April 2018 | WWEA Policy Paper Series (PP-02-18-C)

THE NETHERLANDS

Denmark - Germany - The Netherlands - Spain - United Kingdom

Author: Frits Ogg

WWEA
World Wind Energy Association

KWEIA 한국풍력산업협회 KOREA WIND ENERGY INDUSTRY ASSOCIATION

Table of Contents

1. The Netherlands; review of existing data and reports on public policies for wind farm development

Wind energy has been used in the Netherlands since the inception of the country. Windmills have harnessed the power of the wind to drain the wetlands, saw logs for building, grind grain for food, and many other industrial purposes. This has not changed as time progressed, though the type of wind power used has certainly changed. No longer large wooden or stone windmills but modern wind turbines spin to create the electricity that a modern country like the Netherlands needs. The conditions for offshore wind energy in the Netherlands are excellent: relatively shallow waters, good wind resource, good harbour facilities, experienced industry and a robust support system (Offshore wind energy in the Netherlands RVO, 2015).This study is essentially built on citates from published information (see the references), research results and market information.

The historic process of development and introduction of the scheme

Despite continuous efforts from the seventies in the last century onwards, wind energy still is a minor niche in the Netherlands, although the Dutch offshore potential is considerable. Wind energy was then regarded as a promising renewable energy option for the Netherlands, accompanied by visions with 200.000 80kW wind turbines onshore. It faces several serious problems, especially the difficult development trajectory. A combination of a technology push approach, frictions in the social network behind windenergy and limited learning, results in a tarnished symbolic image. This historic proces was well described by Verbong et al. from which parts of the next chapter are derived (Verbong 2008).

Following the first oil crisis in 1973, policy interest in wind energy rapidly increased. The first national energy research program on wind energy started in 1976. The official goal was to investigate the potential of wind energy and the general vision was that the Netherlands (and Dutch industry) should become a global leader on wind energy. Referring to the famed past of Dutch windmills, it served to legitimate a national research program. The outcome of this first program confirmated the view that wind energy was promising and conducted with recommendation for more research.

A national goal for wind energy was agreed in the early 1980s upon 1000 MW in the year 2000. It became obvious during the 1990s that this target would not be met, although it remained the official target.

Actors from the existing electricity regime dominated the social network behind wind energy, therefore certain ideas guided the visions on wind energy. Large wind turbines, preferably clustered in wind parks, should be the best way forward. However, the grass roots movement contested this large-scale vision. It succeeded in creating a decentralised line within the research program, focusing on small autonomous turbines. The learning proces in the late 80s and early 90s ran into problems for both designs. Experience in Denmark showed that gradual upscaling of small turbines was a better way to innovate. Dutch actors also embraced this idea in the mid 1990s, but it was too late to save the Dutch wind turbine industry.

In the late 90s, wind energy still was regarded as one of most important Dutch renewable energy options and was stimulated by concerns about climate change, but the implementation of wind energy encountered a lot of problems such as local opposition and a weakening of its symbolic image. Public opinion expressed concerns about landscape disturbance (wind turbines obstructing wide 'open sky' views) and 'bird shredding' which was stimulated by negative publicity in (local) newspapers. Newspapers played a crucial role by causing excitement in giving the few opponents mostly unfounded voice, in a try to make the newspaper the talk of the day. Furthermore grid operators increasingly saw wind turbines as unreliable because of the variability of wind and as a danger to the stability of the electricity system. Politicians came to perceive wind turbines as a waste of tax money and a not very cost-effective way of reducing greenhouse gases.

The social network behind wind energy in the 70s consisted mainly of representatives of the existing players in the electricity market: research institutes, large companies and electric utilities. They thought that the only feasible option were large turbines (Breukers 2007).

Therefore, Research & Development focused on large MW-size turbines, based on design knowledge from aeronautics. From the beginning the utilities played an ambiguous role. They were initially sceptical about wind energy's potential but sympathetic to (subsidised) initiatives! (Verbong 1999).

The first frictions in the network behind wind energy were played out in the early 80s.The utilities wanted to have control over the first wind park, because its functional characteristics were similar to power plants. They succeeded in getting the park out of the national program framework, frustrating other actors.

Relationships between the utilities and technology suppliers further deteriorated, when the park failed because of unreliable wind turbines. The company that supplied the turbines went bankrupt. Another industrial company quit participation, complaining about the turbine selection procedure and arrogant behaviour of the electricity sector (Gipe, 2016) .

The attitude of the electricity sector and large industrial companies towards wind energy became more hostile because of these negative experiences.

Despite the disappointments and frictions in the 80s, the Dutch position in wind energy in the early 90s was still good in an international perspective (Bergek and Jacobsson 2003):

- There were three middlesized turbine producing companies, supported by a few producers of rotor blades and other components;
- The knowledge infrastructure was well developed, especially at Delft university and ECN (the Energy Research Centre of the Netherlands);
- The utilities formed a foundation for the large-scale implementation of wind turbines, with financial support from the government, and
- The government reached an agreement on wind turbine sites with seven Provinces.

Ten years later, however, ambitions were shattered and the Dutch wind industry was overrun by Danish turbine producers. Although the Dutch companies switched to the Danish design, they could not keep up with the international companies who benefitted from first mover advantages and scale economies (Kamp, Smits, and Andriesse 2004).

The Dutch 1989 Electricity Law enforced a separation of production of electricity. While utilities remained responsible for production, the law introduced new actors; Energy Distribution Companies (EDCs). These were responsible for electricity distribution and consumer markets. These new actors provided new dynamics because EDCs stimulated wind energy (and other renewable sources). Although EDCs put most of their efforts and resources in cogeneration of heat and power (CHP), they also stimulated the 'green electricity'market through advertising and image-building campaigns and constructed several wind energy parks. Nevertheless, the government did not achieve its official target. Only 450 MW of wind turbines were installed in 2000 (instead of 1000 MW).

The implementation problems were related to increasing frictions between the national policy level, where ambitious targets were set, and the local policy level, which was responsible for implementation, siting and permit procedures. The national level, focused exclusively on the contributions of wind energy to climate change policies and often neglected possible benefits, sensitivities and opportunities on the local level. Because policy makers focused primarily on large scale applications and regime actors, they neglected broad-based institutional capability building (Breukers 2007).

The learning process

In the 70s and 80s, learning focused mainly on technological aspects. The development of large breakthrough designs proved to be difficult. Most large turbines broke down or did not function, therefore outcomes of learning processes were disappointing. Danish firms, in contrast, conquered the market with a bottom–up approach: they started with small-size turbines, and subsequently upscaled them (Maegaard 2013). The innovative two bladed design, favoured by the Dutch (and also Americans and Germans) lost out to the more conservative three-bladed Danish design.

Failures also occurred in decentral designs, because the assumption that wind energy systems could function reliably without grid back-up, proved to be erroneous. These learning processes hardened the vision that only grid-connected wind parks had a future. Hence, the relationship with the existing electricity regime was seen as crucial for further development of wind energy (Verbong 2001).

Wind energy's impact on the electricity system was another issue. Because of wind fluctuations and unpredictability, the electricity sector estimated that only 650 MW of wind turbine capacity could be connected without endangering the system. This claim was contested by ECN (Energy Research Centre of the Netherlands), which made higher estimates (2500 MW).

The underlying issue was that wind turbines require the presence of spare capacity which can provide backup during windless periods. Normally, utilities paid electricity suppliers for the amount of electricity delivered to the grid, topped up with a 'capacity fee' based on

savings in installed capacity. But for wind turbines, the electricity sector did not want to pay such a fee, arguing that they did not really replace existing production units. Wind energy promoters fiercely contested this principle, because low feedback tariffs increased the price gap between wind energy and regular electricity. The principle thus formed an important barrier for local initiatives by co-operatives and private wind initiatives. Despite these protests, utilities refused to pay 'capacity fees'. Another financial barrier for wind energy suppliers came from additional costs that utilities charged for connecting wind turbines to the grid. Both problems soured relationships in the social network behind wind energy.

In 1996, some conditions improved because of the introduction of an energy tax (REB). Because renewable energy was exempted from this tax, the price gap between 'green' electricity and normal 'grey' electricity was reduced. The tax exemption was supplemented by 2 cents⁄kWh for production support. These support measures enabled wind energy to overcome the two previously mentioned economic barriers (the unpaid capacity fee and grid connection costs). Now'green'electricity was about the same price as 'grey'electricity, which stimulated households'demand: the number of green electricity consumers rapidly increased from 16,000 in 1996 to 1.4 million in 2002.

From 1996 onwards, contributions from wind energy grew steadily, but the expansion also led to new problems, especially in the process of societal embedding. Local environmental and local interest groups increasingly opposed new wind energy projects, complaining that wind turbines disturbed the natural landscape, acted as 'bird shredders', and were noisy, ugly objects. These protests were the main reasons that wind energy targets for 2000 were not met. After 2000, offshore wind parks were seen as a promising solution, because they avoided on-land problems, but permit - procedures, negotiations with nature conservationists and uncertainty over financial support schemes delayed these projects.

This uncertainty was due to new policy changes in 2003. The underlying problem was that the rapid increase in consumer demand for 'green electricity' could not be met with national production alone. Hence, imports of renewable electricity increased rapidly from 1.5 GWh in 2000 to 10.5 GWh in 2002 (www.cbs.nl). In 2002, only 26% of 'green electricity'was produced domestically (Van Rooijen and Van Wees 2006). The unintended effect of renewable energy subsidies was that Dutch tax money flowed to international suppliers. Hence, a new government stopped the demand-oriented REB exemptions in 2003, replacing it with the supply-oriented and technology specific MEP-regulation (Environmental Quality Electricity generation).

The MEP provided a fixed feed-in tariff to renewable electricity producers plus an additional ecotax exemption. The new MEP-scheme was initially set for 10 years, but within 2 years the minister of Economic Affairs announced a major downscaling, because the number of proposals for wind parks was much larger than expected, something that would imply major increases of the MEP budget. The minister thus excluded new offshore wind and large-scale biomass projects from MEP scheme. Only two offshore wind parks acquired financial support. In another twist to this story, the government abruptly announced the end of the MEP-scheme for all new projects, including smallscale projects, in August 2006. The government argued that the Netherlands would reach the EU goal (9% renewable electricity

in 2010) with existing projects. Continuation of the MEP-regulation was thus seen as too costly and not really necessary.

These frequent changes in regulations and subsidy schemes and the refusal to support the industry over an extended period of time (as the Germans did) have given the national government an image of unreliability. Moreover, a persistent problem is the neglect of societal embedding of wind energy, with policy focusing primarily on the technical side of innovation (Breukers 2007).

Prospects and predictions of wind power deployment

Prospects onshore

In the coming years, onshore wind will remain one of the most inexpensive ways of producing renewable energy. The Dutch target is 6,000 megawatts installed power capacity from onshore wind turbines by 2020. Currently there are 2,000 onshore wind turbines, providing only 4 percent of the total Dutch electricity requirement.

Prospects offshore

Offshore wind capacity from will grow to 4,500 MW in 2023 as part of the National Energy Agreement (See chapter 4). The Dutch government has designated three wind farm zones where new wind farms can be developed in the coming years. In consultation with the wind energy sector, a new system was designed for the deployment of these new wind farms (See 3. Offshore wind in the Netherlands).

