



Baltic  
InteGrid

Integrated Baltic Offshore  
Wind Electricity Grid Development



# Establishing an offshore meshed grid

Policy and regulatory aspects and barriers in the  
Baltic Sea Region

July 2018

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## **Establishing an offshore meshed grid**

### **Policy and regulatory aspects and barriers in the Baltic Sea Region**

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## List of abbreviations

AC	Alternating current
ACER	Agency for the Cooperation of Energy Regulators
BEMIP	Baltic Energy Market Interconnection Plan
BSR	Baltic Sea Region
CACM	Commission Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management
DC	Direct current
ECJ	European Court of Justice
EEZ	Exclusive economic zone
EIA	Environmental impact assessment
EIA Directive	Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014
Electricity Directive	Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC
Electricity Regulation	Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003
ENTSO-E	European Network for Transmission System Operators for Electricity
EU	European Union
EUSBSR	EU Strategy for the Baltic Sea Region
FCA	Commission Regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation
GW	Gigawatt
Habitats Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
HELCOM	Baltic Marine Environment Protection Commission
HVDC	Commission Regulation (EU) 2016/1447 establishing a network code on requirements for grid connection of high-voltage direct current system and direct current-connected power park modules
ISO	Independent system operator
ITC Mechanism Regulation	Commission Regulation (EU) No 838/2010 of 23 September 2010 on Laying down Guidelines Relating to the Inter-Transmission System Operator Compensation Mechanism and a Common Regulatory Approach to Transmission Charging
ITO	Independent transmission operator
MPA	Marine protected areas
MSP	Maritime spatial plan
MW	Megawatt
NC	Network code
NEMO	Nominated electricity market operator
NM	Nautical mile

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NRA	National regulatory authority
NSCOGI	North Seas Countries Offshore Grid Initiative
OWE	Offshore wind energy
OWF	Offshore wind farm
PCI	Project of common interest
RES	Renewable energy sources
RES Directive	Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC
ROC	Regional operation centre
RfG	Commission Regulation (EU) 2016/631 establishing a network code on requirements for grid connection of generators
SEA	Strategic environmental assessment
SEA Directive	Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment
TEN-E Regulation	Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
TSO	Transmission system operator
TYNDP	Ten-Year Network Development Plan
UNCLOS	United Nations Convention on the Law of the Sea

## Summary

Building on the Baltic InteGrid report *European and national offshore wind energy policy in the Baltic Sea region: a regional status report*, this report closely examines the policy and legal frameworks relevant to transmission grid development and offshore wind energy (OWE) production in the Baltic Sea Region (BSR). It provides an overview of legal and institutional inventory, including of relevant stakeholders, and outlines the stages of transmission and generation projects from abstract planning to concrete development. The various types of electricity transmission cables are identified, as well as the legal status of each type. Legal and policy challenges posed by the current institutional framework are analysed at national and EU level on the basis of prior Baltic InteGrid research.

The report identifies key challenges in the development process, beginning in the planning phase. The authorisation process for offshore cables is regulated at a national level and often demands more than one permit, particularly in a cross-border context. The development of offshore wind farm (OWF) projects generally necessitates complex and lengthy permitting procedures. Such requirements may deter investment by increasing the administrative burden associated with a meshed offshore transmission grid.

The planning, construction, and operation of OWFs and related infrastructure could have a number of negative socio-economic effects, such as damage to the environment or human health, property, or heritage assets. Public engagement in early project stages is necessary to build local support and increase positive attitudes towards OWFs. Planning processes permitting a participatory approach, such as environmental impact assessments, do not always ensure that all relevant interests are balanced, nor do they always succeed in securing support from the affected communities or sectors. Therefore, regulatory frameworks should provide sufficient incentives for winning acceptance and remain flexible enough to account for varied stakeholder interests.

Finally, there are complicated legal and regulatory issues associated with a meshed grid configuration in which cables are used simultaneously as interconnectors and park-to-shore cables. These issues should be addressed by an adequate regulatory framework that can accommodate constellations more complex than radial connections and single interconnections between national transmission systems







# 1. Introduction

## 1.1 Scope and methodology

This report was prepared as part of the Interreg project Baltic InteGrid project's 'Policy and Regulation' Group of Activity. It is intended to provide project partners and stakeholders with a record of outputs regarding the policy and legal framework for the development of a transmission grid and offshore wind energy (OWE) projects in the Baltic Sea Region (BSR). The Project's other Groups of Activity may use these outputs to optimise the conduct of their research in their own fields. The legal and institutional inventory is especially relevant for the Groups of Activity for 'Spatial Planning', 'Cost-benefit Analysis', and 'High Level Concept', as well as the Working Package 'Prefeasibility studies'.

This legal and institutional inventory for OWE generation and transmission in the BSR focusses on relevant provisions of European Union (EU) law and their transposition into the legislation of Baltic Member States.<sup>1</sup> It also analyses, at national and EU level, the key legal and policy challenges within the current institutional framework. This paves the way for the recommendations of the Project's Group of Activity 'Policy and Regulation Recommendations' on adjustments to supranational and national institutional and legal settings that will establish efficient future policy frameworks.

## 1.2 Content of the report

This report assesses the legal and policy framework relevant to offshore wind electricity transmission and generation, focusing on political targets, relevant stakeholders and legal provisions (section 2). Sections 3 and 4 address the planning phases for transmission as well as offshore wind farm (OWF) projects, particularly with regard to environmental issues and social acceptance. The construction of offshore grids and wind farms and their connections are included in the analysis (section 5). The report concludes by summarising the identified barriers to an offshore meshed grid in the Baltic Sea (section 6).

For the purposes of this report, we use the grid concepts previously provided by the North

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<sup>1</sup> An exhaustive inventory of the legal framework of all Baltic Member States in all relevant topics would go beyond the scope of this report. The authors chose instead to assess the EU legal framework, which is common to all eight countries, and, for each topic, to provide examples of the transposition of EU legal provisions into the respective national law. The information relative to the national legal frameworks used in this report were provided by the project partners within their respective policy and regulatory inventories. A report on the current legislation governing offshore grids in the North Sea was prepared as part of the PROMOTioN project, the 'sibling project' of Baltic InteGrid. That report includes an overview of the international, EU, and national laws applicable to cables situated in the territorial seas and EEZ of EU Member States. To avoid unnecessary repetition, we refer to the results of the PROMOTioN project where possible.

Seas Countries' Offshore Grid Initiative (NSCOGI) in figures 1–4.<sup>2</sup>

The first two constellations, radial connections (figure 1) and local coordination (figure 2), involve the use of sea cables exclusively for one purpose: either to provide an interconnection between the electricity systems of two countries (*interconnectors*) or to connect OWFs to the transmission grid of one country (*park-to-shore cables*<sup>3</sup>). In the local coordination configuration, several OWFs share one park-to-shore cable.

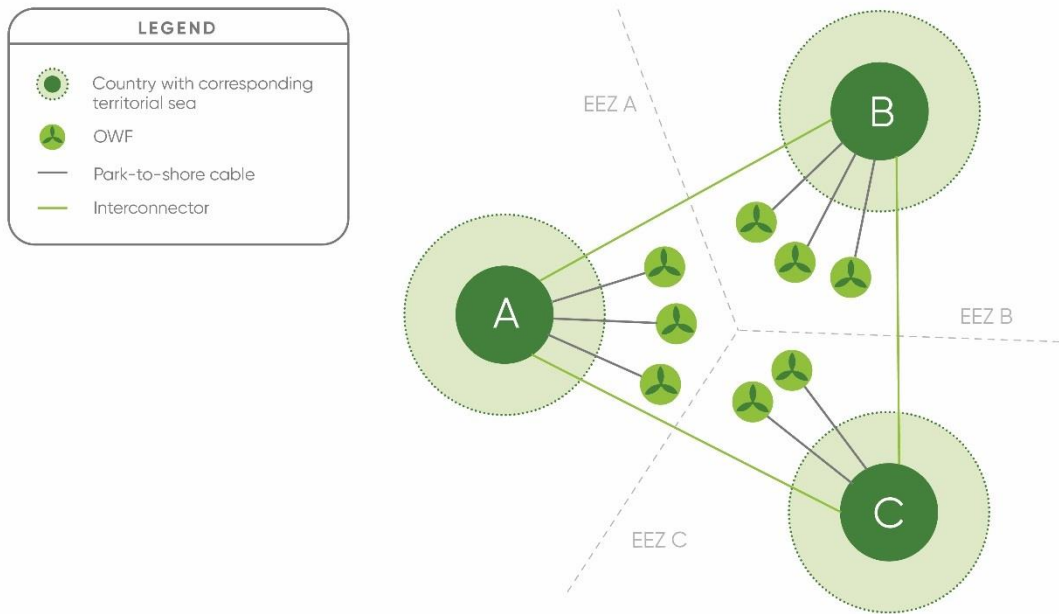
In the international coordination (figure 3) and meshed grid (figure 4) connection types, power plants are connected to more than one national transmission system, thus giving sea cables the physical possibility to act as interconnectors or park-to-shore cables or both simultaneously. In the international coordination constellation, an OWF can send electricity to two different national transmission systems or, in the meshed grid constellation, to three or more. In the interest of simplicity, this report uses the term *meshed grid* to refer to grids connected through international coordination and those in a meshed constellation.<sup>4</sup>

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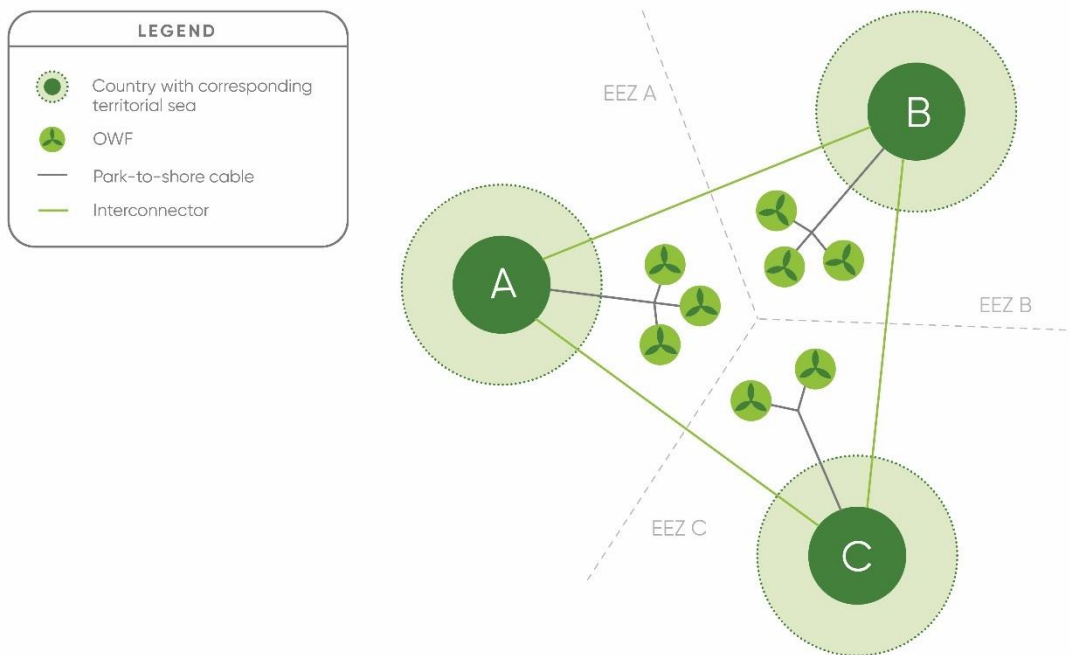
<sup>2</sup> Definitions from NSCOGI, 2012; definitions and deliverables of the Initiative available at Benelux, “North Seas Energy Forum”, <http://www.benelux.int/nl/kernthemas/holder/energie/nscogi-2012-report/> (accessed 24 May 2018).

<sup>3</sup> The term *export cable* is also commonly used in the industry. See, for example, offshoreWIND.biz, “Export Cables”, <https://www.offshorewind.biz/tag/export-cable/> (accessed 24 May 2018).

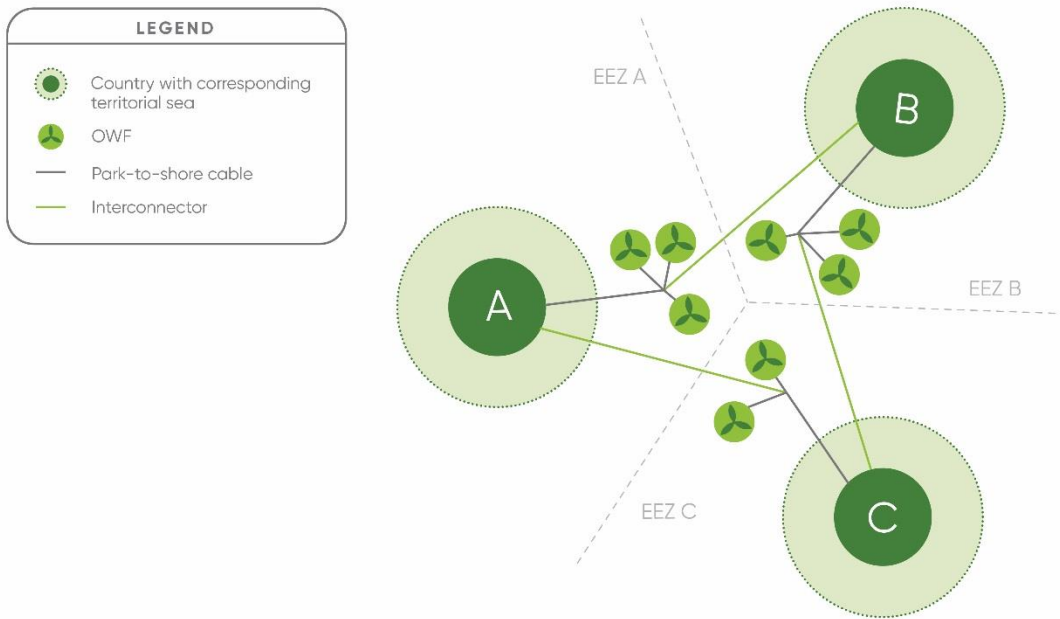
<sup>4</sup> Similarly, Nieuwenhout defines *cross-border offshore electricity grid* as ‘transmission assets that connect offshore generation from renewable energy sources to onshore connection points in two or more national electricity systems’. C.T. Nieuwenhout, “How to regulate a MOG? Legal regulatory challenges”, presentation, PROMOTioN midterm conference, Amsterdam, 6 June 2018.



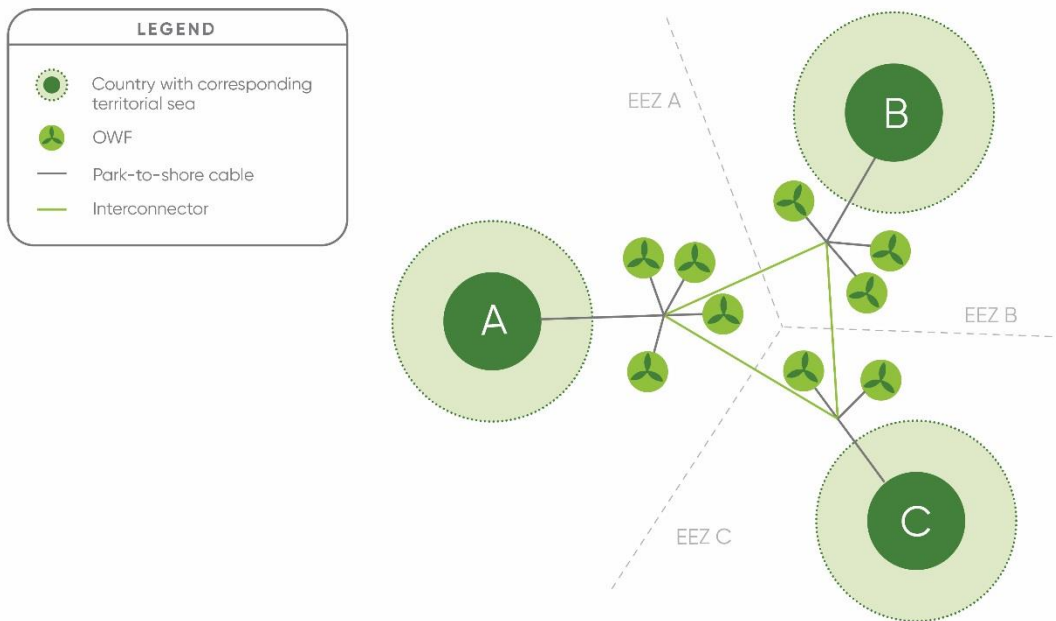
**Figure 1. Radial connections.**  
 Source: NSCOGI (2012) | Graphics: Ellery Studio



**Figure 2. Local coordination.**  
 Source: NSCOGI (2012) | Graphics: Ellery Studio



**Figure 3. International coordination.**  
 Source: NSCOGI (2012) | Graphics: Ellery Studio



**Figure 4. Meshed grid.**  
 Source: NSCOGI (2012) | Graphics: Ellery Studio

## 2. Legal and policy framework

This section examines OWE development and transmission in the BSR by addressing the political context, relevant stakeholders, and main regulatory provisions at international, EU, and national levels in Baltic Member States.

### 2.1 Political context

#### 2.1.1 Renewable energy targets at EU and national level

Currently, EU Member States must achieve renewable energy targets by 2020 as defined in Annex 1 of the Renewable Energy Sources (RES) Directive.<sup>5</sup> With the **Clean Energy for All Europeans package** (also known as the Winter Package), the EU intends to set a binding target of at least **32%** of EU energy consumption from renewable energy by 2030, to be achieved through national energy and climate plans.<sup>6</sup>

The EU does not set defined targets for OWE, nor does it interfere in the Member States' (renewable) energy mix. However, although it does not directly support the development of OWE as such, it leaves room for the Member States to provide economic incentives as an exception to Art. 107 TFEU<sup>7</sup> and its prohibition of state aid.<sup>8</sup> The Member States may grant aid to energy from renewable sources, provided that this contributes to the EU's fulfilment of energy and climate targets; however, such support must not have undue negative effects on competition and trade.<sup>9</sup> In 2017, for example, the European Commission (for the remainder of this document, 'the Commission') approved the support granted by Denmark to the Kriegers Flak OWF and concluded that the positive aspects of the project outweighed the potential distortions of competition caused by support from the Danish government.<sup>10</sup>

#### 2.1.2 Specific offshore wind energy targets at national level

Currently, three countries in the BSR have set specific offshore wind targets: Germany,

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<sup>5</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, OJ L 140, 5.6.2009, p. 16–62; a list of these targets is available in Table 3 *Renewable energy targets of the Baltic Member States for the year 2020*.

<sup>6</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank – Clean Energy For All Europeans, COM(2016) 860 final, p. 7; European Commission – Statement, “Europe leads the global clean energy transition: Commission welcomes ambitious agreement on further renewable energy development in the EU”, 14 June 2018, [http://europa.eu/rapid/press-release\\_STATEMENT-18-4155\\_en.htm](http://europa.eu/rapid/press-release_STATEMENT-18-4155_en.htm) (accessed 22 June 2018).

<sup>7</sup> Consolidated version of the Treaty on the Functioning of the European Union, OJ C 326, 26 October 2012, pp. 47–390.

<sup>8</sup> Communication from the Commission — Guidelines on State aid for environmental protection and energy 2014–2020, OJ C 200, 28 June 2014, p. 1–55.

<sup>9</sup> *Ibid.*, n° 3.2.6, 3.3.

<sup>10</sup> Commission decision of 28 March 2017 – State Aid SA.45974 (2017/N) – Support to Danish Kriegers Flak offshore wind farm, JOCE C/291/2017, 1 September 2017.

Denmark and Lithuania.

### 2.1.2.1 Germany

According to the Renewable Energy Act,<sup>11</sup> the share of renewable energy in Germany's electricity consumption should be 40–45% by 2025, 55–60% by 2035, and at least 80% by 2050.<sup>12</sup> One way to achieve renewable energy targets is to develop the production of offshore wind power. OWE targets were set by the German legislature in the Offshore Wind Energy Act.<sup>13</sup> German legislation calls for the installation of an **offshore wind capacity of 15 GW by 2030, 14 3.3 GW of which is to be installed in the Baltic Sea.**<sup>15</sup>

### 2.1.2.2 Denmark

In Denmark, the targets for offshore wind energy are laid down in a political agreement between a majority of the political parties of the Danish Parliament.<sup>16</sup> The **March 2012 Energy Agreement** sets the targets for 2012–2020.<sup>17</sup> The Liberal Alliance, which holds 13 of 179 seats in Parliament as of 2018, is the only political party that has not signed the Agreement. The Agreement establishes a framework for climate and energy policy up to 2020 and outlines the direction Denmark will take until 2050. Importantly, the Agreement defines Danish ambitions for OWE, including the decision to establish a 400 MW OWF at Horns Rev, followed by a 600 MW offshore project at Kriegers Flak, and 500 MW offshore wind in coastal areas. The subsequent **Growth Package Agreements** of July 2014 modified the 2012 agreement. The original plans to establish 500 MW offshore wind turbines in coastal areas were reduced to 400 MW.

In June 2018, all of the political parties in the Danish Parliament entered into a new Energy Agreement.<sup>18</sup> The Agreement includes a pledge to support construction of three new OWFs with a total capacity of 2,400 MW, to be operational by 2030:

- an 800 MW OWF to be tendered in 2019/2020 and connected to the grid between

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<sup>11</sup> Renewable Energy Act of 21 July 2014 (BGBl. I p. 1066), last modified 17 July 2017 (BGBl. I p. 2532).

<sup>12</sup> Sec. 1 par. 2 Renewable Energy Act. At the time of redaction, the governmental coalition agreement establishes a goal of approximately 65% RES by 2030 if the grids allow it. See the German coalition contract, *Koalitionsvertrag zwischen CDU, CSU und SPD*, p. 14, available at [https://www.bundesregierung.de/Content/DE/\\_Anlagen/2018/03/2018-03-14-koalitionsvertrag.pdf?\\_\\_blob=publicationFile&v=5](https://www.bundesregierung.de/Content/DE/_Anlagen/2018/03/2018-03-14-koalitionsvertrag.pdf?__blob=publicationFile&v=5) (accessed 24 May 2018).

<sup>13</sup> Offshore Wind Energy Act of 13 October 2016 (BGBl. I p. 2258, 2310), last modified 20 July 2017 (BGBl. I p. 2808).

<sup>14</sup> Sec. 1 par. 2 (1) Offshore Wind Energy Act.

