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Date
Subject Progress of implementation of Offshore Wind Energy Roadmap 2030

Our reference
DGETM / 19046874

Dear Madam President,

On 27 March 2018, I wrote to you[1] to inform you about the Offshore Wind Energy Roadmap 2030, signalling implementation on my part of the agreements in the coalition agreement on the contribution of offshore wind energy to reducing CO_2 emissions. Thanks to this Roadmap, I anticipate also being able to meet the contribution of 49 TWh entirely from the draft Climate Agreement.

Given these ambitions, it is important that we accelerate the roll-out of offshore wind energy. At the same time, there are further developments in the North Sea, such as the reduction in oil and gas extraction, the challenge for CCS, the fishing sector and the importance of ecological recovery. As regards the Roadmap 2030, the necessary weighing of interests took place when designating the wind farm zones. Any commitment in the climate agreement for additional offshore wind farms, on top of this Roadmap 2030, will be realised in the Strategic Agenda for the North Sea 2030, about which you were recently informed of by the Minister of Infrastructure and Water Management[2]. The *Overlegorgaan Fysieke Leefomgeving* has been requested to come to an agreement with stakeholders and the Dutch Government on the North Sea by mid-2019. This agreement should establish general arrangements on striking a balance between nature, the fishing sector, energy and wind energy, how to achieve this balance, the time schedule involved, and the provision of adequate and timely instruments and means needed for the necessary innovation, transition and mitigation required to achieve sustainable use of the North Sea. This could perhaps be done by means of a North Sea Transition Fund.

I have, nonetheless, as far as possible taken nature and fisheries into account as much as possible in relation to the implementation of the Roadmap 2030. I shall return to this toward the end of this letter.

At the end of March 2018, I indicated that, for the purpose of implementation of the Offshore Wind Energy Roadmap 2030, I would commission further study of:
1. Possible connection points and corresponding routes for the offshore grids to and over land;

[1] Parliamentary Paper 33561, No. 42.
[2] Parliamentary Paper 35000-J, No. 7.

2. Further development of the design of the offshore grid, including the potential deployment of an island for the *IJmuiden Ver* Wind Farm Zone;
3. Allotment of the Wind Farm Zones into sites, including initiating the preparatory studies into the (geo)physical conditions and cultural-historical values offshore;
4. An update of the Ecology and Cumulation Framework for the offshore wind farms, which includes the Roadmap 2030.

I am writing this letter to you, jointly on behalf of the Minister of Infrastructure and Water Management, the Minister of the Interior and Kingdom Relations and the Minister of Agriculture, Nature and Food Quality, to update you, regarding these topics, on the progress of implementation of the Offshore Wind Energy Roadmap 2030, and in particular the results of the studies and choices made based on those results. Choices need to be made now to ensure timely commencement of the formal decision-making procedures, while leaving enough time for a careful participation process and comprehensive balancing of interests. The speed with which the network connections can be realised is of particular importance in determining the pace of roll-out of offshore wind energy. The choices can be summarised as follows:

1. Exploration of connection points:
- In consultation and having conducted a broad exploration process with early involvement by public authorities, companies and civic organisations, I have decided to opt for a distributed connection pattern, with connection points preferably close to the industrial clusters on the coast, using existing infrastructure;
- Based on the examined impact on technology, costs, environment, surroundings and durability, four procedures are to be started, with scope for further elaboration of alternatives;
- For *Hollandse Kust (west),* this means connecting to the station at Beverwijk; for *North of the Frysian Islands* connecting to Eemshaven, Vierverlaten or Bergum, and for *IJmuiden Ver* one connection to Borssele, Rilland or Geertruidenberg and one connection to Maasvlakte or Simonshaven.
- For the follow-up process, I have agreed with regional authorities that the procedures be commenced in the spirit of the Environment and Planning Act, starting with a participation plan.

2. The design of the offshore grid for the *IJmuiden Ver* Wind Farm Zone:
- Based on different studies, I propose that *IJmuiden Ver* be connected with the national high-voltage grid by means of two 525 kV underground direct current connections, each with a transmission capacity of 2 gigawatt (GW).
- In addition, the studies lead me to conclude that the best option is to use platforms for connecting wind farms in *IJmuiden Ver.* This provides the greatest certainty that it will be possible to ensure these wind farms are operational in good time.

