

# Offshore wind in The Netherlands

Webinar Thursday April 20, 2023









## Today's topics

- About NWEA
- A transition to a carbon free energy system
- Offshore wind energy in the Netherlands
- Challenges and positive developments
- Final thoughts
- Questions

# NWEA

## mission and vision

### MEMBERS

More than 300 members have joined the Netherlands Wind Energy Association (NWEA) in the last 15 years, covering the whole supply chain

### MISSION

Fostering the development of windenergy in the Netherlands as one of the drivers of a sustainable and decarbonised energy system

### VISION

Threefold target for 2030:

- \* 70 per cent of our electricity supply should come from solar or wind sources
- \* substantial increase in the share of electrification in the energy mix
- \* supporting a strong export position for the Dutch wind sector

### STRATEGY

Advocacy activities aimed at policy makers, knowledge institutes and NGO's, as well as European counterparts (together with WindEurope)





# Outlook Energy System 2050

The energy system needs to be carbon free in 2040 to compensate for other sources of carbon. Electricity needs to be carbon free in 2035.

Energy transition recognised as a joint effort, not only as a technical challenge, it's also about education, health, (living) environment, social cohesion, and security.

Different perspectives: not only security of supply and affordability, but also robustness, just and sustainable.

Offshore wind and solar energy main sources of primary demand.

Green hydrogen will also play an important, but limited role.

Demand reduction also a major task.

<https://www.etes2050.nl>

[https://www.tweedekamer.nl/kamerstukken/brieven\\_regering/detail?id=2023Z06636&did=2023D15638](https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2023Z06636&did=2023D15638)



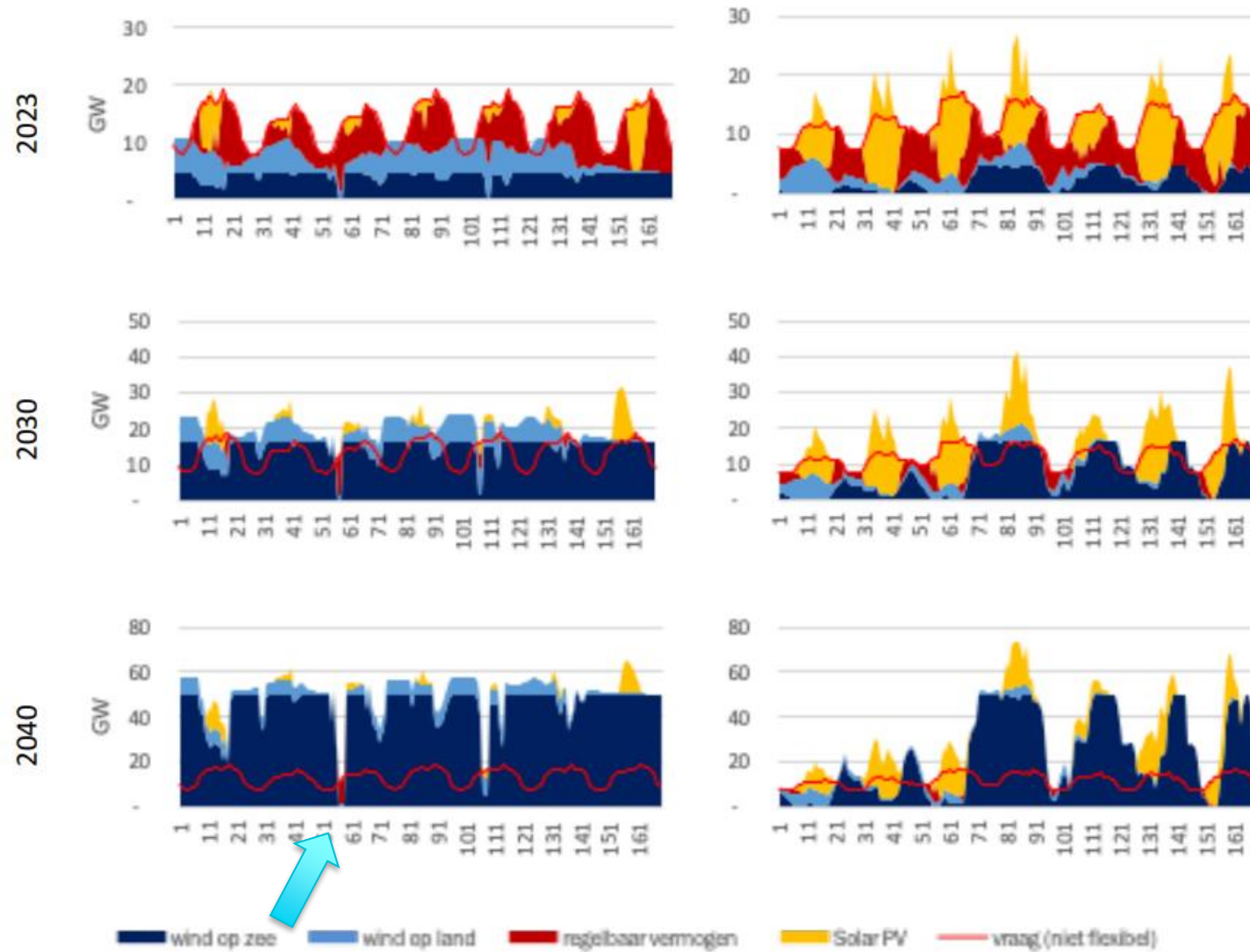
**Energie door perspectief:  
rechtvaardig, robuust en  
duurzaam naar 2050**

