juli 1998 (BGBl. I S. 1791), das zuletzt durch Artikel 1 des Gesetzes vom 23. Dezember 2016 (BGBl. I S. 3188) geändert worden ist. Stand: Neugefasst durch Bek. v. 6.7.1998 I 1791; Zuletzt geändert durch Art. 1 G v. 23.12.2016 I 3188

186 Seefischereiverordnung vom 18. Juli 1989 (BGBl. I S. 1485), die zuletzt durch Artikel 2 der Verordnung vom 2. März 2016 (BGBl. I S. 371) geändert worden ist, Stand: Zuletzt geändert durch Art. 2 V v. 2.3.2016 I 371

187 Verordnung zur Durchsetzung des Fischereirechts der Europäischen Union (Seefischerei-Bußgeldverord-nung): Seefischerei-Bußgeldverordnung vom 16. Juni 1998 (BGBl. I S. 1355), die zuletzt durch Artikel 1 der Verordnung vom 2. März 2016 (BGBl. I S. 371) geändert worden ist, Stand: Zuletzt geändert durch Art. 1 V v. 2.3.2016 I 371

188 Fischereigesetz für das Land Schleswig-Holstein (Landesfischereigesetz – LFischG), 10.02.1996, Textnachweis ab: 01.01.2003, Fundstelle: GVOBl. 1996, 211. Stand: letzte berücksichtigte Änderung: mehrfach geändert (Ges. v. 26.10.2011, GVOBl. S. 295)

189 Landesverordnung zur Durchführung des Landesfischereigesetzes (LFischG-DVO) : 11.11.2008, Gültig ab: 01.01.2009, Gültig bis: 13.07.2018, Fundstelle: GVOBl. 2008, 628. Stand: letzte berücksichtigte Änderung: § 3 geändert (LVO v. 30.06.2016, GVOBl. S. 566)

190 Landesverordnung über die Ausübung der Fischerei in den Küstengewässern (Küstenfischereiverordnung (KüFO) 11. November 2008, Gültig ab: 01.01.2009, Gültig bis: 31.12.2018, Fundstelle: GVOBl. 2008, 640. Stand: letzte berücksichtigte Änderung: §§ 2, 22, 24 und Anlage geändert, § 7 neu gefasst (LVO v. 04.12.2013, GVOBl. S. 552)

5.3.2 Fisheries law Germany and Schleswig-Holstein - content with relevance to mussel aquaculture

The German Federal Fisheries Act specifies basic terms of marine aquaculture. Accordingly, mussel aquaculture is sea fishery (§ 1 (1) SeeFischG) and mussels are regarded as fishes (§1 (2) SeeFischG). It also determines the Federal Office for Agriculture and Food (BLE) as responsible institute for fisheries control and surveillance (§ 2 (1) SeeFischG). The duties of the Federal Government and consequentially the BLE are listed in the Annex (SeeFischG). The Federal Fisheries Act does not specify aquaculture explicitly but empowers the Federal States to adopt own fishery rules (§ 21 SeeFischG).

Additionally the Federal Office for Agriculture and Food (Bundesanstalt für Landwirtschaft und Ernährung (BLE)) publishes regularly official announcements[191] for the fisheries sector concerning catch regulation and vessel management. Although these announcements seldom concern mussel aquaculture, they have to be respected.

Schleswig-Holstein adopted the State Fisheries Law and the Inshore Fisheries Regulation.

State Fisheries Law (LFischG)

The State Fisheries Act in Schleswig-Holstein is applicable within the Federal States coastal waters (12 nm) (§1 LFischG). The Act regards mussels as fish[192] (§ 2 LFischG) just as the Sea Fisheries Act. Two paragraphs of the State Fisheries Act concern explicitly mussel fishery and musselculture.

§ 40 Mussel fishery

- Mussel fishery needs permission. The responsible authority is the supreme fisheries authority (MELUND). The permission is granted in consensus with the supreme nature conservation authority if mussel culture is performed in nature conservation areas. It may only be denied if the other fisheries, common utilisation, island/ coastal protection or nature protection are significantly compromised.
- The supreme fisheries authority controls the type and size of the mussel vessel and the applied gear.
- The supreme fisheries authority should develop a mussel management program to achieve the sustainable use of mussel resources
- Due to the prevention of mussel diseases, the release of mussels from outside of Schleswig-Holstein is forbidden. Mussel vessels must not have been used (for harvest or transport of mussels) in other waters than Schleswig-Holstein. The paragraphs §37 (information duty concerning increased mussel mortality) and § 38 (the release prohibition of diseased mussels) also aim at prevention of mussel diseases.
- Given special reasons (no risk of disease or mussel parasite import), producers may be released from this transport prohibition (§40 (4)).

§41 Mussel culture

[191] http://www.ble.de/DE/Themen/Fischerei/Fischereimanagement/fischereimanagement_node.html
[192] For systematic legislative reasons, mussels are defined as fish to clarify that mussels belong to Fisheries Law.

- mussel culture areas may be established for mussel seeding, rearing, harvesting and the storage. These areas must be published in the Schleswig-Holstein Official Gazette.
- Given permission, the mussel culturing areas may be used. The permission generally includes incidental provisions such as control, information duties, license charge and fees.

Inshore Fisheries Regulation (KüFO)
The Inshore Fisheries Regulation is applicable in the Schleswig-Holstein coastal waters (12 nm). It determines minimum size, closed seasons and catch limits of fish.

According to § 2 (1) (KüFO) harvested blue mussels (*Mytilus edulis*) must have a size of 4 cm at minimum. The harvesting is forbidden between the 15th of April and 14th of July (except seed mussel fishery which is allowed during 1st of July until the 30th of April (§ 3(2) KüFO). It is forbidden to harvest mussels below the minimum size and during the closed season (§2(2) KüFO). Smaller mussels must be put back into the sea (§2 (3) KüFO), however, the catch of 10% undersized mussels is permitted (§ 3 (1) KüFO).[193] § 4 KüFO determines basics for mussel fishery (mussel harvesting material, bycatch, seed mussel fishery), but is not relevant for mussel cultivation. The KüFO determines rules for the labelling of mussel culturing areas. According to § 5 (2) (KüFO), marker buoys require radar reflectors, as well as the inscription of the mussel farmer name. Details are controlled by the superior fisheries authority. Also to mussel vessels need to be labelled. § 15 (KüFO) requires the registration and approval of vessels by the superior fisheries authority. The label need to show three letters of the home port and an identification number (given by the LLUR). The vessel approval certificate must be carried along (§ 15 (2) KüFO).

5.3.3 Fisheries law Germany and Schleswig-Holstein - gaps and shortages

Mussel culture has a long tradition in the German North Sea. Mussels are cultivated in bottom mussel culture areas – but are harvested with dredges from special mussel vessels. Wild seed mussels are fished and "replanted" on mussel beds in mussel cultivation areas. Recent technical innovations in seed mussel cultivation include submerged nets (smartfarms).

There are no general rules for floating mussel aquaculture in Schleswig-Holstein concerning the fisheries law. Special rules have been developed for the North Sea and the National Park Wadden Sea (including the type and scale of mussel business) but are lacking for the Baltic Sea.

Existing rules require a mussel fishery permission. The used vessel must also be registered and approved. The applicability of the rules for minimum size and closed mussel season is questionable in floating mussel aquaculture.

5.3.4 Other National Fisheries law (contributions of project partners)

5.3.4.1 Poland

[193] The minimum size and closed seasons according to the KüFO is only applicable outside the national park in the Wadden Sea (North Sea). In this national park, the mussel business is regulated within the Schleswig-Holstein mussel fishery program and the respective permissions and the including official requirements.

Aquaculture and fisheries come under the Ministry of Agriculture and Rural Development (MARD). The Department of Fisheries is responsible for the development of marine fisheries, inland fisheries, aquaculture, and marketing. The Department is headed by a director and two vice-directors and comprises six sections: Structural Policy, Monitoring and Reporting on the Utilization of Financial Aid, Trade, Resource Management, Fisheries Administration, and Inland Fisheries (responsible for fisheries and aquaculture).

Cooperating Ministries: the Ministry of Infrastructure, the Ministry of Agriculture and Rural Development, the Ministry of Regional Development, the Ministry of Interior and Administration, the Ministry of Environment, the Border Guards.

Research institute that supports work of the Ministry in Inland Fishing is Institute in Olsztyn, which collects aquaculture production data and submits to the Ministry.