North Sea in the Policy Document on the North Sea 2016-2021 (see references)

The Central Government's North Sea policy sets frameworks for the spatial use of the North Sea in relation to the marine ecosystem. The spatial aspect of the North Sea Policy Document applies to the Dutch Exclusive Economic Zone and the non-administratively classified territorial sea. Other aspects may also pertain to the area that is administratively classified. After all, there is interaction between the marine ecosystem and the designated uses at sea and the (water on) land. The 2016-2021 North Sea Policy Document outlines the current use and developments in the North Sea and the relationship with the marine ecosystem, as well as the vision, tasking and policy. The North Sea Policy Document, including the appendix Marine Strategy Part 3 (programme of measures), forms an integral part of the National Water Plan (NWP).

Long-term vision

The vision on the North Sea has been laid down in the North Sea 2050 Spatial Agenda and incorporated into the North Sea Policy Document.

The Netherlands will benefit from a safe, clean, healthy and ecologically diverse North Sea that helps to provide for economic and social needs. The sea is also of great socio-cultural and historical significance to the Netherlands and it is a source of knowledge. The sea can

make an optimal contribution if the natural resilience is (further) restored and increased and its attraction is preserved for everyone. The use of the sea is in a state of transition.

The crux of the new policy for the North Sea is: together with civil-society organisations, steering towards desired use in terms of space and time, ecology and economy, and continuing to develop the natural potential of the sea and coast. The Central Government is aiming for a development-based approach to the sea, one that leaves room for new initiatives and flexible management of the sea.

Based on this vision, the emphasis in the period up until 2050 will be on five themes: building with nature; energy transition at sea; multiple/multifunctional use of the space; connecting land and sea; and accessibility/shipping. International collaboration and export opportunities play a significant role in all five themes.

The marine ecosystem and designated uses The North Sea is a highly complex, open marine ecosystem, without borders and with specific habitats. The shallow and nutrient-rich area is a habitat for marine mammals, a breeding ground for fish and an important migratory route and wintering area for many bird species. The marine ecosystem can be used as a source of goods (such as fish, sand, shells, oil, gas, wind, tidal and wave power) and to facilitate services (shipping routes, recreation, CO2 storage, perception) for (Dutch) society.

The expected intensification in the use of the North Sea, which is partly the result of an increase in the number of designated uses, demands responsible use of the limited available space. Increasing use is exerts pressure on the marine ecosystem. Policy is a prerequisite for harmonising the various designated uses of the North Sea and ensuring a healthy ecosystem. The Policy Document on the North Sea 2016-2021 sets out the desired policy for the use of space, within the limits of the marine ecosystem. The Central Government sets the spatial frameworks, allowing the use of space in the North Sea to develop in an efficient and sustainable manner. Multiple use of space is an important principle in this regard. It offers balanced opportunities for all forms of use of the North Sea.

The Framework Vision on Infrastructure and Space presents the following national spatial challenges for the North Sea:

- the preservation of the coastal foundation and implementation of the area-based Coastal and Wadden Region sub-programmes of the Delta Programme in association with local and regional government authorities;
- the preservation and protection of Natura 2000 areas and the marine ecosystem;
- maintaining the unobstructed view of the horizon up to 12 nautical miles from the coast;
- providing space for the main network for the transport of (hazardous) substances via pipelines;
- the protection of archaeological values (submerged settlements, shipwrecks and other archaeological values).

Within the European frameworks (Water Framework Directive, Marine Strategy Framework Directive, Birds Directive, Habitats Directive and the Malta Convention), the Cabinet is giving priority to the activities that are of national interest to the Netherlands:

- Oil and gas extraction: as much natural gas and petroleum as possible is being extracted from the Dutch fields in the North Sea, in order to optimise use of the potential of natural gas and petroleum reserves in the North Sea.
- CO2 storage: sufficient space for the storage of CO2 in depleted oil and gas fields or in underground aquifers.
- Shipping: a whole system of traffic separation schemes, clearways and anchoring areas that can accommodate shipping safely and swiftly.
- Sand extraction: sufficient space for sand extraction for coastal protection purposes, countering flood risks and sand for use on land.
- Generation of renewable energy: sufficient areas for wind energy and other forms of renewable energy, combined wherever possible.
- Defence: sufficient military exercise zones in the North Sea.

The policy decisions for all designated uses are described in the report.

2. Grid connection regulations in the Netherlands onshore and offshore

In the Netherlands Tennet is the transmission system operator (TSO).

According to the Energy Industry Act, operators of transmission systems have an obligation to define the minimum technical requirements for connections to their grids.

The minimum requirements for the TenneT grid on land are described in the "Grid code – extra high voltage" (see references). The "Requirements for offshore connections in the grid of TenneT TSO GmbH" applies to grid connections for offshore plants (see references).

3. Permission procedures, environmental impact assessments in the Netherlands

Onshore

To build a wind turbine one needs an “omgevingsvergunning” (formerly building permission). An omgevingsvergunning is granted by the municipality. For a wind farm 5 to 100 MW, a province can authorise.

If the location of the turbine doesn't fit in the zoning plan, then a zoning plan change has to be made.

Offshore wind energy in the Netherlands

The Netherlands is working on a transition to a sustainable, reliable and affordable energy supply for everyone. Drivers are the climate change, the declining availability of fossil fuels, and the dependence on international energy suppliers.

Within the National Energy Agreement, a goal of 16% sustainable energy in 2023 was agreed upon with over forty organisations including Ministries, energy organisations, employers organisations, unions, NGO's and others. All available sustainable energy sources are needed to reach this goal, including wind energy both land based and offshore (see 4. Social aspects – Energy agreement).

The conditions for offshore wind energy in the Netherlands are excellent: relatively shallow waters, good wind resource, good harbour facilities, experienced industry and a robust support system.

This chapter gives a brief overview of the road map to increase offshore wind capacity from todays 1,000 MW to 4,500 MW in 2023 as part of this National Energy Agreement (Offshore wind energy in the Netherlands, January 2015). The Dutch government has designated three wind farm zones where new wind farms can be developed in the coming years. In consultation with the wind energy sector, a new system was designed for the deployment of these new wind farms. The government is responsible for a greater part of the preliminary works: consents, electrical infrastructure and insight in the physical environment. Companies that want to develop a wind farm can base their Front End Engineering Design (FEED) studies on these preliminary works and register for one of the selected sites.

The company with the lowest bid will be awarded with both the permit and grant to develop the wind farm. This approach contributes to efficient use of space, cost reduction and an acceleration of the deployment of offshore wind energy.

The existing offshore wind farms have a capacity of approximately 1,000 MW. The first two wind farms built in the North Sea off the coast of the Netherlands are the offshore Wind Farm Egmond aan Zee (OWEZ, 2006) and the Princess Amalia Wind Farm (2008).

The OWEZ Wind Farm lies 10-18 km off the coast and comprises 36 Vestas 3 MW turbines. It is owned by Noordzeewind, a joint venture between utility company NUON and oil company Shell. Utility company Eneco owns the Princess Amalia Wind Farm, located outside the 12-mile zone, 23 km off the coast. It comprises 60 Vestas 2 MW turbines.

Two projects are recently completed: Wind farm Luchterduinen and the Gemini wind farm. Wind farm Luchterduinen is owned by Eneco and Mitsubishi Corporation and comprises 43 Vestas 3 MW turbines located 23 km off the coast. The Gemini wind farm will be constructed with 150 Siemens 4 MW turbines on the twin locations Buitengaats and Zee-Energie, 85 km off the coast. Gemini is owned by Northland Power, Siemens, Van Oord and HVC.

In 2013 more than forty organisations laid the basis for a robust, future-proof energy and climate policy for the Netherlands in the Energy Agreement for Sustainable Growth (see 4. Social aspects – Eenergy agreement. An important part of this agreement is scaling up

offshore wind power. In 2014 the Minister of Economic Affairs presented a road map to the parliament enabling the Government to achieve this expansion of offshore wind in accordance with the time line agreed upon in the Energy Agreement.

The road map towards 4,500 MW offshore wind power foresees an annual tendering of 700 MW in the period 2015 – 2019, it is a precondition that the cost of offshore wind power will decrease by 40% in the coming years.

The Government has decided that three offshore wind farm zones will be used for the deployment of the 3,500 MW new offshore wind capacity: Borssele (1,400 MW), South Holland coast wind farm zone (1,400 MW) and North Holland coast wind farm zone (700 MW).The tenders to select parties for realising the offshore wind farms are done according to this schedule:

Year Power Wind farm zone

2015 700 MW Borssele wind farm zone

2016 700 MW Borssele wind farm zone

2017 700 MW South Holland coast wind farm zone

2018 700 MW South Holland coast wind farm zone

2019 700 MW North Holland coast wind farm zone

Wind farms will become operational within four years after a decision on funding and can use the state-of-the-art technology available by that time. The legal bases of this road map will be a new Offshore Wind Energy Law.

The offshore wind energy law

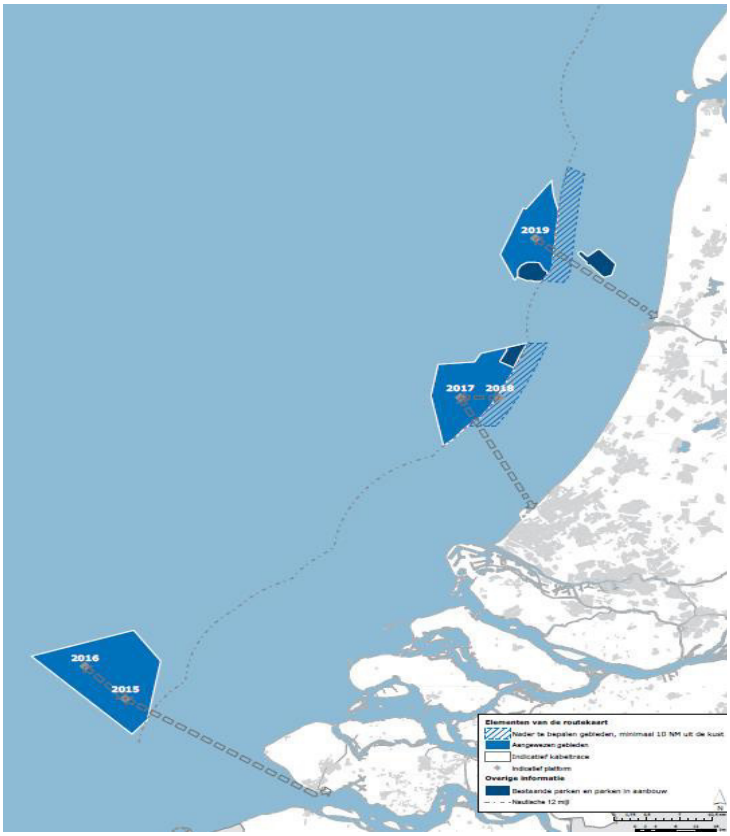
The Dutch government developed a framework in which designated offshore wind areas, each with different sites, will be tendered. These sites will be consented based on an environmental impact assessment and will have a grid connection to the main land. Also the site data of the physical environment is to be made available by the government.

This procedure is expected to reduce social cost compared to previously developed wind farms, in which developers were responsible for consents and investigations to provide input for their Front End Engineering Design (FEED) studies. High cost were incurred before they could apply for financial support.

The new approach is presented in the Offshore Wind Energy Law (Wet Windenergie op Zee). The new approach was designed in consultation with the wind energy sector. It contributes to a higher efficiency in the use of space, cost reduction and it accelerates the deployment of offshore wind energy. The system has five distinct aspects:

Wind farms are only allowed in designated wind farm zones

Under the National Water Plan, wind farm zones have been designated. Only on sites within these zones, the construction of wind farms will be allowed. Any location outside these wind farm zones will not be consented.



