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United Report

The legal, regulatory and contractual framework for integrated solar and offshore wind

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1 Executive summary

1.1 Background of the report

This report addresses the legal and contractual implications of integrating an offshore floating solar farm into an offshore wind farm. Six scenarios based on various combinations of standalone, semi-standalone, and integrated design concepts (provided by our partner TNO), along with green- or brownfield development have been analyzed. The majority of Dutch wind farms, both current and projected, will be situated within the Dutch exclusive economic zone (EEZ). For the purpose of this report, it is assumed that future floating solar farms will be realized in the vicinity of existing and future offshore wind farm plots.

1.2 Key regulatory findings

The Offshore Wind Energy Act is applicable within the Exclusive Economic Zone. This Act provides for a comprehensive tender procedure for offshore wind and solar energy projects. However, the Offshore Wind Energy Act does not include a framework for other types of energy projects, or for integration of wind and other forms of energy production. A framework specifically developed for offshore solar farms and other types of multi-use is currently lacking. As a result, for offshore solar projects in the Dutch EEZ a fragmented framework is applicable. To operate a solar farm (and to integrate it with a wind farm) in the North Sea, a permit must (separately) be obtained under the Water Act, covering the presence and operation of the floating installation.

One important issue is that, under the current regulation offshore solar farms cannot connect directly to the offshore grid. Solar farms will not be able to get their own connection agreement (CTA) with grid operator TenneT unless the Electricity Act and/or the future Energy Act (which will consolidate the prevailing Electricity Act and Gas Act into a single Act) are amended. This means that the current regulatory framework does not allow for the standalone design concept for solar farms on the North Sea, except for small-scale experiments. The other concepts (semi-stand alone and turbine integrated) are possible, as solar farms connecting to wind farms and supplying energy through them is left open as an option. This does however cause potential bankability issues as it makes the solar farm dependent on the CTA between the wind farm and TenneT.

The current legal framework provides for more room for the integration of greenfield offshore wind farms and solar farms than for the integration of brownfield offshore wind farms and solar farms. This is the case because the offshore solar farm is not subject to the regulatory framework of a permit issued for the offshore wind farm under the Offshore Wind Energy Act. Consequently, a separate water permit will need to be obtained for the offshore solar farm. As opposed to what is the case for permits under the Offshore Wind Energy Act for offshore windfarms, a tender procedure does not apply for this water permit.

In the case of a greenfield wind farm, the offshore solar farm can be included in the tender for the offshore wind farm. The winner of the tender for the combined wind and solar farm is expected to be granted the water permit. Even if specific conditions will be attached to this permit, and the relationship between these conditions and the conditions of the permit based on de Offshore Wind Energy Act is uncertain (notably, in the event of multiple applicants seeking a water permit for the operation of an offshore solar farm, the government lacks legal criteria to ascertain the party to whom the water permit should be awarded). The greenfield scenario would seem to be easier to fit into the existing offshore wind regulatory framework.

However, in brownfield situations the tender process for the wind farm has already been concluded. The report addresses, among other things, whether a brownfield wind farm can be compelled to accommodate an offshore solar farm on the grid connection of the wind farm. The fact that the tender procedure has already been concluded, results in a scenario in which any person desiring to establish an offshore solar farm could apply for a water permit. Of course, they would also need (private law) permission from the offshore wind farm to connect to its infrastructure, meaning that in seeking a permit without such permission ,considerable expenses may be incurred without a guarantee of project feasibility. But, as feasibility is not a criterion for obtaining a water permit, it is conceivable that multiple parties will apply for a water permit to realize an offshore solar farm, irrespective of whether they have obtained cooperation from the relevant offshore wind farm. This raises legal and commercial issues as, without legislative amendment, the wind farm cannot, as a general rule, be forced to allow the integration of an offshore solar farm into its grid connection.

1.3 Bankability issues

The bankability of offshore integrated projects within the Dutch EEZ is problematic under the current regulations. Ownership and security rights are not expected to be major concerns, as project finance parties can deal with legal uncertainties through financing documents. However, the larger issue lies with grid connection scenarios for offshore floating solar assets, due to regulatory gaps and uncertainties. In such cases, solar farms may need to connect to the offshore grid indirectly through wind farms. Financing parties will require thorough due diligence on wind farms and all other installations involved, insurance, warranties and credit support for internal settlement of grid connection costs and tariffs, and set high standards for their long-term viability. This could increase transaction costs and raise concerns about commercial and technical proprietary information.

1.4 Case study

Included in this report is a case study, which delves into three different scenarios for integration of wind and solar energy in the North Sea. In the first scenario, a park under construction includes a 50 MW solar farm connected to an offshore wind farm, assuming the solar farm is included in the Area Passport for Shared Use. The second scenario involves a 50 MW solar farm that can connect to TenneT's offshore substation, where it is assumed that the solar farm is not included in the Area

Passport for shared use. In this scenario, a brownfield situation is assumed, meaning that the wind farm is already fully constructed and operational. The third scenario entails a situation in which a 50 MW solar farm is connected to a wind farm and the tender for the wind farm incorporates criteria that enable (or even require) the establishment of a solar farm.
The outcome of this case study reflect once again that the prevailing legal framework holds out more favourable prospects for the integration of offshore solar farms and greenfield offshore wind farms, than to the integration of offshore solar farms and brownfield offshore wind farms.

1.5 Recommendations

To address the bankability issues identified in the report and to solve the issues in paragraph 1.2, an overhaul of the Dutch regulatory offshore integration framework is needed. We recommend the governmental institutions to create a comprehensive legislative package for integrated offshore (energy) projects. This new comprehensive law (for example: the Dutch Offshore Act for Energy projects and Multi-use) should, in our opinion, at least encompass the following: designation of offshore solar farm areas (including tender procedures), integrated permitting processes, and conditions for integrating offshore solar farms with brownfield wind farms.

2 Introduction

Ventolines is a partner in the UNITED, a research project co-financed by the European Union Horizon 2020 program. The UNITED project runs from 2020 to 2023 to provide evidence for the viability of ocean multi-use through a variety of research and pilot projects. Ventolines is a partner in the Dutch pilot project along with Oceans of Energy (floating solar developer) and TNO (research organization).

Specifically, Ventolines is assigned Work Package 7 (WP7), Pilot 7.2, Task 7.2.1, Deliverable D7.2.1.9. The deliverable is a report on the legal and contractual framework for an integrated floating solar and offshore wind farm.

The contractual and legal implications of integrating a floating solar farm into an offshore wind farm are dependent on multiple factors. Two important categories to consider are the design concept and whether the solar and wind assets are developed in coordination. Some of these characteristics may also impact the regulatory and legal requirements for an integrated floating solar and offshore wind farm.

This document outlines six scenarios based on different combinations of on the one hand standalone, semi-standalone and integrated designs, and on the other hand green- and brownfield development. For example, one scenario is a design concept that connects the solar plant at the TenneT offshore substation (standalone) to an existing offshore wind farm (brownfield development). In all scenarios, it is assumed that solar plants and wind farms belong to different owners. The contractual, legal and regulatory implications of an integrated solar and offshore wind farm with these characteristics will be explored.

3 Project Characteristics

3.1 Design Concept

There are many potential design concepts for integrating floating wind into an offshore wind farm. Given that all existing and planned offshore wind farms in the Netherlands use bottom-fixed foundations, this report only considers the integration of floating solar with bottom-fixed foundation offshore wind farms. In TNO report R10444, TNO has outlined 10 concepts for the electrical integration of floating solar with offshore wind farms. All 10 of those concepts (and potentially many others) can be grouped into three main categories: Standalone, Semi-standalone, Turbine-integrated. Here we use the same terminology as TNO for consistency. The table provides a summary of the design concepts, which are elaborated on in sections 3.1.1 through 3.1.3.

	Location of connection	Voltage level of connection
Standalone	TenneT substation	66 kV[1]
Semi-standalone	WTG switchgear	66 kV
Turbine integrated	WTG LV side of transformer	voltage at LV side of transformer (500 – 1000 V)

3.1.1 Standalone

Standalone designs all interconnect the solar farm at the TenneT offshore substation at the array cable voltage. In the case of the TNO paper, it was assumed to be a 66 kV array (the first offshore wind farms in the Netherlands have a 33 kV[2] array, but 66 kV has now become the standard). The solar farm has its own inverters, transformer(s), and array cabling that ties in to the 66 kV switchgear at the offshore substation. This would require the availability of a connection field at the offshore substation, which is very rare in the case of the existing 700 MW platforms. In the case of the new 2 GW platforms, a connection field with a maximum of 415 MW would be possible. First of all, it will have to be determined who will be guaranteed the transport capacity. Subsequently, a legal framework would have to be developed for non-guaranteed (non-firm) use of the transport capacity by the additional renewable energy generator. This will be discussed in Chapter 4.

[1] Or 33 kV for some older Dutch offshore wind farms
[2] OWEZ, Prinses Amalia, Gemini and Luchterduinen use 33 kV array cables (OWEZ directly to shore, no substation).

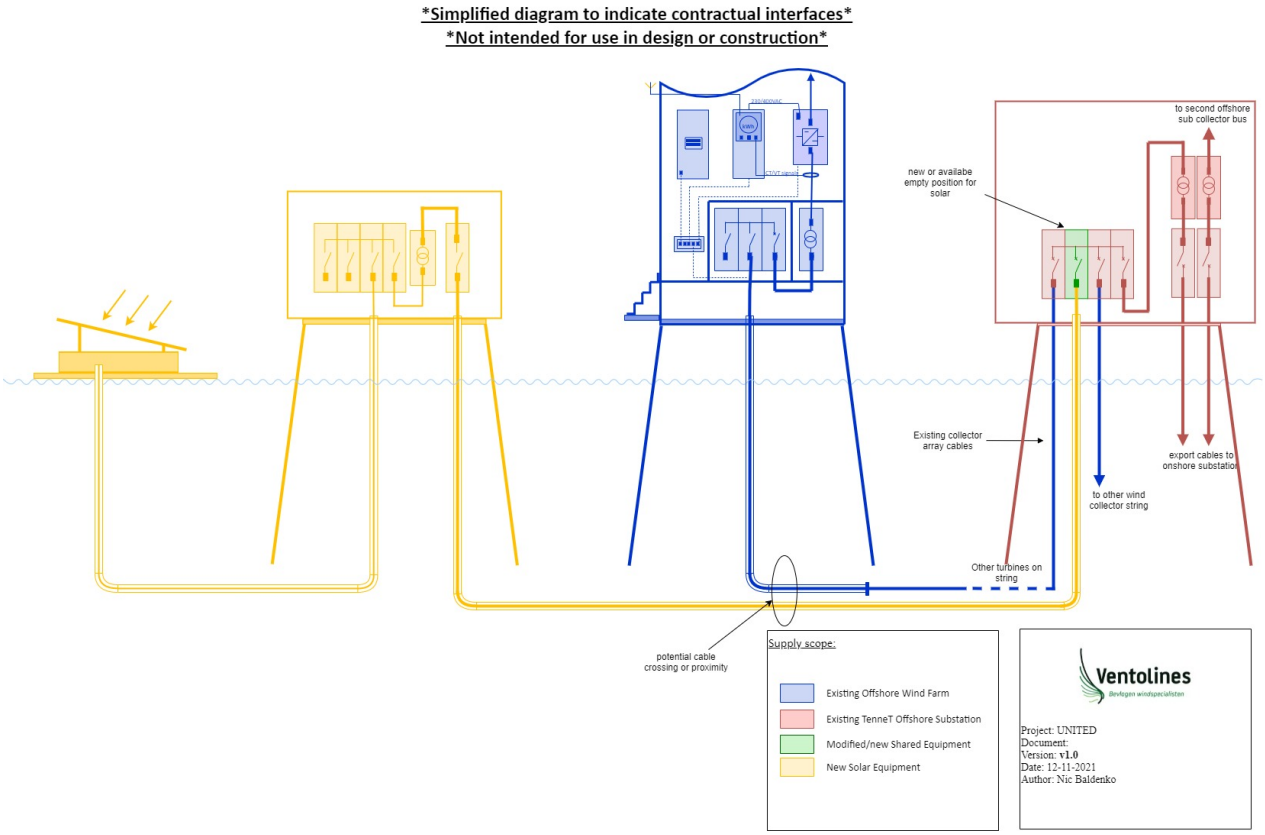


Figure 1 - Simplified diagram of the standalone design concept to indicate contractual and ownership interfaces

3.1.2 Semi-standalone

Semi-standalone designs interconnect the solar farm to the existing offshore wind farm collector array, with each solar module sized to connect at the end of an existing string of wind turbines. The solar farm has its own inverters and transformer(s) to connect at the array cable voltage (66 kV in the case of the TNO paper).