The Polish Fisheries Association currently consists of nine regional units, the strongest of which is the Unit of Salmonid Fish Producers (a member of the Federation of European Aquaculture Producers). They co-operates with central and regional administration, local government, social organizations, research and development facilities and universities. It also provides training and is co-organiser of conferences.

In Polish Marine Fishery Act marine organisms also refer to fish and shellfish. Therefore, their cultivation falls under the provisions of the Article 97.1, where it is stated that conducting breeding or rearing of marine organisms or restocking of fish in the maritime areas of the Republic of Poland requires a permit issued, by decision, by the minister competent for fisheries.

5.3.5 Fisheries law – outcome information

- Mussel fishery permission is required
- Mussel vessel must be registered and approved
- Vessel approval certificate must be carried along
- Mussel minimum size is 4 cm
- Closed mussel season: 15th of April and 14th of July (except for seed mussel fishery which is allowed during 1st of July until the 30th of April)

5.4 Waterways legislation

Besides their transport function, waterways fulfil a number of other functions. They supply drinking and domestic as well as irrigation water, they feed power stations, they are used for waste water disposal and for the removal of flood water, and they offer amenities for fishing and aquaculture.

5.4.1 Waterways legislation – case example Germany

German maritime water legislation may be divided into maritime shipping legislation and waterways legislation, the latter being authoritative for mussel aquaculture purposes. Details about the maritime shipping legislation are described shortly in Chapter 5.8 (other relevant national law).

German waterways legislation is constituted in the Federal waterways act (Bundeswasserstraßengesetz (WaStrG)[194]).

According to §1 WaStrG, inland and maritime waterways are federal waterways. Broadly speaking, maritime waterways are the German territorial coastal waters (12 nm zone).

The Federal Government is owner of the maritime waterways, using the ownership basically traffic related. The Federal States have extensive usage authorities in maritime waterways, if not compromising the waterways traffic function. The responsible authority for waterways administration is the Federal Waterways and Shipping Administration (Wasserstraßen- und Schifffahrtsverwaltung des Bundes, WSV), within the scope of business of the Federal Ministry of Transport and digital Infrastructure (Bundesministeriums für Verkehr und digitale Infrastruktur (BMVI)). The Federal Waterways and Shipping Administration (WSV) has set itself the task of coordinating the different waterways functions. The WSV maintains and manages the Federal waterways, including rebuilding and maritime traffic management. The Directorate-General for Waterways and Shipping (GDWS) subordinated the Federal Ministry of Transport and digital Infrastructure. The current 39 Waterways and Shipping Offices (WSA) are subjected to the GDWS as lower authorities. These local authorities represent the lower instance and carry out Federal sovereign responsibilities of the WSV like:

- Maintenance and operation of Federal waterways including Federal shipping infrastructure (sluices, weirs, operation centres etc.)
- waterway police

194 Bundeswasserstraßengesetz in der Fassung der Bekanntmachung vom 23. Mai 2007 (BGBl. I S. 962; 2008 I S. 1980), das durch Artikel 6 Absatz 42 des Gesetzes vom 13. April 2017 (BGBl. I S. 872) geändert worden ist. Stand: Neugefasst durch Bek. v. 23.5.2007 I 962; 2008, 1980; zuletzt geändert durch Art. 6 G v. 5.7.2016 I 1578. Hinweis: Mittelbare Änderung durch Art. 2 G v. 18.7.2016 I 1666 (Nr. 35) noch nicht berücksichtigt. Änderung durch Art. 4 Abs. 118 G v. 18.7.2016 I 1666 (Nr. 35) noch nicht berücksichtigt. Änderung durch Art. 2 G v. 23.12.2016 I 3224 ist berücksichtigt. Änderung durch Art. 6 Abs. 42 G v. 13.4.2017 I 872 (Nr. 22) ist berücksichtigt

- installation and operation of navigation signs
- water level reports
- ice control (own icebreakers)

Responsible Waterways and Shipping Offices for the German Baltic Sea are located in Lübeck (http://www.wsa-luebeck.wsv.de) and in Stralsund (http://www.wsa-stralsund.de).

In the German EEZ (beyond the 12 nm zone), the Federal Maritime and Hydrographic Agency (BSH) is the responsible authority.

5.4.2 Waterways legislation Germany – content with relevance to mussel aquaculture

Mussel farming in the 12 nm zone
Within the 12 nautical mile limit, i.e. in the area of the territorial sea, responsibility for the approval of mussel farms rests with the German Federal coastal states. Baltic German territorial waters are Federal waterways ((§1 (1) WaStrG). Mussel aquaculture located in these waters must respect the German maritime waterways legislation.

The German Federal Waterway Act (Bundeswasserstrassengesetz WaStrG) controls the legal relations within the Federal waterways and especially the prevention of risks to navigation. The WaStrG defines the type of waterways (§1 WaStrG): Marine mussel aquaculture takes place in maritime waterways. Areas between the coastline (or the seaward border of inland waterways) and the seaward border of the territorial sea (12 nm) are maritime waterways (§1 (2) WaStrG). The waterways use for e.g. wild mussel fishery or other fisheries is free of charge, if the fulfilment of the Federal administrative tasks is not compromised (§1 (3) 2. WaStrG). Mussel aquaculture implies the installation of structures and thus, excludes others from using the farming area. Aquaculture are a risk to the navigation (stretched lines, buoys,

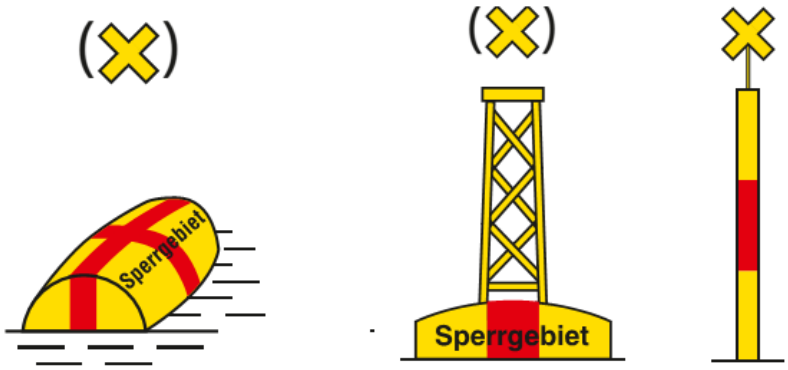

Fig. 9: Examples for navigational signs („restricted areas") used for aquaculture sites in Germany according to the German Shipping Law © WSA Bremerhaven 2013

nets) and therefore have to carry navigational signs.

Mussel farm installations in Germany Waterways require a river and shipping police permit (§ 31 (1) 2. WaStrG). The mussel farm installation has to be reported to the responsible WSA before starting (§31(2) WaStrG). The permit may include terms and conditions to balance or prevent the waterways or traffic impairment (§31(4) WaStrG), e.g. the installation of navigation signs (Fig. 9).

The responsible Waterways and Shipping Offices provide leaflets for the application of a river and shipping police permit[195].

The application has to be submitted 6 weeks prior to the installation date to allow a decision about the requirement of this permit. The application must inlude:

- applicant signature, place and date
- general plan
- site plan
- construction description including the construction costs
- floor plan and profile

The claim of an area in a Federal waterway needs a private usage contract[196] with the responsible WSA representing Germany as the owner of the land. The use of the waterways (in the 12 nm zone) is costly[197] and is regulated in the Administrative Regulation (VV-WSV 2604[198]). The cost of an area is calculated according to the regional conditions and is generally 7% of the maritime area market value. The market value of maritime areas is calculated according to the Federal Valuation Guidelines (Wertermittlungsrichtlinien[199]) and depends either on the possible yield of the area or on the value of the directly economically associated land area (generally 50% of the value of the associated land area). The maritime area market value has to be calculated on a case by case basis.

Mussel farming in the EEZ

Beyond the 12 nm zone, Baltic Sea waters are no longer Federal waterways. Hence, the Federal States are not responsible authorities. In these waters, the BSH is the agency which decides on the approval of mussel farm projects. It carries out the application procedure for mussel farms in the German Exclusive Economic Zone (EEZ). This topic will be discussed in Chapter 5.6 (Offshore installations law) in detail.