Designated wind farm zones in the Netherlands continental shelf (Offshore wind energy in the Netherlands, January 2015)

Wind farm sites consented by government

In these wind farm zones, the government decides on sites where wind farms can be constructed. Each zone can contain several sites. The Ministries of Economic Affairs and of Infrastructure and the Environment will take the so-called wind farm site decisions ('kavelbesluiten'). A wind farm site decision is the necessary consent required to build a wind farm and specifies the location for the wind farm and the conditions under which it may be constructed and operated. These conditions will provide flexibility for the design of the wind farm. This gives commercial parties the best opportunities for choosing the best technical options within the natural and environmental framework and realise their project at the lowest possible costs. Wind farm site decisions are subject to an environmental impact assessment (EIA), which will be commissioned by the Ministry of Economic Affairs and the Ministry of Infrastructure and Environment.

Government provides site data

The Government investigates the physical environment of the wind farm site: the soil- wind- and water conditions. This site data will be made publicly available and provide commercial parties with information for their FEED studies and competitive bids in the tendering procedure for the grant possibilities. The Netherlands Enterprise Agency (RVO.nl) will publish the site data. This site data includes:

a. Geological, morphodynamical and geomorphological data

b. Archaeological and Unexploded Ordnance analysis

c. Metocean data

d. Wind resource assessment

e. Geophysical and geotechnical data (based on surveys)

TSO TenneT realises grid connection

To create economies of scale the national electricity Transmission System Operator TenneT will construct five standardised platforms with a capacity of 700 MW each within the wind farm zones. They will each be connected to the national grid with two 220kV export cables. As soon as a 380kV subsea cable is available, this can be applied to reduce the amount of required cables. Connecting wind turbines directly to the TenneT platform implies no need for an OWF platform investment.

Grant tendering

Grants for the wind farm sites will be awarded through a dedicated call for tender under the Stimulation of Sustainable Energy Production. Under this scheme, producers receive financial compensation for the electricity they generate for a fixed number of years (15 years for wind farms). The lowest bidder will be awarded. The bid must be equal or lower than the maximum amount (in €/kWh) set for the specific wind farm site. The lowest bidder will be rewarded with both the grant and the consent to build and operate a wind farm according to the wind farm site decisions.

The above information is part of a brochure that is commissioned by RVO.nl, agency of the Ministry of Economic Affairs. Contacts: Netherlands Enterprise Agency (RVO.nl) January 2015

Environmental Impact Assessment (EIA)

The Ministry of Infrastructure and the Environment is the responsible authority for EIA. The Dutch knowledge centre InfoMil, part of the ministry, is the primary source of information and best practices in matters of EIA/SEA and other environmental legislation

and policies in The Netherlands.
On 27 June 1985, the EIA was implemented for projects in Europe by means of a European Council Directive on the assessment of the effects of certain public and private projects on the environment (85/337/EEC). This directive was revised in 1997, 2003 and 2009. In 1987, the EIA tool was officially introduced in the Netherlands. The associated Environmental Impact Assessment Decree (EIA Decree) has since been modified a number of times. For a further explanation of the EIA: see

http://www.eia.nl/en/environmental-assessment/eia-per-country/netherlands+(the)

Legal framework for EIA

Year of introduction of enabling law

The Environmental Impact Assessment (EIA) is established in law in Chapter 7 of the Dutch Environmental Management Act (EMA) (article 7.1 to article 7.42). The existence, function and working method of an independent commission for environmental impact assessment (Netherlands Commission for Environmental Assessment - NCEA) is set out in (article 2.17 to 2.24). Section 14.2 of the EMA (article 14.4a to 14.16) provides for the coordination for drawing up an environmental impact assessment (EIA).

Approving authority of enabling law :

Parliament

Year of introduction of first national detailed regulation for EIA

In addition to the Environmental Management Act, the Environmental Impact Assessment Decree (EIA Decree) is important to determine whether the preparation of a plan or project must be subject to the EIA procedure. The EIA Decree is an Order in Council (OIC). The fact that a major part of the EIA requirement is set down in the EIA Decree is evident in article 7.2 of the EMA.
Competent authority for the regulation: Ministry of Infrastructre & Environment

Recent updates and additions to the EIA legislation

The Environmental Assessment Modernisation Bill, 1 July 2010 and 1 april 2011.
The Dutch Environmental Assessment legislation has recently been revised.

- For projects with limited environmental consequences, a simplified EIA procedure has been designed.
- EIA for complex projects, and SEA for plans and programmes, is more elaborate.

Note that ‘simplified’ does not necessarily stand for ‘easy’. For EIA ,the type of permit determines whether the simplified or full-fledged procedue applies.
In April 2011, a last amendment to the EIA Act and EIA decree was made, influenced by the verdict of the European Court with respect to the application of thresholds. The margings applied, were found to be too thin. For example, even if a project falls outside the threshold (of screening criteria) and an EIA is not obligatory, then other criteria (such as project location) with possible negative environmental impacts should still be taken into account.

These criteria may provide enough arguments to carry out an EIA or EIA after all. See: (http://www.eia.nl/en/environmental-assessment/eia-per-country/netherlands+(the)#more)

Guidelines

Guidance on carrying out an EIA in the Netherlands is described in the 'Handreiking MER' (in Dutch) (http://www.infomil.nl/onderwerpen/integrale/item-109421/handreiking-0/, http://www.eia.nl/en/environmental-assessment/eia-per-country/netherlands+(the)#more)

Objective of EIA

The objective of the EIA is to ensure that the environment is given full and proper consideration in the decision making process with respect to activities with possible negative consequences on the environment.

In addition, the EIA has two related objectives:
• To promote transparency in decision making. On the basis of what information about the environment are decisions taken and justified?
• To promote participation in the planning and decision making process.

Professional bodies

Association of Environmental Professionals (VVM) (http://www.vvm.info/)

Non-governmental EIA guidance

The NCEA has published various case studies, cahiers and factsheets on EIA related themes and discussions. Most of them are in Dutch (http://www.commissiemer.nl/advisering/Kennis___Informatie_1)

4. Social aspects: acceptance, benefits and support for community ownership

Energy Agreement

Investments in energy saving and renewable energy production make the Netherlands less dependent on fossil fuels (coal, oil and gas), with volatile prices. Also, a more sustainable energy system reduces the negative effects of climate change. Moreover, as a result of more investments in energy saving measures, the transition is expected to lower energy bills and to create jobs in fields such as engineering, manufacturing and construction.

In addition to all that, there were several other important factors to reach and sign the Agreement: lack of consistency in policy making, EU commitments, and stakeholder involvement.

Lack of consistency in policy making Despite significant efforts of several coalition governments, by 2011 the transition to a more sustainable energy system had stagnated.

With a share of 4.5% of renewable energy sources (in 2013) in total energy consumption, The Netherlands performs poorly compared to other European countries. For a part this can be explained by the fact that since the 2000s, not one of the successive coalition governments has succeeded in completing its term. As a result, energy policy frequently changed, which negatively affected the policy's effectiveness. Especially in the energy sector, stability and predictability are fundamental to secure the investments required for the coming decades. Therefore, consistency in policy making is much needed.

The Netherlands has a high per capita energy consumption. Energy intensive sectors such as

petrochemicals, greenhouse horticulture, and transport contribute to a major share of the Dutch economy. The Netherlands imports a considerable amount of energy, and consumes only about a third of those imports. Most of the imported energy, is exported in the form of crude oil and oil products. Compared to many European countries, the Netherlands has relatively large reserves of fossil energy carriers. At current production levels, the Netherlands has approximately ten to fifteen years worth of reserves in its gas fields to meet demand at the present rate of consumption.

For more detailed information, see International Energy Agency, The Netherlands,

Paris 2014; http://www.oecd-ilibrary.org/energy/energy-policies-of-iea-countriesnetherlands-2014_9789264210462-en

Meeting EU objectives

The Netherlands is committed to EU obligations to increase its share of renewable energy consumption to 14% by 2020. Furthermore, massive efforts are necessary to realise the required saving in final energy consumption (100 PJ in 2020) to meet the EU Energy Efficiency Directive. 100 PJ equals the annual energy consumption of approximately 1.5 million Dutch households.

Stakeholder involvement

Given the above-mentioned context, there was wide support in civil society and politics for a different approach to the transition to a sustainable energy system.

An approach in which all relevant stakeholders, (local) governments, employers' associations and unions, environmental organisations etc., take responsibility was considered appropriate. This approach would not only negotiate environmental and climate related objectives, but also take into account both economic challenges and opportunities presented by the transition. After all, the transition to sustainable energy is part of a global development, with growing, international CleanTech markets and many opportunities for innovative businesses.

How did the Agreement come about?

Representatives of (local) governments, employers' associations and unions, environmental organisations, financial institutions, NGOs and other stakeholders participated in negotiation table meetings. At four different tables, independent chairs led discussions on the four

major themes of the Agreement: energy saving, renewable energy, innovation and the transport sector. The negotiations involved in total approximately one hundred participants representing forty-seven organisations. The results of these negotiation table meetings were used as input for the widely supported Agreement on Energy for Sustainable Growth.

During the negotiations, independent research institutions, the Energy Research Centre of the Netherlands and the Netherlands Environmental Assessment Agency, played an important role. They scientifically estimated the effects of the proposed actions. As a result, participating organisations are confident that the proposed actions can meet national and EU objectives.

What is in the Agreement?

The Agreement consists of twelve pillars. Each pillar has its own objectives and

approach. For a detailed description of all pillars see the full document: https://www.ser.nl/~/media/files/internet/talen/engels/2013/energy-agreement-sustainable-growth-summary.ashx .

1 Energy saving in the built environment

2 Energy saving in industry and agriculture

3 Scaling-up renewable energy production

4 Decentralised renewable energy generation

5 Centralised energy transportation networks

6 European Emission Trading System

7 Coal power plants and CCS

8 Transport sector

9 Employment and training

10 Commercialisation of new technologies for economic growth and export

11 Financing investments

12 Heat

Is this a unique Agreement?

The Netherlands has a tradition of striving for consensus on the objectives and means of social and economic policy through consultations between various parties. Representatives of employers' and employees' organisations are used to holding each other accountable for their respective tasks. To discuss socioeconomic topics, they meet in the Social and Economic Council, the main advisory body to the Dutch government and parliament on national and international socioeconomic issues (for more information visit http://www.ser.nl/en/).

For the development of a widely supported, long-term vision and policy on energy, the

consultative approach has been a logical step. The Agreement's 'life span' is much longer than the four-year terms of government and parliament, because its objectives cannot be realised within four years. Parliament supports this rationale.

What has happened since the Agreement has been signed?

• After signing the Agreement, signatory parties have begun to implement actions. Cooperating parties have defined their roles, concretised actions, and designed action plans. By now, the first results have become visible.

• In accordance with the Agreement, in 2013 a committee was set up in the Social and Economic Council to keep the implementation of the Agreement under continuous review.

What is the Standing Committee?

The Standing Committee is the main governing body of the Agreement. It comprises all parties to the Agreement and is chaired by Mr. Ed Nijpels, a former Minister for the Environment. The committee meets approximately four times a year to exchange experiences, discuss progress and address any obstacles.

Principles for monitoring:

• Signatories to the Agreement are responsible for implementing the described actions, particularly for those actions assigned to them.

• Signatories to the Agreement have a common obligation to successfully implement the Agreement.

Tasks of the Committee

The Standing Committee to the Agreement on Energy for Sustainable Growth:

- monitors the progress of the Agreement;
- directs activities when delays become apparent;
- keeps under review the need for amending (parts of) the Agreement in order to meet its objectives;
- develops an agenda that goes beyond the Agreement's validity.

How does implementation work in practice?

Each pillar of the Agreement consists of actions. Each action has been assigned to a representative of one of the signatory parties to the Agreement, who has the lead on this specific topic.