<sup>15</sup> Federal Network Agency (2017), *Bedarfsermittlung 2017–2030: Bestätigung, Offshore Netz-Entwicklungsplan* (Offshore Network Development Plan 2030/O-NEP), p. 19, available at [https://www.netzentwicklungsplan.de/sites/default/files/paragraphs-files/O-NEP\\_2030\\_2017\\_Bestaetigung.pdf](https://www.netzentwicklungsplan.de/sites/default/files/paragraphs-files/O-NEP_2030_2017_Bestaetigung.pdf) (accessed 24 May 2018).

<sup>16</sup> Denmark has a long tradition of energy agreements; a broad agreement between the main political parties, though not formally binding law, secures political stability. The energy agreements do not reflect a specific government policy—which can change if a new government comes into power—but rather the aims of Parliament.

<sup>17</sup> March 2012 Energy Agreement, available (in Danish) from the Danish Energy Agency, *Energiaftalen 22. marts 2012*, <https://ens.dk/ansvarsomraader/energi-klimapolitik/politiske-aftaler-paa-energiomraadet/energiaftalen-22-marts-2012> (accessed 24 July 2018).

<sup>18</sup> June 2018 Energy Agreement, available (in Danish) from the Ministry of Energy, Utilities and Climate, *Energiaftale af 29. juni 2018*, <https://efkm.dk/media/12222/energiaftale2018.pdf> (accessed 4 July 2018).

2024–2027 (it has not yet been decided whether one or more locations will be used);

- an OWF with a minimum capacity of 800 MW to be tendered in 2021;
- an OWF with a minimum capacity of 800 MW to be tendered in 2023.

If technologically and economically possible, the second and third OWFs may exceed the planned 800 MW. The cable routing will be included in the tenders. Because of the visual effects, the Energy Agreement also increases the number of affected municipalities able to raise objections: the terms of the agreement permits objections to projects from municipalities up to 15 km, rather than 8 km, from the OWF. Furthermore, the Agreement plans to expand the electricity infrastructure both in- and outside of Denmark by improving the integration of the power grid. Finally, a screening process will be initiated in the Baltic and North Sea for OWF sites of up to 10 GW so that new farms can be established quickly in the future.

### 2.1.2.3 Lithuania

In **Lithuania**, the Parliament recently adopted its National Energy Strategy, which sets a target for the Lithuanian electricity mix of 45% RES by 2030 and 100% RES by 2050. At least half of the RES energy supply is to be provided by wind farms.<sup>19</sup> The country intends to develop the offshore wind sector for this purpose. Among other measures, the Strategy sets up an auction scheme for wind energy to begin in 2019, with an overall target of **2,300 MW of installed offshore wind capacity by 2030**.

### 2.1.3 Regional cooperation

The **EU Strategy for the Baltic Sea Region (EUSBSR)** is a macro-regional strategy approved by the European Council in 2009 with the objectives of saving the sea, connecting the region, and increasing prosperity.<sup>20</sup> The connection goal addresses energy policy in particular.<sup>21</sup>

In 2009, all eight Baltic Member States, along with the Commission, signed a Memorandum of Understanding for a **Baltic Energy Market Interconnection Plan (BEMIP) initiative**<sup>22</sup> to open up the EU internal energy market to the BSR and end energy isolation in the area. Concrete goals of the BEMIP include the design of an integrated electricity and gas market in the BSR through the development of infrastructure projects for

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<sup>19</sup> WindEurope, “Lithuania significantly steps up its wind energy ambitions with new National Energy Strategy”, 15 June 2018, <https://windeurope.org/newsroom/news/lithuania-significantly-steps-up-its-wind-energy-ambitions-with-new-national-energy-strategy/> (accessed 20 June 2018).

<sup>20</sup> EUSBSR, “About”, <http://www.balticsea-region-strategy.eu/about> (accessed 24 May 2018).

<sup>21</sup> EUSBSR, “Policy Area ENERGY”, <http://groupspaces.com/eusbsr-energy> (accessed 24 May 2018).

<sup>22</sup> European Commission, “Baltic Energy Market Interconnection Plan”, <https://ec.europa.eu/energy/en/topics/infrastructure/trans-european-networks-energy/baltic-energy-market-interconnection-plan> (accessed 24 May 2018).



renewable energies and interconnections.<sup>23</sup>

In 2015, the BEMIP was updated and combined with the Energy Policy Area of EUSBSR. The revised common Action Plan defines measures to be implemented by 2020 in areas including energy infrastructure, the electricity market, security of supply, energy efficiency, and renewable energy.<sup>24</sup>

Regional cooperation is at times supported by political declarations, such as the joint statement of the Heads of State or Governments of the Baltic States of 22 March 2018, which affirmed the parties' commitment to synchronising the Baltic State's electricity grids with the continental system by 2025.<sup>25</sup>

#### 2.1.4 Grid expansion and interconnection in the Baltic Sea Region

In 2014, in an effort to establish a functioning and connected internal energy market that ends the isolation of 'energy islands' like the Baltic States, the EU set an **interconnection target of at least 10% of Member States' installed electricity production capacity by 2020 and 15% by 2030**.<sup>26</sup> Figure 5 below shows the current state of interconnection and DC connections in the BSR.

Among other measures based on the above-mentioned BEMIP, several interconnector projects in the BSR were implemented, such as the cables Estlink 1 and 2 between Estonia and Finland, LitPol Link between Lithuania and Poland, and Nordbalt between Sweden and Lithuania.<sup>27</sup>

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<sup>23</sup> Memorandum of Understanding on the Baltic Energy Market Interconnection Plan, available at [https://ec.europa.eu/energy/sites/ener/files/documents/2009\\_bemip\\_mou\\_signed.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2009_bemip_mou_signed.pdf) (accessed 24 May 2018).

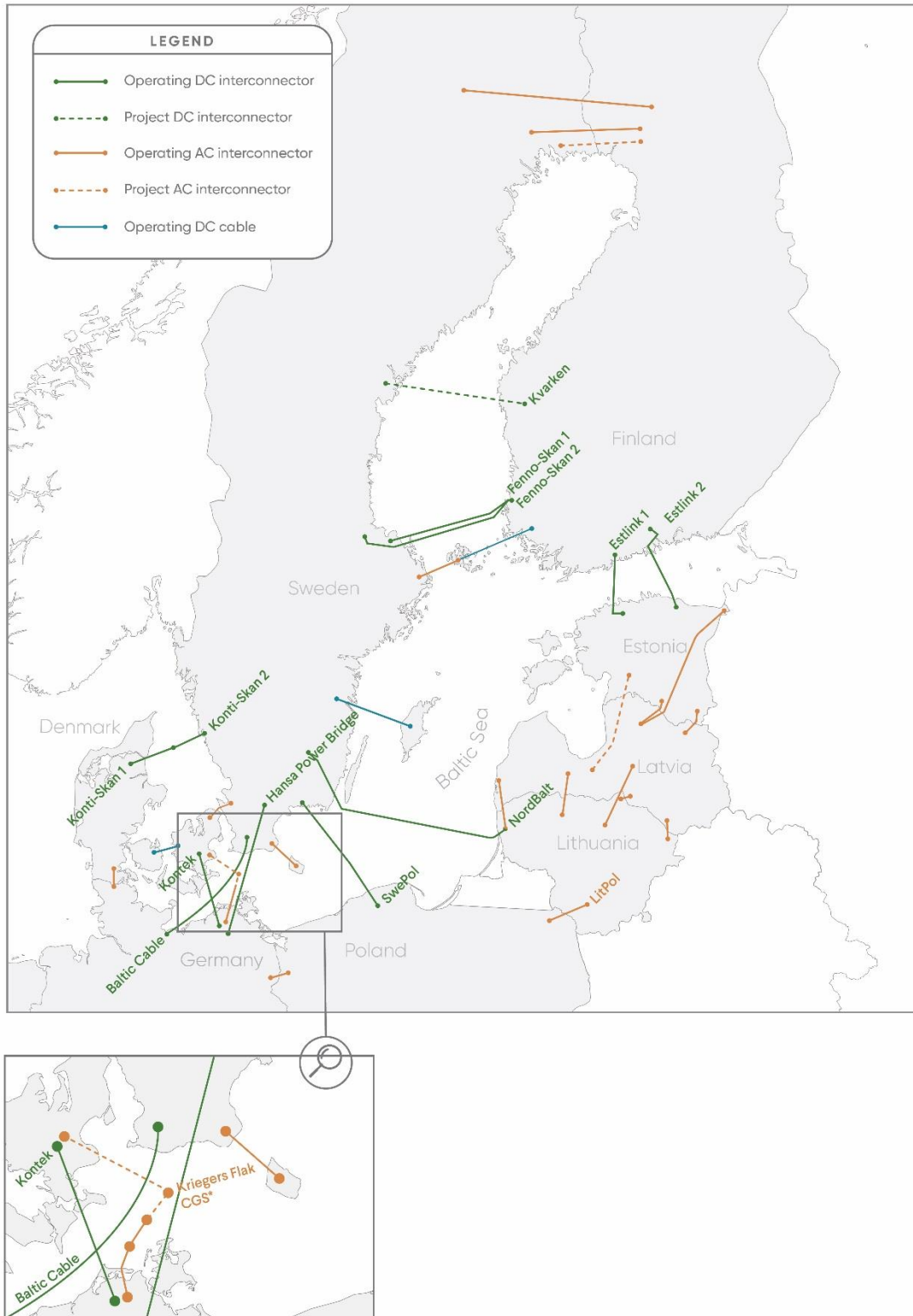
<sup>24</sup> Commission Staff Working Document – European Union Strategy for the Baltic Sea Region – Action Plan for the European Union Strategy for the Baltic Sea Region (COM(2009) 248), SWD(2017) 118 final, p. 85.

<sup>25</sup> European Commission – Statement, “Energy Union: Synchronisation of the Baltic States' electricity network with the European system will strengthen solidarity and regional security of supply”, 22 March 2018, [http://europa.eu/rapid/press-release\\_STATEMENT-18-2142\\_en.htm](http://europa.eu/rapid/press-release_STATEMENT-18-2142_en.htm) (accessed 24 May 2018).

<sup>26</sup> European Commission, “2030 framework for climate and energy – Outcome of the October 2014 European Council”, p. 12, available at [https://ec.europa.eu/clima/sites/clima/files/strategies/2030/docs/2030\\_euco\\_conclusions\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/strategies/2030/docs/2030_euco_conclusions_en.pdf).

<sup>27</sup> European Commission, “Baltic Energy Market Interconnection Plan”, <https://ec.europa.eu/energy/en/topics/infrastructure/trans-european-networks-energy/baltic-energy-market-interconnection-plan> (accessed 24 May 2018).





**Figure 5. DC cables, interconnectors, and interconnector projects in the Baltic Sea Region.**  
 Source: IKEM (2018) | Graphics: Ellery Studio

## 2.2 Stakeholders

This section addresses the relevant stakeholders of individual Baltic Member States at the national level. In addition to national governments (consisting of ministries, ministerial agencies, and regulatory authorities), relevant local authorities, transmission system operators (TSOs), and private actors from civil society are introduced.

### 2.2.1 Governments

Some countries have **ministries** dedicated to energy policy, while in others this field is within the purview of the ministries for economic affairs. Ministries for nature conservation and environmental affairs are also relevant to offshore wind policy. In all eight Baltic Member States, the respective ministries are supplemented by public **agencies** that assist them in accomplishing their tasks, for example by carrying out spatial planning or providing permits for transmission and generation projects.

Public authorities at **regional and local levels** may also play an important role in the development of OWF and the offshore transmission grid. In Finland, for example, municipalities have competence for spatial planning and building permits and sometimes environmental permits.<sup>28</sup>

The following (table 1<sup>29</sup>) presents the primary governmental bodies involved in the creation of an offshore grid in the BSR.

	<b>Ministries</b>	<b>Agencies</b>
<b>Denmark</b>	<p>The <b>Ministry of Energy, Utilities and Climate</b> is responsible for national and international issues related to energy policy and the prevention of climate change.</p> <p>The <b>Ministry of Environment and Food</b> has competence for administrative and research tasks in the areas of environmental protection, farming and food production.</p>	<p>The <b>Danish Energy Agency</b> is competent for tendering and permitting the establishment of OWFs.<sup>30</sup></p> <p>The <b>Danish Energy Board of Appeal</b> is competent for legal remedies against decisions of the Danish Energy Agency.</p> <p>The <b>Danish Nature Agency</b> plans the land-based infrastructure development of OWFs (e.g., the EIA for onshore infrastructure, such as transformer stations and cables).</p>
<b>Estonia</b>	<p>The <b>Energy Department of the Ministry of Economic Affairs and Communications</b> is competent for the development of energy policy.<sup>31</sup></p>	<p>The <b>Technical Regulatory Authority</b> is competent for the field of renewable energy policy.</p> <p>The <b>Environmental Board</b> is the main</p>

<sup>28</sup> Ministry of the Environment, *Local master plans coordinate and direct local detailed plans*, available at [http://www.ymparisto.fi/en-US/Living\\_environment\\_and\\_planning/Land\\_use\\_planning\\_system/Local\\_master\\_plans\\_coordinate\\_and\\_direct\\_local\\_detailed\\_plans](http://www.ymparisto.fi/en-US/Living_environment_and_planning/Land_use_planning_system/Local_master_plans_coordinate_and_direct_local_detailed_plans); Sec. 130 Land Use and Building Act (132/1999); Sec. 34 Environmental Protection Act (527/2014).

<sup>29</sup> Table content is based on the policy and regulatory inventories provided by the respective partners of the Baltic InteGrid project.

<sup>30</sup> Danish Energy Agency, “Procedures and Permits for Offshore Wind Parks”, <https://ens.dk/en/our-responsibilities/wind-power/offshore-procedures-permits> (accessed 24 May 2018).

<sup>31</sup> Republic of Estonia Ministry of Economic Affairs and Communication, “Energy sector”, last modified 24 April 2018, <https://www.mkm.ee/en/objectives-activities/energy-sector> (accessed 24 May 2018).

	<p>The <b>Ministry of Environment</b> has competence for the policies of national environmental and nature protection and sustainable development. It is also responsible for granting OWF permits for special use of water.</p>	<p>executive authority for environmental protection and is competent for EIAs. The <b>Maritime Administration</b> is competent for navigation and maritime safety and security.</p>
<p><b>Finland</b></p>	<p>The <b>Ministry of Economic Affairs and Employment</b> has competence for energy policy. It coordinates the national energy and climate strategies and grants permits for cross-border interconnectors. The <b>Ministry of Environment</b> plays a crucial role, with responsibility for climate policy, environmental protection, spatial planning and construction.</p>	<p>The <b>Energy Authority</b> is the authority for energy-related permits, surveillance, and regulations. The <b>Regional State Administrative Agencies</b> are permit authorities, for example for environmental and water permits. Consent from the <b>Council of State</b> is required to exploit and build in the EEZ.<sup>32</sup></p>
<p><b>Germany</b></p>	<p>The competencies in energy law are shared between the federal level and the German federal states (<i>Länder</i>).<sup>33</sup> Therefore, the different activities related to transmission and generation of OWE are distributed between the federal and regional authorities.<sup>34</sup> For activities within the EEZ, competence is held at the Federal level. The <b>Federal Ministry of Economic Affairs and Energy</b> assumes lead responsibility for energy policy and the development of OWE policy. The <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety</b> was appointed to conduct research on the environmental impact of OWE.<sup>35</sup> Competences for offshore installation regulations and spatial planning are held by the <b>Federal Ministry of Transport and Digital Infrastructure</b>.<sup>36</sup> The coastal <i>Länder</i> <b>Mecklenburg-</b></p>	<p>The <b>Federal Network Agency</b> is the electricity regulatory authority and oversees offshore network development planning. The <b>Federal Maritime and Hydrographic Agency</b> is competent for the spatial planning of offshore wind areas as well as for granting authorisation for transmission cables and OWF projects in the EEZ.<sup>38</sup> The <b>Federal Environmental Agency</b> is involved in the approval procedure for OWF projects. It also has the power to issue statements regarding the environmental impact; this power is also held by the <b>Federal Agency for Nature Conservation</b>, which provides technical and scientific advice on landscape and nature conservation.<sup>39</sup></p>

<sup>32</sup> Sec. 6, 7 Act on the Exclusive Economic Zone of Finland (1058/2004).

<sup>33</sup> German Basic Law, last modified 13 July 2017 (BGBl. I p. 2347).

<sup>34</sup> Art. 74 par. 1 n° 1 German Basic Law.

<sup>35</sup> Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, “Strategy of the German Government on the use of off-shore wind energy”, last modified 1 January 2002, <http://www.bmu.de/en/service/details-energy-efficiency/artikel/strategy-of-the-german-government-on-the-use-of-off-shore-wind-energy/> (accessed 24 May 2018).

<sup>36</sup> Federal Ministry of Transport and Digital Infrastructure, “Spatial planning means reconciling interests”, 16 November 2016, <http://www.bmvi.de/SharedDocs/EN/Dossier/SpatialPlanning/03-spatial-plans-eez.html> (accessed 24 May 2018).

<sup>38</sup> Sec. 6 par. 7, sec. 45 par. 2 Offshore Wind Energy Act.

<sup>39</sup> Federal Agency for Nature Conservation, “Marine Nature Conservation”, <https://www.bfn.de/en/activities/marine-nature-conservation.html> (accessed 24 May 2018).

	<b>Western Pomerania</b> and <b>Schleswig-Holstein</b> have ministries dedicated to energy policy. <sup>37</sup>	
<b>Latvia</b>	<p>The <b>Ministry of Economics</b> is responsible for energy policy. Due to the country's budgetary situation, the Ministry expressed its reluctance to subsidise offshore wind power – or any other type of renewable energy.<sup>40</sup></p> <p>The <b>Ministry of Environmental Protection and Regional Development</b> is responsible for environmental issues, such as the EIA and maritime spatial planning. The Maritime Spatial Plan of Latvia is already being prepared and is expected to be approved soon by the Government.</p>	The <b>Public Utilities Commission</b> is the monitoring authority for tariff calculation and determination, public service licensing, and TSO compliance.
<b>Lithuania</b>	The <b>Ministry of Energy</b> is competent for energy policy. In 2015, it drafted the Renewable Energy Resources Development Programme for 2016–2020 to promote investment in wind energy with the goal of increasing the total inland wind power capacity by 150%. <sup>41</sup> The Ministry has called for greater investment in wind energy. It has also proposed that the State perform all research related to offshore wind development, a recommendation that has been criticised by potential investors on the grounds that allocating this task to public authorities may lead to long and costly delays in project development. <sup>42</sup>	The <b>National Commission for Energy Control and Prices</b> is a multi-sector regulatory authority for the energy sector. It is responsible for monitoring the market, overseeing competition practices, distributing and supervising licences, and designating the electricity TSO.
<b>Poland</b>	<p>The <b>Ministry of Energy</b> is responsible for designing the national energy policy and supervises state-owned utility companies.</p> <p>The <b>Ministry of Maritime Economy and Inland Navigation</b> conducts procedures for issuing localisation permits for OWFs (permits for the construction and use of artificial islands, structures and facilities in</p>	<p>Three <b>maritime offices</b> in <b>Gdynia</b>, <b>Ślupsk</b>, and <b>Szczecin</b> supervise maritime safety and sea life.</p> <p>The <b>Field Maritime Administration</b> is competent for supervising maritime safety and life at sea, protecting the marine environment, distributing permits for the construction and use of artificial islands (if a</p>

<sup>37</sup> In Mecklenburg-Western Pomerania: Ministry of Energy, Infrastructure and Digitalisation, <https://www.regierung-mv.de/Landesregierung/em/Energie/>; in Schleswig-Holstein: Ministry for Energy transition, Agriculture, Environment, Nature and Digitalisation, [http://www.schleswig-holstein.de/DE/Landesregierung/V/v\\_node.html](http://www.schleswig-holstein.de/DE/Landesregierung/V/v_node.html).

<sup>40</sup> Baltic InteGrid workshop, “Offshore Wind Energy Infrastructure: Opportunities and Challenges in Latvia”, Riga, 15 May 2017.

<sup>41</sup> The Baltic Course, “Lithuania's Energy Minister proposes changes in wind energy sector”, 29 September 2015, <http://www.baltic-course.com/eng/energy/?doc=111135> (accessed 24 May 2018).

<sup>42</sup> The Baltic Course, “Offshore wind power projects in Lithuania become state's business”, 4 December 2015, <http://www.baltic-course.com/eng/energy/?doc=113871> (accessed 24 May 2018).

	<p>Polish maritime areas), and for cables (permits for laying and using subsea cables and pipelines). It acts as the licensing authority in the event that the marine development plan has not been created. It is also responsible for the country's maritime policy and is involved in the authorisation procedure for the Maritime Spatial Plan.</p> <p>The <b>Ministry of Development</b> is involved in consultations for permits for constructing and using artificial islands and permits for laying and using subsea cables and pipelines.</p>	<p>maritime spatial plan is in place), and distributing licences for the laying and maintenance of submarine cables.</p>
<b>Sweden</b>	<p>The <b>Minister for Policy Coordination and Energy</b> works under the Prime Minister's Office and is mainly responsible for energy policy. The <b>Ministry of Environment and Energy</b> is competent for issues related to the energy supply and use, energy infrastructure, and the functioning of the electricity market.</p> <p>The <b>Ministry of Enterprise and Innovation</b> also has responsibilities for aspects of energy policy development due to its involvement in issues including housing, urban development, industrial policy, and infrastructure.</p>	<p>The <b>Swedish Energy Agency</b> is responsible for ensuring the security of supply and implementing the national energy policy. It is responsible for the implementation of the EU Emission Trading Scheme.</p> <p>The <b>Energy Markets Inspectorate</b> is an independent regulator for energy markets that is responsible for electricity, natural gas, and district heating. It also handles applications for concessions from Sweden's electricity TSO, Svenska kraftnät, for the development of new power lines.</p> <p>The <b>Environmental Protection Agency</b> is competent for implementing environmental policy, developing environmental scenario forecasts, and conducting reviews.</p>

**Table 1 Stakeholders: Governments and governmental agencies.**

Source: *Baltic InteGrid (2018)*

### 2.2.2 TSOs

Due to the historical state monopoly over the transmission grid, many TSOs are still state-owned. Table 2 below provides a list of the TSOs that operate along the Baltic Sea coast of the Baltic Member States.

	<b>Grid Operator</b>	<b>State share</b>
Germany (Eastern Baltic Coast)	50Hertz	0%
Germany (Western Baltic Coast)	TenneT	100% (NL) <sup>43</sup>
Poland	PSE S.A.	100%
Denmark	Energinet.dk	100%
Sweden	Svenska kraftnät	100%

<sup>43</sup> The Tennet Holding B.V. is owned to 100% by the Dutch Ministry of Finance; see TenneT, "Organisation", <https://www.tenneT.eu/company/profile/organisation/> (accessed 24 May 2018).