Expertteam Energiesysteem 2050

April 2023



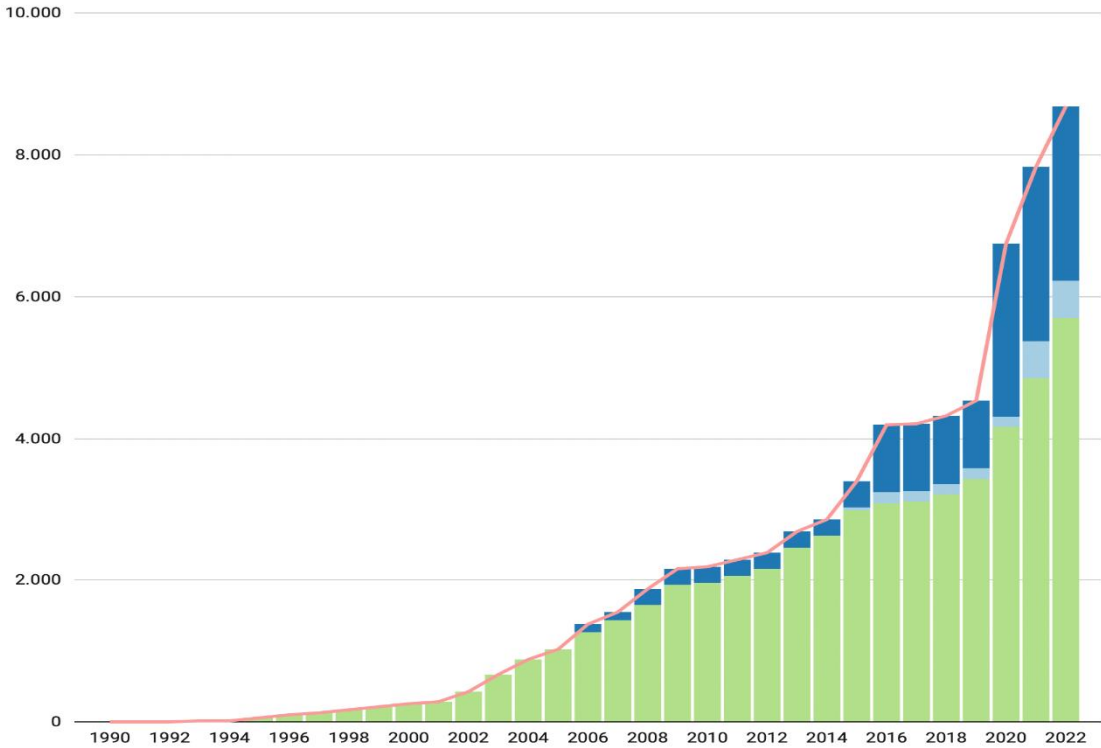
## One week production profile in winter and summer



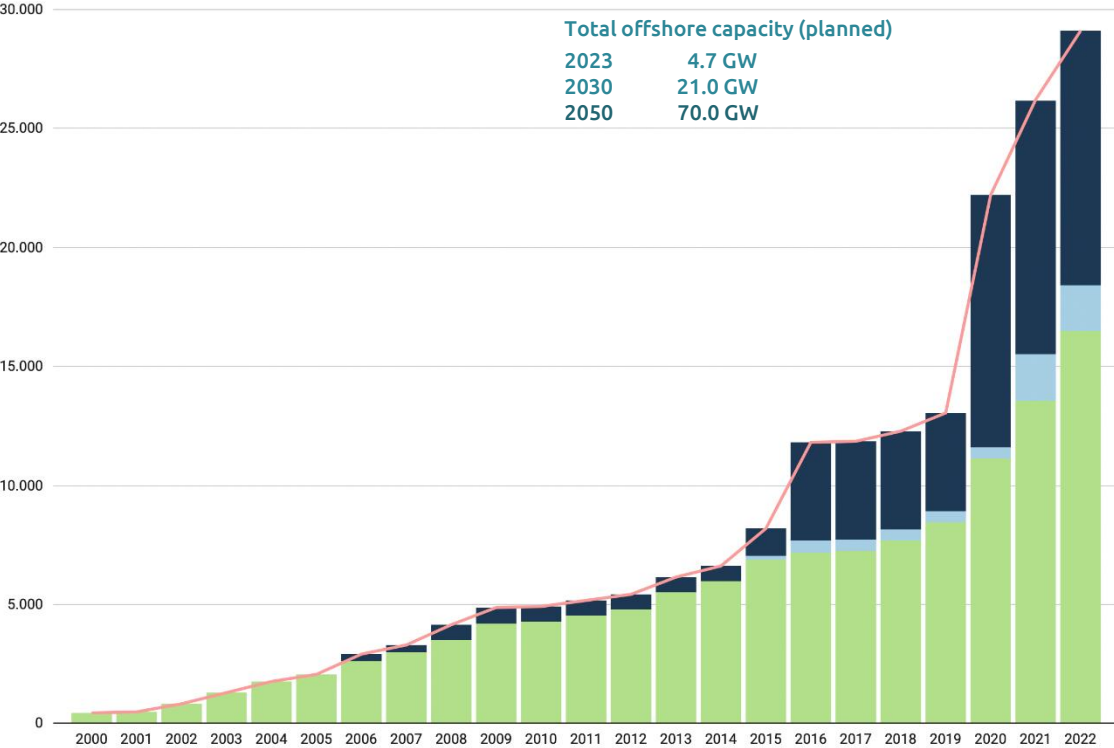
Figuur 3.2. Illustratie van ontwikkeling van elektriciteitsproductie uit wind op zee, wind op land en zon-PV in vergelijking tot de vraag (niet flexibel) en regelbaar vermogen als invulling van residuele vraag, op basis van vooruitzichten voor 2023, en 2030 en de richtdoelen wind op zee voor 2040<sup>28</sup>

