PROMOTioN
PROGRESS ON MESHED HVDC
OFFSHORE TRANSMISSION
NETWORKS

Work Package 7.1: Final Deliverable (D7.2)

Designing the Target Legal Framework for a Meshed Offshore Grid

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EXECUTIVE SUMMARY

The present deliverable analyses the form and the contents of the target legal framework[1] for the Meshed Offshore Grid (MOG). Considering the form, there is no 'one size fits all': different legal instruments are needed to reach a target legal framework that addresses all issues at the best level, that is, following the subsidiarity principle, the the most immediate (most local) level at which the solution still is effective. Applied to the offshore grid, these legal instruments are an agreement under international law, needed for asset classification and governance of the MOG (hereinafter: North Sea agreement); amendment of various instruments under EU law and national law; and a new OSPAR[2] or International Maritime Organsiation (IMO) guideline on decommissioning of offshore wind farms (OWFs) and offshore grid components. The agreement under international law should be in the form of a mixed partial agreement, to which the countries connected to the MOG are members and the EU itself also becomes a member.

Considering the contents of the target legal framework, the deliverable addresses the issues that stakeholders have indicated as the main legal barriers to an offshore grid, namely asset classification, governance of the MOG, planning and permitting, support schemes for OWFs connected to hybrid or meshed grids and decommissioning.

Clarification of the legal status of hybrid and meshed assets is necessary on international law level, establishing jurisdiction, and on the regulatory level, establishing the market rules applicable to the assets. A common interpretation of the law of the sea by the North Sea coastal states will be necessary. No amendment of UNCLOS is needed, but for legal certainty, adopting a common interpretation in a North Sea agreement is recommendable. Considering regulatory asset classification, PROMOTioN campaigned for the adoption of a separate category of 'offshore hybrid asset'. This is adopted in the recital of the new Electricity Regulation, but this does not yet provide the required amount of legal certainty. As a first step, PROMOTioN proposes that the definition should be adopted in the operative[3] part of the Regulation and specify in more detail what the regulatory regime for this new category of 'offshore hybrid assets' should be. A second step is inclusion of this definition in the North Sea agreement.

The governance of the offshore grid entails many different subjects, such as coordinated planning, ownership (with a link to asset classification), operational rules, innovation, regulatory governance, financial regulation, procedures and legal certainty. The backbone of governance for the MOG should be an international agreement that binds all states connected to the MOG and that addresses the abovementioned issues. The preferred contents of such an agreement are described in chapter 4.

[1] The target legal framework entails the legal framework as it should be designed in order to facilitate the cost-effective connection of offshore windfarms in a meshed offshore grid (MOG). The current legal framework will not be sufficient to reach this target, so amendments need to be made and, in some cases, new instruments will need to be adopted. The combination of all legal measures needed for the cost-effective development of the MOG is the "target legal framework".
[2] Convention for the Protection of the Marine Environment in the North East Atlantic, Oslo and Paris, 1992.
[3] Each Directive and Regulation consists of a number of recitals, giving general information on the context of the instrument, and an operative part in which concrete binding rules are laid down.

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Planning and permitting procedures are considered burdensome for the offshore grid and offshore wind farms alike. It must be noted that the procedures for one project are still tolerable, but they become a large cost and risk if they need to be repeated many times, which may be the case for an offshore grid, each time when new connections are added. Various measures are available to smoothen the planning and permitting procedures for the offshore grid in coastal states. These measures are national in scope and addressed at governments, National Regulatory Authorities (NRAs) and project developers.

Support schemes for OWFs connected to a hybrid/meshed offshore grid are often mentioned by stakeholders as one of the most pressing issues that hold back hybrid/meshed grid development. The issue is that, due to the formulations in national law, OWFs connected to a hybrid connection may lose their entitlement to support schemes. This reduces the willingness of OWF developers to be connected to a hybrid or meshed grid, while at the same time disturbing the level playing field between OWFs. This should be addressed in two phases: in the first phase, nationally oriented support schemes should separate market flows from physical flows, and calculate support over the market flows. In the long term, support schemes for OWFs, if still necessary, will need to be adapted to new bidding zone configurations.

As a last part of the lifecycle of both OWFs and the offshore grid, decommissioning needs to be taken into account in the legal framework. There are two reasons for this: the decommissioning rules may change what is considered the optimal grid topology, and secondly, decommissioning rules influence the total cost of investment in the MOG, next to the capex and opex. These costs have to be taken into account from the outset to give the full picture of the lifecycle of the investments. The decommissioning standard for OWFs should be based on a case-by-case assessment by the relevant permitting agency, and for cables, the standard should be leaving the cables in place unless in a sensitive area with high shipping or fishing activity or areas such as the beach. Concerning what should be done with the cables when an OWF is removed, a new tender for the same area is preferred, and the state should get the responsibility over parts that remain after decommissioning, under the condition that the state is compensated for this, for example through a ring-fenced fund.

Finally, it is important to consider time as a factor in designing the legal framework. It takes a long time to draft or amend legislation, especially in the multi-level and multi-actor context of a MOG. Early development of the legal framework is necessary to facilitate the next steps towards a MOG, namely hybrid grid connections, already on the short term. These developments are likely to be constructed in the next 10 years and they benefit from a well-designed legal framework. In order to have the legislative framework ready for the MOG, it is recommended to start developing the legal framework without delay.

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KEY RECOMMENDATIONS

Short Term

- Amend (Recast) Regulation on the internal market for electricity to include a definition and substantive provisions on how a hybrid asset should be regulated – § 3.4
- Smoothen the (national) planning and permitting procedures by:
  - Centralised OWF planning, preparation by authorities (EIA, sea bed analysis) – § 4.3, 5.3
  - Decoupling OWF permitting process from cable permitting process, but coordinate the projected commissioning dates – § 5.3
  - Simplification of the permitting process (number of permits, interdependencies) – § 5.4
  - Creation of a one stop shop for key project permits – § 5.4
  - Adoption of clear definition of hybrid grid assets in EU and national law – § 3.4, 5.5
  - Anticipation on future developments (innovation in energy storage, island hubs etc.) – § 5.5
  - Early communication with authorities about new projects; early communication with stakeholders and involvement in the decisionmaking process – § 5.6
  - Move towards joint EIA procedures with cumulative impact assessment – § 5.7
  - Joint EIA procedure pilot project with intensive coordination of the authorities involved – § 5.7
- Keep the current tender system for state support for OWFs, keep existing bidding rules: OWFs in the EEZ of country A bid into the electricity market of country A, but separate market flows and physical flows; support should be calculated over market flows – § 6.5
- Income regulation: avoid projects based solely on congestion income – § 4.8
- Initiate more research into the decommissioning of OWFs and the offshore electricity grid – § 7.1

Long Term

- Adopt a North Sea treaty for the Member-States, third states and EU, providing:
  - Common interpretation of relevant UNCLOS provisions – § 3.3
  - Aims and principles of the MOG – § 4.2
  - Governance and decision-making structures:
    - Long-term OWF and grid planning (geographical and temporal, in a similar way as the TYNDP process) – § 4.3
    - Regulatory Governance (formalise the cooperation between NRAs) – § 4.7
    - Decision-making: yearly conference of parties where long-term decisions are made, delegation of tasks to committees of national experts (alignment of construction rules; technical rules (e.g. network codes); cumulative environmental impact) – § 4.2
    - Legal certainty (formalise decision-making process and appeals procedures) – § 4.9
- Use small zones bidding zone configuration. This requires impact assessment and mitigation of the consequences for certain parties, and adaptation of the support system – § 6.5, Deliverable 12.3.
- Adapt the support schemes for OWFs (if still existent) to the small zones pricing regime – § 6.5
- Adopt guidelines at IMO/OSPAR level on the decommissioning of OWFs and offshore grid – § 2.3, 7.5

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LIST OF ABBREVIATIONS

AC	Alternating Current
ACER	Agency for the Cooperation of Energy Regulators
CACM	Capacity Allocation and Congestion Management
CBA	Costs and Benefits Analysis
CEF	Connecting Europe Facility
CfD	Contract for Difference
CJEU	Court of Justice of the European Union
DCO	Development Consent Order
EEA	European Economic Area
EEG	*Erneuerbare Energien Gesetz* (German Renewable Energy Act)
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Analysis
ENTSO-E	European Network of Transmission System Operators for Electricity
EU	European Union
FCA	Forward Capacity Allocation
HVDC	High Voltage Direct Current
IMO	International Maritime Organisation
ISDS	Investor-State Dispute Settlement
MOG	Meshed Offshore Grid
MW	Megawatt
MWh	Megawatthour
NRA	National Regulatory Authority
OFTO	Offshore Transmission Operator
O&M	Operations and Maintenance
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (Oslo/Paris)
OWF	Offshore Wind Farm
PCI	Project of Common Interest
RES	Energy from Renewable Energy Sources
RVO	*Rijksdienst voor Ondernemend Nederland* (Dutch Executive Agency for a.o. offshore wind)
ROC	Renewable Obligation Certificate
TEN-E	Trans-European Networks for Electricity
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

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1. INTRODUCTION

1.1 DELIVERABLE OUTLINE

A solid and reliable legal framework is an important building block for the Meshed Offshore Grid (MOG). Earlier research within the PROMOTioN project showed that the current legal framework for offshore wind and offshore electricity infrastructure is fragmented, lacking specific rules for hybrid connections[4] and too nationally oriented.[5] This final deliverable shows how the legal framework should be designed in order to address these issues and to provide a solid basis for the regulation of the MOG.

The task is to design a legal framework for the MOG. In order to do this, the first step is to investigate which instruments could be used to form the legal framework. This is addressed in chapter 2. It becomes clear that there is no one-size-fits-all legal instrument for all issues that need to be addressed. Thus, the legal framework will consist of different legal instruments that address the issues at the right level, which is the most immediate (most local) level in which the instrument is still effective, in line with the (EU-law) principle of subsidiarity. The next step is to decide whether the MOG can be regulated within the current categories of law, i.e. offshore wind farm connections or interconnectors. Chapter 3 shows that it is recommendable to have a separate definition for hybrid assets, assets that combine the connection of windfarms with interconnection. This will be the case for hybrid assets, the first building blocks of the MOG, and eventually for the MOG as a whole.

An important part of the legal framework will be the governance of the offshore grid, addressed in chapter 4. The important question throughout this chapter is: who decides on the MOG and how are these decisions reached? The chapter addresses these questions for a number of themes: location of the offshore wind farms (OWFs) and grid extension, ownership (with a link to asset classification), operational rules, innovation, regulatory governance and financial regulation. Finally, the procedures and the need for legal certainty are also addressed in this chapter.

Then, the deliverable discusses a few issues that stakeholders mentioned as issues that are relevant for the development of the MOG. This is done via three chapters that follow the lifetime of the grid and the OWFs connected to it. First, chapter 5 is dedicated to the streamlining and de-risking of permitting procedures in the project development phase, as developers indicated that the variety and length of permitting procedures, especially for cross-border projects, forms a risk to the (timely) realisation of these projects. The chapter provides an analysis of the risks in the permitting process and the mitigation measures that can be taken to reduce the risk. Chapter 6 is dedicated to support schemes for OWFs. Stakeholders indicated that support schemes for OWFs connected to hybrid projects are a difficult topic, as the electricity will not always flow to the state that provides the

[4] Hybrid connections (or hybrid assets) are, for the purposes of this deliverable, defined as connections with a dual function, namely connection of OWFs and interconnection between two electricity systems. As such, hybrid connections host two types of electricity flows: electricity flowing from OWFs to the onshore electricity grid of one of the countries it is connected to, and electricity flowing between different countries on the basis of the difference in electricity prices.
[5] C.T. Nieuwenhout, PROMOTioN Deliverable 7.1: Legal Framework and Legal Barriers to an Offshore HVDC Electricity Grid in the North Sea: Intermediate Report for Stakeholder Review, July 2017, p. 144.

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support in a hybrid or meshed situation. Finally, in chapter 7, different options for the decommissioning of OWFs and the MOG are analysed. Decommissioning did not yet receive much attention, but it needs to be adopted in the legal framework for the MOG, as it influences both the grid topology[6] and the costs of the grid.

1.2 READER'S GUIDANCE

1.2.1 SCOPE

The geographical scope of this deliverable is the North Sea and its coastal states, including Belgium, Denmark, France, Germany, the Netherlands, Norway, Sweden and the United Kingdom. The temporal scope of the deliverable is indicated in the text (i.e. short term or long term). Hybrid assets are expected to develop in the current decade 2019-2029. A meshed offshore grid, in which multiple assets are coupled to each other, is envisaged for the long term, 2030-2050.

1.2.2 METHODOLOGY

For each topic, there are different possible options to regulate the MOG. In order to have a solid basis for decision-making and to increase insight into why certain options are preferred over others, WP7 has developed an evaluation framework with four parameters. The parameters are designed in such a way that they are mutually exclusive and collectively exhaustive. The parameters are:

- Costs/benefits: it is often difficult to estimate the absolute costs and benefits of a certain option, as there are many uncertainties. Instead, the deliverable assesses the relative costs and benefits of one option compared to the other options. In general, options that stimulate development towards a MOG are deemed more beneficial than options that lead to radially connected OWFs, as the meshing provides societal benefit through the interconnection of different electricity grids. Transaction costs and other costs are also taken into account where relevant.
- Speed of Implementation: the parameter 'speed of implementation' entails two things. It relates to the time needed to implement a certain option in the legal framework, with minor amendments being faster than a complete overhaul of the legal system or the adoption of a new legal instrument. Secondly, after implementation of the measure in the regulatory framework, it relates to whether it makes MOG development faster or slower.
- Socio-political acceptance: socio-political acceptance is subjective to assess. In this deliverable, the parameter is scored in the following way: in the current political situation, options for which national authority needs to be transferred to the EU or to another supranational organisation are scored negatively, as some states (notably non-EU (third) states) will probably not accept this. Also, distribution

[6] Grid topology relates to the way in which individual parts of the grid are arranged and relate to each other. In the context of PROMOTioN, grid topologies are developed in Work Package 12. Preliminary grid topologies are available here (last visited 22-3-2019): **https://www.promotion-offshore.net/news_events/news/detail/optimal-scenarios-for-the-future-european-offshore-grid/**. Final grid topologies will be published in Deliverable 12.2.

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of the costs according to which state reaps the benefits is considered fairer and scores more positively than every state pays an equal share. For decommissioning, options that adhere to the principle of 'polluter pays' score higher than options that disregard this principle.

- Provision of Private Capital: this parameter scores to what extent investors will be willing to provide private capital for the development of the MOG. Issues that influence the scoring for this parameter are stability, creating a level playing field, ability to win back the investment and long-term foresight of how the MOG will be regulated.

The framework is visualised through a table, in which the different options and the scores for the different parameters are listed. The options can be scored very negative (--), negative (-), neutral (0), positive (+) or very positive (++). The option that scores the least minuses/the most pluses will be deemed the best option for the development of the MOG. In the example below, option 1 will be recommended, as it scores the most +'s and the least –'s. The aggregate of these scores are shown in the last two columns. If there are multiple options with the same score, the option with the least extreme negative (--) takes precedence.

Example Table	Costs/ benefits	Speed of Implementation	Socio-political Acceptability	Provision of private capital	Total +	Total -
Option 1	+	+	+	0	3	0
Option 2	-	+	0	-	1	2
Option 3	++	-	-	+	3	2

Throughout the deliverable, where different options are available, this evaluation framework is used to 'grade' the different options and to come to recommendations on which option should be incorporated in the target legal/regulatory framework.

1.2.3 POLITICAL DEVELOPMENTS

The deliverable was finalised in Q1 2019, in the midst of many Brexit developments. At the moment of finalisation of the deliverable, the future relation between the UK and the EU was not yet clear. Therefore, throughout the deliverable, no reference is made to possible future relations. Instead, the standard categorisation of EU states, EEA states and third states is used.

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2. INSTRUMENTS FOR THE LEGAL FRAMEWORK

2.1 INTRODUCTION

In the previous deliverable, as well as in other reports and documents,[7] legal barriers to the development of a meshed offshore HVDC grid have been identified. These legal/regulatory barriers can be addressed by different legal instruments. It is important to use the right legal instrument for each specific legal barrier. There is no 'one size fits all'. For example, instruments to address support schemes will have to be able to be adjusted regularly, to follow the developments of the market, whereas a legal instrument to clarify the question of jurisdiction for hybrid and meshed electricity infrastructure has to create definitive legal certainty and should therefore not be easily amendable. For every issue, it should be considered which characteristics are important and which legal instrument fits with these characteristics. The entirety of legal instruments needed, adjusted to each other to form one coherent framework, are the 'target legal framework', which will be filled in further in the following chapters.

This chapter first analyses which indicators could be used to choose between different legal instruments. They could be ordered in level of law, i.e. international, European or national law, and in type of law (i.e. hard or soft law).[8] Each level/type has its own characteristics and decision-making process. The characteristics to be compared are the extent to which instruments are binding, the level of detail and whether they allow for further rule-making at a lower (more local) level.[9]

The chapter follows a two-step approach: first, it provides indicators of choice between national, European and international law and between hard and soft law. The choice between different instruments of national law is not considered here, as this would require an extensive analysis of constitutional law of the different North Sea coastal states, which is beyond the scope of this deliverable. The second step is that these indicators for the choice of legal instruments will be applied to the legal barriers identified in the context of PROMOTioN. For each legal barrier, it will be analysed which characteristics are required and which legal instrument(s) match(es) best with these requirements. The 'target legal framework' described as project aim for WP7.1 and worked out in chapter 4 will thus consist of different legal instruments, fit to address the variety of legal barriers to a MOG.

[7] THINK Report, topic 5, Offshore Grids: towards a least-regret policy, January 2012; H.K. Müller, A Legal Framework for a Transnational Offshore Grid in the North Seas, Antwerp, Intersentia, 2016; PwC, Tractebel, Ecofys, Study on regulatory matters concerning the development of the North Sea offshore energy potential, January 2016.
[8] The term soft law is used to describe various semi-legal instruments, such as guidelines, statements and action plans, as well as many UN resolutions. These are often non-binding or drafted in such a way that states or other actors cannot directly gain rights or responsibilities from them, contrary to hard law, which is binding. The decision-making and adoption procedures for soft law are usually lighter than for hard law. See for a general overview: Boyle 'Soft Law in International Law-Making', M.D. Evans *International Law,* OUP 2014, 4th ed., p. 118.
[9] *Cf.* K.W. Abbot, D. Snidal, Hard and Soft Law in International Governance, *International Organization*, Vol. 54, No. 3, 2000, p. 423.

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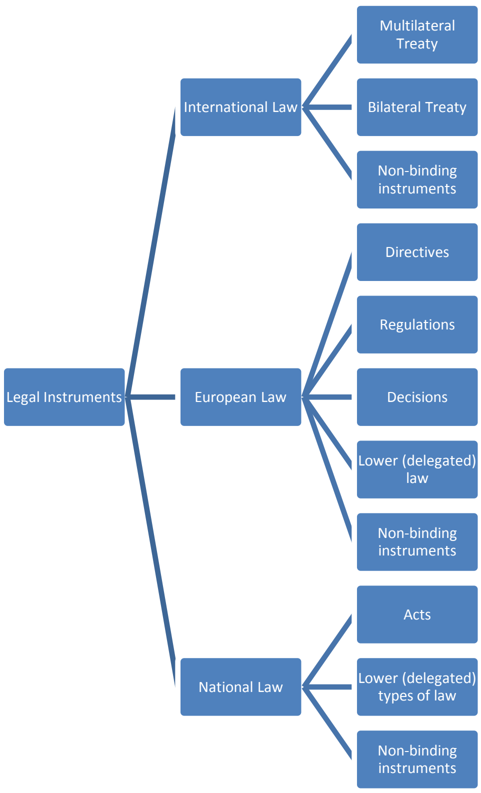
Image 1: Overview of legal instruments in different categories. In the hierarchy of legal instruments, European law is bound by the limits of international law, and national law is bound by the limits of European and international law. Therefore, they are portrayed hierarchically, with international law above and national law below. Following the subsidiarity principle, however, the lower (more local) option is preferred above the higher option, which means that paragraph 2.2 is ordered from the lower level (national law) to the higher level (international law).



2.2 INDICATORS FOR THE CHOICE OF LEGAL INSTRUMENT

This paragraph aims to investigate which elements are important in the choice between different levels of law and different instruments within these levels, in order to find the right legal instruments for the target legal framework. As said above, although the hierarchy of legal instruments dictates that international law comes first, the legal instruments are treated from local (low) to international (high). This is to make sure that solutions are not made larger than necessary, in line with the principle of subsidiarity.[10] First, indicators for the difference between the national level and anything larger than national are given. The following choice is between EU law and international law. For this choice, different interests (inclusiveness, enforceability) have to be weighed against each other.

[10] The principle of subsidiarity entails that issues should be addressed at the most immediate (most local) level possible, as the higher authority only is subsidiary to the lower (or more local) authorities. For EU law, it is defined as "is it not or not sufficiently possible to achieve the objective at national level, either centrally or decentrally."

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Then, the difference between hard and soft law is analysed. Every subchapter concludes with key indicators or questions to define which level should be used. Before using the framework below, it is important to assess whether the issue has already been addressed before or not. If the issue was addressed before, and the current legislation is the source of the problem, the fastest way is often to address the issue at the level that forms the problem.

2.2.1 BETWEEN NATIONAL LAW AND LARGER-THAN-NATIONAL LAW

In general, when a certain issue needs to be regulated, it is regulated on a national level. However, for several reasons, states may deviate from that base case and decide to regulate an issue at a higher level, namely international, European or regional level. An obvious reason for this step is when there is a global, regional or at least cross-border effect, making it more effective to regulate something on a larger-than-national level. An example of this is climate change or environmental pollution, which does not stop at national borders. Another reason to address an issue at larger-than-national level is economies of scale that emerge from regulating something with multiple countries at the same time. This is the case for example with standardisation and certification – it delivers economic benefits if the market for a certain product or service is expanded and barriers are taken away.[11] Another reason could be path-dependency: when a related issue is already regulated at a certain level, states are more likely to continue using the instruments that are already in place instead of creating new instruments again.[12]

The indicators for the distinction between national and international law are not only to be found in legal doctrine, but also in logic and economic theory. Eventually, the choice whether states will regulate something on a larger-than-national level depends on political willingness of multiple states to engage in this. Nevertheless, on the basis of EU law, the following questions should be asked:

- Is it possible to adequately address an issue on national level? (subsidiarity)
- Is it possible to adequately address an issue with a less invasive instrument? (proportionality)

If the first question can be answered positively, this indicates a choice of national law rather than EU- or international law. If the second question can be answered positively, this indicates that another legal instrument should be used.

[11] An example regarding the offshore industry, which could be relevant for the offshore wind sector, is the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), London, 1978, allowing nautical crew to work under different flags. This convention allows for more efficient allocation of crew to OWF installation vessels and cable-laying vessels.

[12] This happens both with international law and with European law. B. De Witte, A. Thies, 'Why Choose Europe?' in B. Van Vooren, S. Blockmans and J. Wouters (Eds) *The EU's Role in Global Governance,* OUP 2013, p. 29

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2.2.2 BETWEEN EU LAW AND INTERNATIONAL LAW

The choice between international law and European law to address a certain issue is less clear-cut than the choice between national and larger-than-national law. A basic question regarding the possibility of addressing an issue at EU law level is: does the EU have competence regarding the issue? This is generally the case for issues relating to energy (art. 194 of the Treaty on the Functioning of the European Union (TFEU)), trans-European networks (art. 170 TFEU) and the environment (art. 191-193 TFEU).[13] If the EU has competences on the issue and if the measure complies with the requirements of proportionality and subsidiarity, it is also still possible to address the issue with an international (regional) agreement. Instead of specific requirements, such as above in the choice between national and EU law, this choice is rather based on indicators that make explicit which interests could be taken into account and influence a decision either towards international law or towards EU law.

The two indicators that point towards addressing an issue on international level, for example through a regional agreement between the countries around the North Sea, are:

Is it important to have one solution for all North Sea coastal states, EU- and non-EU Members?

An EU-based solution would exclude non-EU Member States. For EEA-states, such as Norway, implementation may be possible via the EEA, although there is a legislative lag as adoption by the EEA takes some years.[14] Non-participation of the EEA- and third states might lead to suboptimal grid development from a socio-economic perspective. Therefore, for issues in which it is important to only have one solution for the entire North Sea region, a solution under international law is preferred.

Is it an issue that only has relevance to North Sea coastal states?

Including 27 states in the decision-making process, whereas only a small amount of states has an interest in the issue from a geographical point of view slows down decision-making procedures under EU law. The political will to conclude an agreement is probably small for the states for which the issue is not relevant. Thus, for these issues, there might not be a window of opportunity to address the issue. Instead, regional specialisation for the relevant countries is possible via an international agreement. It differs per topic whether this is possible in practice: even if the issue is only directly relevant for a limited number of Member-States, there might still be indirect consequences for other states, which means that they will probably want to have influence in the decision-making process as well. An example is technical rules on the operation of the offshore grid, which are directly relevant for the countries that participate in the offshore grid, but which have an impact on the entire continental synchronous area it is connected to, as well as the entire Scandinavian synchronous area.

On the other hand, there are also certain indicators that point towards an EU-law based solution:

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[13] In all three cases, this is a shared competence between the EU and the Member States. This means that Member States can only act in as far as the EU has not yet acted in that field. For more information on competences, see C.T. Nieuwenhout, PROMOTioN Deliverable 7.1, 2017, chapter 3.3.

[14] For more information on the relation between the EU and the EEA, see C.T. Nieuwenhout, PROMOTioN Deliverable 7.1, 2017, chapter 3.4.

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Did the EU already make use of its competence to regulate the issue?

Many issues fall under 'shared competences'. Due to the principle that for shared competences, Member-States can only act in as far as the EU has not acted yet,[15] it is important to note that EU action on a certain issue also blocks action from Member-States on international level.[16] There is no reason to presume that there is a difference between internal and external action of the Member-States in these matters (this is based on the principle of pre-emption).[17]

Is it important that the rule is binding and enforceable?

If the bindingness and enforceability of the solution are important, for example when there is a risk of free-riding, it is more logical to choose a solution under EU law. Agreements under international law are less enforceable than EU law instruments, as the European Commission supports the enforcement of EU law and the Court of Justice of the EU (CJEU) judges cases on a binding basis. Moreover, decisionmaking style is also relevant in this context: under EU law, decision-making on the competences relevant for the offshore grid is based on qualified majority voting.[18] In international law, decisionmaking and enforcement often are difficult.[19] Intergovernmental agreements often require unanimity for decision-making, and enforcement only happens if enforcement mechanisms are explicitly adopted in the agreement (which is more difficult to reach (unanimous) agreement on).

Mixed Partial Agreement as a Compromise

In this context, an interesting option is an international law agreement between the relevant EU Member-States, the relevant third states and the EU. It is possible for EU-Member States to conclude agreements outside the context of the EU legal framework.[20] This is used for example if an agreement is only interesting for a part of the Member-States. This type of agreement is called 'partial agreement' or '*inter se* agreement'.[21] The term originates from the Council of Europe, where it is used for agreements which cover most but not all Member-States to the Council of Europe, if consensus cannot be reached otherwise. However, the term is also used in other contexts, such as in the context of EU-Member States acting outside EU-law context to allow for differentiation between Member-States.[22] The EU itself, however, could also become member of such an agreement. Then it becomes a 'mixed partial agreement'.

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[15] See C.T. Nieuwenhout (2017), *supra* note 5, chapter 3.3.
[16] This principle is the same between the EU and national law and between the EU and international law.
[17] B. De Witte, 'Chameleonic Member States: Differentiation by means of partial and parallel agreements' in B. De Witte, D. Hanf, E. Vos, *The Many Faces of Differentiation in EU law,* Intersentia 2001, p. 241.
[18] The qualified majority voting procedure is explained in TFEU art. 238(3).
[19] Whereas countries have a police and judicial power to enforce laws, this does not exist in the same form on the level of international law. The UN Security Council has a role in enforcement, as has the ICJ and courts of arbitration, but this is not comparable to the national and European level as the power is much less binding.
[20] B. De Witte (2001) addressed the question whether this could be forbidden to Member-States, and his answer is that this is not possible, *supra* note 13, p. 32/33.
[21] 'Partial agreements' can be contrasted with 'parallel agreements' which are also concluded outside the EU law framework but which bind all Member-States.
[22] B. De Witte (2001), *supra* note 13, p. 234 and further.