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[195] Wasser- und Schifffahrtsamt Lübeck (2006): Merkblatt zur Erteilung von strom- und schifffahrtspolizeilichen Genehmigungen im Bereich von Bundeswasserstrassen, 01.12.2006. Online available at http://www.wsa-luebeck.wsv.de/service/doc_pdf/ssg_merkblatt.pdf.
Wasser- und Schifffahrtsamt Stralsund (2011): Merkblatt ssG, 07.09.2011. Online available at http://www.wsa-stralsund.de/Schiff-WaStr/Wasserstrasse/ssG/Merkblatt_ssG/index.html.

[196] GDWS: Nutzungsvertrag. VV-WSV 2603 Liegenschaftsmanagement - Version 2016.1. Online available at https://www.wsv.de/service/faq/muster_nv.pdf.

[197] WSV: Verwaltungsvorschrift der Wasserstraßen- und Schifffahrtsverwaltung des Bundes (VV-WSV) Nutzungsentgelte. VV-WSV 2604, p. 17

[198] Verwaltungsvorschrift der Wasserstraßen- und Schifffahrtsverwaltung des Bundes (VV-WSV) Nutzungsentgelte. VV-WSV 2604, Version 2016.1.

[199] Wertermittlungsrichtlinien – WertR 2006; BAnz. Nr. 108a vom 10. Juni 2006; Berichtigung vom 1. Juli 2006 BAnz. Nr. 121 S. 4798

5.4.3 Waterways legislation Germany - gaps and shortages

Mussel cultivation needs permit to use the waterways. The permission and use of waterway is costly and represents one of the major administrative costs in mussel business. The price for the use of a maritime area needs to be calculated on a case by case basis and is hardly comprehensible.

Also the navigational signs that have to be installed. These are available in different types and price categories depending on the decision of the WSA.

5.4.4 Waterways legislation (contributions of project partners)

5.4.4.1 Poland

Act concerning the maritime areas of the Republic of Poland and the maritime administration of March 1991. The Act defines the legal situation of the maritime areas of the Polish Republic, the coastal area and the authorities of the marine administration and their scope of jurisdiction. According to the Article 1. 1 the Act regulates water management in accordance with the principle of sustainable development, in particular the development and protection of water resources, the use of water and the management of water resources. The provisions of the Act shall not be applicable if an international treaty to which the Republic of Poland is a party provides otherwise. Article 5. 1 states division of the waters into surface and underground. The waters, except for the waters of the territorial sea and Exclusive Economic Zone, are the internal waters (Fig. 10). While coastal waters are defined[200] in the Article 5b, of the Act, as the area of surface water from the shoreline whose external boundary is one nautical mile from the baseline, excluding the internal waters of the Gulf of Gdańsk and adjacent waters of the territorial sea. If the transitory waters are larger than the coastal waters, the external boundary of that range is the outer boundary of coastal waters.

In spatial terms the division of the maritime areas of the Republic of Poland there are:

(1) The internal waters;

(2) The territorial area (marine area of 12 nautical miles (22 224 m) wide, measured from the baseline of the sea);

(3) The exclusive economic zone.

[200] Act of 21 March 1991 on Maritime Areas of the Republic of Poland and Maritime Administration (Journal of Laws of 2016, item 2145, and from 2017, item 32, 60 and 785)

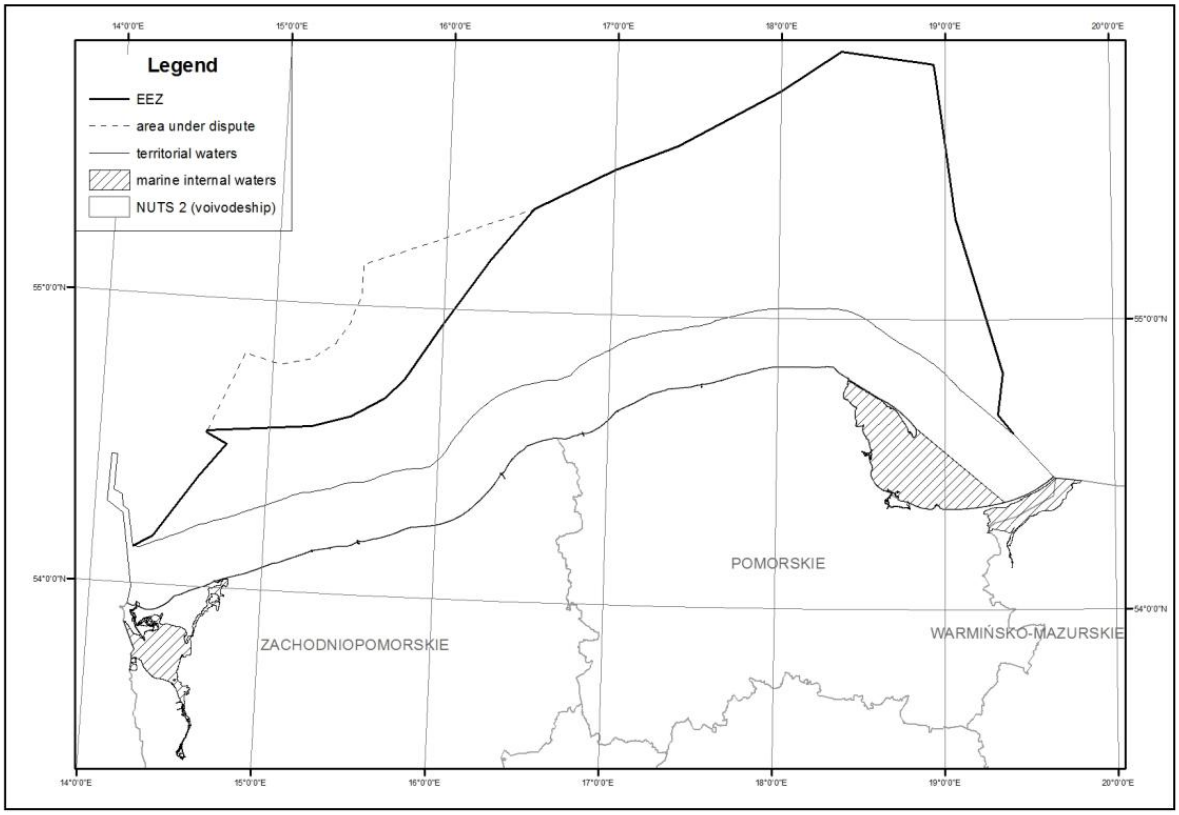

Fig. 10: Source: HELCOM - Country Fiche (www.helcom.fi/action-areas/maritime-spatial-planning/country-fact-sheets)

5.4.5 Waterways legislation – outcome information

Mussel farming in German Baltic territorial waters is carried out in a Federal waterway and requires permission by the WSV.

Mussel farming in Germany requires a usage contract between the farmer and the WSV. The costs for usage are calculated on a case by case basis and depend either on the value of the directly economically associated land area or on the expected yield of the maritime area.

5.5 Offshore Installations Law

5.5.1 Offshore Installations Law (EEZ only) – case example Germany

The legal basis for mussel farms installations in the German EEZ is the United Nations Convention on the Law of the Sea of 10 December 1982 and the German Federal Maritime Responsibilities Act (Seeaufgabengesetz – (SeeAufgG)[201]), implemented by the Maritime Facilities Act (Seeanlagengesetz (SeeAnlG[202]).

5.5.2 Offshore Installations Law in Germany (EEZ only) – content with relevance to mussel aquaculture

Mussel farms in the EEZ are maritime installations (§ 1 (2) No. 3 SeeAnlG) and therefore must respect the legal requirements of the SeeAnlG. Maritime installations require an approval (§ 6 (1) SeeAnlG).
The approval procedure must respect the principles and current aims (or aims in process) of spatial planning (§ 6 (2) SeeAnlG).
The required written application for approval must contain a detailed description of the installation and its operation including the description of safety and precautionary measures. It must contain drawings, explanations and plans of the mussel farm. The BSH may also request an expert opinion about technical the state-of-the-art and safety requirements (§ 6 (3) SeeAnlG). The approval may be time limited and include incidental provisions (§ 6 (4) SeeAnlG)[203].

