Ministerie van Economische Zaken
en Klimaat

> Return address PO Box 20401 2500 EK The Hague

The Speaker of the House of Representatives
of the States General
Prinses Irenestraat 6
2595 BD THE HAGUE

Directorate-General for Climate and Energy
Energy Transition Directorate

Visiting address
Bezuidenhoutseweg 73
2594 AC The Hague

Postal address
PO Box 20401
2500 EK The Hague

Government identification no.
00000001003214369000

T +31 (0)70 379 8911 (general)
F +31 (0)70 378 6100 (general)
www.rijksoverheid.nl/ezk

Date
Subject Update on Additional Offshore Wind Energy Roadmap

Our reference
DGKE-DRE / 52795804

Dear Speaker,

In June 2022, I informed the House of Representatives about the Additional Offshore Wind Energy Roadmap[1]. With this addition to the original Roadmap, the Government doubled the target for offshore wind to generating capacity of approximately 21 gigawatts (GW). Offshore wind energy is making a major contribution to ensuring our electricity mix is more sustainable and our industry greener. At the same time, achieving 21 GW is a colossal task with many challenges.
With this letter, in accordance with my commitment[2], I hereby inform the House about the planning schedule for the realisation of the wind farms that have yet to be granted a permit and the associated offshore grids under the Additional Offshore Wind Energy Roadmap (hereinafter: the Roadmap).
Under this updated plan, 21 GW is expected to be achieved by the end of 2032. This is a year later than originally planned. This is because of the lead times for the spatial planning procedures for the grid connections, pressures in supply chains and the additional time required to connect the wind farms to the offshore grid.

Tender procedures for IJmuiden Ver and Nederwiek (zuid)
First of all, I am pleased to report that as part of the permit licensing procedures ("tenders") for IJmuiden Ver Wind Farm Sites Alpha and Beta (combined: 4 GW), multiple bids were received for both sites. I expect to inform the House about the outcome of the tenders in the summer.

In addition, I expect to send the House a letter shortly to inform it about the choice of tender procedure for the permits relating to IJmuiden Ver Wind Farm Site Gamma and Nederwiek (zuid) Wind Farm I. In this letter, I will also discuss my commitments regarding site size and any further standardisation of size of wind turbines[3].

[1] Parliamentary Paper 33561, no. 53
[2] Parliamentary Paper 33561, nos. 57 and 59.
[3] The commitment on site size was made during the Committee Debate on the National Energy System Plan (NPE), held 8 February 2024. The commitment on standardisation was made during the Plenary debate - Finalisation and adoption of the budget statements of the Ministry of Economic Affairs and Climate Policy (36410-

Challenges implementing the Roadmap
As I also mentioned in my letter of June 2022, the realisation of offshore wind farms comes with many uncertainties that can affect their implementation. In particular, the ecological frameworks, the spatial integration of offshore wind and grids (both offshore and onshore) in conjunction with drilling activities and other spatial interests such as shipping, fisheries and defence, are challenges for making (timely) wind farm site decisions. Shortages in the supply chain for offshore wind farms and offshore grids also causes longer lead times in the realisation of wind farms and grid connections.

To limit the impacts of this as much as possible, I am working on a number of solutions. For example, with the State Secretary for Economic Affairs and Climate Policy and relevant private parties, I am working to develop tailor-made solutions for the integration of both offshore wind farms and drilling platforms. I previously informed you about this in May 2023[4]. I am also examining whether legislation and regulations could be amended to achieve the planned customisation. I will inform the House about progress on this after the summer.

With regard to the planning schedule, the subject of this letter, there are three influencing factors that I will explain in more detail:
1. The possibility of permits being granted for and lead times of grid connections;
2. The pressure in the supply chain for grid connections, and
3. The time required to connect 2 GW wind farms to the offshore grid.