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Partial agreements exist in different forms, but one form that is particularly relevant as an example for the North Sea is partial agreements that are concluded for a certain geographically-bound goal. Two interesting examples of this are the Convention on the Protection of the Rhine (Bern, 1999) and the 'Alpine Convention', the Convention on the Protection of the Alps (Salzburg, 1991). What is more, in both conventions, non-EU Member States also participate.[23] Moreover, the European Economic Community, now succeeded by the EU, is also a member of both conventions. The latter is interesting if the agreement deals both with issues in the competence of the EU and with issues in the competence of Member-States.[24] EU-Membership of an agreement can also resolve issues if part of the envisaged content lies within the competence of the EU and part of it lies with the Member-States.[25]

In both the Alpine Convention and the Rhine Convention, an institutional structure is designed to draft subdelegated decisions and documents.[26] A commission ensures continuity, monitoring and enforcement. There are several meetings in which the representatives of the Member-States can decide on specific issues. In this way, a convention that only mentions general themes can still address specific issues.

A clear theoretical limit to the treaty-making competences of the Member-States and the EU is that due to the primacy of EU law, there should be substantive compatibility between a newly drafted partial agreement and the already existing body of EU law.[27] This is because, in general, international law on treaty interpretation dictates that in case of conflict between EU law and the partial agreement, the latter treaty prevails between states that are both member to both treaties.[28] This is an undesirable situation as the CJEU has always stressed the importance of uniformity of EU law and thus defended the absolute supremacy of EU law.[29] Therefore, different interpretation due to various partial agreements should be avoided. In the Schengen Convention (1990),[30] this is solved by adding the following provisions:

> *Article 134*
> *The provisions of this Convention shall apply only insofar as they are compatible with Community law.*
>
> *Article 142(1)*
> *(…) Provisions which are in breach of those agreed between the Member States of the European Communities shall in any case be adapted in any circumstances.*

[23] Switzerland, Liechtenstein, Slovenia at the time of ratification of the treaty.
[24] Examples of such mixed agreements: P.J. Kuijper, J. Wouters, F. Hoffmeister, G. De Baere, T. Ramopoulos, *The Law of EU External Relations*, OUP 2013, p. 156 and further.
[25] B. De Witte (2001), *supra* note 13, p. 241.
[26] Convention on the Protection of the Rhine, Bern, 1999, art. 8, 10 and 11. In the Alpine Convention, this is done by a Conference of the Parties that can make protocols and annexes to the Convention. Convention on the Protection of the Alps (Alpine Convention), Salzburg, 7 November 1991, artt. 5-7.
[27] B. De Witte (2001), *supra* note 13, p. 243.
[28] Vienna Convention on the Law of Treaties, Vienna, 23 May 1969, art. 30.
[29] B. De Witte (2001), *supra* note 13, p. 244.
[30] Convention implementing the Schengen Agreement of 14 June 1985 between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic on the gradual abolition of checks at their common borders, OJ L 239, 22/09/2000 P. 0019 – 0062.

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The tension between partial agreements and EU law is also shown by case law: in 2006, the European Court of Justice judged on the compatibility of a provision of the Schengen Convention with EU law,[31] particularly free movement law. Another question is what happens if there is a legal conflict over the convention between an EU Member-State and a non-Member State. According to international law,[32] EU law is not supposed to affect the rights of third states. As long as there is close cooperation between the states involved in the agreement and the EU, this can be prevented.

Concluding, the following questions should be weighed for the choice between EU law and international law:

- Is it important to have one solution for all states?
- Is the issue only relevant to North Sea coastal states (not to other EU Member States)?
- Did the EU already make use of its competence to legislate on the issue?
- Is enforceability of the agreement/rules important?

If the first two questions are answered affirmatively, this points towards a solution under international law. If the third and fourth question are answered affirmatively, this points towards a solution under EU law. As a compromise, a mixed partial agreement has elements of international law and of EU law. This is a promising solution for certain issues in the MOG.

2.2.3 BETWEEN DIFFERENT INSTRUMENTS AT ONE LEVEL: HARD AND SOFT LAW

In the choice of legal instruments, next to the geographical scope of the instrument, another possible distinction is the distinction between hard and soft law. Soft law, which some consider not to be a 'real' type of law, proves to be specifically effective for certain purposes.[33] The distinction between hard and soft law stems from international law, where hard law is always binding[34] and soft law relates to all other forms of law. In international law, it is defined as "a variety of non-legally binding instruments used in contemporary international relations", such as declarations, interpretative guidance, codes of conduct, guidelines and recommendations.[35] However, the concept of soft law also exists on lower levels, i.e. the guidelines and communications by the European Commission.[36] In this subchapter, the concept of soft law and its advantages and disadvantages are elaborated further. Then, indicators for the choice between soft and hard law are developed.

[31] Case C-503/03 Commission v Spain [2006], CJEU, ECR I-01097, particularly recitals 33–35.
[32] Vienna Convention on the Law of Treaties, *supra* note 28, art. 34.
[33] A. Boyle (2014) *supra* note 8, p. 118-119.
[34] A. Boyle, C. Chinkin, *The Making of International Law*, OUP 2007, p. 213.
[35] Ibid., p. 212/213.
[36] European Commission, Communication: Guidelines on State Aid for Environmental Protection and Energy 2014-2020, C-200/1 28-6-2014.

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Although there are many different names for legal instruments,[37] the name of the instrument does not matter so much for the legal form. What is more important is to distinguish between the amount of countries bound by it, the bindingness of the provisions in it and the enforceability of these provisions. Abbott/Snidal refer to three parameters; ‘obligation’, ‘precision’ and ‘delegation’ (the possibility to delegate further decision-making power in the context of the contract to a lower body).[38] In either approach, international agreements can be put on a sliding scale from hard law to soft law. The same goes for instruments adopted under EU law.[39]

Often, the only legal instruments thought of are instruments of hard law. However, it is important to consider whether soft law could also be helpful: soft law has several characteristics compared to hard law that can help towards solutions for politically sensitive issues.[40] It may seem odd to include soft law in a document that is intended to find legal instruments to increase legal certainty on the legal barriers to an offshore grid. This is because the capacities and practical relevance of soft law are sometimes underestimated.[41] There are various benefits of soft law compared to hard law in the context of international law.[42] First, it may be easier to reach agreement if the form is non-binding, because consequences of non-compliance are limited.[43] For the same reason, states can use more detailed and precise provisions compared to vague but binding norms.[44] Secondly, soft law is easier for states to adhere to, as no domestic ratification processes are needed.[45] However, this does reduce the democratic legitimacy of soft law instruments, because the ratification process normally involves a vote in one or more democratically elected chambers. Thirdly, soft law is more flexible, as it is easier to amend than treaties. This is also due to the fact that no ratification procedure is needed for amendments. Lastly, some authors say that soft law can serve for more immediate evidence of international support and consensus than a treaty, as there are no reservations and long waiting time for domestic ratification.[46] However, this is mostly useful if soft law is used as a proof of *opinio juris,* the approval of states that something is good law, which, combined with states’ practice constitutes customary international law.[47]

Sometimes it is not the form (i.e. covenant or treaty) which determines whether something is hard or soft law, it can also be the content of the text: does it contain only principles or real rules/obligations?[48] For example, the Guidelines on State Aid for Environmental Protection and Energy,[49] formulated by the European Commission, prescribe in detail which forms of subsidies do or do not fall under the prohibition of state aid in EU law according to the European Commission. As this is the body that enforces state aid law, it decides whether a support scheme

[37] Convention, treaty, agreement, memorandum of understanding, and the declarations, interpretative guidances etc.
[38] K.W. Abbott, D. Snidal (2000), *supra* note 9, p. 424.
[39] L. Senden, S. Prechal, ‘Differentiation in and through Community Soft Law’ in B. De Witte, D. Hanf, E. Vos (Eds) *The Many Faces of Differentiation in EU Law*, Intersentia 2001, p. 187.
[40] K.W. Abbott, D. Snidal (2000), *supra* note 9, p. 423.
[41] A. Boyle (2014), *supra* note 8, p. 118/119.
[42] K.W. Abbott, D. Snidal (2000), *supra* note 9, p. 423.
[43] A. Boyle, C. Chinkin (2007), *supra* note 26, p. 214.
[44] Ibid.
[45] Ibid.
[46] Ibid.
[47] ICJ, Federal Republic of Germany v. Denmark and v. the Netherlands, The North Sea Continental Shelf Cases, ICJ rep. 1969, p. 4, para 77. See also A. Boyle, C. Chinkin (2007), *supra* note 34, p. 212.
[48] A. Boyle (2014), *supra* note 8, p. 126.
[49] Guidelines on State aid for environmental protection and energy 2014-2020, *supra* note 36.

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for energy complies with the (binding) norm. As the rules are very concrete and enforced, this instrument is a lot less 'soft' than many other guidelines.

From the above, the indicators for the choice between hard and soft law are:

- Is it important that the agreement is enforceable?
- Is it (too) difficult to reach a binding agreement?

These indicators oppose each other somewhat. If enforceability of the agreement is important, this points towards hard law. However, if it is difficult to reach a binding (and thus enforceable) agreement, a solution under soft law may be better suited. Therefore, if enforceability is not of crucial importance and if it is too difficult to reach a binding agreement, a soft law instrument may be a valuable alternative.

2.2.4 INTERIM CONCLUSION

For each issue that needs to be addressed for the offshore grid, it needs to be assessed which legal instrument is the most suitable. In concrete terms, the choice between different levels can be made on the basis of a few principles and indicators:

Choice between national and larger-than-national law:

- Is it possible to adequately address an issue on national level? (subsidiarity)
- Is it possible to adequately address an issue with a less invasive instrument? (proportionality)

If the first question can be answered positively, this indicates a choice of national law rather than EU- or international law. If the second question can be answered positively, this indicates that another legal instrument should be used.

Choice between EU law and international law:

- Is it important to have one solution for all states?
- Is the issue only relevant to North Sea coastal states (not to other EU Member States)?
- Did the EU already make use of its competence to legislate on the issue?
- Is enforceability of the agreement/rules important?

If the first two questions are answered affirmatively, this points towards a solution under international law. If the third and fourth question are answered affirmatively, this points towards a solution under EU law.

Choice between different instruments at one level:

- Is it important that the agreement is enforceable?
- Is it (too) difficult to reach a binding agreement?

If enforceability is important, this points in the direction of (binding) hard law. If it is too difficult to reach a binding agreement, a soft law instrument may be a valuable alternative.

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2.3 THEORY APPLIED TO THE LEGAL BARRIERS

In this chapter, the theory is applied to the legal barriers that are deemed most important in the development of a MOG.[50] For each barrier, the appropriate legal instrument (form) is analysed. In the next chapters, content will be added to these legal instruments.

Asset Classification

A first important legal barrier relates to asset classification and definition issues: what is the legal status of hybrid (and meshed) electricity infrastructure? This category entails questions about what happens if hybrid assets are constructed or when assets take up extra (different) functions.[51] This category should be addressed with priority, so as to provide a solution for the hybrid projects that might come up in the near future, such as the study on a link between the Benelux and the UK.[52] Here, a tailor-made solution should be sought for hybrid infrastructure, in order not to interfere with the existing arrangements for the onshore electricity grid. The solutions for hybrid assets should be designed in such a way that they can also be used for the MOG as a whole. This is to prevent another overhaul of the legal framework when the transition from hybrid assets to the MOG is made.

The problems relating to asset classification exist on all three levels, international law, European law and national law. The nature of the problems differs though. They will be treated here separately. Under international law, the question is whether the difference that is traditionally made between cables and pipelines (interconnectors) on the one hand and installations and structures used for the economic exploration and exploitation of the sea (namely OWFs and the cables needed to connect OWFs) on the other hand should be maintained. This is a question of interpretation of international law. Following the structure of chapter 2.2, it is not possible to address this issue at national law, as it will not reach the desired effect, namely legal certainty and a uniform treatment of meshed assets in the entire North Sea. Then, between international and EU law, interpretation of the law of the sea is an issue for which the EU will not have competence. Thus, international law remains as the right level to address this issue. Considering hard and soft law, it is not problematic if the issue is not enforceable, as it mainly deals with common interpretation of the law. Therefore, it is not necessary to pursue hard, binding law – a softer wording will moreover be faster to agree on and to implement. Thus, asset classificication under international law can best be addressed through a soft law instrument, such as an interpretation guideline, or as a soft article in an international agreement.

Concerning EU law, there are legal uncertainties about whether the cables of an offshore grid fall under the category ‘interconnectors’, national electricity network of the Member-States or whether they should form a new category that does not yet exist. Addressing this issue under national law is not possible, as it typically concerns cross-border connections. Therefore, it should be addressed on a larger-than-national law level. In practice, as this is already addressed at EU law level, it is logical to continue addressing it at the same level. EU Member-States will not have the power to engage in another convention on this issue, as it is already addressed in EU law. Enforceability of the agreement is important as it concerns important connections in the internal energy market. The issue is mainly relevant for the North Sea (and Baltic Sea) states, not for landlocked states, although there may be indirect effects on the power flows in other countries, following from the regulatory rules around offshore hybrid assets. It is useful to have one solution for as many North Sea coastal states as possible, to create a level playing field. Weighing the interests mentioned above, the best solution would be to address the issue in an international agreement, namely a mixed partial agreement, in which all North Sea states participate, and the EU participates for the issues for which the EU Member-States have no competence, following the principles of EU law. In practice, the second best option, but faster to implement, is a substantiation of recital 66 of the Regulation on the Internal Market for Electricity.[53]

Concerning national law, the legal barrier lies with definitions in national law that are not always compatible with new developments for hybrid/meshed grids. In line with the subsidiarity principle, the best level to address this is with amendments at national level.

Governance

The next category of legal barriers relates to regulatory governance. The main question is: who decides on issues such as coordinated planning, location of the OWFs and grid extension (long-term vision); ownership and operation of the grid, operational rules, innovation, regulatory governance and financial regulation? Another part of governance, next to the question 'who decides?' is 'how are the decisions made?' and 'how can parties that disagree with the decision appeal?' With regard to this type of governance, there is no specific legislation yet. There are only instruments of soft law, such as the Political Declaration on Energy Cooperation between the North Seas Countries which aims to support the further cost-effective deployment of offshore wind energy and to encourage concrete, albeit voluntary, cooperation at regional or sub-regional level.[54] However, this instrument does not provide a concrete framework on governance, it only provides a forum for countries to discuss the difficulties without any binding steps afterwards. There is also a Directive on governance of the Energy Union, but this also does not provide sufficiently concrete measures to govern the MOG, and the governance of the MOG is not addressed in other instruments either. We can conclude that the governance of the offshore grid is not regulated already, and that the questions of chapter 2.2 can be applied to this topic: as governance issues have clear cross-border effects, a solution larger than national law should be sought. The competence of the EU to regulate the governance of an offshore electricity grid could stem from the energy competence (Art. 194 TFEU) or the competence on trans-European networks (Art. 170-171 TFEU). Then, the question is whether this should be addressed on EU level or international law level.[55] Here, the interests of enforceability and inclusiveness for

[53] Regulation on the Internal Market for Electricity (recast), in the latest version available, as adopted by the European Parliament (26-3-2019): http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P8-TA-2019-0227. See chapter 3.4 of this Deliverable for more information on this recital and why it should be substantiated.
[54] Political Declaration on Energy Cooperation between the North Seas Countries, 6 June 2016, (last visited 11-3-2019): **http://www.benelux.int/files/9014/6519/7677/Political_Declaration_on_Energy_Cooperation_between_the_North_Seas_Countries.pdf**. An earlier example is the Memorandum of Understanding on the North Seas Countries Offshore Grid Initiative, 3-12-2010, (last visited 11-3-2019) **http://www.benelux.int/files/8113/9625/9202/MoU_NSCOGI.pdf**.
[55] The choice for a certain instrument also influences the institutional structure, i.e. which institution or body is responsible for the regulatory governance of the offshore grid. This is discussed further in chapter 4.6.

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non-EU states be weighed against each other. It is important that all states participate, whether they are part of the EU or not. This points in the direction of an instrument under international law and, in the author's opinion, outweighs the benefits of the enforcement possibilities under EU law.[56] Therefore, for the issue of governance, an instrument of international law should be chosen. Here, again, the mixed partial agreement would be the most useful instrument, as it allows EU member-states to address the issues that fall under EU competence (because they have been addressed by the EU before) via the EU, which also participates in the agreement.

One specific part of 'governance of the MOG' is offshore grid operation. It is important that all connected countries follow the same rules in order to create a level playing field and to avoid national differences in applicable grid codes, access rules and responsibilities that are also indicated as a current legal barrier. Operational rules and market rules are currently already well-developed unter EU law, namely through the EU Network Codes.[57] Here, enforceability is especially important as the operational rules influence the grid safety and stability. In the author's opinion, EU instruments score better than international law instruments for this specific issue, although subject to political acceptance of third states connected to the MOG.

A possible solution, if this is politically acceptable, is to incorporate in an international agreement, such as the North Sea agreement proposed for governance, a reference to the relevant European network codes. In this way, third states would also be bound by the Network codes but not by all other rules. Alternatively, a similar solution as for Switzerland, which is located in the middle of the synchronous continental electricity network, could be sought. Switzerland is not bound by the network codes directly, but several network codes include a specific clause on Switzerland. For example, in the Network Code on Capacity Allocation and Congestion Management, the following specific demands are mentioned in article 1(4):

The Union single day-ahead and intraday coupling may be opened to market operators and TSOs operating in Switzerland on the condition that the national law in that country implements the main provisions of Union electricity market legislation and that there is an intergovernmental agreement on electricity cooperation between the Union and Switzerland.

An extra clause could also be adopted in the intergovernmental agreement mentioned above, to specifically adopt the most important provisions of electricity market legislation for the offshore grid.

Planning and Permitting

Planning and permitting procedures are organised nationally. The only EU-law component is that the TEN-E Regulation stimulates one-stop-shops and fast treatment of permits for Projects of Common Interest (PCIs). Nevertheless, the main barriers exist because the procedures, created by national law, are not streamlined. The fastest way to address this is incrementally at the national level.

[56] It must be noted that an instrument under international law does not have to be a large treaty such as the United Nations Convention on the Law of the Sea (UNCLOS), signed and ratified by the vast majority of states, but rather a specific agreement for the North Sea states that participate in a MOG.

[57] For a detailed explanation of the EU Network Codes, see C.T. Nieuwenhout (2017), *supra* note 5.

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Support Schemes

Nationally oriented support schemes are often mentioned as a barrier to the development of hybrid projects. Thus, the impact of the current support scheme design for hybrid assets is a pressing issue that requires a short-term solution. The provisions in national law limiting support to installations that are located on the territory or in the EEZ of that state prevent connections of offshore windfarms to other countries, even if this is more cost-efficient. There are already instruments under the EU Renewable Energy Directive to provide for cooperation for the financial support of RES, but these instruments are rarely used.[58] Here, again, the provisions in national law form the problem. Therefore, if it is possible to address the issue sufficiently at national law, the subsidiarity principle dictates to address the issue at national law. In principle, the legal barrier (limitation of support for OWFs connected to a hybrid/meshed grid) can be addressed at national law, but it might be that compensation measures are necessary. On the long term, when another bidding system is pursued,[59] a cooperative approach between countries will be necessary. For the long term, this will require an international or European system, depending on the amount of integration the coastal states wish to pursue with regard to support systems.

Decommissioning

Decommissioning of oil and gas installations at sea is currently governed by the International Maritime Organisation (IMO) in a guideline (soft law).[60] Through the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, more specific guidelines for decommissioning for oil and gas installations have been adopted as well. However, there are not yet such guidelines with regard to the decommissioning of renewable energy installations and offshore grid components, such as converter stations and submarine cables. Such guidelines could be adopted to harmonise the expectations states and actors have about the decommissioning obligations for offshore renewables. Although not binding, they still provide a standard for decommissioning of offshore wind and offshore electricity infrastructure, such as converter stations.

Following the framework of chapter 2.2, the issue should be addressed at a larger-than-law level, as there are economies of scale to a common decommissioning standard, and as the maritime environment which is influenced by the standards of decommissioning is typically a cross-border issue. Moreover, solutions based on national law will lead to large diversity of rules, which increases transaction costs and decreases the options for standardization, which scores negatively in terms of costs/benefits. Between EU law and international law, it is questionable whether the EU has jurisdiction on this topic: the EU does not have competence to prescribe how states should take care of their EEZ when economic activities have stopped, which is technically the case after decommissioning. Moreover, the EU does not have any jurisdiction over the way in which electricity is generated, i.e. with which type of turbine. Therefore, the most logical option to address decommissioning issues is

[58] See below, chapter 6.3. Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, OJ L-328/82, 21.12.2018 (RED II), art. 8-13.
[59] See below, chapter 6.
[60] Resolution A.672(16), adopted on 19 October 1989, Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone. Accessible at (last visited 11-2-2019): **http://www.imo.org/blast/mainframe.asp?topic_id=1026**. This task lies with the IMO on the basis of UNCLOS art. 60(3), which addresses the removal of installations after their use. The article refers to 'the competent international organisation', which has to develop standards. The competent organisation is the IMO.

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international law. Between the international instruments that can be used in this context, soft law instruments, such as the guidelines used for decommissioning of offshore oil and gas installations, are most realistic. Drafting OSPAR guidelines for the decommissioning of OWFs and offshore grid components will score higher than IMO guidelines on the same issue, as the countries in the OSPAR region will probably adhere to higher/stricter environmental standards than if a larger consensus amongst different countries in the world needs to be sought. Moreover, with a smaller group of countries in OSPAR, consensus will be reached earlier and implementation may be faster than if the issue needs to be negotiated with a large group of countries. Therefore, an OSPAR instrument scores higher than an IMO instrument, although, if it is possible to reach consensus with the IMO countries, the effects will be much broader than only the North-West Atlantic.

2.4 TARGET LEGAL FRAMEWORK

The target legal framework is a proposal for which legal instruments should be utilized in order to facilitate the construction of an offshore grid and to resolve the legal barriers that currently hold back such development.[61] The framework consists of different legal instruments and concrete rules that should be adopted in these instruments. On the basis of the analysis above, this should be a combination of:

ISSUE	INSTRUMENT
Lack of clarity on asset classification under international law	Mixed partial agreement including the North Sea coastal states connected to the MOG, as well as the EU
Lack of clarity on asset classification under EU law	First step: Amendment of existing EU law (Regulation) Second step: Mixed partial agreement
Governance of the MOG; formalized regional cooperation in the North Sea, long-term vision and principles	Mixed partial agreement including the North Sea coastal states connected to the MOG, as well as the EU
Planning and Permitting Issues	Amendment of various instruments of national law
Support Schemes for OWFs connected to hybrid/meshed grid	Amendment of various instruments of national law
Decommissioning of OWFs and offshore electricity infrastructure	Guidelines (soft law) at international law level, through OSPAR or the IMO

This table shows mainly in which form or at which level the solutions should be developed. The contents of the instruments mentioned above are elaborated in the next chapters.

[61] The barriers are investigated in C.T. Nieuwenhout (2017), *supra* note 5.

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2.5 CONCLUSION

The subject of this chapter is how to choose the right legal instrument for different regulatory issues. The conclusion is that this can be based on many indicators, going from national law to international law, based on the principle of subsidiarity. These indicators are formulated in the form of questions, seemingly straightforward but sometimes still difficult to answer. In this chapter, the legal barriers found in earlier deliverables are analysed in light of the described questions. This leads to a legal framework based on several legal instruments: a mixed partial agreement to establish formal regional cooperation and to fix issues of governance and a long-term vision; a dedicated regulation to address offshore grid operation; amendments to various instruments of EU law and national law to tackle existing incompatibilities, and new guidelines (soft law) to address the issue of decommissioning of offshore windfarms and offshore infrastructure. These instruments together form the target legal framework which has to be filled in further, based on the analysis of the next chapters of this deliverable.

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3. ASSET CLASSIFICATION

3.1 INTRODUCTION

This chapter addresses the legal classification of assets that combine the function of interconnection with the function of landing offshore-generated renewable energy. In this deliverable, these assets are referred to as 'hybrid assets', they are considered the first building blocks of a meshed offshore grid.[62] The chapter first addresses the questions of what hybrid assets are, how they would be regulated under current law and why a separate legal classification for hybrid assets is needed (chapter 3.2). Then, asset classification is elaborated, first under international and secondly under EU law (3.3 and 3.4 respectively). Considering EU law, a new legal definition for hybrid assets is proposed by PROMOTioN WP7.1. This has eventually been adopted in recital 66 of the Regulation on the Internal Market of Electricity.[63] The chapter provides the definition and limits of the Offshore Hybrid Assets as proposed by PROMOTioN and as adopted in EU law (3.5). Finally, the chapter concludes that offshore hybrid assets should be adopted in the operative part of the relevant EU legislation, and that the regulatory framework applicable to these assets should be clarified in the same instrument.

3.2 BACKGROUND

Hybrid assets are considered the first building blocks towards a meshed offshore grid. They combine the connection of offshore wind farms with interconnection between multiple countries. Several studies have shown that hybrid connections are more economically beneficial than separate wind farm connections and interconnection.[64] Additionally, the amount of cables in coastal waters is less compared with separate wind farm connections and interconnector cables, resulting in reduced environmental impact and less impact on the fisheries sector and shipping activities. Furthermore, the reliability of the connection for offshore wind energy is increased if there are multiple possible routes to evacuate the wind generated offshore to onshore electricity systems. The first hybrid asset, Kriegers Flak Combined Grid Solution, between Denmark and Germany, is currently under construction.[65]

Temporal Dimension

Several forms of hybrid assets are possible:

[62] C.T. Nieuwenhout, 'Offshore Hybrid Grid Developments: The Kriegers Flak Combined Grid Solution', in Roggenkamp, M. & Banet, C. (eds.) *European Energy Law Report 2018*, Intersentia, Vol. XII, p. 95-112.
[63] See *supra* note 35.
[64] A. Flament, P.Joseph (3E); G. Gerdes, L. Rehfeldt (Deutsche WindGuard); A. Behrens, A. Dimitrova, F. Genoese (CEPS); I. Gajic, M. Jafar, N. Tidemand, Y. Yang (DNV GL); J. Jansen, F. Nieuwenhout, K. Veum (ECN); I. Konstantelos, D. Pudjianto, G. Strbac (Imperial College Consultants), Final Report of the NorthSeaGrid project, 2015, p. 61 and further; Pöyry, WindConnector study, 2017, (last visited 11-2-2019) **https://www.tennet.eu/news/detail/study-suggests-a-windconnector-linking-dutch-and-gb-electricity-markets-and-offshore-wind-farms-coul/.**
[65] The project is due to be come operational at the end of 2019. More information available at (last visited 11-2-2019): **https://en.energinet.dk/Infrastructure-Projects/Projektliste/KriegersFlakCGS**.

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I. Existing offshore wind farms (or hubs) that are already connected to their 'own' countries are connected to existing farms or hubs in other countries (the hub-to-hub connection is constructed later than the hubs themselves)
II. Offshore wind farms are connected to an existing interconnector (Tee-in)
III. The entire asset (OWF connection and interconnection) is constructed synchronously
IV. A meshed offshore grid with grid extensions from time to time

The difference between these forms, besides the level of technological difficulty, is the temporal aspect: which function was created first?

The temporal dimension is a relevant issue under current EU regulations, because at the moment, the function of the asset (interconnector or connection of offshore wind farms) determines how it is regulated. For example, certain rules about congestion management are specifically applicable to interconnectors and not to OWF connections. For example, the maximum capacity on these cables needs to be made available to the market.[66] Moreover, the revenues from the congestion rents are supposed to be invested in guaranteeing the capacity availability and/or in maintaining/increasing interconnection capacity.[67] This is not the case for wind farm connections.

3.3 ASSET CLASSIFICATION AT JURISDICTION LEVEL[68]

There is a difference between asset classification at jurisdiction level and at regulatory level. Asset classification at jurisdiction level is addressed in international law, as international law prescribes whether or to what extent states have jurisdiction over a certain activity or asset. The regulatory level is more specifc: the exact way in which assets are categorised has consequences for the way in which they are regulated. Asset classification at regulatory level is currently addressed mainly in EU law.

Concerning asset classification at jurisdiction level, it is important that states, project developers and investors know to what extent a coastal state has jurisdiction over a certain offshore electricity cable, which entails the right to regulate the construction and usage of hybrid electricity cables as well as to enforce these rules. As submarine cables are located for the most part outside the states' territories,[69] this right cannot stem from territorial sovereignty. Therefore, the aim of this paragraph is to assess whether and to what extent states have jurisdiction over hybrid assets on another basis, namely on the basis of the law of the sea. The main source of international law addressing the rights and duties of states at sea is UNCLOS.[70] UNCLOS provides that the actual right of a coastal state to regulate a cable depends on the location and on the function of this cable.