The mussel farm has to be approved (§ 7 (1) SeeAnlG) provided that

- it does not impair the safety and efficiency of navigation

a) impairment of navigation signs → mussel farm may not use lights that may be confused with navigational signs

b) impairment of shipping and shippingways → mussel farms usually do not cause ships to slow down or stop which may be an impairment. However, a roundabout way for shipping is acceptable.

and

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201 Gesetz über die Aufgaben des Bundes auf dem Gebiet der Seeschiffahrt (Seeaufgabengesetz – SeeAufgG) in der Fassung der Bekanntmachung vom 17. Juni 2016 (BGBl. I S. 1489), das zuletzt durch Artikel 21 des Gesetzes vom 13. Oktober 2016 (BGBl. I S. 2258) geändert worden ist. Stand: Neugefasst durch Bek. v. 17.6.2016 I 1489. Zuletzt geändert durch Art. 21 G v. 13.10.2016 I 2258. Hinweis: Mittelbare Änderung durch Art. 2 G v. 18.7.2016 I 1666 ist berücksichtigt

202 Seeanlagengesetz vom 13. Oktober 2016 (BGBl. I S. 2258, 2348)

203 For example, wind farm approvals expire after 25 years, so that after the end of their regular service life an extension of approval can be re-considered. (http://www.bsh.de/en/Marine_uses/Industry/Wind_farms/index.jsp)

- it is not detrimental to the marine environment according to the Art 1 (1) No 4 (UNCLOS)[204] and the bird migration is not put at risk.

The mussel farmer need to commit to not to put the marine environment at risk and not to impair navigational safety of ships and smooth traffic movements, military or private interests (§12 SeeAnlG).

Also the risk of mussel aquaculture facilities to maritime navigation has to be evaluated. In order for a mussel farm installation to obtain approval, the BSH as the responsible authority (§ 6 SeeAnlG) and the Directorate-General for Waterways and Shipping (GDWS) must have consented to it under the aspect of navigational safety (§ 8 SeeAnlG).

The BSH must control the offshore farm (with participation of the WSV) (§14 SeeAnlG). The BSH also publishes the installation of a restricted area in the Notices to mariners (Nachrichten für Seefahrer) and also implements the farm site in official nautical charts (§11 SeeAnlG). In the course of the approval procedure, the BSH reviews whether the marine environmental protected features like birds, fish, marine mammals, benthos, sea bottom and water are put at risk by mussel aquaculture. Unlike other offshore installations, mussel farms do not require an environmental impact assessments based on the UVPG (Environmental Impact Assessment Act). However, the impact of large musselculture areas on the environment has to be evaluated (see Chapter 3.2 MSFD for details).

It is possible to install safety zones around a mussel farm 500 m from each point of the farms outer edge (§10 SeeAnlV).

5.5.3 Offshore installations law Germany - gaps and shortages

The legal situation concerning the safety of ships and smooth traffic movement is yet not well interpreted (moreover overvalued) for aquaculture installations.

The common safety measures for offshore installations like navigation lights and safety zones are not well applicable for aquaculture installations, because these are made for bigger and more dangerous systems. The measures and the resulting costs would be an enormous cost factor for the farmer. Regarding that aquaculture serves as food production, the proportionality to other installations (mining resources) is not satisfying yet and needs new applicable rules.

5.5.4 Other National Offshore Installations Law (contributions of project partners)

5.5.4.1 Poland

In Poland any specific offshore installation law does not exist. In realm to the offshore installation Geological and mining Law currently is in use, with concern on exploratory

[204] "pollution of the marine environment" means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and .reduction of amenities

fossils on the sea and the Act on Renewable Energy (RES) concerned on the Offshore Wind Energy.

Previously used and still active RES Act is the Energy Law of April 1997, and the transitional provisions of the Act of February 2015 on renewable energy sources. Nevertheless, new established RES Act provides that Poland will maintain the green certificate system for the existing renewable energy installations ("RES" installations), albeit with some changes to the current rules.

5.5.5 Offshore Installations Law – outcome information

Although it is not clear if the Offshore Installations legislation yet is applicable for mussel farming, theoretically mussel culture in the German EEZ needs an approval by the BSH. The offshore legislation is extremely technological oriented and was not developed for aquaculture purposes. This creates disproportionate costs for aquaculture business.

5.6 Other National Law

Besides the already listed national law, also other national law is relevant for mussel aquaculture in Germany. Law concerning maritime shipping and vessel safety, labour, insurance, food hygiene and animal welfare has to be taken into consideration.

5.6.1 Maritime Shipping Law

The Maritime Shipping law controls the use of ships on national and international waterways. Following regulations are used on German waterways:

- International Regulations for Preventing Collisions at Sea (Kollisionsverhütungsregeln - KVR[205]) in conjunction with the respective implementation regulation (SeeStrVO)[206]
- German Traffic Regulations for Navigable Maritime Waterways (Seeschifffahrtsstraßenordnung (SeeSchStrO)[207]) including the WSD notifications
- traffic rules in national parks and nature conservation areas

The International Regulations for Preventing Collisions at Sea (KVR) are applicable at high seas as well as in German territorial waters. The latter is only the case if the Maritime Waterways Regulation (SeeSchStrO) exhibits no special legal provisions.

The Maritime Waterways Regulation (SeeSchStrO) is applicable in all German Baltic Sea waters. This Regulation complements and specifies international regulations on national waterways. The basis for the SeeSchStrO is the German Maritime Responsibilities Law (Seeaufgabengesetz). The SeeSchStrO determines maritime driving rules and rules for navigation signs and noises. The Regulation is applicable on coastal waters 3 nm from coastline for all waterways users equally. In waters beyond 3 nm and the seaward delimitation of the territorial sea, only the some provisions of the present Regulation apply (§ 1 (2) SeeSchStrO).

To protect fauna and flora, national parks and nature conservation areas determined special traffic rules. These rules include spatial and temporal traffic regulations.

The German Maritime Responsibilities Law is the essential authorisation basis for the Maritime Law and the Federal Administration in Germany. It controls the duties and responsibilities of the involved Federal Authorities.

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205 Kollisionsverhütungsregeln vom 13. Juni 1977 (BGBl. I S. 816), die zuletzt durch Artikel 1 Nummer 2 der Verordnung vom 18. März 2009 (BGBl. I S. 647) geändert worden ist. Stand: Zuletzt geändert durch Art. 1 Nr. 2 V v. 18.3.2009 I 647

206 Verordnung zu den Internationalen Regeln von 1972 zur Verhütung von Zusammenstößen auf See vom 13. Juni 1977 (BGBl. I S. 813), die zuletzt durch Artikel 22 des Gesetzes vom 13. Oktober 2016 (BGBl. I S. 2258) geändert worden ist. Stand: Zuletzt geändert durch Art. 22 G v. 13.10.2016 I 2258

207 Seeschiffahrtsstraßen-Ordnung in der Fassung der Bekanntmachung vom 22. Oktober 1998 (BGBl. I S. 3209; 1999 I S. 193), die zuletzt durch Artikel 2 § 3 der Verordnung vom 29. November 2016 (BGBl. I S. 2668) geändert worden ist. Stand: Neugefasst durch Bek. v. 22.10.1998 I 3209; 1999 I 193; zuletzt geändert durch Art. 2 § 3 V v. 29.11.2016 I 2668

5.6.1.1 Poland

Responsible authority for the transport on sea is the Ministry of Maritime Economy and Inland Waterways. The main regulation defining rules for transport is Maritime Code of 2001, which regulates maritime shipping law, it applies to commercial, research, sports and leisure ships.

5.6.2 Vessel safety

The German fishing vessels (and aquaculture vessels) of less than 24 m length are covered by German law. The the German Ship Safety Act (Schiffssicherheitsgesetz (SchSG)[208]) and the Ship Safety Regulation (Schiffssicherheitsverordnung (SchSV)[209]) include ship safety requirements regarding the design and the construction of the vessel depending on the ship's size, hull form, fishing gear and intended area of operation. Some safety requirements are different for open and for covered vessels. The fishing vessel must be adequately designed and constructed for the intended area of operation. Further details on ship safety requirements can be found in the German guideline for fishing vessels of less than 24 m length[210].

5.6.2.1 Poland

In regard to the maritime safety regulations they are laid down in the Act on Maritime safety[211] of November 2000 that is considering matters referring to maritime safety in shipbuilding, ship machinery and equipment, qualifications and composition of crew, safe navigation and rescues at sea.
Nevertheless, vessel safety is also regulated with the following amending Acts:
- Act of April 2004 to amend the Act on maritime safety;
- Act of December 2003, amendment of the Maritime Code from 2001;
- Act of May 1991, on work on board merchant sea-going vessels;
- Act on maritime safety from November 2000.