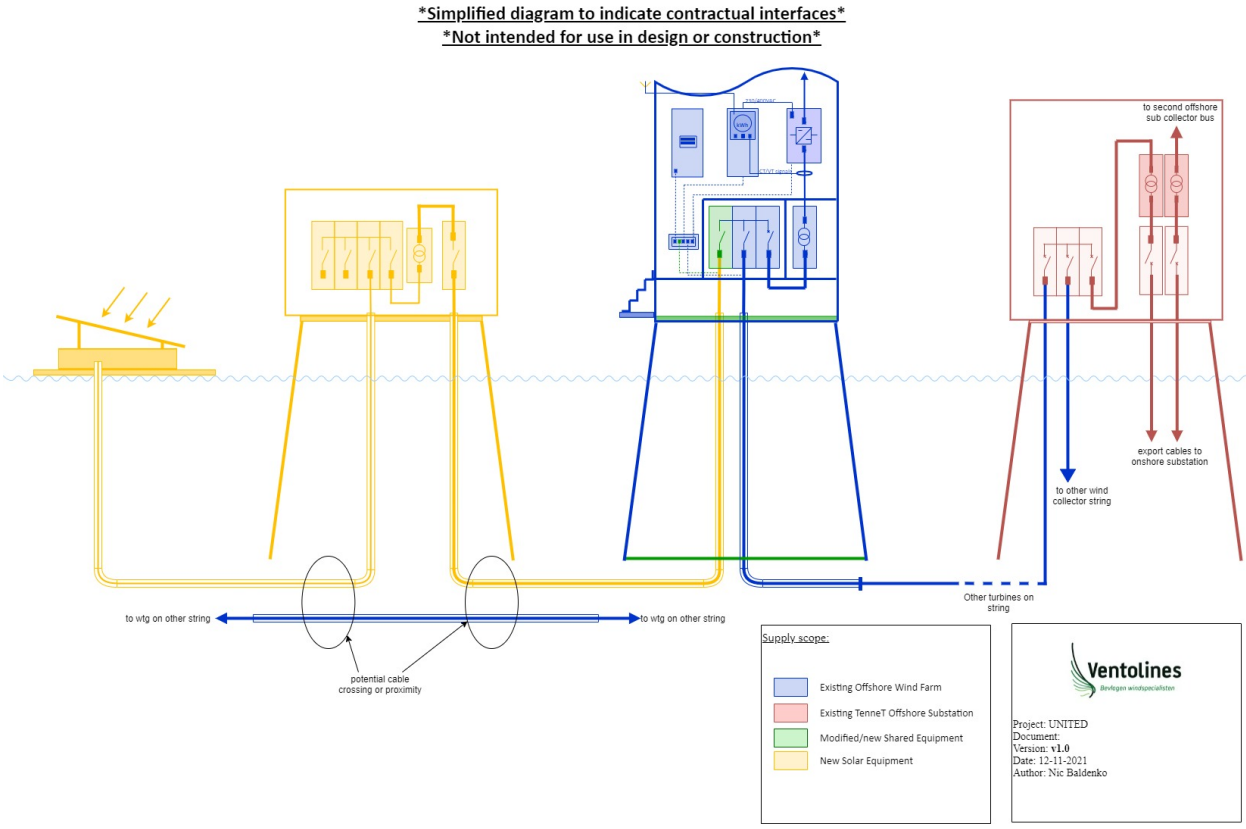


Figure 2 - Simplified diagram of the semi-standalone concept to indicate contractual and ownership interfaces

3.1.3 Turbine-integrated

Turbine-integrated designs interconnect smaller modules of the solar farm directly into multiple existing wind turbines along each array string. Generally, the solar farm is broken up into reasonably sized modules that tie in directly with the turbine transformer or a new transformer at the wind turbine. This design concept differs from the semi-standalone design concept due to the larger number of smaller PV modules. The contractual and ownership interfaces look similar to those shown in Figure 2.

3.2 Development Coordination

Two forms of development coordination are considered in this paper as they have different implications for contractual and regulatory requirements. In one case, a combined offshore wind and floating solar project may be developed in a coordinated manner on a greenfield site with no existing assets. Such a situation will be referred to as Greenfield development.

In the second case, there may be an existing offshore wind asset to which floating solar may be added. Such a situation will be referred to as Brownfield development. In either case, it is possible that the total facility may consist of more than one wind and one solar development. While this paper considers the case with one wind farm and one solar farm, the conclusions will likely be similar for facilities with more developments.

4 Contractual considerations

4.1 TenneT connection agreements

In order to connect to the offshore substation, customers must enter into a Connection and Transmission Agreement ("CTA"; in Dutch *"Aansluit- and Transport Overeenkomst"* or *"ATO"*) with the offshore grid operator TenneT. In some cases (for example, semi-standalone or turbine integrated design), only one of the farms will have a CTA with TenneT. For new connections, a Realisation Agreement (*"REA"*), to have the network operator construct the required infrastructure, is required as well. Existing offshore wind farms will have an existing CTA.

4.2 Cable sharing/cable pooling

This section considers the situations in which a contractual solution is required to facilitate the use of shared cables (and other shared electrical equipment) between the wind and solar facilities. Cable pooling is a term associated with existing agreements that facilitate the shared use of cables for onshore wind and solar facilities, and therefore it is used in this paper. However, this paper also uses the term cable sharing to more broadly address the topic of shared electrical infrastructure.

Regardless of design concept, all designs will share the export cable from the offshore substation to the onshore substation. For existing wind farms, the export cable has likely been sized for the windfarm alone. The wind farm likely has a higher maximum capacity than the nominal capacity of the export cable, as a large wind farm almost never runs at full capacity, due to unavailability of one or more wind turbines (hereinafter also referred to as: "WTGs") and wind conditions ("overplanting"). The solar farm will attempt to efficiently utilize spare capacity. Also, in green field developments the export cable will most likely not be sized to export the full capacity of the wind and solar farm simultaneously.

Two situations can be distinguished:

1. Solar and wind farms have individual connection and transmission agreements (CTAs) with TenneT. While it is possible to have a standalone design with separate CTAs, it is also feasible to share a single CTA with TenneT to reduce costs. However, it is important to note that offshore wind farms cannot have a separate CTA as per current legislation, since it is not possible for offshore solar farms to connect to the offshore grid. This means that concluding a CTA is not possible for offshore solar energy projects (this will be outlined below in Chapters 5-6).

2. In all other situations there will be one CTA with TenneT. It will depend on the regulatory and commercial context whether both farms will be a party to this CTA, or only one of them (most likely the wind farm).

In situation 1, a solution will be needed to determine priority for using shared TenneT facilities. For example, a three-party agreement between TenneT, the wind farm owner, and the solar farm owner may be used to determine priority. Such a solution would be new, to the best of our knowledge, as it has not been done before. Alternatively, there may be legal or regulatory solutions

that more broadly cover the shared use of offshore facilities. Whichever solution, or combination of solutions is developed, such a solution must inter alia cover the following topics:

- Maximum capacity of export cable (firm and excess)
- Minimum and maximum capacity allocated to each owner (if any)
- Priorities of usage and curtailment (by TenneT, by producers/PPA offtakers), including detailed procedure

It must be emphasized that on the basis of current Dutch legislation, situation 1 is not possible for offshore solar energy projects on the North Sea, because solar farms are not able to connect to the offshore grid. This means that, based on the current legislation, concluding a CTA is not possible for offshore solar farms. For more details, please refer to our findings in Chapter 5 and 6.

For situation 2, the cable pooling agreement developed by Ventolines could be used as a basis in addition to the CTA with TenneT, a summary of which is provided in paragraph 4.2.1 below. This is especially the case if both farms are a party to the CTA. In case only one of the farms (most likely the wind farm) is a party to the CTA, additional clauses in the cable pooling agreement are necessary to ensure the solar farm's access to the grid as this is not guaranteed by a CTA.

In the case of semi standalone and turbine-integrated designs, congestion will likely occur in the array cables, as most likely they are not designed to transport full wind plus solar capacity at the same time. This issue may also be solved via a form of cable pooling agreement, as the wind and solar farm will share a single grid connection with TenneT in all semi-standalone and turbine-integrated designs.

4.2.1 Cable pooling agreement

The cable pooling agreement is a contract between two (or more) entities that want to connect their wind- or solar farms to the grid via a single connection. The parties apply for a grid connection together, and the connection and meters are co-owned. The main objective of the cable pooling agreement is to optimize the available capacity.

The cable pooling agreement covers, inter alia, the following topics:

- Construction, operation and maintenance of the commonly owned grid connection and meters, including distribution of costs.
- Exchange of information, e.g., with balancing responsible parties.
- Curtailment of the wind and solar farms in case of congestion.
- Clauses on financing, insurance, decommissioning, termination etc.
- Ownership of shared equipment.
- Coordination and cooperation between farms; risk mitigation; liabilities in case damages are caused.

As explained above, two cases need to be distinguished: (1) both farms (possibly via a general partnership (*vennootschap onder firma*), or a similar construction, depending on the outcome of ongoing legal debates) are party to a CTA with TenneT and (2) only the wind farm has a CTA with

TenneT. In the latter case, additionally, there is need to ensure the solar farm's access to the grid in case the wind farm ceases to function.

4.3 Cable crossing & proximity agreements

In the project site, three types of cables will be installed:

1. TenneT owned cable(s) connecting the offshore substation to shore and possibly to other offshore substations
2. Inter array cables connecting wind turbines to the offshore substation
3. Cables interconnecting solar panels, solar transformer platform (if applicable) and wind turbines (semi-standalone and turbine integrated) or offshore substation (standalone)

In general, greenfield designs should be able to avoid all cable crossings. Depending on the lay-out brownfield development might require crossing wind farm inter array cables; crossing TenneT cables will normally be avoidable but might be necessary in brownfield standalone situations. Obviously, when wind and solar farms are owned by the same company, no crossing or proximity agreement is required in relation to these assets (but, of course, TenneT would still be relevant).

A cable proximity agreement with TenneT would normally only be required in the standalone layout, as the solar cables will necessarily be close to the TenneT cables near the offshore substation. Cable proximity agreements would be necessary in all designs with the wind farm owner (if different from the solar farm owner).

If solar panels are installed within the safety zones around the TenneT and wind farm cables, the solar panels may hinder or prevent repairs on the cables. If that situation can be avoided, no proximity agreements would be necessary. If the solar farm can be designed such that the panels can be (re)moved in case of repair on seabed cables, solar panels could be installed in the safety zones. A specific proximity agreement would need to be developed which would provide for the temporary removal of solar panels from the safety zone.

4.4 Turbine maintenance & service contract

Integrated design concepts will require modifications to turbine equipment, varying from simply tying in the solar array cables into the WTG (semi-standalone), to co-usage of the transformer (integrated) and potentially adding metering and IT equipment. Solar farms should be designed such that accessibility of the WTG (for CTVs, SOVs and heavy lift vessels) is not impacted.

The additional and/or modified equipment of course needs to be maintained (but given the nature of this equipment, the scope will be rather small). In principle, two main options are possible:

1. Inclusion of maintenance and service of additional equipment installed in the WTG (cables, metering, IT) in the WTG maintenance and service contract. Compared to a standard WTG service contract, the following must be added or modified:
    - Addition / modification of scope (e.g., Modified transformer, additional cable, additional meters) to the WTG service contract

- Maintenance strategy, scope of standard service activities (preventive, reactive), reaction times
- Performance criteria
- Liabilities, in particular related to:
    - Damage to third party equipment (which would be more or less a standard clause), and
    - Compensation of down time caused by the o&m contractor to the solar farm (which needs to be elaborated, in line with standard o&m contracts for wind farms);
- Access to confidential information

Furthermore, additional agreement is needed between the wind farm owner and the solar farm owner, covering payment for the additional maintenance under the WTG service contract, liabilities for downtime of the solar wind farm as a result of failure to perform preventative maintenance or break down of the serviced equipment, and liabilities for downtime of the wind farm caused by the solar farm. This can be laid down in a separate agreement or a CPA.

2. A separate maintenance and service contract for the additional equipment installed in the WTG. In this situation, the following should be agreed between the parties (service providers and owners):
    - Scope division
    - Access to the WTG (not working at the same time, access to proprietary equipment)
    - Liabilities in case of damage third party property

For both situations, the following applies: in case the solar farm equipment hinders access to the WTGs (for CTVs, SOVs or heavy lift vessels), WTG maintenance and service contract may need amendments.

4.5 Warranties on and certification of WTGs

In the semi-standalone and integrated scenarios, especially in brown field situations with an existing wind farm, warranties by the WTG and BoP supplier might be impacted. Depending on the exact lay-out, the solar farm uses WTG equipment, in particular switchgear or transformers. Warranty provisions in supply contracts normally specify that the WTG supplier is obliged to repair a defect, but that the cost of the repair is to be borne by the Employer if the cause of the defect is external. Theoretically it could be possible a switchgear or transformer defect is caused by the solar farm. Amendments to existing contracts are not necessary, but it is recommended that new contracts include a specific clause on the impact of the solar farm on warranties. Other WTG warranties, like power curve and noise warranties are unlikely to be affected by the solar farm.

Specific consideration should be given to the IEC certification of the WTGs. Although the solar farm does not impact the core characteristics of the WTGs, it is recommended to further investigate this topic with certification bodies. This does not apply in standalone scenarios.

4.6 Financing and insurance

Project finance and insurance policies for standalone offshore wind farms are readily available at reasonable terms. This is not (yet) the case for offshore solar farms, simply because no offshore solar farm (other than smaller, experimental farms) has ever been constructed. The financing and insurance market will need to go through a learning curve with the first few offshore solar farms, just as it went through a learning curve with the first offshore wind farms.

When that step has been taken, the next step of financing and insuring a greenfield combined offshore wind/solar farm with one owner in one financing agreement and one insurance policy appears to be relatively easy. Combining a wind and solar farm with different owners, and thus under different financing agreements and insurance policies adds another level of complexity.

4.7 Key Findings

1. All design concepts will share a TenneT export cable and therefore must determine priority for curtailment based on substation and export capacity.
2. Ensuring that the floating solar panels do not hinder ability to work on existing TenneT and/or wind farm cables will help minimize cable proximity agreements and modifications to service and maintenance contracts.
3. In integrated and semi-standalone concepts additional equipment is installed in the WTGs and/or existing equipment is modified, that needs to be maintained. The additional maintenance can either be included in the existing WTG maintenance agreement, or a separate agreement can be concluded.
4. WTG warranties and certification of the wind farm need to be taken into consideration but are not likely to be materially impacted.
5. Insurance and project finance of combined wind- and solar farms is new, and it is expected that a few projects need to be developed before the finance and insurance world has a full understanding of the risk profile of combined wind- and solar farms.