He or she is responsible for implementing this action, usually with representatives of other stakeholders.

Every pillar has one or two coordinators, who are representatives of the organisations that signed the Agreement. The coordinator overviews the progress (of actions) within a pillar. He or she is also the first person to contact whenever problems arise.

The Standing Committee discusses the general progress during its meetings. When a coordinator is unable to solve problems, he or she can approach the chair of the Committee. The chair of the Committee regularly organises meetings to discuss progress in more detail. In addition, the Committee organises conferences to exchange and deepen relevant knowledge and expertise.

How to follow the Agreement's progress?

Transparency in monitoring is fundamental to the tasks of the Standing Committee.

Several tools (in Dutch only) provide insight on the progress of the Agreement:

• A monitor (dashboard) is available to keep track of the progress of actions, results and (expected) effects. (For more information, see: http://afsprakengestart.energieakkoordser.nl);

• An annual progress report of the Agreement on Energy. The first report was published on 20 June, 2014. (For more information, see: http://www.energieakkoordser.nl/publicaties/voortgangsrapportage-2014.aspx);

• Annual analyses in the Dutch National Energy Report, published for the first time in October 2014. (For more information, see:

https://www.ecn.nl/news/item/energietransitie-nederland-wordt-zichtbaar/).

• In 2016, the Agreement and the Committee's operations were evaluated.

Forty-seven parties signed the Agreement on Energy for Sustainable Growth.

Objectives

To contribute substantially to the total energy efficiency goal of 100 PJ by 2020. The Dutch private sector aims to play a leading, international role when it comes to energy efficiency.

To increase the share of renewable energy generation to 14% of total energy consumption by 2020 (291 PJ) and 16% by 2023 (333 PJ).

By 2020, to generate approximately 40 PJ renewable energy at a local scale through decentralised generation units.

By 2020, at least one million households and/or small and medium-sized enterprises use a substantial share of decentralised generated renewable energy.

The above text about the energy agreement is an excerpt. The full text of the energy agreement can be found here:

https://www.ser.nl/~/media/files/internet/talen/engels/2013/energy-agreement-sustainable-growth-summary.ashx

5. Support for community ownership

REScoop.EU

In Europe, several partners are united in REScoop.eu, a project development assistance project under the Horizon 2020 program of the European Commission. Thanks to active support, the project partners will develop renewable energy projects and use part of the revenues to initiate energy efficiency investments in private homes and public buildings. This approach aims to enforce the relationship between REScoops and local authorities.

REScoop.eu was legally set up in 2013 as a Belgian non-profit association. Although officially based in Brussels, their premises are located in Berchem (Belgium). Their address is REScoop.eu vzw | Posthoflei 3 bus 3 | 2600 Berchem.

REScoop.eu is a full member and sector Association of Cooperatives Europe the European branch of the International Cooperative Alliance. Cooperatives Europe represents the voice of 160,000 cooperative enterprises and their 123 million members. European cooperatives provide sustainable jobs to 5.4 million citizens.

REScoop.eu is a member of the Coalition for Energy Savings, a network of associations and companies that strive to make energy efficiency and energy savings number one priority when setting energy and economic policies.

REScoop.eu is also a member of the Community Energy Coalition in which we join forces with Friends of the Earth Europe, Greenpeace, BEUC, ClientEarth, Bankwatch, CAN Europe, Climate Alliance, Energy Cities, Housing Europe and WWF.

What is a REScoop?

REScoop is short for renewable energy cooperative, and refers to a business model where citizens jointly own and participate in renewable energy or energy efficiency projects. We also refer to REScoops as community power or community energy initiatives.

REScoops do not necessarily have the legal statute of a cooperative, but rather distinguish themselves by the way they do business. They typically respect 7 principles that have been duly outlined by the International Cooperative Alliance.

All citizens are eligible to join a REScoop. After purchasing a cooperative share and becoming a member or co-owner of local RES and EE projects, members share in the profits and often are given the opportunity to buy the electricity at a fair price. In addition, Members

can actively participate in the cooperative: they can decide in what and where the REScoop should invest, and are consulted when setting the energy price.

REScoops are not the same as financial cooperatives (FINcoops). The latter also issue shares to finance renewable energy projects, but unlike REScoops, the members of a FINcoop **do not own the projects themselves**. Projects are typically owned by a private company that receives a subordinated loan from the FINcoop. As a result, FINcoop members are exposed to a considerable financial risk. As a federation, we support the model with direct citizen participation because we believe that it fosters social acceptance for renewable energy.

Watch the video:https://rescoop.eu https://rescoop.eu/node/1289 to see how a REScoop works.

REScoopNL is a cooperative of sustainable energy cooperatives in the Netherlands. Their goal is: making sustainable energy projects together succesfull. REScoopNL helps starting cooperatives with experience and capital for the development fese of new initiatives.

Energiecoöperaties

REScoopNL was founded on 1 november 2013 with 18 members and since then supported a lot of citizen initiatives. Now the cooperation has 48 members. Members of REScoopNL are sustainable energy cooperations. Most of them have production capacity (wind turbines, solar and hydro).

Code of conduct

The NWEA (Netherlands Wind Energy Association) has together with several associations on the field of ecology and environment (Greenpeace, ODE e.g.) established a code of conduct, for use by realising wind turbines. The code will guarantee participation by the realisation of windturbines. See Appendix A

Handbook on participation in the development process of wind energy projects

In 2020, a total of 6000 MW wind energy should be operational. Most stakeholders are convinced that this goal can be reached if all stakeholders government, developers and residends cooperate. This is called participation. (See also 4. Social aspects: acceptance, benefits and support for community ownership; Handbook on participation in the development process of wind energy projects) Participation can be realised with a participation plan.

The NWEA (Netherlands Wind Energy Association) developed a blueprint for a participation plan (The blueprint is only available in Dutch). The process and permission procedure is devided in 5 phases, 7 guidelines and more than 20 tools.

Phases

1. Policy Making

2. Permission

3. Contracting

4. Construction

5. Exploitation

The handbook is only available in the Dutch language and is realised on behalf of NWEA by Ecofys and Houthoff Buruma. (See for more information on NWEA in Chapter 7)

6. Available wind data in the Netherlands

The windchart of the Netherlands gives information about the average wind velocity at 100m heigh for every location in the Netherlandds.

In 2014 the old windchart of 2005 is replaced by the KNMI The chart can be downloaded from the Internet:
https://www.rvo.nl/sites/default/files/2015/01/Windkaartvan%20Nederland%20%282014%29.pdf

The Royal Netherlands Meteorological Institute (KNMI) is the Dutch national weather service. Primary tasks of KNMI are weather forecasting, and monitoring of weather, climate, air quality and seismic activity. http://www.knmi.nl/over-het-knmi/about

A table on the internet gives the annual averages for wind speed and the number of days with strong winds at cities and other places around the Netherlands. Each location has its average wind speed for a year in miles per hour (MPH) and kilometres per hour (KPH). Plus there's a total of the mean number of days yearly with strong breezes. Strong breezes are defined here as winds with speeds greater than 41 KPH (25 MPH or 22 knots). Winds of this strength can whip up 2.4 metre (eight foot) waves and move large tree branches. All the numbers are based on weather data collected from 1981 to 2010.
https://www.currentresults.com/Weather/Netherlands/wind-speed-annual.php

Mission for NEWA

In this project a New European Wind Atlas will be developed to be used as a standard for site assessment. The new Atlas, based on improved modelling competencies on atmospheric flow, together with the guidelines and best practices for the use of data, should become a key tool not only for manufacturers and developers, but also for public authorities and decision-makers, by reducing overall uncertainties in determining wind conditions.

Overall, the new Atlas will provide a unified high resolution and freely available data-set of wind energy resources in Europe. The statistics in the atlas will cover Europe with a

resolution 20-30 meters in at least 10 wind turbine relevant heights. This statistical downscaling is built on at least 10 years of mesoscale simulations with a resolution of 2-3 km. These mesoscale data will be publicly available.
The area coverage is the EU countries and 100 km offshore plus the Baltic and the North Sea. In addition to wind resource information, the new Atlas will give measures of wind variability, wind power predictability from day-ahead to decadal as well as parameters for wind turbine design

http://www.neweuropeanwindatlas.eu/

The Global Wind Atlas is part of an international collaboration. It has come about in the framework of the Clean Energy Ministerial (CEM) (http://www.cleanenergyministerial.org/) and in particular the CEM Working Group on Solar and Wind technologies
http://globalwindatlas.com/

Actual windspeed:

https://www.theweather.net/weather-maps/viento-holand.html

Energy and Industry Data Sets: This a list of Energy and Industry data sets available on the world wide web. http://enipedia.tudelft.nl/wiki/Energy_and_Industry_Data_Sets

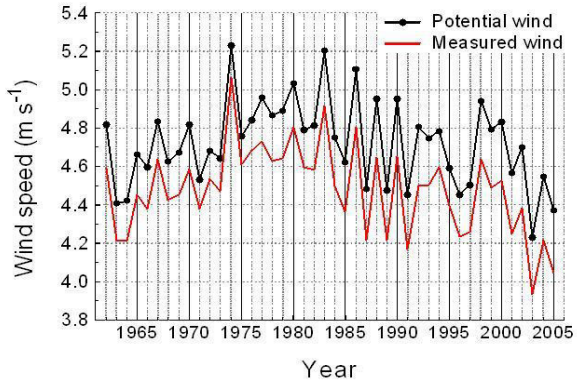
https://windeurope.org/about-wind/statistics/ WindEurope publishes its European onshore wind energy statistics annually. It also publishes European offshore statistics half-yearly, statistics that are eagerly awaited by the industry and media.

Trend in wind speed?

Operators of wind farms are concerned about a decline in wind power potential since 1988

The figure below shows the trends of yearly averaged wind speed in the Netherlands. The average has been computed from the stations Schiphol, Soesterberg, Vlissingen, Eindhoven, De Bilt, Deelen, Eelde, Gilze-Rijen, Leeuwarden, Beek en Zestienhoven. All these stations have nearly complete times series since 1962.

The wind speed does show a decline since 1988. However, it also shows that during the sixties the wind power potential has been lower compared to the period 1975–1985 as well. The year 2003 yields the lowest average wind speed since the beginning of the Hydra time series (1962).



So far, little is known about the trends in wind speed in future climate.
https://projects.knmi.nl/hydra/faq/u_trend_en.htm

In 2005, a study has been published on the trends in storminess over the past 40 years.(https://cdn.knmi.nl/system/data_center_publications/files/000/066/305/original/smitsetal2005.pdf?1495620527).

DOWA (Dutch Offshore Wind Atlas)

The DOWA project is granted in july 2017. In DOWA, ECN, KNMI and partners join forces to to extend the KNMI North Sea Wind Atlas with years 2013-2019 and to make another atlas for 2008-2017 with a better representation of the diurnal cycle and an option for further downscaling with LES (Large-Eddy Simulation). https://www.knmi.nl/research/weather-climate-models/updates/dowa-dutch-offshore-wind-atlas-project-granted

7. Industrial capacities of domestic windturbine manufacturers in the Netherlands

Dutch domestic manufacturers 2017:

2-B Energy, 6 MW offshore wind turbine, under development
EWT, 250,500,900,1000 kW windturbines ~ 100 wind turbines/y
Lagerwey, 1,5 , 2,3 , 2,5, 4 MW , 250- 4000 kW (icl. old models), 50 wind turbines/y, and now at the forefront of the Russian market.
Seawind, 6,2 MW, offshore wind turbine, under test
WES, 50, 80, 100, 225 kW wind turbines ~ 12 wind turbines/y, 1200 installed worldwide.
XEMC-Darwind, (Xiangtang Electrical Manufacturing Corporation (XEMC) Ltd. in China is the ultimate parent company), 2 and 4 MW Onshore wind turbines, 5 MW offshore wind turbine under development. ~ 150 windturbines/y

Several small wind turbine manufacturers:

With track record > 20 years: Fortis www.fortisenergy.com

Beginning; Without trustable record and testing < 5 years (2017): Windchallenge, EAZ

Several other manufacturers did leave the market within the year they entered the market or soon after that. Mostly leaving customers disappointed behind.