Likewise, list of implementing Acts

- Regulation of the Minister for Infrastructure (July 205), regarding inspection and documents certifying the safety of sea vessels;

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[208] Schiffssicherheitsgesetz vom 9. September 1998 (BGBl. I S. 2860), das durch Artikel 1 der Verordnung vom 28. Juni 2016 (BGBl. I S. 1504) geändert worden ist. Stand: Zuletzt geändert durch Art. 1, 2 und 3 V v. 25.9.2015 I 1664. Hinweis: Änderung durch Art. 1 V v. 28.6.2016 I 1504 (Nr. 30) textlich nachgewiesen, dokumentarisch noch nicht abschließend bearbeitet

[209] Schiffssicherheitsverordnung vom 18. September 1998 (BGBl. I S. 3013, 3023), die durch Artikel 177 des Gesetzes vom 29. März 2017 (BGBl. I S. 626) geändert worden ist. Stand: Zuletzt geändert durch Art. 2 V v. 28.6.2016 I 1504 Hinweis: Änderung durch Art. 177 G v. 29.3.2017 I 626 (Nr. 16) textlich nachgewiesen, dokumentarisch noch nicht abschließend bearbeitet

[210] BRD: Guideline to § 6 Abs. 1 No. 6 of the Ship Safety Ordinance for safety requirements of fishing vessels with a length of less than 24 m.

[211] Maritime Safety Act (Text No. 1368), Dziennink Ustaw, 2000-12-13, No. 109, pp. 6149-6164

- Regulation of June 2003 of the Minister of Infrastructure concerning inspection and safety documents of maritime vessels;
- Regulation of April 2004 of the Minister of Infrastructure to amend the Regulation from 2003 of the Minister of Infrastructure on inspection and safety documents of maritime vessels
- Order of 24 March 2003 of the Minister of Infrastructure concerning vocational training centres for crew members of sea going vessels (Text No. 847).
- Order of 6 February 2002 concerning professional seafarers' vocational training and qualifications (Text No. 734).
- Order of 13 December 2002 of the Minister of Infrastructure on detailed navigation safety requirements to be fulfilled by sea-going vessels (Text No. 1867).
- Order of 18 November 2002 of the Minister of Infrastructure concerning detailed procedure for conducting inspections with regard to crew qualification and composition on sea-going vessels (Text No. 1666).

5.6.3 Labour Law

Labour law includes laws and regulations concerning non-selfemployment. Labour law is either individual (relation between employee and employer) or collective (relation between trade union, employees representatives or staff council and the employer associations). The essential content of labour law is the employee protection.

5.6.3.1 Poland

Labor law in Poland is regulated by the Labor Code of June 1974, which governs the rights and obligations of employees and employers. An employment contract is defined as contract between an employer and an employee, by which the employee voluntary agrees to personally perform work for the employer under supervision of the employer and in location and time indicated by the employer, being in turn entitled to remuneration for the work performed.

5.6.4 Insurance Law

One major aspect is the (obligatory) membership in an employers' liability insurance association (Berufsgenossenschaft (BG)). Concerning mussel culture business this would be the “BG Verkehr”. The BG Verkehr is the accident insurance agency for a large business variety such as traffic, transport, aviation as well as shipping and fishery. As accident insurance the BG Verkehr publishes standards for safety at work and health protection (e.g. ship safety check) and takes care of the insured person in cases of accidents at work or occupational diseases. The BG Verkehr carries out ship surveys according to the guideline on Ship Safety (see section above). If the ship survey has shown compliance with the provisions of this guideline, the ship safety division of the BG Verkehr issues a ship safety certificate, valid for a maximum of 5 years.

The common insurance law controls the relations between insured persons and insurances. Major insurances are either company insurances (concern the insurance of property like builings, eletronic devices) but also liability insurance and legal expense insurances are important insurances to take into consideration.

5.6.4.1 Poland

The Insurance Law in Poland is consisted of a series of Acts, which regulate the financial market and the development of insurance activities. A special Financial Supervision Commission also oversees the process of licensing insurance companies and supervising their activities. Act of 22 May in the insurance activity, Act of 22 May on insurance mediation and Act of 22 May on Insurance and Pension Funds Supervision are important legislative documents that provide legal resources for the insurance industry in Poland.

The Financial Supervision Commission is the main regulatory body in Poland that deals with the financial services industry and the insurance activity in the country.

5.6.5 Animal Welfare Law

As special administrative law, the German Animal Welfare Act (Tierschutzgesetz (TierSchG)[212]) was established as human responsibility to protect animal life and well-being. The Animal Welfare Act principle is: Nobody may cause pain, suffer or damage to animals without rational reason. The Animal Welfare Act includes rules for animal husbandry, slaughter (§12 (11) 2. TierSchSchlVO concerns the killing of mussels)[213], animal experiments as well as rules for breeding and trade.

The German working group VDFF (Verbandes Deutscher Fischereiverwaltungsbeamter und Fischereiwissenschaftler e.V.) developed a guideline including recommendations for self-monitoring in the aquaculture business according to § 11 (8) TierSchG. The major principle of the guideline is the responsible animal handling in terms of "good practise" for ethical, legal and economical reasons. The guideline includes descriptions, practical instructions to facilitate self-monitoring in the aquaculture business.

[212] Tierschutzgesetz in der Fassung der Bekanntmachung vom 18. Mai 2006 (BGBl. I S. 1206, 1313), das durch Artikel 141 des Gesetzes vom 29. März 2017 (BGBl. I S. 626) geändert worden ist. Stand: Neugefasst durch Bek. v. 18.5.2006 I 1206, 1313; zuletzt geändert durch Art. 4 Abs. 87 G v. 18.7.2016 I 1666. Hinweis: Änderung durch Art. 141 G v. 29.3.2017 I 626 (Nr. 16) noch nicht berücksichtigt

[213] Tierschutz-Schlachtverordnung vom 20. Dezember 2012 (BGBl. I S. 2982)

5.6.5.1 Poland

In Poland Animal Welfare Law is transposed trough the Animal Protection Act[214], amended in the 2010. Where in the Article 2 of the Act is covered responsibility of the farming animals, likewise within the Art. 1 is stated that the bodies of the Public Administration will undertake activities aimed at protecting animals, and will cooperate with appropriate domestic and foreign institutions and organizations.

[214] OJ No 111, Item 724(1997); No 106, Item 668 (1998)

6 Annexes

6.1 Annex I: Comparison of the legislation regarding mussel farming in Germany and Latvia

(Reported by Zaiga Ozolina)

In comparison with the Latvia's legislation, in the analysis of German legislation is it is clearly seen that the aim of the harvesting of mussels is clearly defined - it is envisaged only for the production of mussel meal and agricultural needs.
If upon the conclusions of the analysis of the Latvia's legislation it is clearly seen that the legal regulation is mainly based on defining the conditions to comply with in establishing mussel farming/ depositaries, without having defined the proper place (focusing on the active use of the territory), the analysis of German legislation shows that is focuses on the effective use of the sea water as a source of natural resource.
In Latvia apart from Germany, mussel farming can be used as the place for agricultural production, as well as production sites for the improvement of the quality of the sea water, thus cleaning the water from the pollution with N and P.

The German law requirements met applied to harvesting of mussels with net differ from those of mussel farming on ropes/rods. Latvia doesn't have a clear opinion whether mussel is to be considered as a wild animal or agriculture animal.