5 Grid connection within the Dutch Exclusive Economic Zone

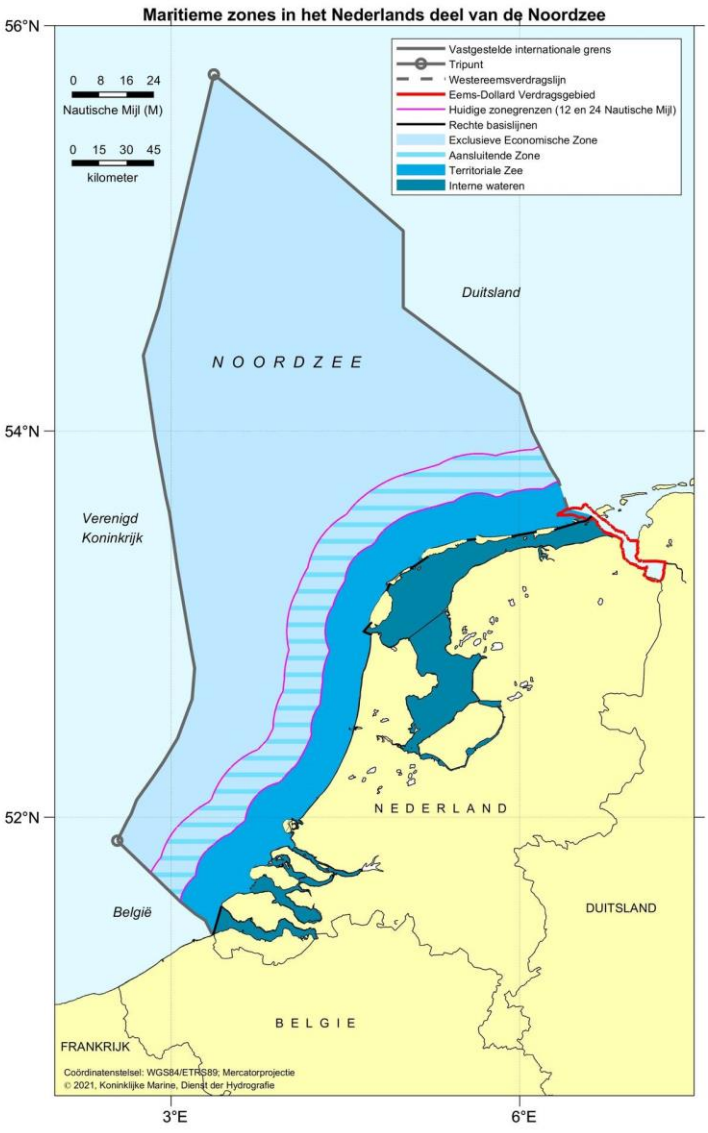


Figure 3 – the Dutch Maritime Zones in the North Sea

5.1 Introduction

Many of the legal and regulatory aspects are location-specific and will differ from country to country. This applies even within the EU because, even if many of the regulatory aspects such as environmental law and electricity regulation have EU origins, regulatory regimes differ widely from member state to member state. In addition, many other (private law) legal aspects (such as ownership, rights in rem and security rights (pledge, mortgage and contractual security rights)) are fully a competence of the EU member states and thus can be completely different between member states.

As this report is drafted as a part of the Dutch pilot project, it is assumed that the offshore integration between solar and wind farms takes place under (some form of) jurisdiction of The Netherlands. Concretely, this means that the offshore wind and solar farms concerned must be located either in the territorial seas of The Netherlands or in the Dutch EEZ, as explained in the next paragraph. If the wind and solar farms are in neither of these regions, but instead in the territorial seas or EEZ of another state or on the high seas, The Netherlands has no jurisdiction and, consequently, Dutch law does not apply.

5.2 Dutch territorial seas and Dutch Exclusive Economic Zone

The scope of jurisdiction of states on the surrounding seas is defined in the United Nations Convention on the Laws of the Sea from 1982 (UNCLOS). Currently, 133 states have ratified UNCLOS, among which The Netherlands and virtually all European states, meaning that all states

bordering the North Sea will recognize and apply UNCLOS to determine which state has jurisdiction.

The Dutch territorial seas have their limit of 12 nautical miles out of the coast of The Netherlands (article 3 UNCLOS). In the Dutch territorial seas, the Netherlands have full jurisdiction – meaning that all Acts and regulations apply there fully (unless explicitly mentioned otherwise). The figure above illustrates the Dutch maritime zones in the North Sea.[3]

Almost all windfarms that are planned and/or are currently under construction in front of the Dutch coastline, however, are located outside the 12-mile zone.[4] The illustration below shows the locations of the prospected windfarms. This means they will fall into the Dutch EEZ as introduced by UNCLOS. In the EEZ, a state does not have full jurisdiction, but instead *"(…) the coastal State shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of: (a) artificial islands; (b) installations and structures for the purposes provided for in article 56 and other economic purposes; (c) installations and structures which may interfere with the exercise of the rights of the coastal State in the zone. 2. The coastal State shall have exclusive jurisdiction over such artificial islands, installations and structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration laws and regulations."*

In The Netherlands, acts do not automatically apply in the Dutch EEZ; an act must explicitly declare it is applicable in the Dutch EEZ. In the subsequent paragraphs, it will be indicated whether acts/regulations apply in the EEZ or not.

5.3 Electricity, cable pooling and grid connection regulation

Before we delve deeper into the various spatial aspects of integrated offshore wind/solar projects, in this paragraph the relevant legal framework around obtaining a grid connection in the North Sea will be presented.

5.3.1 The offshore grid

The Dutch Electricity Act (*Elektriciteitswet 1998*) regulates the production, supply and transport of electricity in the Netherlands. Recently, a draft proposal for a new Energy Act – combining regulatory regimes for both the electricity and the gas markets – has been made public for consultation. The proposal for a new Energy act is currently going through legislative procedure. It was sent to the (Second Chamber of) the Dutch Parliament in June 2023. If enacted, the Energy Act will replace several acts related to energy, among which the Electricity Act. Whether and at what date the Energy Act will enter into force and replace the Electricity Act will depend on the outcome of the legislative process. The Electricity Act and the future Energy Act are applicable in the EEZ – although with some limitations as will be explained later on.

The Electricity Act qualifies the offshore grid as separate from the national (onshore) grid. Currently, only offshore wind farms can apply for a connection to the offshore grid, meaning solar farms are excluded from access to the offshore grid. In the explanatory memorandum

[3] Noordzeeloket, "Maritime and incident control zones North Sea"
[4] OWEZ is located entirely and HKZ III & IV are partly located within the 12 nautical mile zone.

accompanying the new Energy Act, certain indications are provided that suggest the possibility of connecting solar farms to the Offshore Electricity Transmission System. [5]

This serves to emphasize that the offshore solar technology can be considered a mature technology ready for large-scale deployment at sea. In this context, the Explanatory Memorandum accompanying the Energy Act indicates that solar and wind are, first and foremost, highly complementary techniques for electricity generation, which is expected to result in minimal competition between offshore solar energy and wind energy on the offshore electricity transmission system. It is also stated that the technological development of offshore solar energy is progressing rapidly. For these reasons, it is considered plausible and desirable in the Explanatory Memorandum that (large-scale) pilot projects for offshore solar energy in the North Sea can be developed in the coming years. The Energy Act therefore proposes to enable the integration of solar energy and other generators into the offshore electricity transmission system.

However, upon closer examination of the statutory text, Article 3.86 of the Energy Act reveals that the opportunity for solar farms to autonomously feed into the offshore electricity grid is not ensured under the new Energy Act. The Energy Act proposal's explanatory memorandum outlines regulations for offshore integrated energy projects in the North Sea. According to the proposal, the Transmission System Operator (TSO) is only required to connect offshore wind farms that have permits under the Offshore Wind Energy Act, as well as end-users of electricity. However, this does not necessarily mean that offshore solar energy installations cannot be connected to existing wind energy installations. If such a connection is made, the two installations will share the connection to the offshore electricity transmission system. In the event that a solar energy installation is linked to an existing wind farm, the wind farm will be responsible for ensuring that a new Connection and Transmission Agreement is reached with the TSO for offshore electricity. It should be noted that regulations similar to those in place for wind farms do not currently apply to PV-installations. This does however not entail a situation in which the offshore solar farm has an independent grid connection.

Given that the statutory text of the Energy Act does not allow solar farms to independently connect to the offshore grid, an amendment is required to allow offshore solar farms access to the offshore grid (except for experiments, as explained above).

5.3.2 An obligation to assign a grid operator?

A complicated regulatory question is whether the connections between offshore assets (e.g. wind and solar farms) qualify as a grid within the meaning of the Dutch legislation (the Electricity Act/the Energy Act). In this regard, we remark that connections between onshore assets do qualify as a grid within the meaning of the Electricity Act. This has as its consequence that there will be an obligation, on the basis of article 10 (9) Electricity Act, to assign a grid operator. The question is whether this obligation also applies to the offshore grid and more specifically the connection between offshore assets. First of all, it is clear that the connections between integrated offshore assets do not constitute part of the offshore grid (as defined in article 15a Electricity Act):

> *"The offshore grid comprises the grids that are intended for the transmission of electricity and that connect one or more offshore wind farms to the national high-voltage grid, with the*

[5] Paragraph 3.3 of the Explanatory memorandum of the Energy Act

> *exception of pipelines and connected equipment for the transmission of electricity that connects one or more offshore wind farms to the national high-voltage grid and for which a permit has been granted before 1 January 2016 under the Public Works Management Act (Wet beheer rijkswaterstaatswerken) or under Article 6.5 of the Water Act".*

This means that the offshore grid only applies to connection between offshore wind farms and the national (onshore) grid. Therefore, connections between integrated offshore assets do not fall under the scope of "the offshore grid" within the meaning of the Dutch Electricity Act. However, that still leaves open the possibility that these connections qualify as a (non-specified) "grid" in the meaning of the Electricity Act. For this, it becomes relevant how the scope of the Electricity Act within the EEZ is described:

> *"This Act and the provisions based on it also apply on the offshore grid located within the Dutch EZZ, cross-border grids located within the Dutch EEZ and to installations for the generation of electricity located within the Dutch EEZ, as well as the electricity generated by it."*

This definition does not include connections/grids between two production-installations. A production-installation is defined in the Electricity Act as: "an installation for the production of renewable energy". A production installation can consist of multiple production units. A production unit can be qualified as the smallest possible entity that produces renewable energy. An example of multiple production units that together form an entire production-installation, are multiple wind turbines in one wind farm. The infrastructure between these productions units will qualify as production-installation. However, it seems unlikely to us that an integrated wind and solar farm will qualify as a single production-installation. If this is indeed not the case, then connections between solar and wind farms in the EEZ will not be regulated by the Electricity Act (and by the Energy Act neither, as this Act applies in the EEZ in a similar way to the current Electricity Act, as will be explained below).

The foregoing means in turn, that there is no "grid" and therefore no obligation to appoint a grid operator (as normally would be required on the basis of article 10 (9) of the Electricity Act). The explanatory memorandum of the Electricity Act does mention that the "connection obligation" (*aansluitplicht*) of the offshore grid operator will follow the onshore regulations for grid connection as much as possible, although the connection obligation only applies to holders of a permit for an offshore wind farm. Furthermore, the definition of "offshore grid" in the Electricity Act (see above) is only applicable to offshore wind farms.

As mentioned above, from the text of the explanatory memorandum of the Energy Act also follows that TSO TenneT is only obliged to connect offshore wind farms. The new Energy Act proposal provides some clarity with regard to legal classification of the connections between offshore assets. The scope of the Energy Act within the Dutch EEZ is regulated in article 1.6. This article regulates that the Energy Act is applicable within the Dutch EEZ to offshore transmission systems.

> The definition of "offshore transmission system" is laid down in article 1.1 of the Energy Act: *"system of pipes and connected devices for the transport of electricity at a voltage level*

equal to or greater than 110 kilovolts that primarily connect one or more offshore wind farms to an electricity transmission system".

The explanatory memorandum discusses the possibility of connecting other types of users to the offshore transmission system (e.g. solar farms). In case of connection to the offshore wind farms, the offshore solar farms and their connection(s) to the offshore transmission system will not qualify as being part of the offshore transmission system. This would mean that, based on the Energy Act, the connections between offshore solar farms and offshore wind farms will not fall within the scope of the EEZ, and therefore, there will be no requirement to appoint an operator for these connections.

5.3.3 Connecting to an offshore TenneT platform

As mentioned in paragraph 3.1 above, the additional generation of (solar) energy within an offshore wind farm would either require the solar farm to connect to the array strings of the wind farm (semi-standalone concept), or an individual connection field to one of TSO TenneT's offshore high-voltage stations (standalone concept). The latter case is very rare in the case of the existing 700 MW platforms. In case of the new 2 GW platforms, a connection field with a maximum of 415 MW would be possible. First of all, it will have to be determined who will be guaranteed the transport capacity. Since it is not possible for solar farms to connect directly to the offshore grid, the wind farm will be the party that will be guaranteed transport capacity. Subsequently, a legal framework would have to be developed for non-guaranteed (non-firm) use of the transport capacity by the additional renewable energy generator. As long as legal framework is not developed, contractual agreements must be made between the wind and solar farm, which will share the cable that connects the offshore substation to the onshore substation.

It is worth noting that at Hollandse Kust Noord, additional connections have been established at the substation for gas and oil electrification. It has been indicated that these connections, in theory, could also be utilized for offshore solar projects. This effectively creates the physical possibility for the offshore solar farm to connect to TenneT's substation. However, practical limitations arise due to the provisions of the Electricity Act, as solar farms are unable to independently enter into a Connection and Transportation Agreement (ATO) with TenneT.

5.4 Key findings

1. Currently, only offshore wind farms have access to the Dutch offshore electricity grid, and this is expected to remain the case under the current version of the Energy Act. In principle, solar farms are excluded, except for the option to connect to an offshore wind farm and supply energy to it instead of directly to the grid.

2. The offshore semi-standalone and offshore turbine-integrated design concepts require a single CTA with TenneT because solar farms cannot connect directly to the offshore grid. As a result, the current and anticipated future legislation does not allow for offshore solar farms to operate in a standalone concept.

3. To enable offshore solar farms to enter into a CTA with TenneT, an amendment to the Electricity Act and/or the Energy Act will be required in the future. We propose that this be included in the legislative package necessary to introduce offshore solar and offshore integration.

6 Spatial planning of offshore projects

This paragraph explores the practical implications of spatial planning rules for offshore wind farms, floating solar farms and offshore integrated projects (the latter in both brownfield, and greenfield situations).

6.1 Offshore wind

Specifically for development of offshore wind farms at the North Sea, the legislator has adopted the Offshore Wind Energy Act (*Wet windenergie op zee*). One of the instruments introduced with adoption of the Offshore Wind Energy Act is the "plot decision" (*kavelbesluit*), through which the competent authority can designate areas in the North Sea (including the EEZ) for offshore wind farms and cable routes between wind farms and (onshore) substations. Plot decisions provide a regulatory framework for prospective wind farms, indicating the square footage of a windfarm and the capacity and power of the wind turbines. While the authorities remain competent to set up a (national) zoning plan for areas of the North Sea, the adoption of the Offshore Wind Energy Act by the legislator suggests a preference for the plot decision when it concerns the spatial arrangements for offshore wind farms.

Naturally, ecological interests play an important role in the preparatory procedures of plot decisions. Specifically for offshore wind farms, the legislator has introduced an integrated implementation of the assessment of aspects of nature (laid down in further detail in Sections 5 and 7 of the Offshore Wind Energy Act). Assessments regarding protection of threatened species and habitats are no longer performed separately under the Nature Preservation Act (*Wet natuurbescherming*) but are integrated in the preparatory procedure of the plot decision.