Also there are airboirne wind company start up's, and start up's that have innovative water producing wind turbines („Dutch rainmaker“). Small wind should be able to use national testsites for free and first results should be supported by (applied sciences) universities before going to market.

List of windturbines in the Netherlands:

All Dutch wind projects are listed here: http://windstats.nl/turbines.php

StatLine is the electronic databank of Statistics Netherlands. It enables users to compile their own tables and graphs. The information can be accessed, printed and downloaded free of charge. http://statline.cbs.nl/StatWeb/?LA=en

Overview Renewable electricity; production and capacity (in Dutch):

http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=82610ned

8. Windindustry R&D, training & education Institutions in the Netherlands

The Topsector Energy

The Topsector Energy (TSE) is the driving force behind the innovations needed to make the transition to an affordable, reliable, safe and sustainable energy system. The TSE supports business, knowledge institutes, government and social institutions to collaborate towards the energy system of the future. The Topsector stimulates new initiatives that accelerate the transition towards sustainable energy, creating new activity and the strengthening of the international competitive position of the Netherlands.

The TSE focusses on the goals towards 2050 as stated in the National Energy Agreement, the Energy Agenda and by the EU member states. The aim is to achieve a fully sustainable energy supply and a CO2-reduction of 80 – 95% as opposed to the situation in 1990 by 2050. This gives direction to the innovations the Topsector stimulates. In the Energy Agenda four energy functions have been determined with corresponding transition paths. In 2017 these transition paths will be elaborated further. The Innovations of the TSE support the transition paths following THIS coherence. See: https://topsectorenergie.nl/en/topsector-general.

Topsector Energy

- The top team is the daily management of the TSE and carries the final responsibility for the TSE. The top team consists of a figurehead from the energy sector, a science-representative, a top civil servant and an innovative SME entrepreneur.
- The direction-team consists of leading stakeholders in the energy sector, hailing from

business, knowledge institutes and social institutions.

- Knowledge centres: the Topsector Energy collaborates with the Energy research Centre in the Netherlands (ECN), the Netherlands Organisation for applied scientific research (TNO), the Netherlands Organisation for Scientific Research (NWO) and several universities.

Top consortia for Knowledge and Innovation (TKI)

- TKI Biobased Economy focusses on biobased innovations throughout the biomass value chain. From the field to the end-product, including recycling of industrial and household streams.
- TKI Energy and Industry contributes to the sustainability goals of the process industry through the generation and application of new knowledge in collaborations and demonstration programs.
- TKI Gas organizes a gas sector wide systematic approach for innovations that build on the strong (knowledge)position the Netherlands traditionally has in the fields of exploration and production, transportation and trade, and (end)applications of gas.
- TKI Urban Energy promotes, connects and supports Dutch companies and knowledge institutes om the development and application of innovations towards a rapid transition towards a sustainable, reliable and affordable energy system in the urban environment and infrastructure.
- TKI Wind op Zee facilitates research, development, demonstration, knowledge transfer, (international) collaboration and market development aimed towards maximizing cost reduction and economic impact.

TKI Wind op Zee

Offshore Wind (Wind op Zee) is essential for a successful energy transition in the Netherlands. To this end TKI Wind Op Zee facilitates research, development, demonstration, valorisation, knowledge transfer, (international) collaboration, education and market development towards maximizing the cost reduction and economic impact related to offshore wind. Offshore wind energy can account for up to 50% of the electricity supply by 2030, even if the electricity demand would prove to increase sharply.

Training, education and institutions

ACM The Netherlands Authority for Consumers and Markets

The Netherlands Authority for Consumers and Markets (ACM) is an independent regulator that champions the rights of consumers and businesses. ACM is charged with competition oversight, sector-specific regulation of several sectors, and enforcement of consumer

protection laws. The ultimate goal is to create a level playing field , where all businesses play by the rules, and where well-informed consumers exercise their rights.

Consumers may contact ACM for free information and advice. For example, you may run into problems with a company. You can report your problems to consumer information portal ConsuWijzer. ConsuWijzer will advise you on how you can solve those problems. Based on that advice, you will know what your rights are, and how you can exercise them. If it turns out that, based on your complaint, the company in question has violated the law, we can step in and take action. (https://www.consuwijzer.nl/) (In Dutch!)

Businesses may turn to ACM if they have indications that other businesses fail to play by the rules, for example, because they have concluded price-fixing agreements.

If businesses or organizations wish to merge, they will have to notify us of their plans. We will then assess what the effects will be on competition and consumers. If we think that the effects will be negative, we are able to attach conditions to that merger or acquisition. Or we can even block it altogether.

ACM sets additional rules for the telecommunications, postal services, and **energy markets**. This is because competition in these sectors does not naturally exist. With these additional rules, we also wish to safeguard the affordability, quality and availability of the products and services in these sectors. Finally, we also regulate health care providers that wish to collaborate.

The Netherlands Consumer Authority, the Netherlands Competition Authority (NMa) and the Netherlands Independent Post and Telecommunications Authority (OPTA) joined forces on April 1st 2013, creating a new regulator: the Netherlands Authority for Consumers and Markets. The decisions of our predecessors can also be found on our website.

National cooperation

Within the Netherlands, they work together with ministries, other regulators, government agencies, scientific institutions, complaints boards, and organizations that protect the interests of businesses and consumers.

International cooperation

They also regularly work together with fellow regulators and other agencies outside the Netherlands. In an open economy, consumer and business problems do not stop at the border.

https://www.acm.nl/en/about-acm/collaboration/international-cooperation---competition

International cooperation - competition

Many EU Member States each have their own competition authority. These authorities

practically do the same work as the Netherlands Authority for Consumers and Markets (ACM) does. These authorities look for the best ways to carry out their tasks. EU countries work closely together to make sure that businesses compete fairly with one another. **They also work together with countries outside the EU.**

Why do competition authorities cooperate?

Competition authorities help each other track down and prevent violations of antitrust laws, for example, when a case in a certain industry has been investigated in one country. Competition authorities in the other countries could then learn from that case, such as about the industry's characteristics and what rules apply, but also about how businesses ignore those rules, and how regulators in other countries operate. They also work together if antitrust problems occur in multiple countries at the same time.

European regulators also cooperate to promote free enterprise in certain markets. For example, they make arrangements making it easier to export power from one country to another.

International Competition Network

The International Competition Network (ICN) is an organization of competition authorities worldwide. Within ICN, all competition authorities keep in touch with each other on a regular and informal basis. At meetings, they discuss practical issues regarding competition. ICN wishes to improve global cooperation between competition authorities. ICN additionally wishes to achieve more uniformity in laws, regulations, and policies.

ICN maintains close relations with other international organizations, such as:

- OECD
- WTO
- UNCTAD
- Associations and lawyers that work in competition law or competition economics
- Corporate interest groups
- Consumer or academic organizations

OECD

The Netherlands is one of the member states of the Organization for Economic Cooperation and Development (OECD). The OECD has a competition division. ACM attends OECD meetings on competition on behalf of the Dutch government, which takes place in addition to and in consultation with other government organizations. ACM is an active member of the OECD.

EIA

The Ministry of Infrastructure and the Environment is the responsible authority for EIA. The Dutch knowledge centre InfoMil, part of the ministry, is the primary source of information and best practices in matters of EIA/SEA and other environmental legislation and policies in The Netherlands. Visit Address: Juliana van Stolberglaan 3, 2595 CA The Hague. Postal Address:
InfoMil, P.O. Box 93144, 2509 AC The Hague, The Netherlands, Phone number: +31(0)70-3735575 Email: info@infomil.nl

NWEA

The Netherlands Wind Energy Association (NWEA, www.nwea.nl) is the Dutch sector association working to increase sustainable wind energy on land and at sea. NWEA unites the wind sector in the Netherlands and accelerates the transition towards a renewable energy supply by spurring businesses and governments to invest in wind energy. NWEA actively promotes the utilisation of wind power in the Netherlands, on land and offshore.

The activities of NWEA are mainly aimed at the national government. NWEA initiates and supports policy change to optimise wind energy deployment both onshore and offshore. Among the over 300 members of NWEA are developers of wind parks, owners of wind turbines, manufacturers, constructors, research institutes, electricity providers, consultants and maintenance companies.

Deltares

Postal address P.O. Box 177, Delft, The Netherlands Visiting address Rotterdamseweg 185, Delft, The Netherlands Telephone number +31883358273 Fax number +31883358582

General e-mail address organisation info@deltares.nl Internet address www.deltares.com

Deltares is a leading, independent, Dutch-based research institute and specialist consultancy for matters relating to water, soil and the subsurface. The advanced expertise is used to help people live safely and sustainably in delta areas, coastal zones and river basins. Deltares conducts research and provides specialist advisory services for government authorities and the corporate sector in The Netherlands and globally. The essence of the work is the development, application and sharing of

knowledge. Deltares develops knowledge in partnerships with universities, other knowledge institutions and the business sector, not only in government research programmes but also in contract research. Deltares has more than 800 employees.

Main offices are based in Delft and Utrecht, The Netherlands, with affiliations in Singapore and USA.

DUWIND

Technical University Delft Postal address Faculty Aerospace Engineering, Kluyverweg 1, 2629 HS Delft Visiting address Faculty Aerospace Engineering, Kluyverweg 1, 2629 HS Delft

Telephone number +31152785170 Fax number +31152785347

General e-mail address organisation duwind@tudelft.nl Internet address www.duwind.tudelft.nl

Research on wind energy at the Delft University began 35 years ago, starting with an aerodynamic project at Aerospace Engineering. Nowadays the research programme covers almost all aspects of modern wind turbine technology, and is undertaken across 5 faculties. Each of the research groups at these faculties has its own specific expertise, but an increasing number of research problems requires a multidisciplinary approach. The focus of Duwind is on long term, pioneering research, which implies that PhD research is the core of Duwind. Duwind comprises approximately 50 (full time equivalent) researchers, of which about 30 PhD candidates.

The focus of Duwind's program is on the development of turbine and wind power station technology, ranging from fundamental aerodynamic research to development of design methodologies, and anything in between. Duwind offers a MSc curriculum in wind energy, and provides courses for professionals in the wind energy industry.

Energy research Centre of the Netherlands ECN – ECN Wind Energy

Postal address P.O. Box 1, 1755 ZG Petten, The Netherlands Visiting address Westerduinweg 3, 1755 LE Petten, The Netherlands Telephone number +31224564115 Fax number +31224568214

General e-mail address organisation wind@ecn.nl Internet address www.ecn.nl/wind

ECN operates an own wind farm, consisting of 5 turbines of 2,5 MW each. These turbines can be used for different research purposes.

Prototype turbine test site ECN owns five prototype test positions for testing (offshore) wind turbines up to 10 MW.

ECN offers a wide variety of training programmes and courses in the field of Aerodynamics and Aerodynamic Design Tools, Rotor Aerodynamics, Control of Wind Turbines and Operation & Maintenance of offshore wind farms. On occasion ECN offers contributions to educational programmes at universities.