[66] Regulation 714/2009 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-211/15, 14.8.2009, art. 16(3).
[67] Ibid., art. 16(6).
[68] This paragraph is based on part of a book chapter: C.T. Nieuwenhout (2018), *supra* note 62, pp. 99-104.
[69] Under international law, a state's territory includes its land territory and the first 12 nautical miles (23 km) off its coast.
[70] United Nations Convention on the Law of the Sea (UNCLOS), Montego Bay, 1982.

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Concerning the location of the asset, UNCLOS distinguishes several maritime zones.[71] The territorial zone, reaching up to 12 nautical miles from shore, is considered as an extension of the coastal state's land territory. Therefore, the coastal state has full jurisdiction over all activities in this zone. Beyond the territorial zone lie the continental shelf and the Exclusive Economic Zone (EEZ). On the continental shelf, a natural prolongation of the land under water, coastal states have sovereign rights to explore and exploit natural resources such as oil and gas fields. In the Exclusive Economic Zone (EEZ), which the state has to declare actively through a public declaration and which reaches at most 200 nautical miles from shore,[72] the state also has sovereign rights to exploit the natural resources, both living and non-living. This also includes the production of energy from the 'water, currents and winds'.[73] Accordingly, the jurisdiction of the state in this area is limited to the activities mentioned in UNCLOS. As such, the state only has so called 'functional jurisdiction'. An important clarification needs to be made regarding functional jurisdiction: countries have the right to regulate, but they have to actively make their law applicable to their activities in the EEZ or on the continental shelf.

With the theory of functional jurisdiction, offshore wind farms fall under the jurisdiction of the coastal state. With regard to the cables needed to connect these offshore wind farms to the shore, the basis for jurisdiction is debated. Three approaches are possible:

- The cables are indivisible from the wind farm. Therefore, they should be interpreted as forming part of the installation or structure needed to exploit the natural resources of the EEZ. However, in most countries, this is not the practice.
- The cables are separate assets, which fall under the category of 'installations or structures'. In UNCLOS, these terms are not defined. Some argue that as cables and pipelines are already clearly addressed elsewhere in UNCLOS, and as states do not have the obligation to remove them after their functional lifetime has ended, they are not intended to fall under 'installations and structures'.[74]
- Teleological approach: this approach is based on the thought that the cables to connect offshore wind farms are an essential part of the exploitation of the natural resources in this case, as states cannot enjoy this exploitation of winds at the EEZ if the electricity never reaches the onshore grid.[75] An argument supporting this approach is that under UNCLOS, states also have exclusive right to regulate the construction, operation and use of amongst others installations and structures. The difference between the first and third option is that for the first, it is necessary that the cables are indeed part of the installation; for the third, this is not necessary. Thus, a cluster approach with multiple OWFs on one cable is possible with the third approach, but not with the first.

Cables to connect offshore wind farms are not the only electricity cables in the sea. There are also cables used for other purposes, such as interconnectors to connect the electricity grids of two countries to each other. As part

[71] See C.T. Nieuwenhout 2018, *supra* note 62.
[72] UNCLOS, art. 57.
[73] UNCLOS, art. 56(1)a.
[74] H.K. Müller (2016), *supra* note 7.
[75] A parallel can be drawn here to upstream offshore oil and gas pipelines. See M.M. Roggenkamp, Petroleum Pipelines in the North Sea: Questions of Jurisdiction and Practical Solutions, Journal of Energy and National Resources Law, 1998.

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of the doctrine of the free seas, UNCLOS allows all states to lay cables and pipelines on the continental shelf. It also entails that, if a third state wishes to lay a cable, the coastal state may only take reasonable measures with regard to the exploration and exploitation of the natural resources.[76] Regular electricity interconnector cables are not needed for generating energy from 'the waves, currents or winds' and as such, they are not related to the exploitation of the natural resources of the EEZ. Thus, they cannot fall under the functional jurisdiction states have in the EEZ. Instead, they fall under the freedom to lay cables. This means that, based on UNCLOS, the coastal state does not have jurisdiction over these cables, regardless of whether they connect to the country in question or only transit. It is in this context that the question under which regime hybrid assets fall arises.

Hybrid assets can be looked at from three different angles. One option is that the legal regime changes as the function of the cable changes: when the wind does not blow, the cable's function is limited to interconnection, with very limited jurisdiction of the coastal state. When there is offshore electricity generation again, the cable falls under the functional jurisdiction regime again. This option creates a legally untenable situation in which the legal status of the cable and the jurisdiction over it can change almost per second.

A second option is to divide the construction in three (or more) parts, namely, the part from country A to the converter station A (part 1); secondly from this converter station to the converter station B (part 2) and finally from the second converter station to the onshore grid of country B (part 3). If these parts are seen as separate elements, one can argue that only part 2 falls under the freedom to lay cables, as this part is not necessary to enjoy the exploitation of the natural resources in the EEZ, whereas parts 1 and 3 do fall under the functional jurisdiction regime. However, this is also undesirable, as states and developers will want legal certainty and clear regulation over the middle part between wind farm A and wind farm B. Moreover, in a MOG, regardless which topology, there will be many cables that would fall in the same category as 'Part 2', in which case jurisdiction is limited.

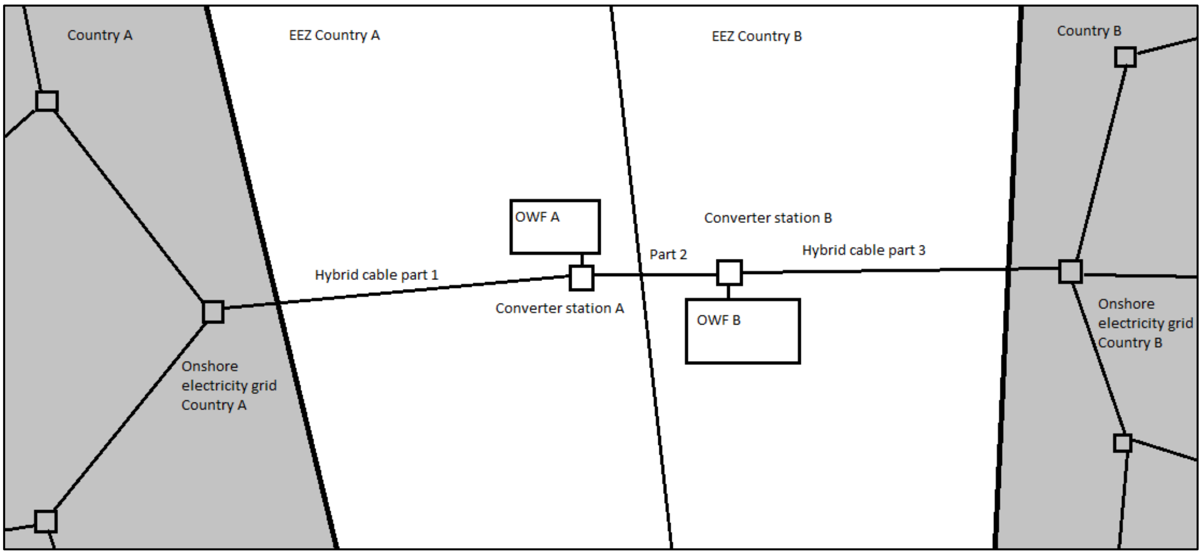

Image 2: Schematic overview of hybrid electricity cable. Source: author's own production.

[76] UNCLOS, art. 79. Coastal states may also take measures to protect the environment in their continental shelf and EEZ. However, they may not impede the laying of cables and pipelines according to art. 79. This may create tension.

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A third option is to use a broad interpretation of UNCLOS' terminology. There is some room in UNCLOS for this: according to article 60.1, the coastal state has exclusive rights over the construction, operations and use of installations constructed for the purposes of article 56 (the exploration and exploitation of resources in the EEZ) 'and for other economic purposes'. In this approach, the focal point is the (two or more) converter stations, installations which are essential for the successful transmission of electricity over long distances in general. One could state that regulation of a cable between the two offshore converter stations is necessary for the use of these installations. Then, it also does not matter that they are not solely used for the transmission of offshore-generated electricity but also for interconnection between states, as interconnection, with the purpose of electricity exchange falls under the 'other economic purposes'. This is also why this approach focuses on the converter stations rather than the wind turbines as installations: the use of wind farms as installations can be served already by single wind farm-to-shore cables, but for converter stations, interconnection as 'other economic purpose' can be included. With this interpretation based on article 60 UNCLOS, the cable between different converter stations can indeed be seen as falling under the functional jurisdiction of the coastal state.

It can be asked whether this broad interpretation of UNCLOS is sufficient in order to reach the desired amount of jurisdiction over the entire hybrid asset, or eventually of the MOG; some activities concerning the middle part of the hybrid asset will still not fall under the jurisdiction of the coastal state. An example of this is that it is difficult to conclude that the coastal state has jurisdiction over the construction process of the cable or even the delineation of the cable part between the two converter stations based on the regulation of the use of the converter stations. If states do regulate this, the coastal state's jurisdiction goes further than what UNCLOS provides. Nevertheless, this interpretation does allow for more jurisdiction for hybrid assets and eventually for the MOG. In the interest of legal certainty, it is recommendable that the North Sea coastal states adopt a common interpretation of the law of the sea regarding hybrid assets and the MOG, for example in a multilateral (mixed partial) agreement that is used for the governance of the MOG.[77]

3.4 ASSET CLASSIFICATION AT REGULATORY LEVEL

As mentioned above, asset classification at regulatory level is more specific than international law,[78] and the categorisation of the cables influences how the assets are regulated in terms of conditions for access, income (tariffs) and ownership. Currently, this is addressed at EU law level.[79] After Brexit, it is preferable to address it in a mixed partial agreement. However, as a first step, in order to facilitate hybrid developments in the coming years, the issue at EU law level. In the longer run, a mixed partial agreement can incorporate the solutions proposed below.

[77] See below, chapter 4.
[78] It must be noted that regulation of the assets cannot go beyond the framework of asset classification at jurisdiction level, created by international law. Thus, a state cannot adopt rules on a cable for which it does not have jurisdiction.
[79] Regulation 714/2009, *supra* note 66, art. 14 and 16; 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, art. 9 and further. (Recast) Regulation on the Internal Market for Electricity, *supra* note 35, provisionally chapter 3, art. 14-17.

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Various options for the asset classification of hybrid assets (and the MOG) at regulatory level have been investigated: regulate hybrid assets under the existing legal framework, categorisation as 'upstream assets' and drafting a new legal category with separate regulatory framework.

The option to make use of the current law and to regulate hybrid assets within the existing legal framework is used for the Kriegers Flak Combined Grid Solution, an asset that connects one Danish and two German offshore wind farms with both Germany and Denmark. For Kriegers Flak, the capacity that remains after the deduction of the predicted capacity usage of the offshore wind farms (Baltic 1 and Baltic 2 (DE) for Germany and Kriegers Flak (DK) for Denmark) is marketed as interconnection capacity. This option works for connection forms I (hub-to-hub connection)[80] and III (roughly simultaneous construction of the entire asset), but it is not possible in the case of connection form II, where the asset is constructed on the basis of an interconnector business case and then turned into a hybrid asset, as it changes the business case fundamentally. It is also difficult with option IV (connection to a meshed grid), as it is then uncertain how the capacity in this grid is divided between different offshore wind farms.

Considering the option 'categorise as upstream assets', there is a parallel with the North Sea gas sector, in which the transmission infrastructure to bring the gas from the offshore production fields to the onshore gas grid is categorized as 'upstream' assets. The pipelines, connected to production facilities and to other pipelines (meshed) are often owned by joint ventures of several oil/gas companies and operated by one operating party. Although there are several differences between the gas and electricity sectors, there is an analogy between the upstream gas pipeline system and connection of offshore wind farms by the wind farm owner. This system is used in Sweden, Norway and, prior to legislative changes in 2016 and 2017, in Belgium and the Netherlands. The advantage of this system, according to major European wind farm owners, is that wind farm owners can make the connection in a better and less costly way. Nevertheless, the disadvantage of using this system for hybrid solutions and the offshore grid is that wind farm owners do not have an incentive to go beyond a single radial or hub connection to one country. Especially where large anticipatory investments are required (in anticipation of further connections), the benefits for individual wind farm owners do not outweigh the costs, irrespective of larger collective socio-economic benefits. This limits the amount of hybrid and meshed electricity grid developments. In the gas sector, this issue is solved by state participation in both these investments via a state petroleum company or another state company.[81] The state is able to consider the wider socio-economic benefits when considering the business case for investment. However, in the electricity sector, state participation in upstream investments is not a common practice.[82]

[80] The connection forms referred to here are elaborated in chapter 3.2 of the present deliverable.
[81] Examples are the 45% ownership of EBN (Dutch State investment company for the oil and gas sector) in Nogat Pipeline, the 46,7% ownership of Petoro (Norwegian State investment company for the oil and gas sector) in Gassled, which owns the Norwegian offshore upstream pipeline system, including pipelines to Belgium (Zeepipe) and Germany (Europipe I). Pipelines to the UK, such as Forties and Cats, are owned by private investors.
[82] One could argue that funding the network connection of OWFs through support schemes is a form of state participation in upstream investments. However, if the connection is part of the transmission system, it is no longer 'upstream'. This is the case for example in Germany, Denmark and the Netherlands. See C.T. Nieuwenhout 2017, *supra* note 5.

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It was indicated by the stakeholders (TSOs, OWF developers, in the context of earlier PROMOTioN WP7 stakeholder interaction) that the current definitions are not sufficient and that a new definition was needed. The following arguments justify why a new category of assets is necessary:

- The current definitions do not do justice to the specifics of hybrid assets: for example, the regime for interconnectors with all capacity available to the market does not do justice to the main reason for the construction of these offshore transmission grids, namely the connection of offshore wind farms. If there is no capacity left for the wind farm to export its electricity, the aim to promote renewable energy rather than other forms of energy is compromised. Moreover, if the wind farm is not adequately compensated, the business case of the wind farm is also compromised.
- At the moment, the risks for offshore electricity transmission are different than for onshore investments, due to more complex technology and different construction and maintenance circumstances at sea, leading to an overall higher cost of offshore assets. Regulating the return on investment for offshore transmission systems at the same rate as onshore transmission systems might not give shareholders sufficient financial room to invest in offshore transmission systems,[83] and may make it difficult to attract sufficient capital. Therefore, it is better to regulate offshore transmission separately from onshore transmission, at least for the time being. The risks decrease over time as technology develops and as market risks diminish if negative externalities of conventional electricity sources are adequately priced (CO_2 emissions, tax differences).
- There are already many interconnectors and most of them are not 'hybrid'. It disturbs the legal certainty of other interconnectors and transmission networks if the current rules have to be changed in order to allow for hybrid developments. Instead, rules to allow for hybrid developments should not change the legal position of other interconnectors and electricity grids adversely. If regular interconnectors fall under a different legal category than hybrid assets, the current rules for interconnectors can be left undisturbed while the specific rules for offshore hybrid assets can refer specifically to this category only, instead of to the broader category of 'transmission infrastructure' or 'interconnectors'. It must be noted that adding offshore hybrid assets to the electricity network will influence the business case for existing interconnectors, as more interconnection capacity means less scarcity of capacity and thus lower congestion rents. Nevertheless, there is no difference here between adding a new conventional interconnector or an offshore hybrid asset.

3.5 DEFINITION AND LIMITS OF THE OFFSHORE HYBRID ASSET

The rationale behind drafting a new legal category, first under EU law and as a second step in an international agreement, is that the current legislative arrangements for existing interconnectors and wind farm connections will not have to change.[84] Moreover, a new legislative category can target specifically the uncertainty concerning

[83] This also depends on other factors, which are detailed in A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt, PROMOTioN Deliverable 7.6: Final report: Financing framework for meshed offshore grid investments, 2019.
[84] For this reason, H.K. Müller also pleads for the adoption of a new definition for hybrid cables. H.K. Müller (2016), *supra* note 7, p. 362.

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definitions mentioned above. Additionally, specific regulations that address the different risk of offshore transmission grids – and the potential need for a different regulated rate of return – can be adopted.

PROMOTioN proposed the following criteria for the new category of 'offshore hybrid assets':

- Cross-border: between two or more states
- Offshore (geographically located in the seabed, except where the cable 'lands' at shore, until the connection point with the onshore grid)
- With the purpose of connecting offshore renewable electricity generators to the onshore transmission network/s and of hosting cross-border electricity flows

This proposal was followed by stakeholder dialogue between WP7 and the relevant Member-States and eventually led to the provisional adoption of the following text into the recitals of the Electricity Regulation (new text on offshore hybrid assets in bold):[85]

Recital 66: Investments in major new infrastructure should be promoted strongly while ensuring the proper functioning of the internal market in electricity. In order to enhance the positive effect of exempted direct current interconnectors on competition and security of supply, market interest during the project-planning phase should be tested and congestion management rules should be adopted. (…) Exemptions granted under Regulation (EC) No 1228/2003 continue to apply until the scheduled expiry date as decided in the granted exemption decision. **Offshore electricity infrastructure with dual functionality (so-called 'offshore hybrid assets') combining transport of offshore wind energy to shore and interconnectors, should also be eligible for exemption such as under the rules applicable to new direct current interconnectors. Where necessary, the regulatory framework should duly consider the specific situation of these assets to overcome barriers to the realisation of societally cost-efficient offshore hybrid assets.**

It is an important step that 'offshore hybrid assets' are now recognised in the relevant legal instrument. However, this does not yet provide the legal certainty needed for the construction of an offshore grid, as it only creates an exception possibility (new direct current interconnectors) and the possibility to provide case-by-case regulation for hybrid assets. PROMOTioN recommends that the 'offshore hybrid asset' should be adopted in the operative part of the legislation rather than in the recital, and that the legislation should specify the legal and regulatory framework for offshore hybrid assets in more detail. This is because, through the wording and the position in the Regulation, the current recital does not yet give sufficient legal certainty: "where necessary" and "should duly consider" are open to a large margin of interpretation, and the 'offshore hybrid asset' is not mentioned in the definitions or the operative part of the Regulation.

Concerning the temporal element, portrayed by the four different connection forms mentioned in section 3.2, the current definition of 'offshore hybrid asset' fits well with connection forms I (OWFs are constructed first), III (entire

[85] See *supra* note 35. In the original proposal by the European Commission, 2016/0379(COD), this recital was not yet adopted. It was added in the trilogues. The latest version available to the author is the text adopted by the European Parliament on 26 March 2019.

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asset constructed more or less at the same time) and IV (meshed grid with grid extensions from time to time). Connection form II (tee-in to interconnector) might be problematic, as the asset concerned will then first be regulated as a 'normal' interconnector and later as 'offshore hybrid asset', which entails a different kind of regulation and a different business case. The regulatory consequences of different classification of assets will be elaborated below. Our expectation is that with this long-term grid planning and coordination between Member States, connection forms I, III and IV will be more likely to happen than connection form II. With the TYNDP process and long-term grid planning in general, such connection forms can be avoided. There is also an apparent lack of enthusiasm to connect German offshore wind farms to the COBRAcable that is currently being constructed between Eemshaven (NL) and Endrup (DK), even though this should be technologically possible.[86] It is likely that, given the current experiences on the difficulties of connecting German wind farms to the COBRAcable, grid planners anticipate on possible mismatches in infrastructure development at an earlier stage next time, thus avoiding connection form II altogether.

Having a separate definition for a 'cross-border offshore electricity grid' overcomes the concerns mentioned in stakeholder interaction, without affecting the regulatory arrangements of other interconnectors. As it is specific to the offshore electricity grid, it allows specific regulation of the offshore grid in the way that is most socio-economically beneficial. Therefore, we recommend the introduction of the new legal category, 'offshore hybrid assets', defined as above, in the operative part of EU legislation, preferably the Regulation on the internal market for electricity as a first step, and in an international (mixed partial agreement) as a second step.

The way an asset is categorized determines how it is regulated, both at the European level and, following this, at the national level. Having a separate definition is an important first step in the regulatory framework for the MOG. However, the next step is to determine how these assets should be regulated, and by whom. These issues are elaborated in the next chapter. It is important to note that adding a new category to EU law, or adopting it in international law, does not take away all legal barriers considering asset classification. There might still be barriers on national level. For example, Norway and Sweden[87] would have to change their legal systems if they wish to participate in the MOG based on the definition above, as the OWF developer is responsible for the connection to the onshore grid in these countries.[88] However, these countries so far did not express a large interest in the development of OWFs and an offshore grid.[89]

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[86] COBRACable Business Case, chapter 3.1 and 3.3, accessible at (last visited 11-2-2019): **https://www.tennet.eu/fileadmin/user_upload/Our_Grid/Interconnections/CobraCable/DCI-13-059_-__COBRAcable_Business_Case_-_03-12-2103_-_publieksversie.pdf**.

[87] It must be noted that Norway and Sweden currently do not have significant OWF developments. Therefore, willingness to amend legislation in order to participate in a MOG will probably not be high.

[88] C.T. Nieuwenhout (2017), *supra* note 5, p. 104 and 110.

[89] At the moment (end of 2018), Sweden and Norway have respectively 192 MW and 2 MW of installed capacity for offshore wind. WindEnurope, Key Trends and Statistics 2018, available at **https://windeurope.org/wp-content/uploads/files/about-wind/statistics/WindEurope-Annual-Offshore-Statistics-2018.pdf**, p. 12. In the outlook towards 2030, Sweden will develop another 300-800 MW and for Norway no data are recorded here. It seems that the involvement of Norway and Sweden in a meshed offshore grids will not be very large in the foreseeable future. Interestingly, Sweden has consented for almost 2000 MW of offshore wind energy. Source: WindEurope, Offshore Wind Energy: Key Trends and Statistics 2017, p. 21 (last visited 11-2-2019): **https://windeurope.org/wp-content/uploads/files/about-wind/statistics/WindEurope-Annual-Offshore-Statistics-2017.pdf**, p. 18, 26 and 27.

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3.6 CONCLUSION

In the current legislative framework, it is not yet clear how assets that combine the function of offshore wind connection and interconnection (so called hybrid assets) are regulated. For the regulation of the MOG, which is a combination of many hybrid assets, it is important that this is clarified. Under international law, one can establish jurisdiction over hybrid assets through a focus on converter stations rather than offshore wind farms: this is because converter stations, as 'installations and structures' can be used for any economic purpose, including both the connection of OWFs and the trade of electricity. The MOG would gain more legal certainty if this interpretation is shared among the North Sea coastal states and adopted in a common agreement. Regarding EU law, out of the three options, regulating under the current legal framework, regulating as upstream assets or adopting a new category, the latter is preferred, as the current definitions do not do justice to the specific characteristic of hybrid assets. Therefore, PROMOTioN proposed to add a new category of hybrid assets to the legislative framework of the Clean Energy Package. This has been followed up by adding a specific reference to offshore hybrid assets in the (recast) Electricity Regulation.[90] Although this recital is a step in the right direction, PROMOTioN proposes that the definition should be adopted in the operative part of the Regulation and specify in more detail what the regulatory regime for this new category of 'offshore hybrid assets' should be. The latter is elaborated in the next chapters. Eventually, this definition should be adopted in the mixed partial agreement that is needed for the governance of the offshore grid.

[90] (Recast) Regulation on the Internal Market in Electricity, *supra* note 35, recital 66.

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4. GOVERNANCE OF THE OFFSHORE GRID

4.1 INTRODUCTION

Governance refers to how a state, organisation or institution is governed.[91] With regard to the governance of the offshore grid, important choices need to be made. One important factor in the legal and regulatory framework for an offshore grid is who regulates, who owns the grid[92] and who operates it. As discussed before, the regulatory governance is presently a greenfield in terms of definition of the authority (or body of authorities) in charge of regulating the offshore grid. This topic is addressed in this chapter. Considering (economic) ownership and operation, it does not necessarily have to be the same entity responsible for the two functions, but it is important to know whether this is a publicly owned company or a private party (such as an investor), and how many grid owners and operators there will be in the North Sea. More research on this issue and the link to the financing options of the offshore grid is presented in Deliverable 7.6 on Financing the MOG.[93] All in all, many issues are part of the governance of the offshore grid and should be addressed as part of the target legal framework. These issues are:

- Location and Grid Extension: who decides where the OWFs are going to be located? Who decides on grid extension and on future grid topologies? How are these decisions reached?[94]
- Ownership and operation: who owns (parts of) the MOG and who operates it?
- Operational rules for the MOG: who decides on the operational rules? How are these decisions reached?
- Procedures and legal certainty: what happens if parties disagree on the decisions above? Is there an appeals procedure?
- Innovation: when emerging technologies are available for the grid (ie. storage facilities are developed for the MOG, or new types of protection systems are introduced), how are these incorporate in grid models? Is there an amendment procedure?
- Regulatory governance: what is the income regulation model of the offshore grid? Are grid tariffs used? Who decides what the income of the offshore grid owner and/or operator will be?

These questions can be answered separately, but it is important that the recommendations follow the same logic and form one coherent system. This will make MOG governance easier (less different procedures) and more transparent.

[91] Oxford Dictionary, the word derives from 'to steer' in ancient Greek.
[92] A differentiation has to be made between legal ownership and economic ownership. Although the legal owner and economic owner are in most cases the same (legal) person, there is a difference. The legal owner is the person recognized in law to own the asset or good in question. The economic owner is the person who exercises control over the asset and ultimately benefits from its use. This chapter refers to economic ownership only.
[93] These issues are also discussed in A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83, chapter 5.
[94] These topics are also touched upon in P. Bhagwat, PROMOTioN Deliverable 7.3: Economic framework for a meshed offshore grid, 2019.

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4.2 DECISION-MAKING FOR THE MOG

In a multi-level (EU, regional, Member-States) and multi-stakeholder (TSOs, OWF developers, grid and OWF supply chain industry, other sea users) cooperation, it is important that decision-making processes are designed well, in order to run smoothly and to keep transaction costs for participating in the MOG low. Otherwise, decision-making for the MOG may be paralysed by the amount of different interests and difficulties with regard to political priorities that change every few years. In order to give the organisation around the MOG sufficient decision-making power, coastal states should agree on how they want to establish the decision-making process. This could be done via the North Sea agreement that is proposed as a backbone for MOG governance.[95] Similarly to other regional agreements with joint decision-making and with both EU-Member States and third states (the Rhine Convention and the Alpine Convention), a (bi)annual conference could serve to decide on important broad themes, such as the principles governing the grid governance, the general direction of the MOG development (centralised or decentralised) and final decisions on standardisation of technology. Technical (standardisation), economic (regulation), environmental (decommissioning) topics can be addressed at lower levels through a committee or working group structure. Here, again, a comparison with the Rhine and Alpine Conventions can be made.

4.3 COORDINATED PLANNING, LOCATION AND GRID EXTENSION

Stakeholders from industry have indicated that they appreciate a coordinated planning of OWF roll-out, with a steady stream of projects.[96] They have also worded this as a 'backbone structure' providing information on what is going to be built, when and by whom.[97] The MOG is constructed in order to connect OWFs. The location and extension of the grid will thus depend on where the OWFs are located, which depends on many factors, such as wind resources, seafloor structure and other uses of the sea. Coordinated planning, location and grid extension are treated together, as the location and timing of OWF projects will determine where and when the grid needs to be extended and with what capacity, and vice versa cable trajectories and grid extension in a certain area will also facilitate OWF construction in that area, as a connection is closer and the connection costs, whether borne by society or by the OWF developer, will be lower if the OWF is located where there is capacity on the grid to evacuate the offshore generated electricity. At the moment, each state has a different system for deciding on the location of the OWFs and on the cable trajectory for the grid connection.[98] For the governance of the MOG, it is relevant to make clear *who decides* where the OWFs and the cables are going to be located and how the grid is extended, and *how these decisions are reached*.

[95] See chapter 2.3 for an explanation of the envisaged international agreement.
[96] WindEurope, Offshore Wind Energy in the North Sea, Industry Recommendations for the North Seas Energy Forum, 2017, available at (last visited 11-2-2019): **https://windeurope.org/wp-content/uploads/files/policy/position-papers/WindEurope-Offshore-wind-energy-in-the-north-sea.pdf**, p. 4.
[97] A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83, chapter 2, based on stakeholder interviews.
[98] C.T. Nieuwenhout (2017), *supra* note 5, chapter 5. See also, P. Bhagwat 2019, *supra* note 94.

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There are currently two possibilities for who decides on the location of OWFs. In many coastal states, the government decides on these wind farm zones or exact location in which OWFs are to be constructed. In other states, there is an open-door regime, in which OWF developers can choose their own location. In the countries with an open-door approach, the connection to the onshore grid is also developed by the OWF developer; in the countries with specific OWF locations, the cable connection is developed by the TSO on the basis of a grid development plan, developed in cooperation between the TSO and the state.[99] In the UK, a zonal approach is used. The OWF developers construct the export cable to the shore, although it is also possible to appoint an offshore transmission owner (OFTO)[100] to construct it instead.