Finland (continental)	Fingrid Oyj	28% <sup>44</sup>
Finland (Åland islands)	Kraftnät Åland AB	100%
Estonia	Elering	100%
Latvia	Augstsprieguma tīkls	100%
Lithuania	Litgrid	100%

**Table 2. Stakeholders: Transmission grid operators.**

### 2.2.3 Wind energy sector

Other stakeholders include companies and promoters from the wind energy sector, which have formed numerous industrial associations, umbrella organisations, and clusters to advance the interests of energy industries, suppliers, manufacturers, and other actors within the sector. These groups attempt to accelerate the development of wind energy by providing relevant information, influence the development of legislation to promote wind energy, overcome existing barriers to the delivery of renewable energy, and create a reliable and long-term framework for investment. Groups active in the BSR include the **Stiftung OFFSHORE-WINDENERGIE**, the **Danish Wind Industry Association** and the **Bundesverband WindEnergie e.V. (BWE)** in Germany, and the **Estonian Wind Power Association**. In September 2017, wind energy associations in the BSR signed the Baltic Sea Declaration, which aims to accelerate the development of OWF and facilitate international cooperation in the region.<sup>45</sup>

### 2.2.4 Other economic sectors

Assessments of the projected effects of OWE development in the BSR must also consider the impact of offshore wind on regional economies. For some sectors, OWE development poses a potential threat. Industrial and trade associations often promote the interests of the most endangered sectors. For example, the **Central Association of the Fishing Industry** in Finland advocate for the fishing industry, which has raised concerns regarding possible effects on fishing activities close to the maritime cables. Organisations like the German **Verband Deutscher Reeder (VDR)**, the **Finnish Shipowners' Association** and the **Danish Shipowners' Association** have expressed the shipping industry's reservations about OWE development due to the possible obstruction of shipping routes; however, the industry also views offshore wind energy as a new and potentially lucrative business opportunity. The oil and gas transportation and drilling sectors may also be affected by OWE projects, and the representatives of the tourism industry have voiced concern about the impact of near-shore wind turbines on coastal landscapes.

<sup>44</sup> The Republic of Finland holds 28.24% of the TSO shares, while the National Emergency Supply Agency holds 24.9%, bringing the public share in the TSO to a total of 53.14%. See Fingrid, "Shares and shareholders", <https://www.fingrid.fi/en/pages/investors/shares-and-shareholders/> (accessed 24 May 2018).

<sup>45</sup> Baltic Sea Offshore Wind Forum, *Baltic Sea Declaration*, available at <https://www.offshore-stiftung.de/sites/offshorelink.de/files/Baltic-Sea-Declaration.pdf>.



### 2.2.5 Associations

International environmental organisations advocating for climate and environmental protection, such as **WWF** and **Greenpeace**, have expressed a generally positive view of wind power. Wind power development is generally considered a vital part of the energy transition. Many environmental associations operating at national level have also supported the development of offshore wind projects. For example, the **Bund für Welt und Naturschutz Deutschland (BUND)** in Germany, the **Finnish Association for Nature Conservation (Luonnonsuojeliitto)**, and the **Danish Society for Nature Protection** have issued statements in favour of OWE. Moreover, for many actors, OWE presents a solution to problematic aspects of onshore wind, because OWFs situated at a distance from the coast do not exhibit the level of visual and noise pollution typically associated with onshore installations. However, some environmental organisations, such as the German **Naturschutzbund (NABU)**, have expressed caution against OWE installations and have pressed for stricter regulations to protect the environment.<sup>46</sup>

### 2.2.6 Consumer organisations

Consumer organisations and local action groups have raised concerns that the higher relative costs and risks of OWE will lead to higher energy prices for consumers. They have also expressed fears that a focus on offshore wind will direct investment away from onshore wind technology. Critics have also argued that citizens in countries that are net exporters of electricity, such as Sweden, may not experience the benefits of such large investments.<sup>47</sup>

## 2.3 General legal framework

The relevant framework for the development of OWE and its transmission in the Baltic Sea encompasses many legal instruments in the fields of energy and environmental law at international, EU and national levels. Because energy law is a shared competence with the EU, much of the legal framework of Baltic Member States relies heavily on the transposition of legal provisions set out in EU directives. This section provides an overview of the most relevant legal provisions at international and EU levels.

National legal provisions may differ significantly outside the scope of EU law, such as in the field of administrative law, which is relevant to permitting procedures.

### 2.3.1 International conventions

Various international conventions provide a regulatory framework for environmental

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<sup>46</sup> NABU (2016): *Naturverträgliche Nutzung der Windenergie an Land und auf See* (in German), available at [https://www.nabu.de/imperia/md/content/nabude/energie/wind/170320\\_\\_positionspapier\\_naturvertraegliche\\_nutzung\\_windenergie.pdf](https://www.nabu.de/imperia/md/content/nabude/energie/wind/170320__positionspapier_naturvertraegliche_nutzung_windenergie.pdf).

<sup>47</sup> Jacobsson, Karltorp and Dolff (2014), p. 161.

protection standards and the (shared) use of the sea by sovereign countries.

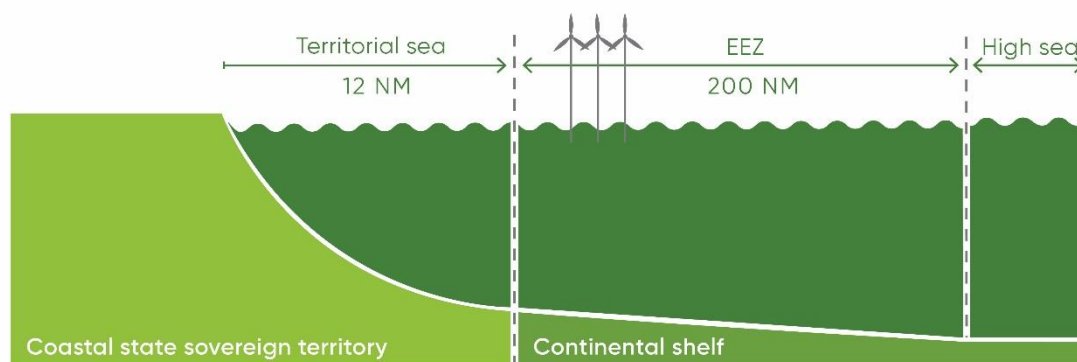
### 2.3.1.1 United Nations Convention on the Law of the Sea

The main legal instrument for international sea law is the United Nations Convention on the Law of the Sea (UNCLOS), which sets common rules establishing limits on sovereignty and specifies the activities permitted in coastal areas.<sup>48</sup> All eight Baltic Member States are parties to the Convention.<sup>49</sup> The Convention divides sea areas into multiple zones, each of which impose different limitations on the sovereignty and economic rights of (coastal) states (figure 6).

**Territorial waters** extend up to 12 nautical miles (NM) from a state's coastal baseline and are composed of land territory and internal waters as well as the sea area and its bed and subsoil.<sup>50</sup>

The **exclusive economic zone (EEZ)** extends for 200 NM beyond the limits of the territorial seas and includes the continental shelf, which is made up of the seabed and subsoil below the surface.<sup>51</sup>

Any bodies of water farther from shore are defined as **high seas**<sup>52</sup>; these are not present in the Baltic Sea.



**Figure 6. Maritime zones established under UNCLOS.**

Source: IKEM (2018) | Graphics: Ellery Studio

Within their **territorial seas**, coastal states exercise their full **sovereignty** and therefore enjoy the same rights as they do on their inland territory. In these waters, they may

<sup>48</sup> United Nations Convention on the Law of the Sea of 10 December 1982, United Nations, Treaty Series, Volume 1833, p. 3.

<sup>49</sup> United Nations, "Chronological lists of ratifications of, accessions and successions to the Convention and the related Agreements", last modified 3 April 2018, [http://www.un.org/depts/los/reference\\_files/chronological\\_lists\\_of\\_ratifications.htm](http://www.un.org/depts/los/reference_files/chronological_lists_of_ratifications.htm) (accessed 24 May 2018).

<sup>50</sup> Art. 2, 3 UNCLOS.

<sup>51</sup> Art. 55, 57, 76 par. 1 UNCLOS.

<sup>52</sup> Art. 86 UNCLOS.



undertake any activity of an economic or other nature, such as the construction of OWF or the laying of sea cables.<sup>53</sup> However, other states enjoy a right of innocent passage in these zones.<sup>54</sup>

In their respective **EEZ**, coastal states have **limited sovereignty rights**, which are listed in the Convention. Sovereign rights are only granted for economic activities, for example the construction of OWFs and laying of park-to-shore cables.<sup>55</sup> Laying interconnectors is not considered an economic activity according to this definition.<sup>56</sup> In these zones, the coastal state and other states are granted limited freedoms, such as those of navigation and overflight, and are permitted to lay submarine cables.<sup>57</sup> On the continental shelf beneath, all states are entitled to lay submarine cables.<sup>58</sup>

### 2.3.1.2 Espoo Convention

Under the Convention on Environmental Impact Assessment in a Transboundary Context (**Espoo Convention**),<sup>59</sup> the parties must perform **environmental impact assessments (EIAs)** as ‘*appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact*’ of projected activities.<sup>60</sup> Countries that are parties to the Convention must notify and consult other countries whose environment is likely to be adversely affected by any given project.

OWF projects are not listed in Appendix I to the Convention, which specifies the activities most likely to cause significant adverse transboundary impact. However, concerned parties may ask to arrange discussions to determine whether such a project could have a detrimental transboundary environmental impact and whether an EIA is required.<sup>61</sup> In particular, size and location are cited in Appendix III to the Convention as relevant criteria to assess the environmental significance of a project.

The Convention was later supplemented by the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (**Kyiv Protocol**).<sup>62</sup> The Kyiv Protocol ensures that the parties undertake **strategic environmental assessments (SEAs)** into earlier phases of the development process so

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<sup>53</sup> Art. 2 par. 1 UNCLOS.

<sup>54</sup> Art. 17 UNCLOS.

<sup>55</sup> Art. 56 par. 1 UNCLOS.

<sup>56</sup> Nieuwenhout (2017), p. 8.

<sup>57</sup> Art. 58, 87 UNCLOS.

<sup>58</sup> Art. 79 UNCLOS.

<sup>59</sup> United Nations Economic Commission for Europe, Convention on Environmental Impact Assessment in a Transboundary Context, United Nations, Treaty Series, Volume 1989, p. 309.

<sup>60</sup> Art. 2 Espoo Convention.

<sup>61</sup> Art. 2 par. 5 Espoo Convention.

<sup>62</sup> Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, text available at <https://www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/protocolenglish.pdf>.

potential environmental effects can be evaluated while plans are still abstract.

All eight Baltic Member States are Parties to the Espoo Convention and Kyiv Protocol, as is the EU itself.<sup>63</sup>

### 2.3.1.3 Helsinki Convention

The Convention on the Protection of the Marine Environment of the Baltic Sea Area (**Helsinki Convention**)<sup>64</sup> took effect in 2000. The governing body of the Convention is the Baltic Marine Environment Protection Commission (**HELCOM**), whose contracting parties include the eight Baltic Member States as well as the EU and Russia.<sup>65</sup>

The Convention designates areas as Maritime Protection Areas (**MPAs**) with the goal of protecting marine and coastal flora and fauna specific to the Baltic Sea Region; these areas may overlap but do not always correspond to the zones defined under the EU's Natura 2000 network (see figure 7 below).<sup>66</sup> There are currently 176 MPAs in the Baltic Sea.<sup>67</sup>

### 2.3.1.4 Aarhus Convention

The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (**Aarhus Convention**) of the United Nations Economic Commission for Europe, in force since 2001, establishes environmental rights of the public regarding access to environmental information and participation in environmental decision-making as well as access to judicial review on environmental issues. It was implemented in the EU by the Public Participation Directive,<sup>68</sup> which requires the Member States to give environmental organisations the right to pursue environmental proceedings and lawsuits.

### 2.3.1.5 Other relevant nature protection conventions

The Council of Europe's Convention on the Conservation of European Wildlife and Natural Habitats (**Bern Convention**) provides protection for species and their habitats on the European continent and in some states on the African continent. The EU is party to the Bern Convention, and the appendices to the Convention have served as a model for the

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<sup>63</sup> The status of the parties at the Convention is listed at [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-4&chapter=27&lang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-4&chapter=27&lang=en).

<sup>64</sup> The text of the Convention is available at [http://www.helcom.fi/Documents/About%20us/Convention%20and%20commitments/Helsinki%20Convention/1992\\_Convention\\_1108.pdf](http://www.helcom.fi/Documents/About%20us/Convention%20and%20commitments/Helsinki%20Convention/1992_Convention_1108.pdf).

<sup>65</sup> HELCOM, “Contracting parties”, <http://www.helcom.fi/about-us/contracting-parties/> (accessed 24 May 2018).

<sup>66</sup> HELCOM, “HELCOM MPAs and Natura 2000 areas”, <http://www.helcom.fi/action-areas/marine-protected-areas/HELCOM-MPAs-and-Natura-2000-areas> (accessed 24 May 2018).

<sup>67</sup> HELCOM, “Marine protected areas”, <http://www.helcom.fi/action-areas/marine-protected-areas> (accessed 24 May 2018).

<sup>68</sup> Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment with regard to public participation and access to justice and amending Council Directives 85/337/EEC and 96/61/EC, OJ L 156, 25.6.2003, p. 17–25.

Annexes to the Habitats Directive.<sup>69</sup>

Another relevant nature protection convention is the 1971 Convention on Wetlands of International Importance especially as Waterfowl Habitat (**Ramsar Convention**).<sup>70</sup> Its original purpose is the ‘wise use’ of wetlands, where contracting parties must designate at least one wetland within their territory as a ‘Wetland of International Importance’, also known as **Ramsar sites**.<sup>71</sup> The Baltic Member States contain a total of 240 Ramsar sites.<sup>72</sup> In more recent times, the Convention's objectives have broadened to include the protection of wetlands as important ecosystems with the goal of maintaining biodiversity.

## 2.3.2 EU law

### 2.3.2.1 EU energy law

The energy law field is an area in which the EU and Member States **share competence** pursuant to Art. 4 TEU, meaning that either the EU or Member States may adopt energy-related legislation and policies. According to **Art. 194 par. 1 TFEU**, EU energy policy aims to ensure the functioning of the energy market and security of supply within the EU as well as to promote the interconnection of energy networks.

**Secondary EU legislation** provides rules for the design of the European common energy market. The legislation currently in force<sup>73</sup> is the EU’s **third energy package**, which was proposed by the Commission and adopted by the EU legislature in 2009 with the objectives of making the energy market fully effective and creating a single EU energy market.<sup>74</sup> The third energy package consists of several acts of secondary EU law and regulates, among other issues, the opening of the electricity market, ownership unbundling in grid operation, market access, and the establishment of national energy regulatory authorities. The EU Agency for the Cooperation of Energy Regulators (ACER) ensures effective cooperation on these tasks.

#### 2.3.2.1.1 EU legal instruments relevant to the energy market

The **RES Directive**<sup>75</sup> establishes a framework for the development of renewable energy

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<sup>69</sup> Federal Agency for Nature Conservation, “Bern Convention”, <https://www.bfn.de/en/activities/species-conservation/species-conservation-legislation-and-conventions/bern-convention.html> (accessed 24 May 2018).

<sup>70</sup> Ramsar, “About the Ramsar Convention”, <https://www.ramsar.org/about-the-ramsar-convention/> (accessed 24 May 2018).

<sup>71</sup> Federal Agency for Nature Conservation, “Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) (1971)”, <https://www.bfn.de/en/activities/international-nature-conservation/international-agreements-and-programmes/steckbriefe-natura2000/ramsar.html> (accessed 24 May 2018).

<sup>72</sup> Ramsar, “Country Profiles”, <https://www.ramsar.org/country-profiles> (accessed 24 May 2018).

<sup>73</sup> At the time of redaction (June 2018).

<sup>74</sup> European Commission, “Questions and Answers on the third legislative package for an internal EU gas and electricity market”, 2 March 2011, [http://europa.eu/rapid/press-release\\_MEMO-11-125\\_en.htm?locale=en](http://europa.eu/rapid/press-release_MEMO-11-125_en.htm?locale=en) (accessed 24 May 2018).

<sup>75</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, OJ L 140, 5.6.2009, p. 16–62.

sources in the EU.<sup>76</sup> It defines ‘energy from renewable sources’ as energy from renewable non-fossil sources, including wind energy,<sup>77</sup> and sets technical rules for the calculating the share of electricity generated from both hydro and wind sources.<sup>78</sup>

The Directive does not specify offshore wind objectives, but sets minimal **binding targets for the share of energy from renewable sources** within the Member States’ gross final consumption of energy in 2020 (table 3).<sup>79</sup>

2020 RES targets	
Denmark	30%
Estonia	25%
Finland	38%
Germany	18%
Latvia	40%
Lithuania	23%
Poland	15%
Sweden	49%

**Table 3. Renewable energy targets of the Baltic Member States for the year 2020.**

The Internal Electricity Market Directive (**Electricity Directive**)<sup>80</sup> sets rules for the organisation and functioning of an integrated and competitive electricity market in the EU.<sup>81</sup> The Directive also promotes regional cooperation.<sup>82</sup> For the Baltic Integrid project, other relevant instruments include the Regulation on conditions for access to the network for cross-border exchanges in electricity (**Electricity Regulation**),<sup>83</sup> which lays out additional rules for cross-border electricity exchanges, and the **EU network codes and guidelines**, which are binding legal instruments establishing rules for the EU electricity market.<sup>84</sup>

Furthermore, the Regulation on guidelines for trans-European energy infrastructure

<sup>76</sup> Art. 1 RES Directive.

<sup>77</sup> Art. 2 (a) RES Directive.

<sup>78</sup> Annex II RES Directive.

<sup>79</sup> Art. 3 par. 1 in conjunction with Annex I A RES Directive.

<sup>80</sup> Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, OJ L 211, 14.8.2009, p. 55–93.

<sup>81</sup> Art. 1 Electricity Directive.

<sup>82</sup> Art. 6 par. 1 Electricity Directive.

<sup>83</sup> Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003, OJ L 211, 14.8.2009, p. 15–35.

<sup>84</sup> European Commission, “Electricity network codes and guidelines”, <https://ec.europa.eu/energy/en/topics/markets-and-consumers/wholesale-market/electricity-network-codes> (accessed 24 May 2018).

(**TEN-E Regulation**)<sup>85</sup> provides support for the development of priority corridors and aspects of trans-European energy infrastructure, including the tasks within the scope of the BEMIP initiative (see section 2.1.3).<sup>86</sup> In particular, the Regulation addresses projects of common interest (PCIs) and rules for the cross-border allocation of costs and risk-related incentives for those projects.<sup>87</sup>

#### The EU Clean Energy Package

At the end of 2016, the Commission introduced the **Clean Energy Package** (also called **Winter Package**), a new package of legislative proposals intended to modernise the EU legal framework on energy. It comprises reforms on energy efficiency, renewable energy, and electricity market design and focusses on measures to facilitate a clean energy transition.<sup>88</sup> As a result, significant changes to the EU's legal framework on energy are expected in the years to come.

The Commission's proposals aim to change the EU legal framework by creating regional operation centres (ROC),<sup>89</sup> setting a binding energy efficiency target for 2030 at EU level,<sup>90</sup> opening up national RES support schemes to include electricity generated in other Member States,<sup>91</sup> and ending priority dispatch for new renewable generating installations with a capacity of 500 kW or more.<sup>92</sup>

#### 2.3.2.1.2 EU network codes

Because of the increasing interconnection between national electricity systems in the EU, grid operation and trading rules, which were drawn up at a national level, must be harmonised sufficiently to ensure the effective management of electricity flows.<sup>93</sup> In order to implement EU law and govern cross-border transactions and system operations, the Commission, with input from ACER and ENTSO-E, introduced legally binding network codes

<sup>85</sup> Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009, OJ L 115, 25.4.2013, p. 39–75.

<sup>86</sup> Art. 1 par. 1 in conjunction with Annex I n° 1 par. 4 TEN-E Regulation.

<sup>87</sup> Art. 1 par. 2 TEN-E Regulation.

<sup>88</sup> European Commission, "Clean Energy for All Europeans", <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans> (accessed 24 May 2018); see also the Commission's communication "Clean Energy For All Europeans" (COM(2016) 860 final); at the time of redaction, the legislative package was being examined by the EU legislator.

<sup>89</sup> Art. 32 Proposal for a Regulation of the European Parliament and of the Council on the internal market for electricity (recast), COM(2016)861/2 (Recast Electricity Regulation).

<sup>90</sup> Proposal for a Directive of the European Parliament and of the Council amending Directive 2012/27/EU on energy efficiency COM(2016) 761 final – 2016/0376(COD).

<sup>91</sup> Art. 5 Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast) COM/2016/0767 final/2 - 2016/0382 (COD).

<sup>92</sup> Art. 11 Recast Electricity Regulation.

<sup>93</sup> European Commission, "Electricity network codes and guidelines", <https://ec.europa.eu/energy/en/topics/markets-and-consumers/wholesale-market/electricity-network-codes> (accessed 24 May 2018).

(NCs) that supplement the Electricity Regulation.<sup>94</sup> These are divided into several thematic categories—namely, market and trading, connection, and system operation—and are linked to and cross-reference each other.

### 2.3.2.1.3 Connection requirements

The NCs for grid connection are most relevant to the development of an offshore meshed grid. Harmonised rules for the grid connection of new power generation installations, including ‘significant’ offshore power park modules, are established in the NC for generators (**RfG**).<sup>95</sup> The NC regulating HVDC connections (**HVDC**)<sup>96</sup> specifies requirements for grid connections of HVDC systems and DC-connected power park modules, such as OWFs.<sup>97</sup> Both NCs entered into force in 2016, but their requirements will not take effect until 2019.<sup>98</sup>

### 2.3.2.1.4 Capacity allocation and congestion management

The NC on capacity allocation and congestion management (**CACM**)<sup>99</sup> aims to prevent risks related to congestion and prescribes minimum harmonisation as part of the EU’s efforts to promote and regulate a fully functioning and interconnected internal energy market.<sup>100</sup> The new regulation addresses the single day-ahead and intraday coupling between the grids of different countries and is intended to serve as the sole regulation governing capacity allocation and congestion management for international trade. It creates a framework to ensure cross-zonal capacity allocation and congestion management in the day-ahead and intraday markets and applies to all transmission systems and interconnections in the EU.<sup>101</sup> An important aspect of this NC is the concept of a **bidding zone**. This zone, defined as the largest geographical area within which market participants are able to exchange energy without capacity allocation,<sup>102</sup> plays a crucial role in the established framework. A bidding zone may fall entirely within a state’s borders, but it can also span several countries. The NC introduces a new procedure for reviewing the configurations of the existing bidding zones<sup>103</sup> and specifies that they should be designed to ensure

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<sup>94</sup> Ibid.