# Installed wind capacity in the Netherlands

Growth of the wind energy sector in the Netherlands 1990-2022



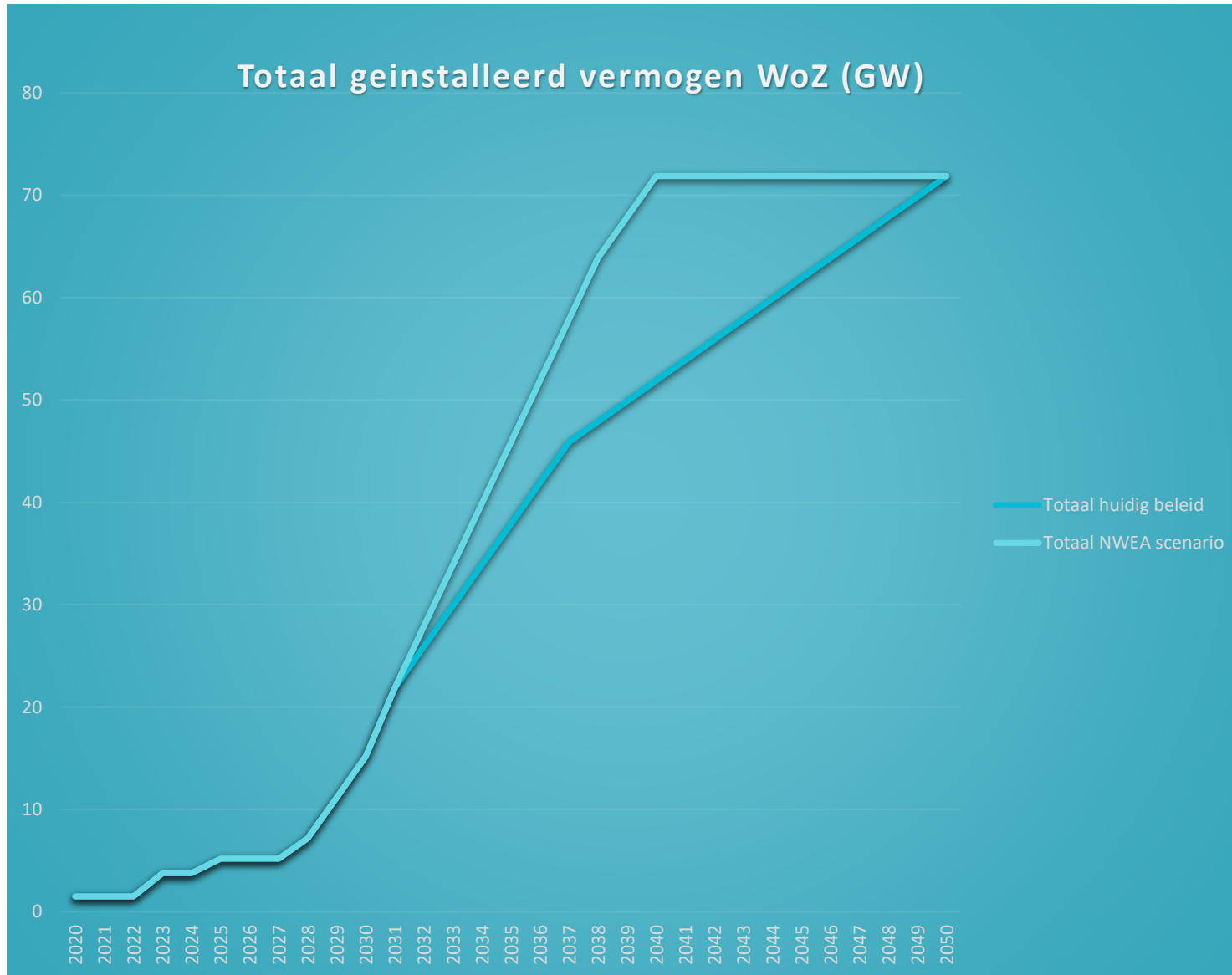
Electricity from wind approached 30 TWh in 2022



