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Offshore wind energy developments in the Netherlands: road to 2030 and beyond

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The conditions for offshore wind energy in the Netherlands are incredibly favourable. Factors like relatively shallow waters, good wind resource and an experienced industry, coupled with the increasing demand for sustainable energy, are driving the offshore wind energy market. The government considers offshore wind energy to be key in the transition to a near complete climate-neutral energy supply by 2050. With the fulfilment of offshore wind energy capacity targets for 2023 in sight, legislative and policy steps are being taken towards achieving follow-up targets set for 2030 and beyond.

Amendments to OWEA

The Climate Act stipulates that the Netherlands must reduce its CO2 emissions by 49% by 2030 and by 95% by 2050, compared to 1990 levels. The first target is likely to be increased from 49% to 55% after the current caretaker government has been replaced by a new government (most likely consisting of the same four political parties).

Previously, the Netherlands was committed to increasing the total installed capacity of offshore wind energy to at least 4.5 gigawatts by 2025 (currently it is approximately 2.5 gigawatts). This commitment was part of the previous Climate Agreement, an agreement between many organisations and companies in the Netherlands to combat climate change, playing a vital role in Dutch climate policy (for further details please see "[Towards a climate and energy plan: will Dutch polder model succeed?](#)"). The commitment was operationalised in the Offshore Wind Energy Roadmap 2023 (the 2023 roadmap).

The Offshore Wind Energy Act (OWEA), which entered into force on 1 July 2015, was implemented to streamline the decision-making process for the realisation of offshore wind projects in an effort to meet the Netherlands' renewable energy targets for 2020 and 2023. On 11 November 2021, an amendment to the OWEA came into force to support the offshore wind energy assignment (the amendment). With a view to ensuring continuity in the realisation of offshore wind energy after the 2023 roadmap expires, the amendment aims to pave the way for the development of 7 gigawatts of additional offshore wind energy capacity in the period up to and including 2030, as outlined in the 2018 addition of the [Offshore Wind Energy Roadmap 2030](#) (the 2030 roadmap).

The amendment leaves the core intentions of the OWEA intact, with the government setting the parameters for elements including:

- the location of wind farm sites;
- the grid connection;
- the maximum capacity; and
- the pace of development.

Accordingly, wind parks may be built only at designated areas, with "site decisions" setting out the conditions for development and operation. The site decision is followed by a wind permit that allows the holder to build and operate a wind farm at the specific site. Changes pursuant to the amendment that are relevant for parties (that are considering becoming) active in the Dutch market for offshore wind energy development include the following:

- energy carriers other than electricity have been brought within the scope of the OWEA;
- two new tender methods have been introduced; and
- the maximum term of a wind permit has been extended from 30 to 40 years.

The amended OWEA is no longer based on the assumption that wind turbines are solely used to generate electricity and that the electricity generated is fed into the grid. Electricity is not the only energy carrier capable of being generated by wind turbines: hydrogen and ammonia can be produced offshore as well. In line with this, the amendment has introduced a definition for "wind energy" (ie, an energy source created by converting wind) and it has altered the definition of a "wind farm" (in brief, an assembly of equipment that is interconnected for the production of wind energy) in a way in which wind farms that produce energy carriers other than electricity are brought within the scope of the OWEA.

In addition, a definition for "connection point" has been added that clarifies that this is the point at which a grid connection is connected to a grid or to another installation. There are various situations that qualify as a connection to an installation, according to the explanatory note to the amendment, including:

- an electricity cable connected to a hydrogen plant, where the hydrogen plant is the facility and may be located onshore or offshore;
- a hydrogen plant connected to a facility from where the hydrogen is further distributed (onshore or offshore) via pipelines, trucks or ships; or
- a pipeline connected to a facility that produces electricity from hydrogen.

The costs of offshore wind energy have decreased significantly in recent years. In 2018, the government awarded two wind permits for



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building the world's first subsidy-free offshore wind farms. While the government welcomes the decreasing need for subsidies, it also acknowledges that full exposure to market prices can create uncertainty, which may lead to higher capital costs and a greater risk of wind farms not being built. Accordingly, subsidies may still be needed in certain cases. The amendment seeks to address such situations, while simultaneously bolstering the trend towards a subsidy-free era.

The two tender methods that were already in place under the OWEA prior to the amendment have remained unchanged:

- The first is a subsidised procedure with a wind permit and subsidy awarded to the tenderer that requests the lowest subsidy amount.
- The second is a subsidy-free procedure with a wind permit awarded on the basis of a comparative assessment (a "beauty contest") that takes into account:
 - the height of the bid;
 - the degree of certainty that the wind farm will be realised; and
 - the wind farm's contribution to the total energy supply.