3. Allotment: following consultation with the fishing industry, the wind energy sector and mining companies, I am considering a compact array for the wind farms, leaving more space for other activities in the North Sea.

4. An update of the Ecology and Cumulation Framework has shown that, after mitigation, the anticipated impact of wind farms on nature is less than previously thought. New results from ecological research funded by my ministry have contributed to this finding. As a consequence, the Roadmap is easier to realise within the contours of the Nature Conservation Act and there is also scope for possible further growth of offshore wind energy.

Finally, I opt to allocate the *Hollandse Kust West* Wind Farm Zone in a single tender of 2 x 0.7 GW, and for *IJmuiden-Ver* two tenders, each of 2 x 1 GW.

Pursuant to Section 16e of the Electricity Act 1998, I will lay down the choices made regarding the design of the offshore grid in the Development Framework for Offshore Wind Energy (which will be amended for that purpose), which broadly determines the design and date of completion and delivery of the offshore grids to be installed and deployed by the offshore grid transmission system operator, TenneT. I will submit this to the House of Representatives in due course. I am also currently exploring options for financing the offshore grid. I shall return to this later in this letter, and will also address the planning of the tenders and the possible further growth of offshore wind energy.

1. Possible connection points and routes for the connections of the offshore grid

The exploration of possible routes and connection points is in preparation for the procedures that will commence in early 2019 under the National Coordination Scheme. The purpose of the exploration is to involve stakeholders at an early stage, to formulate a clear substantiation of the necessity and usefulness of different options, and to make an initial selection of possible routes and connection points. These will serve as a basis for selecting a preferred route and connection point for the different wind farm zones later in the permit procedures. The goal is faster and better decision-making that can rely on broad support.

Early involvement

The way in which this exploratory survey was carried out demonstrates a new approach to realising the spatial integration of projects with an impact on the living environment, which I endorse. At the heart of this new approach is a broad exploration of the problem to be resolved (in this case the shore landing of offshore energy) with early stakeholder and regional involvement.
Early involvement has resulted in a broad engagement of provinces, (coastal) district authorities, the Flemish Region, interest groups and businesses. This was achieved by organising a kick-off meeting, various discussions, two rounds of regional meetings, and a final meeting. On 5 December 2018, a concluding meeting was held with members of the Provincial Executives of the provinces concerned. A summary of the agreements made with them is enclosed with this letter. Where the option of a route through the Western Scheldt Estuary was considered during this exploration, this was also discussed with the Flemish authorities in view of the importance of ensuring good and reliable access to the port of Antwerp.

As part of a broad exploration, 'unconventional options' such as offshore conversion into hydrogen were also considered alongside plans for laying power cables. The exploration revealed the grids also offer potential for improving sustainability in industry and that it is important to look beyond 2030. As such, the agreements with the regional authorities demonstrate a dual ambition:

1. Implementation by 2030 of shore landing of the offshore grids nearby the industrial clusters on the coast, and;
2. Conclusion of cooperation agreements aimed at improving sustainability further in the industrial clusters, up to and beyond 2030. This will be elaborated further both in and in response to the Climate Agreement.

Positive recommendation by the Netherlands Commission for Environmental Assessment regarding the impact study

I asked consultancy firms Arcadis and Pondera to carry out an impact evaluation to examine the options and (overall) advantages and disadvantages for various connection points. They were to examine costs, environment, technological solutions (including the pace of development of new technological solutions), environmental aspects (such as synergy with regional ambitions), and durability. The results of this evaluation were laid down in an assessment memorandum, which was shared and discussed at length with all the stakeholders[3].

The independent Netherlands Committee for Environmental Assessment has issued a recommendation[4] regarding the assessment memorandum. The Commission was very positive about the methodical and transparent nature of this exploratory study. The Commission considers it logical that the landing options for the three wind farm zones were examined conjointly in view of the possible interconnection between them. Numerous parties had the opportunity to respond to and discuss the shape and substance of the exploratory survey in a variety of meetings. The assessment memorandum addresses the main questions raised during these meetings.