<sup>95</sup> Commission Regulation (EU) 2016/631 establishing a network code on requirements for grid connection of generators, OJ L 112, 27.4.2016, p. 1–68.

<sup>96</sup> Commission Regulation (EU) 2016/1447 establishing a network code on requirements for grid connection of high-voltage direct current system and direct current-connected power park modules, OJ L 241, 8.9.2016, p. 1–65.

<sup>97</sup> Art. 1 HVDC.

<sup>98</sup> Art. 72 RfG, Art. 86 HVDC.

<sup>99</sup> Commission Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management, OJ L 197, 25.6.2015, p. 24–72.

<sup>100</sup> Recital (1) CACM.

<sup>101</sup> Art. 1 par. 1, par. 2 CACM.

<sup>102</sup> Article 2 par. 3 of the Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council, OJ L 163, 15.6.2013, p. 1–12.

<sup>103</sup> Art. 32 CACM.



efficient congestion management and overall market efficiency.<sup>104</sup>

The NC establishes the **nominated electricity market operator (NEMO)**, an entity with the task of coupling the day-ahead and intraday market together with the TSOs. These tasks also include matching orders and allocating them in accordance with the coupling results, establishing the requirements for the single day-ahead and intraday coupling, and determining minimum and maximum prices.<sup>105</sup> The presence of more than one NEMO per bidding zone is possible. Member States can decide if the NEMOs are operating in a monopoly or competitive function. The NC also includes provisions concerning the creation of a common grid methodology intended to establish a common grid model.<sup>106</sup>

#### 2.3.2.1.5 Forward capacity allocation

The NC on forward capacity allocation (**FCA**)<sup>107</sup> sets a guideline for long-term cross-zonal capacity allocation.<sup>108</sup> Its purpose differs from that of the CACM, which lays out rules for the day-ahead and intraday markets. The FCA thus addresses long-term transmission rights to the forward market. It presents a framework similar to that of the CACM, and there are cross-references between the two NCs, for example regarding bidding zones<sup>109</sup> and capacity calculation regions.<sup>110</sup>

Under the provisions of the FCA, a '**single allocation platform**' to allocate forward capacity must be established in the form of a European platform, which is to be established by TSOs and become operational within at most two years after the FCA entered into force.<sup>111</sup> The main task of the platform will be '*offering long-term transmission rights, and on the possibility to return long-term transmission rights for subsequent forward capacity allocation or transfer long-term transmission rights between market participants*'.<sup>112</sup>

These provisions may play a fundamental role in removing existing barriers between national electricity markets. The creation of harmonised rules for cross-zonal capacity allocation is essential for the development of a common electricity market. In the context of an offshore grid, the FCA and CACM are relevant to the allocation of interconnector capacity.

#### 2.3.2.1.6 A non-binding policy instrument: the Ten-Year Network Development Plan

The **Ten-Year Network Development Plan (TYNDP)**, prepared by ENTSO-E, outlines

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<sup>104</sup> Recital (11) CACM.

<sup>105</sup> Art. 7 CACM.

<sup>106</sup> Art.17 CACM.

<sup>107</sup> Commission Regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation, OJ L 259, 27.9.2016, p. 42–68.

<sup>108</sup> Art. 1 FCA.

<sup>109</sup> Art. 27 FCA.

<sup>110</sup> Art. 8 FCA.

<sup>111</sup> Art. 48 FCA.

<sup>112</sup> Art. 1 par. 1 FCA.

the needs for investment in grid infrastructure that comply with EU policy objectives. The long-term plan is intended to ensure transparency and coordinate investment and expansion activities and serves as a guideline for the different plans drafted by the TSOs on a national level.

### 2.3.2.2 EU Environmental law

The EU legal framework requires Member States to ensure that environmental considerations are not neglected in the course of the development of renewable energies—partially in order to fulfil the EU’s own commitments under international conventions. The most comprehensive requirements relevant to an assessment of the environmental impact of transmission grid and OWF development are anchored in EU law.

The Strategic Environmental Assessment Directive (**SEA Directive**)<sup>113</sup> obligates Member States to ensure that environmental assessments are carried out when designing ‘*certain plans and programmes which are likely to have significant effects on the environment*’.<sup>114</sup> It applies to a wider range of public plans and programmes adopted by public authorities at national, regional or local level, such as those concerning land use and the development of power plants.<sup>115</sup> As a result, an SEA is carried out in an earlier and more abstract phase of planning and assesses environmental impact, not of a concrete plant project, but of development in general.

On the other hand, the Environmental Impact Assessment Directive (**EIA Directive**),<sup>116</sup> last modified in 2014,<sup>117</sup> applies to ‘*the assessment of the environmental effects of those public and private projects which are likely to have significant effects on the environment*’.<sup>118</sup> Its provisions concern concrete project planning; the EIA is therefore performed at a later planning stage than is the SEA.

Through the EIA Directive, the EU complies with the requirements of the **Espoo Convention**. The SEA Directive was adopted to implement the **Kyiv Protocol** into EU legislation.<sup>119</sup>

Furthermore, as a party to the Aarhus Convention since 2005, the EU itself implemented

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<sup>113</sup> Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197, 21.6.2001, p. 30–37.

<sup>114</sup> Art. 1 SEA Directive.

<sup>115</sup> European Commission, “Strategic Environmental Assessment – SEA”, last modified 6 February 2018, <http://ec.europa.eu/environment/eia/sea-legalcontext.htm> (accessed 24 May 2018).

<sup>116</sup> Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, OJ L 26, 28.1.2012, p. 1–21.

<sup>117</sup> Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, OJ L 124, 25.4.2014, p. 1–18.

<sup>118</sup> Art. 1 par. 1 EIA Directive.

<sup>119</sup> European Commission, “Strategic Environmental Assessment – SEA”, last modified 6 February 2018, <http://ec.europa.eu/environment/eia/sea-legalcontext.htm> (accessed 24 May 2018).



its provisions through the adoption of the **Public Participation Directive** and the **Directive on public access to environmental information**.<sup>120</sup> The Member States transposed these Directives into national law to fulfil their own obligations under the Aarhus Convention and EU law.

The **Habitats Directive**,<sup>121</sup> together with the **Birds Directive**,<sup>122</sup> sets standards for the conservation of nature in the EU and calls for the creation of the Natura 2000 network, composed of sites in the EU that harbour vulnerable species and natural habitats.<sup>123</sup> Natura 2000 sites in the BSR are identified in figure 7 below. This network represents the EU's contribution to the **Emerald Network of the Bern Convention**, an ecological network made up of Areas of Special Conservation Interest.<sup>124</sup> The designation of a site as a nature protection area generally affects the environmental assessments of plans or projects related to the construction of energy production plants.

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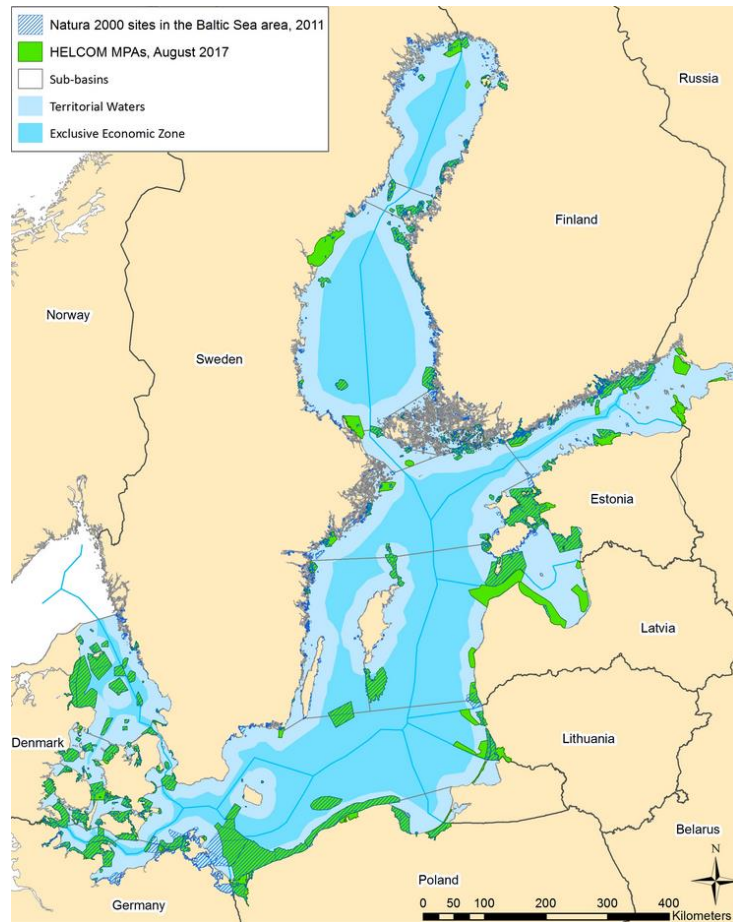
<sup>120</sup> Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC, OJ L 41, 14.2.2003, p. 26–32.

<sup>121</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.07.1992, p. 7–50.

<sup>122</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ L 20, 26.01.2010, p. 7–25.

<sup>123</sup> Art. 3 par. 1 Habitats Directive.

<sup>124</sup> Council of Europe, “Emerald network of Areas of Special Conservation Interest”, <https://www.coe.int/en/web/bern-convention/emerald-network> (accessed 24 May 2018).



**Figure 7. HELCOM MPAs and Natura 2000 areas in the Baltic Sea.**  
*Source: HELCOM*<sup>125</sup>

The Maritime Spatial Planning Directive (**MSP Directive**)<sup>126</sup> obligates Member States to create **maritime spatial plans** (MSPs) in order to coordinate activities at sea by 31<sup>st</sup> March 2021.<sup>127</sup> An overview of maritime spatial planning around the Baltic Sea is available on the European MSP Platform of the Commission.<sup>128</sup>

## 2.4 Regulatory framework relevant for sea cables

In the context of OWFs and interconnectors, electricity is transmitted through submarine power cables. For the purpose of this report, it is necessary to differentiate between types of offshore power cables based on the function of each: this establishes its legal status, which, in turn, determines the applicable rules and the stakeholder entitled to the

<sup>125</sup> HELCOM, “HELCOM MPAs and Natura 2000 areas”, <http://www.helcom.fi/action-areas/marine-protected-areas/HELCOM-MPAs-and-Natura-2000-areas> (accessed 24 May 2018).

<sup>126</sup> Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning, OJ L 257, 28.8.2014, p. 135–145.

<sup>127</sup> Art. 4 par. 1, 15 par. 3 MSP Directive.

<sup>128</sup> European MSP Platform, “Baltic Sea”, <https://www.msp-platform.eu/sea-basins/baltic-sea-0> (accessed 24 May 2018).

operation of the cable.

## 2.4.1 Types of cables

### 2.4.1.1 Interconnectors

A **power interconnector** is defined in two distinct ways in the legislation of the European Union.<sup>129</sup> The Electricity Directive defines an interconnector as an ‘*equipment used to link electricity systems*’,<sup>130</sup> while the Electricity Regulation, in derogation of the Electricity Directive, defines it as ‘*a transmission line which crosses or spans a border between Member States and which connects the national transmission systems of the Member States*’.<sup>131</sup> Because the Electricity Regulation applies to the conditions for access to the network for cross-border exchanges in electricity, this difference in definitions is understandable. For multiple reasons, the latter definition is used in this report for the assessment of barriers to a meshed grid in the Baltic Sea. Firstly, because this definition is more restrictive than that found in the Electricity Directive, a structure that qualifies as an interconnector under the Regulation also falls within the scope of the Directive. Secondly, the meshed grid addressed within the scope of this project necessarily involves cross-border electricity exchanges; the definition given in the Electricity Regulation can be applied as *lex specialis* over that in the Directive. Interconnectors are operated by TSOs.

Meshed grids introduce questions regarding the legal status of offshore power cables. In early studies, the legal analysis of meshed grids generally started with an examination of ‘hybrid projects’. These projects have a simpler structure and are considered a probable first step towards a meshed grid.<sup>132</sup> An example of a hybrid project is one that involves two OWFs that are located within one country’s EEZ and connected to one another by a cable. The cable would also transmit electricity across the border (figure 8). This constellation occurs in the Kriegers Flak Combined Grid Solution, a cable that will connect the Danish OWF Kriegers Flak and the German OWF Baltic 2.<sup>133</sup> Because the cable ‘*link[s] electricity systems*’, it appears to qualify as an ‘interconnector’ under the definition of the Electricity Directive.<sup>134</sup> However, it is questionable whether it can be defined as such under the Electricity Regulation. The cable connects two OWFs, not necessarily ‘*transmission systems*’ per se. A literal interpretation of the Regulation does not necessarily allow for this type of cable to be considered an interconnector, especially when the OWF is responsible for the connection to the shore. On the other hand, if the offshore power

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<sup>129</sup> As the EU electricity market legislation has affected the national legal regimes to a large extent and represents a common denominator between them, it is reasonable to start with EU-level definitions.

<sup>130</sup> Art. 2 n° 13 Electricity Directive.

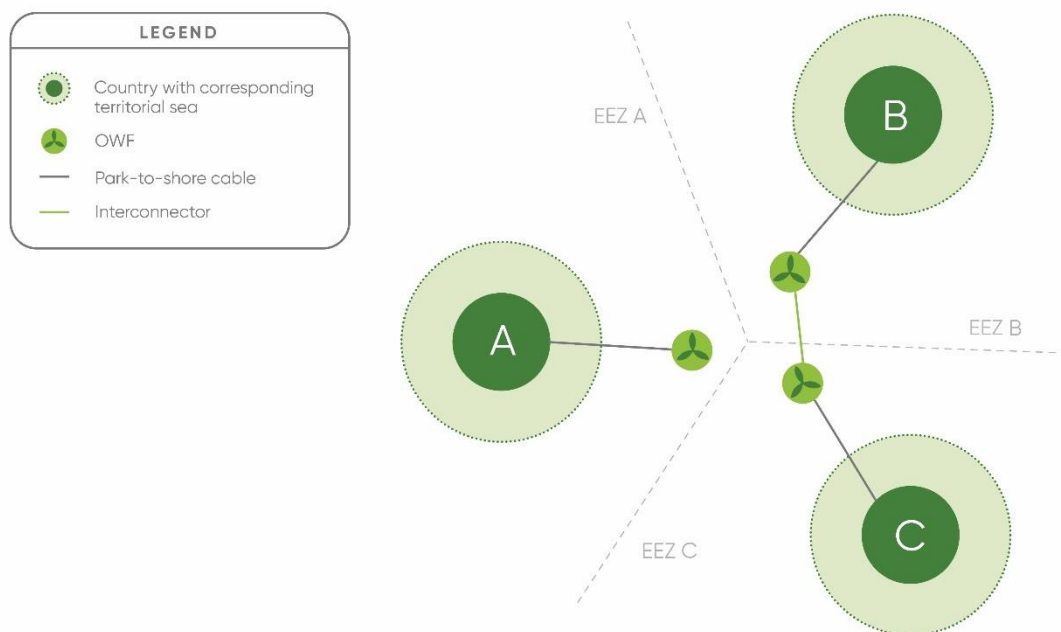
<sup>131</sup> Art. 2 par. 1 Electricity Regulation.

<sup>132</sup> See, for example, Müller (2016); Nieuwenhout (2017).

<sup>133</sup> 50hertz, “Kriegers Flak – Combined Grid Solution”, <http://www.50hertz.com/de/Netzausbau/Leitungen-auf-See/Projekte/Combined-Grid-Solution> (accessed 24 May 2018).

<sup>134</sup> There is no specific definition for “electricity system” in the Electricity Regulation nor the Electricity Directive.

cable functionally connects transmission systems, even through OWFs, it could be considered an interconnector under the Regulation.<sup>135</sup>



**Figure 8. Interconnection through the connection of OWF ('Kriegers Flak constellation').**

Source: IKEM (2018) | Graphics: Ellery Studio

In future, devising legal definitions that can accommodate a greater number of meshed grid designs will enable developments in the electricity systems while avoiding legal uncertainty regarding the relevant rules for cables.<sup>136</sup> In its Clean Energy Package, the Commission proposed a common interconnector definition for use in the Electricity Directive and Regulation: *'a transmission line which crosses or spans a border between bidding zones, between Member States or, up to the border of EU jurisdiction, between Member States and third countries'*.<sup>137</sup> In the context of the Electricity Regulation, the new definition would be wider than the one currently in force. The final wording of the Recast Electricity Regulation and Directive will likely become clear by the end of 2018.<sup>138</sup>

In addition to 'classical' interconnectors, the EU legal framework allows for **DC merchant interconnectors**, which differ from their counterparts in the sense that the cable owner is not a network operator but a natural or legal person that is (at least in a legal sense) unbundled from the network operator. The merchant interconnector can be

<sup>135</sup> The classification is also discussed in Nieuwenhout (2017).

<sup>136</sup> The same conclusion in Nieuwenhout (forthcoming).

<sup>137</sup> Art. 2 n° 33 Recast Electricity Directive, Art. 2 par. 1 Recast Electricity Regulation.

<sup>138</sup> Szalai Pavol, "Karins MEP: 'Small-scale electricity producers don't need special protection'" Euractiv, 26 March 2018, <https://www.euractiv.com/section/electricity/interview/karins-mep-small-scale-electricity-producers-dont-need-special-protection/> (accessed 24 May 2018).

temporarily exempted from certain requirements normally applicable to the ‘regular interconnectors’, such as unbundling, non-discriminatory third-party access, and requirements for the use of congestion revenue.<sup>139</sup> In addition to a new DC interconnector, an exemption can be granted for an AC interconnector with a significant investment and cost risk. An existing interconnector with significantly increasing capacity can also be exempted. In all cases, the exemption may cover third party access, unbundling and use of congestion revenues, the connection and access conditions, tariff or tariff methodologies, and balancing terms confirmed *ex ante* by the respective NRA under the Electricity Directive.

At the end of the granted exemption period, the ‘special treatment’ of the interconnector ends; the merchant then has the option to sell the cable to the TSO, as was the case for Estlink 1, or comply with the rules for grid operators.

#### Example: EstLink 1

Only one interconnector in the Baltic Sea area has been exempted under the merchant exemption regime: Estlink 1.<sup>140</sup> It was exempted from third-party access until it became part of the national transmission systems, although the exemption was to expire at the end of 2013. The investors were Baltic energy incumbents and two energy companies from Finland.<sup>141</sup> At the end of 2013, the Finnish and Estonian TSO acquired ownership of the cable.<sup>142</sup> By that point, the TSOs had already rented the cable from the merchant and opened it for market use.<sup>143</sup>

The following tables (table 4 and 5) provide an overview of interconnectors and interconnector projects in the Baltic Sea, along with their (planned) commissioning years.

<sup>139</sup> The criteria for the merchant exemption are set out in Art. 17 par. 1 Electricity Regulation: ‘*the investment must enhance competition in the electricity supply; the level of risk attached to the investment is such that the investment would not take place unless an exemption is granted; the interconnector must be owned by a natural or legal person which is separate at least in terms of its legal form from the system operators in whose systems that interconnector will be built; charges are levied on users of that interconnector; since the partial market opening referred to in Article 19 of Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity, no part of the capital or operating costs of the interconnector has been recovered from any component of charges made for the use of transmission or distribution systems linked by the interconnector; and the exemption must not be to the detriment of competition or the effective functioning of the internal market in electricity, or the efficient functioning of the regulated system to which the interconnector is linked*’.

<sup>140</sup> The list of exemptions under Art. 17 Electricity Regulation is available at European Commission – Directorate-General for Energy, “Pending Notifications of National Exemption Decisions”, last modified 16 May 2017, [https://ec.europa.eu/energy/sites/ener/files/documents/exemption\\_decisions2017\\_0.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/exemption_decisions2017_0.pdf) (accessed 24 May 2018).

<sup>141</sup> European Commission, Exemption Decision No E/2005/001, Estlink Project, TREN/C2/MS/nh/D(2005) 108708, 27 April 2005.

<sup>142</sup> Fingrid, “Fingrid ja Elering Estlink 1 -sähkökaapelin uusiksi omistajiksi”, 27 November 2013, <https://www.fingrid.fi/sivut/ajankohtaista/tiedotteet/2013/fingrid-ja-elering-estlink-1--sahkokaapelin-uusiksi-omistajiksi/> (accessed 24 May 2018).

<sup>143</sup> Fingrid, “Fingrid Oyj ja Elering OÜ ovat saattaneet loppuun Estlink 1 sähkökaapelin kaupan”, 30 December 2013, <https://www.fingrid.fi/sivut/ajankohtaista/tiedotteet/2013/fingrid-oyj-ja-elering-ou-ovat-saattaneet-loppuun-estlink-1-sahkokaapelin-kaupan/> (accessed 24 May 2018).

	<b>Connected countries</b>	<b>Ownership/ operation</b>	<b>Transmission network operators</b>	<b>Particularities</b>
<b>Konti-Skan 1</b> <sup>144</sup> (1965)	Denmark, Sweden	TSOs	Energinet, Svenska kraftnät	-
<b>Konti-Skan 2</b> <sup>145</sup> (1988)	Denmark, Sweden	TSOs	Energinet, Svenska kraftnät	-
<b>Fenno-Skan 1</b> <sup>146</sup> (1989)	Finland, Sweden	TSOs	Fingrid, Svenska kraftnät	The Swedish-Finnish interconnection will be enhanced by the construction of a third 400 kV AC onshore connection north of the Baltic Sea (to be completed by 2025), which qualified as a PCI in 2017. <sup>147</sup>
<b>Baltic Cable</b> <sup>148</sup> (1994)	Germany, Sweden	Baltic Cable AB <sup>149</sup>	Baltic Cable AB	The company operates only one interconnector; regardless of the view of Swedish and German NRAs concerning TSO status, it is not certified as a TSO.
<b>Kontek</b> <sup>150</sup> (1995, 2016)	Germany, Denmark	TSOs	50 Hertz, Energinet	-
<b>SwePol Link</b> <sup>151</sup> (2000)	Poland, Sweden	TSOs	PSE S.A. Svenska kraftnät	In 2012, TSOs acquired full ownership (before SwePol Link AB). The interconnector was opened to the markets in 2010. <sup>152</sup>
<b>Estlink 1</b> <sup>153</sup> (2006)	Finland, Estonia	TSOs	Fingrid, Elering	Initially a merchant interconnector operated by Nordic

<sup>144</sup> ABB, “Konti-Skan”, <http://new.abb.com/systems/hvdc/references/konti-skan> (accessed 24 May 2018).

<sup>145</sup> 4COffshore, “Konti-Skan 2 Interconnector”, <http://www.4coffshore.com/windfarms/interconnector-konti-skan-2-icid87.html> (accessed 24 May 2018).