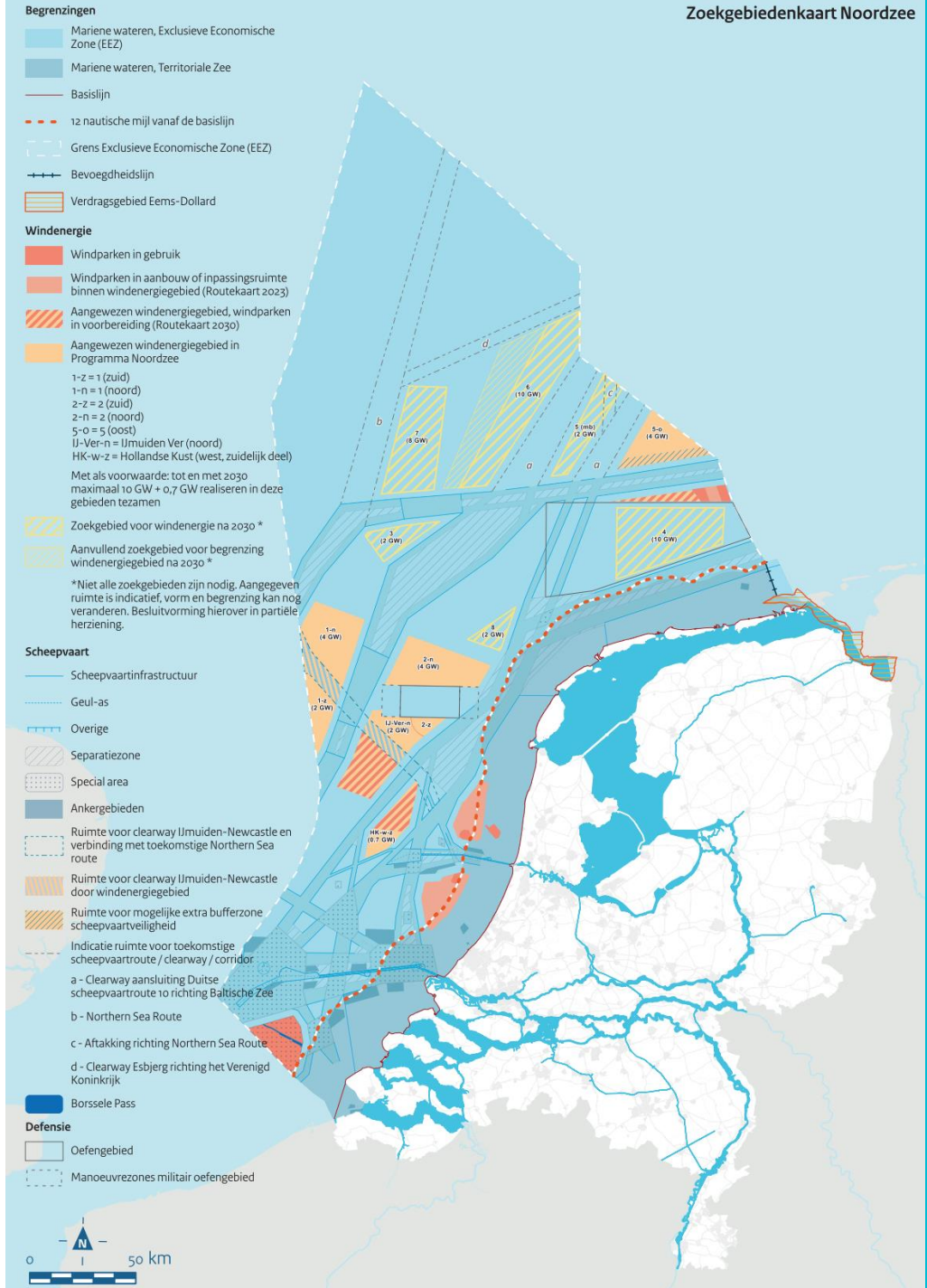
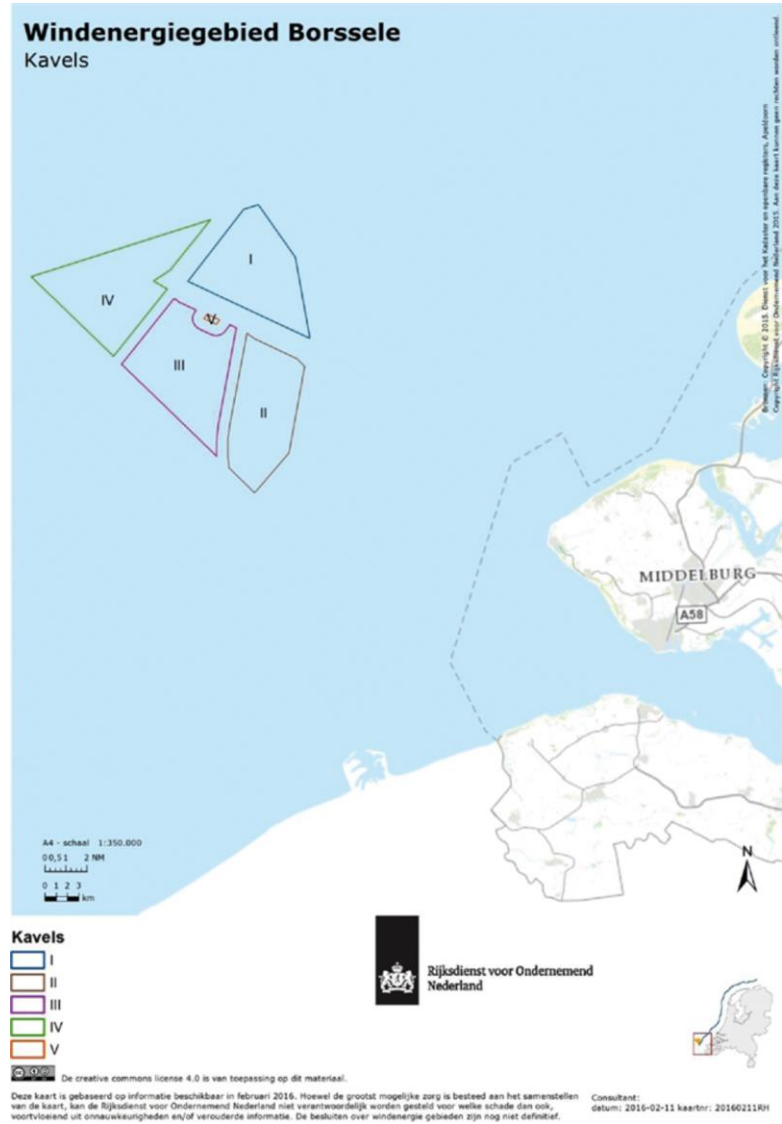
Onshore ■ Lake ■ Offshore ■ Total ■