ECN cooperates closely with Duwind, the wind energy research institute of the Technical University Delft and WMC, the knowledge centre for wind turbine blade and materials. The research program and expertises are adapted to each other, keeping the character of each institution in mind: ECN and WMC focus on implementing medium and short-term R&D, while Duwind focuses on fundamental medium and long-term research, with enough overlap to cooperate and compete.

Duwind and ECN share a common international Advisory Board.

IMARES

Part of Wageningen UR Postal address P.O. Box 68, 1970 AB IJmuiden, The Netherlands Visiting address Haringkade 1, 1976 CP IJmuiden, The Netherlands

Telephone number +31317480900 Fax number +31317487326

General e-mail address organisation imares@wur.nl Internet address www.imares.nl

IMARES is a leading, independent and international scientific institute for strategic and applied marine ecology. The institute focuses on fisheries management, aquaculture, environmental protection and spatial use of the seas and coastal zones.

The core competencies are (marine) ecological research in support of maritime policies and innovation, conservation, water quality, contaminant risks, biological production and marine governance. The research incorporates fieldwork, laboratory experimentation and testing, data management, modelling, simulations and stakeholder participation.

IMARES employs over 200 people representing a broad variety of scientific disciplines. IMARES is an independent specialized contract research organization within Wageningen University and Research Centre.

MARIN

Maritime Research Institute Netherlands MARIN Postal address P.O. Box 28, 6700 AA Wageningen, The Netherlands Visiting address Haagsteeg 2, 6708 PM Wageningen, The Netherlands Telephone number +31317493911 Fax number +31317493245

General e-mail address organisation info@marin.nl Internet address www.marin.nl

The Maritime Research Institute Netherlands was founded in 1929 as the Netherlands Ship Model Basin (NSMB) by the Dutch government and industry. Work started in 1932, following completion of the deep water towing tank. To cope with the ever-increasing demands of the industry for research in the fields of powering performance, seakeeping and manoeuvring, including shallow water effects, cavitation, vibration, noise etc., a whole series of special test laboratories was successively built (Deep Water Towing Tank 1951, Shallow Water Basin 1958, High Speed Basin 1965, Depressurised Towing Tank 1972, Cavitation tunnel 1979). A new Seakeeping and Manoeuvring Basin became operational in the course of 1999. The upgrading of the Depressurised Towing Tank was completed in 2001. As Offshore technology experienced extensive growth, MARIN became involved in offshore projects since 1960. A Wave and Current Basin was built in 1973, it was replaced by a complete new Offshore Basin in 2000. As early as 1970, MARIN extended its activities to include nautical research and training. For this purpose a modern Vessel Traffic Simulator and two full-mission simulators are available today.

At present, approximately 300 people work at MARIN; together they are responsible for a turnover of € 33 million. 85% is earned on the commercial worldwide maritime market.

So for more than 75 years, the Maritime Research Institute Netherlands (MARIN) has been contributing to the development of safe and economic ships and offshore structures as independent advisor, therefore MARIN sees it as its responsibility to contribute to the development of renewable energy offshore from waves, tides and wind. For this reason, MARIN has recently started a special Renewable ENergy Team (RENT).

In the area of Offshore wind energy, much is related to normal floating and fixed offshorestructures. Installation, removal, maintenance, survivability and vessel traffic safety are topics that link offshore wind energy to MARIN's broad maritime expertise. Finally, MARIN also contributes to the development of wind turbine installation vessels.

Other information

MARIN, ECN, DNV, GL, Statkraft and Ramboll are in the process of starting up a Joint Industry Project (JIP) with the acronym 'WiFi': Wave impacts on Fixed turbines. The objective of this WiFi JIP is to improve the way effects of steep (and breaking) waves are taken into account in the design methodology of fixed offshore wind turbines, so that optimized offshore wind turbines can be developed. In preparation of the JIP, MARIN performed pilot model tests in November 2010 with a special model of an offshore wind turbine with realistic flexibility tested in (extreme) waves. These tests confirmed that significant oscillations can occur in the turbine as a result of steep and breaking waves.

NLR

National Aerospace Laboratory Postal address P.O. Box 90502, 1006 BM Amsterdam, The Netherlands Visiting address Anthony Fokkerweg 2, 1059 CM Amsterdam, The Netherlands

Telephone number +31205113113 Fax number +31205113210

General e-mail address organisation info@nlr.nl Internet address www.nlr.nl

The Dutch National Aerospace Laboratory (NLR) carries out applied research on behalf of the aviation and space sectors. NLR is an independent technological institute and performs research to develop new technologies for aviation and space travel, not only from a scientific perspective, but also for the application of this research in industrial and governmental sectors. NLR's aerospace capabilities have a logical spin-off to wind energy such as applying safety methods, aerodynamic design, applying high tech materials and wind tunnel testing. NLR's clients include governmental authorities, large and small industries, and aerospace organizations - both in the Netherlands and abroad. NLR has a number of specialized research facilities such as wind tunnels, which it operates together with its German sister organization DLR. It is one of the Netherlands' major technological institutions. Threequarters of the research it performs is commissioned by clients.

Other information

The Foundation German-Dutch Wind Tunnels (DNW) is a non-profit organisation jointly established by the Dutch National Aerospace Laboratory (NLR) and the German Aerospace Centre (DLR).

DNW provides a wide spectrum of wind tunnels and simulation techniques to customers from industry, government and research. See also DNW for more details.

German-Dutch Wind Tunnels

(DNW)Postal address P.O. Box 175, 8300 AD Emmeloord, The Netherlands Visiting address Voorsterweg 31, 8316 PR Marknesse, The Netherlands

Telephone number +31527248520 Fax number +31527248582

General e-mail address organisation info@dnw.aero Internet address www.dnw.aero

The Foundation German-Dutch Wind Tunnels (DNW) was jointly established in 1976 by the Dutch National Aerospace Laboratory (NLR) and the German Aerospace Centre (DLR), as a non-profit organisation under Dutch law. The main objective of the organisation is to provide a wide spectrum of wind tunnel tests and simulation techniques to customers from industry, government and research. DNW owns the largest low-speed wind tunnel with open and closed test section options in Europe. Also the major aeronautical wind tunnels of the DLR and NLR are fully integrated and managed by the DNWorganisation. DNW provides solutions for the experimental simulation requirements of aerodynamic research and development projects. These projects can originate in the research community (universities, research establishments or research consortia) or in the course of industrial development of new products.

TNO

Postal address P.O. Box 505, 1780 AM Den Helder, The Netherlands Visiting address MMPC, Bevesierweg 4, 1781 CA, Den Helder, The Netherlands

Telephone number +31888663801 Fax number +31888666556

General e-mail address organisation wegwijzer@tno.nl Internet address www.tno.nl

Netherlands Organization for Applied Scientific Research (TNO) is a fully independent research organization, established by law in 1932, with a staff of about 4400. TNO expertise and research make an important contribution to the competitiveness of companies and organizations, to the economy and to the quality of society as a whole. TNO's unique position is attributable to its versatility and capacity to integrate this knowledge. TNO works for a variety of customers: governments, the small and medium enterprises sector, large companies, service providers and non-governmental organisations.

TNO Offshore Wind started in 2003 with the Dutch We@Sea research program with development of the 'ROBIN' bird radar for the Egmond aan Zee (OWEZ) wind farm. Other offshore wind projects are corrosion and bio-fouling risk assessment for the wind farm Princes Amalia. Assessment of the impact and on-site measuring of produced sub sea noise during installation of wind turbine foundations. Optimisation of offshore wind farm monitoring, operation and maintenance (O&M). Since 2009 TNO participates in international offshore wind research programs in the European ÆRTO's program (Associated European Research and Technology Organizations).

TNO Offshore Wind cooperates with European Research and Technology Organizations (RTO's) like Fraunhofer IWES (D), SINTEF (N) and VTT (Fin).

Other information

TNO participated in several offshore wind research programs like the ÆRTO's program (ERA net program), 'Operation and Maintenance in Offshore Wind' and 'Cost Efficient Corrosion Protection for wind turbines and structures'.

TNO was one of the authors of the Knowledge Investment Agenda Offshore Wind 'Wind op Zee', in cooperation with Technical University Delft, different RTO's and industrial partners.

Knowledge Centre WMC Postal address P.O. Box 43, 1770 AA Wieringerwerf, The Netherlands

Visiting address Kluisgat 5, 1771MV Wieringerwerf, The Netherlands

Telephone number +31227504949 Fax number +31227504948

General e-mail address organisation info@wmc.eu Internet address www.wmc.eu

Knowledge Centre WMC is a research institute for materials, components and structures. The major activities are fundamental and applied research on Fibre Reinforced Plastics (FRP) and wind turbine structures. WMC is working for both the European and Dutch governments, as well as for the international industry. Full scale tests on rotor blades have been carried out since 1984. WMC develops in close cooperation with ECN the modular integrated design tool FOCUS6 that is being used worldwide by many of the largest wind turbine manufacturers. WMC is actively involved in international standardization committees.

WMC renders services for setting up testing facilities around the world. WMC is situated at a unique location along the border of the IJsselmeer, which enables the transport of large structures to the facility. WMC also offers consultancy for setting up test facilities around the world.

WMC combines fundamental and applied research in order to offer the industry the state of the art support for structural research. This includes experimental as well as numerical research. WMC participates in national and European research programmes in many cases in cooperation with Duwind and ECN.

A more detailed overview of Wind energy research and education in the Netherlands of the information above can be found here:
https://topsectorenergie.nl/sites/default/files/uploads/Wind%20op%20Zee/Documenten/Dutch%20Wind%20Energy%20Research.pdf

9. Export promotion policies for the Dutch wind industry

International export and knowledge agenda

Internationalisation is of great importance for the Topsector Energy.Agreements towards the development of the internationalisation agenda have hence been laid down in the National Energy Agreement . In the execution of this agenda the emphasis is placed upon intensive collaboration with the other Topsectors and the international transfer of knowledge.

https://topsectorenergie.nl/en/international-export-and-knowledge-agenda

The Netherlands has a strategically advantageous geographic location: its seaports border all offshore wind farms in operation, under construction, or under development in the United Kingdom, Belgium, Denmark, Germany and the Netherlands itself. Dutch seaports have proven to be a high quality, safe, and cost-effective operational base for leading international offshore wind energy companies.

Opportunities for Entrepreneurs; The increasing size of the offshore wind turbines is no obstacle for the Dutch seaports. It offers manufacturers the space to assemble their wind turbines as efficiently as possible, and thus, as close as possible to the ports themselves. In most European ports on the North Sea, space is scarce where some locations must cope with turbine components' insufficient supply capabilities. (Holland-Your-Portal-to-Offshore-Wind-Power_brochure_Sep2014.pdf)

The Ministry of economic affairs promotes the Netherlands as a country of enterprise with a strong international competitive position and an eye for sustainability. It is committed to creating an excellent entrepreneurial business climate, by creating the right conditions and giving entrepreneurs room to innovate and grow. By paying attention to nature and the living environment. By encouraging cooperation between research institutes and businesses. This is how we enhance our leading positions in agriculture, industry, services and energy and invest in a powerful, sustainable country.
(https://www.government.nl/ministries/ministry-of-economic-affairs)

10. References:

Ancillary services from offshore windfarms in the Netherlands, TKI Wind op Zee (Frans Van Hulle 2015) 20150911_Rap_TKI_Ancillary_services http://bit.ly/2xw8ibT.

Bergek, A., and S. Jacobsson. 2003. The emergence of a growth industry: a comparative analysis of the German, Dutch and Swedish wind turbine industries. In Change, transformation and development, eds. S. Metcalfe and U. Cantner, 197–228. Heidelberg: Physica/Springer.

Breukers, S. 2007. Changing institutional landscapes for implementing wind power. PhD thesis, University ofAmsterdam.