In almost all cases, more in-depth environmental research will be required during the preparatory stage of a plot decision in addition to the assessments on habitat and species protection. Most likely, the competent authority will also explore whether an environmental impact assessment and a so-called *"passende beoordeling"* are to be performed. If these assessments show that construction and/or operation of the relevant offshore wind farm have any unacceptable negative effects on the environment, the competent authority will explore if and how these effects can be sufficiently mitigated by additional measures and – if so – how these mitigating measures should be translated to site-specific regulations as part of the plot decision.

After laying down the starting points and basic principles for an offshore wind farm in a plot decision for a specific location in the North Sea, the plans for the wind project will materialize through a permit for its construction and offshore operations. Only one permit will be granted per location – to the winner of the to be organized tender (see next paragraph). The period for which the activities that are specified in the permit can be carried out is determined in the plot decision. This permit replaces the "traditional" permit requirements regarding construction and environmental aspects (*Wet algemene bepalingen omgevingsrecht*) and the permit based on the Water Act (*Waterwet*), as the permitting-framework that is pursuant from each act is not applicable

when it comes to offshore wind farms (provided it does not concern a near-shore wind farm that is situated within the territory of a municipality or province).

When the plot decision is final, the Netherlands Enterprise Agency (*RVO*), commissioned by the Ministry of Economic Affairs and Climate, will organize a tender procedure for the allocation of the plot(s) and the associated permit(s). The winner of the tender will (exclusively) be entitled to obtain a permit. The Offshore Wind Energy Act provides the framework for the tender (such as a summing up of the criteria that can potentially be set in the tender); the precise wording and weighting of the criteria will be worked out in a tender specific regulation. In this way, the specifics of the tender vary (slightly) from tender to tender.

When the tender regulation is final, commercial parties with an interest in the plot can submit proposals/permit applications with regard to the construction and operation of the wind farm. The government will decide which party will build and operate the wind farm. This party will receive a permit for the construction and operation of the wind farm in the relevant site.

6.2 Integrated projects

By contrast to the regime for wind energy (as described in the previous paragraph), no specific legislation for other types of offshore renewable energy/installations (such as solar, energy storage etc.) exist, let alone for integration between different types of energy. Zooming in on floating solar farms and integrated wind/solar projects with cable pooling between the projects, we see that specific regulation equivalent to the Offshore Wind Energy Act is yet to be created and adopted. Regarding constructing and having a PV-installation and/or a shared cable network in the EEZ, this leads to a situation in which we fall back on the following general zoning and environmental regulations for offshore activities within the EEZ, which will be briefly outlined in the paragraphs below.

A clear trend is visible: system integration is playing an increasingly large role in the outcome of the wind tenders (described in the previous paragraph). In the draft-tender regulation for the most recent IJmuiden Ver tender plot Beta, the applicant's contribution to the adaption of the offshore wind farm to the Dutch energy system is one of the award criteria. A total maximum of 168 points can be divided between (1) onshore investments in order to adapt the offshore wind energy plot to the Dutch national (onshore) grid, and (2) the integration of offshore solar farms and the wind farms within the IJmuiden Ver Beta plot. The stimulation of investments in integrated offshore solar farms will contribute to more efficient use of the available offshore (wind) energy infrastructure. According to this points awarding system, a solar farm of at least 50 MWp can be integrated into the offshore wind farm in the IJmuiden Ver Alpha plot. The fact that a solar farm of 50 MWp (or even more) can be included in a plot that is originally designed and determined for wind energy indicates that the solar farm can be considered subordinate to the offshore wind farm that it connects to.

The full offshore solar farm must be taken into use no later than 60 months after the permit has become irrevocable. Parties grant unlimited access to the entire solar farm at sea to parties designated by the State for ecological monitoring and allow the necessary equipment to be

installed in the park. The results of this research will be made public. In their proposal, the parties include a description of how the collaboration with these parties designated by the State will be established and how they will facilitate this ecological research. Parties will monitor the practical applicability of solar energy at sea and the way in which electricity production from solar energy and wind energy function together. They make this knowledge publicly available. The parties will make every effort to keep the entire offshore solar farm operational for at least ten years. Requirements for the configuration of the set-up with regard to safety and ecology are to be determined.

The current draft tender regulations for other offshore wind areas do not include a specific awarding system for system integration. However, for example in the Hollandse Kust West VII plot, integrated solar projects are planned to be operated. The fact that award criteria are not included in the draft tender regulation does not prevent the realization of offshore integrated solar farms.

Based on the information provided above, it appears that offshore wind farms are predominantly regulated through plot decisions under the Offshore Wind Energy Act. This raises the question of how this affects brownfield wind farms that have existing plot decisions which lack criteria for combined use and system integration. Is it possible to amend these existing plot decisions? Additionally, is it feasible to require existing wind farms to share their cables with offshore solar farms?

6.3 The Area Passport for Shared Use

Before delving into the required water permit for offshore zone energy projects, we will first introduce an offshore-specific government instrument: the Area Passport for shared use. The Area Passport is a guide that serves as the basis for spatial zoning of initiatives within wind farms. When assessing the water permit applications (which will be discussed in the following paragraph) from potential shared users of the wind farm's spatial zone, Rijkswaterstaat consults the Area Passport. The Area Passport serves as a tool for zoning initiatives within wind farms and indicates the lay-out of a wind energy zone. This entails that the Area Passport will provide an overview of the WTGs exact locations, the cable circuits, the routes for shipping traffic, and where there is still room for other activities, such as fishing, marine farming, animals/plants protection, other renewable energy projects and recreation.

Recently, Area Passports have been introduced to provide interested parties with information on where activities other than wind energy, such as solar energy, can be carried out. Integrated solar energy is an example of combined use of a wind farm's spatial zone, and parties that want to generate energy within the wind farm may deviate from the Area Passport.

Although the legal status of the Area Passport is not entirely clear; what is clear is that they will have an impact on the assessment of the application of a water permit.[6] The Area Passport system has been outlined in the Program North Sea 2022-2027. This program qualifies as a national water program, which plays an important role when deciding whether a water permit can be granted,

[6] Article 6.22 jo. 2.1 Water Act and article 8.84 Environmental Activities Decree

this will be outlined in the next paragraph. As the Area Passports follow from this national water program, it is to be expected they will also play a major role in deciding whether a water permit can be granted.

It is possible that the preparations for an Area Passport will start after the tender for the offshore wind farm. Therefore, it is advisable to consider the integrated offshore solar farm when designing and positioning the wind turbines for the wind farm. This provides clarity about the position of the solar farm within the wind farm zone and the cable locations. As a result, the location(s) included in the area passport for the solar farm will most likely align with the preferred location for the operator of the offshore solar farm. If the location that is designated for solar in the permit application, corresponds with the solar area in the Area Passport, this will reinforce the water permit application.

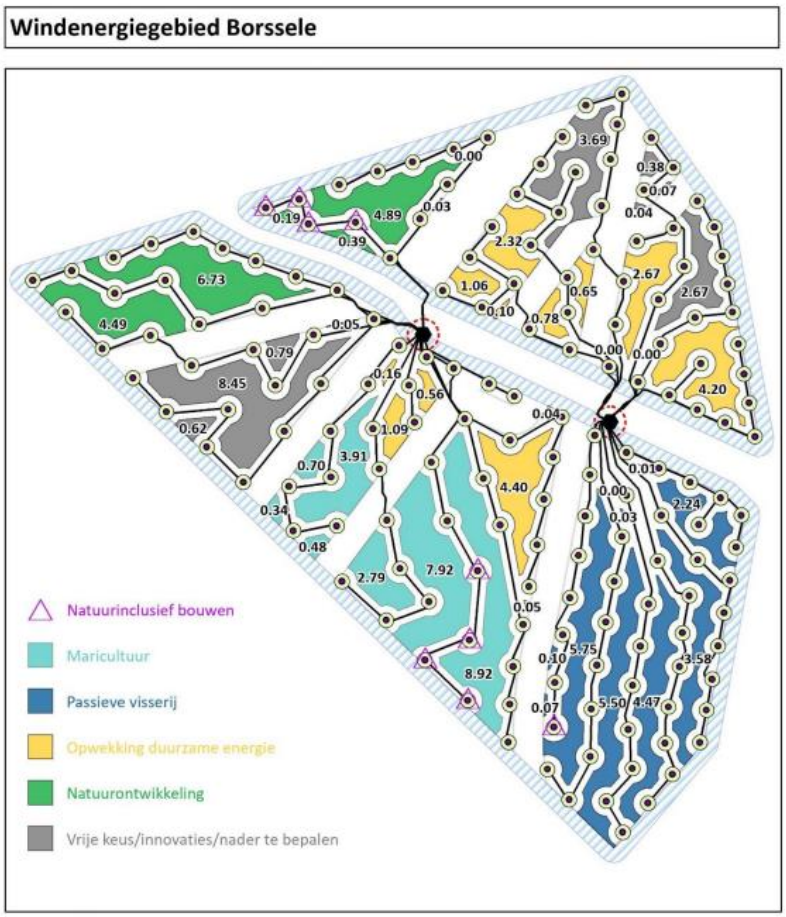


Figure 4 - The Area Passport for Shared Use for Offshore Wind Energy Area Borssele. The area dedicated to renewable energy (other than wind) is indicated in yellow.

6.4 The water permit for offshore solar

It is prohibited to carry out activities in a water body and to erect construction works in that water body without a so-called water permit (Section 6.5 (c) of the Water Act (*Waterwet*) in conjunction with Section 6.13 of the Water Decree (*Waterbesluit*)). The North Sea is considered a water body in

that sense too and, therefore, projects that are to be developed and operated at the North Sea must possess a water permit. This applies both to the solar farm itself and to the cables that are required to integrate wind and solar farms, although this raises questions regarding overlap with the permit granted based on the Offshore Wind Energy Act – on which more below.

A water permit can be granted with a view to the applications of the Water Act. The applications of the Water Act can be summarized as follows: preserving water quality, maintaining water quantity, and fulfilling societal functions through water systems. This last aspect pertains, for example, to infrastructure (including considerations for maritime transport), economic interests such as water for businesses and water for agriculture, and ensuring adequate drinking water provisions. "Protection of water quality" includes both chemical and ecological quality of the body water (article 6.21 jo. 2.1 Water Act).

For the sake of its completeness, we note that from January 1st, 2024, the permit under the Water Act will be indicated as an environmental permit under the Environment and Planning Act (*Omgevingswet*). Under the Environment and Planning Act, a water permit will be replaced by the environmental permit for limitation area activities regarding water management structures (*beperkingengebiedactiviteiten met betrekking tot waterstaatswerken*). This environmental permit will be assessed against the same criteria as the aforementioned criteria under the Water Act. Under the Environment and Planning Act the protection of the physical environment (one of the main objectives of this Act[7]) is an additional criterion for the assessment of the permit application. However, we do not expect this criteria to result in an issue regarding permit application, as the government seeks to facilitate offshore solar projects.

Water permit conditions can only be established in accordance with the aforementioned applications of the Water Act (or in the near future the Environment and Planning Act). In this report, the permit for an offshore solar farm will be referred to as: "the water permit".

The criteria mentioned above from the Water Act (water quality, water quantity, and societal functions of water systems) will be assessed by the government when reviewing a water permit application. The latter criterion pertains to the maintenance of a sound water infrastructure and places significant emphasis on maritime navigation. Additionally, other economic interests are considered in the evaluation of this criterion. For instance, this may include the allocation of available water resources among different enterprises, such as sustainable energy projects or fisheries.

Article 8.84, subsection 2 of the Environmental Quality Decree[8] further dictates that the competent authority, when assessing a water permit application, shall take into account water management programs, regional water programs, river basin management plans, flood risk management plans, and the national water programs. The shared-use area passport, as outlined above in Section **Fout! Verwijzingsbron niet gevonden.**, is derived from the national program North Sea. This program constitutes a national water program. Consequently, the shared-use area passport will factor into the evaluation of a water permit application for an offshore solar energy project. The

[7] Article 8.90 of the Environmental Quality Decree
[8] The Environmental Quality Decree is one of the four implementation Decrees on the Environment and Planning Act

shared-use area passport designates areas within a wind farm for various forms of multi-use. This will de facto mean that obtaining a permit in an area not designated for solar energy in a shared-use area passport will be challenging. If it is designated, then a significant hurdle is cleared for the "societal functions of water systems" evaluation criterion. In such cases, the assessment of the water permit will primarily focus on the protection of chemical and ecological water quality.

The Water permit will be assessed against the assessment framework for multi-use, derived from the North Sea program.[9] The framework for this purpose is intended, on the one hand, for the permit issuers to assess permit applications for these activities in offshore wind farms and to carefully weigh the interests. On the other hand, the framework provides permit applicants with insight into the steps to be taken to obtain a permit, as well as the required documentation and resources.

In evaluating the admissibility of the activity, a fixed legal procedure is followed. The framework provides guidance for steering towards efficient and multi-use spatial planning in wind farms. In this regard, the principle of 'first come, first serve' is partially applied, and the initiative lies with the market. The framework for assessing the water permit for shared use follows the steps outlined below:

STEP 1: Preliminary Consultation and Description of Activity and Spatial Needs

In the initial phase of the process for co-use in offshore wind farms, it is advisable to engage in preliminary discussions with the competent authority before submitting a permit application. This preliminary discussion, considered as the initiation of the integration process, involves deliberations on the proposed activity and may, when necessary, involve other stakeholders such as wind farm operators. The description of the activity and spatial requirements necessitates specific information regarding the activity, spatial claim, potential effects, and the intended location within the wind farm. Evaluation encompasses various aspects, including nature conservation, the effects on the ecosystem, and an assessment of potential impacts based on the best available knowledge. The ecosystem approach and the precautionary principle are applied in this context.

A pivotal consideration in the relationship between the co-use initiator and the wind farm operator is that co-use must not impede the generation of wind energy. Consultation between co-use initiative-takers and wind farm operators is highly recommended to identify potential effects and prevent objections to the co-use permit.

STEP 2: Pre-assessment of Intended Activity and Spatial Requirements

In the second step, the pre-assessment of the intended activity and spatial requirements, the activity is evaluated by the competent authority based on preferences outlined for each offshore wind energy area. If the activity is designated as a preferred activity, the process proceeds directly to the third step. If the activity is not designated as a preferred activity, the competent authority

[9] North Sea program, p. 129

may announce an intention to issue a permit for the specific location. Other initiators then have the opportunity to declare within six weeks that they also intend to deploy a co-use activity in the area in the short term. If no other initiators come forward within this period, the formal permitting process can commence. If another initiator emerges within this timeframe with a preferred activity for the intended location, consultation will determine if there is room for both initiatives and whether the activities can be combined. The "first come, first serve" principle applies when there are no preferred activities, with priority given to the initial activity.

