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Date 16 September 2022  
Re Letter to Parliament on offshore wind energy 2030-2050

Dear President,

**Our reference**  
DGKE-E / 22174505

Offshore wind energy is set to continue to grow strongly and rapidly. This is essential to make our society more sustainable and contribute to increasing our energy independence. The target for offshore wind energy has been increased to approx. 21 GW by around 2030.<sup>1</sup> Almost all the spatial procedures necessary for achieving this target have already started<sup>2</sup> and before the summer I informed your House about how this increased ambition will be achieved.<sup>3</sup>

In this letter – also on behalf of the Minister of Economic Affairs and Climate Policy (EZK), the Minister of Infrastructure and Water Management (I&W), the Minister for Housing and Spatial Planning (VRO), the Minister of Agriculture, Nature and Food Quality (LNV) and the Minister for Nature and Nitrogen Policy (N&S) – I will outline the Government's vision for the further development of offshore wind energy after 2030 and what is needed to successfully bring this about. Offshore wind is part of a larger energy system. In the Letter to Parliament *Contours of the National Energy System Plan*<sup>4</sup>, I provided an outline of my view on the long-term development of the energy system. By drawing up *targets and routes*, I aim to provide sufficient guidance to the energy system as a whole to ensure timely and efficient sustainability. In this letter, I further elaborate my vision for offshore wind energy in the future energy system.

Over the past year, on my instruction, two studies have been conducted<sup>5</sup> to gain a clearer picture of how the realisation of offshore wind energy can remain successful. These studies focused on the challenges in the energy system and the relevant stakeholders, such as the wind sector, grid operators and industry. I explain the results of these studies in more detail in the relevant sections of this letter. Both studies are attached to this letter to the House, as appendices.

<sup>1</sup> On 18 March, the North Sea Programme 2022-2027, as part of the National Water Programme 2022-2027, was sent to the House of Representatives, containing the ambition for offshore wind energy for 2030. (Parliamentary Paper 35325 no. 5)

<sup>2</sup> Letter to Parliament Investigation of Cable Landing Points for Offshore Wind Energy 2030 (Parliamentary Paper 33561 no. 52)

<sup>3</sup> Letter to Parliament Additional Offshore Wind Energy Roadmap 2030 (Parliamentary Paper no. 33561 no. 53)

<sup>4</sup> Letter to Parliament Contours of the National Energy System Plan (Parliamentary Paper 32813 no. 1053)

<sup>5</sup> 'Study System Integration Offshore Wind 2030-2040' (Guidehouse and Berenschot) and 'Policy options for offshore wind 2040' (Guidehouse)

With further growth of offshore wind energy after 2030, pressure on the other users of the North Sea will also increase. The same applies for local stakeholders in the landing regions. Offshore wind is not only part of the energy transition, but also affects the nature transition (strengthening biodiversity) and the food transition (more sustainable fishery and food production)<sup>6</sup> of the North Sea. These transitions must remain in balance with each other. I will therefore discuss this in detail in this letter.

This letter also responds to the motion by the members Erkens and Boucke<sup>7</sup> concerning international cooperation in the field of offshore hydrogen, the motion of members Mulder and Sienot<sup>8</sup> (and the promise made<sup>9</sup> to the House by my predecessor, with the same intention) about a study into combined tender models and the motion from Sienot and Van der Lee regarding policy options for the cost-efficient rollout of offshore wind energy<sup>10</sup>.

### ***Letter structure***

I start this letter by describing the central message. I then explain it further in three parts:

- PART 1: First I explain the challenges regarding further growth of offshore wind energy, and how this affects public interests.
- PART 2: Here I explain the approach I consider necessary to ensure successful long-term growth of offshore wind energy. I also outline the actions being initiated to ensure the realisation of offshore wind energy can continue without interruption after 2030.
- PART 3: This is an overview of the policy agenda I envision for offshore wind energy for the coming years.

### ***The central message***

The Government will make from now on look further ahead in the plans for the future realisation of offshore wind energy. Concretely, I will set targets for offshore wind energy in 2035, 2040 and 2050 in the National Energy System Plan, in consultation with North Sea stakeholders. It is necessary that we move away from scenarios with broad bandwidths towards clear targets that now help us make targeted choices. The starting point for these targets is to make our Dutch society sustainable in good time and that the Netherlands embraces its responsibility within the EU as a whole to become more sustainable and increase its energy independence.

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<sup>6</sup> The North Sea Agreement established that there are three major transitions in the North Sea: nature transition, food transition and energy transition.

<sup>7</sup> Motion Erkens and Boucke 35925 XIII No. 27

<sup>8</sup> Motion Mulder and Sienot 35092 2020-2021 no. 16

<sup>9</sup> Commitment during the Legislative Deliberations on 1 February 2021 with number ID5167

<sup>10</sup> Motion Mulder and Sienot 35092 2020-2021 no. 14

It cannot yet be said with any certainty what the energy system of the future will look like. Precisely how much offshore wind energy will be needed in 2050 depends on many factors. The Government wants to ensure that we create a sustainable society in good time. For that reason, in the preparatory stages for the further rollout of offshore wind energy after 2030, the Government wants to focus on the upper limit of the bandwidth of energy scenarios. This means we are looking at approx. 50 GW by 2040 and approx. 70 GW by 2050. The Government will investigate what this growth could look like in concrete terms and whether it is actually feasible, given the ecological impact and other uses on the North Sea.<sup>11</sup> The Government has started the Partial Review of the North Sea Programme 2022-2027 in which these issues are dealt with and new wind farm zones for the period after 2030 will eventually be designated. At the time the Partial Review is adopted, the coverage and distribution of the (consequential) costs of offshore wind energy must also have been agreed.

With further growth of offshore wind energy after 2030, the Government expects that, in addition to electricity, hydrogen will also be produced in the North Sea. After 2030, offshore wind energy will largely be located in larger areas further out in the North Sea. In the rollout of offshore wind energy, the Government will therefore work with a hub-based approach, whereby an integral assessment is made for these larger areas regarding the form (electrons or molecules) in which the generated energy can best be brought ashore. This requires an integral vision of the energy system for the North Sea. Based on the realisation path towards 2050, and on the basis of future choices on the spatial planning of the North Sea (via the North Sea Programme), a *North Sea Energy Infrastructure Plan 2050* will also be drawn up, including a strategic picture of where the Government expects energy hubs and what infrastructure will be required. TenneT will remain the grid operator for the offshore grid for the electrical infrastructure. For hydrogen transport, I am investigating which market regulation is most appropriate and I want to make a decision before the end of the year about which potential role, if any, is best for Gasunie.

The further growth of offshore wind energy after 2030 also means the pressure on other interests in the North Sea will grow. With that in mind, the Government is carefully examining how the growth of offshore wind energy can take place alongside other activities in the North Sea. The energy transition in the North Sea must run in parallel with the food transition and the nature transition. The current European Directives for nature and the environment<sup>12</sup> require that activities at sea take place within the parameters of a good environmental status of the marine environment and a favourable conservation status for specific species and habitat types. In addition, space is also needed for activities of national importance such as (safe) shipping, sand extraction and defence and mining. For the food transition, space is needed for sustainable marine food production, with economically viable fisheries with sufficient space to meet demand. The balancing of these interests will be considered carefully for the realisation of targets after 2030, both in the North Sea Programme and in the site designation for wind farm zones, and always in consultation with stakeholders for the North Sea.