Gipe P. Fluttering Flags, Can-can, & the Big Men of Wind Energy (consulted 20160716)

https://www.linkedin.com/pulse/fluttering-flags-can-can-big-men-wind-energy-paul-gipe?trk=hp-feed-article-title-publish

Grid Code - High and extra high voltage - Tennet TSO GmbH Bernecker Straße 70, 95448 Bayreuth (November 2015)

Kamp, L.M., R.E.H.M. Smits, and C.D. Andriesse. 2004. Notions on learning applied to wind turbine developments in the Netherlands and Denmark. Energy Policy 32: 1625–37.

Maegaard P., Kranz and Palz (2013); Wind power for the world, Wind Power for the World: The Rise of Modern Wind Energy ISBN 9789814364935 DOI: 10.4032/9789814364942 , Pan Stanford publishing, Singapore.

Offshore wind energy in the Netherlands, January 2015 (brochure commissioned by RVO.nl, agency of the Ministry of Economic Affairs), The roadmap from 1,000 to 4,500 MW offshore wind capacity, Utrecht www.rvo.nl / http://english.rvo.nl

Van Rooijen, S.N.M., and M.T. van Wees. 2006. Green electricity policies in the Netherlands: an analysis of policy decisions. Energy Policy 34: 60–71.

Verbong, G.P.J. 1999. Wind power in the Netherlands 1970–1995. Centaurus 41, no. 1/2: 137–60.

Verbong, G., A. van Selm, R. Knoppers, and R. Raven. 2001. Een kwestie van lange adem. De geschiedenis van duurzame energie in Nederland 1970–2000. Boxtel: Aeneas Technical Publishers.

Verbong,G., Frank W. Geels and Rob Raven, Technology Analysis & Strategic Management Vol. 20, No. 5, September 2008, 555–573 Eindhoven , University of Technology, The Netherlands http://dx.doi.org/10.1080/09537320802292719 (in Dutch only) De Windkaart van Nederland op 100 m hoogte is door KEMA Nederland B.V. ontwikkeld, inopdracht van SenterNovem. De opdracht is uitgevoerd in het kader van het DEN programma. Arnhem, juni 2005

Windkaart (2014)
http://www.klimaatatlas.nl/klimaatatlas.php?wel=wind&ws=kaart&wom=Gemiddelde%20windsnelheid (in Dutch 20170921)

Annual Average Wind Speeds in the Netherlands

https://www.currentresults.com/Weather/Netherlands/wind-speed-annual.php

Luchterduinen and Gemini – Two success stories in offshore wind:

http://www.ramboll.com/media/rgr/luchterduinen-and-gemini-two-success-stories-in-offshore-wind (consulted 20170920)

Dutch wind energy research, wind energy research and education in the netherlands (on behalf of the dutch wind energy research and education institutes, Gijs van Kuik (tu delft)

and Theo de Lange (ecn))
https://topsectorenergie.nl/sites/default/files/uploads/Wind%20op%20Zee/Documenten/Dutch%20Wind%20Energy%20Research.pdf

Netherlands - Big onshore projects with large turbines on horizon, Windpower Monthly, Eize de Vries, 1 March 2012 http://www.windpowermonthly.com/article/1119306/netherlands-big-onshore-projects-large-turbines-horizon

The Agreement on Energy for Sustainable Growth: a policy in practice CO2 (English):

https://www.ser.nl/en/publications/publications/2013/energy-agreement-sustainable-growth.aspx

The Agreement on Energy for Sustainable Growth (in Dutch) can be downloaded free of charge from the website http://www.energieakkoordser.nl/ .

Published by Sociaal-Economische Raad (Social and Economic Council) Bezuidenhoutseweg 60, PO Box 90405, 2509 LK Den Haag, The Netherlands

to see how a REScoop works, the video:https://rescoop.eu https://rescoop.eu/node/1289

- https://coopseurope.coop/.

Code of conduct : http://ponderaconsult.com/uk/wp-content/uploads/2013/06/dutch-code-of-conduct-on-acceptance-and-participation-onshore-windenergy-3-sept.-2014.pdf

https://www.government.nl/ministries/ministry-of-economic-affairs

11. Appendix A: Dutch Code of Conduct

Dutch Code of Conduct regarding onshore wind energy acceptance and participation (September 2014)

This document contains the translation of the Dutch Code of Conduct regarding onshore wind energy acceptance and participation. This code was signed in September 2014 by: Nederlandse Wind Energie Associatie (Netherlands Wind Energy Association (NWEA)), Stichting De Natuur- en Milieufederaties (The Nature and Environment Federations Foundation), Stichting Natuur & Milieu (Foundation for Nature Conservation and Environmental Protection) and Greenpeace Nederland (Greenpeace Netherlands).

Introduction

The Code of Conduct regarding onshore wind energy on creating acceptance and participation commits the members of the NWEA to a number of basic principles with regard to create acceptance and participation. Increasing acceptance is a matter of the wind energy sector, authorities and other parties involved. The nature and environmental organisations that co-signed the code of conduct are prepared to contribute to the realisation of social acceptance of wind energy projects. The undersigned parties to this code of conduct ask the competent authorities to declare this code of conduct applicable to all initiators of wind energy projects, thereby creating a level playing field throughout the wind energy sector.

In a tender letter to the licensing authorities (the government, IPO (Association of Provincial Authorities) on behalf of the provinces and VNG (Association of Netherlands Municipalities) on behalf of the local authorities), the signatories of the code of conduct asked to find ways to compel developers to use the code of conduct, as such making this code of conduct binding for all parties that are active in the wind energy sector. That letter also listed a number of examples on how to achieve this.

Summary

In brief, the code of conduct regulates how the wind energy sector involves the community in a wind energy project:

1. The initiator is - in addition to the steps taken by the authorities during the spatial planning process - responsible for involving the community in the entire project process (development, construction and operation). This happens as early as possible; the design of a project starts with participation of the community during the planning process.

2. For this purpose, initiators, in consultation with the competent authorities and stakeholders, draw up a participation plan prior to the spatial planning process of the project; within the project, the initiator appoints a contact person for the community.

3. The scope and contents of the participation plan are customised and depend on the project and outcome of the consultations with local residents and other stakeholders.

4. The participation plan describes the (non-statutory) participation:

• Process participation (for instance: consultative talks with stakeholders, setting up a focus group, organising discussions, public hearings or design workshops, setting up a proper and transparent system for the processing of questions and complaints)

• Project participation (for instance: financial participation with shares/bonds, local fund, arrangements for local residents such as green energy at a discount, a discount on the energy bill or other (financial) compensation, creating local jobs).

5. Preferably, stakeholders are involved in the process of looking for participation options with the greatest possible social return.

6. As an indication of the financial scope for (non-statutory reinforcement of) acceptance and participation, the wind energy sector applies a target amount of 0.40 to 0.50 Euro/MWh.

7. The different financial contributions of the initiator to the community will be reviewed in their entirety in order to revent an accumulation of contributions. When the financial contribution is spent, designations that show a direct link between project and community will be considered.

8. The initiator is primarily responsible for project-related communication.

Preamble

The Netherlands are faced with the challenge of having 6,000 MW of onshore wind energy operationally by 2020. Among other things, this target is a starting point in the Energy Agreement for Sustainable Growth (September 2013) which was formed under coordination of the SER (Social and Economic Council of the Netherlands). The objective for onshore wind energy is also embedded in the National Action Plan in which the Netherlands explains to the EU how it can achieve at least 14% of sustainable energy. The Energy Agreement (which is endorsed by the NWEA and environmental organisations, among others) sets out the preference for an approach to retain and reinforce acceptance. To that end, in line with the Energy Agreement, this Code of Conduct regarding onshore wind energy acceptance and participation ("the code of conduct") was drawn up. The code of conduct commits the NWEA members to a number of basic principles concerning acceptance and participation, in the course of which the signator es feel it is vital that the authorities are also responsible for declaring this code of conduct applicable to all project developments regarding onshore wind energy. In brief, the code of conduct regulates how the wind energy sector enters into a dialogue with the community in a wind energy project. The signatory nature and environmental organisations are prepared to contribute to reinforcing acceptance for wind

energy projects, working in accordance with the code of conduct during the development stages.

Subject to situations that involve significant effects within the framework of the Nature Conservation Act, as evidenced by the relevant assessment.

The first version of the code of conduct was prepared by the NWEA in June 2014, following consultation with the Ministry for Economic Affairs, the Ministry for Infrastructure and the Environment, the Association of Provincial Authorities (IPO), the nature and environmental organisations, the Netherlands Association for Local Residents Wind Energy (NLVOW), the Association of Netherlands Municipalities (VNG) and other social groups. After one year, the parties will evaluate the code of conduct and amend it, if necessary; in addition, they will exchange their experiences with the code of conduct every six months. During the evaluation, particular attention is paid to the question whether the resources made available through the code of conduct are enough to contribute to increasing social acceptance of wind energy projects. The parties undertake to provide each other with transparent information in that respect.

NWEA members comply with the code of conduct and communicate about it in their organisations.

Compliance with the code of conduct is the personal responsibility of the members. If NWEA members demonstrably fail to comply with the code of conduct, the executive board will remind the member in question of his responsibilities. In addition, the NWEA explicitly asks other parties, such as authorities and civilians, to make initiators aware of the code of conduct and to use the code of conduct as a starting point for project development. The nature and environmental organisations that co-signed the code of conduct are prepared to contribute to the realisation of social acceptance of wind energy projects. They have a commitment obligation to avoid proceedings and within that context they are open to consultation about mitigating and compensatory measures that involve nature and environmental interests and they will remind the other nature and environmental organisations of the need to speed up the realisation of the wind energy goals.

0. Definitions and terminology

Community: A specified group of stakeholders surrounding a specific wind energy project.

Stakeholder: A person who lives in the vicinity of a (potential) wind energy project or

organisations that have a demonstrable interest in the surrounding

community of a (potential) wind energy project.

Acceptance: This means that a (sufficiently) large group of the stakeholders do not oppose the measures or decision.

Initiator: A party from the wind energy sector that has taken the initiative to develop a energy project - at the invitation of the competent authorities or otherwise.

Participation: Involving and entering into a dialogue with stakeholders during the development, construction and operation of a wind energy project.

Participation plan: The plan that indicates for the various project phases (development, construction and operation) who has an interest and how, and how these various parties are involved in the project.

I. General

I.1. Customisation

Each wind energy project is unique. The location, project and circumstances differ for each project.

With every project, the parties look at the best way to safeguard the interests of the community surrounding of a wind energy project.

I.2. Coordination

The preparation and realisation of wind energy projects is a complex process that involves a lot of different parties. In order to properly manage this process, it is important that the parties involved make solid agreements in advance: who is responsible for what and who can the community turn to.

In consultation with the competent authorities and stakeholders, the initiator draws up a participation plan (see under II). Within the project, the initiator appoints a contact person for the community.

I.3. Scope

The development process of a wind energy project has various phases. The code of conduct and the themes below relate to the project as a whole and to all corresponding phases. In concrete terms, they are the development phase, the construction phase and the

operational phase. This code of conduct applies to all new and current projects for which no permit application has been made yet.

Current projects for which binding agreements about acceptance and participation have already been made with the competent authorities and/or the community are not included in this; by virtue of the code of conduct, previously completed phases do not have to be repeated.

I.4. Financial contribution

The initiators provide financial resources for (the non-statutory reinforcement of) acceptance and participation; the outcome of the dialogue with the community as translated into a participation plan is also taken into account for the expenditure. As an indication of the financial scope for this contribution, the wind energy sector applies a target amount of 0.40 to 0.50 Euro/MWh.