Update of the Roadmap planning schedule
<u>The possibility of permits being granted for and lead times of grid connections</u>
In my Letter to Parliament about the Roadmap[1] I stated that the addition of a further 10.7 GW to the previous target consisted of two parts:
- Part 1 related to 6 GW and consists of three sites in the IJmuiden Ver and Nederwiek (noord and zuid) Wind Farm Zones.
- Part 2 consisted of sites yet to be selected in the Doordewind, Nederwiek (noord) and Hollandse Kust (west) Wind Farm Zones, representing a total capacity of 4.7 GW.

The lead times for the necessary spatial planning procedures for the grid connections of the sites in Part 2 require more time due to the technical and environmental complexity of the cable routes. My predecessor therefore commissioned the investigation of and preparation for grid connections for 2 GW of additional capacity ('overplanting')[5]. The results of these investigations means a choice can now be made between the aforementioned sites for Part 2. More information is now known about, among other things, the possibility of permits being granted for and lead times of grid connections. Based on this, I have decided to include Doordewind Wind Farm Site I (2 GW), Hollandse Kust (west)

XIII) for the year 2024 and Finalisation and adoption of the budget statement of the National Growth Fund for the year 2024 (36410-L), reply 1st term + remainder, held 12 October 2023.
[4] Parliamentary Paper 34682, no. 161
[5] Parliamentary Paper 33561, no. 52

Wind Farm Site VIII (0.7 GW) and Nederwiek (noord) Wind Farm Site III (2 GW) in the Roadmap:

- For Doordewind Wind Farm Site I, the planning schedule is changing due to major spatial challenges relating to the potential grid connection routes to be investigated, due to them crossing the Wadden Sea, and challenges in the last part of the route to Eemshaven (previous completion date: ; new completion date:). At the request of the House, a programme-based approach was initiated at the end of 2021: the Offshore Wind Connection – Eemshaven Programme (PAWOZ-Eemshaven).
- Hollandse Kust (west) Wind Farm Site VIII has been included to continue to ensure all options for the sustainability of Tata Steel possible. The 150 kV Velsen substation is intended as the connection location for the power cable from this site. The availability of connection capacity and space at and to the Velsen substation is related to Tata Steel's sustainability process. This grid connection is expected to be realised after 2031.
- The decision to include Nederwiek (noord) Wind Farm Site III and not Doordewind Wind Farm Site II is based on the expectation that the landfall of the grid connection for Nederwiek (noord) Wind Farm Site III can be realised earlier than that for Doordewind Wind Farm Site II[6]. I expect to make a decision on the Nederwiek (noord) landfall route by the end of this year. This decision will provide greater clarity with regard to the planning schedule.

  A second reason for choosing Nederwiek (noord) Wind Farm Site III is that, for the first time, a connection between two countries and a Dutch offshore wind farm are combined, namely the intended hybrid interconnector with the UK (LionLink)[7]. This innovative configuration may require extra attention in the preparation for permit tenders and the realisation of the wind farm. The regulatory framework for hybrid interconnectors is under development, both nationally and internationally.

  I recently sent a third memorandum of amendment to the House, which aims to facilitate the development of hybrid interconnectors within the Energy Act bill[8]. I also maintain regular contact with the European Commission and NSEC countries about embedding hybrid interconnectors into the European regulatory framework. In the coming period, I also intend to further intensify national dialogue on the development of hybrid interconnectors in general, together with the wind power industry, TenneT and the Authority for Consumers and Markets (ACM).

Doordewind Wind Farm Site II (2 GW) is being carried forward to the follow-up phase of the Offshore Wind Energy Roadmap for the period 2032-2040, which is yet to be determined. To this end, the Government is designating new wind farm zones with the Partial Revision of the North Sea Programme 2022-2027, which is now underway[9].
In the context of the aforementioned overplanting order, the offshore grid

[6] Parliamentary Paper 33561, no. 59.
[7] Parliamentary Paper 33561, no. 59.
[8] Parliamentary Paper 2024D14181.
[9] Parliamentary Paper 35325, no. 8

operator, TenneT, is also preparing a grid connection for Doordewind Wind Farm Site II[10]. This will ensure that, in the tight supply chain, production and installation capacity is secured so that the rollout of offshore wind energy can continue beyond the current Roadmap. This preparation has already started and TenneT intends to make further investments by the end of this year, about which I will inform the House at that time.