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<sup>11</sup> In the past, for example in the North Sea Energy Outlook 2050<sup>11</sup>, a bandwidth of 38-72 GW offshore wind energy was assumed, for 2050.

<sup>12</sup> Birds Directive (BD), Habitats Directives (HD) and Marine Strategy Framework Directive (MSFD) and Maritime Spatial Planning Framework Directive

This can create a bottleneck. In particular, the importance of the fixed (legal) ecological and spatial boundaries in the North Sea and the important fixed (legal) requirements for achieving a climate-neutral society could become a constraint in the future. In addition to a general effort to save energy, we are therefore also specifically focusing on additional nature-enhancing measures to prevent this bottleneck as much as possible and to ensure the growth of offshore wind energy remains within the ecological carrying capacity of the North Sea. North Sea-wide cooperation is important in this regard, as is joint concern for the ecological carrying capacity.

Future realisation of offshore wind energy also demands new technological applications. This mainly concerns offshore hydrogen production and the development of energy hubs. The Government expects that, in the future, a significant amount of offshore wind energy will be converted into hydrogen offshore and that energy hubs will be developed in areas located further offshore. To prepare both the Government and the market for this development, the Government is committed to realising a number of demonstration projects for offshore hydrogen before 2030. In addition, after 2030 offshore solar or other sustainable energy sources may also play a role within offshore wind farms, again in conjunction with other possible joint uses.

The Government wants to prepare for these new developments in good time to ensure the successful rollout of offshore wind energy after 2030. That is why I want to launch the *North Sea Energy System Development Programme*, in collaboration with relevant parties within government, grid operators and North Sea stakeholders. Through this programme, I intend to ensure the new techniques and policy frameworks required for further growth of offshore wind energy after 2030 are available in good time.

### **PART 1: Public interest and challenges in the growth of offshore wind energy**

The current realization of offshore wind energy is very successful, but also presents major challenges. With the *Additional Offshore Wind Energy Roadmap 2030*, recently sent to your House, in combination with onshore renewable energy generation, current electricity consumption in the Netherlands can, for the most part, be made more sustainable. The further growth of offshore wind energy will serve to make other sectors more sustainable, replacing fossil fuel energy consumption with green electricity or molecules. The realisation of offshore wind energy – and installation of the necessary infrastructure – will have to be carried out in close alignment with the pace and methods of the decarbonization of relevant sectors and the countries around us. After all, wind farms only provide climate benefits if the produced energy replaces fossil fuel usage and the related CO<sub>2</sub> emissions.

That is why I believe it is important to consider the challenges for future realisation of offshore wind energy in this letter, so that the approach can be structured in such a way that public interests are served as much as possible in the future.

In the government's National Vision on Market Development for the Energy Transition<sup>13</sup>, my predecessor already set out the determining public interests for the overall energy transition: clean/sustainable, safe, reliable/secure supply, affordable and spatially compatible. The target of climate neutrality by 2050 from the Climate Act serves as the starting point for making society more sustainable. This Government also aims to strengthen biodiversity.

Offshore wind energy contributes to a *sustainable* and *affordable* energy supply. The further growth of offshore wind energy is not a goal in itself. The unique starting position that the Netherlands enjoys for realising large-scale and efficient offshore wind energy offers huge potential for cost-efficiently making our Dutch society and Europe more sustainable.

In the Netherlands, offshore wind energy is one of the cheapest sources of sustainable energy and therefore plays an important role in keeping energy supply *affordable*. Further growth of offshore wind energy will also make the Netherlands and Europe less dependent on (fossil) energy from other countries (many of them outside Europe).

Offshore wind energy has *spatial impact*, both in the North Sea and on land. The spatial integration of the energy transition is a complex issue. The North Sea is busy and it is essential that sufficient space be maintained for all use functions and that any spatial development takes place within the ecological carrying capacity of the North Sea. The process of balancing will be conducted very carefully, at an overall level, in the North Sea Programme<sup>14</sup> and at specific level in the processing of site designation, in Wind Farm Site Decisions and in the awarding of permits, but it remains a challenge. Spatial integration at landing points for electricity cable (and future hydrogen pipelines) is also complex. As offshore wind energy continues to grow, more cables will have to come ashore. The goal remains to make our society more sustainable, but at the same time it is worthwhile recognising that this will place huge demands on the regions where these cables or pipelines are brought ashore. This in turn will require predictability for the region (how much more can we expect in the longer term?), an integral vision (not only offshore wind energy, but what more will be needed, for example in terms of upgrading the electricity grid on land or large-scale electrolysis?) and the full consideration and inclusion of the impact on nature and stakeholders (are there acceptable alternatives? Or compensation?). I will discuss all these issues later in this letter.

Offshore wind energy is expected to become the largest source of national energy production. This means offshore wind energy is vital for our *security of supply*. It is essential the energy system in the North Sea is robust, secure and not overly dependent on one or a few (foreign) private parties. Sufficient attention to the security of vital offshore infrastructure is required.

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<sup>13</sup> The government's National Vision on Market Development for the Energy Transition (Parliamentary Paper 32813, no. 536)

<sup>14</sup> The North Sea Programme contains the maritime spatial plan, which satisfies the obligations from the Maritime Spatial Planning Framework Directive (OJEU 2014, L 257)

In addition to the direct public interests affected by offshore wind energy, it is also worthwhile considering the economic impact of offshore wind energy in the Netherlands. If offshore wind energy cannot grow fast enough in line with demand for sustainable energy, in particular from industry in the Netherlands, this will have an impact on the competitive position of companies and the investment climate in the Netherlands. In the Government's vision on making basic industry more sustainable<sup>15</sup>, the Government has already explained how important it is that our industry is able to compete internationally in a sustainable way. This is essential for our earning capacity as a country and generates jobs. It has therefore also been agreed in the Coalition Agreement that greater efforts will be made to make our industry more sustainable. Before the summer, the Minister of Economic Affairs and Climate Policy outlined the steps to be taken to accelerate the process of making industry more sustainable by means of customised agreements.<sup>16</sup>

The growth of offshore wind farms also offers opportunities for Dutch companies active in the development and operation of offshore wind farms. In particular, Dutch companies are world leaders in installation and maintenance work. The rapid growth of offshore wind energy in the Netherlands offers new high-quality employment opportunities and opportunities for Dutch companies to acquire knowledge and experience of new technologies (such as energy hubs and offshore hydrogen), which can then be exploited worldwide.

### ***Challenges and bottlenecks for future realisation of offshore wind energy***

Future realisation of offshore wind energy is characterised by four major overarching challenges:

1. Careful spatial integration (both in the North Sea and onshore for landing of cables and pipelines), in balance with opportunities for nature, food and other uses, within the ecological capacity and in conjunction with the spatial integration of surrounding countries;
2. Efficient integration in the (international) energy system and the timely availability of the required technology;
3. Ensuring the safety and security of supply of the energy system in the North Sea, as the largest national source of energy; and
4. Sufficient capacity within the (labour) market and implementation power at the government, and sufficient availability of (critical) raw materials for the actual implementation and achievement.

These are complex challenges. In the next part of this letter, I will discuss the approach I consider necessary to deal with this properly.

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<sup>15</sup> Letter to Parliament Vision for making basic industry more sustainable towards 2050 (Parliamentary Paper 29696, no. 15). In this letter, the following industries of the industry sector have been designated as basic industry: petroleum refining, chemicals, paper, base metals, construction materials, and part of the food industry.