In the Commission's view, the selected, specific approach contributes to the support for the proposal, the alternatives considered, the method of assessment, and the choices that will be made in due course. The Commission considers the inventory of options and leading assessment criteria to be complete. Several options are dismissed during the first selection stage. The memorandum sets out clearly why further elaboration of these options is not appropriate and what role the environmental impacts, if any, played in this dismissal. The manner in which the remaining options are then evaluated and classified is clear and easily understandable. The degree of detail of the impact descriptions and evaluations is appropriate for an exploratory study. In the Commission's opinion, the assessment was carried sufficiently 'carefully' as to preclude the possibility of alternatives being too quickly or wrongly dismissed as a result.

[3] The report is available on the Bureau Energieprojecten (Energy Projects Office) website: https://www.rvo.nl/subsidies-regelingen/bureau-energieprojecten/lopende-projecten/hoogspanning/verkenning-aanlanding-netten-op-zee-2030.
[4] The recommendation can be found at: https://www.commissiemer.nl/adviezen/3350

The Commission considers, moreover, that the outcome of the exploration provides a good starting point for individual follow-up procedures, since:

- Convincing reasons have been given to support the view that conventional shore landing via connection to the national high-voltage grid is the most logical choice at the present time;
- Sound reasons were given for the selection of possible connection points;
- Problem areas that need to be addressed are well highlighted, and it is expected sufficient scope exists for resolving them.

Grounds for opting for conventional connection with power cables

When exploring how energy produced by the offshore wind farms can be transmitted ashore, as indicated above, extensive consideration was also given to non-electric options. In particular, the possibility of converting the electricity generated into hydrogen by means of electrolysis was examined. While there are multiple initiatives at the present time for the production and/or storage of hydrogen, the scale and cost level will still be insufficiently developed for processing the large volumes of electricity offshore which, according to the timeline of the Roadmap 2030, will be produced by the wind farms from around the year 2025. It must remembered also that an investment decision for the necessary electrolysis plants would need to be made several years in advance.

Based on the study carried out[5] and our present knowledge, the offshore and onshore production of hydrogen would not appear to be a realistic alternative to an electrical connection for the wind farms in the Roadmap 2030. Conventional connection via a power cable to the industrial clusters on the coast, however, does offer possibilities for (the development of) onshore electrolysis applications. Partly in light of the National Coordination Procedures, the developments around hydrogen will therefore be closely followed. This option looks to offer increasing potential for the longer term future also, when wind farms may be located even further out to sea, the technologies for offshore electrolysis have been further developed, and the transmission benefits of gas form over electricity are greater. I will expressly consider hydrogen as an option in any decision on the further growth of offshore wind energy.

A priority in identifying suitable on-shore connection sites and routes for the electrical connections is that no major problems are created on the national high-voltage network which require additional investments on top of already planned expansions of the national high-voltage grid, and hence also have an adverse impact on the feasibility of the planning of the Roadmap. I have nonetheless, at the request of the regional parties, examined whether it would be feasible to upgrade existing electricity grids around Den Helder and Terneuzen, given specific opportunities in those regions. The evidence suggests that constructing a 380 kV grid in those areas is not based on any substantiated necessity and usefulness, has a long lead time (making the planning of the Roadmap uncertain), and is not cost-effective in terms of the shore landing and connection of *IJmuiden Ver*.
An important consequence of the basic decision not to expand the existing onshore grid is that the connections will be distributed: e.g. at least one

[5] See the study "Power-to-Hydrogen IJmuiden Ver", DNV-GL, 6 June 2018, among others.

connection from *IJmuiden Ver* will need to be connected to one of the south-western 380 kV stations - Borssele, Rilland or Geertruidenberg.

The electricity will be transmitted from the wind farms via underground connections to the onshore connection sites, as is currently the case for the offshore grid for the *Borssele* and *Hollandse Kust (zuid and noord)* Wind Farm Zones, which are being developed in accordance with the Energy Agreement. In conformity with the Offshore Wind Energy Roadmap 2030 and for reasons of cost effectiveness, it has been decided to connect the areas *Hollandse Kust (west)* and Ten Noorden van de Waddeneilanden (*North of the Frysian Islands)* using alternating current connections, and *IJmuiden Ver* by means of two (also underground) direct current connections.