<sup>146</sup> Fingrid, “New direct current transmission link between Sweden and Finland inaugurated today”, 25 January 2012, <https://www.fingrid.fi/en/pages/news/news/2012/new-direct-current-transmission-link-between-sweden-and-finland-inaugurated-today/> (accessed 24 May 2018).

<sup>147</sup> Fingrid, “A third 400 kV AC interconnection to Sweden”, <https://www.fingrid.fi/en/grid/construction/cross-border-connections/third-interconnection-finland--sweden/> (accessed 24 May 2018).

<sup>148</sup> Baltic Cable AB, “About Baltic Cable”, <http://www.balticcable.com/aboutindex.html> (accessed 24 May 2018).

<sup>149</sup> The Baltic Cable AB is owned by Norwegian Statkraft.

<sup>150</sup> ABB, “Kontek”, <http://new.abb.com/systems/hvdc/references/kontek> (accessed 24 May 2018).

<sup>151</sup> ABB, “SwePol Link”, <http://new.abb.com/systems/hvdc/references/swepol-link> (accessed 24 May 2018).

<sup>152</sup> Reuters, “Polish and Swedish grid operators acquire SwePol power link”, <http://www.reuters.com/article/poland-power/polish-and-swedish-grid-operators-acquire-swepol-power-link-idUSL6E8JVH7720120831>.

<sup>153</sup> Fingrid, “Press Release: Fingrid and Elering will become the new owners of Estlink 1”, 27 November 2013, <https://www.fingrid.fi/en/pages/news/news/2013/press-release-fingrid-and-elering-will-become-the-new-owners-of-estlink-1/> (accessed 24 May 2018).



				Energy Link, then the TSOs rented the cable; at the end of 2013, the TSOs acquired ownership of the cable.
<b>Fenno-Skan 2</b> <sup>154</sup> (2011)	Finland, Sweden	TSOs	Fingrid, Svenska kraftnät	-
<b>Estlink 2</b> <sup>155</sup> (2014)	Finland, Estonia	TSOs	Fingrid, Elering	Investment subsidy from the EU
<b>NordBalt</b> <sup>156</sup> (2016)	Lithuania, Sweden	TSOs	Litgrid, Svenska kraftnät	Investment subsidy from the EU

**Table 4. Overview of interconnectors in the Baltic Sea.**

	<b>Connected countries</b>	<b>Ownership/ Operation</b>	<b>Transmission network operators</b>	<b>Particularities</b>
<b>Kriegers Flak Combined Grid Solution</b> <sup>157</sup> (2018)	Denmark, Germany	TSOs	50 Hertz, Energinet	The project received EU financing as a PCI. <sup>158</sup>
<b>Hansa Power-Bridge</b> <sup>159</sup> (2025/2026)	Sweden, Germany	TSOs	50 Hertz, Svenska kraftnät	-
<b>Kvarken DC</b> (late 2020s)	Finland, Sweden	TSOs	Fingrid, Svenska kraftnät	The Kvarken DC connection, with its 800 MW capacity, serves as a replacement for Fenno-Skan 1, which will reach the end of its operating life by 2020. <sup>160</sup>

**Table 5. Overview of interconnector projects in the Baltic Sea.**

Currently, there are no merchant interconnectors in the Baltic Sea. It should be noted that

<sup>154</sup> Fingrid, “New direct current transmission link between Sweden and Finland inaugurated today”, 25 January 2012, <https://www.fingrid.fi/en/pages/news/news/2012/new-direct-current-transmission-link-between-sweden-and-finland-inaugurated-today/> (accessed 24 May 2018).

<sup>155</sup> Fingrid, “EstLink 2 – second high-voltage direct current link between Finland and Estonia”, <https://www.fingrid.fi/en/grid/construction/arkisto/estlink-2/> (accessed 24 May 2018).

<sup>156</sup> Svenska kraftnät, “NordBalt”, <http://www.svk.se/naturutveckling/stamnatsprojekt/nordbalt/> (accessed 24 May 2018).

<sup>157</sup> Energinet, “Kriegers Flak - Combined Grid Solution”, <https://en.energinet.dk/Infrastructure-Projects/Projektliste/Kriegers-FlakCGS> (accessed 24 May 2018).

<sup>158</sup> Energinet, “Kriegers Flak - Combined Grid Solution”, <https://en.energinet.dk/Infrastructure-Projects/Projektliste/Kriegers-FlakCGS> (accessed 24 May 2018).

<sup>159</sup> 50Hertz, “Hansa PowerBridge”, <http://www.50hertz.com/en/Grid-Extension/Offshore-projects/Projects/Hansa-PowerBridge> (accessed 24 May 2018).

<sup>160</sup> Fingrid, *Main grid development plan 2017–2027*, pp. 5, 30, available at <https://www.fingrid.fi/globalassets/dokumentit/fi/kanta-verkko/kantaverkon-kehittaminen/main-grid-development-plan-2017-2027.pdf>.

Baltic Cable AB has been considered by national NRAs and the Commission as a TSO that should comply with unbundling requirements; it become a certified TSO, even though the company operates only one interconnector. The company itself has disagreed with the definition.<sup>161</sup>

#### 2.4.1.2 Park-to-shore cables

Another category of offshore cable is the **park-to-shore cable**, which links a wind farm to the transmission (or distribution) network. This cable is not defined in the EU Electricity Directive or Regulation so that Members States have room to define their legal status and operation modalities. In Finland, for example, the power generator is responsible for connecting the plant to the shore.<sup>162</sup> In Germany, on the other hand, park-to-shore cables are described as a ‘connection line’ linking the transformer station of a wind farm to the onshore connection point of the transmission grid; they are part of the transmission grid.<sup>163</sup>

#### 2.4.2 Legal regimes for cable operation

In this section, we refer to ‘transmission grid cables’ as cables that must be operated by a TSO pursuant to EU law requirements, as opposed to ‘commercial cables’ that may be operated by any actor.

##### 2.4.2.1 Transmission grid cables

It is not clear whether cross-border **interconnectors** are part of national transmission systems under EU legislation.<sup>164</sup> In particular, neither the EU Electricity Directive nor the Electricity Regulation makes a clear statement on this point or even defines the term ‘transmission system’. On the one hand, it could be inferred from the wording of the Electricity Directive and Electricity Regulation that interconnectors are considered a part of the transmission systems. Interconnectors are clearly related to the activities of the

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<sup>161</sup> See Energimarknadsinspektionen, Beslut: Prövning av arrangemang för Baltic Cable, 14 July 2016, available at [https://www.svk.se/contentassets/702c1153a1494811958dbbe2a3137e2c/beslut---arrangemang-for-baltic-cable.pdf?\\_t\\_id=1B2M2Y8AsgTpgAmY7PhCfg==&\\_t\\_q=v%C3%A4gledning+f%C3%B6r+kablar&\\_t\\_tags=language:sv,siteid:40c776fe-7e5c-4838-841c-63d91e5a03c9&\\_t\\_ip=192.121.1.150&\\_t\\_hit.id=SVK\\_WebUI\\_Models\\_Media\\_OfficeDocument/\\_3294ce26-2c3a-4684-9ece-17c64d3afcbf&\\_t\\_hit.pos=499](https://www.svk.se/contentassets/702c1153a1494811958dbbe2a3137e2c/beslut---arrangemang-for-baltic-cable.pdf?_t_id=1B2M2Y8AsgTpgAmY7PhCfg==&_t_q=v%C3%A4gledning+f%C3%B6r+kablar&_t_tags=language:sv,siteid:40c776fe-7e5c-4838-841c-63d91e5a03c9&_t_ip=192.121.1.150&_t_hit.id=SVK_WebUI_Models_Media_OfficeDocument/_3294ce26-2c3a-4684-9ece-17c64d3afcbf&_t_hit.pos=499); The Energy Markets Inspectorate, Imposition of fines in relation to dealing with income resulting from the allocation of interconnection, 2016, available at [https://www.ei.se/Documents/Nyheter/Nyheter%202016/Baltic\\_Cable\\_In\\_english.pdf](https://www.ei.se/Documents/Nyheter/Nyheter%202016/Baltic_Cable_In_english.pdf);

European Commission, draft Commission opinion pursuant to Article 3(1) of Regulation (E) No 714/2009 and Article 10 of Directive 2009/72/EC - Germany – Baltic Cable AB (2014), available at [https://ec.europa.eu/energy/sites/ener/files/documents/2013\\_091\\_de\\_en.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2013_091_de_en.pdf).

<sup>162</sup> Sec. 3 subsection 1 para. 5 Electricity Market Act (588/2013); The Energy Authority, “Valvontamenetelmät neljännellä 1.1.2016–31.12.2019 ja viidennellä 1.1.2020–31.12.2023 valvontajaksolla” (in Finnish), p. 15, available at [http://www.energiavirasto.fi/documents/10191/0/Liite\\_2\\_Valvontamenetelm%C3%A4\\_S%C3%A4hk%C3%B6nkanta.pdf/9b9f5e5f-3b7a-4f9f-b461-27318cdca5db](http://www.energiavirasto.fi/documents/10191/0/Liite_2_Valvontamenetelm%C3%A4_S%C3%A4hk%C3%B6nkanta.pdf/9b9f5e5f-3b7a-4f9f-b461-27318cdca5db).

<sup>163</sup> See sec. 1, sec. 2 par. 1 Act on the Acceleration of the Transmission Grid Expansion of 28 July 2011 (BGBl. I p.1690), last modified 20 July 2017 (BGBl. I p. 2808).

<sup>164</sup> This question has been addressed in the PROMOTioN project; see Nieuwenhout (2017), pp. 29-30.



TSOs, because the Directive defines TSOs as ‘*responsible for operating, ensuring the maintenance of and, if necessary, developing the transmission system in a given area and, where applicable, its interconnections with other systems [...]*’.<sup>165</sup> This is confirmed by a systematic analysis of the Electricity Regulation: **merchant interconnectors** must be exempted from the rules applicable to TSOs.<sup>166</sup> Otherwise, the application of independence requirements, among others, is similar for interconnectors as for the rest of the transmission grid. On the other hand, one could argue that such merchant interconnectors are not part of the transmission system because they have been exempted and are not operated by a TSO.

When the cable is part of the transmission system, it may be operated under different regimes pursuant to the EU Electricity Directive. The general definition of a TSO is ‘*a natural or legal person responsible for operating, ensuring the maintenance of and, if necessary, developing the transmission system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the transmission of electricity*’.<sup>167</sup>

According to the Electricity Directive, the operation of the transmission system can be designed in three different regimes. The ‘standard’ structure in organising the new transmission network operators is the model of **ownership unbundled transmission system operator (TSO)**. Pursuant to the Directive, a TSO is an ownership unbundled system operator, which owns the transmission network.<sup>168</sup> This implies that the network owner is independent from any supply or production interest, a requirement intended to prevent any given company from exercising control over generation and/or supply or over the transmission system.<sup>169</sup> Except in Latvia, all the operators of transmission networks in the BSR are ownership unbundled TSOs.

In cases where the transmission system is part of a vertically integrated undertaking, an **independent system operator (ISO)**, which does not own but operates the network, may be appointed by the respective Member State.<sup>170</sup> The operation activity must be (at least legally) unbundled from activities other than transmission; the Directive also sets requirements for independence of the management.<sup>171</sup> In Latvia, the transmission network is operated by an ISO.

By contrast, an **independent transmission operator (ITO)** is part of the vertically

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<sup>165</sup> Art. 2 n° 4 Electricity Directive.

<sup>166</sup> Art. 17 Electricity Regulation.

<sup>167</sup> Art. 2 n° 4 Electricity Directive.

<sup>168</sup> Art. 9 Electricity Directive.

<sup>169</sup> Recital (11) Electricity Directive.

<sup>170</sup> Art. 13 par. 1 Electricity Directive.

<sup>171</sup> Art. 13 par. 2, Art. 9 par. 1 Electricity Directive.

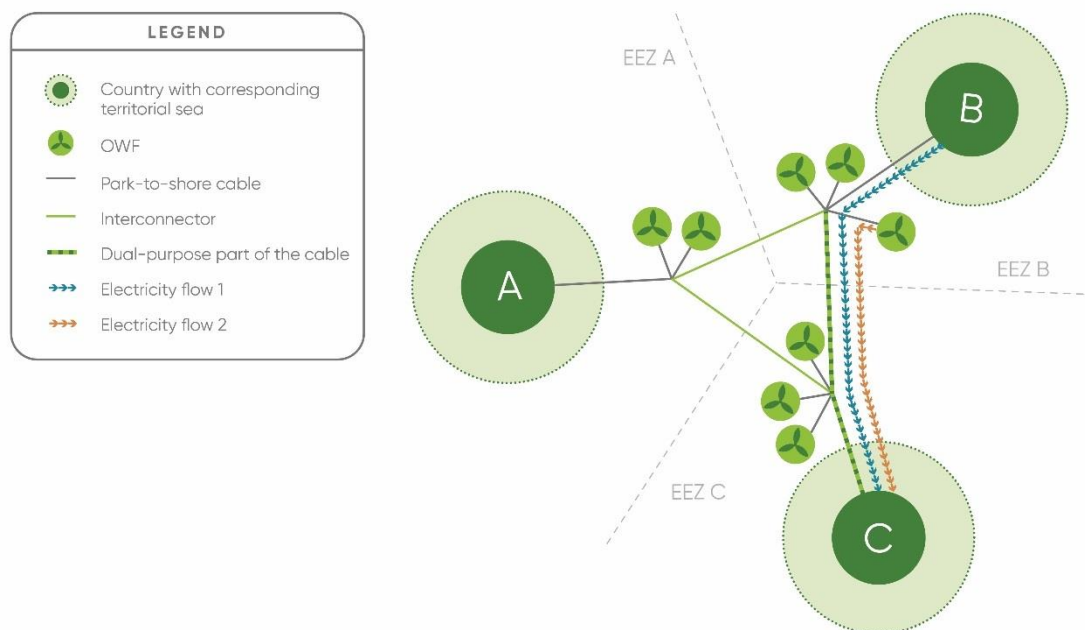
integrated undertaking. It owns the required assets, including the transmission network, and has the necessary personnel. In addition, there are independence requirements for ITOs.<sup>172</sup>

#### 2.4.2.2 Commercial cables

Commercial cables are those which are not part of the transmission or distribution system and are therefore directly related to generation and/or supply. These include the **park-to-shore cables** connecting an OWF to the transmission grid connection point, similar to connection cables under Finnish legislation. The relevant electricity generator or supplier is responsible for these cables.

#### 2.4.2.3 Dual-purpose cables

The above-mentioned legal framework indicates that, if two or more OWFs are integrated into a meshed grid, it is problematic for one particular cable to act at times as a park-to-shore cable and at other times as an interconnector, or even as both at the same time (figure 9). A simultaneous action as interconnector and park-to-shore cable arises when part of the cable's capacity would be used by the OWFs and part to transmit electricity from one shore to the other.



**Figure 9. Dual-purpose cable.**

Source: IKEM (2018) | Graphics: Ellery Studio

Another constellation for dual-purpose cables may arise when two OWFs, each situated in a different country, are connected to each other with an offshore cable, as in the Kriegers Flak constellation (see figure 8). This cable could technically act as a park-to-shore

<sup>172</sup> Art. 17 Electricity Directive.

cable when the OWF feeds electricity through this cable into a national grid, and as an interconnector when the OWF is inactive and the cable is only transmitting electricity from one shore to the other.<sup>173</sup>

Interconnectors and park-to-shore cables in a given country may need to be operated by different actors. The operation of a meshed grid may become complex if the entity entitled to operate the cable varies depending on the legal status and function of a cable at a given time. The configuration in which the cable is used as an interconnector and a park-to-shore cable at the same time presents even more complex regulatory aspects due to the simultaneous use of the cable. It could be argued that the percentage of the capacity used to transmit electricity from the OWF is not open to non-discriminatory third-party access and thus not in compliance with the Electricity Regulation.<sup>174</sup> In addition, the question of priority access or guaranteed access of RES in accordance with the RES Directive still must be addressed in hybrid projects and meshed grids, as shown in the example below.<sup>175</sup>

#### Kriegers Flak Combined Grid Solution

In the Kriegers Flak Combined Grid Solution project, the two TSOs have planned to connect the Danish and German transmission systems through the OWFs Kriegers Flak, Baltic 1, and Baltic 2. On the Danish side, the TSO is responsible for the construction of the wind power connection from maritime substation to shore. On the German side, the TSO is responsible for the grid until the offshore substation of the OWFs. The OWFs are to be linked by an offshore interconnector. The project has received PCI status.

Kriegers Flak Combined Grid Solution would closely resemble a meshed grid, and its legal classification is therefore highly interesting. With regard to priority access for wind power, the Danish NRA determined that Kriegers Flak could have priority access when electricity is transmitted to Denmark. The reasoning for the decision was that the wind farm should be treated the same as other wind farms in the area.<sup>176</sup> The priority access does not cover cross-border transmission of electricity per se. Nevertheless, in practice the priority access limits the available capacity of the cross-border interconnector.<sup>177</sup>

<sup>173</sup> This particular scenario has been researched in the PROMOTioN project; see Nieuwenhout (2017), pp. 14, 29.

<sup>174</sup> Art. 17 Electricity Regulation in conjunction with Art. 32 Electricity Directive.

<sup>175</sup> See Nieuwenhout (forthcoming).

<sup>176</sup> Danish Utility Regulator, "Punkt 5, Energitilsynets møde den 28. januar 2014, Metodegodkendelse af markedsmodel for Kriegers Flak havvindmøllepark – elforsyningslovens Sec. 73 a", Engros & transmission 13/08233/HGO, 15 January 2015, available at [http://energitilsynet.dk/fileadmin/Filer/0\\_-\\_Nyt\\_site/EL/Tilsynsafoerelser/2014/Kriegers\\_Flak\\_2.pdf](http://energitilsynet.dk/fileadmin/Filer/0_-_Nyt_site/EL/Tilsynsafoerelser/2014/Kriegers_Flak_2.pdf).

<sup>177</sup> About the legal classification, see Nieuwenhout (forthcoming).

## 3. Abstract planning

### 3.1 General principles of abstract planning

The planning of OWE development can be governed by a variety of instruments, such as national strategies for renewable energy, coalition agreements, and action plans.<sup>178</sup> Among these, spatial plans for sea areas are one of the most important tools in controlling the relevant environmental risks.<sup>179</sup> Such plans determine the location of OWF developments, allowing specific environmental risks to be evaluated in SEAs. Spatial planning is carried out in different ways and at different levels in the Baltic Member States.

#### National example

According to **Finnish** national land use guidelines<sup>180</sup> (1<sup>st</sup> or most abstract level of planning), wind power should primarily be concentrated in units of several power plants. Areas best suited for wind power development may be marked in the regional land use plan (2<sup>nd</sup> level plans), which governs the design of local plans.<sup>181</sup> More details are provided in a local master plan (3<sup>rd</sup> level plan) that may be specific to wind power development (thematic plan), or a local detailed plan (4<sup>th</sup> level plan).<sup>182</sup> However, local plans may not necessarily exist. If there is no local-level spatial plan for the area in question, a plan of this kind (i.e., a local detailed plan or a special wind power local master plan) should be drawn up before an OWF can be constructed in territorial waters.<sup>183</sup> In the EEZ, however, only a non-binding maritime spatial plan will be drafted to permit the construction of an OWF, even if it was not included in the maritime spatial plan. Areas that are not indicated for OWF development in the regional plan may be selected for such use in local plans.<sup>184</sup> All spatial plans are subject to sufficient assessments.<sup>185</sup> The competent administrative authority is theoretically responsible for spatial planning. However, if the planning process of a local plan mainly serves private interests and is

<sup>178</sup> See, for example, the 2005 Sustainable Estonia 21 Strategy, a general document containing general policy principles, available at [https://riigikantselei.ee/sites/default/files/content-editors/Failid/estonia\\_sds\\_2005.pdf](https://riigikantselei.ee/sites/default/files/content-editors/Failid/estonia_sds_2005.pdf); see also Energiatalgud, Draft *ENMAK 2030+ – Estonian Energy Sector Development Plan till 2030*, available at [https://energiatalgud.ee/img\\_auth.php/5/5b/ENMAK\\_2030.\\_Eeln%C3%B5u\\_13.02.2015.pdf](https://energiatalgud.ee/img_auth.php/5/5b/ENMAK_2030._Eeln%C3%B5u_13.02.2015.pdf).

<sup>179</sup> See, for example, the maritime plan initiated by the Estonian government at the beginning of 2017, Tuuleenergia Assotsiatsioon, “VALITSUS ALGATAS ÜLERIIGILISE MEREALA PLANEERINGU”, 26 May 2017, <http://www.tuuleenergia.ee/2017/05/valitsus-algatas-uleriigilise-mereala-planeeringu/> (accessed 24 May 2018).

<sup>180</sup> See Ministry of the Environment, *Finland’s National Land Use Guidelines issued by the Council of State on November 30, 2000*, (2002), available at [https://helda.helsinki.fi/bitstream/handle/10138/135808/Ymparistoopas\\_93en.pdf?sequence=1](https://helda.helsinki.fi/bitstream/handle/10138/135808/Ymparistoopas_93en.pdf?sequence=1).

<sup>181</sup> Sec. 28, 32 Land Use and Building Act (132/1999).

<sup>182</sup> Sec 35, 50 and 77a Land Use and Building Act (132/1999).

<sup>183</sup> Sec 135, 136 Land Use and Building Act (132/1999).

<sup>184</sup> Sec. 135, 136 and 77a Land Use and Building Act (132/1999).

<sup>185</sup> Sec. 9 Land Use and Building Act (132/1999). The required assessments are regulated in more detail in sec. 1 of the Land Use and Building Decree (895/1999).

initiated by the developer or the landowner, the municipality can require the costs of drafting the plan to be covered wholly or partially by the developer, the landowner, or another party.<sup>186</sup>

### 3.2 Planning of offshore wind power capacity involving tendering procedures

One possibility for offshore wind power capacity planning involves the introduction of **tendering procedures** like those set up in Denmark and Germany.