The amendment adds two new subsidy-free tender methods to the mix:

- The first procedure combines a comparative assessment with a financial bid in which the ranking of the tenderers is determined on the basis of both elements.
- The second procedure introduces an auction process in which the wind permit is awarded solely on the basis of the bid price. To avoid strategic behaviour, the bid price consists of a fixed amount that is independent of, for example, the amount of electricity produced.

The tender procedure to be applied may differ per tender, depending on the market conditions and whether a subsidy is required. If a subsidy is not needed, one of the three subsidy-free methods will be chosen. However, it is not always clear at the outset whether a subsidy is required for a wind farm to be built. Adding to the possibility to open a tender procedure with and without a subsidy in a sequential manner already in place under the previous version of the OWEA, the amendment has introduced the option to conduct several procedures simultaneously, including a combination of a subsidised and subsidy-free procedure. In the latter case, the applicant must decide whether, for instance, to submit a bid at the auction or whether to specify at which subsidy level it is prepared to build the wind farm. If the applicant requests a subsidy, it may not simultaneously take part in the subsidy-free procedure and vice versa. It is only if the applications in the non-subsidised procedure do not result in a wind permit being granted that the applications in the subsidised procedure will be considered. This enables the government to establish in a single tender whether the wind farm can be developed without a subsidy and, if that is not the case, to proceed directly to the granting of a subsidy and a wind permit.

In connection with the above, in cases where applications for a wind permit can be submitted for multiple tender procedures, the amendment provides for the possibility to limit the number of applications that an applicant may submit to one application. This is to prevent instances where subsidiaries are established with the sole intention of increasing the possibility of obtaining a wind permit by submitting multiple applications.

Given that space for offshore wind energy is scarce, it is not desirable that a wind permit holder could use an offshore site indefinitely. Unlike in other cases, the wind permit holder does not own the seabed or water column, meaning that a new site decision may be issued once the term of the wind permit expires. The wind permit does not confer an exclusive right to use the wind farm site either: the permit gives the right only to build and operate a wind farm on that site during a specific period.

When the OWEA was drafted in 2014, the lifespan of an offshore wind farm was approximately 20 years. With future technical developments in mind, the maximum term of a wind permit was set at 30 years. The lifespan of turbines has since increased (which is one of the reasons costs for offshore wind energy have decreased in recent years). To bring the maximum permit term in line with the increased longevity of wind farms, the amendment has adjusted the maximum permit period from 30 to 40 years.

The 40-year maximum permit term applies to new wind permits. The permit term is determined on a case-by-case basis, depending on the projected lifespan of the wind farm. The minister of economic affairs and climate policy (the minister) has stated that it would not seem obvious to immediately switch to 40-year permit terms for upcoming wind permits, but rather to continuously seek alignment with the expected lifespan of the technology available in the market. Wind permit holders already granted under the OWEA can apply for an extension of the permit term. Several criteria will be considered when deciding whether to grant an extension, including the importance of an efficient connection of a wind farm to a connection point. This implies that the possibilities of keeping the offshore grid available for a longer period and the related costs are considered before the permit extension is granted. The duration of the extension is determined on a case-by-case basis. Wind permits that have already been granted currently state that parties may not begin dismantling the wind farm earlier than six years before the permit's expiry. Accordingly, an extension of the wind permit postpones the moment at which the dismantling can start. Applications for an extension of the permit term can be submitted approximately seven years after the wind permit has been granted. At the time of amending the site decision, and thus extending the wind permit, the future claim made on the relevant wind farm site cannot exceed the 30-year term set out in the original site decision.

The lifespan of the offshore grid will evidently have to match with the extended maximum wind permit term. While the [Development Framework for Offshore Wind Energy](#) requests TenneT, the national transmission system operator in the Netherlands, to design and maintain the offshore grid in a way that considers the possibility that wind permits are granted with a permit term of more than 30 years, the actual lifespan of the offshore grid is set at a minimum of 27 years. The minister has stated in that regard that the next version of the development framework will change the minimum lifespan of the offshore grid with respect to future grid connections.

Road to 2030

The current [Climate Agreement](#) includes a commitment to achieve an aggregated installed offshore wind energy capacity of approximately 11.5 gigawatts by 2030. Taking into account existing wind farms (which have a capacity of approximately 1 gigawatt) and the wind farms that will be created under the 2023 roadmap (which will have a capacity of approximately 3.5 gigawatts), this means that between 2024 and 2030, a significant amount of additional wind farms will have to be constructed that will contribute approximately seven gigawatts worth of installed offshore wind energy (based on the roll-out of 1 gigawatt per year).

