The offshore wind energy tender scheme that is currently being rolled out by the Dutch government aims to increase offshore wind capacity to reach 4.5 GW by 2023. So far, this scheme has resulted in three successful tenders, which have achieved significant cost reductions. With two more tenders to go, scheduled for 2018 and 2019, the scheme is coming to a close.

In order to continue offshore wind energy developments after 2019 and to offer clarity on the future of offshore wind developments, the Dutch government has just revealed its 2030 Offshore Wind Roadmap.

Issued on 27 March 2017, this road map provides an outline for the development of offshore wind parks for the period 2014-2030.

The Dutch CO2 emission reduction targets, as set out in the recent coalition agreement, translate into a 7 GW increase in offshore wind capacity by 2030. Taking into account the wind parks that have already been realised and the parks that will be built between 2019 and 2023 under the current tender scheme, the government aims to achieve an aggregate installed Dutch offshore wind capacity of approximately 11.5 GW by 2030.

The road to 11.5 GW by 2030

To develop this additional wind energy capacity, the wind energy areas currently designated in the National Water Plan are, in principle, adequate. Sea bird protection and the available electricity transmission capacity on the onshore grid, however, are constraints to this development.
Taking these constraints into account, it will still be possible – according to the new 2030 roadmap – to develop an additional offshore wind capacity of 6.1 GW (0.9 GW less than the targeted capacity of 7 GW), provided that the following conditions are met:

1. The new wind parks will be located in the wind areas Hollandse Kust (west), Ten Noorden van de Waddeneilanden and IJmuiden Ver
2. The wind turbines will have a capacity of at least 10 MW, and
3. Until research yields alternatives, 4 GW of the 6.1 GW will have to be connected to the onshore grid at locations further inland to avoid congestion. How to develop the remaining 0.9 MW will be decided at a later time.

The following is the roadmap for 2030:

<table>
<thead>
<tr>
<th>Additional capacity (GW)</th>
<th>Shortest distance to the coast</th>
<th>Start site decision procedure</th>
<th>Tender</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4</td>
<td>Hollandse Kust (west)</td>
<td>51 km from Petten</td>
<td>2018</td>
<td>2020/2021</td>
</tr>
<tr>
<td>0.7</td>
<td>Ten Noorden van de Waddeneilanden</td>
<td>56 km from Schiermonnikoog</td>
<td>2019</td>
<td>2022</td>
</tr>
<tr>
<td>+/- 4.0</td>
<td>IJmuiden Ver</td>
<td>50 km from Den Helder; 80 km from IJmuiden</td>
<td>2020</td>
<td>2023/2026</td>
</tr>
<tr>
<td>+/- 0.9</td>
<td>To be agreed on</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Wind energy area key specifics**

According to the roadmap, the envisaged 1.4 GW in the Hollandse Kust (west) area may potentially be tendered at once, possibly in 2021, to facilitate further cost reduction. The offshore grid that connects wind parks in this area to the onshore grid may follow part of the same route as the connection from the Hollandse Kust (noord) park, which will be tendered under the 2023 roadmap. Combining these offshore grids offers several advantages, such as shortening the licensing process, reducing harmful environmental effects from the offshore grid’s construction, and making efficient use of offshore and onshore space.

A 0.7 GW wind park in the Ten Noorden van de Waddeneilanden wind energy area will be located near the existing Gemini wind parks. With the designation of this area, the government is responding to the ambitions of the Province of Groningen to contribute to a sustainable Dutch energy supply. The offshore grid that will connect these wind parks, however, will cross the Wadden Sea, which has been designated a Particularly Sensitive Sea Area (PSSA). As a consequence, the offshore cable route in this wind energy area will constitute a key concern.

The third wind energy area, IJmuiden Ver, is by far the largest, but the south part of this area will not be used for the development of wind parks given its potential designation as a Natura-2000 site. At this moment, no decision has been made on the capacity to be specified in individual tenders in relation to this wind energy area. According to the roadmap, the government is considering two tenders of 2 GW each (in 2023 and 2025) or four tenders of 1 GW each (between 2023 and 2026). In deciding on the optimal capacity per tender, factors will be taken into account such as the optimal capacity of the offshore grid, an expressed desire by certain parties for very large tenders, and the optimal wind park capacity of 1 GW to 1.5 GW, as advocated by the wind energy sector.
In relation to the last phase where additional capacity of 0.9 GW will need to be realised, the roadmap raises the following options:

1. Gaining 0.7 GW in wind energy area Hollandse Kust (south west), but keeping in mind that this area is important for the fishing industry and that nearby gas fields may be used for carbon capture and storage (CCS)
2. An additional tender in the IJmuiden Ver wind energy area, or
3. The designation of a new wind energy area.

The grid connection

The grid connection for the Hollandse Kust (west) and Ten Noorden van de Waddenzee wind parks will be based as much as possible on the concept that is currently being used (i.e. alternating current, standardised platforms with a capacity of 0.7 GW, and connecting to onshore stations near the coast). The IJmuiden Ver wind energy area, however, requires a new connection concept, given its size and distance to onshore connection points. Possible alternatives include the use of direct current technology and onshore connections located further inland, or non-electrical options, such as conversion to hydrogen.

According to the roadmap, the government will consider the construction of a small island as an alternative to large offshore HVDC platforms. (This is not the envisaged North Sea Wind Power Hub on the Doggersbank, which may come into play only after 2030.) This autumn, decisions will be taken on offshore grid design (to be set out in the development framework), and the initiation of permit proceedings for the island mentioned above.

The roadmap confirms the government’s desire to realise non-subsidised offshore wind parks as soon as possible. For this purpose, a bill to amend the current Offshore Wind Energy Act will be submitted to parliament before the summer. In addition, the government has indicated that, in the context of a bill to transform the current Electricity Act 1998 and Gas Act into an Energy Act which is currently pending in the Senate, it will assess the future funding of the offshore grid (which is currently subsidised).

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