## Offshore energy goals for 2040 / 2050





# Marine Space Planning (MSP)



# New Offshore Wind Energy Areas

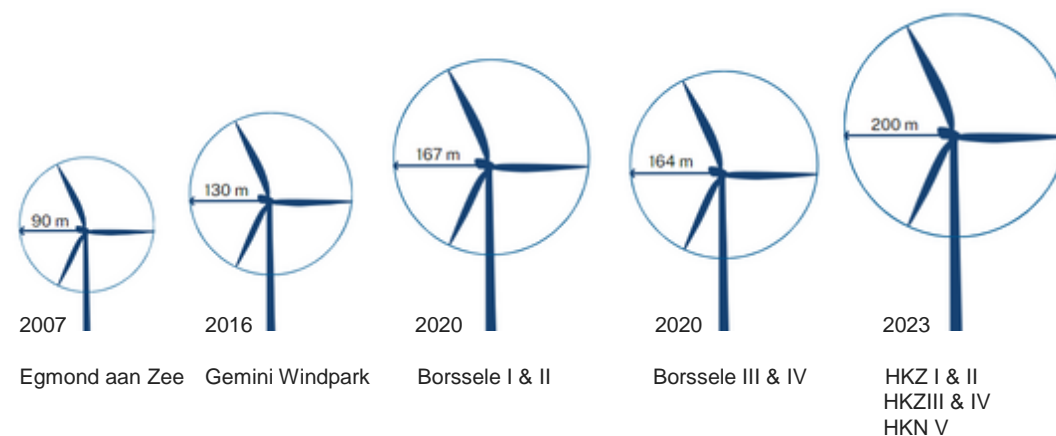


Legenda

-  Previously allocated wind energy areas
-  New wind energy areas





















## Offshore wind in the Netherlands: achievements




- Reduced the pre-bid costs and risk levels for offshore wind developers by developing a one-stop-shop approach.
- Commissioned the world's first zero subsidy bid offshore wind farm (Hollandse Kust (zuid) I & II)
- Integrated ecology-friendly measures in the offshore grid design as a basic condition - Nature Inclusive Design (HKW VI)
- Inclusion of Energy System Integration factors in tender evaluation (HKW VII)
- Reduced the cost of connections and reduced the development time (from 7-10 years to 3-4 years) for offshore wind farms