STEP 3: Assessment of Effects of Activity and Location Selection

In the third step, the evaluation of the effects of the activity and location choice after the submission of the formal permit application, the application is assessed based on various criteria. This includes aspects such as spatial and operational effects on the wind farm and other activities in the area. Attention is also given to safety, liability, and financial security. Specific requirements apply to the permit duration, clean-up obligation after the permit term, and ensuring a good environmental state according to the North Sea Program 2022-2027. The text also underscores the consideration of archaeological and cultural-historical values, which are factored into permit issuance for activities in the North Sea.

The aforementioned criteria for the assessment of a water permit do not include any criteria designating a location to the entity granted the water permit to construct and operate an offshore solar farm. In this context, it is interesting to note that the government (the Ministry of Internal Affairs in collaboration with Rijkswaterstaat) has established a tool that can contribute to designating areas for offshore solar farms: the Area Passport for shared use which will be elaborated in paragraph 6.3.

Furthermore, in our view, the criteria for the assessment of a water permit on the basis of the Water Act (as stated in Article 2.1 of the Water Act)[10] do not allow the competent authority responsible for granting water permits to differentiate between multiple parties applying for a permit to build and operate a solar farm at the same location. This results in some issues regarding the tender procedure for offshore solar projects. These issues will be addressed in the following subparagraph.

6.5 Awarding offshore solar

In practice, operators of an offshore solar farm will only seek a water permit when they secure the tender for the integrated solar farm within the offshore greenfield wind project. If the solar farm operator does not win the tender, the project will not be feasible. Although, from a legal standpoint, the government cannot discriminate among the various parties applying for a water permit for an offshore solar farm, there still exists a situation wherein the party applying for a water permit will distinguish itself from the other applicants for the offshore solar farm permit. This

[10] Article 8.84 of the Environmental Quality Decree under the new Environment and Planning Act

distinction arises due to the fact that this party has won the tender for offshore solar, which is integrated in the tender for the greenfield offshore wind farm.

In brownfield situations, the tender procedure has already been concluded. Consequently, a scenario can be imagined in which any entity desiring to establish an offshore solar farm could apply for a water permit. However, it is worth noting that it remains uncertain whether many entities will initiate the application process without having obtained permission from the offshore wind farm to connect to its infrastructure. In such cases, considerable expenses are incurred in the permit process without a guarantee of project feasibility. Nevertheless, it is imperative to underscore that project feasibility is not a criterion for obtaining a water permit. From a legal perspective, it is therefore feasible for multiple parties to apply for a water permit to realize an offshore solar farm, irrespective of whether they have obtained cooperation from the offshore wind farm. An intriguing question arises as to whether the wind farm, under such circumstances, can be compelled to allow the integration of an offshore solar farm into its grid connection. Solar farms are entirely reliant on the ability to connect to the grid connection of an offshore wind farm since they cannot independently connect to the offshore grid (as discussed in Section 5.3). This raises the possibility that the grid connection of an offshore wind farm may be considered an essential facility.[11]

Currently, there is no provision within the Offshore Wind Energy Act that obliges an offshore wind farm to admit an offshore solar farm to its grid connection. This would necessitate an amendment to the Offshore Wind Energy Act. What is particularly problematic in this regard is the fact that compelling a brownfield wind farm to incorporate an offshore solar farm would require a retroactive provision, since the brownfield wind farm is already constructed (or at least tendered). This presents a challenge in light of the 1st Protocol of the European Convention on Human Rights (ECHR): “the protection of the peaceful enjoyment of property”. The wind farm, after all, is owned by the wind farm operator, and compelling the admission of a solar farm to the wind farm's connection would constitute an interference with that property. As a result, we would expect that, in such a case, compensation for damages would need to be offered to the wind farm, as a matter of principle. In practice, however, one may question whether the wind farm would indeed suffer any harm. In practice, it is expected that the wind and solar farms would agree that the solar farm would curtail its generation when there is insufficient grid capacity.[12] This is a situation commonly observed onshore for wind and solar farms that share a grid connection through cable pooling. The fact that the solar farm would curtail its generation means that, in practice, the wind farm would not suffer production losses due to the connection of the solar farm.

Furthermore, both the Offshore Wind Energy Act and the Water Act lack provisions determining which party should be granted a water permit when multiple applicants seek such a permit for an offshore solar farm at the same location. This appears to be inconsistent with judgments from the

[11] It could be argued that the offshore electricity grid can be considered an essential facility under European law. By denying direct access to the offshore electricity grid for offshore solar farms, these solar farms are placed in a dependent position relative to the offshore wind farm. However, it is uncertain whether the essential facilities doctrine provides room for the solar farm to compel a connection to the offshore electricity grid through the wind farm, since there are no precedents.

[12] Since the solar farm is the secondary party that connects to this offshore grid connection

Court of Justice of the European Union (ECJ).[13] According to European law, there should be a transboundary interest for its application. We anticipate that such an interest exists since foreign entities may also express interest in operating an offshore solar farm in the North Sea. The European case law cited above indicates that rights cannot be allocated without some form of tender procedure, as this would contravene the prohibition of discrimination and the principle of transparency. It is essential to emphasize that the situation in the case of a greenfield wind farm is evident due to the tender procedure for the wind and solar farms in that scenario. The winner of this tender, provided they meet the relevant legal evaluation criteria, will be granted a water permit. As a result, we anticipate that there is no violation of European law in a greenfield scenario.

The situation becomes intriguing when dealing with a brownfield offshore wind farm. In such a case, multiple operators of offshore solar farms can theoretically apply for a water permit. When the wind farm cannot be compelled to cooperate in connecting a specific solar farm, it places the wind farm in a highly privileged position. This would result in a scenario where the offshore wind farm, by winning the offshore wind tender, also gains the exclusive right to choose whether, and if so, which solar farm may connect to the offshore wind farm. This is in contrast to the case of a brownfield wind farm where no tender for an offshore solar farm has taken place. While the wind farm may have won the tender for wind energy, solar energy was not included in that tender at the time. Consequently, considering the prohibition of unfair competition and the concept of scarce permits, it appears unjust that an offshore wind farm has the exclusive authority to determine which solar farm may connect to it. Furthermore, in our opinion offshore solar is a development that should be stimulated by the government. This makes that solar farms should have a stronger position in order to be able to operate offshore, that both in greenfield and in brownfield situations.

From the above, it is evident that the operator of an offshore wind farm could potentially gain a disproportionately privileged position when connecting offshore solar farms without a tender procedure. Therefore, it is expected that the government will organize a tender when multiple parties apply for a water permit for the operation of an offshore solar farm that wishes to use the grid connection of an offshore wind farm. An alternative is that the government holds the applications and waits for new policy in this area, which could possibly involve the aforementioned amendment to the Offshore Wind Energy Act.

6.6 Environmental impact assessments

Different from the regime for offshore wind farms (where the plot decision, and, therefore also, permit on the basis of the Offshore Wind Energy Act cover environmental aspects), the relevant assessments regarding protection of threatened species and habitats are to be performed separately under the Nature Preservation Act if applicable (the Nature Preservation Act is applicable within the Dutch Exclusive Economic Zone). Likewise, an EIA (hereinafter also referred to as: “EIA”) must be performed if this is required on the basis of the regulation regarding Environmental impact assessments. However, as self-explanatory performance of EIAs are in

[13] ECJ, ECLI:EU:C:2010:506 (Engelmann) en HvJEU, ECLI:EU:C:2000:669 (Telaustria); Moreover, we also examined the national Dutch jurisprudence concerning this matter (ABRvS 6 juni 2018, ECLI:NL:RVS:2018:1847), but it is less relevant in this context

developing (offshore) wind farms (for wind turbine installations and high voltage cable routes), this is not the same for offshore solar farms. Unless a project is expected to have significant consequences for a Natura-2000 area in its vicinity, EIAs are not mandatory for offshore solar farms, because floating solar is not mentioned in the lists in the appendix of the EIA regulation (*Besluit-mer*).

The option that an EIA has to be carried out, because the project has potential significant consequences for a Natura-2000 area, is only relevant when a project is situated near one of the Natura-2000 areas in the North Sea (article 7.2a Environmental Management Act jo. article 2.8 Nature Preservation Act). [14]

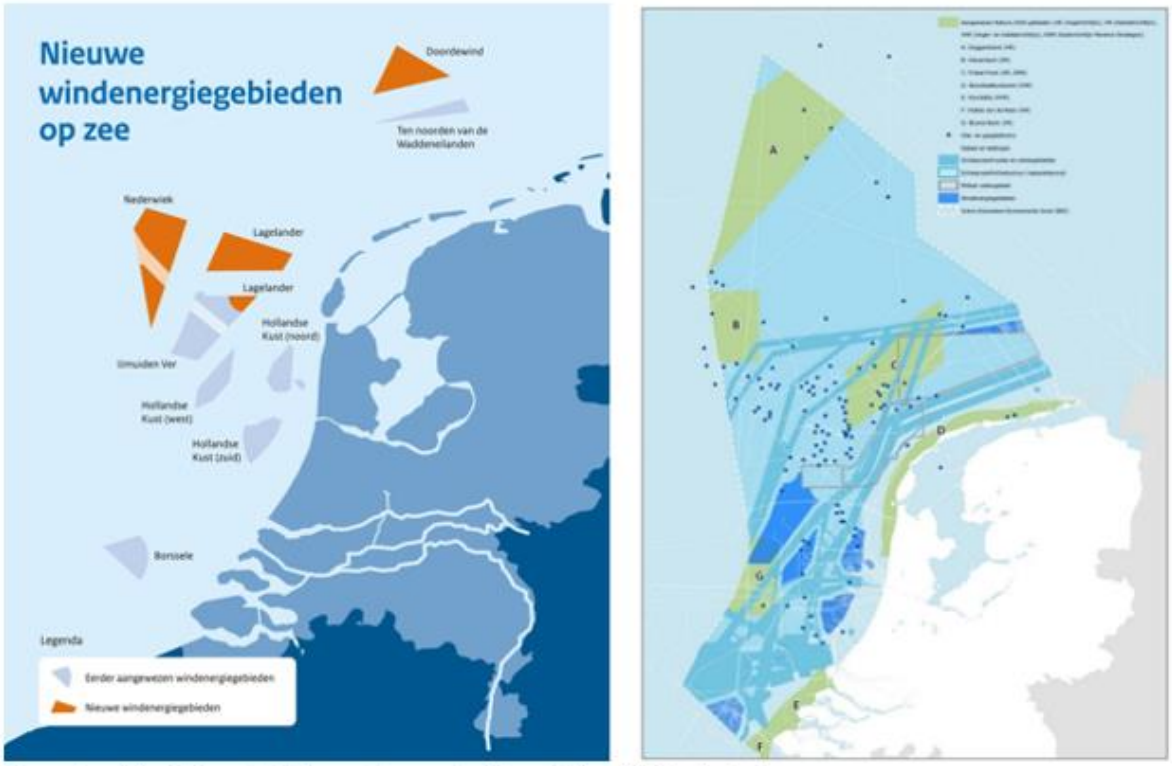
As indicated on the map below, the plots for Windarea IJmuiden Ver (and potentially Hollandse Kust West) are located near the Natura-2000 area Bruine Bank. The original plot for IJmuiden Ver is amended, in order to not overlap with the Bruine Bank Natura-2000 area. However, the fact that both the wind area and the Natura-2000 area are located close to each other, results in the fact that an estimation of potential significant consequences pursuant to article 2.8 Nature Preservation Act (and thus and EIA) will probably have to be carried out. Protected species in the relevant Natura-2000 areas are marine mammals, birds and bats. For wind-energy projects mammals are mostly affected through noise of pile driving and flying species are affected by the rotor. The solar farm substation equipment will require foundations. As such, there may be an impact on protected species. Also, the effect of the reduction of solar radiation that penetrates the surface of the North Sea - due to the installation of (floating) solar panels on the surface of the water - on flora and fauna needs to be examined.

As a result, EIAs are only mandatory for plans or programs that are constituted for the preparation of offshore solar projects, if the offshore solar project has significant consequences for one of the Natura-2000 areas which are indicated in the map below. The water permit for an offshore solar farm will not qualify as “plan” or as “program”. This means that there will be no EIA required for the water permit for an offshore solar farm. The Area Passport does however qualify as a plan or program, since it provides with a framework for the assessment of the water permit for the offshore solar farm. This means that the Area Passport will possibly have to be submitted to an EIA.

The wish to expand operations by adding a floating solar farm to an existing wind farm (brownfield situation) could raise the question whether the ecological and environmental studies that were performed in the preparatory stages of the plot decision and permit based on the Offshore Energy Act are still accurate and whether the new project design is expected to cause any additional environmental impact compared to the original design. Assuming that the expected environmental and ecological impact of the new project increases as the project scale increases, we believe that the authorities may set a higher standard and, therefore, may require a more elaborate

[14] Or article 16.36 (2) jo. 16.53c (1) under the Environment and Planning Act

substantiation regarding ecological and environmental aspects.



Figures 5 and 6 – Offshore Wind Energy Areas and offshore Natura 2000 protected areas

6.7 Key findings

1. Nearly all of the current and projected Dutch wind farms will be located in the Dutch EEZ. Most of the relevant regulation applies to the EEZ, with the notable exception of the Dutch Civil Code (see Key finding 5 below).

2. For offshore wind farms, the Offshore Wind Energy Act provides an extensive regulatory framework. Interested parties can obtain a permit for construction and operation of a wind farm by winning a tender for a specific location designated as suitable for wind energy by the Minister of Economic Affairs. Such a permit covers all the environmental and spatial planning aspects.

3. For offshore solar farms, by contrast such a framework is lacking. Solar farms will mainly have to apply for a water permit for the construction and operation of the solar farm on the basis of the Water Act. This permit covers the presence and operations of the floating installation at the North Sea. Such a permit will be awarded if it can be shown that the solar PV system or cable network will not interfere with maintaining or achieving a "good condition" of the water body (water quality). This “protection of water quality” includes both chemical and ecological quality of the body water (article 6.21 jo. 2.1 Water Act).