<sup>16</sup> Summer Letter to Parliament Customised Agreements (Parliamentary Paper 29826 no. 148)

## **PART 2: Approach for future realisation of offshore wind energy towards 2050**

In this part of the letter, I will explain in more detail how I intend to design the approach for the future realisation of wind energy and which actions I will take to ensure offshore wind energy development can continue, without interruption, after 2030. I will first discuss the need to develop a longer-term vision for offshore wind energy; a guiding long-term perspective.

I will then discuss the division of roles I consider necessary between government, grid operators and the market for the energy system in the North Sea. I will then explain how I intend to initiate the appropriate actions, with the *North Sea Energy System Development Programme*, to prepare for the realisation of large-scale energy hubs in good time. Finally, I will explain the steps the Government is taking to ensure new wind farm zones are designated in time for post-2030 development and that new landing options are available.

### ***Government and long-term vision***

The realisation of offshore wind energy will become more complex in the future and affect different interests. To enable the timely and careful realisation of offshore wind energy, the Government will have to continue to play a steering role after 2030. The realisation of offshore wind energy involves several complex coordination issues, both in the North Sea and the energy system. This calls for an integrated view and timely choices that are beneficial to society as a whole. The Government is best placed to meet these requirements, rather than the market. This particularly applies to 1) optimum use of the scarce space offshore – in relation to other uses and nature; 2) optimum use of the limited landing capacity and 3) ensuring coherence between realisation of offshore wind farms and the necessary onshore and offshore infrastructure. The *Policy Options for Offshore Wind 2040* study also shows that market parties in the chain have only limited opportunities to achieve the necessary coordination themselves or in collaboration. Without direction, there is a real risk that the potential of offshore wind energy will be used insufficiently, inefficiently or too late.

For these reasons, the Government will determine where, when, under what conditions and with which accompanying measures offshore wind farms will be built after 2030. To ensure sound choices are made, from an all-round perspective, and to ensure we prepare in good time, it is necessary to look much further ahead at what level of offshore wind energy growth is desirable. Choices about where wind farms can be installed in the North Sea, and how and where the energy generated can be brought ashore, can only be made carefully if there is insight into what offshore wind capacity will be needed towards 2050. This is also necessary to be able to determine requirements in terms of strategic reinforcement or expansion of the onshore infrastructure and start the realisation of this in good time.

The National Energy System Plan (NPE) will include a pathway for offshore wind energy development towards 2050. This is not a 'cast in stone' final vision or roadmap. Instead, it is a long-term outlook necessary from the perspective of the

energy system, which gives direction for the choices that need to be made now.

The realisation of offshore wind energy must remain adaptive and must meet the actual need for making the Netherlands and Europe more sustainable in time. For electricity, our national generation capacity will have to keep pace with national demand. For molecules (producing green hydrogen from wind), national generation capacity will depend on the extent to which the Netherlands, specifically in a European context, wishes to be dependent on or independent from energy import, and at what price this is possible. The integral spatial considerations in the North Sea Programme may also require an adjustment to the realisation pathway. This means the realisation pathway will have to be periodically re-assessed, a process provided for in the methodology of the National Energy System Plan. The realisation pathway, for example, places us in a better position to start developments with a very long lead-time, in good time, such as the development of large-scale energy hubs or strategic reinforcement of the onshore infrastructure.

The realisation pathway to be determined will have to find a balance between what is needed for the energy system on the one hand and, on the other, what is appropriate for the spatial competition between - or within possible combinations of - different uses and this must be achieved within the ecological capacity of the North Sea. Space in the North Sea is scarce and finite. I will therefore draw up the realisation pathway in consultation with North Sea stakeholders and in conjunction with the North Sea Programme. To implement the realisation pathway in the National Energy System Plan, sufficient wind farm zones will have to be periodically designated, in good time, in the North Sea Programme. I will return to the designation of new zones later in this letter.

***From site-based approach to hub-based approach***

Future wind farm zones located further offshore will be accessed using both electricity transmission cables and pipelines for the transport of hydrogen. The report *System Integration Offshore Wind Energy 2040* shows there are advantages in using larger areas located further offshore for the combined production of electricity and offshore hydrogen. Through this smart offshore combination, it is possible to save costs and retain as much flexibility as possible in the energy system.

For the period after 2030, the Government therefore foresees a new approach for realizing energy infrastructure for offshore wind energy: not specific for each individual wind farm, as has been the case so far, but focused on large-scale energy hubs that enable zones to be accessed via integrated plans (for both electrons and molecules). These plans also include which (international) links to other energy hubs are attractive. The infrastructure, or parts of it, will also have to last for a longer period. Currently, the offshore grid is tailored to individual wind farms with a specific service life and capacity. From now on, the Government wants to design (parts of) the infrastructure with the longer term in mind. After all, cables and pipelines have a longer technical service life than wind farms. The offshore energy infrastructure will be optimised for the available space, the landfall

challenges, the impact on the onshore energy system and mutual and international connections. The design and size of energy hubs can differ. The function of an offshore energy hub is to collect the energy from surrounding wind farms, to convert (part of) that energy into hydrogen, and bring it ashore (or to transport it to another energy hub or country). The extent to which these functions are relevant may differ for each energy hub.

### ***North Sea Energy Infrastructure Plan 2050***

The practical elaboration of the realisation pathway in the *National Energy System Plan* will be outlined in the *North Sea Energy Infrastructure Plan 2050*, still to be drawn up. This plan is a strategic vision on what energy infrastructure in the North Sea is necessary and efficient. The *North Sea Energy Infrastructure Plan 2050* is based on the realisation pathway from the National Energy System Plan 2050 and the wind farm zones and search areas from the Partial Review of the current North Sea Programme. This plan elaborates on where energy hubs are expected, what energy infrastructure is required for the hubs and, on the basis of this overall picture, which international connections are attractive. If the design of the hubs requires specific spatial choices, these will be included in the North Sea Programme. The drafting of the *North Sea Energy Infrastructure Plan 2050* ties in with the TEN-E Directive<sup>17</sup>, which recently came into force. In this Directive, all Member States are called upon to lay down joint, concrete (non-binding) targets for the realisation of offshore wind energy by 2040 and 2050, and to draw up an infrastructure plan for this at a strategic level.

By 2030, offshore wind energy will become the largest national source of renewable energy and with the further growth after 2030, it will remain so towards 2050. This emphasises the importance of paying sufficient attention to and safeguarding the (cyber) security of the vital infrastructure that connects this largest source of energy to our country. Sufficient attention will also be required for the enforceability of safety offshore. I will also pay sufficient attention on these issues in the choices I make in drafting the North Sea Energy Infrastructure Plan 2050.

The *North Sea Energy Infrastructure Plan 2050* will consist of:

- A map showing the potential locations for the intended capacity in the North Sea<sup>18</sup>;
- An indicative distribution between landing electricity and molecules;
- A strategic vision on the necessary infrastructure, with a concrete indication of where energy hubs, electricity connections and hydrogen pipelines are logical;
- An overview of attractive international connections between wind farms or energy hubs.

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<sup>17</sup> Regulation regarding trans-European energy infrastructure (TEN-E). BNC fiche sent to the House of Representatives on 12 February 2021 (Parliamentary Paper no. 22112-3051)

<sup>18</sup> This map is based on the designated wind farm zones and search areas in the Partial Review of the North Sea Programme.