Thus, in the first model, the government decides where the OWFs will be located and the (often state-owned) TSO and the government decide on the cable trajectories and grid extension. In the second model, this is decided by the OWF developer. The connection point onshore is decided in agreement with the onshore TSO. A third possible model is to have a North Sea regional authority to decide on the optimal locations for OWFs and cable trajectories in the entire area. Especially regarding the large expected capacity of offshore wind energy in the North Sea and the grid infrastructure needed to connect this,[101] it is necessary to plan and decide on the location in a strategic way.

Costs/benefits[102]

With centrally organised spatial planning for OWFs, the scarce space in the North Sea can be used more efficiently than with an open-door regime (-). By grouping OWFs in certain areas, the MOG can also be developed in the most cost-effective way. In several countries, this is currently done on national level (+), but it could be more efficient if coordinated at European level (++), as that allows for placing the OWFs in the areas with the best wind resources/the lowest interference with the environment.[103]

Speed of implementation

The speed of implementation will be lower if regional decisionmaking is used (-), as this will need some time to start up. On the other hand, letting OWF developers decide is faster (+), as they can file an application when they want. If multiple actors are involved in a bottom-up process of planning the usage of the sea, the socio-political acceptability will be higher but the more actors involved, the longer it may take to reach consensus. Governments as a central authority is neutral (0) – it is the status quo in many countries, so it does not need much implementation, but on the other hand, every tender needs to be prepared.

Socio-political acceptability

The socio-political acceptability is high (+) when governments are in charge (at least, if they also involve stakeholders in their decision-making processes). Letting OWF developers decide scores neutrally (0), as it will be more difficult to find a compromise with the other users of the sea if the scarce space is not used in the most

[99] P. Bhagwat 2019, *supra* note 94.
[100] For a detailed explanation of the OFTO regime, see C.T. Nieuwenhout, 2017, *supra* note 5, chapter 5.9.
[101] See, for example, the PROMOTioN Scenarios, *supra* note 6.
[102] The methodology and grading system used in the deliverable is explained in chapter 1.2.2.
[103] This works best in combination with a joint support scheme, as described in chapter 6.5.

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efficient way. Regional decisionmaking scores slightly negatively (-) as it entails a transfer of authority from national states to a higher level, which some states do not deem acceptable.

Provision of Private Capital

For private investors in the MOG, it is important that there are sufficient users of the MOG, which means that the investors have the opportunity to recoup their investments.[104] If developers decide, this is less certain (-) than if this is decided on a regional level (+), which is more likely to ensure a steady roll-out of OWF projects to be connected to the MOG. Having a coordinated regional planning creates more certainty and long-term foresight into the project pipeline, for both investors and financiers. Governments decide is in the middle, it depends on the governmental decision-making to what extent the grid is used, which is less certain than if this is decided by a regional authority, but more certain than if it is decided by the developers (0).

Planning, location and Grid Extension – who decides?	Costs/ benefits	Speed of Implementation	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
Governments decide – nationally oriented	+	0	+	0	2	0
Developers decide – open door regime	-	+	-	-	1	3
Regional Decisionmaking – North Sea	++	-	-	+	3	2

From the analysis above, it appears that regional decisionmaking on a North Sea level is the recommendable option. This means that the governance framework, as laid down in a mixed partial agreement, will have to provide for a structure of decision-making at a regional level. Examples can be found in the Alpine Convention and the Rhine Convention, which provide for a (yearly) conference of the parties at which the long-term vision for the region is adopted. The exact locations of the OWFs can be decided at a lower level within the same structure. This long-term vision could be similar to the TYNDP as developed by ENTSO-E.

4.4 OWNERSHIP OF THE GRID ASSETS

The ownership[105] of the offshore grid assets determines who has control over the asset and who profits from them, which is important for financability of the MOG. In this subchapter, several ownership models are referred to. They are developed in the Financial framework for the MOG.[106]

Ownership Models[107]

Different models for the ownership of the offshore grid are possible. The specifics of the models are described in Deliverable 7.6, but in order to understand the following section, a short recap is given here:

- Model A: North Sea Grid (NSG) TSO: one 'super' TSO for the entire North Sea Grid
- Model B: Cooperation of national TSOs/third parties

[104] This should be no problem with a regulated tariff structure, as proposed in chapter 2 and recommendation 6.1 of A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83.
[105] As mentioned above, ownership in this context means 'economic ownership'. See *supra* note 92.
[106] A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83.
[107] Ibid.

- Model C: Tenders before construction, ownership lies in many hands
- Model D: NSG TSO builds and then sells (tenders) to third parties
- Model E: National TSOs build and then sell (tenders) to third parties

From a legal perspective, two issues are important. First, the chosen ownership and operation models for the MOG should fit into EU Energy law, specifically in the rules on unbundling. If this is not possible, for example because it is not possible to attract sufficient private capital in other ownership configurations, then the exception created in recital 66 of the Regulation on the Internal Market for Electricity[108] needs to be substantiated with legislation that makes clear to what extent ownership and operation need to be separated in the case the grid owner also owns (part of the) OWFs connected to the MOG. This is part of the rules on unbundling, which originate competition law concerns, specifically with the potential abuse of the dominant position in which the MOG owner would find itself as the MOG is a form of natural monopoly.[109]

Secondly, if the ownership of the MOG is divided over many parties and ownership transfers take place regularly, which is the case in ownership model D and E, it is important that the legal requirements for acquiring and transferring ownership are organised in such a way that the transaction costs remain manageable. The current transaction costs lie mainly in administrative requirements: TSOs need to obtain a permission from the NRA in order to become a TSO.[110] This entails an administrative burden both for the TSO and the NRA which checks the file and decides whether or not the entity can become a TSO. This system works if there are only a few TSOs, but it might become more difficult if there are many different grid owners and/or operators. However, the system was designed in this way in order to protect the connected parties, as it provides more certainty that the owners/operators of the grid are able to bear the responsibilities that come with owning a grid on which others, such as the OWFs connected to it and the onshore TSOs that need to take into account the large flows of energy from the MOG, rely.

If the MOG is to have multiple different owners and operators, this issue can be addressed in a similar way as how the UK has addressed it regarding the OFTO system. There, OFTOs need to obtain an OFTO licence. Standardised licences with standardised conditions are available.[111] A single body to manage the licensing procedures would also be advisable to simplify the overall complexity of the procedures. Considering grid operation, National Grid as transmission operator (TO) makes sure that, for example, planned maintenance of the OFTO lines is coordinated, in order to prevent planned outages on multiple lines at the same time. For the MOG, such cooperation could also be envisaged: standardised conditions for licences can be developed, and a central authority needs to coordinate where planned outages take place. The latter should be incorporated in the operational rules for the MOG.

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[108] See *supra* note 35.
[109] It is not economically advantageous for competitors to enter the market by building a second network, because this network would also have high costs, while the usage will be split between the two networks, making the revenue for both twice as low, with the same costs. W. Kip Viscusi, Economics of Regulation and Antitrust, 4th Edition, Cambridge MA, MIT Press, 2005, p. 402.
[110] Directive 2009/72/EC, *supra* note 79, art. 10-11.
[111] See for example Generic Offshore Transmission Owner (OFTO) Licence 2016, (last visited 11-2-2019): **https://www.ofgem.gov.uk/system/files/docs/2016/10/generic_ofto_licence_tr5_v1.pdf**.

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4.5 OPERATIONAL RULES FOR THE MOG

Introduction

Many operational rules are needed to make a grid function in a safe and reliable way. For the onshore AC electricity grids, these rules have been developed over time and they are now part of the legal framework through national network codes and EU network codes. Although all rules and principles influence each other and the functioning of the grid in general, a distinction can be made between technical operational rules[112] and market rules.[113] This deliverable focuses on the market rules, which are laid down mainly in the CACM Network Code and Forward Capacity Allocation Network Code. The technical rules and standardisation are addressed in PROMOTioN Work Package 11[114] and the Electricity Balancing rules are addressed in WP7.2.[115]

Concerning market rules in general, some of the rules of the AC grid can be copied directly to the offshore grid. An example is the rule of 'programme responsibility', which entails that connected parties need to indicate a day before what they plan to consume or produce in terms of electricity (their programme) and pay a financial punishment if they deviate from their programme. This ensures that the grid operator is aware of the flows that will likely pass through the network and is able to take precautionary measures if the flows are beyond the grid capacity. Other market rules will, nevertheless, have to be changed, due to fundamentally different characteristics of the offshore grid. An example is that the presumption of a 'copper plate' for the onshore grid does not hold for the offshore grid.

EU Network Codes for the Entire North Sea?

The current EU Network codes are applicable throughout the EU. However, the MOG will also incorporate non-EU states. For EEA countries, such as Norway, the Network Codes will be implemented as well. For third states, this may be more difficult. A possible solution, if this is politically acceptable, is to incorporate a reference to the relevant European network codes in an international agreement, such as the mixed partial agreement proposed for governance. In this way, third states would also be bound by the Network codes but not by all other rules. Alternatively, a similar solution as for Switzerland, which is located in the middle of the synchronous continental electricity network, could be sought. Switzerland is not bound by the network codes directly, but several network

[112] In the European Network Codes, technical network codes would be Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators, OJ L112/1 (Network Code on Requirements for Grid Connection); Commission Regulation (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules, L 241/1 (HVDC Grid Code); Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation, OJ L 220, 25.8.2017.

[113] The EU Network Codes addressing market rules are Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management, OJ L 197/24 (CACM); Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation, OJ L-259/42. The Network Code on Electricity Balancing (Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing) has both technical and market components and is treated in P. Bhagwat 2019, *supra* note 94, chapter 10.

[114] PROMOTioN Deliverable 11.5 (Forthcoming) addresses these issues.

[115] P. Bhagwat 2019, *supra* note 94, chapter 10.

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codes include a specific clause on Switzerland. For example, in the Network Code on Capacity Allocation and Congestion Management, specific demands are mentioned in article 1(4):

The Union single day-ahead and intraday coupling may be opened to market operators and TSOs operating in Switzerland on the condition that the national law in that country implements the main provisions of Union electricity market legislation and that there is an intergovernmental agreement on electricity cooperation between the Union and Switzerland.

It must be noted that this clause does not solve all difficulties: everything depends on the implementation and the practical cooperation between the countries. Nevertheless, to create the right circumstances for this practical cooperation, an extra clause, such as the one above, could also be adopted in the envisaged intergovernmental agreement for the MOG.[116] The aim of adoption of such a clause will be to adopt the most important provisions of electricity market legislation for the offshore grid. In this way, coherence in grid operation is ensured even when the grid spands EU Member-States and third states alike.

Capacity Allocation and Congestion Management

Research on the CACM Grid Code shows that the current EU Network code is fairly compatible with the plans for a MOG. Some small amendments to the wording may be needed, but no large amendments are expected. Even the introduction of another bidding zone system (such as many small bidding zones) would be possible under the current rules. This is because the CACM network code mainly addresses flows between bidding zones rather than inside bidding zones. It must be noted that, although no large textual amendments should be necessary, the algorithms and systems referred to may need to be changed when the MOG is developed.

Forward Capacity Allocation

The Forward Capacity Allocation (FCA) rules are developed in order to organise future capacity reservations, which entails all time slots before Day Ahead (which is already addressed via the CACM network code). Whereas the CACM Network Code does not have to be changed significantly to incorporate the MOG, this might be different for FCA. The main parties connected to the offshore grid are OWFs, whose output cannot be predicted too long in advance. This means that reserving capacity long in advance is perhaps not advantageous for the parties connected to the MOG. This depends on the grid topology and its capacity, as well as on the market model used. More (economic) research into this topic is needed.

Priority Access and Priority Dispatch for RES in the MOG

A heavily debated issue for renewable energy in general is the provision on priority access and priority and/or guaranteed dispatch for renewable energy in the 2009 Renewable Energy Directive.[117] Under the new rules of the Clean Energy Package, there will be no priority access and dispatch for renewable energy, priority dispatch

[116] See chapter 2.3 and 4.2.

[117] 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 (*Renewable Energy Directive, RED)*, OJ L 140/16, art. 16.

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is limited to small installations (less than 400 kW) and demonstration projects for innovative technologies.[118] Therefore, priority dispatch will generally not be applicable to the offshore wind sector. However, it is still important to develop a method to decide on curtailment and compensation in case of a capacity shortage in certain lines.

Access Regime for Offshore Connected Parties other than OWFs

The main parties connected to the MOG will be OWFs. Nevertheless, the offshore oil and gas industry has expressed an interest into electrifying the platforms that are currently driven by fossil fuels. Although the MOG is primarily constructed to evacuate offshore generated electricity to shore and to provide for interconnection capacity between countries, it should be possible to connect other parties than OWFs to the grid. This increases the grid usage (albeit on a limited scale) and decreases the use of fossil fuels for the electrified platforms. To what extent such parties should pay for connection costs is a political choice. As the grid is designed mainly for the connection of OWFs, converter stations will normally be located close to these OWFs and not necessarily close to gas and oil fields. Therefore, the costs to lay a cable to the closest converter station will be higher for oil and gas platforms than for OWFs. The benefits of connecting oil and gas platforms to the grid are that these platforms will not have to use fossil fuels for their operations, which decreases CO_2-emissions and fuel costs.

In the future, it might be that offshore energy storage or conversion (for example through power-to-gas) is developed in the North Sea. It falls outside the scope of PROMOTioN to determine the best regulatory framework for this situation. Nevertheless, the topic is researched in other research projects.[119]

4.6 INNOVATION

When new technologies become available to the market, it is important that the offshore grid governance model is flexible enough to make use of these innovations. Therefore, innovation needs to be taken into account when designing the governance framework. Examples of innovations that could develop in the future are storage facilities that can be deployed at sea, or improved protection systems for the HVDC grid.

In order to incorporate innovation in the long-term grid planning and in the network codes, periodic review of the grid planning is needed. This needs to be incorporated in the decision-making process of long-term grid planning. Periodic review allows grid owners and operators to make use of new developments when they become available, which will lead to lower costs/higher benefits. However, periodic review of network codes or grid planning will also decrease legal certainty. This scores negatively for the provision of private capital. In a table, this looks as follows:

Innovation	Costs/ benefits	Speed of Implementation	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
Legal framework facilitates review possibilities	+	0	0	-	1	1
Legal framework limits review possibilities	-	0	0	+	1	1

118 (Recast) Regulation on the Internal Market for Electricity, *supra* note 35, art. 11.
119 See, for example, **https://www.north-sea-energy.eu/**.

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In practice, a balance needs to be struck between sufficient review possibilities to incorporate innovations when they become available, without compromising legal certainty for investors in the MOG.

4.7 REGULATORY GOVERNANCE[120]

To Regulate or Not to Regulate

Before discussing in-depth on how the offshore grid should be regulated, a fundamental choice is whether the offshore grid needs to be regulated in the first place, or whether this is not necessary.[121] In a non-regulated situation, the grid construction costs are fully borne by a pool of private investors, creating a consortium which can be extended to all parties that need an offshore grid connection. Connection and remuneration rules can be decided within the consortium rules. However, following from economic theory, transmission of electricity (and the ownership and operation of transmission grids) is deemed to be a natural monopoly.[122] The construction of electricity cables in general, and in particular at sea, entails large costs. These costs are sunk costs, costs that have to be made before the first electron is transported. However, once the cable is there, there is only a low marginal cost to transport electricity over it, which gives the first supplier a large economic advantage.[123] It is not economically viable to have multiple cables next to each other in the same area, as the costs of constructing a second cable are just as high, while the returns will be lower for both cables. This is an extra barrier to entry. This leads to natural monopolies, which, without the competititve pressure of other market participants, may lead to (unnecessary) high prices or unfair conditions for access, or otherwise deliver insufficient service to the grid users. In order to prevent this, regulation simulates competitive pressure in income regulation of the grid owner, and rules on access and quality norms ensure that those connected to the system will get fair treatment. Therefore, electricity transmission (and distribution) is generally a regulated activity.

There are some specific situations in which there is less regulation: some interconnector projects can be (partially) exempted from the regulatory framework applicable to interconnectors. These projects, the so-called exempted or merchant interconnectors, can, under specific circumstances, be exempted from the rules on tariffs (which determine their income), unbundling or third-party access.[124] However, this is only done in a limited amount of cases and only if it is not possible to develop the project under the general regulatory framework.

Several OWF developers also advocate that they are able and willing to own and operate an offshore grid and that this does not have to be a TSO-based activity. For the reasons set out in chapter 3.4, this is not ideal for the development of the offshore grid. However, if countries decide that, contrary to the normal unbundling rules, OWF developers should be able to own and operate the offshore grid, regulation is necessary to ensure the level playing

[120] This paragraph benefitted from valuable contributions by C. Degli Esposti.
[121] Regulation exists to overcome market failures. However, over-regulation may lead to inefficiencies in the market, creating so-called regulatory failure or government failure. See B. Orbach, “What is government failure?” (2013)44 Yale Journal on Regulation Online, p. 45.
[122] J. Perloff, Microeconomics, Fifth edition, Boston, Pearson, 2009, p. 369/70.
[123] W. Kip Viscusi, Economics of Regulation and Antitrust, 4th Edition, Cambridge MA, MIT Press, 2005, p. 402.
[124] (Recast) Electricity Regulation, *supra* note 35, art. 59.

field between different OWF developers as the grid owners in this situation will have a competitive advantage over non-grid owners that do own an OWF. Therefore, regardless of whether the grid is owned by a TSO, by various third parties or by OWF developers, regulation of the transmission activities is necessary.

Scope of Regulatory Governance

A key issue related to the overall governance design of an offshore HVDC grid is which entity will undertake the day-to-day regulatory supervision of the infrastructure. This is of fundamental importance since the MOG would serve the interests of a multitude of countries and actors. There is a risk of clumsy or slow decision-making processes in case it is not clear which entity is in charge, or if many regulatory authorities are in charge and unanimity is required for any decision.

As in the case of traditional grids, regulation of the MOG should, in principle, account for three basic elements:

1. Steering agents' (TSOs; connected parties such as OWFs) behaviors towards the regulatory objectives;
2. Provide a structure, i.e. granting access to enough actors to prevent excessive market concentration so to avoid oligopolistic or dominant behaviors;
3. Supervise agents' behavior in the respect of the rules.

To fill in these three elements, several sub-tasks can be determined, that are further elaborated elsewhere in this chapter.

- First, regarding financial regulation, the amount of network charges and the division of these charges between different users should be determined (*cf.* chapter 4.7).[125] The height and division of these charges affect each actor's competitive position.
- Then, market rules, such as rules on priority dispatch, must be established, in order to avoid conflicts arising around limited grid capacity (*cf.* chapter 4.4).
- Effective rules must also be established to ensure that transmission network expansion takes place in accordance with system needs, seeking to maximize the aggregated social welfare of the MOG region. Each transmission reinforcement has direct implications on the individual benefits and losses of the market agents (TSOs, connected parties, *cf.* chapter 4.2). When a certain state is negatively affected by grid expansion, compensation via Cross-Border Cost Allocation (CBCA) should take place.[126]

These general principles are valid for both onshore and offshore systems. However, they are more complicated for the MOG, since the MOG also significantly influences onshore market flows and, thus, assessments of societal welfare for the MOG must also take into account the benefits for onshore grid users potentially impacted by the increase in offshore generation.

Besides these three main market-oriented issues, regulators have to deal with a wider set of topics, which may not seem relevant for the MOG as such. Examples are designing and monitoring consumer prices and tariffs, fixing the standards for reliability and service, and monitoring the quality thereof, the economic viability of the

[125] Notably between generation (producers) and load (consumers), see P. Bhagwat 2019, *supra* note 94, chapter 7.
[126] P. Bhagwat 2019, *supra* note 94.

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companies involved, the environmental impact of transmission activities, the policies for energy poverty and supply to vulnerable consumers, market structure and market power, proportionality between investment volumes and operational efficiency and demand, and asymmetries between information available to the regulator and to TSOs and connected parties.

For an offshore grid, none of these topics must be excluded a-priori. Even if some of these issues appear to be far from the direct needs of a HVDC offshore grid, the interconnection with other systems requires their consideration into the regulatory governance of the MOG for the sake of compatibility with other regulatory regimes. This means that, for example, generation from offshore wind farms could contribute to recalculate the weight between investment volumes and operational efficiency in the regulatory regimes accounting for this regulatory practice (e.g. UK).

Instruments of Regulatory Governance

Regulatory entities have a wide range of instruments (economic incentives, structural constraints, etc.) with which they can manage and influence the abovementioned topics positively. The available instruments are:

- Regulatory oversight on the cost of service.
- Benchmarking of regulated monopolies: for regulated entities such as TSOs, the regulator may link remuneration to their performance, whereby companies providing better service obtain higher revenues than the ones providing lower quality service. This practice is more in use when the numbers of operators to be compared is high (such as with distribution system operators). We consider benchmarking techniques to be relevant only when specific cost categories are analyzed (e.g. procurement costs of specific network component encountered by different TSOs);
- Price or revenue caps: a ceiling may be set on the price that the supplier can pass on to consumers. The company is free to establish its expenditures, but the remuneration or profit earned is subject to a limit set by the regulator.
- Unbundling of activities: if a company conducts activities that the regulator believes can be performed more efficiently if unbundled, or if the joint exercise of activities may result in a dominant position in the market, the regulator may require separation of the competitive (generation; supply) and non-competitive (transmission; distribution) activities. In the case of an offshore grid, the main issue is the strong interrelation between generation and transmission assets, which cannot be set apart from each other beyond a certain extent (hybrid assets), for which specific remuneration schemes must be designed.
- Introduction of competitive pressure: the regulator may establish rules to enhance competitiveness among market participants. It may, for instance, impose limits on larger players to enable new competitors to grow.
- Application of other incentives, such as the creation of quality standards (ISO 9001) or other regulatory measures, such as command and control (standards, targets, penalties, etc.), operating license requirements, establishment of prerequisites for mergers and acquisitions, Information gathering and analysis and market behavior monitoring.

Actors in Regulatory Governance

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Three types of institutions are relevant with regard to regulatory governance: the ministry concerned with energy (and/or infrastructure), a regulatory authority independent from the ministry and the competition authority. In federal systems, these institutions may exist at both the central and regional government levels. Moreover, the regulatory authority and competition authority may be merged into one authority, e.g. in the Netherlands. Other organizations, such as ministerial agencies and independent advisory agencies, may also play a potentially significant role, albeit with no legally sanctioned regulatory powers.

A special role exists for ACER, the Agency for the Cooperation of Energy Regulators, which was established through EU law. It has as its main tasks:

- to assist the NRAs in exercising, at Union level, the regulatory tasks performed in the Member States and, where necessary, to coordinate their action
- to provide opinions and to deliver recommendations to TSOs, ENTSO-E, ENTSO-G, NRAs, EU Parliament, EU Council and EU Commission;
- to take special decisions for special, individual cases, in case concerned NRAs fail to reach an agreement within a pre-specified period, or if they demand an explicit intervention of ACER

In this respect, until now ACER cannot be considered as a European Regulator, an EU body responsible for promoting regulatory cooperation and for coordinating NRAs' activities in the EU playing a central role in the institutional framework introduced by the Third Energy Package. Many of its tasks, however, are clearly related to the cross-border dimension, where NRAs of different countries need to find compromise solutions to align their regulatory schemes to the national ones. In this respect, ACER could to take over a broader set of responsibilities regarding the MOG, acquiring the same competences as an NRA has for the onshore grid. ACER already has a clear operational responsibility on the EU market monitoring process.[127] Moreover, a direct recognition of ACER responsibilities would allow bypassing the complicated procedure to be followed to reach consensus between NRAs. However, giving ACER these responsibilities would require amendments of the legislative framework.

Regulating the MOG

The MOG requires regulatory decisions on a regular basis, and these decisions will be cross-border by nature. Various options for regulating the MOG are available. However, before analysing the options in detail, it is important to be aware of the interdependencies between these choices and earlier choices about ownership and operation of the offshore grid. If the grid is owned by one entity, it should be regulated as one grid, in order to make sure that the grid is operated and developed in the best way from a regional perspective. With regional ownership[128] of the grid in combination with nationally oriented regulation, there may be wrong incentives to develop the grid in a certain (nationally oriented) way, even though this is suboptimal from a regional (North Sea) socio-economic perspective. Moreover, if the grid is owned by multiple entities, there should be regulatory decisions for each entity individually, due to the principles of (national) administrative law. This means that the

[127] Two dedicated agency departments are taking care of market monitoring and integrity.

[128] Regional ownership of the grid entails that the grid is owned and operated by one entity, even though it stretches over multiple jurisdictions in the North Sea region.

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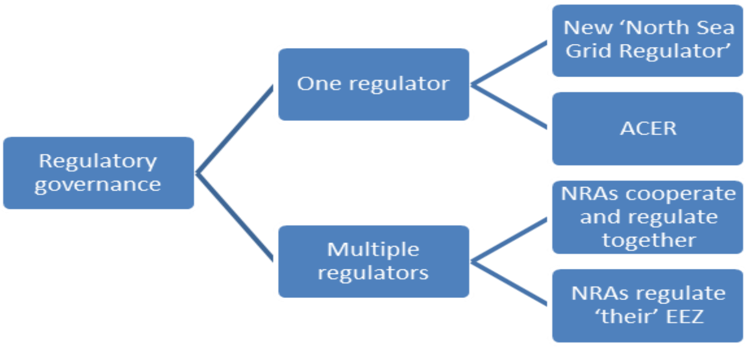
choice for one MOG owner/operator or for multiple owners/operators influences the choice for the regulatory governance.

There are various possible options for the regulation of the MOG. The options could be divided into whether there should be one regulatory authority for the entire grid or whether there should be multiple regulatory authorities, for example a separate regulator for each EEZ. Then, a subdivision can take place between 'creating a new entity/system' and 'applying the existing system to a new grid'. One regulator could thus be a new entity, a special purpose 'North Sea Grid regulator', in which national experts of the participating countries take place, or ACER, as an existing entity that could get a new role. Multiple regulators could be like the current system in which NRAs all regulate activities in their 'own' EEZ, or a cooperation of multiple NRAs. The difference between the cooperation of multiple NRAs and founding a new North Sea Regulator is that in the former, the NRAs cooperate as institutions but keep their own authority, whereas in a new North Sea Regulator, the authority is shifted to this new entity. In practice, the same persons may decide on the regulatory governance on the North Sea, but either they do this as representative of their own NRA or they are seconded/employed by the new entity and decide on behalf of the new entity. In a scheme, the structure looks as follows:

Image 3: Schematic overview of regulatory governance options.



Analysis of the different options

Costs/benefits:

The creation of a new regulatory body on top of the existing national regulatory bodies will entail extra costs on the short term, compared to other options. However, the possibilities for specialisation and learning (both leading to cost savings) are larger in a dedicated offshore regulatory agency on the long term, leading to a slightly positive score (+). Cooperation of national NRAs will not lead to large upfront investments, as there is no need for the establishment of a new entity, but there might be larger transaction costs on the long term. However, NRAs have indicated that they experience a learning curve with regard to cross-border cooperation,[129] which means that transaction costs may decrease over time. As the infrastructure for NRA cooperation already exists, this is the

[129] This was confirmed in stakeholder meetings with TSOs, governments and regulators. The findings are based on experiences in the field of interconnector development.

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option with the least costs, and with similar benefits potential on the long term, thus scoring ++. Making ACER responsible for the regulation of the MOG on the North Sea will lead to extra costs to construct capacity at ACER for fulfilling this new function, as ACER currently does not fulfil all the roles of regulator, only specific roles related to the cooperation of states. On the other hand, with ACER as a regulatory body, specialisation on the MOG will also be possible. Thus, this gives a mixed picture, leading to a 0/+ score. Finally, NRAs regulating 'their' EEZ leads to 'islands' of regulation, i.e. every regulator only with the interests of the own EEZ in mind. This may also lead to double regulation of cables that cross EEZ borders and complex situations if the regulatory requirements are different in different EEZs, leading to a very negative score (--).

Speed of implementation:

NRAs currently regulate grid assets in 'their' EEZ. In terms of speed of implementation, maintaining this status quo will be the fastest option in the short term, for relatively simple hybrid assets, as nothing will have to be changed to the current system. However, it may be that this causes long discussions at a later stage, especially if more complex connections (i.e. linking three or more countries) are developed, and if, for the MOG, repeated negotiations are needed for each connection. Therefore, it may not be the fastest on the long term. Using ACER as a regulator is also an option which will cost relatively little time, as ACER is an existing body already. Nevertheless, the ACER Regulation should be adjusted in order to make this possible, which will take a few years. Creating a North Sea Regulator will take more time on the short term, as a new institution will have to be created. However, on the long term, increased speed of decision making can be achieved compared to the previous two options. Cooperation of the NRAs will build on existing structures, leading to a fast speed of implementation on the short term. On the long term, a method needs to be found to allow for standardised decision-making between the NRAs, especially if repeated decision-making is needed for the MOG. To what extent this is necessary depends on the grid topology that is developed, i.e. for decentralised grids with many connections, this is more important than if a few large hubs are created with relatively fewer connections.