	DE	LV
1	**Water Framework Directive** *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy*	Law on Water Management, Cabinet Regulations No 418 as of 31 May, 2011, "Regulations Regarding Water Bodies at Risk" Law on Marine Environment Protection and Management, EU Shellfish Directive 2006/113/EU on water quality requirements (validity ended the 31.12.2013), this directive was not implemented in Latvia.
2	**Marine Strategy Framework Directive** *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*	Law on Maritime Environment Protection and Management Cabinet Regulations No 393 as of 15 July, 2014 "On the order of registration and identification marking of agricultural and aquaculture animal and herd and depositaries / settlement"
3	**Habitats Directive** *Council Directive 92/43/EEC of 21 May 1992 on the*	Law on Protection of Species and Biotope Cabinet Regulations No 153 as of 21 February, 2006 "On Regulation of the List of

	conservation of natural habitats and of wild fauna and flora	the EU Priority Species and Biotope existing in Latvia"
4	**Birds Directive** *Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds*	
5	**Animal Disease Directive** *Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals*	Cabinet Regulations No 146 as of 14 March, 2017 "On Regulation of Veterinary Requirements for Aquaculture Animals, their Products and its Circulation, as well as Preventive Fight of Inflectional Diseases of some Aquaculture Animals". Cabinet Regulations No 753 as of 9 December, 2014 "On Conditions of Activities of Fishing and Aquaculture Product Producer Groups, and its Operational Conditions and Control Procedures"
6	**Maritime Spatial Planning Directive** *Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning*	Maritime spatial planning is under development Cabinet Regulations No 740 as of 30 October, 2012 "Procedures of the Development, Implementation and Monitoring of the Maritime Special Plan"
7	**Animal by-products Regulation** *Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002*	Directly applicable Veterinary Medicine Law pursuant to which mussels are aquaculture animals and their farming sites are animal depositaries Cabinet Regulations No 275 as of 17 April, 2012 "On Order of Enterprise Recognition and Registration of Equipment and Person that are involved in Processing of Animal By-products and derived Products that are not intended for Human Consumption"
8	**Organic Products Regulation** *Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91*	Directly applicable From of this point of view the mussel farming has not been examined in Latvia.

9	**EMFF Funding – Regulation** *Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund and repealing Council Regulations (EC) No 2328/2003, (EC) No 861/2006, (EC) No 1198/2006 and (EC) No 791/2007 and Regulation (EU) No 1255/2011 of the European Parliament and of the Council*	Directly applicable From of this point of view the mussel farming has not been examined in Latvia.
10	**Regulation of EU market for fishery and aquaculture products** *Regulation (EU) No 1379/2013 of the European Parliament and of the Council of 11 December 2013 on the common organisation of the markets in fishery and aquaculture products, amending Council Regulations (EC) No 1184/2006 and (EC) No 1224/2009 and repealing Council Regulation (EC) No 104/2000*	Directly applicable From of this point of view the mussel farming has not been examined in Latvia.
11	**Aquaculture Alien Species Regulation** *Council Regulation (EC) No 708/2007 of 11 June 2007 concerning use of alien and locally absent species in aquaculture*	Directly applicable From of this point of view the mussel farming has not been examined in Latvia.
12	**EU hygiene package on food hygiene legislation** Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs. OJ L 139, 30.4.2004, p. 1–54 Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food	Directly applicable

	of animal origin. OJ L 139, 30.4.2004, p. 55–205 Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption. OJ L 139, 30.4.2004, p. 206–320	
13	**Feed Regulation** *Regulation (EC) No 767/2009 of the European Parliament and of the Council of 13 July 2009 on the placing on the market and use of feed, amending European Parliament and Council Regulation (EC) No 1831/2003 and repealing Council Directive 79/373/EEC, Commission Directive 80/511/EEC, Council Directives 82/471/EEC, 83/228/EEC, 93/74/EEC, 93/113/EC and 96/25/EC and Commission Decision 2004/217/EC (Text with EEA relevance*	Directly applicable Cabinet Regulations No 1111 as of 29 September,2009 „ Rules on animal feed and feed ingredients of forbidden substances and the feed safety requirements
14	**Mussel aquaculture in the Baltic Sea – Relevant German National Law**	
14.1.	Nature Conservation Law	Law On Animal Protection
14.2.	Construction Law	Cabinet Regulations No 631 as of 14 October, 2014 "Construction Regulation for Structures of Internal Waters and Territorial Waters and Exclusive Economic Zone of the Republic of Latvia
14.3.	Fisheries Law	Fishery Law
14.4.	Maritime water legislation	Cabinet Regulations No 1171 as of 21 December, 2010 „ Regulations Regarding the Procedures for the Regime of Navigation in

		Latvian Waters”
14.5	Offshore Installations Law (EEZ only)	Directly applicable UN Convention on the Law of the Sea
14.6	Maritime Shipping Law	Maritime Administration and Marine Safety Law
14.7	Vessel safety law	Cabinet Regulations No 451 as of 12 July, 2016 “On Technical Requirements for the Technical Means of Navigation and the Order on Provision of its Activity”
14.8	Labour law	Labour Protection Law Cabinet Regulations No 359 as of 1 July, 2003 “Regulations with respect to Safety and Health Protection Requirements and Medical Treatment on board Vessels” Cabinet Regulations No 61 as of 4 March, 2003,, Rules on Safety and Health Protection Requirements for Work on Fishing Vessels”
14.9	Insurance law	Not determined
14.10	Animal Welfare Law	Law on Animal Protection
15.		REGULATION (EC) No 183/2005 laying down requirements for feed hygiene
16.		Regulation (EC) No *999/2001* laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies (prohibition of chicken and fish feed production) – is not applied on mussel

6.2 Annex II: The legislation regarding mussel farming in Sweden

(reported by Izabela Alias; "A practical guideline based on CAB's Västra Götaland experience of dealing with application for mussel cultivation")

The guideline provides a general overview of the legal aspects regarding to mussel aquaculture under fishery legislation and the Environmental Code (ex Chapters 3 and 4 (public interests) and Chapter 7 (Shore Protection Areas, Nature Conservation, Natura 2000)) in Sweden. Authorization for cultivation of mussels is not considered in the meaning of the Environmental Code. However, the rules contained in the Environmental Code may affect the possibility of obtaining permission for cultivation.

The County Administrative Board is responsible for examination of the application for mussel cultivation. The County Administrative Board may also propose a program for the control of mussels and carry out an environmental monitoring.
Referral agencies such as the Swedish Transport Agency, the Swedish Maritime Administration, the Swedish Board of Agriculture etc. are also involved in the process.
The first step is to find out who owns the water where the farm is to be placed - the state, the municipality or if there is a private owner. In a private water this is usually arranged as a leasehold with a yearly fee paid to the owners. If waters are owned by the municipality mussel farmer shall ask for permission.

At the same time as the cultivation permit application (the cultivation permission is valid 10 years), the shore protection dispensation shall be also applied for, primarily to the municipality, but in some cases also to the County Administrative Board (eg nature conservation) with temporary dispensation, 5-10 years. Normally, shore protection is from the shoreline and 100 meters out. In individual cases, the County Administrative Board has the right to extend the protection of the coast to a maximum of 300 meters from the shoreline. In the case mussel farm is planning closer to the shoreline then shore protection dispensation is required.
Hygiene plan must be formulated for each mussel farm with support of specifically appointed veterinarian.
Once the County Administrative Board has received an application that is complete, it is sent to the municipality concerned, to the Transport Agency (for comments and whether the cultivation may hinder boat traffic), to the Maritime Administration responsible for maritime traffic management, and submitted to other units at the County Administrative Board for consultation. The County Administrative Board's decision indicates the extent of the cultivation, the conditions for cultivation, the reasons for the decision and specific information.

When examining the cultivation permit, the following is assessed:

1. Location of the farm
2. Possible negative impact on public interests for the purposes of fishing, nature conservation, outdoor recreation or conservation of the cultural environment in Chapter 3. MB
3. Risk of spreading diseases and parasites
4. Risk of genetic contamination

According to the regulations of the Swedish Board of Agriculture, permission for cultivation may not be granted to species that are foreign to the area.
Authorizations may also not be granted for water areas where species of national interest exist, for example wild salmon stocks, due to risk of disease.
Permits for cultivation are not granted to water areas as supported by the Environmental Code if the cultivation can harm the national interests of professional fishing, nature conservation or outdoor life.
According to SJVFS 2014: 4, mussel farm must be marked with yellow special marks, and a SSA license is required from the Transport Agency before the establishment of the farm.
Mussel farmer must provide a bank guarantee to cover the risks related to their businesses.
After the cultivation permit has been approved, additional maritime safety assessment status is required. The actual coordinates shall be reported to the Swedish Maritime Administration (by E-mail to ufs@sjofartsverket.se) for the introducing on the map.

Water Framework Directive

The Water Framework Directive was incorporated into Swedish legislation in 2004.
The Swedish Government and Parliament has the overall responsibility for the WFD (including making changes to existing legislation and prepare and adopt the necessary ordinances in order to implement the WFD into Swedish legislation).
The Swedish Agency for Marine and Water Management (Havs- och vattenmyndigheten; HaV) and the Geological Survey of Sweden (Sveriges Geologiska Undersökning; SGU) are responsible for issuing regulations and preparing guidances for the implementation of the WFD. The Swedish Meteorological and Hydrological Institute (SMHI) is responsible for providing data and other necessary information for the implementation.