4. Tailored regulations for the integration of offshore wind and solar have not yet been created. Currently, neither the Offshore Wind Energy Act, nor the Water Act explicitly

facilitate expansion of wind-operations in the sense that new activities that are complementary to existing operations can be assessed and permitted based on a set framework. For clarification purposes, we propose to expand the scope of the Offshore Wind Energy Act to include other renewable energy projects.

5. Despite the challenges surrounding permit applications, there is a clear trend emerging: system integration is becoming increasingly important in tender outcomes. In the draft tender regulations for the IJmuiden Ver Alpha plot, points are given for the integration of solar projects. This means that a solar farm with a capacity of up to or even exceeding 50 MWp can be integrated into the plot, which was originally intended for wind energy.

6. In brownfield situations, the tender procedure for the offshore wind farm has already been concluded. When an offshore solar farm subsequently seeks to connect to the brownfield offshore wind farm, there is no legally prescribed tender procedure for obtaining a water permit for the offshore solar farm. In our opinion, it is entirely conceivable that the government may organize a tender procedure in such a case to obtain the water permit for offshore solar.

7. The preceding key finding raises the interesting question of whether the wind farm can be compelled, in such a situation, to allow the winner of the tender for this water permit access to its grid connection (as the offshore solar farm cannot independently connect to the offshore electricity grid, as discussed in Chapter 5.3). The Offshore Wind Energy Act currently lacks a legal basis to compel wind farms to permit offshore solar farms onto their grid connection. Since it appears legally impossible to force wind farms in this regard, operators of brownfield wind farms appear to be in a privileged position. They can independently decide whether, and if so, which offshore solar farm may connect to their grid connection. Addressing this privileged situation would require amendments to the Offshore Wind Energy Act. Such amendments would need to be accompanied by a compensation scheme for any damages incurred by the offshore wind farm as a result of allowing the offshore solar farm onto the grid connection of the offshore wind farm.

8. Based on the current legal framework (and the future framework of the Environment and Planning Act) the is no EIA required for the water permits for an offshore solar farm. However, the Area Passport for Shared Use may qualify as a “plan” or “program”, since it provides a framework for the assessment of water permits. Article 7.2a of the Environment Management Act states that an EIA will be required when a suited estimation of environmental impacts (“*passende beoordeling*”) will have to take place. [15] We expect that the preparation of the Area Passport will need a “*passende beoordeling*”, and therefore an EIA will be demanded.

[15] And article 16.36 (2) jo. article 16.53c (1) Environment and Planning Act

6.8 Recommendations based on the foregoing

Even though development of integrated offshore activities is still in its early stages, as also noted above, we observe that regulatory bodies have not acted on the need and desire for regulation facilitating new developments in this field. The market's interest in such structures is evident, as illustrated by the joint advocacy of Holland Solar and the Dutch Marine Energy Centre. They recently submitted a shared perspective, advocating for increased opportunities to conduct experimental initiatives at sea, including other sustainable technologies such as large-scale offshore solar power systems.

We believe the most efficient way to address this is through expansion of the scope of the Offshore Wind Energy Act to include other renewable energy projects (for example, solar, storage, integrated projects etc.). One of the major advantages of this would be that, as with wind energy currently, one permit for the solar farm including integration with the wind farm will suffice, without the need to perform individual EIAs (see the previous paragraph for details). Another advantage of expansion of the scope of the Offshore Wind Energy Act to other types of renewable energy is that this will also allow for the Minister to set rules on how the integration will take place. For example, it can be regulated whether wind farms are free to build their own solar farms next to them or whether the solar farms will be (publicly) tendered. And in case the solar farms are tendered, are wind farms then required to share cables and so on?

The absence of a tender procedure in the Water Act makes it difficult to distinguish between multiple parties applying for a water permit for an offshore solar farm in the same location. In greenfield situations, this problem could be resolved by stipulating in the law that the winner of the integrated tender for the offshore solar farm, that is concluded in the tender for offshore wind, is the only party eligible to apply for a water permit. However, in such a greenfield scenario, we anticipate that in practice only a party winning the offshore solar tender, that is integrated in the tender for offshore wind, will apply for a water permit. Should the tender not be secured by a solar farm operator, the project would, in practice, be unfeasible for that solar farm operator.

In brownfield situations, the tender procedure has already concluded. When offshore solar was not included in this the tender for the brownfield wind farm, it is legally possible for multiple parties to submit water permit applications for the establishment of an offshore solar farm. There is, in principle, no tender procedure associated with the issuance of the water permit for offshore solar. In this Chapter, we have examined whether such a situation is desirable. The wind farm is placed in a highly privileged position as it has the ability to determine whether and, if so, which solar farm has the opportunity to connect to the grid connection of the offshore wind farm. We believe it is entirely possible that, in practice, the government may still organize a tender procedure for the issuance of the water permit for offshore solar in a brownfield situation. Also on this topic, we recommend the government to provide clarity by expanding the Offshore Wind Act to other types of energy and to system integration and regulate such issues as described above in comprehensive legislation.

Preparation of a plot decision requires an EIA. In this EIA, multiple variants in terms of turbine types, foundation techniques and cable locations will be assessed for their environmental effects.

As long as the permit application shows that the proposed project fits within the project outlines provided by the plot decision, the party to whom the permit is ultimately granted does not need to draw up a new environmental impact report. This is also applicable to other aspects that were not considered in the plot decision but are taken into account in the permit application. Of course, it would be preferential to draft plot decisions in such a way that a certain margin for future expansions of offshore activities is maintained. However, because performed environmental research is only valid for a certain amount of time, we doubt that this leads to future proof plot decisions. The desired flexibility that encourages to look beyond offshore wind should therefore have its own position in the Offshore Wind Energy Act. It will provide clarity and certainty for project initiators regarding the question whether an integrated project is compliant with the applicable legal obligations when it is only in possession of a permit pursuant to the Offshore Wind Energy Act. Furthermore, the suggested change ensures that project initiators are well informed about their possibilities regarding integration of offshore wind and other renewable techniques, such as solar activities. Our expectation is that this permanent solution will be provided for when authorities have new incentives to provide a regulatory response to developments in the field of sustainable energy.

7 Ownership

7.1 Ownership in relation to legal and permit requirements

Under Dutch administrative law, non-compliance with legal requirements can in principle be cause for the competent authorities to issue enforcement measures, such as a periodic penalty payment (*last onder dwangsom*) or an administrative enforcement action (*last onder bestuursdwang*). A precondition for issuing enforcement measures is that the legal entity that has failed to be compliant, is able to put an end to the illegal situation. Decisive in this respect is not whether the entity that receives the enforcement measure for example owns the challenged structure, but whether it can comply with the order. If two components of a project are each owned by different parties, that would be a strong indication that the competent authority can only take enforcements action against the owner of the relevant component.

Which legal entity operates the project (or for which part), which entities share in of the project is a matter of legal structuring. Parties can work these aspects out in the relevant contractual arrangements. In case of a brown field situation, parties can make additional arrangements for aspects that are relevant when expanding operational activities.

7.2 pledging for offshore assets

The Dutch Civil Code applies to wind and solar farms in the Dutch territorial seas. This makes it possible to establish security rights (mortgage, pledge, as applicable) over all installations used for offshore integration in the Dutch territorial seas in an identical way as for onshore installations. This will enable financing parties to create the security they need to provide loans to finance projects in the Dutch territorial seas.

Whether or not (or to what extent) the Dutch Civil Code applies in the EEZ is subject of legal discussion. The prevailing opinion is that the Dutch Civil Code does apply. There is no debate as to ownership of (parts of) the Dutch part of the EEZ: (parts of) the EEZ cannot be the subject of ownership rights, whether by private persons or entities or the Dutch State. Nor does the UNCLOS Treaty (see paragraph 5.2) include any provisions relating to ownership. Forgoing a discussion of the fine legal points, we observe that it is generally accepted that (if only for that reason) a right of mortgage cannot be established over assets in the EEZ even if they would unambiguously qualify as immovable property (*onroerende zaken*) when present in the Dutch territorial sea. Conversely, *communis opinio* seems to exist that title and rights of pledge can be created over such assets, qualifying as movable property. Based on Dutch international private law the Dutch Civil Code is the most likely (if not the only available) legal regime to apply to such title and rights of pledge.

Determining the plot for offshore solar farms is an issue in general. While a plot decision procedure is applicable to offshore windfarms on the basis of the Offshore Wind Energy Act, there is no similar procedure for solar farms. This means that to offshore solar farms the regular water-permit procedure on basis of the Dutch Water Act applies. This water-permit procedure however does not include designating a plot for the offshore energy-project. This makes it complicated - if not

impossible – for operators of offshore wind farms to claim ownership of a certain area on the North Sea, in order to operate the solar farm. A procedure where the solar farm is integrated in the wind farm, in a way that the plot decision for the offshore wind farm could be shared by the offshore solar farm, could be a solution for this problem. The answer to the question, whether a plot decision can be shared, depends on the different design concepts/scenarios of the integration of offshore wind and solar farms. The different concepts/scenarios with regard to the characteristics of each integrated project will be discussed in more detail in Chapters 8 and 8.

7.3 Bankability and ownership

Based on our findings in the previous paragraphs we do not expect ownership and the possibility to create security rights (notably rights of pledge; mortgage rights are excluded due the fact that the Dutch EEZ cannot be owned) over wind farm and solar farm assets to raise major bankability concerns. It is established practice for project finance parties to deal with any legal uncertainties through the introduction in financing documents of clauses that enable financing parties to unilaterally vest, or have placeholder rights automatically convert into, security rights as possible under applicable law. In addition, in line with project finance practice, rights of pledge will be established over shares in the relevant project companies, ensuring that lenders will be able to assume control of the project through the exercise of voting rights well before commercial or financial degradation of the project threatens to evolve into insolvency scenarios. The impact of residual legal uncertainties with regard to the overall security package on commercial terms of senior debt facilities (such as gearing and risk premium) is outside the scope of this study.

If we look at bankability from a project risks perspective, the larger issues lie with the grid connection scenarios for offshore floating solar assets, prompted by the current gaps and uncertainties in the regulatory regime that governs access to the offshore grid. Under the prevailing regulatory regime floating solar will need to connect to the offshore grid indirectly, either through a turbine-integrated configuration or by connecting to the windfarm's inter-array cabling. If we assume that each production asset is developed, financed and operated in a separate special purpose company, then the solar-SPC will depend on the windfarm-SPC for the continuity of its grid connection. Banks would normally look for intercreditor arrangements, containing informational covenants, cross-default provisions, cross-control mechanisms to manage reserved discretions, and step-in rights. It is to be noted that, under prevailing regulatory law a right for the solar-SPC to step into the grid connection agreement – a common solution in onshore constellations – would not be exercisable because the offshore grid is not available for connection of generation facilities other than wind turbines. It can be expected that, particularly in greenfield situations, in order to assess financing risks of offshore floating solar farms, banks will instruct thorough technical and commercial due diligence on the offshore windfarm that the solar project is to connect to, and set high standards for the long-term robustness of the windfarm's business case. This will cause a significant increase in transaction costs and raise intricacies on how to deal with commercial and technical proprietary information.

8 Contractual and legal implications for six scenarios with varying project characteristics

Projects with different combinations of design concept, development coordination, and ownership will have different contractual implications. There are 6 scenarios with different combinations of characteristics which are outlined below in Table 1. In this Chapter, each scenario will be described.

Table 1 - Scenario Definitions

Identifier	Design Concept	Development
1 (standalone-green)	Standalone	Greenfield
2 (standalone-brown)	Standalone	Brownfield
3 (semi-green)	Semi-Standalone	Greenfield
4 (semi-brown)	Semi-Standalone	Brownfield
5 (turbine-green)	Turbine integrated	Greenfield
6 (turbine-brown)	Turbine integrated	Brownfield

8.1 Scenario 1 Review (standalone - greenfield)

Scenario 1 contemplates a standalone design on a greenfield site. In other words, the solar and wind farms will each have independent owners, on a site with no previous development, and connect them separately into a single TenneT offshore substation that is constructed for the combined wind and solar project.

8.1.1 TenneT CTAs

In this scenario, both the wind farm and solar farm will require their CTAs with TenneT. As mentioned above (in paragraph 4.2), entering into a CTA with TenneT is not possible for offshore solar farms, since the connection obligation for TenneT on the North Sea is only applicable to wind farms. See also 8.1.5 below.

8.1.2 Cable pooling

In this scenario, as a minimum, the only shared cable(s) will be the export cable(s) from the TenneT offshore substation to the onshore substation. A cable pooling agreement needs to be concluded between wind farm and solar farm, as described in paragraph 4.2.

8.1.3 Cable crossing and proximity

Cable crossings should be avoidable in this scenario, given that the wind, solar, and offshore substation are being developed in a coordinated manner. However, cable proximity agreements between the wind farm, solar farm, and TenneT will likely be necessary since they will all have cables tying into the same offshore substation.

8.1.4 Turbine maintenance

No amendment necessary.

8.1.5 Regulatory implications

This scenario involves a greenfield situation and requires the entire project to undergo the permitting process. Assuming that the solar and wind projects have different owners and that liability issues are isolated to the respective parties responsible for the operations of their installations, the initiators of the solar and wind projects must each secure the necessary permits for their offshore activities. The wind component requires a permit based on the Offshore Wind Energy Act, while the solar component requires a Water permit for shared use under the Dutch Water Act.

Taking this perspective into account, choosing a plot for offshore solar farms would pose a challenge since the water permit process does not entail designating a specific location, nor does it include a tender procedure. Additionally, current legislation does not allow solar farms to connect to the offshore grid. Consequently, the standalone scenario is not a viable option for offshore solar farms to link up with the North Sea grid.

8.2 Scenario 2 Review (standalone - brownfield)

Scenario 2 contemplates a standalone design on a brownfield site. In other words, a solar farm will be constructed on a site that already has an offshore wind farm, by a different owner than the offshore wind farm, and it will connect directly to the TenneT offshore substation that was built for the offshore wind farm.

8.2.1 TenneT CTAs

In this scenario, both the wind farm and solar farm will require their own CTAs with TenneT. As mentioned above, concluding a CTA with TenneT is not possible for solar farms, since solar farms are not able to connect directly to the offshore grid. See also 8.2.5 below.

8.2.2 Cable pooling

In this scenario, the only shared cable(s) necessary are the export cable(s) from the TenneT offshore substation to the onshore substation. A cable pooling agreement needs to be concluded between wind farm and solar farm, as described in paragraph 4.2.