Assessment framework for decision-making

Based on the assessment memorandum, discussions with the local authorities and the recommendation of the Netherlands Commission for Environmental Assessment, I have weighed up the available choices for connection sites and routes to be examined further during the permit process. Three aspects were of particular importance in this regard:

1. Firstly, there will be a focus on maximising the capacity of the existing electricity grid. This is cheaper than installing new infrastructure, and has the additional benefit of lower spatial impact;
2. Next, efforts will be made where possible to install connections in the vicinity of industrial clusters on the coast. In this way, supply and demand are brought together as closely as possible. This is in line with the guiding statements from the government perspective for the National Environmental Strategy[6];
3. Thirdly, a survey was made of clearly distinctive effects on the aspects of technology, environment, durability, prevention of nuisance or inconvenience for the surroundings and costs.

Based on the assessment framework set out above, I have decided to include the following connection sites and routes in the procedures under the National Coordination Scheme for the wind farm zones of the Roadmap 2030 (figure 1):

- *Hollandse Kust (west)*, Site VII: connection to Beverwijk[7];
- *North of the Frysian Islands*, Site I: connection to Eemshaven, Bergum or Vierverlaten;
- *IJmuiden Ver (zuid)*, Sites I and II: connection to Borssele, Rilland or Geertruidenberg;
- *IJmuiden Ver (midden)*, Sites III and IV: connection to Maasvlakte or Simonshaven.

In view of the large overall size of the envisaged wind farms (4 GW) and the considerable distance to the coast (roughly 80 km as the crow flies), the Offshore Wind Energy Roadmap 2030 states that *IJmuiden Ver* will be connected using direct current. Regarding the further development of the design of the *IJmuiden*

[6] Parliamentary Paper 34682, No. 6, blg-857652.
[7] The route of the 'alpha' grid connection for Site VI in this area will be combined with the route of the grid connection for the *Hollandse Kust (noord)* wind farm. The grid connection for Site VII of *Hollandse Kust (west)* is sometimes also referred to as 'beta'.

Ver offshore grid, I will rely on the recommendation of TenneT, and a review I asked an independent consultancy (BLIX Consultancy) to carry out of that recommendation. I have asked the Directorate-General for Public Works and Water Management to carry out a hydraulic engineering quick scan for the construction of an artificial island, with the aim of gaining a greater understanding of the results in this respect of the market consultation carried out on the instructions of TenneT[8].