The ambition is to have a first version of the North Sea Energy Infrastructure Plan 2050 ready in 2023. Together with the Ministry of Infrastructure and Water Management, which is responsible for spatial planning in the Dutch North Sea, my Ministry recently started a preliminary investigation into offshore energy hubs, their potential locations and the most suitable construction methods. In drafting the Infrastructure Plan, I will collaborate with stakeholders for the North Sea and from the energy chain. There is considerable correlation between drafting of the Infrastructure Plan, designation of new wind farm zones in the Partial Review of the North Sea Programme 2022-2027 and finding new landfall locations in the Programme for the Investigation Landfall Options Offshore Wind Energy 2031-2040 (VAWOZ Programme). Due to tight timelines, the processes will be tackled in parallel and in conjunction with one another. Towards the end of the year, I expect to have to the initial results of the investigation into energy hubs, which I will then send to the House of Representatives.

***TenneT will remain the offshore grid operator***

One of the success factors of the Dutch approach to offshore wind energy is the role TenneT plays in connecting offshore wind farms to the onshore electricity system. In the light of the previously mentioned public interests and challenges, and the report published last year by the Netherlands Court of Audit about the role of State participations in the energy transition<sup>19</sup>, the Government has reassessed TenneT's role in the future realisation of offshore wind energy. At my request, the *Policy Options for Offshore Wind 2040* study explicitly discussed the advantages and disadvantages of continuing the role for TenneT as the offshore grid operator to connect offshore wind farms. Partly on the basis of this study, I have concluded that it is necessary to retain TenneT as the grid operator for offshore electrical infrastructure for the period after 2030.

The reasons for once again entrusting TenneT as grid operator in the future, with the task of realising electrical connections, are as follows:

- The relationship between the onshore energy system and the offshore system will become increasingly important and increasingly complex in the future. There will not always be sufficient space on the high-voltage grid to connect future offshore wind farms.<sup>20</sup> So there are major correlations between the development of the offshore grid and the reinforcement and expansion of the onshore electricity grid. As grid operator, TenneT is better able to undertake the necessary coordination for the correct connection with the onshore energy system, than other market parties.
- Moreover, offshore, there will be more connections realised between wind farms and energy hubs (also international). This requires close (international) coordination. This is partly a technical issue

<sup>19</sup> Report of the Netherlands Court of Audit 'In public hands' (Parliamentary Paper no. 2021D25475)

<sup>20</sup> Both in the *Programme for the Investigation Landfall Options Offshore Wind Energy 2031-2040 (VAWOZ Programme)* and in the *Study System Integration Offshore Wind 2030-2040*, the picture clearly emerges that the existing high-voltage grid does not have the capacity for all future offshore wind energy and that as a consequence, additional offshore wind energy will have to be achieved in combination with additional demand at the landfall locations (including electrolysis) or reinforcement of the high-voltage grid to transport the electricity.

(systems must be to connect to each other), but also a social/political issue (connections have consequences for Member States), for example because they can influence the price (security) of both consumers and wind farms, and security of supply security. It is easier to reach agreements on these issues if a grid operator is responsible for the infrastructure.

- By standardising parts of the infrastructure (such as the offshore platforms), costs can be saved on design and maintenance. There are also economies of scale in purchasing because a whole series of platforms can be ordered.
- Offshore energy infrastructure will increasingly have to be able to serve multiple parties. In addition to offshore wind energy, the infrastructure will be able to transport energy from other offshore renewable energy sources, such as offshore solar, or it will be possible to connect offshore consumers such as oil and gas production and CO<sub>2</sub> storage facilities. An independent operator will be useful in this respect.
- The development of offshore wind energy will be slower if market parties realise grid connections themselves. This is because in the run-up to the tender for a wind farm, TenneT is already able to make preparations for the construction of the grid. In countries where the grid connection is not built by a grid operator, but by the party building the wind farm, the lead-time for projects is significantly longer. This is contrary to the task of accelerating the realisation of offshore wind energy and the desire to remain adaptive in the future.

In other countries around the North Sea, too, a trend is emerging where the grid operators are given a stronger role in the further realisation of offshore wind energy.

### ***Offshore hydrogen and market regulation***

One of the most important developments for the future growth of offshore wind energy is offshore hydrogen. Offshore hydrogen refers to the production of hydrogen, offshore, using wind energy, and transporting the hydrogen to land through pipelines. Technically, offshore production of hydrogen from desalinated seawater can either be done centrally (by means of a large electrolyser on a platform at the wind farm) or it can be decentralised in the base of each individual turbine.

National production of renewable hydrogen can partly satisfy national demand for hydrogen and reduce energy dependency on countries outside Europe. The previous Government already indicated that hydrogen has an essential role to play in the energy system of the future<sup>21</sup> and that, in addition to imports, this will require significant national production<sup>22</sup>. This Government also included the ambition to support the upscaling of renewable hydrogen production in the Coalition Agreement. The geopolitical developments of recent months have further emphasised the importance of such domestic production.

<sup>21</sup> Letter to Parliament Government vision on hydrogen (Parliamentary Paper 32813 no. 485)

<sup>22</sup> Letter to Parliament Market development and Market regulation hydrogen (Parliamentary Paper 32813 no. 958)

The biggest advantage of producing hydrogen offshore (as compared with onshore production of hydrogen, whereby the green electrons will have largely come from offshore) is that the energy can be brought ashore by means of a pipeline rather than via electricity cables. A single pipeline can transport hydrogen from 10GW of offshore production, the same as five 2GW electricity cables currently used as standard by TenneT for new wind farms. As a consequence, the impact on the coastal regions where the cables and pipelines for offshore wind energy are brought ashore can be minimised, because fewer connections are needed. A second important advantage is that the further growth of offshore wind energy will take place ever further out into the North Sea. According to the *Study System Integration Offshore Wind 2030-2040*, offshore production of hydrogen is expected to be cheaper than using the electricity from these more distant wind farms to produce hydrogen on shore.

The technology for offshore hydrogen production is new, but is currently being developed rapidly. The technology is expected to be widely available from 2030. PosHydon<sup>23</sup> has started the first pilot for offshore electrolysis, but this is still on a very small scale. It is important that the further up-scaling of this technology takes place in good time. I want to support the development of offshore hydrogen and, over coming months, I intend to set up an innovation programme in collaboration with market parties. Part of that will be to establish a new knowledge platform. I will involve TKI Offshore Wind and TKI New Gas in this, as well as ongoing research programmes such as the North Sea Energy Programme<sup>24</sup> to ensure mutual cohesion and prevent overlap what is already happening.

As well as research and innovation, I also intend to support larger-scale practical demonstration projects. The aim is to complete these projects before 2030 and use them as a stepping stone to GW-scale projects in the next decade. I am currently considering a number of options, including a pilot for approx. 100 MW which can be realised as part of a planned wind farm from the existing Offshore Wind Energy Roadmap and an option for an independent project of approx. 500 MW that can be presented to the market as a separate, individual offshore hydrogen tender. The purpose of these demonstration projects is to prepare both the market and Government for large-scale production of hydrogen in the North Sea.

Over the coming year, I intend to further elaborate on what the market regulation for offshore hydrogen will look like, including the question whether, as is the case for electricity, there is a role for an offshore grid operator for hydrogen. The *Policy Options for Offshore Wind 2040* study also looked at the best way to regulate offshore hydrogen transport infrastructure.