Socio-political acceptability:

It is unclear what the relationship between third states around the North Sea with ACER would be. An EU briefing paper in the context of Brexit indicates that the UK could re-join ACER as an associate member with the agreement of the EU27 (although this has never been done before). It is unclear whether this position would be acceptable to the UK Government as it would require adhering to the decisions of a body which is controlled by the EU Court of Justice.[130] Creating a new North Sea Regulator scores slightly negatively, as it entails a transfer of authority to an international body, which is more difficult to control for the coastal states, and the assumption is that states prefer to keep the control over regulatory bodies. Letting NRAs regulate 'their' EEZ will be politically acceptable, as it is the status quo. It does not entail a change with the current situation and there is no need for a supranational entity regulating activities in states' EEZ. Cooperation between national NRAs scores positively, as this is also a current practice which is generally evaluated positively by NRAs and national governments. Such

[130] G. Frederiksson, A. Roth, S. Tagliapietra, G. Zachmann (Bruegel), Briefing: The Impact of Brexit On the EU Energy System, European Parliament (ITRE), November 2017, available at (last visited 11-3-2019): http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/614183/IPOL_BRI(2017)614183_EN.pdf.

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cooperation can evolve over time, if coastal states are willing to increase the amount of cooperation, eventually creating a de-facto North Sea Regulator.

Provision of private capital:

For the provision of private capital, it is important that investors have regulatory certainty,[131] i.e. that they know well in advance what they can expect in terms of financial (income) regulation, and what the duties of the grid owner and operator are in terms of providing access and delivering a high security of supply, as this influences the height of the costs for a MOG. Building on an existing legal framework gives certainty to investors. On the other hand, in the case of using ACER for this matter, an existing organisation would have to take up new tasks, which may give similar uncertainty as it requires changes to the ACER Regulation.

Regulatory Governance	Costs/ benefits	Implementation speed	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
New North Sea Regulator	+	-	-	-	1	3
Cooperation of national NRAs	++	+	+	+	5	0
ACER	0/+	+	-	-	0-1	2
Every NRA regulates its 'own' EEZ	--	++	+	+	4	2

From the analysis above, it appears that cooperation of the national NRAs is the recommendable option to incorporate in the legal framework for the governance of the MOG. The NRAs should decide together on tariffs, access regime, safety standards etc. Such cooperation can evolve over time, if coastal states are willing to increase the amount of cooperation, eventually creating a de-facto North Sea Regulator.

4.8 FINANCIAL REGULATION

There are two ways in which transmission network owners and operators gain income. First, many transmission networks in the EU receive income through regulated transmission tariffs based on incentive regulation, in order to achieve economic efficiency in the absence of competitive pressure.[132] Secondly, interconnection owners receive congestion revenues from the explicit or implicit auctions of their capacity. For merchant interconnectors, congestion rents and user charges are the only source of income; for regulated interconnectors, the income is earmarked and should be reinvested into grid expansion or the availability of the cross-border connections.[133] Although the revenues are earmarked, in the Netherlands, it turns out in practice that these congestion revenues have been saved by the TSO and are going to be used to lower the transmission tariffs instead, following a decision by the dutch NRA.[134]

[131] A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83, chapter 3.5 and recommendation 6.3.
[132] This stems from Regulation 714/2009, *supra* note 66, art. 14(1). An example is CPI-x regulation, which takes into account static and dynamic efficiency of the TSO and which is used in Germany and the Netherlands, or RIIO, used in the United Kingdom, which takes into consideration many performance indicators
[133] Regulation 714/2009, *supra* note 66, art. 16(6).
[134] ACM and TenneT, Bevoegdhedenovereenkomst, p. 3 and 4. Available (in Dutch) at (last visited 11-2-2019): https://www.acm.nl/sites/default/files/old_publication/publicaties/15112_bevoegdhedenovereenkomst-acm-tennet-inzet-veilingmiddelen-20151215.pdf.

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One of the main purposes of an MOG is interconnection. With offshore hybrid infrastructure, and eventually the MOG, the level of income from interconnector congestion revenue would be smaller, as there will be more transmission capacity, which generally entails less congestion. Merchant interconnector revenue is solely based on the price differential between the interconnected countries/markets, i.e. congestion rent. The increasing interconnectivity and a sufficient cross-border capacity would lead to convergence of the electricity prices and consequently to a decrease of congestion rents. In such a case the profit of merchant interconnector would be significantly reduced. Therefore, it is concluded that in the long term, the merchant model will not be viable for meshed offshore grid investments. For regulated interconnector developers as well, the income should not be dependent on congestion revenue, as this will diminish in the future. This means that the regulated income alone should be sufficient to invest in these assets.

Therefore, <u>we recommend that for the offshore hybrid assets connected in a MOG, income should be based on regulated income rather than on congestion revenue.</u>[135] The exact way in which TSOs generate income from their transmission assets is based on choices made by national legislators and national regulatory authorities. As in most countries, these detailed decisions are made (and may be subject to change) every regulatory period of 4-6 years, it is not valuable to assess the current regulation of financial returns in the North Sea coastal states. Instead, it suffices to say that it is important to have such regulation of financial returns in place that provides the project developers an incentive to develop the grid in the way that is most efficient from a socio-economic perspective. The exact way in which this should be done depends on the circumstances of the grid ownership,[136] and on developing insights into financial regulation.[137]

4.9 PROCEDURES AND LEGAL CERTAINTY

In the subchapters above, it is made clear how decisions are made and who has the authority to make these decisions. Following the general principles of administrative law, these decisions should normally be well prepared and the interests should be weighed well and taken into account where possible. Nevertheless, it can still occur that parties disagree with regard to a certain (regulatory) decision. In that case, it is important for the purpose of legal certainty and acceptability of the decisions that the procedures for appeal are made clear in advance.

It is important to note that there are two types of disputes; disputes between two commercial parties involved in the MOG (horizontal conflicts) and disputes between a commercial party and a government/regulatory authority/EU authority (vertical conflicts). Horizontal disputes are normally solved via national procedures or via commercial arbitration. This subchapter focuses on vertical conflicts, as this is more complex for the MOG in which decisions are taken jointly by various regulatory authorities.

[135] This conclusion is also supported from the financial perspective. See A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83, chapter 3.6.
[136] A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83, chapter 5.
[137] It is beyond the scope of the legal framework to develop the financial regulation for an offshore grid. This could be analysed in further research.

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The status quo for decisions made by the regulator at the national level is that they can be appealed at national level and tested through national legal procedures. Often, the judge will not engage in a full reconsideration of the case, but rather apply a marginal test, in which it is only verified whether the authority (NRA) could reasonably have arrived at its decision and whether no procedural mistakes were made. The judgment by the national court follows the procedures that exist in national administrative law. For cross-border projects, this procedure is replaced with procedures that stem from EU law. For decisions concerning cross-border interconnector projects, the procedure is that the NRAs should first reach a decision together. If they cannot reach a decision together, they refer the case to ACER.[138] ACER provides for a Board of Appeal for internal review of its decisions.[139] If the developer does not agree with the decision of the ACER Board of Appeal, the project developer can appeal the decision at the General Court (previously known as the Court of First Instance), part of the Court of Justice of the EU.[140] This happened in practice in the case of Aquind, which shows the necessity of having procedures if NRAs cannot agree on a decision for cross-border projects:

Case study Aquind

Aquind is an interconnector to be constructed between the UK and France.[141] The project developers applied for an exemption under art. 17 of Regulation 714/2009.[142] A partial exemption from EU law is sought, namely with regard to:

- the use of revenue requirements to provide project investors with an appropriate return to reflect the risks of the project;
- Third Party Access for all capacity allocated through multi-year contracts. All other short-term Aquind capacity will be subject to the prevailing capacity allocation rules. No exemption is requested for short-term capacity;
- Articles 37(6) and 37(10) of the Electricity Directive for the allocation rules for multi-year contracts; and
- the unbundling requirements set out in Article 9 of the Electricity Directive

There has been a dialogue between Ofgem and CRE, the relevant NRAs, since 2015. After the official exemption application in September 2017, both NRAs indicated they could not decide on the case.[143] As the NRAs could not reach a decision, the case was referred to ACER, which decided on the case in June 2018. ACER decided that the exemption would not be permitted. The Aquind consortium appealed this decision at the ACER Board of Appeal, which upheld ACER's decision to refrain from granting an

[138] Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators, OJ L 211, 14.8.2009, p. 1–14, art. 8.
[139] Ibid., art. 19.
[140] Ibid., art. 20.
[141] For general information, see (last visited 11-2-2019): **http://aquind.co.uk/**.
[142] Regulation 714/2009, *supra* note 66, art. 17.
[143] Internal minutes by Aquind, available at (last visited 11-2-2019): **http://aquind.co.uk/wp-content/uploads/2018/11/Internal-minutes-of-Appeal-Hearing.pdf**, p. 2.

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exemption.[144] Aquind started proceedings at the General Court (part of the Court of Justice of the EU, CJEU). The General Court has not yet judged on the case.

This case makes clear how project developers currently rely on appeal mechanisms and procedures that are developed in EU law, providing legal certainty and uniform application of the law. However, after Brexit, it is questionable whether third states will accept the CJEU as highest court to judge on cases about interconnectors, network codes, tariffs and access regimes. Different options are possible:

1) the procedures under the ACER Regulation remain applicable to the entire North Sea MOG (via a mixed partial agreement)
2) for conflicts between two EU Member-States, the ACER Regulation and CJEU procedures remain applicable; for conflicts between an EU Member-State and a third states, international arbitration is used
3) if NRAs disagree with each other or with the project developer, international arbitration is used for the entire MOG

Method of evaluation of the options mentioned above

Whereas other topics in this deliverable are evaluated on the basis of costs/benefits, speed of implementation, acceptability and provision of private capital, such an evaluation is hardly possible for the topic of procedures and legal certainty, especially if third states and EU Member-States have to agree on a joint procedure for this. Costs and benefits depend on the length of the procedures, and this varies significantly between cases. Moreover, this depends on the rules of procedure that are adopted. The same goes for speed of implementation. Therefore, another method of evaluation is necessary here. There are some fundamental legal rules that influence the choice between the options mentioned above. Therefore, the evaluation of these options is done on the basis of doctrine. A definite preference cannot be given at this stage as this depends on the future relation between the UK and the EU, which is unclear at the moment.

Legal Doctrine

In a long line of case law, the CJEU has made clear that legal disputes between two EU Member-States for which the CJEU has jurisdiction, that raise potential issues for EU law should be judged only by the CJEU, and not by other instances such as international courts or other dispute settlement bodies. This doctrine derives from the Mox Plant Case,[145] and relates to the exclusive jurisdiction of the CJEU and the autonomy of the EU legal order. More recently, in the Achmea Case,[146] which was about a bilateral investment treaty between the Netherlands and Slovakia, the CJEU judged that the arbitration clause in that treaty, stating that disputes should be handled by an arbitral tribunal, was also deemed to be against the autonomy of the EU legal order. Therefore, it is incompatible with EU law.[147] In the light of these judgments, option 3 (all disputes are solved through international

[144] **https://acer.europa.eu/en/The_agency/Organisation/Board_of_Appeal/Decisions/Case%20A-001-2018%20%E2%80%93%20BoA%20decision.pdf**.
[145] C-459/03 Commission v. Ireland, 30 May 2006, 2006 I-04635 (Mox Plant Case).
[146] C-284/16 Slovak Republic v. Achmea B.V., 6 March 2018, ECLI:EU:C:2018:158 (Achmea Case).
[147] Ibid., para 58/59.

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arbitration) is not possible, as disputes between two EU Member-States on matters for which the EU has competence, should be addressed exclusively by the CJEU.

With the second option, ACER/CJEU for disputes between EU Member-States; arbitration for disputes between EU-states and third states, there will be two parallel ways of dispute resolution. This may lead to multiple interpretations of the same text, which creates legal uncertainty that is undesirable for stakeholders. However, as the first option (ACER/CJEU for all disputes, including for third states) is not likely to be politically acceptable to the third states, the second option may be the best attainable. In order for this option to be possible, it is necessary that the arbitral decisions cannot influence the interpretation of EU law. This is necessary because otherwise, similar concerns as with the third option exist: if the decisions are able to influence the interpretation of EU law, they will be deemed to be incompatible with EU law, which means that EU Member-States may not enter in such an agreement. This issue is currently investigated by the CJEU in the context of CETA, the trade agreement between the EU and Canada.[148] This agreement is also a mixed agreement, in which both the EU and its Member-States will participate, alongside Canada as a third state. The agreement also includes an investor state dispute settlement mechanism (ISDS) in the form of a tribunal. To what extent this is compatible with standing EU law will be clarified by the CJEU. The outcome of the opinion by the CJEU on CETA will give guidance on which conditions and precautionary measures must be in place in a mixed partial agreement for the North Sea as well.

Therefore, in expectation of the CETA Opinion and clarity on the future status between the EU and the UK, it is not possible to give recommendations on how dispute settlement within the MOG should be dealt with. The only recommendation possible at this moment is that appeal procedures and dispute settlement procedures should be taken into account into an international agreement on the MOG.

4.10 CONCLUSION

The governance of the offshore grid entails many different subjects, such as coordinated planning, ownership and operation, operational rules, innovation, regulatory governance, financial regulation, and procedures and legal certainty. The most important questions are: who decides and how are these decisions reached? The red line throughout this chapter is that the structure and rules for governance of the MOG should be established through an international agreement, the mixed partial agreement referred to in chapter 2. The contents of such an agreement should include the following:

Coordinated planning, location and grid extension

- Analysis shows that a regional (North Sea) authority to decide on where and when to construct new OWFs and to extend the grid is most beneficial.
- Example of such regional coordination exist in the Alpine Convention and the Rhine Convention.
- This needs to be adopted for the MOG as well.

[148] CJEU Opinion 1/17, forthcoming. The opinion of Advocate General Bot is already published (29 January 2019), he concluded that the ISDS (investor-state dispute settlement) clauses in CETA are compatible with EU law.

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- The coordinated planning could be based on a similar process as the TYNDP, developed by ENTSO-E.

Ownership:

- Either the ownership rules for the MOG will have to follow EU unbundling rules, or exemptions need to be granted. In the latter case, competition law concerns need to be addressed in another way.
- Under current EU law, TSOs need certification. If the MOG will be owned and operated by multiple different parties, there needs to be a standardised way to certify TSOs. UK practice could be followed, which could be introduced through the international agreement.

Operational rules:

- The operational rules for the electricity market can, to a large extent, also be applied to the MOG. The most beneficial solution is to use the EU Network Codes that are developed by ENTSO-E and ACER. They can be applied to the entire North Sea area through specific clauses in the international agreement needed for the governance.
- No large changes are needed in the CACM Network Code; algorithms will have to be changed.
- The FCA Network Code on the other hand is more difficult to apply to the MOG, due to the volatile nature of the main connected parties.
- Priority dispatch will generally not be applicable to the MOG, but a method to decide which OWFs will be curtailed if there is a capacity shortage and how they will be compensated needs to be developed.
- Parties other than OWFs that still wish to be connected to the MOG (notably offshore oil and gas platforms that aim to electrify their operations) should be able to be connected to the MOG. The connection costs (borne by the connected party) may be higher, as the grid is designed to be close to OWFs rather than to gas platforms.

Innovation:

- A balance needs to be struck between sufficient review possibilities to incorporate innovations when they become available, without compromising legal certainty for investors in the MOG.

Regulatory governance:

- Cooperation of the national NRAs is the recommendable option to incorporate in the legal framework for the governance of the MOG. The NRAs should decide together on tariffs, access regime, standards etc.

Financial Regulation:

- offshore hybrid assets connected to the MOG should have an income based on regulated income rather than on congestion revenue

Procedures and legal certainty:

- This is a sensitive issue related to the ongoing developments. It is currently not possible to give a recommendation on *how* dispute settlement should be addressed in an international agreement on the MOG.
- Nevertheless, it is important that this issue is addressed in some form in such an agreement.

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5. PLANNING & PERMITTING

5.1 INTRODUCTION

Permitting and licensing procedures are perceived as an important risk in large projects.[149] This especially holds for large infrastructure projects such as the MOG. This is because permitting issues become even more important and burdensome when the projects concerned span over more than one jurisdiction, with the possibility of these risks materializing in two (or more) countries. Even when there are no delays, it is important to connect to design smooth permitting processes, as the projected 200 GW of offshore wind requires many offshore grid projects to be constructed in a few decades. In order to lower the costs of constructing and financing the MOG, it is important to lower the (perceived) risks in the permitting and licensing phase of projects.[150] The permitting process can take longer than expected for justifiable reasons (e.g. gathering more information or evidence), but this chapter focuses on how to reduce the risks which could delay the process without delivering a benefit to the project or to the environment.

The aim of this deliverable is to address how to decrease the (perceived) risks in the permitting and licensing phase of offshore electricity infrastructure projects, especially of cross-border projects. A secondary goal, served if the recommendations of this deliverable are followed, is that the permitting procedures become faster and easier, both for the project developers and for the government officials charged with the permitting phase of offshore electricity infrastructure projects. Different actors are addressed in this deliverable. First, the permitting procedures are influenced to a large extent by the legislation that governs these procedures in the first place. Therefore, the (perceived) risks in this procedure can be addressed (at least partially) by better (EU- and national) legislation and by better implementation and application of the legislation. Moreover, the NRAs and other permitting authorities have a large role in how the law is executed and they can also anticipate on planning and permitting risks. Finally, project developers of offshore infrastructure projects have a large role to play with regard to communication with authorities and with other stakeholders. In short, all three have a role in limiting the risks and time needed for the permitting phase, so all three parties are addressed in this deliverable.

The chapter is structured to address each (perceived) risk, per subchapter. In each subchapter, first the risk itself is addressed: what the risk entails, what causes the risk to exist and what are possible consequences if the risk materialises. Then, possible mitigation measures are addressed. For each measure, it is also stated which actor bears the responsibility for adopting mitigation measures. Where possible, the measures are illustrated with examples of existing good practice in North Sea coastal states. The deliverable concludes with recommendations on how the (national) legal frameworks regarding planning and permitting could be smoothened.

[149] See for example, A. Armeni, G. Gerdes, A. Wallasch, L. Rehfeldt 2019, *supra* note 83, chapter 4.3, the example of COBRAcable.

[150] A. Armeni, A. Wallash, L. Rehfelt, PROMOTioN Intermediate report: Financing framework for meshed offshore grid investments, July 2017, p. 38. Also in other projects, stakeholders mention “permits are not stable, they might change, reopen during the construction phase and this is a reality.”

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5.2 BACKGROUND AND SCOPE

Before analysing the risks related to the permitting phase, it is important to understand the background of the development process for large projects, including offshore windfarms and offshore electricity infrastructure. The project development process typically involves the following stages:

- Site identification
- Planning
- Permitting
- Financial Investment Decision
- Detailed Design, Tendering and Contracting
- Construction
- Operation

This document focuses on the key permits and licenses that are typically needed to reach a financial investment decision. For offshore windfarms, these typically include a seabed license/water license, onshore and offshore planning permission, and a connection agreement with the transmision system owner.[151] For offshore electricity infrastructure, it usually includes planning permission, a construction license for the cable and offshore converter station, an onshore construction license for the converter station and the onshore leg of the cable, and permission from the regulator.[152] The chapter does not focus on sub-agreements which are typically between two private parties and are agreed alongside or after the main permits listed above are granted. Examples of these sub-agreement includes (not exclusive) crossing agreements (offshore), land rental (onshore) and design and construction agreements with (sub)contractors.

5.3 CHANGES TO THE REGULATORY FRAMEWORK

5.3.1 RISKS OF A CHANGING REGULATORY FRAMEWORK

One of the risks with the largest consequences in the project development phase is that legislation changes between the project proposal phase and the moment when all permits are awarded. A specific cause for this risk is the long time between the different phases of offshore projects, often several years. It may seem obvious, but if several years elapse between the project planning phase (or the first permits) and the final investment decision (or the last permits), the risk is larger than if this phase only lasts a few months. Secondly, some countries have a more stable legislative framework than others, which means that this risk is larger in some than in other countries. Nevertheless, regardless of the country involved, one should strive for a smooth permitting procedure that does not cost several years, but rather several months to conclude.

[151] See C.T. Nieuwenhout (2017), *supra* note 5, chapter 5.
[152] Ibid.

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If the risk of legislative changes during the project development phase materialises, this may lead to (extra) project delays. This happens for example if already acquired permits or concessions are no longer valid and have to be applied for again. Another possibility is that the business case for the project changes because of the legal/regulatory changes, which would mean that the project needs to be changed and new permits have to be obtained for the amended project.

Example: withdrawn licenses Netherlands

In the Netherlands, the legal framework for offshore wind changed in 2014. Many projects had an open-door license to construct a windfarm in a specific zone from before this time, but they failed to get the financial close in time. This was mainly due to a lack of subsidies specifically for offshore wind.[153] In order to be able to change the law, the Dutch Minister for Economy withdrew the licenses for the projects that did not reach the financial close in time. All preparatory activities that had been performed for the licenses turned out to be useless as the licenses have been withdrawn. In the current situation, some of these sites have been reorganised into larger plots that are available for tender in a structured, government-led procedure.

Example: review licenses Scotland

The Scottish Government have recently reviewed the Special Areas of Conservation for Harbour Porpoises.[154] They proposed to extend these areas to include areas which had already been granted planning permission for offshore wind farms. The Government decided that the extension of the conservation areas meant that all permissions granted had to be reviewed, causing developers a lot of uncertainty (effectively a retrospective application of the law). One of the reasons for the review is that harbour porpoises are affected by noise, including offshore construction works. It has recently been decided that all existing permissions will remain valid but the uncertainty has likely caused additional time/cost for each project. The same issue is reviewed in the Southern North Sea (English waters), which also affected OWFs that had been given consent.[155]

Countries do often decide in their legislation that the ‘old’ system remains in place for existing projects. This is to safeguard the principle of legal certainty, which entails that citizens and companies should be able to trust that “the rules of the game do not change during the game”. In order to incorporate this in the law, new legislation often includes an implementation phase with a specific date in the future, indicating when the new legislation is applicable. For projects that are being developed, a border needs to be drawn in order to make clear to which projects the old legislation still applies and to which the new legislation will apply. The border could for example

[153] E.M.N. Noordover, A. Drahmann, Tailormade Regelgeving voor windturbineparken op de noordzee, Tijdschrift voor Omgevingsrecht, okt. 2014; M. Roggenkamp, H.K. Müller, 'De regulering van offshore windenergie sinds 2008: Een offshore processie van Echternach', NTE 2013, nr. 2, p. 84 – 94;

[154] **https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/international-designations/natura-sites/harbour-porpoise-candidate**.

[155] **https://www.gov.uk/government/consultations/southern-north-sea-review-of-consents-draft-habitats-regulations-assessment-hra**.

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be the financial close of the project, such as in Belgium (see below). Flexibility can also be added to the system via other methods, such as in the UK (see below).

Example: financial close as border line in Belgium

Belgium has been through a transition of the support scheme for offshore wind, meaning that there is a different scheme for OWFs for which the financial close was reached before May 1st 2014 and for OWFs with a financial close after that date.[156] Before May 1st 2014, there was a fixed minimum price of EUR 107 per green certificate (1 MWh) for the first 216 MW of installed capacity and EUR 90 per certificate for capacity above 216 MW. The differences in support may influence the business case, which may mean that the project developer may wish to change the size of the wind farm or the technology used, as well as the capacity of the grid connection. However, changing the capacity means that the permits have to be changed as well, which may take extra time again.

Example: Flexibility through 'Rochdale Envelope' Procedure in the UK

In the UK, financial support for an OWF project can only be awarded through the (Contract for Difference) CfD auction process.[157] To enter into this process the developer must already have secured a Development Consent Order (DCO), which is a planning permission for the onshore and offshore aspects, and a connection agreement with the onshore Transmission Owner[158]. This means that there is often a delay of years between submitting the application for the DCO and starting construction by which time the optimal design may have changed. To avoid having to resubmit the DCO application, offshore wind developers can submit a DCO application under the 'Rochdale envelope' approach.[159] A Rochdale Envelope gives the developer flexibility to change the design after the DCO has been granted, within certain parameters which will be set out in the developer's application and the final DCO. The Environmental Impact Assessment (EIA) for these applications will take a 'worst case' approach within the bounds of the design 'envelope'. This can give the developer flexibility over (for example) the number and power rating of turbines, and the maximum height of the turbines. Developers have indicated they appreciate the Rochdale Envelope procedure very much. However, this approach can add complexity for authorities, as the lack of project certainty makes it difficult for them to advise developers or decision makers on the impacts of a project.

The above examples are about offshore wind, but similar problems exist for offshore electricity transmission infrastructure. Furthermore, the development of the transmission infrastructure is linked to the development of the OWFs. Delays in the permitting phase of the OWF may lead to suboptimal use of the transmission assets, especially in a hub-based connection. Therefore, governments and project developers should strive to

[156] C.T. Nieuwenhout (2017), *supra* note 5, p. 56.
[157] Ibid., chapter 5.9.2.3.
[158] Contracts for Difference – Allocation Round 2. Interactive Guidance:
https://www.emrdeliverybody.com/Contracts%20for%20Difference%20Document%20Library/CFD%20Round%202%20Delivery%20Body%20Guidance%20v2.0.pdf
[159] More information available at (last visited 11-2-2019): https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2013/05/Advice-note-9.-Rochdale-envelope-web.pdf.

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commission both the connection and the OWF around the same time and avoid delays in the permitting- and construction phase.

5.3.2 MITIGATION

The main mitigation option to reduce the risk is to adhere to the principle that, once granted, permits/licenses will remain valid for the duration of the construction and operation phase. Furthermore, the risk that legislation changes during the project development phase is reduced if the time between the project planning and permitting process is shortened. The pivotal question then is how to reduce this period? First of all, the mitigation measures for the other risks (reduction of the complexity of the process; clarity about the correct classification of the assets; smooth public participation and a smooth EIA process) will already contribute to a reduction of the total time of this phase. For the concrete mitigation measures concerning these issues, see the respective subchapters below.

Secondly, centralised OWF planning and preparation helps in reducing the time between the project planning and the permitting phase. This system currently exists in Denmark, Germany and the Netherlands.[160] The OWF zone is already prepared beforehand (seabed surveys, EIA) by the government body responsible for offshore wind permitting and tendering.[161] This saves time in the preparation phase of the OWF and avoids the risk for individual project proposals (in an open-door approach) to be rejected for reasons that could be avoided if centralised planning is applied. This is specifically relevant for the cumulative environmental and technical impact of multiple windfarms in the same area.

Extra time can be saved if the abovementioned centralised approach is combined with a TSO- or third party led grid connection. With this system, the project developer of the grid connection (usually the TSO) can already start the permitting phase for the grid connection even if it is not yet known which party will develop the OWF, as the tender for this takes place later. The project developer for the transmission assets can already start with the EIA and construction permits for the onshore (converter station and cable landing) and offshore (cable and offshore

[160] It must be noted that Denmark also has an open-door regime next to its centralized tendering regime. In practice, the open-door regime is barely used. C.T. Nieuwenhout (2017) *supra* note 5, p. 64/65.

[161] In the United Kingdom, the authorities do much less preparatory work than in Denmark, Germany and the Netherlands: wind farm zones are indicated but developers are free to choose where in these zones they aim to construct an OWF. As the exact location of the OWF is not clear, there is no seabed investigation or EIA prepared by the authorities. Nevertheless, it seems that stakeholders have become comfortable with both approaches: In the UK they have more flexibility on design but also higher risk, in the NL/DE there is less flexibility but lower risk. The reason why the UK has a different approach than the continent, is that the seabed is not owned by the government but by the Crown Estate which is run as a commercial company that does not want to take the risk for these surveys. Moreover, the UK has a large coastline and EEZ, it would be impracticable to have one authority to survey all the possible OWF sites. Having said that, for the next seabed leasing round, the Crown Estate are identifiying regions in UK waters. For each region they will undertake a geographical analysis and a Habitat Risk Assessment and make this information available to developers. Developers will then need to approach the Crown Estate with specific project ideas as part of a competitive tender process. The Crown Estate will then issue seabed licences to winning projects, enusring that there aren't too many projects in one area which may cause an unacceptable (cumulative) impact on the environment. See (last visited 11-2-2019): **https://www.thecrownestate.co.uk/en-gb/media-and-insights/news/2018-the-crown-estate-shares-further-detail-on-plans-for-round-4-including-proposed-locations-to-be-offered-for-new-seabed-rights/.**

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converter station) infrastructure. Prerequisites of this system are that the location of the grid connection and the capacity of the OWF are known in advance and that there is no doubt as to whether the OWF will actually be constructed.[162] The early start in the permitting procedure allows for more margins for unexpected events in the permitting phase (see example below) and makes it more likely that the permitting phase is concluded in time for the construction of the OWF.