Cable crossings may not be avoidable in this scenario, depending on the original lay-out of the wind farm. However, cable proximity agreements between the wind farm, solar farm, and TenneT will likely be necessary since they will all have cables tying into the same offshore substation.

8.2.3 Cable crossing and proximity

Cable crossings should be avoidable in this scenario, given that the wind, solar, and offshore substation are being developed in a coordinated manner. However, cable proximity agreements between the wind farm, solar farm, and TenneT will likely be necessary since they will all have cables tying into the same offshore substation.

8.2.4 Turbine maintenance

No amendment necessary.

8.2.5 Regulatory implications

The first regulatory issue pertains to the lack of access for solar farms to the offshore grid, as explained in Chapter 5 above. This means that a standalone scenario is currently not feasible, since a CTA between the solar farm and TenneT is required, which TenneT cannot establish with the solar farm.

In this scenario, a new offshore solar farm will be integrated with an existing offshore wind farm. The solar project will have its own cable route between the PV-installation and the TenneT substation to deliver the produced electricity. The wind component will require a permit based on the Offshore Wind Energy Act, while the solar component will require a Water permit for shared use based on the Dutch Water Act. It is worth noting that under current Dutch legislation, the standalone scenario is not an option for connecting a solar farm to the offshore grid.

8.3 Scenario 3 Review (semi-standalone - greenfield)

Scenario 3 contemplates a semi-standalone design on a greenfield site. In other words, the solar and wind farms will each have independent owners, on a site with no previous development, and the solar farm will tie into the offshore wind farm strings. The connection to the TenneT offshore substation will come from the array strings that contain both wind turbines and solar panels.

The wind farm owner will need to conclude a REA and CTA with TenneT. Assuming the cable pooling exception in the Electricity Act has been amended to include offshore situations as described in Section 4.4, an exemption as network operator is not required.

8.3.1 TenneT CTAs

The wind farm owner will need to conclude a REA and CTA with TenneT.

8.3.2 Cable pooling

In this scenario, both the wind farm array cables and the export cable(s) from the TenneT offshore substation to the onshore substation will be shared. A cable pooling agreement needs to be concluded between wind farm and solar farm, as described in paragraph 4.2. Furthermore, a sharing agreement is necessary (which can be arranged by including paragraphs on sharing in the CPO) between wind and solar farm owner to regulate capacity sharing of the array cables, covering the following topics:

- Maximum capacity of array cable (guaranteed and excess)
- Minimum and maximum capacity allocated to each owner (if any)
- Priorities of usage and curtailment (by TenneT, by PPA offtakers), including detailed procedure.

8.3.3 Cable crossing and proximity

Cable crossings should be avoidable in this scenario, given that the wind, solar, and offshore substation are being developed in a coordinated manner. However, cable proximity agreements between the wind farm and solar farm will likely be necessary since they will both have cables tied into the same WTG.

8.3.4 Turbine maintenance

The design of wind- and solar farms should be optimized to avoid impact on access to the WTG, and no specific arrangements need to be included in the WTG service and maintenance contract. The additional solar farm equipment could be serviced by the WTG service provider (in which case the WTG service contract need to include this scope) or could be serviced by a third party (in which case access to the WTG should be arranged for in both service contracts).

8.3.5 Regulatory implications

In this scenario, the solar project and the wind project will share the cable between the wind farm and the TenneT substation to deliver produced electricity to the grid from the start. As the shared cable-infrastructure will also serve energy production by means of wind, the cable route between the wind farm and the TenneT substation and between the PV-installation and the TenneT substation, can both be included in the plot decision procedure and permitting procedure pursuant from the Offshore Wind Energy Act.

The wind component will require a permit as per the Offshore Wind Energy Act, while the solar component will require a Water permit for shared use based on the Dutch Water Act. The water permit application does not involve a tender procedure. However, in this case, the solar farm will be included in the tender for the offshore wind farm. Therefore, we anticipate that the winner of the integrated tender for the offshore wind farm, including the offshore solar component, will be the sole entity to whom a water permit for the construction of the offshore solar farm will be granted.

As solar farms cannot connect directly to the offshore grid, it is not feasible for them to conclude a CTA with TenneT, even in an integrated scenario. In a greenfield situation, the wind farm will be responsible for concluding a CTA with TenneT, and the solar farm will depend on the provisions agreed upon in this CTA. Of course, the wind and solar farms can make their own arrangements between themselves.

8.4 Scenario 4 Review (semi-standalone - brownfield)

Scenario 4 contemplates a semi-standalone design on a brownfield site. In other words, a solar farm will be constructed on a site that already has an offshore wind farm, by a different owner than the offshore wind farm, and it will connect to the offshore wind array strings.

8.4.1 TenneT CTAs

The wind farm owner will have a CTA with TenneT. The solar farm will plug into the wind farm and supply its energy to the wind farm, instead of supplying directly to the grid. This means that the wind farm's CTA will need to be amended.

8.4.2 Cable pooling

In this scenario, both the wind farm array cables and the export cable(s) from the TenneT offshore substation to the onshore substation will be shared. A cable pooling agreement needs to be concluded between wind farm and solar farm, as described in paragraph 4.2. Furthermore, a sharing agreement is necessary between wind and solar farm owners.

8.4.3 Cable crossing and proximity

Cable crossings should be avoidable in this scenario, depending on the original layout of the wind farm. However, cable proximity agreements between the wind farm and solar farm will likely be necessary since they will all have cables tied into the same WTG.

8.4.4 Turbine maintenance

It may not be possible to design the solar farm such that there is no impact on access to the WTG, so an amendment of the WTG service contract may be necessary. The additional solar farm equipment could be serviced by the WTG service provider (in which case the WTG service contract need to include this scope) or could be serviced by a third party (in which case access to the WTG should be arranged for in both service contracts), as detailed in paragraph 4.4.

8.4.5 Regulatory implications

In this scenario, the wind project will no longer have sole use of its cable infrastructure to the TenneT substation, because the addition of the PV-installation to the offshore project will lead to the situation that the solar project also uses the cable between the wind farm and the TenneT substation to deliver produced electricity to the grid. However, as the shared cable-infrastructure keeps serving the energy production by means of wind, the cable route between the wind farm and

the TenneT substation remains within the scope of the plot decision procedure and permitting procedure pursuant from the Offshore Wind Energy Act.

The construction and operation of the PV-installation in the water body, along with the cable infrastructure between the solar farm and the wind farm, will also require a Water permit for shared use. However, the absence of instruments like the plot decision and the tender procedure (as found in the Offshore Wind Energy Act) in the Water permit process remains an issue.

Similarly to the semi-standalone greenfield scenario, in this brownfield scenario, the solar farm will connect to the offshore wind farm's array strings. In this case, the solar farm will not establish an individual or separate CTA with TenneT. Instead, the solar farm will rely on the provisions outlined in the CTA between TenneT and the wind farm it connects to.

Finally, the solar farm will require a water permit. In this case, the absence of a tender procedure for the issuance of this water permit does present an issue. The lack of a tender procedure means that it is not clear to which party the water permit will be granted when multiple parties apply. We anticipate that the government may organize a tender procedure. However, this raises the question of whether the brownfield offshore wind farm can be compelled to allow an offshore solar farm to connect to its grid. Forcing such admission does not appear to be justifiable in light of the offshore wind farm's right to undisturbed enjoyment of property. Allowing an offshore solar farm would necessitate adjustments to the (business) structure of the wind farm. Furthermore, the guarantees of the wind farm will be at risk due to the addition of the offshore solar farm. In our view, it is not possible under current laws and regulations to compel an offshore wind farm to admit an offshore solar farm.

8.5 Scenario 5 Review (turbine integrated - greenfield)

Scenario 5 contemplates a turbine integrated design on a greenfield site. In other words, the solar and wind farms will each have independent owners, on a site with no previous development, and the solar farm will tie in with the offshore wind turbine transformers. The connection to the TenneT offshore substation will come from the array strings that contain both wind turbines and solar panels.

8.5.1 TenneT CTAs

The wind farm owner will need to conclude a REA and CTA with TenneT.

8.5.2 Cable pooling

In this scenario, both the wind farm array cables and the export cable(s) from the TenneT offshore substation to the onshore substation will be shared. A three-party agreement is necessary between TenneT, the owner of the wind farm, and the owner of the solar farm for the sharing of the export cable and the grid connection. Furthermore, a sharing agreement is necessary between wind and solar farm owners.

8.5.3 Cable crossing and proximity

Cable crossings should be avoidable in this scenario, given that the wind, solar, and offshore substation are being developed in a coordinated manner. However, cable proximity agreements between the wind farm and solar farm will likely be necessary since they will both have cables tying into the same WTG.

8.5.4 Turbine maintenance

The design of wind- and solar farms should be optimized to avoid impact on access to the WTG, and no specific arrangements need to be included in the WTG service and maintenance contract. The additional solar farm equipment could be serviced by the WTG service provider (in which case the WTG service contract need to include this scope), or could be serviced by a third party (in which case access to the WTG should be arranged for in both service contracts)

8.5.5 Regulatory implications

In this scenario, PV-installations will be integrated with separate wind turbines. As a result, the solar and wind projects will share cables between the wind turbines and the cable between the wind farm and the TenneT substation. However, the wind component will require a permit based on the Offshore Wind Energy Act, while the solar component will require a permit based on the Dutch Water Act.

As solar farms cannot connect directly to the offshore grid, it is not possible for them to establish a CTA with TenneT, even in an integrated scenario. In a greenfield situation, the wind farm will be responsible for concluding a CTA with TenneT, and the solar farm will depend on the provisions agreed upon in this CTA. Of course, the wind and solar farms can make their own arrangements between themselves.

Finally, the solar farm will need a water permit. The application for and granting of the water permit do not involve a tender procedure. However, in this case, the solar farm will be included in the tender for the offshore wind farm. Therefore, we expect that the winner of the integrated tender for the offshore solar component within the wind farm tender will be the sole entity to whom a water permit for the construction of the offshore solar farm will be granted. Please be referred to Chapter 6 for more detailed information on this matter.

8.6 Scenario 6 Review (turbine integrated - brownfield)

Scenario 6 contemplates a turbine integrated design on a brownfield site. In other words, a solar farm will be constructed on a site that already has an offshore wind farm, by a different owner than the offshore wind farm, and it will connect to the offshore wind turbine transformers.

8.6.1 TenneT CTAs

The wind farm owner will have a CTA with TenneT. The solar farm will plug into the wind farm and export energy via the wind farm, instead of supplying directly to the grid. This means that the wind farm's CTA will need to be amended.

8.6.2 Cable pooling

In this scenario, both the wind farm array cables and the export cable(s) from the TenneT offshore substation to the onshore substation will be shared. A cable pooling agreement needs to be concluded between wind farm and solar farm, as described in paragraph 4.2. Furthermore, a sharing agreement is necessary between wind and solar farm owner.

8.6.3 Cable crossing and proximity

Cable crossings should be avoidable in this scenario, depending on the original lay-out of the wind farm. However, cable proximity agreements between the wind farm and solar farm will likely be necessary since they will all have cables tying into the same WTG.

8.6.4 Turbine maintenance

It may not be possible to design the solar farm such that there is no impact on the access to the WTG, so an amendment of the WTG service contract may be necessary. The additional solar farm equipment could be serviced by the WTG service provider (in which case the WTG service contract need to include this scope), or could be serviced by a third party (in which case access to the WTG should be arranged for in both service contracts), as detailed in paragraph 4.4.

8.6.5 Regulatory implications

In this scenario, new PV-installations will tie into existing separate wind turbines. This will lead to a situation in which the solar and wind project will from that moment on share the cables between the wind turbines and the cable between the wind farm and the TenneT substation.

However, the wind energy component will be subject to regulation through a permit based on the Offshore Wind Energy Act, while the solar component will be regulated by a Water permit for shared use. As mentioned earlier, the latter may result in some issues with plot designation and selecting among multiple solar farm operators who apply for a Water permit to operate at the same location.

As solar farms cannot connect directly to the offshore grid, it is not feasible for them to establish a CTA with TenneT, even in an integrated scenario. In the brownfield scenario, the wind farm will already have a CTA with TenneT. Since the solar farm cannot establish a CTA with TenneT, it will have to rely on the provisions outlined in the existing CTA that have already been agreed upon.

Finally, the solar farm will need a water permit. In this case as well, the absence of a tender procedure for the granting of this water permit raises concerns. The lack of a tender procedure means that it is not clear to which party the water permit will be granted when multiple parties

apply. We anticipate that the government may organize a tender procedure. However, this raises the question of whether the brownfield offshore wind farm can be compelled to allow an offshore solar farm to connect to its grid. Forcing such admission does not appear to be justifiable in light of the offshore wind farm's right to undisturbed enjoyment of property. Allowing an offshore solar farm would necessitate adjustments to the (business) structure of the wind farm. Furthermore, the guarantees of the wind farm will be at risk due to the addition of the offshore solar farm. In our view, it is not possible under current laws and regulations to compel an offshore wind farm to admit an offshore solar farm.

Ventolines

9 Table and key findings

	TenneT agreements	Cable Pooling	Cable crossing agreements	Proximity agreements	Turbine maintenance	Environmental/spatial planning	Electricity Regulation
1. stand alone green	Requires separate CTA's for wind and solar. Problematic: no CTA possible between solar farm and TenneT.	Three party agreement / legal framework	TenneT & wind Farm: Avoidable, but may be required	TenneT & wind farm: likely	Turbine access coordinated between wind and solar MSAs	Permit based on the Offshore Wind Energy Act will be required for wind energy component; Water permit will be required for floating solar PV.	Amendment required to allow solar farms access to national offshore grid.
2. stand alone brown	Requires separate CTA's for wind and solar. Problematic: no CTA possible between solar farm and TenneT.	Three party agreement / legal framework	TenneT & wind farm: Likely	TenneT & wind farm: likely	Modify wind MSA based on accessibility impact from solar panels	Permit based on the Offshore Wind Energy Act will be required for wind energy component; Water permit will be required for floating solar PV.	Amendment required to allow solar farms access to national offshore grid.
3. semi green	Wind farm concludes CTA, solar farm will depend on provisions CTA between wind farm and TenneT; Shared REA	Two party agreement. Extra provisions needed to cover for access to the national grid for solar farm.	TenneT & wind farm: Avoidable/ minimized	TenneT: Avoidable/ minimized Wind farm: Likely	Coordinated access and shared equipment in wind and solar MSAs	Permit based on the Offshore Wind Energy Act will be required for wind energy component; Water permit will be required for floating solar PV.	Possible to share connection with Windfarm. Amendment required for solar farm to be a party to a CTA with TenneT.
4. semi brown	Wind farm's CTA must be amended, No new REA	Two party agreement. Extra provisions needed to cover for access to the national grid for solar farm in case only wind farm has CTA with TenneT	TenneT: Avoidable/ minimized Wind farm: likely	TenneT: Avoidable/ minimized Wind farm: Likely	Modify wind MSA based on accessibility and shared equipment	Permit based on the Offshore Wind Energy Act will be required for wind energy component; Water permit will be required for floating solar PV.	Possible to share connection with Windfarm. Amendment required for solar farm to be a party to a CTA with TenneT.