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<sup>23</sup> PosHydon is a small-scale pilot for the offshore production of hydrogen from demineralised seawater. The equipment for the pilot is mounted on a gas platform 13 km off the coast of Scheveningen.

<sup>24</sup> The North Sea Energy Programme is a public-private research programme headed by TNO. The programme brings together around 30 international parties from the energy value chain active on the North Sea. The programme is investigating the potential of the North Sea for an integrated energy system.

Hydrogen transport infrastructure in the North Sea will play a vital role in our future energy system. The development and management of this infrastructure requires a high degree of coordination between onshore and offshore hydrogen infrastructure and with the infrastructure for offshore electricity. In addition, when constructing pipelines, their size will have to take account of the future realisation of more offshore hydrogen. Based on these considerations, I am currently investigating which role is appropriate for the Gasunie, also in the light of its intended onshore task as operator of the national hydrogen transport grid. I expect to be able to provide further clarity on these issues before the end of the year.

A relevant question here is whether and to what extent existing offshore gas infrastructure is suitable for the transport and storage of hydrogen produced offshore. This is why I recently launched a study to investigate the potential for reuse of existing gas infrastructure in the North Sea for hydrogen. This study will take into account the role this infrastructure will still have in coming years for bringing natural gas ashore from the North Sea. I expect the results of the study before the end of the year. Currently, this existing gas infrastructure is largely owned and managed by private parties.<sup>25</sup> If the infrastructure proves suitable for reuse, I will enter into discussions with these parties and also examine how reuse can be organised in such a way that public interests are safeguarded and a level playing field for realisation of offshore wind energy and hydrogen maintained. I will also look at the role EBN - which participates in all existing gas infrastructure in the North Sea - can play in researching and supporting pilots or initiatives aimed at reusing this infrastructure for hydrogen-related activities. I will return to this subject in the appreciation of the study into the reuse of the existing gas infrastructure.

Of course, the Netherlands is not the only country developing offshore hydrogen. Steps in this direction are also being taken in neighbouring countries. To encourage sound cooperation, I asked TNO to prepare an analysis of the topics where cooperation is desirable and how this can be achieved. My ambition is to start by tackling these cooperation issues with the pioneering countries that signed the *Declaration of Esbjerg* (which I will discuss in more detail later in this letter), before subsequently approaching all relevant North Sea countries.

### ***Integration of energy systems in the North Sea***

Integration with other energy generation or use in the North Sea is important for future realisation of offshore wind energy. The Government expects that, in the long term, offshore wind energy will be by far the largest source of energy in the North Sea. By 2050, Dutch oil and natural gas reserves are expected to largely be exhausted. Moreover, over the next two decades, a large number of oil and gas fields will be approaching the end of their economic life. Other generation techniques (such as offshore solar) may play a significant role in combination with offshore wind farms, but have yet to prove themselves on a large scale. The Offshore Renewable Energy Strategy of the European Commission<sup>26</sup> also presents the same picture, with offshore wind energy as the dominant source of energy in the North Sea.

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<sup>25</sup> EBN is 40% owner of all gas infrastructure in the North Sea. The remaining 60% is in the hands of various private parties.

<sup>26</sup> Notice from the European Commission dated 19 November 2020 entitled 'An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future'

Within the hub-based approach, consideration will also be given to potential opportunities for synergy or combination with other energy applications (as referred to above) in a wind farm zone. The policy regarding realisation of offshore wind energy will primarily remain focused on maintaining successful production of energy (electrons and molecules) from wind power. The greatest opportunities for combination with other energy applications lie in the efficient use of the infrastructure. The primary purpose of the offshore grid will remain connecting wind farms to the onshore electricity grid, but my intention with the Energy Act is to make it possible in the future for other offshore customers (such as oil and gas platforms that want to electrify their operations) and other generation technologies (such as offshore solar) to use the offshore grid. The underlying principle here is that these new applications must not hinder the operation of wind farms. In addition, if energy hubs in the international North Sea are interconnected in the future, the offshore grid will also serve as an interconnection between the connected countries.

### ***International cooperation***

To make society across the entire European Union more sustainable and to reduce our energy dependence on countries outside the EU, intensive cooperation is required. Together with the neighbouring countries like Denmark, Germany and Belgium, the Netherlands wants to play a leading role in working together towards this joint vision. Drawing up a realisation pathway towards 2050 and drafting the *North Sea Energy Infrastructure Plan 2050* are the first steps on this for the Netherlands. In addition, collaboration with these countries will be intensified and, in the coming years, we will investigate how the growth of offshore wind energy towards 2050 can be jointly organised, with attention to the necessary connections between wind farms or energy hubs and the relationship between energy production, nature and other uses.

Together with the Prime Minister, I recently confirmed this intensified cooperation by signing the *Declaration of Esbjerg* on behalf of the Government on 18 May. In this declaration, Denmark, Germany, Belgium and the Netherlands - as a leading group within the European Union - have agreed to collaborate intensively on realising the future energy system in the North Sea. It was also agreed to jointly aim for at least 150GW of installed offshore wind capacity by 2050.

The Netherlands is already working with neighbouring North Sea countries in the *North Seas Energy Cooperation (NSEC)* and will further intensify this cooperation. In 2023, the Netherlands will assume the presidency of the NSEC and further reinforce our pioneering role in a broader European context. The presidency will place us in a position to intensify cooperation and tackle important topics such as ecology, designing a joint long-term vision for the energy system in the North Sea and the development of offshore hydrogen and large-scale energy hubs internationally.

In terms of integration offshore wind energy in relation to other uses and ecology, other North Sea countries are facing similar challenges to the Netherlands. That is why the Government is investigating the possibilities of finding international

solutions that can contribute to safeguarding the balance between the energy, food and nature transitions, and other forms of use.

### ***North Sea Energy System Development Programme***

The aforementioned developments concerning the future energy system in the North Sea are closely related. This year and next year, a series of studies and preparations will be conducted to enable timely realisation of energy hubs and offshore hydrogen. This must be viewed in context. I will do this, partly on the basis of the North Sea Programme, by tackling the various initiatives and studies together in the soon to be launched *North Sea Energy System Development Programme*. In the coming period, in collaboration with relevant stakeholders, I intend to further elaborate the structure of this programme and will duly inform the House on this in more detail after the summer.

Specifically, this will include:

- Preparing a specific plan for how the realisation pathway adopted in the National Energy System Plan can be realised in the North Sea and drawing up a plan for the required infrastructure (*North Sea Energy Infrastructure Plan 2050*).
- Preparing a specific plan for the design of the first large-scale hub. This will include elements of market regulation, including the role of network operators.
- Ensuring that new technologies such as offshore hydrogen and energy hubs are available in time by organising an integrated innovation programme and, where necessary, supporting demonstration projects.
- Preparing the necessary legal and policy frameworks - in time - to enable energy hubs and offshore hydrogen to be realised from 2030.

### ***A new rolling Offshore Wind Energy Roadmap***

The Offshore Wind Energy Roadmap will remain in use as a policy instrument and will become a rolling programme. The Offshore Wind Energy Roadmap contains the plans for specific projects to be realised. The Roadmap will become a permanent rolling implementation timetable, with an operating horizon of approx. 10 years.