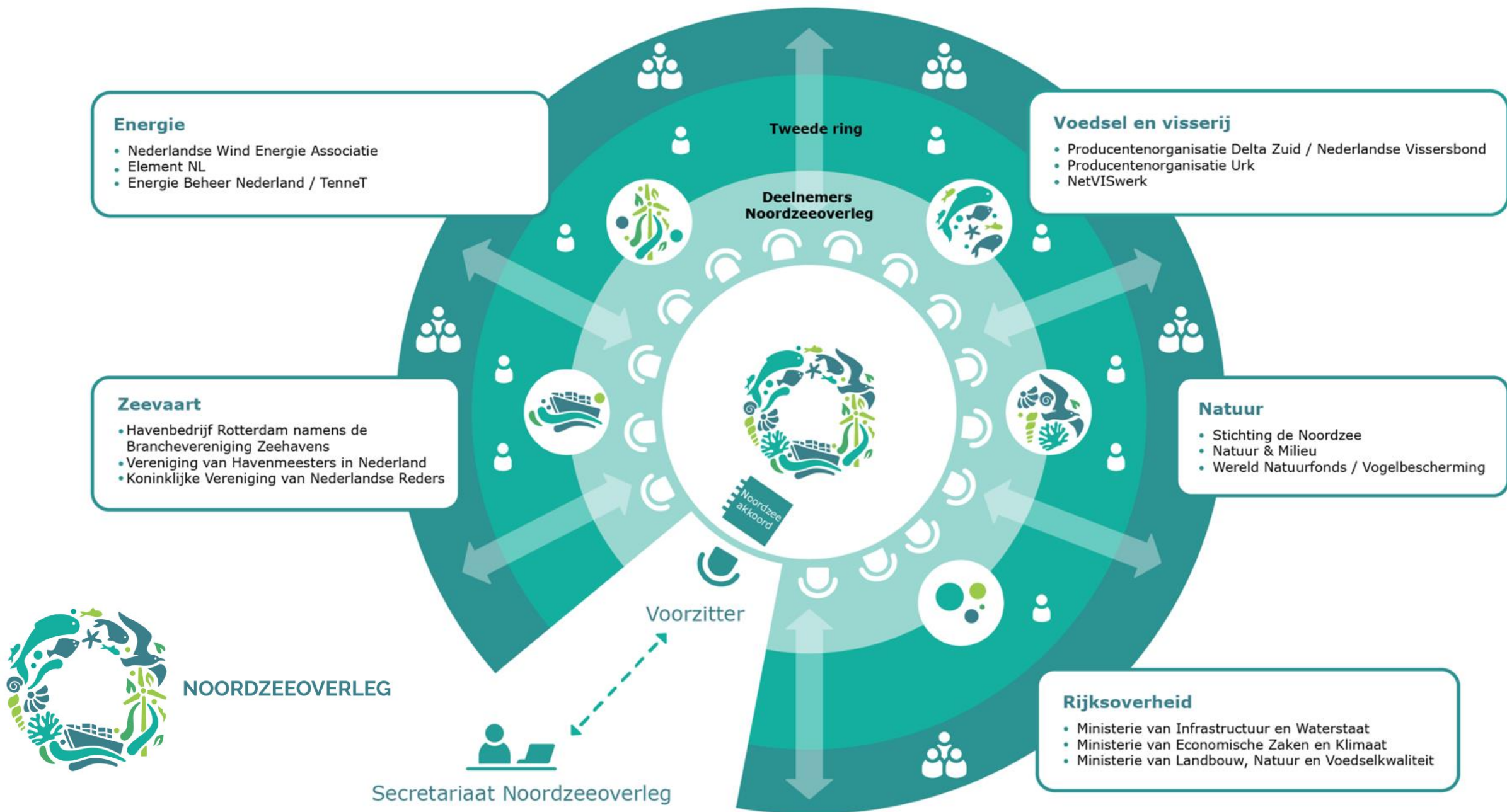
## Offshore Wind Energy Roadmap 2030

Omvang (GW)	Windenergiegebied, kavel(s)	Tender kavels	(Verwachte) ingebruikname windpark	Status
0,75	Borssele, kavels I en II	Gerealiseerd in 2016	2020	
0,75	Borssele, kavels III, IV en V	Gerealiseerd in 2016	2020	
0,76	Hollandse Kust (zuid), kavels I en II	Gerealiseerd in 2017	(2022-2023)	
0,76	Hollandse Kust (zuid), kavels III en IV	Gerealiseerd in 2019	(2022-2023)	
0,76	Hollandse Kust (noord), kavel V	Gerealiseerd in 2020	(2023)	
ca. 0,7	Hollandse Kust (west), kavel VI	Gerealiseerd in 2022	(2025-2026)	
ca. 0,7	Hollandse Kust (west), kavel VII		(2025- 2026)	
ca. 1,0	IJmuiden Ver, kavel III	Vierde kwartaal 2023	(2028)	
ca. 1,0	IJmuiden Ver, kavel IV		(2028)	
ca. 1,0	IJmuiden Ver, kavel I		(2029)	
ca. 1,0	IJmuiden Ver, kavel II		(2029)	
ca. 1,0	IJmuiden Ver (noord), kavel V	Tweede kwartaal 2025	(2029)	
ca. 1,0	IJmuiden Ver (noord), kavel VI		(2029)	
ca. 2,0	Nederwiek (zuid), kavel I		(2030)	
ca. 2,0	Nederwiek (noord), kavel II	2026*	(2030)	
ca. 2,0	Nederwiek (noord), kavel III		(2031)	
ca. 0,7	Hollandse Kust (west), kavel VIII	2026/2027**	N.t.b.**	
ca. 0,7	Ten noorden van de Waddeneilanden, kavel I	2026/2027*	(2031)	
ca. 2,0	Doordewind, kavel I	2027*	(2031)	
ca. 2,0	Doordewind, kavel II	2027*	(2031)	

Gerealiseerd:  In aanbouw:  Gepland: 

\* De tenderdata voor deze windenergiegebieden zijn indicatief. Naar verwachting zal in 2024 over de planning een definitief besluit worden genomen, op basis van de resultaten van het onderzoeksprogramma Programma Aansluiting Wind op Zee – Eemshaven (PAWOZ - Eemshaven) voor *Ten noorden van de Waddeneilanden* en *Doordewind*, en het onderzoek naar aanlanding voor kavel III van *Nederwiek*.

\*\* De tenderdatum voor dit windenergiegebied is indicatief. In afwachting van duidelijkheid over de in ontwikkeling zijnde plannen van Tata Steel voor verduurzaming van de energievoorziening en het productieproces zal hierover nadere besluitvorming plaatsvinden. De besluitvorming over de aanlanding van het betreffende deel van het net op zee zal hiermee samenhangen.