In **Denmark**, the 2012 Energy Agreement, which lays down the guidelines for Denmark's energy policy plans for the period 2012–2020 and the 2014 Growth Package Agreements, set out plans to establish offshore wind capacity within pre-defined projects, including 400 MW at the Horns Rev wind farm (North Sea) and 600 MW at Krieger's Flak (Baltic Sea). These projects are then the object of a tendering procedure. As an example, Vattenfall Wind Power A/S has won the concession for Horns Rev 3 to build and operate the wind farm at a price of DKK 0.77/kWh. The wind farm is expected to be in operation by January 2020.<sup>187</sup> The Kriegers Flak concession was also won by Vattenfall at a price of DKK 0.372/kWh.<sup>188</sup>

In **Germany**, the 2017 Offshore Wind Energy Act introduced a competitive tendering procedure for OWFs in the German EEZ. The Federal Maritime and Hydrographic Agency issues a land development plan (*Flächenentwicklungsplan*), the provisions of which will apply from 2026 onwards to sectoral planning in the German EEZ in the North and Baltic Sea regions.<sup>189</sup> The plan selects areas in which OWFs may be built and takes concrete decisions on details of the tendering procedures, such as the timeframe, project capacity, routes for the electricity grid, and precise locations where the grid crosses the border between EEZ and territorial waters or between two countries. The plan must be conceived so that OWF with an **expected installed capacity of 700-900 MW** may be tendered each year by the German NRA and made operational by 2026. For the transitional period until 2021, the capacity was assigned through two rounds of tender calls, opened in April 2017 and April 2018. The total amount of auctioned capacity was for **3,100 MW**. Each call was intended to auction 1,550 MW, but because the first round in April 2017 closed with 60 MW left, the second auction in April 2018 began with a volume of 1,610 MW. Participation in the tenders was limited to existing projects, namely those which had been approved prior to August 2016 or were already planned for the German

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<sup>186</sup> Sec. 59, 77c Land Use and Building Act (132/1999).

<sup>187</sup> Vattenfall, "Horn Revs 3", <https://powerplants.vattenfall.com/en/horns-rev-3> (accessed 24 May 2018).

<sup>188</sup> Esben Baltzer Nielsen & Niels V. Vester, "VATTENFALL CHOSSES SERVICE HARBOUR FOR KRIEGER'S FLAK", News from Vattenfall, 14 December 2017, <https://news.vattenfall.com/en/article/vattenfall-chooses-service-harbour-kriegers-flak-offshore-wind-farm> (accessed 24 May 2018).

<sup>189</sup> Sec. 4 et seqq. Offshore Wind Energy Act; at the time of redaction a Land Development Plan has not yet been published.

EEZ.<sup>190</sup>

### 3.3 Strategic environmental assessments

**SEAs** are carried out during the abstract planning phase and therefore earlier than EIAs, which assess the environmental effects of a concrete project.<sup>191</sup> The SEA Directive sets out the requirements for environmental assessments during the preparation, adoption, and modification by public authorities of energy policy plans and programmes that are ‘*likely to have significant environmental effects*’.<sup>192</sup> These provisions apply to plans and programmes in the energy sector that ‘*set the framework for future development consent of projects listed by the EIA Directive*’,<sup>193</sup> including OWFs.<sup>194</sup> The public authority responsible for preparing the plan or programme is generally also responsible for conducting the SEA.<sup>195</sup>

The Member States assess whether plans are **likely to have a significant environmental effect**, for example by examining them on a case-by-case basis. Member States must, however, take into account the criteria set out in Annex II of the SEA Directive.<sup>196</sup> Under these criteria, possible environmental problems are risks to human health and the environment. Furthermore, the value and vulnerability of the area likely to be affected must be considered. An environmental report must be prepared in order to identify likely significant effects on the environment as well as reasonable alternatives.<sup>197</sup>

The plan or programme and the environmental report must be made available for **consultation** to public authorities likely to be concerned, to other Member States in case of potential **transboundary environmental effects**, as well as to the general public—including environmental organisations—that are likely to be affected or that have an interest in the decision-making process.<sup>198</sup> The environmental report and the results of the consultations must then be considered during the preparation of the plan or programme.<sup>199</sup>

### 3.4 Assessment under the Habitats Directive

The Habitats Directive requires the creation of a European ecological network of special

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<sup>190</sup> Sec. 26 par. 2 n°2 Offshore Wind Energy Act.

<sup>191</sup> See below under section 4.2.2, ‘Environmental impact assessment’.

<sup>192</sup> Art. 1 SEA Directive, Art. 3 par. 1, par. 2 (a) SEA Directive in conjunction with Annex 2 n° 3 (a), (b) EIA Directive.

<sup>193</sup> Art. 3 par. 2 (a) SEA Directive.

<sup>194</sup> See below under section 4.2.2.

<sup>195</sup> European Commission, “Nature Protection and Environmental Impact Assessment”, last modified 8 June 2016, [http://ec.europa.eu/environment/legal/law/2/module\\_3\\_21.htm](http://ec.europa.eu/environment/legal/law/2/module_3_21.htm) (accessed 24 May 2018).

<sup>196</sup> Art. 3 par. 4, par. 5 SEA Directive.

<sup>197</sup> Art. 5 SEA Directive.

<sup>198</sup> Art. 6 par. 3, par. 4, Art. 7 SEA Directive.

<sup>199</sup> Art. 8 SEA Directive.



areas for conservation under the title **Natura 2000**.<sup>200</sup> Abstract plans and concrete projects that may significantly affect a Natura 2000 site must be subject to an **environmental assessment**.<sup>201</sup> Although the Habitats Directive does not define plans or projects, the case law of the European Court of Justice (ECJ) has applied the definition of a ‘project’ pursuant to the EIA Directive.<sup>202</sup>

The Directive does not specify how the assessment is to be carried out. However, the ECJ has ruled that assessments must ‘*take into account the cumulative effects which result from the combination of that plan or project with other plans or projects in view of the site’s conservation objectives*’<sup>203</sup>; it may therefore overlap with an SEA or EIA carried out on the same occasion. The legal significance of a Habitats Assessment differs from that of an SEA. The results of an SEA must be taken into account by the competent authority, but in principle significant negative impacts do not prevent the adoption of the plan or an assessment of the programme. A negative assessment under the Habitats Directive, however, only allows the plan or project to proceed in the presence of ‘*imperative reasons of overriding public interest, including those of social or economic nature*’, and the Member State must take all compensatory measures necessary to ensure the protection of the coherence of Natura 2000.<sup>204</sup>

## 4. Concrete project planning

### 4.1 Permitting procedures design

The concrete planning of grid or offshore wind power projects can take many forms and may be subject to certain conditions, such as the winning of a tender. Member States are competent to design permitting procedures pursuant to their respective principles of administrative law and practice. With regard to the generation and transmission of RES electricity, however, they are obligated under EU law to ensure that authorisation, certification, and licensing procedures are proportionate and necessary.<sup>205</sup> In particular, comprehensive information on the procedures must be made available to stakeholders by the Member States at an appropriate level.<sup>206</sup>

#### 4.1.1 Permitting for cables

The permitting procedure for the laying of offshore cables is defined at the national level.

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<sup>200</sup> Art. 3 par. 1 Habitats Directive.

<sup>201</sup> Art. 6 par. 3 Habitats Directive in conjunction with the SEA Directive.

<sup>202</sup> ECJ – Judgment of the Court (Grand Chamber) of 7 September 2004 (C-127/02) - *Waddenvereniging and Vogelsbeschermingvereniging*, par. 24-29.

<sup>203</sup> *Ibid*, par. 53-54.

<sup>204</sup> Art. 6 par. 4 Habitats Directive.

<sup>205</sup> Art. 13 par. 1 RES Directive.

<sup>206</sup> Art. 13 par. 1 (b) RES Directive.



As a result, the actual procedure depends on the country in which the cables will be situated. The specificity of administrative procedures designed at the national level may complicate projects for developers, especially foreign investors.

#### National example: Germany

Due to the federal organisation of the German state, authorisation procedures for laying transmission cables vary depending on whether the cables will be situated in territorial waters or in the EEZ. In territorial waters the competent public authorities for cables are those of the *Länder*, while the Federal Maritime and Hydrographic Agency is competent for the EEZ; there is a separate procedure for each of these two cases.<sup>207</sup> This may complicate the authorisation process when an OWF is situated in the EEZ and the transmission cable must cross territorial seas on its way to the onshore connection point. Yet another administrative procedure is applicable when a cable is planned in territorial waters but has an interregional (i.e., involving multiple *Länder*) or international character. In this case, a third procedure applies under the competency of the German NRA.

Another complication for project development is that cables which cross borders, such as **interconnectors**, will be subject to two different national authorisation procedures depending on which sovereign territory or EEZ they cross; this may increase the administrative burden on project developers. Developers must ensure compliance with the respective national frameworks, for example with regard to monitoring plans, methods to limit effects on fishing, and notifications to authorities. Permit conditions for any one interconnector may vary significantly from those for others, depending on which national transmission grids are being interconnected.

#### Example cases of interconnector permitting

##### Fenno-Skan 2

Fenno-Skan 2 is an interconnector cable between Finland and Sweden commissioned in December 2011.<sup>208</sup> It has a transmission capacity of 800 MW and a HVDC voltage of 500 kV.<sup>209</sup> Svenska kraftnät in Sweden and Fingrid in Finland applied for permits for the interconnector project. The procedures are quite different in the two countries: the project is much more closely regulated under the Finnish permit conditions than

<sup>207</sup> For more detail on the respective legal basis and competencies for cable authorisation procedures, see Baltic InteGrid report *Offshore Wind in the Baltic Sea: Policy and Regulatory Frameworks on Energy Transmission and Generation – Country report: Germany* (forthcoming).

<sup>208</sup> Fingrid, “New direct current transmission link between Sweden and Finland inaugurated today”, 25 January 2012, <https://www.fingrid.fi/en/pages/news/news/2012/new-direct-current-transmission-link-between-sweden-and-finland-inaugurated-today/> (accessed 24 May 2018).

<sup>209</sup> Water Permit 5/2008/4.

under the Swedish.

In Finland, an interconnector requires a water permit under the Finnish Water Act,<sup>210</sup> which is granted by the Regional State Administrative Agencies; it also requires a project permit from the Ministry of Economic Affairs and Employment.<sup>211</sup> A permit for the exploration and survey of the sea bottom granted by the Defence Staff might also be needed.<sup>212</sup> The water permit for Fenno-Skan 2 is an 18-page document that contains twelve permit conditions related to the completion of the works, construction time frame, notifications, maintenance, compensations, and monitoring.<sup>213</sup> The cable is required to be laid on the sea bottom. However, in areas that are reserved for trawl fishing and shallower than 12 m, it must be laid below the sea bottom. The works must be completed within four years after the permit is obtained, and various authorities must be notified. Cable maintenance is also required. With regard to environmental concerns, several monitoring programmes overseen by two different authorities assess the effects of the cable on fish, and compensation must be paid to the authority for purposes of fish planting in the affected area.<sup>214</sup>

The Swedish concession permit is seven pages shorter and includes only four permit conditions.<sup>215</sup> Svenka kraftnät consulted the Swedish Nuclear Fuel and Waste Management Co during the installation and operation of the cable. In areas of national interest for professional fishing, the cable needed to be designed so as to limit the negative effects on fishing as much as is technically possible and economically reasonable based on a consultation with the Swedish Fisheries Administration.<sup>216</sup> The exact placement of the cable within the defined route in areas of national interest for energy production was decided after a consultation with the Swedish Energy Agency, taking into account the potential for wind power installation. Finally, the placement of the overhead cables within the defined route was designed to limit negative effects on the natural environment and the Bruksdammen Natura 2000 area after consultation with provincial and municipal authorities and landowners.

As a result, the Finnish permit document contains more permit conditions as the Swedish permit for the same project, and more authorities were involved through notifications and various monitoring plans. The Swedish permit only contains conditions related to the exact placement and design of the cable, whereas the Finnish conditions are related to the completion of the works, time frame of construction, notifications,

<sup>210</sup> Water Act (587/2011).

<sup>211</sup> Sec. 14 Electricity Market Act (588/2013).

<sup>212</sup> Sec. 12 and 20 Territorial Surveillance Act (755/2000).

<sup>213</sup> Water Permit 5/2008/4.

<sup>214</sup> Ibid, pp. 11-13.

<sup>215</sup> Regieringeringens beslut N2007/7258/E of 17.4.2008.

<sup>216</sup> The Swedish Agency for Marine and Water Management is now competent instead of the Swedish Fisheries Administration.

maintenance, compensation, and monitoring.

### Estlink 2

Another example is provided by Estlink 2, an interconnector cable between Finland and Estonia with a transmission capacity of 650 MW and HVDC voltage of 450 kV. It consists of a 14 km overhead line in Finland and a 140 km sea cable<sup>217</sup> and was commissioned in February 2014.<sup>218</sup> The permits were applied for by Elering in Estonia and Fingrid in Finland. The Finnish water permit for Estlink 2 is 46 pages long and contains 14 permit conditions, largely similar to those set out in the Fenno-Skan 2 permit. It also contains conditions for the disposal of dredging waste.<sup>219</sup> It was necessary for the cable to be laid below the sea bottom, where the water depth is below 10 m (less than the 12 m at Fenno-Skan 2).

In 2009, an amendment to the Estonian Water Act entered into force, requiring that non-permanently connected infrastructure such as EstLink 2 obtain construction permits as well as use and occupancy permits from the Technical Regulatory Authority.<sup>220</sup> Estlink 2, though planned after this legal amendment, was initially built without these new permits, which it obtained a posteriori in 2014.<sup>221</sup> Before the amendment, only permits for the use of the seabed and for special use of water were necessary. The permit for the use of the seabed was granted by governmental order in 2009,<sup>222</sup> and the permit for the special use of water was granted by the Ministry of Environment in 2010.<sup>223</sup> The permit for the special use of water is three pages long and sets only a few conditions: the cables should not be laid underneath the sea bottom between April and July in order to cause minimum impact to the environment; the cable should be laid by sinking; Elering must notify the Estonian Ministry of Environment of any changes to the data provided at the time of application.<sup>224</sup>

#### 4.1.2 Permitting for power plants

The concrete design of the national permitting systems for power plants depends on the design of the administrative procedure in the respective countries, which may differ

<sup>217</sup> Water Permit 206/2010/4.

<sup>218</sup> Fingrid, “EstLink 2 – second high-voltage direct current link between Finland and Estonia”, <https://www.fingrid.fi/en/grid/construction/arkisto/estlink-2/> (accessed 24 May 2018).

<sup>219</sup> Water Permit 206/2010/4, pp. 39-41.

<sup>220</sup> Äripäev, “Elering rajas merekaabli ehitusloata”, 15 December 2014, <http://www.aripaev.ee/uudised/2014/12/15/elering-rajasmerekaabli-ehitusloata> (accessed 24 May 2018).

<sup>221</sup> Ibid. The EstLink 2 building permit with reference number 220706537 can be found at [www.ehr.ee](http://www.ehr.ee).

<sup>222</sup> Estonian Government, Permit for the use of the seabed of 27.08.2009 nr 365, available at <https://www.rigiteataja.ee/akt/13215711>.

<sup>223</sup> Estonian Ministry of Environment, Permit for the special use of water nr L.VV/319030, available at [http://www.vta.ee/public/adr\\_upload/EstLink\\_2\\_vee\\_erikasutusluba\\_EST.121802.pdf](http://www.vta.ee/public/adr_upload/EstLink_2_vee_erikasutusluba_EST.121802.pdf).

<sup>224</sup> Ibid, p. 3.

significantly. With regard to the contents of the authorisation, in some countries, the development of the transmission lines between the transformer substation and onshore connection point to the transmission grid is considered to be part of the power plant; in such cases, these cables will be included in the permit.<sup>225</sup> In other countries it is part of the transmission grid itself and subject to a distinct permitting procedure applicable to the transmission grid.<sup>226</sup>

### Examples of permitting procedures

#### Denmark

Three licences are required in Denmark: a pre-investigation licence, a licence to construct, and a licence to produce electricity.<sup>227</sup> All of the licences are granted by the same administrative authority, which acts as a **one-stop shop**. In the tender procedure, the licences are granted together to the successful bidder, while they are sequential in the open-door procedure.

In a **tender procedure**, the pre-investigation licence does not actually require the successful bidder to investigate, because the suitability of the project to the area has already been investigated. The TSO is responsible for the EIA report; geophysical surveys as well as some geotechnical surveys are carried out in the planning phase ahead of the call for tenders. These in-depth studies of the physical features of the site deepen the knowledge of the sites and give future investors insight into the technology choices that they will have in the bidding procedure. This early action is intended to reduce the length of the approval process and give applicants better possibilities to offer a price on a real cost basis. The preliminary surveys will also provide information about requirements for the design of the wind farms, including the choice of foundations. The costs of the preliminary investigations will subsequently be refunded by the winner of the concession.<sup>228</sup> The successful bidder may also carry out additional investigations to supplement the surveys already completed.

In an **open-door procedure**, the project developer takes the initiative to establish an OWF. The project developer must apply for a licence to carry out preliminary investigations in the designated area.<sup>229</sup> The final licence to exploit the wind power from the electric plant goes hand in hand with the authorisation to produce electricity. After the first kWh from a wind farm is delivered to the collective electricity grid, it is considered

<sup>225</sup> See for example in Estonia: Division 4 of the Water Act (Veeseadus, Vastu võetud 11.05.1994, RT I 1994, 40, 655).

<sup>226</sup> Energy Industry Act of 7 July 2005 (BGBl. I p. 1970, 3621), last modified 20 July 2017 (BGBl. I p. 2808, 2018 I 472).

<sup>227</sup> Sec. 22–29 Renewable Energy Act.

<sup>228</sup> Danish Energy Agency, *Danish Experiences from Offshore Wind Development* (2017), available at [https://ens.dk/sites/ens.dk/files/Globalcooperation/offshore\\_wind\\_development\\_0.pdf](https://ens.dk/sites/ens.dk/files/Globalcooperation/offshore_wind_development_0.pdf).

<sup>229</sup> Sec. 22 Renewable Energy Act.

to be grid-connected.<sup>230</sup> From the occurrence of that milestone, the licence to exploit the plant is valid for 25 years and can be extended.

#### Finland

In Finland, numerous permits may be required for an OWF in territorial waters. In addition to the construction permit,<sup>231</sup> an air navigation obstacle permit from the Finnish Transport Safety Agency may be necessary.<sup>232</sup> If there is a risk that the project will contaminate the soil and this risk was not be considered for the required water permit, a separate environmental permit may be required.<sup>233</sup> An additional permit is needed for the exploration of the formation, structure, or composition of the sea bottom or sediments through geological or geophysical surveys as well as for systematic measurement and recording of the topography of the sea bottom.<sup>234</sup> In the EEZ, only a water permit and in some cases an environmental permit are needed. However, consent from the Council of State is required.<sup>235</sup>

#### Germany

In Germany, as in Finland, the authorisation procedure varies depending on whether the OWF is situated in territorial waters (where the *Länder* are competent) or in the EEZ, which falls under the competence of the Federal state. In theory, numerous construction and environmental permits are needed; however, the authorisation of a plant is subject to a planning approval procedure in the EEZ<sup>236</sup> or to a simpler authorisation procedure pursuant to the Federal Emissions Control Act<sup>237</sup> in territorial seas. Both procedures have a **concentration effect**, meaning that the competent authority will assess the totality of the necessary permits at once before delivering the authorisation<sup>238</sup>— thus making the competent authority a **one-stop shop**.

## 4.2 Environmental impact of offshore wind farms

### 4.2.1 Environmental risks associated with offshore wind farms

OWFs are usually constructed in shallow waters, which from an environmental perspective are places with high ecological value and important habitats for breeding, resting,

<sup>230</sup> Sec. 35a, par. 2, sec. 5 Renewable Energy Act.

<sup>231</sup> Sec. 125 Land Use and Building Act (132/1999).

<sup>232</sup> Sec. 158 Aviation Act (864/2014).

<sup>233</sup> Sec. 27 Environmental Protection Act (527/2014).

<sup>234</sup> Sec. 12 Territorial Surveillance Act (755/2000).

<sup>235</sup> Sec. 6, 7 Act on the Exclusive Economic Zone of Finland (1058/2004).

<sup>236</sup> Sec. 45 par. 1 Offshore Wind Energy Act.

<sup>237</sup> Federal Emission Control Act of 17 May 2013 (BGBl. I p. 1274), last modified 18 July 2017 (BGBl. I p. 2771).

<sup>238</sup> Fehling, in: Schneider/Theobald, *Recht der Energiewirtschaft*, Sec. 8, Rn. 182-183.

and migratory seabirds and other species.<sup>239</sup> Power plant projects require platforms, turbines, cables, substations, grids, interconnection and shipping, dredging, as well as associated construction activity, all of which affects the environment. The construction, operation, and decommissioning of an OWF entail significant interactions with the surrounding environment. The potential impact of OWFs is primarily visual or acoustic due to the noise impact on marine animals; however, the laying and use of sea cables may also disrupt geomagnetic patterns, because the long-distance transport of electricity generates magnetic fields.<sup>240</sup> The main environmental effects are most likely to occur during the construction and decommissioning phases and may be especially disruptive to fish species and marine mammals.<sup>241</sup> Other possible effects include bird strikes.<sup>242</sup>

#### Applying the precautionary principle and preventing environmental risks

There is no certainty about the potential consequences of these effects or the likelihood of their occurrence. For example, the results of studies investigating the influence of electromagnetic fields on fish are inconclusive.<sup>243</sup> Furthermore, the importance of human health and environmental considerations makes it necessary to act *ex ante* (i.e., before damage occurs rather than mitigating damage already incurred). This is possible if all branches of power apply the precaution and prevention principles.

The **precautionary principle**, embedded in a number of international agreements, consists in taking measures to avert abstract threats of harm to human health or the environment even when there is no definitive scientific proof of cause and effect relationships.<sup>244</sup> This causes a shift in the burden of proof, as a state does not have to prove the harmful character of a certain conduct in order to prohibit it; instead, the acting party must prove that its conduct is innocuous before it can proceed. The precautionary principle has become fundamental tenet of EU environmental policy and law.<sup>245</sup> At national level, too, the precautionary principle has become an important principle of environmental law. For example, in Germany, the state's obligation to protect the environment has been enshrined in the Constitution.<sup>246</sup> This obligation goes further than mere prevention of danger, as it requires **proactive protection of environmental concerns** by all three branches of power. This provision can be understood as an expression of the

<sup>239</sup> British Trust for Ornithology, "Understanding the risk of birds colliding with offshore wind turbines",

<https://www.bto.org/science/latest-research/understanding-risk-birds-colliding-offshore-wind-turbines> (accessed 24 May 2018).

<sup>240</sup> Wind Energy - The Facts (WindFacts), "Offshore", <https://www.wind-energy-the-facts.org/offshore-impacts.html> (accessed 24 May 2018).

<sup>241</sup> Ibid.

<sup>242</sup> Ibid.

<sup>243</sup> See, for example, IR Schultz et al. (2010), a study prepared for the U.S. Department of Energy.

<sup>244</sup> Science and Environmental Health Network, "Wingspread Conference on the Precautionary Principle", 26 January 1998, <http://sehn.org/wingspread-conference-on-the-precautionary-principle> (accessed 24 May 2018).