An important factor for success factor of the current offshore wind energy approach is the one-stop shop system. As a result of all the preparatory work by government for realising offshore wind farms (Wind Farm Site Decision, site studies and grid connections), tenders for offshore wind farms in the Netherlands are accessible to all parties and risks are reduced for those parties that wish to submit an application for a permit in a tender. This has led to competitive tenders with strong applications that have contributed to a huge cost reduction for offshore wind energy - thereby maintaining the affordability of the energy transition - and high-quality projects that are innovative worldwide in the field of system integration and ecology.

That is why I want to keep the one-stop shop approach as the underlying operating principle. Therefore, the Government will continue to conduct preparatory studies for sites in the future and ensure the infrastructure is available on time. This then leaves sufficient leeway to make choices within the Roadmap on how tenders should be structured.

To be able to include actual projects in the Roadmap, we need insight into expected demand. The market itself will not be able to provide sufficiently clear insight into energy demand development, 10-15 years in advance. In planning the Roadmap and selecting the landfall locations in the VAWOZ Programme, cooperation will be sought with the industrial clusters (as the leading user demand sector). The Cluster Energy Strategies (CES) offer good insight into the potential of the industrial clusters, but whether and when these projects will be realised remains uncertain, if based exclusively on the CES. Generally, on the basis of normal commercial considerations, parties wishing to become more sustainable will not be able to provide any certainty, 10-15 years in advance, about how and when they will achieve that.

I therefore want to take the lead-time for offshore wind energy into account when designing policy for the demand side (in particular the effects of expected European obligations for renewable hydrogen and the customised agreements for industrial sustainability). It is important to gain timely insight into how much electrolysis is needed for this period and where it will be installed. When finalising customised agreements with the largest emitters of greenhouse gases, I will also take into account the need to provide clarity 10-15 years in advance. Vice versa, when adding new projects to the rolling Offshore Wind Energy Roadmap, it is important to take into account the customised agreements and the intended electrolysis capacity. In this way, supply and demand can be matched.

### ***Feasibility***

An important challenge for realising large volumes of offshore wind energy in the future is ensuring sufficient implementation power and (labour) capacity within both government and industry. For the executive government services responsible for the realisation of offshore wind energy, and for TenneT and market parties, it is therefore important to keep offshore wind energy development predictable. This also played a role in choosing to continue working with a roadmap with a predictable achievement pathway for after 2030. The North Sea Energy System Development Programme will also pay attention on training sufficient people to be able to carry out the necessary work for new technologies and developments, such as offshore hydrogen and energy hubs.

A second major feasibility challenge is the availability of sufficient raw materials, including critical metals. The most important way in which offshore wind energy (and the energy transition in the broader sense) can contribute is to ensure all raw materials can be reused.

That is why, with its Roadmap for circular wind farms (as part of the advisory roadmap for the circular manufacturing industry)<sup>27</sup>, the Government is committed to ensuring the circularity of offshore wind farms. In addition, as outlined in the letter accompanying the Additional Offshore Wind Energy Roadmap 2030<sup>28</sup>, I am also examining whether circularity and international corporate social responsibility can play a role as criteria in future tenders.

### ***Tender system after 2030***

In the Letter to Parliament on the North Sea Energy Outlook 2050, my predecessor indicated that the Government will review how – also in the light of future challenges for offshore wind energy – offshore wind farms are licensed, because future offshore wind farms will be larger and require more flexibility. In line with the Mulder and Sienot motion/commitment and the Sienot and van der Lee motion<sup>29</sup>, it was also announced that the possibility of combined tenders for offshore wind energy and hydrogen would be further investigated. Both of these have been included in Guidehouse's *Policy Options for Offshore Wind 2040* study.

Subsidy-free licencing will remain the underlying principle for realising offshore wind energy in the future. This ensures that parties developing wind farms have the right incentives to successfully realise a project. Parties are incentivised to ensure power from the wind farm can be used effectively in the energy system and thus help improve sustainability. On the basis of market consultation in the context of the *Policy Options for Offshore Wind 2040* study, Guidehouse also concludes that the wind sector supports the policy principle of subsidy-free offshore wind energy. I see this as a good sign that offshore wind energy has become a mature market in recent years.

In the *Policy Options for Offshore Wind 2040* study, Guidehouse also looked at which subsidy instrument is most suitable if subsidy-free realisation is unsuccessful and it becomes (temporarily) necessary to provide some support to projects. In line with the Sienot and Van der Lee motion/commitment<sup>30</sup>, the option of a *contract for difference*<sup>31</sup> was also considered. Guidehouse concluded that if a subsidy is needed to realise projects, an instrument like the SDE++ (a sliding fixed premium) is the best option, because this provides better incentives for the developer to invest in efficient integration of the wind farm in the energy system. I therefore note that there is no reason to amend the current legal framework on this point to make other instruments, such as a *contract for difference*, possible.

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<sup>28</sup> Letter to Parliament Additional Offshore Wind Energy Roadmap 2030 (Parliamentary Paper 33561 no. 53)

<sup>29</sup> Motion 35092 2020-2021 nos. 14 and 16

<sup>30</sup> Motion 35092 2020-2021 no. 14

<sup>31</sup> *Contract for difference* is a subsidy instrument used in a number of countries to support offshore wind energy. With a *contract for difference*, the market party receives a government-guaranteed price for the energy produced. If the actual market prices are lower than the agreed price, the government makes up the difference; if the market prices are higher than the agreed price, the market party pays the difference to the government.

I have already discussed the further details of the tender system up to 2030 in the Letter to Parliament, before the summer, on the realisation of offshore wind energy up to 2030.<sup>32</sup> I will soon send the detailed elaboration of this to the House, with a view to the upcoming tender for IJmuiden Ver. After 2030, the realisation of offshore wind energy will be based on the previously mentioned hub-based approach. Wind farms will become part of an (internationally) connected hub and both electrons and molecules will be produced offshore. Whether this requires changes to the tender system - in particular for offshore hydrogen projects - is something I will be considering as part of the North Sea Energy System Development Programme. I will include how, in relation to the tender system, other uses in the North Sea (including food and nature) and other social criteria (such as corporate social responsibility and circularity) can be sufficiently safeguarded.

#### ***Combined tenders for offshore wind energy and hydrogen***

In the *Policy Options for Offshore Wind 2040* study, consideration was also given to the further elaboration of the way in which the combination offshore wind energy and onshore hydrogen can be designed. Earlier research commissioned by my predecessor<sup>33</sup>, has already shown that developing offshore wind energy and onshore hydrogen together results in synergies. The *Policy Options for Offshore Wind 2040* study looked at four specific models in more detail and mapped out the advantages and disadvantages. These models differ in the extent to which the projects are combined in the tender system. Based on this analysis, I have concluded that it is necessary to coordinate the realisation of offshore wind energy and hydrogen. In concrete terms, this means that central government, in consultation with stakeholders in industrial clusters, will actively look at how coordination of large-scale electrolysis sites can be shaped in terms of combination with the planned wind farms that will have energy landing points at those sites.<sup>34</sup>

It is not yet possible to say whether, in addition to the coordination referred to above, establishing a direct link to hydrogen production in the tenders for offshore wind farms offers further advantages, because how coordination of large-scale electrolysis will work is yet to be determined. I will discuss these issues with stakeholders from both the offshore wind energy side and in industry (as potential customers).