# The Economist


Olaf Scholz's inner circle

Why the Trump show matters

Which degrees are worth it?

America's gender-medicine mistakes

APRIL 8TH-14TH 2023



**HUG  
PYLONS  
NOT  
TREES**  
THE GROWTH  
ENVIRONMENTALISM  
NEEDS

## Some challenges...

- **Business case impediments**

Reduction of 47% in 2022 (yoy) in orders for wind turbines as a result of discussions on possible caps on incomes from windfarms, price rise of 40% of wind turbines due to rising costs of raw **materials**.

- **Regulatory environment**

Project can take many years to materialise due to lengthy procedures and legal actions. (Possibly, the proposal to create Sustainable Acceleration Areas under RED 3 might help)

- **Ecology**

Some species are not in a good state. Part of the preparing a permit is checking the impact on ecology and species in bad state. More action is needed to improve the **ecology** at the North Sea (conservation, compensation, etc)

- **Space**

The North Sea is the most crowded sea in the world. Many needs require **space**; at first hand it might look very occupied.

- **Network capacity**

Congestion issues: fluctuating energy supply as opposed to base load demand. Planning landing stations. Balancing electrons and molecules.

- **Ports capacity**

Acceleration of offshore installation activities can leave ports (over) stretched. Also later on, extended capacity is needed for O&M.

- **Installation capacity**

Acceleration of offshore installation activities can also create a shortage of the necessary installation and cable-laying vessels. Increase in wind turbine size could hamper a healthy return on investment of vessels: discussion on standardisation.

- **Human resources**

The fast expansion of the offshore wind energy sector might meet with acute shortages in certified **personnel**.



# ...and positive developments

- Signs of recognition of the critical role of ports

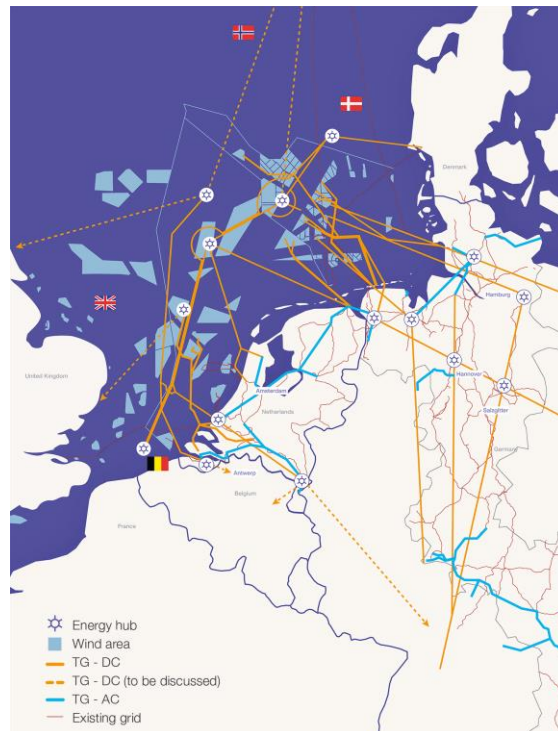
Inclusion of offshore wind port services in the TEN-T revision, in order to enable them to deliver on the Green Deal. Positive advice from the TRANS working group in the EP.

European ports working together in WindEurope's Ports platform.



- Target Grid announced

Tennet's investment plans: towards an integrated cross-border on- and offshore HV electricity network, crucial for a climate neutral energy system by 2045.



- International cooperation further picking up

Second North Sea Summit coming up, a follow-up of the Esbjerg summit in 2022: 5 more countries will join Denmark, Germany, The Netherlands, and Belgium: Norway, France, the UK, Luxembourg, and Ireland.



- Investment announcements in the Netherlands

The Port of Rotterdam plans electrolysis capacity of 2.5 GW, part of the national ambition to reach 4 GW by 2030