<sup>245</sup> Daemen (2003), p. 7.

<sup>246</sup> Art. 20a Basic Law.



precautionary principle.<sup>247</sup> It is the legislature's task to weigh economic interests and environmental protection. This makes it necessary to assess the probability and severity of environmental risks. In this process, minimum requirements of rationality are sufficient; the assessment is not subject to a strict level of scientific proof.<sup>248</sup>

The **prevention principle**, on the other hand, gives an administrative authority the competence to **intervene in certain cases if a concrete danger emerges**. This requires the authority to assess the severity of this danger for the environmental and/or human health. Such danger is defined in German case law as the '*sufficient probability of a damage arising to a protected legal interest*'.<sup>249</sup> Similarly, under Estonian law, an environmental hazard is the '*sufficient probability of the occurrence of a significant environmental nuisance*'<sup>250</sup>, where such nuisance must exceed environmental quality limit values or cause pollution, environmental damage, significant environmental impact, or unfavourable impact to a Natura 2000 site.<sup>251</sup> Because the mere threat of damage suffices to intervene, the concrete occurrence of damage does not need to be scientifically proven.

#### 4.2.2 Environmental impact assessment

Before an installation is built, its environmental impact must be assessed. The EIA Directive states that the environmental impact of projects which are '*likely to have significant effects on the environment*' must be assessed.<sup>252</sup> Projects are defined by the Directive as '*the execution of construction works or of other installations or schemes*' and '*other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources*'.<sup>253</sup>

In its Annex I, the Directive provides a concrete list of projects for which an EIA is required; OWFs and undersea cables are not part of this list.<sup>254</sup> However, the Directive provides a list of projects for which the Member States are free to decide that an EIA will be mandatory.<sup>255</sup> This list includes '*industrial installations for the production of*

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<sup>247</sup> Landmann/Rohmer, Umweltrecht 83. EL Mai 2017, Rn. 62. At statutory level, expressions of the precaution principle may be found, for example, in Sec. 5 and 22 of the Federal Emissions Control Act and their concretising regulations, which prohibit the construction of OWFs taller than 50 m without a permit.

<sup>248</sup> Landmann/Rohmer, Umweltrecht 83. EL Mai 20 17, Rn. 40, 42.

<sup>249</sup> Jarass, BImSchG 12. Auflage 2017, Sec. 5, Rn. 17.

<sup>250</sup> Art. 11 General Part of Environmental Code Act (RT I, 04.03.2015, 9).

<sup>251</sup> Explanatory note to the General Part of the Environmental Code Act (Note 20), p. 12.

<sup>252</sup> Art. 1 par. 1 EIA Directive.

<sup>253</sup> Art. 1 par. 2 (a) EIA Directive.

<sup>254</sup> An EIA is only mandatory for the construction of overhead electrical power lines with a voltage of 220 kV or more and a length of more than 15 km, Art. 4 par. 1 in conjunction with Annex 1 n° 20 EIA Directive.

<sup>255</sup> Art. 4 par. 2 EIA Directive.



*electricity, steam and hot water*',<sup>256</sup> potentially referring to OWFs.

Thus, whether an EIA is mandatory for an OWF project depends on the transposition of the Directive by the respective state. In **Estonia**, for example, an EIA is mandatory for all OWF projects.<sup>257</sup> In **Germany**, on the other hand, the Environment Sustainability Act<sup>258</sup> provides that only projects with more than 20 turbines and taller than 50m are systematically subject to an EIA.<sup>259</sup> **Danish** law does not require an automatic EIA for OWFs of any size; rather, such projects are subject to a mandatory screening and an examination on a case-by-case basis.<sup>260</sup>

Where a Habitats assessment<sup>261</sup> must be carried out in addition to the EIA, both assessments may be conducted in a joint procedure.<sup>262</sup>

### 4.3 Legal challenging of authorisations

#### 4.3.1 Affected third parties

Third parties whose subjective rights are affected – such as physical integrity or property rights – by the completion of a concrete project generally may challenge the project permit by pursuing an **administrative remedy**, meaning that they appeal to an administrative body to revoke the authorisation. They may also request the withdrawal of the authorisation through **legal proceedings** before a court. The respective general administrative laws of each country determine how these remedies and proceedings are carried out.

#### National examples

In **Denmark**, permitting decisions made by the Danish Energy Agency<sup>263</sup> can be appealed in front of the Energy Board of Appeal,<sup>264</sup> provided that the appellant can demonstrate 'significant and individual interest' in the decision.<sup>265</sup> The decision of the

<sup>256</sup> Annex II n° 3 (a) EIA Directive.

<sup>257</sup> Art. 6 par. 5 EIA Act.

<sup>258</sup> Environmental Sustainability Act as amended 24 February 2010 (BGBl. I p. 94), last modified 8 September 2017 (BGBl. I p. 3370).

<sup>259</sup> Sec. 6 in conjunction with Annex 1 n° 1.6.1 Environment Sustainability Act. Sea cables, on the other hand, are not subject to a mandatory EIA.

<sup>260</sup> Sec. 16, cf appendix 2 Environment Sustainability Act.

<sup>261</sup> Habitats assessments are described above in section 3.4.

<sup>262</sup> To avoid redundancy, the Member States may apply for a joint or coordinated EIA and Habitats assessment; see Art. 1 par. 2 (a) EIA Directive. For this purpose, the Commission issued a Commission notice: Commission guidance document on streamlining environmental assessments conducted under Article 2(3) of the Environmental Impact Assessment Directive (C/2016/4701), OJ C 273, 27 July 2016, p. 1–6.

<sup>263</sup> Danish Energy Agency, "Procedures and Permits for Offshore Wind Parks", <https://ens.dk/en/our-responsibilities/wind-power/offshore-procedures-permits> (accessed 24 May 2018).

<sup>264</sup> Sec. 66 subsec. 1 Renewable Energy Act.

<sup>265</sup> Gammeltoft-Hansen et al. (2002), p. 67; the Energy Board of Appeal has tried two appeal cases regarding OWFs and entitlement to appeal: HCH-EKN J.nr. 1131-14-5-21 and HCH-EKN J.nr. 1131-14-1-25.

Energy Board of Appeal may then be brought to a court.<sup>266</sup> The appeal has no suspensive effect, meaning that work on the project may continue during the proceedings, unless otherwise decided by the Energy Board of Appeal.<sup>267</sup>

In **Finland**, a water permit may not only be appealed by a third party with individual interest, but also by a public authority, such as an environmental authority or the municipality affected by the project; the Sami Parliament of Finland may also appeal if the effects occur in the living area of the Sami or if the project may influence the rights of the Sami as an indigenous people.<sup>268</sup>

#### 4.3.2 Environmental organisations

Another possibility to challenge authorisations is one that is not available to individuals but can be used by environmental organisations under national legislation in accordance with EU law.<sup>269</sup> The principle is to offer environmental organisations with **sufficient interest** an opportunity to challenge the legality of administrative decisions that are subject to public participation. Unlike affected third parties, environmental organisations do not need to experience a violation of a subjective right as a result of the authorisation in order for them to seek a legal remedy.

##### National example

In **Germany**, environmental remedies and lawsuits are possible against decisions authorising plans or projects that were subject to an SEA or EIA pursuant to the Environmental Legal Remedies Act.<sup>270</sup> These lawsuits are open to accredited organisations<sup>271</sup> – such as environmental NGOs – which were entitled to participate in the public participation procedure. The claimant organisation must state that the authorisation may have violated provisions of environmental law and that it has therefore affected its statutory goals of environmental protection.<sup>272</sup> The claim is founded if the authorisation violates material or even procedural provisions of environmental law.<sup>273</sup> However, these legal arguments are only admissible if they were raised by the organisation during the consultation phase.<sup>274</sup>

<sup>266</sup> Sec. 66 subsec. 2 Renewable Energy Act.

<sup>267</sup> Sec. 67 subsec. 6 Renewable Energy Act.

<sup>268</sup> Chap. 15 sec. 2 Water Act (587/2011).

<sup>269</sup> Art. 3 Public Participation Directive.

<sup>270</sup> Environmental Legal Remedies Act of 23 August 2017 (BGBl. I p. 3290).

<sup>271</sup> A list of accredited environmental organisations at the federal level in Germany (as of 2 February 2018) is available at [https://www.umweltbundesamt.de/sites/default/files/medien/2378/dokumente/anerkannte\\_umwelt-\\_und\\_naturschutzvereinigungen\\_0.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/2378/dokumente/anerkannte_umwelt-_und_naturschutzvereinigungen_0.pdf).

<sup>272</sup> Sec. 2 par. 1 Environmental Legal Remedies Act.

<sup>273</sup> Sec. 2 par. 4, sec. 4 Environmental Legal Remedies Act.

<sup>274</sup> Sec. 5 Environmental Legal Remedies Act.

#### 4.4 Public acceptance

Offshore wind energy projects are increasingly confronted by citizen opposition, which delays and sometimes even prevents their implementation. Examples of offshore wind projects that recently have faced local opposition are the nearshore projects Vesterhav Syd and Vesterhav Nord along the Danish West Coast.<sup>275</sup> This reflects the frequent gap between support for the general concept of renewables as a strategy for reducing carbon emissions, on the one hand, and acceptance of renewable energy installations in the local land- or seascape, on the other.<sup>276</sup>

Overall, there is strong public support for transitioning to low-carbon energy systems.<sup>277</sup> However, opposition to renewable energy projects often emerges at the local level.<sup>278</sup> This can also be the case with OWE development, especially if such activities are visible from the shore.

##### Example case: proceedings against the authorisation permit of the Hiiumaa Offshore Windpark in Estonia

The Hiiumaa Offshore Wind Farm is a project developed by the company Nelja Energia since 2006. Planned is a wind farm with 100 to 160 wind turbines and capacity between 700 to 1100 MW at a distance of 12 km from the coastline of Hiiumaa island in northwestern Estonia.<sup>279</sup> A permit for a special use of water was submitted to the Ministry of Environment in 2006,<sup>280</sup> leading to an EIA procedure by the Ministry. The exact placement of the turbines depends on the National MSP<sup>281</sup> approved in June 2016 and on the EIA.<sup>282</sup> Until the EIA report is approved, the permit for a special use of

<sup>275</sup> Morten Øyen, “Ny blæst om kystnære vindmøller”, 16 March 2017, [altinget.dk](https://www.altinget.dk/energi/artikel/ny-blaest-om-kystnaere-vindmoeller), <https://www.altinget.dk/energi/artikel/ny-blaest-om-kystnaere-vindmoeller> (accessed 24 May 2018); Filip Knaack Kirkegaard, “Tre jyske landboforeninger opfordrer til kamp mod Energinet”, 20 November 2017, [landbrugsavisen.dk](https://landbrugsavisen.dk), <https://landbrugsavisen.dk/tre-jyske-landboforeninger-opfordrer-til-kamp-mod-energinet> (accessed 24 May 2018).

<sup>276</sup> Jones and Eiser (2010), pp. 3106–3117; Eltham, Harrison and Allan (2008), pp. 23–33; Wolsink (2007), pp. 1188–1207; Bell, Grey and Haggatt (2005), pp. 460–477.

<sup>277</sup> A number of studies indicate high and stable levels of public support for renewable energy, see Wüstenhagen, Wolsink and Bürer (2007), pp. 2685; Devine-Wright (2005), p. 126; European Commission, *Eurobarometer: Attitudes towards energy* (2006), available at [http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs\\_247\\_en.pdf](http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_247_en.pdf).

<sup>278</sup> See for examples of local opposition to renewable energy production projects: Søren Springborg, “Opposition against onshore wind grows in Sweden”, 4 April 2017, Energywatch, <https://energywatch.eu/secure/EnergyNews/Renewables/article9481990.ece> (accessed 24 May 2018); Tuuleenergia Assotsiatsioon, “ESTONIAN HIIUMAA ISLANDERS’ OPPOSITION TO GIANT WIND FARM GROWING.”, 3 January 2009, <http://www.tuuleenergia.ee/2009/01/estonian-hiiumaa-islanders-opposition-to-giant-wind-farm-growing/> (accessed 24 May 2018).

<sup>279</sup> Hiiumeretuulepark, “Overview of the project”, <http://www.hiiumeretuulepark.ee/project> (accessed 24 May 2018).

<sup>280</sup> Interview with Nelja Energia, Tallinn, Estonia (November 2017).

<sup>281</sup> Planeerimisaduse Lahtiseletaja Ehk Ajaveeb, “Mereala planeerimine”, <https://planeerimine.ee/mereala-planeerimine/> (accessed 24 May 2018).

<sup>282</sup> *Estonian State Gazette*, “Initiation of a national plan for the development of the Estonian coastal zone and its adjacent coastal area as well as the thematic plan of the EEZ and the SEA”, Vastu võetud 25.05.2017 nr 157, available at <https://www.riigiteataja.ee/akt/330052017003>.

water is on hold. The Ministry of Environment published the EIA report in February 2017.<sup>283</sup>

The approval procedure is currently on hold while a parallel administrative procedure is underway. After participating in the earlier planning process to oppose offshore wind power and unsuccessfully initiating legal proceedings against the Hiiumaa project,<sup>284</sup> an environmental organisation aims to stop the project by having the project area declared a protected nature area.<sup>285</sup> According to the Estonian Nature Conservation Act,<sup>286</sup> a natural object that is ‘at risk’, ‘rare or typical’ or ‘subject to protection under an international agreement’ may be placed under environmental protection.<sup>287</sup> However, the Act provides no legal definition of these criteria, effectively broadening the definition. Furthermore, because the Act sets no standing requirements, the procedure for placing an area under environmental protection can be initiated by ‘everyone’, meaning any legal or natural person.<sup>288</sup>

The initiation of the procedure allows the competent administrative authority (in the case of the Hiiumaa Offshore Wind Farm, the Ministry of Environment) to suspend for up to 28 months the EIA procedure required for the project.<sup>289</sup> Should the project area qualify as a protected area, the construction of the Hiiumaa wind farm project may be cancelled, depending on the final designation of the protected area.<sup>290</sup>

Public opposition is typically referred to as ‘**NIMBYism**’ (‘Not In My Back Yard’), which refers to a preference for a public good combined with a refusal to contribute to it. It also refers to the tension between general and local support for renewables or simply general resistance to proposed developments.<sup>291</sup> The term is value-laden, as it indicates a selfish attitude; however, this more general usage of the term is not an adequate or fair description of people who oppose the impact of renewable energy on their local communities. Opponents may not be motivated by self-interest, fear of developments, or a failure to understand the importance of combatting climate change. The term does not sufficiently account for other explanations for opposing renewable energy projects, such as broader concerns regarding nature conservation and a lack of transparency or

<sup>283</sup> Interview with Nelja Energia, Tallinn, Estonia (November 2017).

<sup>284</sup> offshoreWIND.biz, “Estonia’s Giant Offshore Wind Project Wins Court Battles”, 1 November 2017, <https://www.offshorewind.biz/2017/11/01/estonias-giant-offshore-wind-project-wins-court-battles/> (accessed 24 May 2018).

<sup>285</sup> Interview with Nelja Energia AS (November 2017), Tallinn, Estonia.

<sup>286</sup> Nature Conservation Act (RT I 2004, 38, 258).

<sup>287</sup> Art. 7 Nature Conservation Act.

<sup>288</sup> Art. 8 Nature Conservation Act.

<sup>289</sup> Art. 8 par. 6 Nature Conservation Act. At the time of redaction, the Ministry of Environment has ordered an additional bird study.

<sup>290</sup> Art. 14 Nature Conservation Act.

<sup>291</sup> Van der Horst (2007), pp. 2705–2706; Devine-Wright (2005), pp. 125–139; Wolsink (2000), pp. 49–64. The NIMBY effect is not specific to renewables and can also be observed in the construction of other large or intrusive infrastructure projects.

inclusiveness in the decision-making processes.<sup>292</sup>

#### 4.4.1 Possible objections to OWE projects

There are many reasons why local communities may object to renewable energy developments. Local acceptance of renewable energy technologies is generally influenced by the following aspects:

- physical and technical factors,
- potential damage to the health of concerned populations and to the environment,
- financial factors,
- perceived distributional fairness, and
- the institutional setup, including the decision-making procedures.

Physical or technical factors include the **visual impacts** of renewable energy facilities. In the case of near-shore wind energy, the most common concern is aesthetic intrusion by wind turbines. For this reason, visual impact assessments are often recommended as part of EIAs.<sup>293</sup> Visual impact assessments illustrate potential visibility, for example of proposed wind turbines at different locations and distances. Furthermore, local opposition may concern flashing white or red lights at night or simply the proximity of installations. **Noise** from rotating turbine blades and **low-frequency noise** are other frequent concerns. In some countries, such as Denmark, nuisances resulting from visual impact and noise are addressed through public law requirements, such as mandatory minimum distances from the shore line or dwellings and noise standards or thresholds.

Health concerns are closely related to physical factors. Uncertainty about the **health impacts** of a facility may be an important contributor to local opposition.<sup>294</sup> The health impact of noise, including low-frequency noise and infrasound from wind turbines, seems to be a growing concern.<sup>295</sup> Another frequent concern is the **impact on the environment, including on birds, sea life, and the ecosystem in general.**<sup>296</sup>

Another important concern which is currently more specific to onshore wind energy is the local **financial impact** of OWFs. Installations may affect property value in their surroundings. Furthermore, conflicts may arise with other land or sea uses, for example if an OWF is placed near a recreational area or wind turbines are visible from a beach or

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<sup>292</sup> Nolon (2011), pp. 330–331. In most literature the narrower understanding of “NIMBY” has been rejected as too simplistic. See also Wolsink (2012), pp. 83–87.

<sup>293</sup> See, for example, Danish Forest and Nature Agency, *Visualiseringer og VVM - behov, metoder, teknikker, eksempler* (2000), available at [https://naturstyrelsen.dk/media/nst/11770239/visualiseringer\\_og\\_vvm.pdf](https://naturstyrelsen.dk/media/nst/11770239/visualiseringer_og_vvm.pdf). Visual assessments help provide an overview of the visual impact and thus form the basis for qualified discussions and evaluations.

<sup>294</sup> Horner, Jeffery and Krogh (2011), pp. 399–413.

<sup>295</sup> Hanning and Evans (2012), p. 1527.

<sup>296</sup> Evans (2014), pp. 32–64.

residential area.<sup>297</sup>

Another critical complication is the **symbolic and affective aspects of RES development, including perceptions of distributional equity**, for instance as to whether project costs and benefits are allocated fairly.<sup>298</sup> When a development benefits some sections of a community at the perceived expense of others, this may damage relationships and divide communities, leading to increased opposition.<sup>299</sup>

Finally, resistance to RES projects may not be directed at the infrastructure and the nuisances it causes, but instead may be due to **mistrust of the developer, the decision-making process, or the public authorities** that approve the development plans. Citizens' attitudes will largely depend upon the perceived possibility to influence decision-making.<sup>300</sup> Citizens who doubt the credibility of the information they receive or their ability to influence decision-making will be less likely to exercise their rights to participate in consultations and to support a project proposal. Research also shows that local citizens frequently feel they have little influence on where a wind project is sited or how it is designed.<sup>301</sup> Critical attitudes may also be triggered by suspicion of the developer's motives, particularly if developers have no local connection, which is often the case with large national or multinational energy companies.

Local authorities may be sensitive to organised local opposition and need to balance the negative local impacts of RES projects against the wider national or global benefits. This is even more of a challenge if the legal framework does not provide for an adequate balancing of these (sometimes conflicting) interests. Local authorities may have limited resources and lack expertise to assess technical studies on wind turbine impacts. Nevertheless, developers and local authorities cannot avoid addressing potential conflicts with local interest groups. A failure to address community acceptance of RES projects increases the risk that they will be delayed or simply fail. Meanwhile, as RES providers increase the size of projects and installations, the impact on seascapes, coastal landscapes and local communities can only be expected to increase.

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<sup>297</sup> On the financial impact of onshore wind farms see Danish Energy Agency and COWI, *Analyse af Vindmøllers Påvirkning på Priser på Beboelsesejendomme* (2016); financial loss is a widespread concern: more than 450 people have applied for compensation for loss of property value caused by the Vesterhav Syd project, see Lars From, "Mange vestjyder vil ikke have flere vindmøller", *Jyllands-Posten*, 6 April 2017, <https://jyllands-posten.dk/protected/premium/indland/ECE9486372/mange-vestjyder-vil-ikke-have-flere-vindmoeller> (accessed 24 May 2018), and Anne-Mette Skaanning, "Rekord mange kræver erstatning for kystnære møller", 6 April 2017, *Dagbladet Ringkøbing-Skjern*, <https://dagbladetringkjoern.dk/hvidesande/Rekord-mange-kraever-erstatning-for-kyst-naere-moeller/artikel/281181> (accessed 24 May 2018).

<sup>298</sup> Wüstenhagen, Wolsink and Bürer (2007), pp. 2685–2687; and Devine-Wright (2005), pp. 126–127.

<sup>299</sup> Gross (2007), pp. 2727–2736.

<sup>300</sup> *Ibid.*, pp. 2729–2730; Wüstenhagen, Wolsink and Bürer (2007), p. 2687.

<sup>301</sup> International Energy Agency, IEA Wind Task 28, *Social Acceptance of Wind – State-of-the-Art-Report* (2010), p.7.



#### 4.4.2 Increasing public acceptance through public participation

Planning assessment procedures ensure public participation in the decision-making process.<sup>302</sup> This not only improves the decision-making basis, but also ensures local legitimacy and acceptance. Public participation is a core element in environmental assessment procedures, as reflected in the EIA and SEA Directives<sup>303</sup> as well as in the Aarhus Convention. It is therefore incorporated into the planning law and procedures of the Baltic Sea countries. Nevertheless, countries may vary in the specific implementation of environmental assessment procedures for OWE project.<sup>304</sup> The success of wind farms, in particular, depends on the ‘*degree to which planning regimes stimulate or impede collaborative approaches*’.<sup>305</sup>

Public acceptance of offshore projects can be improved in several ways. For example, the development of **public participation in the decision-making process** can address citizens’ mistrust of the project developer, the decision-making process, and the public authorities competent to approve the project.

Example: consultation for near-shore sites selected for tender procedures in Denmark

The 500 MW increase in near-shore wind energy set by the 2012 Danish Energy Agreement led to an evaluation of potential sites for wind farms. Following an initial preselection by the Danish Energy Agency, municipalities were consulted on the chosen sites<sup>306</sup> – despite the fact that the Renewable Energy Act does not provide procedural requirements for the planning of offshore wind projects other than those associated with environmental assessments.