Finally, regarding the planning of the wind farm zones, I draw attention to the fact that the Ten noorden van de Waddeneilanden Wind Farm Zone has been designated as a preferred location for demonstration project 2 for offshore hydrogen production[11]. I have therefore asked TenneT not to proceed with preparations for the electrical connection of Ten noorden van de Waddeneilanden until further notice. An electrical grid connection is still included in the research scope of PAWOZ-Eemshaven, which focuses on the options for landfall sites for offshore wind farms via the Wadden Sea, so that the transmission of electricity to the onshore grid remains an alternative for Ten noorden van de Waddeneilanden. I will inform the House about the progress of the offshore hydrogen demonstration projects in a separate letter.

Table 1 shows the new planning schedule for all sites.

Supply chain constraints for grid connections

In my letter of June 2023[12] on the modified planning schedule for the tenders for and commissioning of the planned wind farms in IJmuiden Ver Wind Farm Sites Alpha and Beta, I indicated that TenneT, at my request, is working with its contracting parties to investigate acceleration measures for the following projects. This resulted in the identification of acceleration opportunities for the consortium building and installing the IJmuiden Ver Alpha, Nederwiek I and III and Doordewind I grid connections for TenneT. The other consortium, which is responsible for the grid connections for IJmuiden Ver Beta, IJmuiden Ver Gamma and Nederwiek II, is experiencing some delays relative to the original planning schedule due to supply chain constraints.
I have taken into consideration both developments, with new insights into the time required to connect wind farms to the offshore grid, to arrive at the updated planning schedule.

More time to connect wind farms to the offshore grid

There is also a shortage of production and installation capacity in the supply chain for wind farms. In addition, following the recent tender for IJmuiden Ver Wind Farm Sites Alpha and Beta, I was informed by the wind sector that more time is needed to connect 2 GW wind farms to the offshore grid. That is why I have looked again at the feasibility of the delivery schedule, with a view to increasing the likelihood of timely completion. My foremost consideration was to ensure that societal costs remain as low as possible, weighing the benefits of extra time in the planning schedule for wind farm developers against the additional costs this entails for TenneT. I have also taken account of the implications for the offshore

[10] Parliamentary Paper 33561, no. 53.
[11] Parliamentary Paper 33 561, no. 58
[12] Parliamentary Paper 33561, no. 57

wind energy challenge facing us, as part of the climate goals. After consultation with TenneT, the wind power industry and relevant government agencies, I have produced a new schedule, opting to give future permit holders of planned wind farms more time for connecting wind farms to TenneT's 2 GW DC platforms and for commissioning their wind farm.

For the grid connections built and installed for TenneT by the consortium that manages to implement acceleration measures, the extra time provides an opportunity for the wind farm permit holder to bring forward pulling in the cables from the wind farms onto the TenneT platform (milestone 0: 'mechanical cable pull-in'). I am therefore including this additional delivery milestone for projects of this consortium in the detailed planning timeline for wind farm developers and TenneT, which is contained in the Offshore Wind Energy Development Framework. For the other planned wind farms, the extra time was obtained by extending the original completion date.

I have incorporated the new Roadmap schedule, as set out in Table 1, and the new completion dates into the Offshore Wind Energy Development Framework, which I most recently sent to the House in October 2023[13]. The Development Framework itself remains substantively unchanged. I have therefore decided not to include this with this letter, opting instead to publish it on the customary RVO website.

This update has resulted in a more realistic planning schedule that takes into account as many wishes of parties in the chain as possible. I will do everything I can to ensure this plan is realised. However, given the long lead times and the challenges referred to above, especially in terms of ecological and spatial integration, it cannot be ruled out that further changes will take place. Should that be the case, I will inform you accordingly.