Example: time margin to connect OWFs in time

In the Netherlands, the tenders for the OWFs at the Borssele wind farm zone took place in May and September 2016. The planning permits for the wind farm zone is already prepared beforehand by the coordinating agency RVO (which also organises the tender and serves as a one stop shop). TenneT, responsible for the connection of these windfarms, had already started project planning for the grid connection. It had already calculated different possible trajectories and performed an EIA. The EIA authority had some additional questions, which meant that the EIA dossier had to be adjusted to include extra information. Moreover, the Port of Antwerp appealed in a procedure over the cable trajectories, with the argument that the cable was an obstacle to access the port of Antwerp. The appeal was filed in August 2016, and after long debates between the Flemish and Dutch authorities, the port of Antwerp withdrew their appeal in April 2017, i.e. 7 months later. If the party responsible for the connection would only have started to prepare the permitting phase after the award of the wind farm permit (i.e. May/September 2016), for example in the case of an OFTO or generator-led connection system, it would have been much more difficult to finish the grid connection in time, at the moment of commissioning of the OWF.

This system does not work in a generator-led connection regime such as Norway, Sweden and the UK have in place.[163] There, the transmission assets' permitting phase can only start as soon as it is clear who is going to construct the OWF. This does not have to have negative consequences if there is no large time difference between the permissions for the OWF vs the permissions of the cable. However, in case of difficulties regarding the cable landing route for example, the entire project might be delayed. It also does not work for an open-door system in which it is not clear in advance what the location or capacity of the OWFs will be, as this is a prerequisite for the permitting phase for transmission infrastructure.

5.4 COMPLEXITY OF THE PERMITTING PROCESS

5.4.1 RISKS OF A COMPLEX PERMITTING PROCESS

For offshore electricity infrastructure, multiple permits and licenses are needed. Which permits are needed differs per country.[164] The national permitting system often depends on general administrative law, construction law and

[162] This could be ascertained by adding certain clauses to the tender rules, such as a penalty payment if the envisaged developer withdraws from the project.
[163] C.T. Nieuwenhout (2017), *supra* note 5, p. 104, 111 and 121. In the UK, most OWF connections are constructed by the OWF project developer and then transferred to an OFTO in a separate tender process.
[164] For a full overview of the required permissions per country, see C.T. Nieuwenhout, 2017, *supra* note 5, chapter 5.

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nature protection law, which have historically developed in a certain way. The way these fields of law developed was often without the perspective of offshore electricity developments in mind. Nevertheless, some parallels are visible between the countries: on average, some 2-3 permits are needed for the construction of the OWF, some 2-3 are needed for the construction of subsea electricity cables, and extra permits are needed for the construction of infrastructure such as onshore converter stations, often with different procedures again.

There are three main sources of complexity of the permitting process. First, the number of permits, as mentioned above, can make it complex, especially for the cable construction, as both offshore and onshore permits are needed. Another issue is the interdependence of the permits in some countries. For example, certain permits can only be applied for when a license has been granted already for the same project. This makes permits dependent on the outcome of earlier licenses and permits. A third source of complexity of this process is that in some countries, permits need to be obtained from different authorities with different priorities, i.e. with many different tasks, such as licenses for wind energy as well as authority for the fishing industry and the shipping industry.[165]

Complexity is further increased if the infrastructure spans over two or more countries, which is the case for cross-border electricity infrastructure projects, particularly in a meshed offshore grid. If the risk materialises, and the countries involved in crossborder infrastructure each have complex permitting procedures, this may lead to long procedures with delays in project development (see previous risk).

5.4.2 MITIGATION

Several countries around the North Sea have already made considerable effort to mitigate the risk and to reduce the complexity of their procedures. This can be done by reducing the number of permits, the process for acquiring the permits and the amount of authorities involved (one-stop-shop).

Reduction of the number of permits is introduced in the Netherlands, where only one license (the 'Wind License') is needed to construct an OWF.[166] This license replaces the various earlier licenses. Another example from the Netherlands is to coordinate the planning and permitting process: for the construction of offshore electricity transmission infrastructure, all permits are clustered in one procedure (*Rijkscoördinatieregeling)*.[167] This coordinated procedure treats all (five) permits needed for cable construction in one process, which saves time and makes the process easier for project developers.

Example: Simplification of permitting procedures in the Netherlands

At least five different administrative decisions are needed to construct offshore transmission assets. These are: a permit on the basis of the Water Act, one on the basis of the Nature Protection Act, one on the basis of the Environmental Act, one on the basis of the Flora and Fauna Act and finally a permit for

[165] The German Bundesamt für Seeschifffahrt und Hydrographie (BSH) is a good example of one institution with several different roles.
[166] C.T. Nieuwenhout (2017), *supra* note 5, p. 92/93.
[167] Ibid., p. 93.

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discharging materials in the sea, also on the basis of the Water Act. In order to prevent a burdensome and long process, all permits are prepared in one coordinated procedure, the *Rijkscoördinatieregeling*, under the responsibility of the Minister of Economic Affairs. In this procedure, all permits are handled in one go, which saves time both on the side of the project developer, on the side of interested parties and stakeholders wishing to provide their view, as well as on the side of the authorities that have to grant the permits.

Example: Optimisation of the permitting procedures of OWFs in Germany

In Germany the permitting procedures for the wind farm connections have been optimised: the connections are part of the Federal requirements plan act ("Bundesbedarfsplangesetz"). According to this law, the necessary justification of plan ("Planrechtfertigung") and the primary requirements for the planning approval ("vordringliche Bedarf für die Planfeststellung") are binding and thus, the whole process is accelerated. BSH is the responsible authority for the planning approval. At the same time cables and substations can be approved.

Another way to reduce the complexity of the permitting process is through a one-stop-shop approach, in which the entire preparatory process and the permitting phase are executed by the same government agency. This is currently done in the Netherlands, Denmark, Germany, England and Wales.[168] Benefits of this approach exist both at the side of the government and at the side of the project developers: for project developers, the complexity is reduced as, instead of having to approach a variety of different government agencies, they can always turn to the same address. For the government, a one-stop-shop approach leads to more efficient handling of the case and possibly more specialisation concerning offshore projects.[169]

Example: PCI-projects

According to the TEN-E Regulation, interconnectors that were granted the status of PCI-project should benefit from a streamlined permitting procedure with temporal limits and a one-stop-shop.[170] Nevertheless, stakeholders indicate that this process is still burdensome and that the one-stop-shop principle is not respected in all countries. Therefore, adopting this principle in law is not enough: it needs to be implemented in practice as well, in order for developers to reap the benefits in the permitting procedure.

A last measure to make the permitting process less complicated, specifically for cross-border projects, could be a joint permitting process between neighbouring countries for cross-border projects. However, this measure is only adviceable in the case if there is already a high degree of cooperation and harmonisation between the participating countries (if the required legislative changes for such a measure are relatively small). Otherwise, it

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[168] Respectively by the Rijksdienst voor Ondernemend Nederland (RVO) in the Netherlands; Danish Energy Agency (Energistyrelsen) in Denmark; Bundesamt für Schiffahrt und Hydrographie (BSH) in Germany and the Planning Inspectorate in England and Wales.

[169] By analogy to construction permits, see for example World Bank (last visited 11-2-2019): **http://www.doingbusiness.org/en/data/exploretopics/dealing-with-construction-permits/good-practices#one-stop**.

[170] C.T. Nieuwenhout (2017), *supra* note 5, p. 42/43.

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would probably lead to more delays and resistance to implement new and harmonised permitting processes in legal systems that are often not compatible. This is an important reason not to strive for harmonisation of the entire process. Another reason not to implement a harmonised permitting process is that it reduces the "legislative innovation" that currently exists between the North Seas coastal states. Legislative innovation exists if countries, while introducing new legislation, take into account legislative changes in other countries. If a certain legislative change proves to be effective, it is adopted in the other countries as well. If a certain measure proves ineffective, this is amended in the newly adopted legislation of other states.

An example of this phenomenon is the introduction of the TSO as responsible entity for the connection of OWFs in Denmark.[171] This is followed by the introduction of the same approach in Germany. The innovation in Germany was cluster-based connections which also allowed for the introduction of HVDC connections for OWFs.[172] Then, the same system was adopted in the Netherlands, including a cluster approach for new wind farms. An extra innovation in the Netherlands was the introduction of standardised wind farm connections of 700 MW, leading to cost saving at the TSO level.[173] Moreover, when the system was introduced in the Netherlands, the problems in Germany concerning the pipeline of projects that was too large for the TSO to connect in time were solved, by spreading the OWF connection dates over 5 years and by allowing the TSO to start the permitting phase for the cable trajectory already while the tender for the OWF itself is still ongoing. This legislative innovation is beneficial for the meshed offshore grid as it leads to more efficient permitting processes and provides a learning curve for governments and authorities involved in the permitting process.

5.5 CONFUSION ABOUT ASSET CLASSIFICATION

5.5.1 RISKS OF CONFUSION ABOUT ASSET CLASSIFICATION

As already elaborated in earlier deliverables,[174] with the development of new grid configurations, there is legal uncertainty about how certain cables should be categorised/classified under national and European law. This is specifically the case for cables which fulfil a dual function of (1) bringing offshore generated electricity to the onshore grid(s) they are connected to, and (2) making interconnection capacity available between different electricity grids. It is not entirely clear whether such cables are regulated as interconnectors, onshore grid, offshore grid or something else. Although the chapter 'Asset Classification' proposes a solution to this on EU level, the risk still exists as long as no solution is implemented in law. Moreover, there might still be regulatory uncertainties about the regulatory classification under national law, which means that this risk also exists on the national regulatory level.

The cause for this risk is that the law was not written with the new possibilities and developments around offshore HVDC grids in mind. In principle, this is inevitable because it is impossible to look into the future when drafting a

[171] Ibid., p. 67.
[172] Ibid., p. 86.
[173] Ibid., p. 96/97.
[174] Ibid., chapter 4; see also chapter 3 of this Deliverable.

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regulatory system. If the risk materialises, i.e. if there indeed is confusion about asset classification, this will lead to uncertainty over which permits are needed, which may lead to delays in the permitting procedure. Nevertheless, it is possible to formulate rules in such a way that they cover a broad spectre of cables and possible future developments.

5.5.2 MITIGATION

Anticipation of future technological developments which may require different regulatory actions is essential. If it does not seem clear under which regulatory regime a new project falls, action is needed at an early stage. First of all, mitigation of any confusion about asset classification is possible through the adoption of a clear definition and regulatory regime for hybrid (meshed) assets in EU law and in national law.[175] At the same time, this will not be the last time that technology develops faster than the law develops, leading to new gaps in the legislative framework, possibly also in the legal framework of a MOG. This seems to be paradoxical, as a clear definition is needed for hybrid assets, whereas at the same time, it is better to formulate the law in such a way that also future developments can be incorporated. A possible solution to this is to include high level principles in primary legislation and to devolve the details to secondary legislation which can be amended more easily.[176] However, even if the details are devolved to secondary legislation, the government and regulatory agency need to be aware of the changes at hand, in order to change secondary legislation in time.

Action is required at two levels: on the one hand, project developers play a role in this through early communication with regulatory agencies on what kind of assets they are planning to develop; on the other hand, action is also needed from regulatory agencies themselves or even from the legislative side. When laws or other regulatory documents are amended, it pays off to anticipate on innovative developments, such as hybrid infrastructure, offshore hubs and islands as this will save much time when these innovations are ready to implement.

A special role exists for the regulatory authority. At the moment, it appears from stakeholder interaction that some regulatory agencies have a reactive approach to new developments: if new types of assets or connections are possible, the NRA only reacts when the TSO asks for a decision or when the government asks for this. A proactive approach in which the NRA actively anticipates new developments that require different regulatory action would be better. The independence of the regulatory authority is important in this regard:[177] the regulator should not wait for instructions from the government to investigate a new development that requires regulatory action, this should be done by the regulator at its own initiative. It can be argued that NRAs have this approach because they are not allowed to go beyond the boundaries of the existing law. However, the author believes that this interpretation

[175] See above, chapter 3.
[176] In the OFTO regime in the UK, primary legislation (Electricity Act 1989 as amended by Energy Act 2004) simply allows the regulator Ofgem to develop regulations for an offshore tendering process. Those regulations are written as secondary legislation which are much quicker to amend, as they only require secretary of state sign off, not parliamentary approval.
[177] A. Larsen, L. Holm Pedersen, E. Moll Sørensen, O. Jess Olsen, 'Independent regulatory authorities in European electricity markets', *Energy Policy* Vol. 34, Issue 17, November 2006, chapter 3.1.

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negates the independent role of the NRA.[178] Lack of (financial and personnel) resources is one of the arguments often mentioned for why NRAs use a reactive approach rather than a proactive approach. However, this argument is not entirely valid. Although the timing when the resources have to be dedicated to regulate new developments is different in a proactive approach compared to a reactive approach, even with a reactive approach, the NRA will also eventually have to dedicate resources to investigate how new assets should be regulated. With a proactive approach, time can be saved in the project development phase, leading to more socio-economic benefits, if beneficial projects can be realised earlier.

5.6 LITIGATION AND PUBLIC RESISTANCE

5.6.1 RISKS OF PUBLIC RESISTANCE AND LITIGATION

For every permit, license or concession, an official appeals procedure should be available under national law.[179] This may also be followed by a court procedure to test whether a certain decision was made according to the principles of public/administrative law. For every permit, concession or license (any official decision by the national, local or regional government or by an authority that decides on behalf of the government), an appeals procedure may last several weeks to months, and a court procedure can take several years. Depending on the legal system of the country involved, permits only gain legal validity after a certain period in which appeals can be made. Alternatively, permits already have legal validity but can still be withdrawn if an appeals procedure or a court procedure proves that the decision should not have been taken or should have been prepared better, for example with public hearings. The former creates project delays, whereas the latter creates legal uncertainty. Both come at a (societal) cost.

Appeals procedures and litigation take a long time and bring legal uncertainty over whether a permit can or will be granted, which translates in a risk in the permitting procedure with large potential consequenes for projects. Even if the permit is eventually granted, the long delay in project commissioning costs money; and through the delay, potential synergies with other projects/countries might not be used to their full extent. This is a large risk for a meshed offshore grid.

Example: PCIs and length of procedures

For projects that have been awarded the PCI-status,[180] the TEN-E Regulation stipulates that procedures should be limited: the pre-application procedure will not take longer than 2 years indicatively, and the

[178] The NRA is an institution independent of the relevant ministry. If the NRA can only act after the government has indicated that the NRA should act, the independence is reduced. In anticipation of new developments, NRAs may not go against the law, but there is a large difference between having a proactive approach and going against the law.
[179] This follows from general principles of administrative law that exist in many jurisdictions: individuals should be able to make sure that decisions directed to them are prepared well and considered properly. On the other hand, legislative action for administrative decisions is often limited to a procedural test and only a marginal test of the contents. This test entails mainly whether the authority in question could reasonably have come to the decision it has come to. This is in stark contrast to judgments in civil law, in which the judge is much more thorough in its assessment. The reason for the 'marginal' approach in administrative law is the separation of powers between the executive and the judiciary branch.
[180] C.T. Nieuwenhout (2017), *supra* note 5, p. 42/43, for a general overview of the legislation applicable to PCIs.

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> period between application and the granting of the permits shall not exceed 18 months. Combined, the two periods shall not exceed 3,5 years, which can be prolonged by 9 months. An important exception to this is that administrative appeal procedures and judicial remedies are not counted in these periods. This is significant, as this is specifically a cause of long project delays. This makes the time periods mentioned above much less powerful.

Litigation and appeals procedures are normally started by stakeholders who disagree with a certain permit or with the way in which it was granted. The direct reason for appeals and litigation is mistakes in the assessment of permit criteria or in the permit granting procedure. However, the indirect source of appeals is the stakeholders who are dissatisfied with the procedure or the outcome and who start an appeals procedure or court procedure to amend this. People or corporate stakeholders litigate if they do not agree with the permit and want to protect their own (personal or business) interests. There are also interest groups who aim to protect the interests of common values, such as landscape, and natural or cultural heritage. Whether their concerns are valid or not can be decided by the administrative authority handing out the permits (in an appeals procedure) or ultimately by a court. However, court procedures take a long time. Therefore, mitigation measures should aim to avoid (the escalation of) conflicts and resistance from an early stage.

5.6.2 MITIGATION

Mitigation measures in this chapter are mainly aimed at project developers and permit-granting authorities, in order to minimise (the escalation of) conflicts and resistance. It must be noted that this should not be done through a limitation of the possibilities for appeal and public participation, as the stakeholders often bring forward valid points and fears, and represent interests that need protection too. Therefore, instead of limiting stakeholder interaction, the first step for both project developers and permit-granting authorities is good communication with possible stakeholders about the project.[181] Stakeholder communication should not be seen as an obligatory exercise that has to be dealt with at the last moment. Rather, stakeholder communication should aim to analyse the interests of the stakeholders and to design the project in such a way that their interests can be taken into account where reasonable.

In order for this to be possible, the communication should be sufficiently early, in order to prevent the situation where stakeholders only learn about a project when it is too late to change anything substantially. Much can be learned from the comparison with onshore wind projects, where much litigation is due to late and incomplete information to the neighbourhood. Here, the lesson learnt is that if stakeholders are involved in the project from an early stage, this leads to less disagreement with the result.[182] Moreover, if people's (and companies') interests

[181] P. Bhagwat 2019, *supra* note 94, chapter 5.
[182] There is a general consensus that the earlier in the process, the easier it is to still change things in the project design. See NWEA Gedragscode Acceptatie en Participatie Windenergie op Land, 2016 (Code of conduct Acceptation and participation in onshore wind energy; in Dutch), available at (last visited 11-3-2019): **http://www.nwea.nl/images/PDFs/20161215-Gedragscode-Acceptatie--Participatie-Windenergie-op-Land.pdf**. Furthermore, see A. Aapaoja, H. Haapasalo, and P. Söderström 'Early Stakeholder Involvement in the Project Definition Phase: Case Renovation', *ISRN Industrial Engineering* Vol. 2013, paragraph 2.1.

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are taken into account in the project planning phase, it is less likely that they will feel the need to protect these interests in court at a later stage. Furthermore, good communication should involve all stakeholders that could be affected. This seems obvious but it still regularly goes wrong.

Example: Regional approach in Scotland

As an example of a good practice, in Scotland, there are Regional Advisory Groups made up of experts from several energy and environment organiations who provide feedback and support to project developers by providing information on the local environment, context and through building relationships with local stakeholders. In particular, the Regional Advisory Groups advice on the need for robust environmental monitoring[183]. Moreover, the European Offshore Wind Deployment Centre (EOWDC) in Aberdeen, Scotland is bringing together developers to discuss how planning applications and EIAs can be carried out on a regional basis rather than a project basis.

Finally, where possible, (financial) participation from stakeholders in a project may provide more stakeholder support for the project, as shown in practice in (onshore) wind projects.[184] However, this is easier with wind farms that generate electricity (that can be consumed locally) than with the creation of offshore transmission infrastructure. Finally, litigation from environmental organisations that aim to protect the nature or wildlife in a certain area can be avoided by including environmental impact mitigation measures in the EIA (which will be discussed further in next paragraph).

Example: Coordinated Procedure Experiences from the Netherlands

In the Netherlands, a coordinated procedure for large infrastructure projects (*Rijkscoördinatieregeling*) exists. A recent report shows the experiences for large energy projects which made use of this coordinated procedure.[185] For the connection of offshore wind farms (Borssele, Hollandse Kust), several possible cable trajectories were proposed in an early stage. The choice between these trajectories was made in cooperation with stakeholders such as municipalities, other governmental organisations (such as Rijkswaterstaat, the organisation responsible for important roads and waterways in the Netherlands) and nature conservation organisations.[186] This cooperation from an early stage was evaluated positively by these stakeholders and led to fewer appeals in later stages of the procedure.[187] Vice versa, if certain actors feel that their complaints have not been listened to properly, it can lead to court procedures: the Port of Antwerp started proceedings against the laying of the export cable for Borssele through the Scheldt River because it felt the cable trajectory endangered the shipping traffic on the Scheldt River.[188]

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[183] As an example, the Terms of Reference for the Moray Firth Regional Advisory Group can be downloaded here: **https://www2.gov.scot/Topics/marine/Licensing/marine/scoping/mfrag**

[184] P.J. Schipper, Understanding the success of wind energy cooperatives: A search for determinants of the success of Dutch wind cooperatives, Oct. 2014.

[185] Overzicht Energieprojecten - Projecten rijkscoördinatieregeling (RCR) en kavelbesluiten Wind op zee, 04-2018 (Dutch).

[186] Ibid.

[187] Ibid.

[188] News item on the appeal (last visited 11-2-2019): **https://www.portofantwerp.com/nl/news/havenbedrijf-antwerpen-beroep-tegen-voorgesteld-kabeltrac%C3%A9-windmolenpark-borssele** (in Dutch).

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Eventually, the case was solved without a court judgment, but this process has delayed the permitting phase, and without a decoupling of the OWF and the export cable permitting, the entire project would have faced delays.[189]

5.7 DIFFERENT EIA RULES PER COUNTRY

5.7.1 RISKS OF DIFFERENT EIA RULES PER COUNTRY

The construction, operation and decommissioning of offshore wind turbines falls under the EIA Directive (Annex II), and thus, if national authorities determine so, an EIA needs to be produced for each OWF. For offshore grids, even though they have an impact on the environment,[190] the situation is less clear: EU law does not require an EIA for submarine cables.[191] However, countries may require an EIA through their national legislation.[192] Thus, in practice, for many offshore grid construction projects, EIAs are needed.[193]

An EIA consists of an assessment of the environmental impact of the project and possible mitigation measures to reduce the environmental impact. For example, different drilling techniques could be used to minimise environmental impact during the construction phase, or adjustments could be made to the project design to decrease noise, scour or electrical radiation during the operational phase. For converter stations, the impact may be mitigated through similar measures as for offshore wind farms (prevention of noise pollution while drilling the foundations) and there might be a positive impact from measures to increase biodiversity around the converter station foundations.[194] The impact of the submarine cables (heat radiation for example) is greatly reduced if the cable is dug sufficiently deep into the seabed. However, the way the cable is dug into the seabed again may impact the environment at the seabottom and should take place with care.

The criteria for EIAs and for mitigation measures differ per country and EIAs have to be made on a national level.[195] For cross-border projects, two (or more) EIAs might be needed. The rules about the EIA and the assessment of the rules in a particular case differ per country. For cross-border infrastructure projects, it could be that the required mitigation measures differ per country, which brings extra costs for the project. Moreover, creating two (or more) different EIAs, according to different standards and in contact with different agencies, complicates projects and costs extra time and money.

[189] See example, chapter 5.3, above.
[190] T. Merck, *Assessment of the Environmental Impact of Cables*, OSPAR Biodiveristy Series, 2009.
[191] C.T. Nieuwenhout (2017), *supra* note 5, p. 37.
[192] T. Merck (2009) *supra* note 190, p. 13.
[193] C.T. Nieuwenhout (2017), *supra* note 5, p. 36 and further, provides the background of EIAs.
[194] See, by comparison to offshore wind foundations: J. Vrooman, G. Schild, A.G. Rodriguez, F. van Hest, *Windparken op de Noordzee: kansen en risico's voor de natuur*, Stichting de Noordzee, 2018, Utrecht, p. 20.
[195] For example, J. Phylip-Jones, T. Fischer, 'EIA for Wind Farms in the United Kingdom and Germany', *Journal of Environmental Assessment Policy and Management*, Vol. 15, no. 2 (April 2013) provides a comparison of the contents and the quality of EIAs for German and UK offshore and onshore windfarms.

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5.7.2 MITIGATION

A step forward to reduce the differences in EIA processes and standards and to increase coherence of environmental policy would be a uniform EIA assessment procedure and standardised mitigation measures in the North Sea area. However, this would have a major impact on all projects that need an EIA and would take years to implement. Given the significant time and cost that would be involved in developing a standarised process in law, more practicable options for cooperation should be considered. Soft coordination between the authorities involved in checking the EIA requirements and mitigation measures could also be useful, and much easier to implement than a legal solution. Soft coordination could mean, for example, that the authorities of different countries set up joint standards and processes for the EIA of cross-border projects, not because this is written in the law but because of their own will to cooperate and to improve EIA processes and standards for cross-border projects.

Such soft cooperation could be introduced through a pilot project of cross-border electricity infrastructure. In such a pilot project, it could be assessed to what extent the environmental authorities can already cooperate and design a joint procedure on project basis. The experiences from such a joint procedure could be used for further alignment of the EIA procedures and assessment and feed a development towards joint (cross-border) procedures for all cross-border electricity infrastructure. Potentially, such pilot projects and soft coordination could eventually lead to uniformised EIA procedures for offshore electricity infrastructure.

5.8 CONCLUSION & RECOMMENDATIONS

This chapter elaborates various risks in the planning and permitting procedure for offshore electricity grid assets. Reducing the risk is valuable as it reduces the capital costs of the projects and also the duration of the permitting and licensing period, which is often perceived as a lengthy and burdensome process. Therefore, for every risk, various mitigation options are discussed. These mitigation measures will not only reduce the perceived risks during the permitting phase, they also aim to make this phase easier for both the project developers and for the civil servants charged with the permit application file. With many transmission infrastructure assets to be constructed and with permitting procedures often mentioned as a burden in project developments, these changes will have a positive influence in the legal framework of a MOG.

Most of the mitigation options come down to changes in legislation that prescribes which permits are needed and to anticipation of potential issues by the authorities that handle the permitting process. Good communication by the project developer, for example in stakeholder engagement, is also important. If the following measures are implemented, the permitting process for a meshed offshore grid can be shortened, smoothened and derisked – resulting in savings in time and project development costs.

RISK	CAUSE	MITIGATION	WHO?

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Changes to the legal framework during project development	Long project development and permitting phase, often-changing legislative system	- Centralised OWF planning, preparation by authorities - Decouple OWF permitting process from cable permitting process - Smoothening of the procedures, see measures below	- L - L/A/P
Complexity of the permitting process	Many different permits, process not designed for MOG	- Simplification of the permitting process - Create a one stop shop for key project permits	- L - L
Confusion about asset classification and regulation for hybrid assets	Many different permits, legislative framework not designed for hybrid/meshed projects	- Adoption of clear definition of hybrid projects in EU and national law - Anticipation on future developments - Early communication with authorities about new projects	- L - A - P
Litigation and public resistance	Insufficient, poor-quality or delayed stakeholder interaction	- Early communication with stakeholders and involvement in the decisionmaking process	- A/P
Different EIA processes per country	Different evolution of EIA processes and standards at national level	- Move towards joint EIA procedure - Pilot project with intensive coordination of the authorities involved	- L/A - A/P

Actors involved: L: Legislator; A: Authorities involved in the permitting process; P: Project Developer

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6. SUPPORT SCHEMES FOR OWFS CONNECTED TO HYBRID/MESHED GRID INFRASTRUCTURE

6.1 INTRODUCTION

Over the last two decades, support schemes were necessary in order for OWFs to be constructed. The support schemes were often designed in the form of operational aid per MWh to secure a minimum price for the electricity produced by the OWFs, and in several countries, also support for the connection to the onshore grid. In this chapter, the main focus is on operational support during the lifetime of the OWF, not on funding (part of) the export cable or the offshore grid.[196] Operational support normally had the form of a fixed amount per MWh of electricity fed into the grid, or an amount depending on the wholesale electricity price. The level of support needed for offshore wind has declined significantly. This is due to optimisation in the industry, economies of scale, better procedures and competitive tenders. It must be noted that some of the difference in tender outcomes between countries can be explained by different connection rules: in the United Kingdom, the costs of the grid connection to the onshore grid have to be paid by the OWF owner. In Germany, the TSO pays the export cable as well as the offshore platform and converter station in the case of DC; the OWF owner has to pay for the intra-array cables and a transformer station. In Denmark and the Netherlands, the costs for grid connection are borne entirely by the TSO. Other factors also influence the costs: liability, tax and employment rules, water depth and seabed conditions and the way the compensation mechanism is designed.

Source: TenneT. Note that tender results of 2018 are not included in the graph.