#### ***Relationship with other interests on the North Sea***

The growth of offshore wind energy in the North Sea after 2030 will also result in increased pressure on other interests in the North Sea. This requires an integrated assessment. This will take place in the North Sea Programme and in consultation with stakeholders in the North Sea Consultation (NZO).

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<sup>32</sup> Letter to Parliament Additional Offshore Wind Energy Roadmap 2030

<sup>33</sup> Letter to Parliament North Sea Energy Outlook with appreciation (Parliamentary Paper 32813 no. 646)

<sup>34</sup> In the Letter to Parliament about the progress of regulation and development of the hydrogen market (Parliamentary Paper 32813 no. 1060) I explained further that I will look at, among other things, the designation of sites in the Main Energy Structure Programme, and will be calling upon the national network operators of the electricity and hydrogen networks to designate suitable locations, from the point of view of the system.

The realisation of offshore wind farms has consequences for nature. Both during construction and operation, wind farms impact nature, both below and above the water. Examples of negative effects are disturbance from underwater noise, habitat loss, bird and bat collisions.

Achieving the climate goals and restoring and preserving biodiversity are clear policy principles for this Government. The conservation objectives of the Birds Directive (BD), Habitats Directive (HD) for specific species and habitat types and the good environmental status of the marine environment in the framework of the Marine Strategy Framework Directive (MSFD) set limits for the impact of wind energy on the ecology. With the increase in offshore wind farms, the ecological impact will also intensify. The Government will therefore be focusing its efforts on research to map these effects as accurately as possible, on mitigation to prevent the effects, and on nature enhancement to contribute to the resilience of marine nature. At the same time, the realisation of wind farms can also have positive effects on underwater nature, if projects are built in a nature-inclusive manner.

Based on current ecological knowledge, without additional measures, the ecological limits (for a number of species) will be reached in the near future, as a consequence of the construction of new wind farms. This ecological bottleneck is urgent. This is why, in a letter about the Additional Roadmap to 2030<sup>35</sup>, I have already explained the actions the Government will be taking to prevent this bottleneck and ensure the targets for both nature and the energy transition can be achieved. This potential ecological bottleneck will of course also remain important for the further roll-out of offshore wind energy after 2030. Therefore, both in view of the nature restoration task and the required space for offshore wind energy, it is important that we strengthen both ecological knowledge and ecological space for the period after 2030.

Other uses in the North Sea are also important for the further realisation of offshore wind energy. For example, sufficient space must remain for activities of national importance, such as the nature and food transition, shipping in the North Sea, sand extraction, defence and mining. In consultation with stakeholders, the North Sea Programme will establish how these interests can be served simultaneously with the further roll-out of offshore wind energy. With the further growth of offshore wind energy after 2030, sufficient prospects for these uses will have to be ensured and any instruments (and resources) needed for that must be made available.

With regard to mining, I am currently considering options to improve the spatial relationship between new offshore wind energy projects and new gas production projects. This requires careful integration so bottlenecks can be prevented as far as possible. Where bottlenecks do arise, an integral assessment will have to be made. That is why, together with the State Secretary for Mining, among others, I am currently looking at how the coordination between the roll-out of offshore wind farms

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<sup>35</sup> Letter to Parliament Additional Offshore Wind Energy Roadmap 2030 (Parliamentary Paper 33561 no. 53)

and the issuing of permits for new gas production in the North Sea can be improved to prevent bottlenecks. The Government will provide further information on this to your House in the autumn.

**Our reference**  
DGKE-E / 22174505

For shipping, as well as ensuring sufficient space, it is also important to ensure shipping safety is maintained. An assessment of what is needed to safeguard shipping will have to be conducted each time spatial choices are made for the further roll-out of offshore wind energy.

With the continued growth of offshore wind energy and the closure of nature reserves, the free space for fishing continues to decline. As already announced in a recent letter about the future of Dutch fisheries<sup>36</sup>, the responsible ministers (LNV, N&S, I&W, VRO) will join the North Sea Consultation in investigating whether we can provide more clarity on how we can continue to make optimal use of space in the North Sea for food production from the sea. This relates both to free space and space in wind farms. The main challenge will be to find a good balance between the providing clarity on the one hand and maintaining sufficient flexibility to respond to new developments on the other. The issue of space for fisheries/food production is part of the integrated spatial assessment within the framework of the North Sea Programme, but is also included in the site investigations and area passports that provide direction to the interpretation and possibilities for shared use of wind farms

The realisation of wind farms in the North Sea also has an impact on cultural heritage. The seabed of the North Sea contains traces of earlier habitation and more recent traces in the form of shipwrecks. Some of these are war graves. These must be handled with due care, but at the same time the large-scale development of wind farms offers opportunities to discover more about our own history. Therefore, in the future, as now, archaeological expertise will be used in a timely manner during the realisation phase.

***Designating new wind farm zones for after 2030 in the Partial Review of the North Sea Programme 2022-2027***

To designate new wind farm zones in good time for the period after 2030, the Government is planning a Partial Review of the North Sea Programme 2022-2027. Given the ambition to make our society more sustainable in a timely manner and the Government's decision, in this respect, to focus on offshore wind energy, the Government is working on the basis that offshore wind energy capacity must be able to reach approx. 70 GW by 2050. It is also important, as already explained in the Letter to Parliament about the contours of the National Energy System Plan, that with the ambitions of the fit-for-55 package to tighten up the ETS system, the electricity sector and industry must already have reached a situation of net zero greenhouse gas emissions.<sup>37</sup> This means the Government is factoring in that approx. 50 GW of offshore wind energy may need to have been installed by 2040.

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<sup>36</sup> Letter to Parliament for the Fishery Agenda: safeguarding food production from the sea and large waters (Parliamentary Paper 29675 no. 210)

<sup>37</sup> Letter to Parliament Contours of the National Energy System Plan (Parliamentary Paper 32813, no. 1053)

It is still not certain if this much offshore wind capacity will actually be needed or if it can be achieved in the North Sea. The integrated assessment of this will take place in the Partial Review of the North Sea Programme.

**Our reference**  
DGKE-E / 22174505

In the Partial Review of the North Sea Programme, the right balance must be sought between the designation of new wind farm zones, other interests and the ecological capacity of the North Sea. To avoid a gap in the roll-out after the current Offshore Wind Energy Roadmap (which runs through to 2031), it is important that new wind farm zones are designated quickly. At the same time, it is also desirable to have an indication of which zones can be used for the roll-out of offshore wind energy towards 2050. This second aspect requires further investigation and is therefore at odds with the ambition to designating new zones quickly. In Q1 of 2023, the Government will provide more details about the Partial Review (ambition, scope and planning).

***Infrastructure landfall: area-specific approach and start of the Programme for the Investigation Landfall Options Offshore Wind Energy 2040 (VAWOZ Programme)***

As well as implications for the North Sea, offshore wind energy also has spatial consequences on land. The electricity cables, and in the future pipelines too, will have to be spatially and ecologically integrated at sea and on land. This integration for the energy transition is a complex challenge. The spatial integration of electricity cables at sea and on land is an increasingly sensitive challenge, due to the growing scarcity of spatial possibilities in relation to other interests such as ecology and agriculture. In addition to cables and pipelines (and the associated converter or landing stations) for offshore wind energy, the realisation of onshore infrastructure and the implementation of large-scale electrolysis will also have an impact. The (ecological) integration will depend on the actual feasibility, permissibility and desirability of, among other things, crossing parts of the North Sea and/or the Wadden Sea. This should become apparent with further investigation and the subsequent integrated weighing of interests.