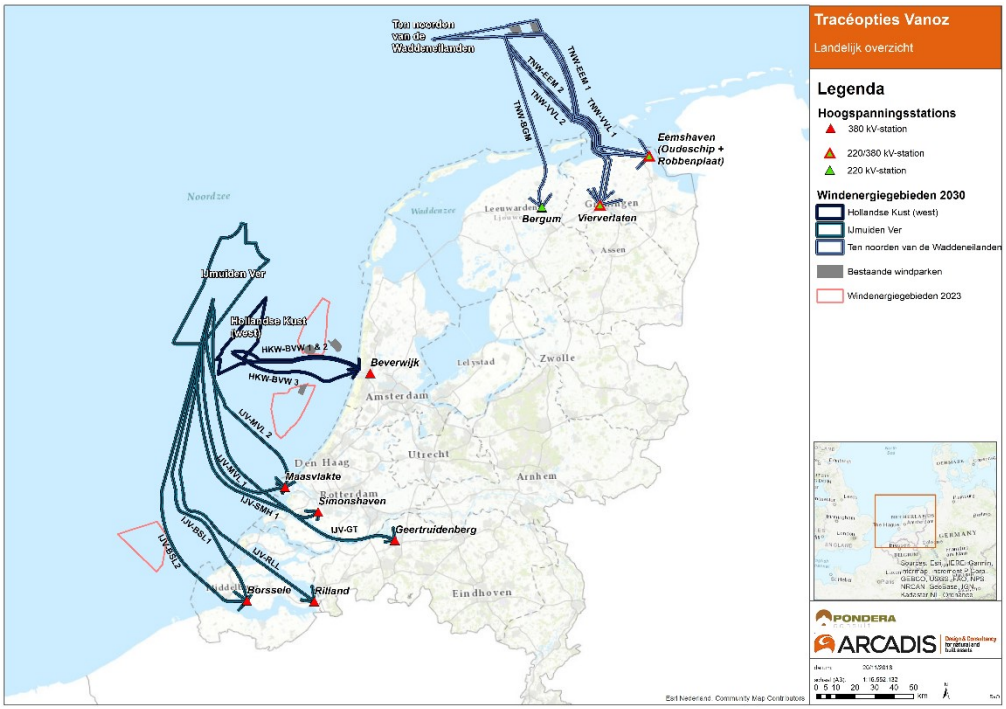

Figure 1 Overview of indicative routes and terminals to be examined further

2. The design of the offshore grid for the *IJmuiden Ver* Wind Farm Zone

Connection *IJmuiden Ver* by means of two power cables

It has been established that the optimum transmission capacity of the connections carrying the electricity produced from *IJmuiden Ver* to the onshore high-voltage grid is 2 GW. These 525 kV DC power cables are in the final stage of development and are currently being tested in Germany. Applying this innovative technology is the cheapest option as well as the option with the least impact on the environment: only two connections are needed to carry the entire 4 GW, which means that no more than 2 offshore and onshore cable routes are needed.

Connection by means of platforms

As announced in the Offshore Wind Energy Roadmap 2030, when considering the design I also examined whether creating a relatively small artificial island (approx. 550 x 550 m) in *IJmuiden Ver,* on which TenneT can install the high-voltage

[8] The report by BLIX and the review by the Directorate-General for Public Works and Water Management are both available on the Netherlands Enterprise Agency's website, www.rvo.nl/windenergie-op-zee.

equipment, offers a better alternative to using direct current platforms (as already applied in other countries) stationed on stilts in the sea. The various studies and reviews lead me to conclude it is not advisable to use an artificial island for connecting the future wind farms in *IJmuiden Ver.* This conclusion is based on consideration of several aspects: timeliness, compliance with roll-out schedule, project certainty, costs, flexibility and safety.

Timeliness: In the interest of ensuring compliance with the roll-out schedule of the Roadmap 2030, deployment of DC platforms appears to offer significantly greater certainty regarding the timeliness of the connection of the wind farms in *IJmuiden Ver*. There are risks of delays attached to an artificial island that, in the case of *IJmuiden Ver*, can result in several years' delay in connecting the first wind farms. A major reason why delays may be associated with construction of an island is that during the construction phase an island must first be created before the electrical plant can be installed. A platform has the advantage that this can be done in parallel.

Compliance with roll-out schedule: Compliance with the roll-out schedule of the Offshore Wind Energy Roadmap 2030 is a precondition for implementing the agreements in the coalition agreement on the contribution of offshore wind energy to reducing CO_2 emissions in 2030. This is especially true in light of the ambitions set out in the Climate Agreement. Furthermore, a smooth, predictable and reliable roll-out schedule is a key element underpinning the drive to (further) reduce the cost of offshore wind energy, since it provides a stable planning framework for the entire chain of market participants. (Risks of) delays will lead to less favourable tender bids. Failure to meet the completion and delivery date (to be laid down in the Development Framework for Offshore Wind Energy) can also result in TenneT being required to pay compensation to the wind farm permit holder, pursuant to Section 16f of the Electricity Act 1998.

Project certainty: Non-performance risks, which affect project certainty, also exist in the permitting stage, during interaction with other users in the North Sea and when carrying out the studies for the Environmental Impact Assessment. The execution of the permitting phase is more predictable in the case of platforms. It is more complex to identify the consequences of an artificial island for the Environmental Impact Assessment than is the case with platforms. This concerns, in particular, the impact on birds and underwater nature as well as on sea currents and seabed morphology, both of which are relatively unknown and hence difficult to predict. The construction phase also presents new challenges, such as risks of delay associated with the need first to prepare the island for building before the high-voltage equipment can be installed on it. When choosing an island, it is important therefore to ensure there is sufficient margin to absorb these risks. This margin does not exist in the case of an artificial island in *IJmuiden Ver*.

Costs: The costs of an artificial island are probably lower than the costs of deploying platforms, although the margin of uncertainty in the costs of an island is greater. The total costs for the offshore grid and the wind farms were consistently taken together when comparing the costs of both options. Deployment of an

island leads to increased cable lengths and costs for the wind farms, for example, because all the cables from the wind turbines must terminate at a single point. The cost benefit of an artificial island is approximately 10% of the total costs for the offshore grid for *IJmuiden Ver* alone, and a few percent of the overall costs for the offshore grid and wind farms combined. The additional costs of less favourable tender bids and compensation which may be payable in the case of (risks) of delays are not factored into this cost comparison. These additional costs cannot be excluded and determined in advance, but may be considerable.