#### 4.4.3 Increasing public acceptance through financial incentives

The financial impact of renewable energy projects may be mitigated through the use of **financial incentives**, such as compensation for a reduction in property value. This leads to a **fairer distribution of profits and losses** and thus to greater public acceptance of the project. Another possibility consists in offering concerned inhabitants the option to become financially involved in the project through **ownership measures**.<sup>307</sup> Various studies have shown that the financial involvement of the local population in RES projects

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<sup>302</sup> See section 3.2 above.

<sup>303</sup> Art. 6 EIA Directive; Art. 6 SEA Directive.

<sup>304</sup> For a comparative study, see, for example, Anker, Olsen and Rønne (2008).

<sup>305</sup> Wolsink (2010), pp. 195–203.

<sup>306</sup> Olsen and Anker (2014), p. 142.

<sup>307</sup> Possible ownership measures include individual investment in shares, split ownership where the community owns a defined part of the infrastructure, joint ownership of an infrastructure where a community developer joint venture owns and operates the installation in a public-private partnership, or full community ownership.



increases acceptance<sup>308</sup> by promoting a feeling of local control and a sense of ownership of the project.<sup>309</sup> Other kinds of agreements are conceivable. In **Lithuania**, for example, wind power developers may reach agreements with local inhabitants. In the Smalininkai project, for example, an agreement was made to reinvest a portion of the income from the electricity produced in the improvement of the town infrastructure; local residents have expressed satisfaction with the arrangement.<sup>310</sup>

#### National examples: Denmark

##### Compensation for loss of property value

The 2008 Renewable Energy Act introduced a legal requirement for a project developer to compensate owners fully for any reduction of property value caused by the installation of wind turbines.<sup>311</sup> The aim of the compensation scheme is to increase acceptance of wind energy projects among owners close to the site, whose dwellings could be affected.<sup>312</sup> Owners of dwellings potentially facing more than a 1% decrease of their property value may be awarded compensation.<sup>313</sup> The compensation scheme covers wind energy developments on land as well as near-shore projects. The level of compensation may be settled either by a private agreement between the developer and the owner, or – as is usually the case in practice – by an administrative decision of the valuation authority, formed specifically to handle owner’s claims for compensation.<sup>314</sup> Since 2009, more than 1,000 decisions have been taken; applicants were granted compensation in approximately 56% of cases.<sup>315</sup> The main criteria for calculating loss of property value are the characteristics of the area, visual interference, distance from the wind farm, estimated levels of nuisance, public and private restrictions on the property, property value, and type of dwelling.<sup>316</sup> However, this compensation scheme has been criticised by legal academics, wind developers, citizen groups, and environmental NGOs.<sup>317</sup> While the costs of the scheme may not be as high as those predicted by wind developers, the scheme emphasises the negative impacts of wind projects, suggesting

<sup>308</sup> See study in Maly (2014), p. 213.

<sup>309</sup> Warren and McFadyen (2010), p. 205.

<sup>310</sup> Lithuanian Energy Institute, *Wind Energy in the BSR 2: Exemplary Study on National Legal Problems and Obstacles for Wind Power Development in Lithuania* (2011), pp. 10-11.

<sup>311</sup> Sec. 6-12 Consolidated Act No 641 of 12 June 2013 on Renewable Energy (Bekendtgørelse af lov om fremme af vedvarende energi).

<sup>312</sup> The scheme applies to onshore turbines more than 25 meters in height; since June 2013, it also applies to nearshore turbines.

<sup>313</sup> If a property owner has contributed to the loss of their property’s value, compensation may be reduced or not payable at all, sec. 6 par. 1 and 3 Renewable Energy Act; sec. 6 par. 3 states, however, that the claim for compensation is only valid for coastal wind farms and not areas designated to large wind farms on sea.

<sup>314</sup> Sec. 7 par. 3 Renewable Energy Act.

<sup>315</sup> Information obtained from Energinet.dk (2017); see also VidenOmVind, “*Taber nabohuse til vindmøller i ejendomsverdi?*”, <http://www.videnomvind.dk/svar-paa-rede-haand/taber-nabohuse-til-vindmoeller-i-ejendomsverdi.aspx> (accessed 24 May 2018).

<sup>316</sup> See, for example, MAD 2016.254.

<sup>317</sup> Olsen (2010), pp. 239-251; Olsen (2014), pp. 202-207.

that wind turbines automatically cause important disturbances. However, while some studies clearly anticipate negative effects on property values,<sup>318</sup> others have demonstrated that wind turbines may not have a measurable impact on housing prices.<sup>319</sup> Furthermore, the compensation calculation lacks transparency, and the owner of property neighbouring a wind turbine who does not receive the expected compensation may feel that he or she has been treated unfairly. A reaction of this kind will not increase local acceptance of the wind project or lead to greater acceptance of wind energy in general. Disappointment in the outcome may also lead to litigation.<sup>320</sup>

#### Mechanism to encourage local financial involvement<sup>321</sup>

The Renewable Energy Act introduced a mechanism to encourage the financial involvement of local citizens.<sup>322</sup> A co-ownership scheme requires all new onshore and near-shore wind energy projects, including re-powering projects, to offer at least 20% ownership to locals, giving local citizens an option to purchase wind turbine shares.<sup>323</sup>

This option is exercised via a tender procedure conducted by the developer. The shares are only offered to citizens living in a municipality with a coastline within 16 km of the site; among these, people living within 4.5 km of the installation site have preferential rights to purchase up to 50 shares.<sup>324</sup> For potential shareholders to have an adequate basis for deciding whether to exercise their options, developers must prepare information about projects and their financial conditions.<sup>325</sup> From the perspective of EU law, the requirement to be a local resident to take part in a tendering procedure could be problematic, as it may constitute a restriction on the free movement of capital in violation of Art. 63 TFEU if the restriction is found to go further than necessary.<sup>326</sup>

## 5. Construction phase

### 5.1 General aspects

The development of an offshore meshed grid requires both the construction of the grid – i.e., the laying of cables and construction of transformer stations – and the building of the OWF itself, a process that includes not only the building of the wind turbines, but also

<sup>318</sup> Jensen, Panduro and Lundhede (2014), pp. 668-682.

<sup>319</sup> Hoen et al. (2013); and Vyn and McCullough (2014), pp. 365–392.

<sup>320</sup> See Olsen and Anker (2014), pp. 137–156; Olsen (2014), pp. 206-207.

<sup>321</sup> See also Olsen (2016), pp. 483-485.

<sup>322</sup> Sec. 13 et seqq Renewable Energy Act.

<sup>323</sup> Sec. 13 par. 1 Renewable Energy Act.

<sup>324</sup> Sec. 15 Renewable Energy Act.

<sup>325</sup> Sec. 14 Renewable Energy Act.

<sup>326</sup> See Joined Cases C-197/11 and C-203/11, *Libert and Others v Gouvernement flamand and All Projects & Developments and Others v Flemish Government*; and Olsen (2014) pp. 201-202.

the laying of inter-array cables. The timeframe and deadlines, as well as related liability conditions, are set by national legislation, which plays an important role in the operational development of the project.

Despite dissimilarities, a general framework for the construction schedule is provided by national law in all of the Baltic Member States. The specific features of an individual project generally determine its timeframe. In some cases, however, the competent public authority may collaborate with project developers to establish a roadmap. Cooperation can also occur between stakeholders, as in **Denmark**, where a collaboration agreement reached during the construction phase ensures a continuous dialogue between the TSO and the OWF developer for the duration of the construction phase.

## 5.2 Possible obstacles to construction

Construction works involve many steps, such as the implantation of the foundation or the transportation and installation of appliances. In the Baltic Sea, construction operations are subject to specific geological, meteorological, and infrastructural conditions that may jeopardise construction or lead to delays. For example, construction works cannot proceed when the sea is frozen. Icy conditions must also be taken into account when siting the wind farm and planning the foundation for the turbines. Other obstacles to construction may be caused by ship collisions, the discovery of war equipment and munition leftovers<sup>327</sup>, the destruction of trawls, the existence of ship wrecks in the seabed, and periodically bad weather. Such issues may generate extra costs for the operators and require a revision of the construction timetable.

## 5.3 Technical requirements

Some countries have developed an accurate set of rules for aspects such as the production, transport, installation, and commissioning of installations. In **Germany**, for example, the Federal Maritime and Hydrographic Agency provides a ‘Standard Design of Offshore Wind Turbines’.<sup>328</sup> This document contains detailed provisions establishing standards for the nacelle and rotor blades of the turbines, support structures and substructures, cabling of the individual installations within the farms (including their linkage at the transformer substation), transformer substations, and even the power export system from the transformer substation to the grid connection on land.

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<sup>327</sup> See, for example, the case of Riffgat in the Nordsee, Tennet, *Munitionsräumung in der Nordsee* (2013), available at [http://www.tennet.eu/fileadmin/user\\_upload/Company/Publications/Corporate\\_Brochures/Munitionsraeumung\\_in\\_der\\_Nordsee\\_2013.pdf](http://www.tennet.eu/fileadmin/user_upload/Company/Publications/Corporate_Brochures/Munitionsraeumung_in_der_Nordsee_2013.pdf).

<sup>328</sup> See Federal Maritime and Hydrographic Agency, *Guidance for use of the BSH standard „Design of Offshore Wind Turbines“*, available at [http://www.bsh.de/DE/PUBLIKATIONEN/\\_Anlagen/Downloads/Offshore/Anlagen-EN/Guidance-Standard-Design-offshore-wind-turbines.pdf?\\_\\_blob=publicationFile&v=2](http://www.bsh.de/DE/PUBLIKATIONEN/_Anlagen/Downloads/Offshore/Anlagen-EN/Guidance-Standard-Design-offshore-wind-turbines.pdf?__blob=publicationFile&v=2).

This approach is not common to all countries in the BSR, however. In **Denmark**, for example, no general or explicit legislation regulates the depth, height, or design of offshore wind turbines. Instead, the Minister for Climate and Energy may lay down technical regulations for aspects including the construction, manufacture, operation, maintenance, and service of wind turbines, as well as requirements for certification, approval, and testing.<sup>329</sup>

## 5.4 Grid connection

Technical requirements for plant connection to the grid are established at EU level by the RfG and HVDC network codes, while connection claims are governed at national level.

	<b>Connection claim</b>
<b>Denmark</b>	The grid operator is obligated to connect any wind power plant that fulfils the grid connection requirements. <sup>330</sup>
<b>Estonia</b>	The grid operator may refuse to connect a plant if the grid capacity is insufficient. <sup>331</sup>
<b>Finland</b>	The grid operator has a general responsibility to connect production units that comply with the given technical requirements. <sup>332</sup> A connection agreement specifies detailed provisions on the connection of a particular power plant to the grid.
<b>Germany</b>	The TSO is obligated to connect RES-E plants, even in cases where the connection is only possible by optimising, boosting, or expanding the grid. <sup>333</sup>
<b>Latvia</b>	The grid operator may refuse to connect a plant to the grid if the grid capacity is not sufficient to support the new load. The refusal must be motivated in writing within 30 days. <sup>334</sup>
<b>Lithuania</b>	The grid operator is obliged to connect RES plants even in those cases where the connection requires the grid to be optimised, boosted, expanded or reconstructed. <sup>335</sup>
<b>Sweden</b>	The grid operator is not obligated to connect plants to the grid if the grid capacity is already fully utilised.
<b>Poland</b>	The grid operator must enter into agreements with the plant operators who require it, provided that the connection is technically and economically feasible. Once this connection agreement is concluded, the plant operator may claim the grid connection. The plant operator must then meet the grid operator's connection requirements. <sup>336</sup>

**Table 6. Overview of claims to grid connection in the Baltic Member States.**

Source: RES legal (2018)<sup>337</sup>

<sup>329</sup> Sec. 33 Renewable Energy Act.

<sup>330</sup> Sec. 2 par. 2 of the Order on the grid connection of wind turbines and the support for wind generated electricity (Order 393/2017).

<sup>331</sup> Sec. 65 (3) n° 4 Electricity Market Act (588/2013).

<sup>332</sup> Sec. 20 Electricity Market Act (588/2013).

<sup>333</sup> Sec. 8 par. 4 Renewable Energy Act.

<sup>334</sup> Sec. 9 par. 4 Electricity Market Law (Latvijas Vēstnesis, 82 (3240), 25.05.2005, Ziņotājs, 12, 22.06.2005).

<sup>335</sup> Chap. III art. 14 par. 2 Law of the Republic of Lithuania on Energy from Renewable Sources (Valstybės žinios, 2011, Nr. 62-2936; 2013, Nr. 78-3940; TAR, 2015, Nr. 20142).

<sup>336</sup> Art. 7 par. 1 Energy Law Act (Prawo energetyczne Dz.U. 1997 nr 54 poz. 348).

<sup>337</sup> Source: RES Legal, "Legal sources on renewable energy", <http://www.res-legal.eu/>.

## 5.5 Timeframe

A construction schedule can be set by law or by an administrative act, for example the construction permit. Deadlines may be set for the beginning or completion of the works.

In this respect, **national legal frameworks** present a wide range of diversity. For example, in **Latvia**, the construction works must begin within four months after the permit becomes non-appealable,<sup>338</sup> while in **Finland**, the construction works must begin within three years after obtaining the construction permit or four years after obtaining the water permit.<sup>339</sup> The works must then be completed within three, five, or ten years, depending on the permits required. In **Estonia**, the works must be completed within seven years.<sup>340</sup>

## 5.6 Liability for construction delays

Liability for construction delays depends on the respective national legal frameworks. Such provisions may be set in the **tender material**. In **Denmark**, the tender conditions would establish a specific date for the completion of the OWF and installation of the transmission infrastructure by the TSO.<sup>341</sup> This follows a detailed schedule laid out in the tender conditions. As a part of the tender material, Energinet.dk is obligated to offer the tenderer an opportunity to connect to the grid at a certain date. This date is relatively early in the process. For example, in Horns Rev 3, the date was 1 January 2017, although the tenderer was not obligated to commence construction before 2019. The TSO's obligation to offer a connection to the grid at an early stage encompasses not only the construction of the submarine cable, but also a proper adjustment of the grid voltage. Due to the size of OWFs, including the projects at Horns Rev 3 and Kriegers Flak, this also requires the reinforcement of the onshore transmission grid. All of these elements must be in place by the deadline. Energinet.dk will be liable for losses – such as production losses – incurred by the tenderer if it fails to fulfil its obligations to provide the necessary transmission infrastructure. The extent of the TSO's liability is limited by a cap specified in the tender.<sup>342</sup>

Liability may also concern OWF project developers. In **Germany**, tendered capacity is only granted after a security deposit has been paid; this deposit is kept as a penalty if the project developer misses a deadline set by the Offshore Wind Energy Act.<sup>343</sup> For example, the tenderer is required to prove to the NRA that the construction of the OWF has started

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<sup>338</sup> Regulation Regarding Permits for Increasing Electricity Production Capacities or the Introduction of New Product Equipment (Regulation of the Cabinet of Ministers No. 883, 11 August 2009).

<sup>339</sup> Sec. 143 Land Use and Building Act (132/1999); Chapter 3 sec. 8 Water Act (587/2011).

<sup>340</sup> Sec. 45 Building Code (Vastu võetud 11.02.2015, RT I, 05.03.2015, 1).

<sup>341</sup> Based on sec. 31 subsec. 1 and 2 Renewable Energy Act.

<sup>342</sup> For example, Kriegers Flak has a liability cap set at DKK 1.8 bn.; Horns Rev 3 has a cap set at DKK 800 mil.

<sup>343</sup> Sec. 21, 32, 59 Offshore Wind Energy Act, in conjunction with the Renewable Energy Act.

at the latest three months before the date set for project completion; otherwise 70% of the security deposit will be forfeited.<sup>344</sup>

Finally, liability of the obliged parties may also have a **contractual origin**. In **Latvia**, for example, the terms of the connection are set in a connection contract between the TSO and the operator of the OWF. Should the plant operator breach the agreement (for example by terminating it prematurely) and if the construction has already started, they must compensate the costs incurred by the TSO. On the other hand, if the connection is delayed due to either the TSO or the plant operator, the party at fault must pay a penalty of 0.01% of the connection fee per day up to a maximum of 10%. If the delay has lasted more than 40 days the connection contract is deemed terminated.

Another possible consequence of missed deadlines is the **withdrawal of a permit**. In **Poland**, for example, several circumstances may lead to the loss of the permit to build and exploit an artificial island. These include failure to observe the following requirements: obtain a construction permit within six years after the artificial island permit is issued; begin construction within three years after obtaining the final construction permit; or initiate operation of the OWF within five years after beginning construction.

Not all national legislation contains specific provisions for missed deadlines in such projects. In **Estonia**, for example, liability is not specifically prescribed by law.

## 5.6 Dismantling

The prospect of the future dismantling phase plays an important role during the planning stage due to the potential environmental impact of the works. Removing facilities usually impacts the surrounding flora and fauna (such as marine mammals, sea birds, fish, or crustaceans) due to noise and seabed disturbances. Under national environmental laws, the environmental impact of the dismantling process must be minimised to the greatest degree possible.

The countries of the BSR differ in the legal approach used to regulate the dismantling of the structures. Nevertheless, it is possible to discern a common framework. The dismantling operations generally must take place under the strict control of a public agency, which in most cases is the same authority that granted the concession or issued the construction or water permit.

### 5.6.1 Obligation to dismantle

For the owner or operator, the expiration of permits and licences usually triggers a duty to remove the structures and to restore the sea environment. In **Sweden**, for example, the Act on the Swedish Economic Zone<sup>345</sup> requires the permit holder to remove the plant and

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<sup>344</sup> Sec. 59 par. 2 n° 3, sec. 60 par. 2 n° 3 Offshore Wind Energy Act.

<sup>345</sup> Law on the Exclusive Economic Zone of Sweden (1992/1140).



other structures after the permit expires.

The dismantling duties may also be included in the permit conditions for OWF construction, which obligates the project developer for dismantling and renaturing the site. In **Finland**, for example, dismantling requirements may be included in the water permit; an environmental permit may also contain provisions on the dismantling of the OWF. In cases where no requirements are set, the permit authority will provide them.<sup>346</sup> In territorial waters, an application must be submitted for a specific dismantling permit in areas covered by a local detailed plan or where a building prohibition is in force. In other areas, the local building supervision authority must be notified in writing 30 days before the dismantling begins. During that period, the building supervision authority may demand that a permit be applied for, provided that there is just cause for doing so.<sup>347</sup> In the EEZ, provisions on dismantling are set out in the decision of the Council of State of Finland regarding the OWF construction.<sup>348</sup>

Legislation does not always impose a dismantling obligation. In **Denmark**, for example, there are no legal provisions on dismantling an OWF. The tender conditions for Horns Rev 3 stipulate that the tenderer must provide to the Danish Energy Agency a plan for dismantling the wind turbines and inter-array cables at the latest two years before the expiration date of the production licence or lifetime of the plant.<sup>349</sup> This plan must detail the dismantling procedure and schedule as well as environmental and safety-related issues. The Danish Energy Agency, operating as a one-stop shop, will then approve this plan. For Kriegers Flak, on the other hand, the winner of the tender procedure will dismantle and decommission the OWF “*in accordance with the terms and conditions in the licence for construction and in the electricity production authorisation*” according to the terms of the tender. They are also obliged to provide a guarantee that does not limit the tenderer’s liability.<sup>350</sup>

Furthermore, the dismantling obligations are not absolute. In the case where the installations in the seabed become important habitats for sea organisms, the option to leave them on site will be considered if the environmental impacts associated with dismantling outweigh the impact of leaving them, wholly or in part. Security and ease of traffic are also considered. In **Germany**, for example, the competent authorities will determine whether to require dismantling by weighing its environmental consequences against the

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<sup>346</sup> Sec. 94 Environmental Protection Act (527/2014).

<sup>347</sup> Sec. 127 Land Use and Building Act (132/1999).

<sup>348</sup> Sec. 7 Act on the Exclusive Economic Zone of Finland (1058/2004).

<sup>349</sup> See for example appendix 6 & 8 in Horns Rev 3 material, on respectively security/dismantling and dismantling/cleaning.

<sup>350</sup> Tender conditions for Kriegers Flak Offshore Wind Farm, see Danish Energy Agency – Draft for final tender conditions – June 2016, n° 5.1, available at [https://ens.dk/sites/ens.dk/files/Vindenergi/kriegers\\_flak\\_-\\_final\\_tender\\_conditions\\_draft.pdf](https://ens.dk/sites/ens.dk/files/Vindenergi/kriegers_flak_-_final_tender_conditions_draft.pdf).



consequences of leaving the installations in place.<sup>351</sup>

The **costs of dismantling and restoration** are generally borne by the operators or the project developers. Under **Swedish** law, for example, the TSO is responsible for dismantling sea cables and must pay the associated costs.<sup>352</sup>

### 5.6.2 Liability

The obligation to dismantle leads to the **liability** of the obligated party. In **Latvia**, for example, the same Cabinet Regulation<sup>353</sup> setting construction requirements provides that the demolition of the structure is subject to an authorisation permit, although it does not set rules for liability.

Administrative authorities assume an active role if the obligated party does not fulfil its dismantling obligation. In **Estonia**, for example, the Technical Regulatory Authority dismantles the structure in accordance with the Substitute Enforcement and Penalty Payment Act.<sup>354</sup>

## 6. Conclusion

Offshore wind energy is a vital and potentially valuable resource for the BSR as it strives to increase the OWE in its energy mix and advance its energy transition. Baltic InteGrid research has identified several aspects of EU and national policy and regulatory frameworks that impede the development of OWE and a meshed offshore grid.

One barrier to OWE production is the lack of strong **political will** for the development of OWE and absence of a **regulatory framework** that facilitates investment in capacity generation.

Another obstacle for OWE production is the **complexity of authorisation procedures** in countries where no one-stop-shops are provided. Project planning also requires bolstering **acceptance at the local level** because opposition to projects may lead to their ultimate failure.

Yet another issue concerns the **concrete modalities of the grid operation** in a meshed design. The current legislative framework has not yet been adapted to address grid architectures that differ from the classic radial connection of OWP and classical interconnectors – especially regarding requirements to **operate dual-purpose cables** that serve both as interconnectors and park-to-shore cables. Therefore, the development of offshore transmission grids in a meshed architecture will require adaptations of the regulatory

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<sup>351</sup> See 3.5.1 (4) of the Regulation on spatial planning of the EEZ in the Baltic Sea of 10 December 2009 (BGBl. I p. 3861) Anlage, and the explanation in 3.5.2(4).

<sup>352</sup> Electricity Act (1997/857).

<sup>353</sup> Chap. 7.5 Construction Regulations for Structures in the Internal Waters (Cabinet Regulation No. 631).

<sup>354</sup> Substitute Enforcement and Penalty Payment Act (Vastu võetud 09.05.2001, RT I 2001, 50, 283).

framework, either through adequate legal instruments at EU level or a regional Convention between the countries involved.

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