[196] The reason for not focusing on how the export cable is financed and whether this entails support for the OWF as well, is that with an offshore grid, with clustered OWFs connected to grids that are also used for interconnection, the grid becomes a public function like the onshore grid, rather than that it is support to an individual OWF. This is also visible in the shift of financing of the grid connections for OWFs: they used to be funded by the renewable energy levy (opslag duurzame energie) but they will be included in the transmission grid tariffs.

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Even though the level of support has gone down significantly over the last few years, the topic is still relevant for the legal framework for a meshed offshore grid. Grid connection costs, which are, in several countries, paid by the grid users through the network tariffs are expected to stay for the coming time. Moreover, operational support (per generated MWh) might still be necessary in the future, for example if the costs of capital or of raw materials needed for wind turbines rise again or if more expensive sites (deeper water; heavier waves), or sites with less wind resources are selected for future wind farms. Moreover, potential hybrid projects in the coming years face a potential challenge in overcoming incompatible support schemes between different countries that can be addressed with this deliverable.

The chapter first gives a short overview of the current different support schemes and the challenges there are under the current legal provisions for hybrid and meshed offshore grid developments (paragraph 2). Then, the deliverable gives an overview of the benefits countries obtain from the construction of offshore wind farms (paragraph 3). The aim of this paragraph is to analyse which benefits are dependent on how the wind farm is connected (i.e. radially or to a hybrid or meshed grid) and how the countries can retain benefits unlocked by their support schemes even if the wind farms are connected in a hybrid or meshed grid. The deliverable then treats specific benefits for which the allocation between countries is dependent on the regulatory framework. The main question is how the benefits can be retained for the country that supports the offshore wind farm, if this wind farm is connected to a meshed grid. First, the benefit of a lower wholesale electricity market price that can be retained through the bidding zone design will be treated (paragraph 4); then, the benefit for (EU) countries of contribution to the renewable energy targets and decrease of greenhouse gas emissions targets, which can be reallocated through cooperation mechanisms, will be addressed (paragraph 5). The subdeliverable finishes with a conclusion and concrete proposal for how support schemes should be designed for wind farms connected to a meshed or hybrid offshore grid.

6.2 CURRENT APPROACHES TO OWF SUPPORT

Before analysing which support schemes are needed for the long term in order to develop a MOG, it is important to see what the starting point is, the current approaches in (national) law concerning support schemes. First, it is relevant to see what the best practices are concerning support schemes. Second, it is necessary to know what parts of the current system are problematic, as these can then be targeted specifically in the proposals for how support schemes should be designed from a legal point of view, which is the topic of this deliverable. In analysing the current approaches, the type of support, conditions for support, procedure for granting support and limitations of the current system towards its use for offshore wind farms connected to hybrid and/or meshed electricity grids are analysed. This paragraph is based on research from Deliverable 7.1.[197] Concerning the types of support, there are two main types in use, they are explained below.

The first type is based on tradable certificates for green energy. Energy suppliers have to provide tradable certificates covering a certain percentage of their supplied energy, which artificially creates demand for these

[197] C.T. Nieuwenhout (2017), *supra* note 5.

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certificates. The demand by suppliers determines the value of the certificates. This system is used in Sweden and Norway, as well as in the UK for older renewable energy installations covered by the previous Renewable Obligation Certificate (ROC) system, now succeeded by the Contracts-for-Difference (CfD) system. Depending on the design of the system,[198] it is in general technology-neutral, as the price obtained for the certificates holds for all renewable energy certificates, whether they are produced by a solar plant or offshore wind energy, even though the capex and opex of these techniques may be very different.

The other main type, used in Belgium, Denmark, France, Germany, the Netherlands and the United Kingdom for new installations, is based on a certain compensation per MWh fed into the electricity grid. The height of this sum of money could be fixed (a feed-in tariff) or variable, depending on the wholesale market price, with as a result a fixed minimum income based on a combination of returns on marketed electricity and subsidy (feed-in premium). Most support schemes are currently a mix between feed-in premiums and tariffs, with for example a sliding scale with a mix of long-term electricity prices and wholesale day-ahead prices. This system can be technology-neutral or technology-specific. The UK's CfD system involves suppliers receiving topped up prices in the case where the strike price agreed with the regulator exceeds the wholesale electricity price but also relinquishing gains if the wholesale electricity price exceeds the strike price.

The procedure for providing support depends on the type of support. For tradable certificates, the support is obtained by selling renewable energy certificates to energy suppliers. For feed-in premiums or tariffs, the procedure is more difficult. In Denmark, Germany (central regime, after 2025) and the Netherlands, a tender procedure in which the right to construct a wind farm at a certain location is coupled to a competitive bidding process in which the level of the required subsidies in the bid determines which party obtains both the right to construct the wind farm and the support it bid for. France has a 'competitive dialogue' system and Belgium has a formula to determine the height of the support. The UK has allocation rounds for CfDs, in which multiple offshore wind farms can participate and receive a contract.

The conditions for support differ per country, and sometimes even per offshore wind farm. These conditions are sometimes not only linked to the support scheme but also to the construction permit (which are linked to each other in Germany, Denmark and the Netherlands). Conditions could be for example how the wind farm is connected to the onshore grid, commissioning date, duration of the support, decommissioning obligations and environmental requirements.

It is also important to look at the limitations in the current support schemes. These are the challenges that need to be addressed in the proposals for support schemes for offshore wind energy connected to a hybrid or meshed grid. **A clear limitation in several support schemes is the requirement that producers receive support only if the electricity is fed into the grid of the country in whose EEZ the offshore wind farm is located.** This would exclude support for wind farms connected to a hybrid or meshed grid at the times when the electricity flows to other countries than the country in which' EEZ the wind farm is located. A practical example of this, albeit not

[198] Some limitations influencing technology choice may be added to the system. Examples are limitation of the total allowed support for certain technologies, or granting more than one certificate per MWh of certain technologies.

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with offshore wind but with onshore wind on an island between Sweden and Finland, is the case of Aland Vindkraft. In this case, Sweden refused to give support to wind energy located on the island Aland, an autonomous region of Finland which is only connected to the Swedish electricity grid.[199] The European Court of Justice accepted this reasoning of the Swedish energy regulator. Such reasoning could also form an impediment to hybrid and meshed offshore wind energy.

In Germany, this is fixed in a relatively simple way. In the German EEG, para 5(3), the possibility to fund projects outside Germany is included, for up to 5% of the tendered capacity. This is under the conditions that the project is located in a country that also opens its support system for German projects (reciprocity) and that it is physically possible to transmit the electricity to Germany, or that there is a similar effect on the German electricity market.[200]

The conditions under which the EEG opens support to projects outside Germany clearly try to cover for the politically difficult measure of giving support to wind farms outside Germany's own territory. With the required reciprocity, the other country will have to accept the same conditions for German applicants. Moreover, with the condition that it should be physically possible to transmit the electricity to Germany (or that an equivalent effect is reached on the German electricity market), the benefits of extra electricity production also (indirectly) benefit Germany. Similar conditions could also be used in other countries to fix limitations of the support scheme to one country only.

6.3 BENEFITS OF OFFSHORE WIND FOR COUNTRIES

Although OWFs represent significant costs, they also entail benefits, both directly for the developer and indirectly for the country allowing their construction. A fair system of support schemes would make sure that the costs of the system lie with the country that benefits most from the OWF that is supported. However, for OWFs connected to a hybrid asset, this may be difficult to assess.

In the current rules on support schemes, some states include the requirement that support is only given if the electricity flows exclusively to the state in whose EEZ the wind farm is located, combined with the requirement that only wind farms in the own territory can obtain support. These rules need to be changed before hybrid assets can be introduced in a certain country. This is generally possible, as long as the benefts still reach the country that pays the support. The author assumes that states are only willing to provide support for renewable energy if they can also reap (some of) the *benefits of* the offshore wind farm development. Another assumption is that, when support schemes become less expensive for countries, less benefits are required. This assumption lies in the trend of the last few years, in which the support needed per OWF has decreased steadily.[201]

[199] CJEU, C-573/12, Alands Vindkraft AB v. Energimyndigheten, ECLI:EU:C:2014:2037.
[200] German Renewable Energy Act, Erneuerbare-Energien-Gesetz vom 21. Juli 2014 (BGBl. I S. 1066), das zuletzt durch Artikel 1 des Gesetzes vom 17. Dezember 2018 (BGBl. I S. 2549) geändert worden ist, para 5 jo 88a.
[201] See chapter 6.1.

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There are different benefits of OWF development. Some are linked to a specific country, some are regional benefits. For each of the benefits mentioned below, it is possible to assess whether countries are still able to enjoy the benefit in a meshed infrastructure, and thus, to what extent countries might be willing to support OWFs that are connected to a meshed offshore grid. The possible benefits for a country of the development of OWFs are:

1. Lower electricity wholesale price if there is more supply at the low end of the merit order
2. RES count towards renewable energy targets states set for themselves and for EU RES targets[202]
3. On the long-term, decreased dependence on gas, coal and oil imports for thermal power plants and an ageing fleet of nuclear power plants (although there are also security of supply costs related to the larger volatility of RES and the need for grid reinforcement)
4. Stimulation of employment due to the construction and maintenance of the installations

Which benefit is most important may vary between countries, i.e. for countries that are already far ahead of their renewable energy targets, the second benefit might be less relevant.

The first benefit depends on which bidding zone the wind farm has to bid in. The demand side in the bidding zone that the wind farm bids in profits from lower wholesale electricity prices. This effect can be redistributed through interconnectors. Bidding zone design has many technical implications for the MOG. Therefore, the issue of bidding zone design should not be based only on its impact on states' willingness to support offshore wind energy. The topic is addressed further in Deliverable 12.3.[203]

Concerning the second benefit: the installed offshore wind capacity counts towards the RES targets that states jointly have under EU law,[204] as well as to the targets that states may have formulated for themselves next to the EU targets. In general, the installed capacity of OWFs counts towards the targets of the country in whose territory or EEZ the OWF is located. If states wish to divide the capacity otherwise, the cooperation mechanisms described in the Renewable Energy Directive are relevant.[205] With cooperation mechanisms, countries can come to a more flexible division of RES counting towards the renewable energy targets, even if the electricity does not flow into the grid of the country in which the OWF is located. Moreover, with cooperation mechanisms, countries can come to a division mechanism in which two (or more) states earn 'renewable energy' from the same project or dedicated support scheme. Therefore, concerning the second benefit, countries' possible concerns in connecting offshore wind farms in a hybrid or meshed grid can be taken away by using one of the various cooperation mechanisms.

[202] Directive 2009/28 indicated targets per country for the amount of renewable energy consumption. With Directive 2018/2001, *supra* note 58, art. 3 there are only EU-wide targets. Next to this, states may still set own internal targets.
[203] Specifically, the contribution of L.J. de Vries on bidding zone design to PROMOTioN Deliverable 12.3 (forthcoming).
[204] Directive (EU) 2018/2001, *supra* note 58, art. 3.
[205] Directive (EU) 2018/2001, *supra* note 58, art. 8-13.

In practice, cooperation mechanisms have not been used often.[206] The 'statistical transfer' is used by Luxembourg, which has 'bought' renewable energy from Lithuania and Estonia.[207] In the context of the meshed offshore grid, statistical transfers could be part of a redistribution scheme concerning which country can count the produced energy towards their national renewable energy target. Moreover, the possibility of statistical transfers could be a motivation for states that have already reached their renewable energy goal to keep investing in renewable energy, including offshore wind energy, as they can statistically 'sell' superfluous renewable energy generation to other countries for counting it towards their targets. Another possibility is the 'joint project', which can also be developed in third states, under specific conditions.[208] Finally, it is possible to cooperate in 'joint support schemes'. Currently, the only example of a full joint support scheme is between Norway and Sweden,[209] and Germany and Denmark are experimenting with a joint tender.[210] Although cooperation mechanisms have not been used often, they could be of use when designing support schemes for OWFs connected to the MOG.

The third benefit, concerning the long-term security of supply, renewable energy in general decreases dependency on electricity generation based on other fuel sources such as coal, uranium and gas, which often have to be imported, or, in the case of nuclear energy, which, in several North Sea coastal states, are planned to be phased out over the coming decade(s).[211] Nevertheless, more renewable energy in an electricity system make the system harder to manage because of the larger volatility, and grid reinforcements are needed. Here, it depends on the grid configuration, the level of interconnectivity, on the bidding zone design and on the actual market conditions to what extent countries benefit from the construction of wind farms, but it is clear that wind farms connected to an offshore grid have an advantage over radially connected wind farms as interconnection capacity is added to the system as well. If a wind farm is connected radially, the benefit of having more generation capacity independent of polluting or scarce primary resources comes only to the advantage of the country it is connected to. If an OWF is connected to multiple countries, the benefits in principle go to the country in whose bidding zone the electricity is offered, which is linked to the first benefit, but at the same time, electricity will flow to another country if there is a local scarcity due to an unexpected outage or another incident.[212] Conclusion: this benefit is probably larger if the wind farm is connected to a hybrid/meshed grid than to a radial line, as the combination of renewable generation and interconnection is more valuable to the country and to the entire region compared to radially connected wind farms. In other words, the marginal benefit of each additional wind farm connection is higher if more benefits (due to the interconnection function) are included.

[206] It may be that they are going to be used more often towards 2020, as states will have to reach their 2020 RES-targets as set out by Directive 2009/28, *supra* note 117.
[207] EU News items (last visited 11-2-2019): **https://ec.europa.eu/info/news/agreement-statistical-transfers-renewable-energy-amounts-between-lithuania-and-luxembourg-2017-oct-26_en**, **https://ec.europa.eu/info/news/second-agreement-statistical-transfers-renewable-energy-amounts-between-estonia-and-luxembourg-2017-nov-13_en**.
[208] (Recast) Renewable Energy Directive, *supra* note 58, art. 9.
[209] C.T. Nieuwenhout (2017), *supra* note 5, p. 103.
[210] Ibid., p. 66.
[211] Nuclear phase-out is the aim in Germany and Belgium. In France, a reduction of nuclear capacity is envisaged by 2030-2035, although the exact targets are not yet decided on a political level. In some other North Sea coastal states, however, there is a renewed interest in nuclear power. This is the case for the UK and Sweden.
[212] Commission Expert Group on electricity interconnection targets, *Towards a sustainable and integrated Europe*, November 2017, p. 10-14, available at (last visited 11-2-2019): **https://ec.europa.eu/energy/sites/ener/files/documents/report_of_the_commission_expert_group_on_electricity_interconnection_targets.pdf**.

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Regarding the fourth benefit, stimulation of employment, it is important to note that this argument is often made by countries for renewable energy in general, but that it does not necessarily hold for offshore wind to the same extent as for onshore renewable energy. This is because the supply chain, construction and maintenance of offshore wind farms are more cross-border than that of onshore renewable energy. For example, in the supply chain of the wind turbines, it might well be that the foundations are prepared in another country than the turbine nacelle, with the wings produced again in another country.[213] Concerning construction, the companies able to construct wind farms work on a European or even international basis, with personnel from all over the world.

A special role in both construction and O&M (operations and maintenance) is reserved for the North Sea ports active in the wind energy sector. Extra demand for employment exists in ports that serve as a basis for construction and maintenance of the wind turbines. It is logical to choose a port which is relatively close to the wind farm in question, which is often in the country where the wind farm is located. Nevertheless, this does not necessarily have to be the case: for example, the Dutch offshore wind farm 'Gemini' is constructed from the port of Esjberg in Denmark.[214] Therefore, extra investment in the offshore wind energy sector in one country does increase employment in the sector, but these benefits are not specific to the wind farm host country but rather distributed over a larger geographical area. Even more importantly, it cannot be said that these benefits are dependent on whether the wind farm is connected radially or in a meshed grid. Therefore, this benefit is not affected by whether or not a wind farm is connected radially or meshed.

6.4 CONSEQUENCES OF BIDDING ZONE DESIGN

There is a clear link between bidding zone design and support schemes. The bidding zone design of the North Sea region determines the income of OWFs and, thus, to what extent developers need extra support in order to develop OWFs. For hybrid and meshed offshore grids, there are multiple bidding zone scenarios:[215]

i. OWFs bid into the country in whose EEZ it is located;
ii. OWFs bid into either country they are physically connected to;
iii. OWFs bid into a North Sea bidding zone;
iv. OWFs are clustered in small zones with a price based on local supply and congestion

Which bidding zone configuration should be used for the meshed offshore grid is a topic of economic optimisation rather than a legal question – addressed in PROMOTioN Deliverable 12.3.[216] Moreover, bidding zone design is sometimes turned into a political question rather than an economic optimisation question. In any case, regarding the willingness to provide support for offshore wind energy, we expect that, in the short time, coastal states are

[213] WindEurope (2017), *supra* note 89, p. 21. The companies mentioned here for production of foundations, nacelles, wings have production locations in various European countries.
[214] Van Oord news item (last visited 11-2-2019): **https://www.vanoord.com/news/2016-first-wind-turbine-installed-gemini-offshore-wind-park**.
[215] Based on NSCOGI Discussion Paper: Possible Market Arrangements for Integrated Offshore Networks, Deliverable 5 (Final Report), 13-3-2013, (last visited 11-2-2019): **http://www.benelux.int/files/5613/9702/3931/options.pdf**.
[216] See *supra* note 203.

only willing to pay for the support if the OWFs bid into the country in whose EEZ they are located (option i). Whether this is indeed the case has to be investigated in consultation with the relevant representatives from the coastal states (the relevant ministeries and executive agencies for the permitting of offshore wind). The result of a lack of willingness for new bidding zone configurations is that, for the short term, **bidding zone design in a MOG will, at least for the wind farms for which support is necessary, be limited to option i**. It must be noted here that, although the wind farm bids into one market only, the physical flow of energy may still go in a different direction due to 'netting' of the electricity flows. This is the logical consequence of creating a meshed offshore grid instead of a radial connection. Nevertheless, as long as the offshore wind farm bids into the bidding zone in whose EEZ it is located, the electricity market benefit still goes to this country.

If, in the long term, another bidding system is introduced, the income pattern of OWFs may change significantly.[217] Some OWFs may still (or again) require financial support. In that case, the support system can no longer be based on the OWFs location in an EEZ, because this would cause arbitrary price differences and strange support patterns. When there are many small price zones in the meshed grid, the way in which countries can be most sure that they reap the benefits of the support they pay, is by establishing a general fund for support to OWFs connected to the MOG. The connected countries can then contribute to the costs of the support scheme on the basis of a calculation *ex post* of the electricity flows, and the share of the time/capacity that they benefited from the offshore generated electricity.[218] The calculation is then based on the principle that the beneficiary pays for the support.[219] A special agreement with rules about the calculation of contributions and award of the support would be needed in order to establish such a system.

In order to allow for legal certainty for the wind farm developer, it should not matter for the wind farm owner to which electricity system the offshore generated electricity flows. This is only possible if the participating countries provide the same amount of support under the same conditions. This is possible, for example, if they organise a joint tender for a certain offshore wind farm project, with joint tender conditions. The maximum support per MWh will then be established through the lowest bid to the tender. It is not possible to combine different types of support schemes, such as a system based on tradable certificates and a feed-in based system, because then the legal situation for the wind farm developer would change based on which country has the highest electricity price at each time slot.

6.5 CONCRETE PROPOSALS FOR SUPPORT SCHEMES FOR OWFS IN A MOG

Short Term

217 Ibid. The most logical option for the long term, from an economic viewpoint, is option iv: OWFs are clustered in many small zones. The reasons and calculations are set out

218 This system can be designed as a form of a joint support scheme, as described in the Renewable Energy Directive, *supra* note 58. This is also possible with non-EU states: the only currently existing joint support scheme is between Sweden and Norway.

219 With the current CBCA methodology, the principle of 'beneficiary pays' is used. For operational support, this principle can also be used.

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As mentioned above, in several countries, it is currently only possible to obtain support for OWFs that feed their electricity in the country in which the OWF is located. An alternative to this approach is to decouple physical flows from market flows. This is done for example in the case of the Kriegers Flak Combined Grid Solution.[220]

Support Schemes for Physical Flows / Market Flows	Costs/ benefits	Speed of Implementation	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
Support if the electricity physically reaches the grid of the coastal state (default)	--	+	+	-	2	2
Decouple physical flows and market flows; support depends on the market flow	++	-	0	+	3	1

Decoupling physical flows from market flows when it comes to support for RES is advantageous (++) in the context of the MOG. This allows for the most efficient solution. Only supporting OWFs that feed their electricity only in the grid of the coastal state is not efficient (--), as it reduces the willingness of OWFs to connect to a MOG – OWFs will only receive support if they are connected radially. In several cases, a radial connection for each OWF is less economically efficient than hybrid/meshed solutions, especially with OWFs that are located further away from the coastline. The speed of implementation is higher if the default option (OWFS only obtain support if the electricity physically reaches the coastal state's grid) is used – no legislative changes are needed for this option. For decoupling the physical flows and the market flows, some legislative changes will be needed. Socio-political acceptability is higher for the default option, as it is clearer that the electricity flows to the country that provides the support, than if the physical flows and market flows are decoupled. Nevertheless, as most of the benefits are independent of whether the electricity physically flows to the coastal state, there is also no negative impact on socio-political acceptability (0). Concerning the provision of private capital for the MOG, the default option reduces willingness of OWFs to connect to the MOG, reducing the rentability of the MOG (-). Decoupling the physical and market flows will facilitate that OWFs can be connected to the MOG, which increases investment in the MOG (+). Thus, decoupling physical and market flows allows OWFs in a MOG to receive support, which is more advantageous for the development of the MOG.

Long-Term Bidding zone development

The socio-political acceptability of giving support for OWFs depends on the extent to which the supporting state reaps the benefits of the OWF. Whereas most benefits do not depend on the way in which the OWF is connected, some states do not intend to open their support system for OWFs that are connected to another country on the short term. If the OWF bids into the bidding zone of the coastal state (that provides the support), even though the electricity physically flows to another bidding zone, the coastal state reaps all the benefits of offshore wind, including lowered wholesale electricity prices. In this scenario, the (nationally oriented) support schemes will work.

However, if another form of bidding zones is developed, i.e. many small zones or a North Sea bidding zone, the coastal state will not reap the full benefit of offshore wind energy, and thus, they will be less willing to provide

[220] C.T. Nieuwenhout (2018), *supra* note 62, pp. 109-111.

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support for OWFs. There are various solutions to this, but they entail large changes in how support schemes are organised and what the source of the support is. A joint fund (or joint support scheme) with calculation of each country's contribution *ex post* (based on the principle 'beneficiary pays') is a possible solution for support in a bidding situation with many small zones.

Support Schemes in Future Bidding zone system with many small zones	Costs/ benefits	Speed of Implementation	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
North Sea support fund in which all states participate equally	0	+	-	0	1	1
North Sea support fund in which states participate on the basis of actual electricity flows (subsequent calculation)	0	-	++	0	2	1
Support for OWFs on the basis of EU instruments (such as CEF)	0	-	+	0	1	1

There is no difference in the costs/benefits (0) between these options, as it only determines where the support comes from, not how much the support should be. The three options are all oriented towards a regional form of support, which means that the benefits will be more or less the same. The costs may vary slightly depending on the transaction costs, but this depends rather on the implementation than on the form of the fund. The speed of implementation will be higher for a fund in which all statses participate equally (+), as it is easier to design than a fund in which states participate on the basis of actual electricity flows (-). Support for OWFs on the basis of the CEF fund will have a longer implementation time (-), as such an instrument would need to go to the entire legislative procedure of the EU. The most important parameter for this table is socio-political acceptability. A solution in which the states contribute equally will not be acceptable for the smaller states, and thus scores very low (--). A fund based on the actual electricity flows (and thus coupled to which state receives the benefits of the installed OWF capacity) is much more fair – the state that benefits will pay for the fund. As this is difficult to predict in advance, it can be divided on the basis of *ex post* calculation, on a weekly/monthly/yearly basis. Support on the basis of EU instruments will probably score high on acceptability for the North Sea states, but the states not connected to the North Sea will be less willing to agree to such a scheme, resulting in a (+). It is not expected that the source of the OWF support has a significance on the provision of private capital for the MOG, as long as it is clear that there is a stable support system for the main parties connected to the MOG, namely OWFs.

Based on the analysis above, a North Sea fund in which states participate on the basis of a calculation *ex post* of the electricity flows, scores best. Such a fund can be created under the Renewable Energy Directive,[221] or it can be part of the international agreement mentioned in chapter 4.

[221] Directive 2018/2001, *supra* note 58.

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6.6 CONCLUSION

Currently, the North Sea countries have several different support schemes, which can be roughly categorised as 'feed-in' based systems and systems based on a market for tradable certificates. Some countries limit the support only to electricity that physically flows into their own electricity grid, which is problematic for the MOG: it would reduce the willingness of OWF developers to be connected to a hybrid/meshed grid instead of a radial connection, as this would limit the support they get for their OWF. PROMOTioN recommends to decouple physical flows from market flows in support scheme rules, and to refrain from basing the support scheme on physical electricity flows.

States are willing to support offshore wind energy if they reap the benefits. It is shown that most of the benefits do not depend on how the OWF is connected (radially or meshed), as long as the OWF bids into the bidding zone of the coastal state, that provides the support. If this is not the case, because a different bidding zone configuration is used, nationally oriented support schemes will be less acceptable, because the coastal state will no longer reap all the benefits of the OWF. In that case, one could consider supporting OWFs through a regional or EU-based fund. A fund in which states participate on the basis of actual electricity flows, based on *ex post* calculation, is considered most fair, and thus most politically acceptable. Such a fund can be created under the Renewable Energy Directive, or it can be part of the international agreement mentioned in chapter 4.

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7. DECOMMISSIONING

7.1 INTRODUCTION

Decommissioning is the process of withdrawing windfarms or cable infrastructure from service at the end of their lifetime. The notion of decommissioning is only emerging in the offshore wind sector, whereas it is already established for decades in the offshore oil and gas sector, where decommissioning entails ending the operations, closing the wells securely, removal of the installation and waste management of the removed parts.[222] The main difference between the offshore oil and gas sector and the offshore wind sector is that decommissioning of oil and gas infrastructure comes naturally when the field is depleted and the infrastructure loses its function. The wind will continue blowing, so decommissioning will not start when the source is depleted, but when the permit indicates a final date, or when the OWF is technically at the end of its lifetime.[223] However, in that case, there are several choices: the permit could also be extended, or turbines that are technically at the end of their lifetime could be replaced by new turbines, especially if the foundations are still solid. Concerning the offshore grid, the grid may also keep its function of interconnector, even when an individual OWF is removed. Thus, decommissioning for OWFs and the offshore grid entails many new choices that cannot be copied from the oil and gas sector. More technical, environmental and economic research is needed in order to come to a well-developed decommissioning policy for the MOG and the OWFs connected to it. This chapter gives an exploration of the issue and the policy choices that could be made.

Decommissioning of OWFs and the grid itself is relevant for the legal framework for the MOG for several reasons.

- First, it is important for the offshore grid design to know what happens after decommissioning of wind farms: will the same sites be used for new wind farms, leaving the connection point in place? Or will the area be completely restored in its previous state, meaning that the connection will also be removed? This may make a difference for grid design and development. This is especially relevant as the estimated lifetime of an OWF is currently around 25 years, whereas the cable infrastructure may last even 40 years.
- Secondly, it is relevant for the CBA (cost benefit assessment) of the offshore grid to have a costs estimation of decommissioning of both offshore wind projects and offshore transmission projects. The standard of decommissioning influences the costs. Full removal of the infrastructure, especially the underground parts (turbine and substation drilled foundations; buried cables) is much more expensive than leaving the underground parts in place. Funds need to be reserved for the decommissioning of a meshed offshore grid, and this needs to come back in the finance and CBA for such a grid.
- Thirdly, it makes a difference for the environmental impact what rules on decommissioning for transmission infrastructure in a MOG are adopted in the legal framework for a MOG.

[222] Exemptions may apply in cases where the structure has no potential effects on navigation and environment or costs are too high or non-proportional risks to personnel are involved, Resolution A.672(16), *supra* note 60, 2.1.
[223] For this chapter, inter-array cables are considered to be part of the OWF. In most countries, the inter-array cables are included in the removal obligation of the OWF. Thus, there is a difference in submarine cables that are part of the offshore grid and cables that are part of the OWF.

Thus, it is important to establish rules on decommissioning for the offshore windfarms connected to a MOG and for parts of the MOG itself. These rules need to be part of the legal framework for a MOG in order to provide certainty on the costs and future grid development.