Flexibility: An island offers less flexibility in the longer term to relocate and/or alter the array of later wind farms so as to correct for wind capture interference and hence boost energy yields. The cable lengths and costs associated with an island mean the wind turbines will have to be located as close as possible to the network connection on the island. Platforms, on the other hand, do offer this flexibility. Having regard among other things to the need to minimise any impact on fishing in the southern North Sea and the priority status government ascribes to the development of wind energy north of Groningen, I place importance on flexibility.

Safety: Safety dictates an artificial island must incorporate a harbour or dock to allow easy access to the island. Given the fact the island will be the site of 4 GW of vital energy infrastructure, this constitutes a serious safety risk (sabotage, and so forth). In addition, an island lends itself more readily to illegal activities, such as drugs smuggling.

In view of the above, I have decided the *IJmuiden Ver* wind farms will be connected via two platforms of 2 GW each. This decision is taken with due regard for the need to ensure the wind farms in *IJmuiden Ver* are operational in good time if the goals of the Roadmap 2030 are to be met. It is questionable whether this will be possible if an artificial island is constructed for the offshore grid. This becomes very likely if platforms are deployed.

At the same time, I consider it important that the possibilities for using artificial islands should continue to be explored, with a view to the possible further roll-out of offshore wind energy after 2030. I would like to include the views of market participants on such artificial islands in this process. In that respect, I wish to state that the Government, led by the Minister of Infrastructure and Water Management, is developing a policy framework for offshore artificial islands. As the Minister of Infrastructure and Water Management has indicated in her letter of 19 November 2018, as referred to above, due to the scarce space in the Dutch part of the North Sea, the Government will decide where, when, and for what function(s) artificial islands may be considered.

<u>Financing the offshore grid</u>
As the Government states in its consideration of the key elements for a Climate Agreement, it is proposed to finance the offshore infrastructure, as is currently the case for onshore infrastructure, for the wind farm zones from the Roadmap 2030 using the rates charged by the network operator, and no longer through a subsidy

scheme. The proposed adjustment would result in increased grid tariffs for citizens and companies. I believe it is important that this method of funding be properly examined and also compared with alternatives, with due consideration given to European laws and regulations in this area and the financial impacts. I will provide the House of Representatives with information in this regard as soon as the study results are available. The funding structure for the offshore grid will be laid down in the Energy Act 1.0.

With wind farms located increasingly further from the coast, infrastructure will account for a growing share in the costs of offshore wind energy. In this letter, I have set out how I intend to reduce the costs as far as possible by deploying innovative offshore connection concepts which contribute to a predictable and timely roll-out, maximising the scale and avoiding the need to expand the existing onshore grid by spreading the connection points and ensuring connections are provided close to where demand is concentrated. It is also important to study innovations which can yield cost reductions. In that respect, I have already highlighted the possibility of offshore conversion into hydrogen. With regard to the proposed grid infrastructure in the *IJmuiden Ver* Wind Farm Zone, I request that TenneT submits a proposal explaining how this infrastructure can be utilised even more efficiently by also deploying it as an interconnector with the United Kingdom via the UK's offshore wind farms which are planned near *IJmuiden Ver* or directly on-shore. I will also examine, in consultation with TenneT and mining companies, the possibilities for the electrification of gas platforms via the offshore grid or utilising the offshore grid for CCS.

3. Allotment of wind farm zones into sites

Consultation has taken place with the fishing industry, the wind energy sector, and mining companies in the context of the allotment of wind farm zones into sites. Based on this consultation, I am considering not utilising the entire wind farm zones, but rather recommending a more compact array for wind farm construction. As stated in my letter of March last year, I will also not designate any sites in part of *IJmuiden Ver*, given the (potential) designation of the partially overlapping "Bruine Bank" area as a Natura 2000 area. As a result of the above, more space is left free where, provided it is not used for the possible further growth of offshore wind energy, other activities can take place.

In anticipation of future tenders for the sites, I have asked the Netherlands Enterprise Agency to initiate the necessary studies of, among other things, the wind climate, the soil (seabed) conditions, cultural heritage assets which may be present, and the possible presence of unexploded ordnance. Timely availability of this information will reduce the risks for wind farm developers and encourage a further reduction in the costs of offshore wind energy.