On 13 October 2021, the state secretary for economic affairs and climate policy informed the House of Representatives on the progress of the roll-out of the 2030 roadmap. Currently, seven pre-designated wind farm sites have been scheduled for deployment. These sites will

accommodate approximately 6.1 gigawatts of offshore wind energy. The state secretary noted that two sites located within the Hollandse Kust (west) zone (with a capacity of approximately 1.4 gigawatts) are tendered on the basis of a subsidy-free procedure. A procedure that combines a comparative assessment with a financial bid is applied if two or more applications are submitted for the same permit. While both sites are subject to the three mandatory ranking criteria mentioned above, additional ranking criteria will be drawn up for each site individually, focusing on either ecological innovation or system integration. According to the state secretary, this approach will ensure the highest level of competition between applicants and therefore yield the highest added social value.

The current caretaker government has earmarked funds in its 2022 budget to research potential locations for the realisation of 10 gigawatts of additional offshore wind energy capacity by 2030, on top of the 11.5 gigawatts already running or planned. The explanatory notes accompanying the 2022 budget further indicate that the government assumes that the next tender for an offshore wind farm will also be won by a company that does not require a subsidy.

On 9 November 2021, an [additional draft to the North Sea Programme 2022-2027](#) was published by the government. The [North Sea Programme 2022-2027](#) is expected to be adopted in March 2022, and it sets out the framework for:

- the spatial use of the North Sea in relation to the marine ecosystem; and
- the policy aimed at improving the environmental status of these marine ecosystems.

The research and monitoring of the effects of offshore wind farms on the marine ecosystem takes place under the Ecological Offshore Wind Energy Programme. The results of the research can lead to measures that limit negative effects as much as possible. When deciding upon site decisions and wind permits, the government applies these results in the context of, among other things, the Environmental Impact Assessment.

The additional draft shows the location of the designated search areas for the development of 10.7 gigawatts of additional offshore wind energy (0.7 gigawatts was added to the target in order to compensate for the shortfall in the 2030 roadmap). In view of the fact that the designated search areas can accommodate a total of 16 gigawatts of offshore wind energy capacity, the current target of 10.7 gigawatts extra capacity might be adjusted upwards along the way.

Electricity generated by offshore wind farms is transmitted to the onshore network through the TenneT high-voltage grid. Therefore, it is vital for the spatial planning of offshore wind farms that the landfall and land-based infrastructure is properly coordinated. The current Exploration of Offshore Wind Energy Landing (VAWOZ) investigates how offshore energy can best be brought to shore. The VAWOZ covers:

- the form (electrons or hydrogen molecules);
- the mode of transmission (cable, pipe or ship); and
- the route and energy demand (location and capacity).

On 13 September 2021, a report was published that had been commissioned by the Ministry of Economic Affairs and Climate Policy, which analysed the potential of various landing locations for offshore wind energy. The report found that it is currently uncertain whether the additional industrial electricity demand in 2030 will be sufficient to mitigate grid congestion when more than six gigawatts of offshore wind energy is added on top of what is currently planned. On 26 November 2021, the minister and state secretary informed Parliament of the intention to include new landing points of offshore wind energy resulting from the VAWOZ in the Multi-year Programme for Energy and Climate Infrastructure, in which the coordination and supervision of infrastructure projects that are essential for the energy transition is elevated to government level.

Beyond 2030

The roll-out of offshore wind energy in the Dutch waters of the North Sea will evidently continue after 2030. According to the [North Sea Energy Outlook \(NEO\) report](#) published by the government in November 2020, in the period of 2030-2050, offshore wind energy will account for the majority of the electricity production in the Netherlands. In the import-dependent scenario, this represents 38 gigawatts of offshore wind energy capacity, whereas in the self-sufficient scenario, 72 gigawatts of offshore wind capacity are maintained. Regardless of the scenario, the North Sea will be vital to achieving the Netherlands' climate target of a 95% reduction in CO2 emissions by 2050. However, to achieve this target, the NEO had concluded that market conditions must be created that will ensure a healthy and stable business case for sustainable energy producers in the long term (market integration) and that offshore wind energy must be properly integrated into the energy system (physical system integration).

The Dutch sector of the North Sea covers an area of around 57,000 km², which is 10% of the entire North Sea and over one-and-a-half times the size of the Netherlands's land surface. Despite its relatively small size, the Netherlands is a global leader in offshore wind energy, ranking second worldwide in terms of newly installed offshore wind energy capacity in 2020, behind only China, according to the [Global Offshore Wind Report 2021](#). With legislation adapting to technologic developments and policies striving for ambitious offshore wind energy targets, the Netherlands could remain at the competitive forefront of the offshore wind energy market for some time to come.

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