The structure of this chapter is as follows. First, the current practice of decommissioning of offshore wind farms and transmission infrastructure is portrayed. After an explanation of the methodology of this chapter, the relevant questions with regard to decommissioning will be analysed on the basis of predetermined criteria. For each of the issues, different options are mentioned and they are analysed through the general analytical framework developed in PROMOTioN WP7. It must be noted that, since the interests weighed in this deliverable are hardly quantifiable and their impact also greatly depends on how the choices are implemented in practice, the analysis will not deliver hard, science-based results but rather recommendations that point in a certain direction and that should be substantiated through further research on the costs and the environmental impact of the different options.[224]

7.2 BACKGROUND

Decommissioning, as mentioned before, entails taking an installation or structure (such as an offshore wind turbine or cable) out of service, safely removing it as far as necessary, and managing the waste after the removal.[225] For the purpose of this deliverable, decommissioning of OWFs is separate from decommissioning of the offshore grid cable infrastructure, as there might be a different approach to constructions above the seabed (and even above the water surface) and cables buried in the seabed.

The current practice of decommissioning of offshore wind farms differs per state. The practices are developing, as states, the offshore wind farm industry and the decommissioning industry are learning from experience with the decommissioning of the first offshore wind farms over the past years. The table below, based on Deliverable 7.1,[226] serves as an illustration of the varying decommissioning practices in eight North Sea coastal states.

	Standard for decommissioning	Based on	Discretionary powers	Financial guarantees
Belgium	Removal of the installation, securing the area concerned and protection of the marine environment	Royal Decree + Domain Concession	Other measures than foreseen could be used if they have at least equivalent result, Minister decides over this	Depends on domain concession proposal
Denmark	Removal of the installation, restoration of the area in its original state	Construction Permit	Developer has to decommission to the extent specified in the construction permit, little discretionary powers	A security deposited at the Danish Energy Agency until final decommissioning
France[227]	Restoration of the area in its original state	Tender criteria,	Two years before the end of exploitation, project developer	EUR 50.000 per MW, guarantee at financial

[224] It reaches beyond the scope of this deliverable on the legal framework to perform this analysis in full.
[225] R.C. Fleming, H. Fernandes Más and C.T. Nieuwenhout, Wind Farm Waste - Emerging Issues with Decommissioning and Waste Regulation in the EU, Denmark and the United Kingdom, OGEL Vol. 16 issue 2, p. 3.
[226] C.T. Nieuwenhout (2017), *supra* note 5, p. 164.
[227] It must be noted that all OWFs currently constructed in France are within the first 22km off the coast (territorial waters). This may make the decommissioning regime stricter than for OWFs located further away.

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		concession conditions	performs study on optimisation of decommissioning, the maritime preferect is the authority who can ask this	institution or Caisse des Dépots et Consignations
Germany	Decommisisoning as far as maritime environment, shipping, mining and defence requires this	Offshore Wind Act	Large discretionary powers: BSH decides to what extent decommissioning needs to take place and to what extent financial guarantees are necessary.	BSH can order that guarantees need to be in place if approving the planning permit
Netherlands	OWF and cables have to be removed when not in use anymore	Water Decision	Minister can decide that some parts may be left behind under specific circumstances.	Not specified
Norway [228]	Removal of the installation	Offshore Energy Act	The Ministry for Petroleum and Energy can prescribe conditions to decommissioning	Not specified
Sweden	Recovery and remedy of environmental damage.	Environmental Act	The Ministry can impose requirements and conditions for the construction permit, one of which relates to decommissioning.	Validity of the permit dependent on financial guarantees. Height: accepted if sufficient for their purpose.
United Kingdom	Flexible: object could be left in place or removed. Provisions needed either for restoration in previous state, or maintenance of objects left in place.	Energy Act 2004	Developer has large discretionary powers with regard to decommissioning (see standard for decommissioning), Secretary of State approves or rejects the plan, and may take remedial action if developer defaults.	Not specified, but polluter pays principle

The current practice of decommissioning of offshore electricity cables is not yet as developed as that of offshore wind farms.[229] However, as with the decommissioning standards for OWFs and converter stations, the decommissioning standards for offshore electricity cables also vary from complete removal to leaving the cables in place as long as they do not do environmental harm or threaten the safety of navigation. Under international law, the standard is that submarine cables can be left in place. There is a removal obligation for 'installations and structures', and cables are not deemed to fall under either of these two notions.[230]

The effect of the current practice (different decommissioning rules and standards per country) is that the offshore wind industry and the decommissioning industry, which both operate on a European (or even worldwide) level rather than a purely national level, have to take into account many different national rules, which entails extra administrative costs. Moreover, having different rules per country does not facilitate 'design for decommissioning', taking decommissioning and waste management into account already in the design and pre-construction phase

[228] Norway is mainly focusing on floating OWFs. Decommissioning of floating OWFs is very different (much easier) than decommissioning of OWFs with fixed foundations.
[229] This is mainly because the cables for the oldest wind farms were deemed to belong to the wind farm and thus fall under the regime of the windfarm itself.
[230] It must be noted that converter stations, although part of the grid structure, will fall under the removal obligation., as they are considerd to fall under 'installations and structures', in UNCLOS art. 60(3).

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of wind turbines and offshore electricity cables.[231] The decommissioning industry, which will develop significantly during the coming few decades,[232] could benefit from more harmonization of the decommissioning rules.

Another effect of having unclear rules on decommissioning is that it becomes more difficult to design an offshore grid in the most cost-effective way. It matters for the grid design whether the same site can be used again after decommissioning of the initial offshore wind farm, or whether another site has to be sought. Moreover, it matters for cost estimations in a cost-benefit analysis to what extent installations have to be decommissioned.

7.3 METHODOLOGY

The parameters used for the assessment of the regulatory framework for the offshore grid are different for the specific topic of decommissioning, compared to the assessment parameters used in the other parts of the deliverable. This is because priorities are different for this topic: time is less of the essence at the end of the lifetime of the wind farm or the cable infrastructure, which means that ‘speed of implementation’ is less relevant as a criterion. On the other hand, environmental impact is specifically important in the context of decommissioning. Therefore, the parameters used to weigh different options against each other, are:

- costs/economic benefits
- environmental impact
- political acceptability
- provision of private capital

Considering the costs and economic benefits, both are difficult to quantify regarding decommissioning. The costs are difficult to quantify because this depends on the decommissioning industry’s learning curve and on the quantity of projects to be decommissioned. The benefits are difficult to quantify as they lie mainly in whether one prefers ecological development or more space for shipping, fishing etc. Both represent a value to certain groups in society but neither directly influence the CBA of the MOG itself. Therefore, analysis on this point is limited to estimations and logical reasoning.

Analysis on the criterion ‘Environmental Impact’ is based on the amount of local disturbance and the loss or creation of habitats. Socio-political Acceptability is based on the principle that states will prefer to keep close control over the decommissioning process rather than to leave this to the industry, and on whether or not the analysed option is in line with the principle of ‘polluter pays’. The criterion on ‘Provision of Private Capital’ includes private capital for the entire project (the MOG), not only the decommissioning stage. In that sense, it includes predictability of the decommissioning costs, as investors will want security about future decommissioning obligations and costs related to this.

[231] R.C. Fleming, H. Fernandes Más and C.T. Nieuwenhout (2018) *supra* note 225, p. 12 and 21.
[232] Ibid., p. 2.

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The chapter is divided in different topics, namely decommissioning and removal of OWFs, removal of submarine cables, timing (i.e. linking removal of the grid to removal of the OWF or not), legal instrument used, and responsibility for remaining parts. For these topics, different options are analysed on the basis of the four abovementioned points.

7.4 ANALYSIS

7.4.1 REMOVAL OBLIGATION OF OWFS AND CONVERTER STATIONS

A first important choice concerns the removal obligation of OWFs and related infrastructure, such as converter stations, at the end of their lifetime.[233] At the moment, there are different rules in each coastal state, as shown above. In international law, removal of installations after the end of usage is the norm, but it is possible to leave installations in place in certain cases. Nevertheless, the rules on when (part of) the installations can be left in place after usage are not clear, as they are mainly directed towards the oil and gas sector. Therefore, the topic should receive attention in the context of a MOG as well. The different options concerning removal of OWFs and converter stations are:

- Complete removal
- Removal of the turbines but leaving the foundations in place
- Removal until a few metres below seabed, creating safety for navigation but leaving the part of the foundations that is below the seabed in place.
- Leaving the choice to the developer to decide, on a case-by-case basis, to what extent removal is needed
- Leaving the choice to the permitting agency at issue to decide, on a case-by-case basis

Costs and Economic Benefits

Concerning the costs, the more parts of the installation have to be removed, the higher the short-term costs (removal, shipment to shore and waste handling costs). On the other hand, if parts remain in place, there will be long-term costs in monitoring the site. The long-term costs of monitoring are probably lower than the removal of (part of) the installation. Therefore, the more parts of the installation have to be removed, especially the underground parts, the more expensive decommissioning will be. Here, the turbine and foundation design is of relevance: drilled monopoles or tripod foundations may have higher decommissioning costs than gravitational foundations or floating wind turbines that are anchored to the seabed. On the other hand, the monitoring costs will be higher when the part of the foundations above the seabed are left in place, than when the foundations are removed until the below the seabed.

From an offshore grid perspective, the use of space also represents a cost for the MOG. For example, if the foundations of an OWF are left in place to serve as artificial reefs, there may be less room to construct new wind

233 Even if the permit is extended, and some turbines are refurbished, there comes a moment that the costs of maintaining the OWF are higher than the costs of removal. This subchapter treats this situation. The question whether the permit should be extended or whether a new tender should be organised for the same area is dealt with in chapter 7.4.3.

farms on the same location, which reduces the benefits of the offshore grid in that area (as the grid loses half of its functionality (the connection of offshore windfarms). These costs need to be taken into account as well.

Environmental Impact

It depends on the case, location and type of installation whether leaving the foundations in place or complete removal is the best option. For aquatic life, the foundations may be valuable artificial reefs, which means some species' habitat will disappear if turbine foundations are removed.[234] On the other hand, the presence of the turbines foundations may disturb the natural habitat of other species. Next to the loss of habitat as artificial reef, there might also be extra disturbance from the removal process, especially if foundations need to be removed from the sea bottom.

Socio-political Acceptability

The societal norms about what is best may change, depending on the development of artificial reefs but also on the importance of navigation and the fishing industry. Nevertheless, leaving it to the developer to decide will score low on acceptability, as this shifts the power to decide from the (politically controlled) public administration to the developer. Generally, this is against the current practice that the law or the permitting agency prescribes the extent of the removal obligation and that the developer has to indicate only how he is going to reach this level. Moreover, leaving everything in place goes against the currently established principle in international law that the polluter pays and that the entity that the owner of the installation will be responsible for removal after the end of use of the installation.

Provision of private capital

For the provision of private capital, both for offshore wind farms and for the offshore grid, it is important that decommissioning costs are predictable. Here, the option that the developer decides on the extent of removal on a case-by-case basis will score high, as the developer will take costs and private capital into account, while a case-by-case basis, decided by the permitting agency or governmental body at issue will score low, as it is not predictable what the decommissioning obligation will be. Next to this, partial removal (until a few metres below seabed) will probably be favoured more than complete removal, as especially the removal of foundations below the seabed will be costly, while at the same time minimizing the costs for post-decommissioning monitoring of the site.

Removal of OWF at end of lifetime	Costs/ benefits	Environmental impact	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
Complete removal	--	--	++	+	3	4
Removal of turbines, leaving foundations in place	+	++	0	-	3	1
Removal of turbine and foundation above seabed, leaving foundation below seabed in place	-	0/-	+	-	1	2-3

[234] J. Vrooman, G. Schild, A.G. Rodriguez, F. van Hest (2018), *supra* note 194.

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Leaving the choice to the developer to decide, on a case-by-case basis	+	0/-	-	+	2	1-2
Leaving the choice to the permitting agency at issue to decide, on a case-by-case basis	+	+/-	++	--	3-4	2-3

Following the analysis, the best option for the MOG is to decide on a case-by-case basis whether the wind farm needs to be fully decommissioned or whether the foundations can be left in place, i.e. in the case of ecologically valuable locations. This choice should be left to the relevant government agency, such as the permitting agency for offshore wind. The negative point of this option is less certainty for investors, which reflects in a negative score for provision of private capital. This could be mitigated by setting the decommissioning standards and drafting the decommissioning plan sufficiently in advance.[235]

7.4.2 REMOVAL OBLIGATION OF MOG CABLES AT THE END OF THE LIFETIME

Next to the rules on OWF and converter station removal, there is also a choice concerning the removal of the MOG cables[236] in the seabed when a certain connection is no longer in use because of economic reasons, or at the end of the lifetime of the cable. There is no removal obligation for submarine cables under international law. Some states have specific rules on the removal of cables, but most states stay silent on the matter. Nevertheless, whether or not cables should be removed after the end of their lifetime is very relevant for a cross-border MOG, as the costs for decommissioning need to be taken into account into cost estimations for the MOG. Moreover, there is a knowledge gap about the impact of leaving submarine cables in place, especially if many cables are installed due to the large growth of offshore wind energy. This issue should be addressed in future policymaking on the MOG. Different options regarding the removal of cables in the MOG are:

- No common rules
- Removal of the cables
- Leave cables in place
- Leave cables except in specific sensitive areas, such as the landing to the beach or important waterways

It must be noted that a differentiation between cables in the MOG can be made: main connections and connections to hubs with multiple OWFs will keep their function much longer than cables that lead to an isolated OWF, after that OWF is removed. This has to be taken into account in the decommissioning rules for the MOG.

Costs and Economic Benefits

There is a cost in removal of the cables that are buried in the seabed. It is more expensive to remove the cables than to leave the cables in place and solving problems such as cables crossing each other (in a 'spaghetti scenario') locally. Therefore, the option with the most removal scores lowest in terms of costs and the one with the least removal scores highest. With no common rules, it is up to the countries and will depend on the local rules. This is slightly negative as it hinders standardization.

[235] R.C. Fleming, H. Fernandes Más and C.T. Nieuwenhout (2018) *supra* note 225, specifically the case of Denmark.

[236] Please note that this does not entail inter-array cables inside OWFs. They are not part of the MOG.

Environmental Impact

The environmental impact of leaving the cables in place will probably be lower than that of removing the cables dug into the seabed, as this disturbs the seabed locally. However, this depends on which type of insulation material is used in the cable and whether it is buried deep into the seabed or not. Leaving the cables in place where this does not do harm to the environment, and removing them in specific areas, such as shipping routes or landing points on the beach is the best from the environmental perspective, if the insulation material of the cables cannot leak into the water. The option 'no common rules' will probably lead to cable owners choosing the option that costs the least, with removal bringing high costs and leaving the cables in place bringing lower costs.

Socio-political Acceptability

Having no common rules will lead to a fragmented landscape and environmental policy with regard to the seabed, which is slightly negative. Removal of the cables follows the general principle of 'polluter pays' and will therefore be more acceptable than leaving the cables in place, which may lead to a public image of creating a 'spaghetti scenario' in the North Sea. Leaving the cables in place except in specific sensitive areas will take away the concerns of those who fear adverse consequences in specific areas, while not leading to high costs and to the 'spaghetti scenario'.

Provision of private capital for the MOG

First of all, the rules need to be consistent, so that investors can take the costs and risks for the prescribed decommissioning standard into account. 'No common rules' will lead to a fragmented landscape, which entails administrative costs and risks for investors in the MOG. Leaving the cables in place requires the least action, and thus the least risk, which scores positive. The other two options score neutral as there is no specific influence.

Decommissioning standard for cables	Costs/benefits	Environmental impact	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
No common rules	-	-	-	-	0	4
Removal of the cables	--	-	+	0	1	3
Leave cables in place	++	-	-	+	3	2
Leave cables except in specific sensitive areas	+	+	+	0	3	0

From the analysis above, it appears that the best option is to leave the cables in place except in specific sensitive areas. In this standard, most cables will stay in place, but in specific sensitive areas, for example with high shipping or fishing activity, or at environmentally sensitive areas like the beach, the cables will be removed (if this does not cause more disturbance than leaving the cables in place). This costs less than full removal, and scores higher on socio-political acceptability than leaving all cables in place.

7.4.3 INTERPLAY OWFS – GRID CONNECTION AT OWF DECOMMISSIONING TIME

A specific question to be asked when OWFs need to be decommissioned, is whether the grid connection will be removed at the same time or whether the grid stays in place for a longer time, especially if the grid is not yet close to its own economic lifetime. The lifetime of MOG cables is significantly longer than the OWFs. At the moment,

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OWFs have a lifetime of about 25 years, whereas offshore HVDC cables are estimated to have a lifetime of around 40 years. Thus, when the OWF is removed, the cable infrastructure will have another 15 years of estimated lifetime, leading to either premature decommissioning of the cables or to other inefficiencies. Different options are:

- Remove grid when OWF is removed
- Extend the license and repower the OWF (by the same developer)
- New tender for the same area, using the same connection
- Leave grid in place for interconnection function

Costs and Benefits

Here, the costs and benefits of the different options depend on the grid topology that is constructed. For example, for centralised hubs, the lifetime of the OWFs connected to it is much shorter than for the hub itself. For such a scenario, removing the grid when the OWFs are decommissioned is not an option. In that scenario, repowering of OWFs or new tenders for the same area are more logical. For the areas in which it is not cost-effective to create a new wind farm, for example because the area is too small to construct the (probably much larger) wind turbines, removal of the grid connection is more logical, but this depends on whether the part of the grid concerned is still in function as extra transport capacity or whether it is not really used for other functions than to evacuate offshore generated electricity. A relevant point here is the division of the costs of removal between different coastal states, where it concerns hubs to which multiple states are connectected and from which multiple states profit. The simplest solution is to take decommissioning costs well into account in the total CBA and possibly in the Cross Border Cost Allocation (CBCA).[237]

For other grid topologies, such as the decentralized smaller hubs, it is essential to keep the grid between the windfarms in place for interconnection function, as the grid is necessary to connect other OWFs further away.
In general, one can say that leaving the grid in place for interconnection function is more cost-effective than removal of the grid when the OWFs connected to it are decommissioned. This is because the (societal) benefits from interconnection remain in place, although the function of OWF connection disappears. Nevertheless, repowering the OWFs or organising new tenders for the same location is the most cost-effective option, as both the interconnection function and the OWF connection function remain in place. A special point of attention here are converter stations, they will need to be kept in place for connecting different cables to each other.

Environmental Impact

In general, whether the grid is removed at the same time as the OWF or not, does not make a large difference in terms of environmental impact. Therefore, the options ‘remove grid when OWF is removed’ and ‘keep grid for interconnection’ are scored neutral (0). Repowering of the old OWF or constructing a new OWF in the same area will score negatively, as there is more construction activity, which has a local environmental impact.

Socio-political Acceptability

[237] This topic is treated extensively in P. Bhagwat (2019), *supra* note 94, chapter 8.

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Removing the grid when the OWF is removed leads to an inefficient use of the resources, which is slightly negative in terms of socio-political acceptability. Using the grid, either for interconnection or for constructing another OWF is more positive, as it increases the usage of the resources. Between repowering the old OWF and creating a new OWF in the same area, the latter is more positive than the former, as it will allow for more competition and innovation.

Provision of Private Capital

For the provision of private capital of the entire MOG, it will be best to use the grid to the fullest extent possible, which means to repower OWFs or to create new OWFs when old ones have to be decommissioned (both score positively). On the other hand, removing part of the functionality of the MOG, by only keeping it for interconnection, is slightly negative. Removing the grid when the OWF is removed, not taking into account the much longer lifetime of the cables, will score negatively, as investors will have much less time to win back their investment.

Interplay OWFs – grid connection at OWF decommissioning time	Costs/ benefits	Environmental impact	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
Remove grid when OWF is removed	--	0	-	--	0	5
Repower OWFs	++	-	+	+	4	1
New tender for same area	++	-	++	+	5	1
Keep grid for interconnection	+	0	+	-	2	1

Following the analysis, the best alternative of what should happen to the grid connection at the end of the lifetime of the OWF connected to it, is a new tender for the same area. This is the most economically efficient option, together with repowering the OWFs. However, it brings more competition as repowering OWFs will be done by the former owners of the OWF.

7.4.4 RESPONSIBILITY FOR REMAINING PARTS ON THE LONG TERM

An important choice for the legislative framework around decommissioning of OWFs and parts of the MOG is who has responsibility for the area after some parts of the foundations and cables are left in place after decommissioning. It must be noted that this topic is more relevant if the countries choose to leave certain parts of OWFs or of the cable infrastructure in place after decommissioning. There are two options:

- Owner (company) keeps responsibility after decommissioning of the OWF for remaining parts
- Owner transfers responsibility to the state, and pays to a fund for the monitoring and maintenance

Costs/benefits

As the OWF owner has more knowledge about and experience with the area and the parts that are left in the sea, it will be economically more efficient if the owner keeps the responsibility over the remaining parts. On the other hand, if the area of the wind farm is used again for the construction of a new OWF, and especially if there are many different offshore windfarms in a certain area, there will be many different parties responsible for remaining

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parts of OWFs and cables in the sea, which may lead to a chaos of different entities with different responsibilities in the same area. This pleads for a transfer of responsibility to the state, under the condition that the state is funded for this. The state (specifically the hydrographic agency or water authority) will then monitor the area and contract a specialist company if remaining parts need to be removed, for example if they become dangerous to the shipping and fishing industry.

Environmental Impact

The state has a task to safeguard long-term interests, and it will have a broader perspective than the OWF or grid owner. Therefore, the environment will probably be better protected if the state regains responsibility over the parts that remain after decommissioning. On the other hand, the former OWF owner may not necessarily have an interest in protecting the environment as such, which may lead to a lower standard of environmental protection.

Socio-political Acceptability

For the socio-political acceptability, it is better if the state regains command over the parts that are left after decommissioning (slightly positive) than if the owner keeps responsibility over this, as the owner may not have the same long-term interests as the state. However, making the state responsible for the remaining parts is only acceptable under one condition, namely that the state is compensated financially for this, for example through a ring-fenced fund for the specific purpose of monitoring the area after a wind farm has been decommissioned. This is because otherwise, if the state gets the responsibility without appropriate compensation, the 'polluter pays principle' is not observed.

Provision of Private Capital

For the provision of private capital for the MOG, there will be a slight preference for the state gaining responsibility and the owner paying into a ring-fenced fund, as this will de-risk the investment and make it more clear what the costs are in advance. If the owner keeps responsibility, the costs are less predictable. On the other hand, OWF owners could also solve this by sharing the responsibility and the costs in a joint fund through an insurance company for example.

Responsibility for Remaining Parts on the long term	Costs/ benefits	Environmental impact	Socio-political Acceptability	Provision of private capital	# +'s	# -'s
Owners keep responsibility	+	0	-	0	2	1
State acquires responsibility	-	+	+	+	3	1

Following the analysis above, the tentative best option is to transfer the responsibility to the state and to finance this through a ring-fenced fund. This will lead to more coherence. The owner may have more in-depth knowledge about the technical specificities of the area and exact cable and foundations. On the other hand, with the re-use of an area for a new OWF or for other purposes, such as extraction of sand or fishing, this option could be difficult, as a new OWF developer will have to take into account the remainder of a previous OWF. Responsibility by the state is clearer, but either it burdens the state's finances, which could be politically unacceptable, or it needs to be secured that the state has the financial resources to monitor the sea bottom and remaining objects and structures. This could be done through a (ring-fenced) fund to which all OWF owners in a state's EEZ contribute.

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For large-scale deployment of offshore wind (and subsequent decommissioning), it is better to have one authority to have the responsibility over abandoned sites, especially if there are important ecological features. In this way, coherent management of abandoned sites can be ensured. It must be said though that the difference between the options is not very large, and it all depends on how the policy is implemented. Thus, both options could be acceptable for the MOG, depending on other choices (such as whether the same area is used to construct another OWF or not) and on implementation.

7.5 CONCLUSION

It is necessary to include decommissioning in the legal framework for the offshore grid, in order to be able to estimate the total lifetime costs well and to adapt the grid topology to the varying lifetimes of the OWFs. In the legal framework for decommissioning, costs, environmental impact, socio-political acceptability and provision of private capital, which translates into predictability for investors, need to be weighed against each other. There are various options on decommissioning standards for OWFs and for transmission assets, timing between these two and responsibility over remaining parts.

The decommissioning standard for OWFs should be based on a case-by-case assessment by the relevant permitting agency, and for cables, the standard should be leaving the cables in place unless in a sensitive area with high shipping or fishing activity or areas such as the beach. Concerning what should be done with the cables when an OWF is removed, a new tender for the same area is preferred, and the state should get the responsibility over parts that remain after decommissioning, under the condition that the state is compensated for this, for example through a ring-fenced fund. These rules should be adopted in international standards, such as IMO or OSPAR guidelines.

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8. CONCLUSION

The present deliverable analyses the form and the contents of the ‘target legal framework’ for the MOG. Considering the form, there is no ‘one size fits all’: different legal instruments are needed to reach a target legal framework that addresses all issues at the best level, that is, following the subsidiarity principle, the lowest level at which the solution still is effective. Applied to the offshore grid, this means that an agreement under international law is needed for asset classification and governance of the MOG, that various instruments under EU law and national law need to be amended and that a new OSPAR (or IMO) guideline on decommissioning for the offshore grid needs to be adopted. The agreement under international law should be in the form of a mixed partial agreement, to which the countries connected to the MOG are members and the EU itself also becomes a member.

Considering the contents of the target legal framework, the deliverable addresses the issues that stakeholders have indicated as the main legal barriers to an offshore grid, namely asset classification, governance of the MOG, planning and permitting, support schemes for OWFs connected to hybrid or meshed grids and decommissioning.

Clarification of the legal status of hybrid and meshed assets is necessary both on international law level, establishing jurisdiction, and on the regulatory level. Concerning the former, a common interpretation of the law of the sea will be necessary. No amendment of UNCLOS is needed, but for legal certainty, adopting this common interpretation in the mixed partial agreement is recommendable. Considering regulatory asset classification, PROMOTioN pleaded for the adoption of a separate category of ‘offshore hybrid asset’. This is adopted in the recital of the new Electricity Regulation, but this does not yet provide the required amount of legal certainty. As a first step, PROMOTioN proposes that the definition should be adopted in the operative part of the Regulation and specify in more detail what the regulatory regime for this new category of ‘offshore hybrid assets’ should be. As a second step, this definition should be adopted in the mixed partial agreement.

The governance of the offshore grid entails many different subjects, such as coordinated planning, ownership and operation, operational rules, innovation, regulatory governance, financial regulation, and procedures and legal certainty. The most important questions are: who decides and how are these decisions reached? The backbone of governance for the MOG should be the international agreement that binds all states connected to the MOG. The preferred contents of such an agreement are described in chapter 4.

Planning and permitting procedures are considered burdensome for the offshore grid and offshore wind farms alike. It must be noted that the procedures for one project are still tolerable, but they become a large cost and risk if they need to be repeated hundreds of times, which may be the case for an offshore grid. Various measures are available to smoothen the planning and permitting procedures for the offshore grid in coastal states. These measures are addressed at states, NRAs and project developers.

Support schemes for OWFs connected to a hybrid/meshed offshore grid are often mentioned by stakeholders as one of the most pressing issues that hold back hybrid/meshed grid development. The issue is that, due to the

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formulations in national law, OWFs connected to a hybrid connection may lose their entitlement to support schemes. This reduces the willingness of OWF developers to be connected to a hybrid or meshed grid, while at the same time disturbing the level playing field between OWFs. For the short term, this can be solved by decoupling physical flows from market flows in a similar fashion as for Kriegers Flak Combined Grid Solution. On the long term, especially if small bidding zones are introduced for OWFs, a joint fund for OWF support with subsequent calculation based on the 'beneficiary pays' principle is a possible option.

As a last part of the lifecycle of both OWFs and the offshore grid, decommissioning needs to be taken into account in the legal framework. There are two reasons for this: the decommissioning rules may influence what is considered the optimal grid topology, and secondly, decommissioning rules influence the total cost of investment in the MOG, next to the capex and opex. These costs have to be taken into account from the outset to give the full picture of the lifecycle of the investments. The decommissioning standard for OWFs should be based on a case-by-case assessment by the relevant permitting agency, and for cables, the standard should be leaving the cables in place unless in a sensitive area with high shipping or fishing activity or areas such as the beach. Concerning what should be done with the cables when an OWF is removed, a new tender for the same area is preferred, and the state should get the responsibility over parts that remain after decommissioning, under the condition that the state is compensated for this, for example through a ring-fenced fund.

Finally, it is important to consider time as a factor in designing the legal framework. It takes a long time to draft or amend legislation, especially in the multi-level and multi-actor context of a MOG. Early development of the legal framework is necessary to facilitate already on the short term the next steps towards a MOG, namely hybrid grid connections. These developments are likely to be constructed in the next 10 years already and they already benefit from a well-designed legal framework. In order to have the legislative framework ready for the MOG, it is recommendable to start developing the legal framework without delay.

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