4. Update of the Ecology and Cumulation Framework

The combined total environmental impacts (on bats, birds and marine mammals) of all offshore wind farms envisaged in 2030 are set out in a new Ecology and Cumulation Framework that has recently been published. This framework forms a basis for the environmental analysis in the Environmental Impact Assessment for

new wind farms and mitigating measures to be prescribed in the relevant Wind Farm Site Decisions.

The Ecology and Cumulation Framework shows that the expected impacts after mitigation more easily fall within the contours of the Nature Conservation Act, partly due to the decision to opt for larger turbines and wind farm zones far from shore. Whereas in March last year it was thought a maximum wind farm capacity of 6.1 GW was possible (on top of the wind farms detailed in the Energy Agreement), it is now clear that more space is available. Should, as is stipulated in the draft Climate Agreement, demand for renewable electricity demonstrably increases, additional offshore wind farms are possible within the constraints of the Nature Conservation Act.
Studies from the offshore wind energy ecological programme (*windenergie op zee ecologische programma*, WOZEP[9]), funded by my ministry have also contributed to further reducing uncertainties in the assumptions regarding the effects on underwater noise and casualties among birds and bats. As a result, the frequency of reliance on the precautionary principle of assuming the least favourable situation is reduced and the environmental impact of wind farms more easily remains within the stipulated environmental limits.

Planning of tenders and further growth of offshore wind energy
The expected timing of future tenders is now also more precisely known compared to the information I was able to give the House of Representatives in March 2018. In consultation with the wind energy sector, I have decided to allocate the *Hollandse Kust West* Wind Farm Zone in a single tender of 2 x 0.7 GW. For *IJmuiden Ver,* I will be organising two tenders of 2 x 1 GW each.
Table 1 gives a complete overview of the tenders for offshore wind farms.

The Offshore Wind Energy Roadmap envisages 3.5 GW (in 2023) and 6.1 GW (in 2030) in addition to the existing wind farms (1 GW), making a combined total of 10.6 GW. Thanks to the possibility permitted by the alternating current platforms, and actually exploited in the construction of the wind farms in the *Borssele* area, to install almost 8% more wind energy generation capacity than the transmission capacity guaranteed by TenneT ('overplanting'), the total wind energy generation capacity in 2030 is expected to be slightly higher even, at roughly 11 GW. Together with an ever-increasing number of full-load hours for each new type of wind turbine, this ensures that in all likelihood the contribution of 49 TWh from the draft Climate Agreement can be met.

Table 1 Planning and proposed offshore wind energy tender schedule

Capacity (GW)	Wind Farm Zone, Site(s)	Tender for Sites	Expected commissioning of wind farm
0.7	*Borssele*, Sites I and II	Issued in 2016	2020
0.7	*Borssele*, Sites III, IV and V	Issued in 2016	2020

[9] Parliamentary Paper 33561, No. 26.

0.7	*Hollandse Kust (zuid)*, Sites I and II	Issued in 2017	2022
0.7	*Hollandse Kust (zuid)*, Sites III and IV	First quarter 2019	2022
0.7	*Hollandse Kust (noord)*, Site V	Fourth quarter 2019	2023
0.7	*Hollandse Kust (west)*, Site VI	Second quarter 2021	2024 through 2025
0.7	*Hollandse Kust (west)*, Site VII		2024 through 2025
0.7	*Ten Noorden van den Waddeneilanden*, Site I	Fourth quarter 2022	2026
1.0	*IJmuiden Ver*, Site I	Fourth quarter 2023	2027 through 2028
1.0	*IJmuiden Ver*, Site II		2027 through 2028
1.0	*IJmuiden Ver*, Site III	Fourth quarter 2025	2029 through 2030
1.0	*IJmuiden Ver*, Site IV		2029 through 2030

Further upscaling of offshore wind energy will be required if an additional demand for electricity generated from renewable sources occurs and the required additional offshore wind energy can be connected mainly at the coast, close to the industrial clusters. The government will make a decision regarding the most suitable locations in this regard in due course, in coordination with stakeholders and international cooperation with neighbouring states.

Eric Wiebes
Minister of Economic Affairs and Climate Policy