Offshore grid costs

I recently received an updated cost estimate from TenneT for the planned and already partially realised grid connections for the 21 GW of the Roadmap. There are no significant changes compared to the overview I sent you a year ago[14]. Nonetheless, costs may increase in the future due to further delays caused by the uncertainties surrounding ecological and spatial integration referred to above. The cost of the planned interconnector to the UK ('LionLink') is also not yet included in the cost overview. I previously gave an undertaking to the House that I would discuss the distribution of the costs of the offshore grid in the next letter on offshore wind energy[15]. I will address this matter in a letter on network rates later this quarter.

I also draw attention to the recently launched inter-departmental policy research (IBO) into the financing of electricity infrastructure.

[13] Parliamentary Paper 33561, no. 60.
[14] Parliamentary paper 33561, no. 59.
[15] TZ202401-029.

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Offshore wind energy is an essential building block in our energy system
Efforts to create a more sustainable energy system are well underway. By taking these actions, we are preparing our country for a future that accommodates green industry, clean transport and well-heated homes. Offshore wind energy makes an essential contribution to this, because it is the largest domestic source of climate-neutral energy: When we reach 21 GW, offshore wind will supply approximately three quarters of our current electricity requirements.
However, about 80 percent of our energy consumption is non-electrical, coming from coal, oil and natural gas. Offshore wind can make a substantial contribution to replacing our current energy mix. It can be the source for the (further) electrification of our industry, transport and buildings as well as for the production of green hydrogen, where electrification is not a solution. I therefore foresee a sunny (and windy) future for our part of the North Sea.

R.A.A. Jetten
Minister for Climate and Energy Policy

Table 1 Updated timeline for the Offshore Wind Energy Roadmap

Installed Capacity (GW)	Wind Farm Site (WFS)	Tender for sites	(Expected) wind farm commissioning
0.75	*Borssele* WFS I and II	Implemented in 2016	2020
0.75	*Borssele* WFS III, IV and V	Implemented in 2016	2021
0.76	*Hollandse Kust (zuid)* WFS I and II	Implemented in 2017	2023
0.76	*Hollandse Kust (zuid)* WFS III and IV	Implemented in 2019	2023
0.76	*Hollandse Kust (noord)* WFS V	Implemented in 2020	2023
0.76	*Hollandse Kust (west)* WFS VI	Implemented in 2022	(2026-2027)
0.76	*Hollandse Kust (west)* WFS VII		(2027)
approx. 2.0	*IJmuiden Ver* WFS Alpha	Implemented in 2024	(Q3 2029)
approx. 2.0	*IJmuiden Ver* WFS Beta		(Q4 2029)
approx. 2.0	*IJmuiden Ver WFS* Gamma	Q3 2025	(Q2 2031)
approx. 2.0	*Nederwiek (zuid)* WFS I		(Q4 2030)
approx. 2.0	*Nederwiek (noord)* WFS II	Q2-Q4 2026	(Q2 2032)
approx. 2.0	*Nederwiek (noord)* WFS III		(Q4 2031)
approx. 0.7	*Hollandse Kust (west)* WFS VIII	TBD[16]	(Tbd)
approx. 0.7	*Ten noorden van de Waddeneilanden* WFS I	2027[17]	(2033)
approx. 2.0	*Doordewind* WFS I	Q1-Q2 2027	(Q4 2032)[18]

[16] Hollandse Kust (west) Wind Farm Site VIII (HKWWFS VIII) is expected to be completed after 2031. The 150 kV Velsen substation is intended as the connection site of the power cable from HKWWFS VIII. The availability of connection capacity and space at and to the Velsen substation is related to Tata Steel's sustainability process.
[17] Provisional timeframe.
[18] The landfall options for both Ten noorden van de Waddeneilanden Wind Farm Site I and Doordewind Wind Farm Site I will be explored in the Offshore Wind Energy Connection Programme (PAWOZ). The expected delivery of these landfall sites is therefore still uncertain.