After 2030/2031, in addition to the hydrogen connections, further electrical cable landing points will also be needed. The importance of making our society more sustainable is the underlying principle, but at the same time, it is worthwhile recognising that it will place huge demands on the regions where these connections must be brought to land. That is why I attach great importance to researching landing options for offshore wind energy in the period 2031-2040 and to developing the subsequent spatial procedures in consultation with stakeholders. All stakeholders must be informed as clearly as possible of what they can expect, so agreements can be made from that long-term perspective. That is why, for those regions where cable and pipeline landing points will be established, I plan to launch an integrated area process in which agreements can be reached between national and regional government on the basis of a long-term view on possible future developments for offshore wind energy landing points in the affected region. Together with the regions, I will take an integrated look at what energy infrastructure is needed and expected onshore and the integration of electrolysis in those regions, in line with the Multi-year Energy and Climate Infrastructure Programme (MIEK).

For landing offshore wind energy in the period 2031-2040, this autumn, I will be launching a new investigation into promising options for landing both electrons and molecules from wind farms that will be built in the period 2031-2040, with a look ahead through to 2050. I will carry this out in a programme under the Environment and Planning Act, in conjunction with the Partial Review of the North Sea Programme 2022-2027. Based on the most promising landing locations from the Programme for the Investigation Landfall Options Offshore Wind Energy 2031-2040 (VAWOZ Programme) and the wind farm zones designated in the Partial Review of the North Sea Programme, specific projects will be added to the Offshore Wind Energy Roadmap for the period after 2030. Spatial procedures for the grid connections for these projects will then be started.

With a view to a smooth start for the Programme for the Investigation Landfall Options Offshore Wind Energy 2031-2040 (VAWOZ Programme), I evaluated VAWOZ 2030. The main conclusions from this evaluation are that, when VAWOZ 2030 was conducted, there was insufficient insight into the future energy system, and the area-specific approach in VAWOZ 2030 was positively received by stakeholders. With the National Energy System Plan and the related overarching control over the various programmes in the entire supply-demand chain, plus the integrated area-specific approach described above, I believe the issues identified in the evaluation are well addressed. I aim to offer stakeholders more comfort and better future prospects by investigating the landing options within a vision for offshore wind to 2050 and assessing them in the context of other energy infrastructure developments in an area.

### **PART 3: Concrete policy agenda for the coming years**

In this part of the letter, I will provide a brief overview of the actions I am taking, when I expect results from them and how they relate to each other.

The actions can be divided into two categories: drawing up an indicative long-term picture (*North Sea Energy Infrastructure Plan 2050*) and preparing for the future energy system in the North Sea, on the one hand, and designing a concrete plan for realization (the rolling Offshore Wind Energy Roadmap) after 2030, on the other. In particular there is strong correlation between the Infrastructure Plan, the Partial Review of the North Sea Programme and the Programme for the Investigation Landfall Options Offshore Wind Energy 2031-2040 (VAWOZ Programme). In principle, the strategic vision for infrastructure from the Infrastructure Plan is the guiding input for the Partial Review of the North Sea Programme 2022-2027 and the Programme for the Investigation Landfall Options Offshore Wind Energy 2031-2040 (VAWOZ Programme). So, the choices made in these programmes will, as far as possible, be in line with the end picture for 2050. However, due to tight timelines, these processes will be tackled in parallel. Drawing up this Infrastructure Plan will have to take place closely alongside the Partial Review of the current North Sea Programme and the VAWOZ Programme.

<b>National Energy System Plan</b>	Result
Setting targets for offshore wind energy for 2035, 2040 and 2050	Q2 2023
<b>North Sea Energy System Development Programme</b>	
Research into potential reuse of gas infrastructure in the North Sea for hydrogen	Autumn 2022
Further elaboration of market regulation and possible role of offshore grid operator for offshore hydrogen	Autumn 2022
Launch of innovation programme for energy hubs and offshore hydrogen	Autumn 2022
Drafting <i>North Sea Energy Infrastructure Plan 2050</i> . End of 2022 results of initial investigation	End 2023
Developing broader policy framework (market organisation, regulation and tender system) for offshore hydrogen and energy hubs (+ any necessary subsequent legislation process)	2022-2023
<b>Rolling Offshore Wind Energy Roadmap</b>	
A Elaboration of tender system for remaining wind farm sites in the Offshore Wind Energy Roadmap (approx. 21GW) to 2031	Q4 2022
Partial Review North Sea Programme 2022-2027 designates wind farm zones and search areas for development after 2031	Q1 2023 (ambition, scope and timeline)
Programme VAWOZ 2031-2040 provides options for electrical and molecule landing points.	2024
Updating the Offshore Wind Energy Roadmap with post-2031 projects	2024

### **Conclusion**

Thus far, offshore wind energy has been a success factor for the energy transition in the Netherlands. In the future, offshore wind energy is expected to be the largest source of national energy production in the Netherlands. This presents huge opportunities, but also challenges and some difficult issues to consider.

With this letter, I hope to involve the House in considering these issues and I therefore specifically invite the House to contribute ideas and suggestions. Offshore wind energy affects many public interests and it is only by working together, in a timely manner, that we can ensure development of offshore wind continues to be successful.

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

### **Coherence between policy programmes and plans**

This letter discusses many existing and two new programmes and plans. Here, a brief explanation of the relationship between these programmes and plans is given. From the perspective of offshore wind energy, these programmes and plans can be divided into *the strategic long-term outlook*, the *concrete plan for realisation of offshore wind farms* and the *integration of offshore wind energy in the energy supply chain*.

The *National Energy System Plan* offers a strategic longer-term outlook for the energy system, including the proposed development realisation path for offshore wind energy. This is translated into a strategic vision for development of the energy system in the North Sea through the *North Sea Energy Infrastructure Plan 2050*. These plans therefore both provide a strategic, *indicative* long-term outlook on the development of the *energy system*, and are not concrete plans for implementation. To ensure that technology and policy frameworks are in order in time for this longer-term energy system - which will consist of several large-scale energy hubs - the *North Sea Energy System Development Programme* will be launched.

To realise this strategic, long-term vision of the energy system, other interests also need to be considered. National government oversees this. In the *North Sea Programme*, wind farm zones will be periodically designated with a sufficiently long horizon. The Programme for the Investigation Landfall Options Offshore Wind Energy 2031-2040 (VAWOZ Programme) will also identify suitable cable and pipeline routes and landfall locations. Designating wind farm zones and researching promising landfall locations must be carried out in combination. Ultimately, specific wind farms will be included in the *Rolling Offshore Wind Energy Roadmap* and issued for tender. The long-term 2050 perspective guides the steps taken to achieve concrete project realisation (North Sea Programme, VAWOZ Programme and Offshore Wind Energy Roadmap). This ensures the steps we are taking now also work for the anticipated energy system of 2050.

There are also other programmes and plans aimed at ensuring offshore wind energy can be successfully integrated in the energy system. The *Multi-year Energy and Climate Infrastructure Programme* is aimed at ensuring timely availability of onshore infrastructure of national importance, such as the national hydrogen backbone. The *Customised Agreements* with industry and the *Policy for upscaling hydrogen production* ensure that, in addition to the ETS and the SDE++, the energy demand side can be made more sustainable in time.