5. **WTG** **green**	Wind farm concludes CTA, solar farm will depend on provisions CTA between wind farm and TenneT; Shared REA	Two party agreement. Extra provisions needed to cover for access to the national grid for solar farm.	TenneT & Wind farm: Avoidable/ minimized	TenneT: Avoidable/ minimized Wind farm: Likely	Coordinated access and shared equipment in wind and solar MSAs	Permit based on the Offshore Wind Energy Act will be required for wind energy component; Water permit will be required for floating solar PV.	Possible to share connection with Windfarm. Amendment required for solar farm to be a party to a CTA with TenneT.
6. **WTG** **brown**	Wind farm's CTA must be amended, No new REA	Two party agreement. Extra provisions needed to cover for access to the national grid for solar farm in case only wind farm has CTA with TenneT	TenneT: Avoidable/ minimized Wind farm: Likely	TenneT: Avoidable/ minimized Wind farm: Likely	Modify wind MSA based on accessibility and shared equipment	Permit based on the Offshore Wind Energy Act will be required for wind energy component; Water permit will be required for floating solar PV.	Possible to share connection with Windfarm. Amendment required for solar farm to be a party to a CTA with TenneT.

Table 2 - Key findings for each scenario

1. The standalone design concept (Scenarios 1 and 2), in which the wind farm and solar farm directly connect their own cables to the TenneT offshore substation is not possible under the current electricity regulation in case of solar farms on the North Sea, safe for small-scale experiments. Connecting to the offshore grid is only possible for wind farms – and for now it is foreseen that this will stay this way also after entry into force of the new Energy Act. The foregoing does however not exclude the option for solar farms to connect to the wind farm and supply energy via the wind farm, instead of supplying directly to the grid. This would mean that the wind farm concludes a CTA with TenneT. This means the solar farm will depend on the wind farm for its grid connection, which (if the solar farm is to be financed separately) may cause bankability issues (see next Chapter), especially when it concerns large scale solar farms.

2. The regulatory hurdle explained in the previous point (only wind farms have access to the offshore grid) prohibits solar farms from having their own CTAs with TenneT. Instead, the wind farm will have or enter into a (revised) CTA with TenneT and the solar farm will enter into a cable pooling agreement with the wind farm (see the next point).

3. For offshore wind farms, the Offshore Wind Energy Act provides an extensive regulatory framework. Interested parties can obtain a permit for construction and operation of a wind farm by winning a tender for a specific location designated as suitable for wind energy by the Minister of Economic Affairs. Such a permit covers all the environmental and spatial planning aspects. By contrast, such a framework is lacking for offshore solar farms. Solar farms will have to apply for a permit for the construction and operation of the solar farm on the basis of the Water Act. This permit covers the presence and operations of the floating installation on the North Sea. Such a permit will be awarded if it can be shown that the solar PV system or cable network will not interfere with maintaining or achieving a "good condition" of the water body (water quality). Additionally, project initiators have to check how the actual and new project plans relate to the project as it was envisioned in the preparatory stages of the (Offshore Wind Energy Act) plot decision and, specifically, whether all aspects of the project were considered in the different studies that were performed, or whether conducted reports must be renewed or amended. Tailored regulations for the integration of offshore wind and solar have not yet been created. Currently, neither the Offshore Wind Energy Act, nor the Water Act explicitly facilitate expansion of wind-operations in the sense that new activities that are complementary to existing operations can be assessed and permitted based on a set framework. For clarification purposes, we propose to expand the scope of the Offshore Wind Energy Act to include other renewable energy projects.

4. All scenarios will require some form of cable pooling due to the fact that electrical equipment will be shared between the wind and solar farms. The model onshore cable pooling agreement as developed by Ventolines (current version: April 2022) can form the basis for such an agreement. However, if it is assumed, based on the previous parts of this study, that under prevailing legislation the CTA cannot not be shared but only entered into by just the wind farm, certain amendments of the model cable pooling agreement will be

necessary with a view to mitigating the risks for the solar farm that result from its dependency on the wind farm for its connection.

5. There is a notable difference in potential cable crossing and proximity between greenfield and brownfield scenarios. Given that brownfield developments already have an existing wind farm where a solar farm will be co-located, there are existing subsea wind cables that cannot be moved or optimized with the new solar farm cables. Therefore, there is a significantly higher chance of cable crossings and cables in close proximity to each other. In a brownfield standalone design (Scenario 2), these additional crossings may occur with TenneT cables because the new solar farm cable(s) will extend directly to the TenneT substation. All brownfield design concepts (Scenarios 2, 4, and 6) will have an increased chance of cable crossings within the wind farm array cables.

6. Based on the above concepts, it can be concluded that current legislation provides better opportunities for the integration of greenfield offshore wind farms and offshore solar farms than for brownfield offshore wind farms and offshore solar farms. In this Chapter, we have described using various concepts that, based on current laws and regulations, it is not possible to compel wind farms to admit offshore solar farms to their grid connections. We recommend amending the Offshore Wind Energy Act to enable this possibility. In this context, consideration should also be given to provisions for compensating the damage that the wind farm incurs due to the addition of the offshore solar farm (such as capacity loss, etc.). Refer to sections 6-7 for a more detailed description of the above.

7. The permit for the wind farm will be granted in accordance with the Offshore Wind Energy Act, but the offshore solar component is not covered by this legislation. Instead, the (integrated) offshore solar farm will be regulated through a Water permit for shared use. Please be referred to Chapter 6 for a more detailed explanation regarding the water permit.

8. Zooming in on the shared equipment and cables after system integration, we see no relevant difference between the greenfield and brownfield situation (other than that the scope of the permits may vary, but the relevant regulation does not change). Other than the frameworks in the Offshore Energy Act and the Water act, the cables of offshore wind farms and of offshore integrated projects are not subject to specific environmental and zoning regulations. The cables and shared equipment are considered in the applicable legal procedure that facilitates the new development (the plot decision, the permit based on the Offshore Wind Energy Act, or the permit based on the Water Act).

10 Case study

This Chapter will apply the findings from the previous Chapters to three distinct scenarios concerning the connection of a 50 MW solar farm to an offshore wind farm.

10.1 Scenario 1 (wind farm under construction, solar farm included in Area Passport)

In this case, we consider a park under construction, where a 50 MW solar farm is being connected to an offshore wind farm. In this scenario, it is assumed that the solar farm is included in the Area Passport for Shared Use (as explained in Chapter 6 above). Since the wind farm is already under construction, cooperation from the wind farm is expected to be necessary to enable the connection of the solar farm. Based on the current law, there appear to be no possibilities to compel the wind farm to connect to the solar farm.

The Area Passport for Shared Use is a document in which the government indicates, based on area-specific characteristics, the most favorable prospects and best ways to integrate various forms of shared use within each wind area. Consequently, these forms of shared use are given preference. The "Guidelines for Area Passports for Shared use in Wind Energy Areas in the North Sea" enable differentiation between permit applications from different potential shared users using the Framework for Shared Use of Offshore Wind Farms.

Since it is not possible on the basis of current legislation to connect to TenneT's offshore substation, the solar farm will need to connect directly to the wind farm (see semi-standalone and turbine integrated concepts paragraphs 3.1.2 and 3.1.3). In this case, the wind farm will enter into the Connection and Transmission Agreement with TenneT, and the solar farm will depend on the agreement between the wind farm and TenneT. Private agreements can also be made between the wind and solar farms, but it remains problematic if the wind farm were to disappear (e.g., when it goes bankrupt). This is because the solar farm cannot enter into an agreement with TenneT independently.

We assume that a water permit can be obtained in any case. The public uniform preparation procedure under the General Administrative Law Act (*Algemene wet bestuursrecht*) will apply to this water permit. The Minister of Infrastructure and Water Management is expected to be the competent authority for granting a water permit for an offshore solar farm.

However, it is not entirely clear how this legal system will function in practice, and there are still some questions in this area (see section 6). The lack of precedents makes it unclear whether water permits will be granted and under what conditions. Nevertheless, we anticipate that, when it is indicated that shared use is possible, there will have been an assessment of whether shared use is indeed feasible at the relevant location. In addition to the foregoing, we recommend operators of offshore solar farms to consider the integrated offshore solar farm when designing and positioning the wind turbines for the wind farm. This provides clarity about the position of the solar farm within the wind farm zone and the cable locations. As a result, the location(s) included in the area passport for the solar farm will most likely align with the preferred location for the operator of the

offshore solar farm. If the location that is designated for solar in the permit application, corresponds with the solar area in the Area Passport, this will reinforce the water permit application.

Moreover, it is unclear how the application for the water permit compares to other applications by solar farms seeking to operate in the same location. This is because the water permit does not involve a site decision procedure or a tender procedure. It is essential for the government to provide clarity on these matters. However, as mentioned in 6.4 above, we do not expect operators of offshore solar farms to seek for a water permit when the wind farm does not want to cooperate with them, since in that case the project will not be feasible.

In this situation we expect that a brownfield wind farm could in principle not be compelled to cooperate with the offshore solar farm that desires to connect. This would change when the government organizes a tender procedure for the application of a water permit for offshore solar. In that case, the question arises whether a brownfield wind farm can be forced to cooperate with the winner of that tender for the water permit for offshore solar. In our opinion, this possibility would require an amendment of the Offshore Wind Energy Act. Additionally, a compensation arrangement shall be required to address any damages incurred by the wind farm due to the inclusion of the offshore solar farm in its connection.

Finally, based on the current legislation (and the future framework of the Environment and Planning Act) an EIA will not be required for the water permit of the offshore solar farm. In case the project has potential negative effects on Natura2000 protected areas, the Area Passport may have to be submitted to an EIA.

10.2 Scenario 2 (wind farm under construction, solar farm included in Area Passport)

The second scenario involves a 50 MW solar farm that connects to a brownfield offshore wind farm, assuming that the solar farm is not included in the Area Passport for shared use. In this scenario, a brownfield situation is assumed, meaning that the wind farm is already fully constructed and operational. The solar farm in this situation appears to always require cooperation from the wind farm to connect.

In the brownfield scenario, unlike the greenfield situation (see scenario 3), the solar farm has not been included in the tender for the offshore wind farm. Consequently, we anticipate that the government will initiate a tender procedure for the issuance of a water permit for an offshore solar farm seeking to connect to a brownfield offshore wind farm.

Under the current legislation, however, it is not possible to compel the wind farm operator to permit the connection of the offshore solar farm to the grid. Enabling the enforcement of such a connection for an offshore solar farm that successfully wins the tender for the water permit would necessitate an amendment to the Offshore Wind Energy Act. This would also involve considering potential compensation for any harm incurred by the offshore wind farm due to the addition of the offshore solar farm.

Furthermore, when connecting an offshore solar farm to an offshore wind farm in a brownfield situation, consideration must also be given to the fact that adding a solar farm to the wind farm will require adjustments to the infrastructure. This will probably affect the warranties of the offshore wind farm, and thus result in issues with regard to bankability. Based on the foregoing, we expect that the current legal framework does not constitute a possibility to compel existing offshore wind farms to integrate an offshore solar farm.

The fact that the solar farm is in this case not included in the Area Passport for shared use means that no specific area has been designated for the generation of sustainable energy through solar power. This means that the water permit cannot be assessed on the basis of the Area Passport and will thus solely be assessed on the criteria which are given in the Water Act.[16]

Granting a water permit for an integrated offshore solar farm is a new topic and there are no precedents. This, combined with the absence of an Area Passport for Shared Use in this scenario, makes it less clear whether a water permit will be issued and under what conditions. However it is clear that the chemical and ecological water quality and fulfilling societal functions through water systems will form the assessment criteria for the water permit.

Water permit requirements are expected to be more stringent than in the situation where the solar farm is included in an Area Passport for Shared Use, as the latter case already undergoes an assessment of the "suitability" of the designated location for the solar farm as per the Area Passport.

Finally, based on the current legislation (and the future framework of the Environment and Planning Act) an EIA will not be required for the water permit of the offshore solar farm.

10.3 Scenario 3 (greenfield, integrated tender)

The third scenario entails a situation in which a 50 MW solar farm is connected to a wind farm where the tender for the wind farm incorporates criteria that enable (or even require) the establishment of a solar farm. It is assumed that in the tender documentation, points are allocated for various capacities of proposed investments in integrated offshore solar farms (ranging from 0-20 MWp to equal to or greater than 50 MWp). In this case as well, the solar farm cannot directly connect to the offshore electricity grid. The solar farm must connect to the wind farm and thus relies on the agreements made in the Connection and Transportation Agreement between the wind farm and TenneT.

Furthermore, a water permit must also be obtained for the solar farm. The application procedure of a water permit does not entail a tender procedure. However, we expect that the winner of the integrated tender for offshore wind and solar will always be the party to which a water permit will be granted. This does, in our view, not seem to be in conflict with the relevant European and national legislation with regard to scarce permits, which we discussed in more detail in Chapter 6.

We recommend operators of offshore wind farms to consider the integrated offshore solar farm when designing and positioning the wind turbines for the wind farm. This provides clarity about the position of the solar farm within the wind farm zone and the cable locations. As a result, the

[16] Or in the Environment and Planning Act, as from 2024 onward this Act will replace the Water Act

location(s) included in the area passport for the solar farm will most likely align with the preferred location for the operator of the offshore solar farm. If the location that is designated for solar in the permit application, corresponds with the solar area in the Area Passport, this will reinforce the water permit application.

Finally, based on the current legislation (and the future framework of the Environment and Planning Act) an EIA will not be required for the water permit of the offshore solar farm.

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