I.5. Preventing accumulation

The different financial contributions of the initiator to the community will be reviewed in their entirety in order to prevent an accumulation of such contributions, as currently formulated in the Energy Agreement. This code of conduct describes the non-statutory participation in its totality and (parts of it) will lapse when authorities stipulate their own additional non-statutory participation or compensation requirements, such as extra compulsory contributions to landscape funds or forms of financial participation imposed by the authorities. The starting point is that alternatives that confirm the relationship between project and the community are preferred.

For a list of (non-statutory) options in the field of financial participation, see II. 3.

I. 6. Best practices

Examples of participation processes and types presented are collected on the NWEA website by the initiators in order to gain more and share experience about the subject.

II. Participation

II.1. Participation plan

II.1.1. Basic principles of participation plan

In consultation with the competent authorities, the initiators draw up a participation plan prior to the spatial planning process of the project. This is done in consultation with the stakeholders (see II.1.2).

The participation plan specifies the stakeholders and their involvement on the basis of a so-called participation ladder that differentiates between informing, consulting, ad-hoc involvement in specific themes, structural involvement, consensus, co-owner.

Agreements made in the participation plan can be adopted unconditionally if - at whatever time - ownership of the wind energy projects is transferred to a party other than the one that signed the participation plan.

II.1.2 Contribution from community to participation plan

The participation plan is drawn up in consultation with stakeholders such as local residents, provincial environmental federations, local nature groups or others. This will lead to consultation about how every party views its own involvement in the development process and operational phase. These conversations will provide input for choices with regard to participation level, commitment and (financial) participation. The scope and contents of the participation plan depend on the project and outcome of the consultations with local residents and other stakeholders.

II.2. Process participation

The initiator is - often in line with the steps taken by the authorities during the spatial planning process - responsible for involving the community in the entire project process (development, construction and operation). This happens as early as possible in dialogue with the community; the design of a project starts with participation of the community during the planning process. The participation plan describes how this process participation is structured. Examples are:

. Consultative talks with local residents, neighbourhood associations, nature and landscape organisations and village councils;

. Setting up a focus group or advisory group of stakeholders;

. Organising and facilitating discussions and informative evenings/days for the region;

. Organising and setting up design workshops for interested parties;

. At what times is the community involved and at what frequency;

. In consultation with the licensing authority, the initiator clearly indicates in the participation plan what the options are for adjustments to the planning process, for instance: at what stage of the process is there still room to discuss a different positioning of turbines compared to the developer's original plan;

. Setting up a solid and transparent system to process questions and complaints, both during construction and operation.

The formal spatial procedure forms part of this project process. The competent authorities are primarily responsible for this (see also III), but the initiator plays an active role in terms

of providing information about the process and about important consultation and decision moments.

During the dialogue with the community it concerns the analysis and internalising (potential) wishes, the use of knowledge and discussing queries (such as views, noise, shadows and ecological effects).

Other (possibly financial) consequences for local residents can also be discussed and analysed; the basic principles are the statutory regulations and the types of compensation set out therein.

The nature and environmental organisations involved in this code of conduct are, if required, prepared to structure the dialogue with stakeholders and to defend the planning process at stakeholders. These efforts are also included in the participation plan, where possible.

When the dialogue has been completed, the developer provides stakeholders with feedback about the progress of the procedure, what the final participation plan will look like and what has been done with the analysed wishes.

II.3. Project participation

Initiators in the sector have developed various forms of participation, aimed at different target groups. In the participation plan, the initiator and the community make agreements about the type of participation for a specific project. Examples include:

• Co-ownership: individual civilians and/or local residents can take part financially in a wind energy farm, risk and consultation included. This can be done on the basis of a wind energy association or cooperative, but also by constructing a turbine that is owned by the local community (the so-called Polder Turbine).

• Financial participation: financial participation is the (risk-bearing) participation in the wind energy project, with shares, bonds of other financial gain, for instance. Initiators can offer the option to take part financially. The appropriate method will be announced in good time. The type of financial participation differs for each project. The target group and its wishes differ for each project and customisation is provided.

• Local fund: one of the agreements can be a contribution to a local fund. An independent board (with representatives of the local residents, local/provincial authorities, environmental federation and operator, for instance) is appointed to administer such a fund. This board will ensure that the fund is spent on the immediate environment of the project. This fund can also be used for non-statutory measures or for measures on top of the permit, for downtime or readjustment of the wind turbines when this is an explicit wish of the community.

• Local residents arrangement: a local arrangement aimed at local residents living within a certain radius of the wind turbines. It may involve the supply of green energy at a discount, a discount on the energy bill or other (financial) compensation.

• ‘Create work with work’: finding out for each location whether the arrival of a wind energy farm can create jobs in the area. Examples are hiring local businesses, where possible, and purchasing their products and services, offering traineeships or building a visitors' centre.

Preferably, the parties will be looking for participation options with the greatest possible social return. Which set of participation options meets those conditions best with the means available will be decided in consultation with the group of stakeholders. As such, the participation plan contains a decision-making procedure about this.

III. Communication

III.0. The importance of communication

Good - and particularly - open communication with the parties involved and the community at all stages of the planning process is vital. The initiator, authorities and nature and environmental organisations each have their own roles in this process. These roles are described below.

III.1. General information

General information about wind energy is made available by the central government, the NWEA and the nature and environmental organisations. Examples are (research) information about noise, shadow, health, the values of homes, wind turbine technology, landscape and nature. The initiators and the competent authorities use this information to inform local residents.

III.2. Policy communication

The competent authorities are responsible for the communication about their sustainable energy policy, the accountability with regard to the location and role of wind energy in that policy (benefit and need) and the explanation and acceptance for the choice of location for wind energy. If requested, the environmental organisations will support the projects in communication about the benefit and need of renewable energy and wind energy.

III.3. Process communication

The competent authorities are primarily responsible for communication with regard to spatial planning procedures. This communication takes place in consultation with the initiator.

III.4. Project communication

The initiator is primarily responsible for project-related communication. Initiators proactively communicate with stakeholders about project progress, decision moments and choices made. When deemed beneficial by the parties involved, the initiator can also outsource (some of) this communication - in terms of benefit and use of wind energy and the social benefit of the project, for instance - to parties that are slightly more distanced from the project. Nature and environmental organisations can contribute to this communication on the basis of the dialogue with stakeholders, if necessary.

Initiators notify the competent authorities about the optimal implementation of their objectives with regard to wind energy and providing information about the wind energy park and wind energy in general for the benefit of process communication.

The above text can be found here: http://ponderaconsult.com/uk/wp-content/uploads/2013/06/dutch-code-of-conduct-on-acceptance-and-participation-onshore-windenergy-3-sept.-2014.pdf

Appendix B:

ACM The Netherlands Authority for Consumers and Markets

The Netherlands Authority for Consumers and Markets (ACM) ensures fair competition between businesses, and protects consumer interests. https://www.acm.nl/en

The Netherlands Authority for Consumers and Markets (ACM) creates opportunities and options for businesses and consumers. We create opportunities by fighting against unfair competition, and by making it easier for new entrants to enter markets. Having more providers means more competition. Competition leads to innovation: new products, services and businesses. Consumers will then have more to choose from. But we also want consumers to be able to make well-informed decisions. Businesses should thus inform consumers properly about their offerings. And finally, consumers should be informed of what their rights are. We take action against businesses that prevent consumers and other businesses from taking advantage of their opportunities and options.

Legislation and regulations, and powers of the Netherlands Authority for Consumers and Markets

On the CM website (https://www.acm.nl/en/about-acm/mission-vision-strategy/legislation) is an overview of the regulations and pieces of legislation that govern the tasks and powers of the Netherlands Authority for Consumers and Markets (ACM). ACM is an autonomous administrative authority (under Dutch law) and is part of the Dutch central government, but is officially not part of any ministry. When drawing up and publishing decisions, ACM follows the rules of the Dutch General Administrative Law Act (Algemene wet bestuursrecht, Awb). The Establishment Act of the Netherlands Authority for Consumers and Markets was amended on August 1, 2014. As a result of this amendment, the powers of the three regulators that merged into ACM have been streamlined.

Also on this website is a list of Dutch electricity licencees (in Dutch) https://www.acm.nl/nl/onderwerpen/energie/energiebedrijven/vergunningen/vergunninghouders-elektriciteit or here: https://www.consuwijzer.nl/energiewijzer https://www.energieportal.nl/english/energy-suppliers

12. Appendix C: Valuable Internet links

Policy Document on the North Sea 2016-2021

nz-eng-printversie.pdf

Permission (in Dutch)

https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/duurzame-energie-opwekken/windenergie-op-land/wetten-en-regels/wabo-omgevingsvergunning

Gridcodes:

https://www.tennet.eu/electricity-market/german-customers/grid-customers/grid-connection-regulations/

https://www.tennet.eu/fileadmin/user_upload/The_Electricity_Market/German_Market/Grid_customers/tennet-NAR2015eng.pdf

https://www.tennet.eu/fileadmin/user_upload/The_Electricity_Market/German_Market/Grid_customers/tennet_tso_gmbh-asn-eng_21122012_final_1_.pdf

Links to laws/regulation

Wet milieubeheer (Environmental Act)

Chapters in the Environmental Act with special attention to chapter 7 on Environmental Assessment. (http://wetten.overheid.nl/BWBR0003245/volledig/geldigheidsdatum_29-08-2011)

https://content.next.westlaw.com/5-503-4243?transitionType=Default&contextData=(sc.Default)&__lrTS=20170709202524598&firstPage=true&bhcp=1

Evironmental impact assesment

http://www.eia.nl/en/environmental-assessment/eia-per-country/netherlands+(the)

Energy agreement:

2014-implementation-energy-agreement.pdf

Energy-agreement-sustainable-growth-summary.pdf

Windturbine manufacturers in the Netherlands:

https://www.lagerwey.com/

http://seawindtechnology.com/

http://www.xemc-darwind.com/Wind-turbines

http://2benergy.com/

medium

http://www.ewtdirectwind.com/

https://windenergysolutions.nl/

small

http://www.fortiswindenergy.com/

https://windchallenge.com/

Scaling up Variable Renewable Power: The Role of Grid Codes

http://www.irena.org/menu/index.aspx?mnu=Subcat&PriMenuID=36&CatID=141&SubcatID=1723

Windchart of the Netherlands

The chart can be downloaded from the Internet:
https://www.rvo.nl/sites/default/files/2015/01/Windkaartvan%20Nederland%20%282014%29.pdf

http://www.orbit.dtu.dk/files/112135732/European_Wind_Atlas.pdf

European grid:

https://www.entsoe.eu/map/Pages/no-webgl.html

ACM The Netherlands Authority for Consumers and Markets

https://www.acm.nl/en

The European Commission (general)

The European Commission (information for consumers)

Links to other competition authorities in Europe

http://ec.europa.eu/competition/publications/eca/

http://www.internationalcompetitionnetwork.org/

https://www.acm.nl/nl/onderwerpen/energie/energiebedrijven/vergunningen/vergunninghouders-elektriciteit

frontier-economics-2015-scenarios-for-the-dutch-electricity-supply-system.pdf

frontier-economics-2015-scenarios-for-the-dutch-electricity-supply-system.pdf

gx-er-market-reform-netherlands.pdf

HB_Handleiding_Boekje_Digitaal_DEF a.pdf (in Dutch)

Environmental Impact assessment (EIA)

World Wind Energy Association

World Wind Energy Association e.V.

Charles-de-Gaulle-Str. 5
53113 Bonn
Germany

Tel: +49-228-36940-80
Fax: +49-228-36940-84

wwindea.org
community.wind
small-wind.org