In Sweden, the WFD was formally adopted in Swedish law by:

- Chapter 5. of The Swedish Environmental Code (1998:808) (5 kap. Miljöbalken (1998:808)
- Ordinance on the management of the quality of the water environment SFS 2004:660 (Förordning (2004:660) om förvaltning av kvaliteten på vattenmiljön)
- Ordinance (2007:825) with instructions for the County Administrative Board (Förordning (2007:825) med länsstyrelseinstruktion).
- The Environmental Protection Agency's regulations and general advice on classification of and quality standards for surface water. NFS 2008:1 (Naturvårdsverkets föreskrifter och allmänna råd om klassificering och miljökvalitetsnormer avseende ytvatten. NFS 2008:1)

Advice on the application of assessment criteria were provided in a handbook *Status, potential and quality requirements for lakes, water courses, coastal and transitional waters: A handbook on how quality requirements in bodies of surface water can be determined and monitored. Swedish Environmental Protection Agency* 2007:4 (Status, potential och kvalitetskrav för sjöar, vattendrag, kustvatten och vatten i övergångszon. En handbok om hur kvalitetskrav i ytvattenförekomster kan bestämmas och följas upp 2007:4), and additional coordinating documents have been developed by the Water District Authorities, which are responsible for coordinating assessments. Furthermore, the instructions have been updated by the Swedish Agency for Marine and Water Management (Havs- och vattenmyndighetens föreskrifter om klassificering och miljökvalitetsnormer avseende ytvatten. HVMFS 2013:19).

The Swedish Environmental code (EC) was adopted in 1998 and entered into force in January 1999. The EC contains 15 acts, the fundamental environmental rules. More detailed provisions are laid down in ordinances made by the Government.
More information on the EC can be found on the web site of The Government of Sweden: https://www.government.se/legal-documents/2000/08/ds-200061/

Ordinance on the management of the quality of the water environment SFS 2004:660 was adopted in June 2004. According to the ordinance Sweden should be divided into five River Basin Districts (RBD's) and The Water Authority (WA) is responsible for coordinating the implementation of the WFD within the RBD. The WA's are placed at five County Administrative Board's (CAB) and are responsible for the consultation and establishment of Ecological Quality Standards (EQS), monitoring programmes, programmes of measures and the preparation of a river basin management plan for the RBD. The programmes of measures only address authorities (for example County Administrative Boards and Municipalities) as the ones responsible for performing the measures.
HaV (surface water) and the SGU (groundwater) are authorized to prepare and adopt necessary regulations on characterisation and analysis, quality standards, River Basin Management Plans, Programmes of Measures, monitoring and reporting.
HaV is the regulatory and guiding authority for the implementation of the WFD. It also coordinates Sweden's five Water District Authorities which in turn oversee the work carried out by the counties within their districts. HaV is responsible for the reporting to the European Commission on the country's progress.

Ordinance (2007:825) with instructions for the County Administrative Board
According to the ordinance the County Administrative Boards (CAB) is responsible for working with the implementation of the WFD. Each Water Authority (WA) shall have a Water Board (WB), who is responsible for making decisions in WFD matters (for example Programmes of Measures and River Basin Management Plans). The WB or the WA can delegate to the CAB's to carry out the operative work with the implementation, for example the preparation of drafts (draft Programmes of Measures for instance), carry out monitoring and programmes of measures, be responsible for the co-ordination of the work in the catchments and making decisions. However, decision making for quality standards, programmes of measures and river basin management plans can not be delegated to the CAB's. The WA's shall in co-operation with the CAB's divide the district in sub-areas (usually one large catchment or a group of smaller catchments). The CAB's shall help the WA's with the implementation. The WA's and the CAB's is supposed to establish reference groups in order to involve interested parties in the implementation. The ordinance also describes further how the WB's shall be established and how their work shall be carried out. A decision made by a WB cannot be appealed against.
Sweden has 21 **County Administrative Boards (CAB)**. Each CAB has, according to a commission from the Water Authorities, established a secretariat for the implementation of the WFD on county level. The secretariat is supposed to carry out the characterization an analysis, produce draft monitoring programmes and programmes of measures. The documents shall be produced in co-operation with neighbor counties, local authorities, organizations and other interested parties.

Marine Strategy Framework Directive – national implementation

The Marine Strategy Framework Directive was incorporated into Swedish law in 2010 as part of the Marine Environment Ordinance (Havsmiljöförordningen (2010:1341)) which complies with the directive. The objective is that both Baltic Sea and North Sea reach good environmental status.
The Swedish Agency for Marine and Water Management (Hav) is responsible for the practical implementation of the Directive in Sweden. According to the regulations and measures adopting by HaV other respective authorities are responsible to fulfill their obligations under the Directive. The Marine Environment Ordinance covers all coastal waters and offshore waters, i.e. waters right up to the boundary with the economic zone.

Habitats Directive

In Sweden, the EU provisions on species protection from the Birds Directive (2009/147/EC) and the Habitats Directive (92/43/EEG) are mainly transposed to the Species Protection Ordinance (Artskyddsförordningen; 2007:845). The Ordinance contains provisions governing capture, killing and taking of species from the wild, trade and other actions involving specimens of animal and plant species in need of protection.
The Swedish implementation of the obligations concerning species protection from the two EU Nature directives is manly found in the Species Protection Ordinance. In addition to this, acts where the intent is to kill or capture wild birds or mammals are regulated the Hunting Ordinance (1987:259). Similarly, the species protection of fishes, mollusks and crayfish is found in the fishing legislation (Ordinance on fishing, aquaculture and fishing industry 1994:1716).
The species protection in the Species Protection Ordinance is a mixture of the provisions from the two EU Nature directives. Broadly speaking, the birds in Sweden enjoy similar protection as the animal and plant species protected by the Habitats directive.
Birds Directive

Maritime Spatial Planning Directive

Sweden has implemented the EU Framework Directive on Maritime Spatial Planning into Swedish legislation through the The Swedish Environmental Code (1998:808) and the Marine Spatial Planning Ordinance (2015:400).
According to the Swedish Environmental Code, there shall be three national marine spatial plans – one for the Gulf of Bothnia, one for the Baltic Sea and one for Skagerrak and Kattegat. The plans shall provide guidance to public authorities and municipalities how to plan and review the claims for the use of the area. The plans shall cover Sweden's exclusive economic zone and the areas that are not a part of private properties in Swedish territorial waters from one nautical mile outside the baseline that are considered being in locations in Swedish territorial waters (Act concerning the Territorial Waters of Sweden (1966:374) and Act concerning Territorial Waters and Maritime Zones of Sweden (2017:1272), respectively).
The marine spatial plans shall be approved by the Swedish Government. The Environmental Code states that the SwAM is responsible for preparing the marine spatial plan proposals. According to the Planning and Building Act 88, the municipality are responsible for preparing the comprehensive plan for the entire municipal areas, including the territorial sea. The national marine spatial plan is rooted in the Environmental Code and extends out to and

including the exclusive economic zone. The comprehensive plan and the marine spatial plan overlap in a part of the territorial sea. In the area where the plans overlap, both of the plans are in effect, while in the outermost marine area, only the marine spatial plan is in effect and in the coastal area, only the comprehensive plan is in effect.

Animal by-Products Regulation

All products from the animal kingdom that are not intended for human consumption and not yet processed as manufactured products, are defined as animal by-products and are regulated in Regulation (EC) No 1069/2009 of the European Parliament and of the Council.
EU legislation on animal by-products consists of two regulations (a basic regulation and an implementing regulation). The regulations are directly applicable in Sweden.

EC 1069/2009 Regulation of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 177/2002 (Animal by-products Regulation)

EU 142/2011 Commission regulation implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive

In Sweden the EU:s regulations are supplemented and completed by national ordinances and implementing rules:

SFS 2006:805 Act on Feed and Animal By-products (Lag (2006:805) om foder och animaliska biprodukter)

SFS 2006:814 Ordinance on Feed and Animal By-products (Förordning (2006:814) om foder och animaliska biprodukter)

SJVFS 2006:84 Befattning med animaliska biprodukter och införsel av andra produkter, utom livsmedel, som kan sprida smittsamma sjukdomar till djur.

SJVFS 2007:21 Public Control of Feed and Animal By-products (Föreskrifter och allmänna råd om offentlig kontroll av foder och animaliska biprodukter)

Classification/separation
Animal products/by-products are divided into three different categories depending of a risk assessment, where category 1 is considered be the greatest risk and category 3 the least risk to human and animal health.
Regulations
The Swedish Board of Agriculture (SJV) requires a licence for the use, import and transport of animal by-products. One background to the rules is the need to ensure traceability.
Handling and storing samples shall take all the necessary measures to avoid the spread of diseases that can be communicated to humans or animals
The Swedish Board of Agriculture has assigned an official identity number to each establishment, based on the activities carried out.

Feed Regulation

EU regulations that are valid in Sweden
(EG) nr 178/2002 (Europaparlamentets och rådets förordning (EG) av den 28 januari 2002 om allmänna principer och krav för livsmedelslagstiftning, om inrättande av Europeiska myndigheten för livsmedelssäkerhet och om förfaranden i frågor som gäller livsmedelssäkerhet)

- Purpose to protect consumers
- Producers are responsible for feed-safety
- Traceability and journal-keeping is important

(EG) nr 852/2004 (Regulation (EC) No 852/2004 of the European parliament and of the council of 29 April 2004 on the hygiene of foodstuffs)

- Hygiene rules for practical handling
- Documentation

(EG) nr 183/2005 (Europaparlamentets och rådets förordning av den 12 januari 2005 om fastställande av krav för foderhygien) (Regulation (EC) No 183/2005 of the European Parliament and of the Council of 12 January 2005 laying down requirements for feed hygiene)

- Hygien rules for feed
- Foderföreskriften (SJVFS 2006:81) (Regulation on feed SJVFS 2006:81) (4 kap. 6 § SJVFS 2006:81)

EU:s regulations are supplemented and completed by national ordinances and implementing rules
Föreskrifter och allmänna råd om foder - SJVFS 2006:81

Primary feed production
Registration of primary feed production
The legal demand for a Swedish primary feed-producer is simply to register the company at www.jordbruksverket.se by signing application no D192. This process will take around 3 months.
Hygiene purposes - Annex I (and III) of the regulation (EG) nr 183/2005
Article 22 of Regulation (EC) No 183/2005 lays down requirements for feed hygiene. All feed business operators, including those who act solely as traders without ever holding the product in their facilities, shall keep in a register relevant data, comprising details of purchase, production and sales for effective tracing from receipt to delivery, including export to the final destination.
The feed industry provides description of the entire processing to ensure that the hygiene objectives in Annex III are ensured.
The Swedish Board of Agriculture recommends providing a *guide to good practice* (sv. *branschriktlinje*). Guides to good practice are not legally binding. Where such guides exist, feed and food business operators may use them on a voluntary basis as an aid to compliance with their obligations under the hygiene regulations (Regulations 852/2004, 853/2004, 183/2005 and related implementing measures).
The development, dissemination and use of both national and guides to good practice must be encouraged. However, these guides may be used on a voluntary basis by the feed business operators. Where a feed business is using a National guide established in accordance with

Community legislation, the competent authorities should take it into account during enforcement activity (Article 10(2)(d) of Regulation 882/2004).

Secondary feed production

Secondary production – the next steps after primary production including killing of the animals, processing, transport, storage, labeling, etc

- The general hygiene requirements in Annex II in the (EG) 183/2005 including HACCP-procedure
- The specific hygiene requirements in the Regulations (EG) 1069/2009 and (EU) 142/2011
- If using feed additives - Regulation (EG) nr 1831/2003 (European Union Register of Feed Additives)
- Labelling rules according to the Regulation 767/2009 and Regulation (EU) 68/2013 (10.8.1. Mollusc meal, Product produced by heating and drying whole or parts of molluscs including squid and bivalves)
  New additives registered on www.feedmaterialregister.eu

Fisheries Law

In Sweden all aquaculture, including mussel farming, requires a permit under the fishery legislation (Fiskelag (1993:787) (Fisheries Act (1993: 787)); Förordning (1994:1716) om fisket, vattenbruket och fiskerinäringen; Statens Jordbruksverks Föreskrifter (2014:4) om djurhälsokrav för djur och produkter från vattenbruk).
The main purpose of the regulation is to prevent the spread of diseases and inappropriate species. The Swedish Agency for Marine and Water Management, is responsible for fishery legislation.
The fishery legislation specifies the conditions for the establishment of fish, shellfish and mussel farming, and the County Administrative Board issues authorization. The County Administrative Board also deals with application for the EU grants provided for the establishment of aquaculture.
Some fishery regulations have been determined with the support of the Environmental Code (Miljöbalken) 1998:808 on sustainable development with respect to the environment, which includes general rules for marine and coastal areas, shore protection and hydraulic operations, building in water and water regulations. This applies primarily to certain prohibitions on fishery and aquaculture operations within nature conservation areas, but may also have been prescribed by the Government or the Environmental Court in conjunction with construction activities in the water.

Fishery Act (1993:787) Fiskelag (1993:787)

4 § mussels are regarded as fish
23 § addresses a delegation on navigation charts/aids for aquaculture facilities
26 § prohibits fishing closer than 100 m from a farm
28 § addresses delegation of requirements for permits and conditions for the introducing, moving and establishment of aquaculture (including mussels and shellfish cultivation)

Ordinance on fishing, aquaculture and fishing industry (1994:1716) Förordning (1994:1716) om fisket, vattenbruket och fiskerinäringen

15 § indicates that, after consultation with Swedish Agency for Marine and Water Management and Swedish Maritime Administration, The Swedish Board of Agriculture (SJV) may issue rules regarding the labeling of aquaculture facilities
16 § indicates that there is a permit required from County Administrative Board to introduce fish, shellfish or mussels/oysters or establish aquaculture (including mussel cultivation)

- No permit for fish species that are inappropriate for the specificity of the water area is granted
- No permit is granted if there is a risk of spread of diseases

17 § och 17a §§ regulates the County Administrative Board's revocation of permission for fish farming, as well as conditions for term and conditions change

Statens jordbruksverkets föreskrifter (2014:4) om djurhälsokrav för djur och produkter från vattenbruk
The ordinance regulates in detail what applies to:

- Information on cultivation permission

No aquaculture in water areas with species of national interest (not relevant regarding mussel farming)
Cultivation must not affect significantly negative national interests according to Chapter 3. MB
Alien species only in the recirculated land-based facility, except for polyploid sterile

- Permit for movement between aquaculture facilities

No permit for movement to the water area with species of national interest (not relevant regarding mussel farming) is granted
No permit is granted in the case of significant negative impact on national interests according to Chapter 3 MB

- Labeling of aquaculture facilities

Usually with a yellow special mark in each corner, if necessary with yellow light. The need for light is determined by the Swedish Transport Agency in connection with the permit application (Transportstyrelsens föreskrifter och allmänna råd om utmärkning till sjöss med sjösäkerhets-anordningar TSFS 2017:66)

- Hygiene plan should be developed in dialogue with a veterinary or animal health inspector

The Environmental Code

The Swedish Environmental code (EC) was adopted in 1998 and entered into force in January 1999. The EC contains 15 acts, the fundamental environmental rules. More detailed provisions are laid down in ordinances made by the Government.
More information on the EC can be found on the web site of The Government of Sweden:
https://www.government.se/legal-documents/2000/08/ds-200061/
According to Chapter 11, section 11, no permit is required to cultivate mussel.

Shore protection areas (Strandskydd)
Miljöbalken 7 kap 13 §
Miljöbalken 7 kap 18 c §

The Swedish shore protection came into force in the 1950 to ensure public access to beaches and to prevent the growing exploitation of coastal areas. It has since been renewed and changed several times and the purpose has been extended to include an ecological protection. A new shoreline protection act came into force in July, 2009. One consequence of this is that responsibility for decisions on exemptions from the law on shoreline protection have been transferred from the county administrative board to the municipalities.
At the same time, the county administrative board was assigned the task of examining all of the decisions made by the municipalities regarding these exemptions.
Section 13 Shore protection applies by the sea, lakes and watercourses.
The purpose of shore protection is to assure public access to outdoor recreation facilities and to maintain good living conditions for plant and animal species on land and in water.
"Land and water areas shall be protected up to 100 metres from the shoreline at the normal average water level (shore protection area). The Government or the authority appointed by the Government may extend this area to not more than 300 metres from the shoreline if this is necessary in order to fulfil any of the purposes of shore protection."
Section 18 A county administrative board may grant exemptions from the provisions of section 16 in special circumstances.

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