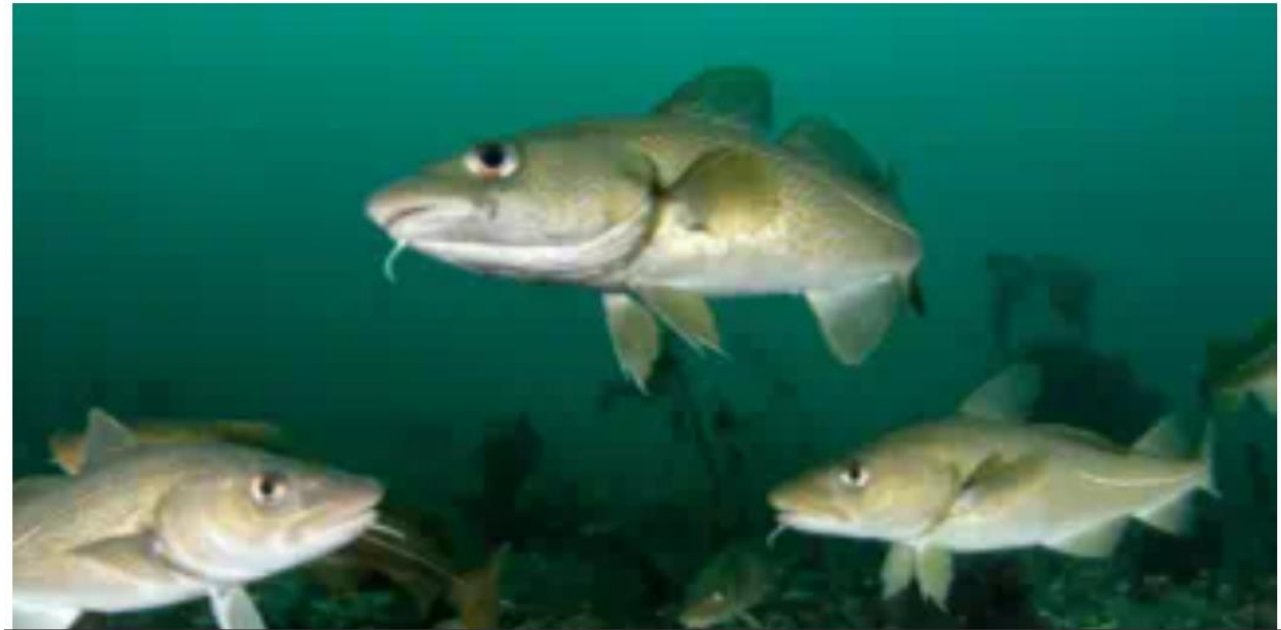
Giga storage project announced in Groningen Seaports.

# Kabeljauwen dol op kunstrif in windpark

18.04.2023 12:30

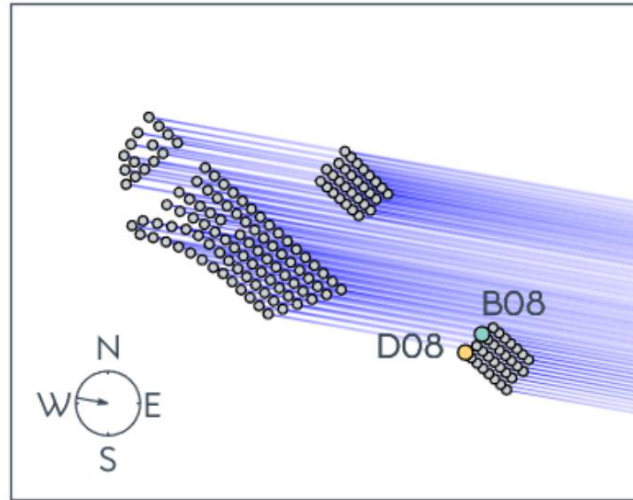


Bij windpark Borssele 1&2 voor de Zeeuwse kust zijn kunstriffen aangelegd om de onderwaternatuur een boost te geven. Uit onderzoek van Wageningen Marine Research (WMR) blijkt dat kabeljauwen vaak te vinden zijn bij de kunstriffen en deze gebruiken als basis. Het gedrag van de kreeften laat een minder eenduidig beeld zien.

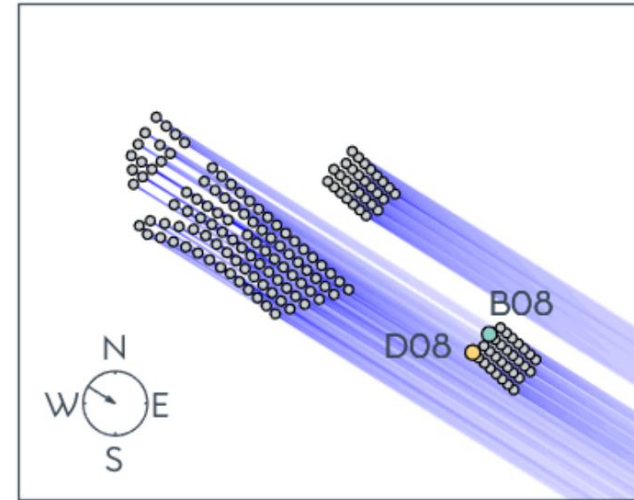


<https://orsted.nl/news-archive/2023/04/kabeljauwen-dol-op-kunstrif-in-windpark>  
<https://www.derijkenoordzee.nl>

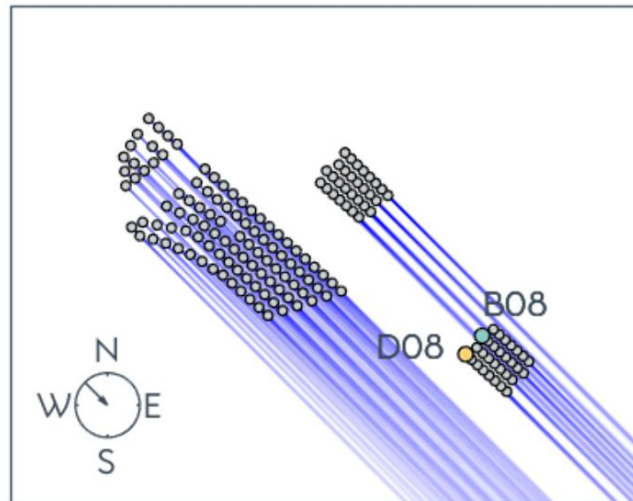
## Wake effects between wind turbines and offshore wind farms



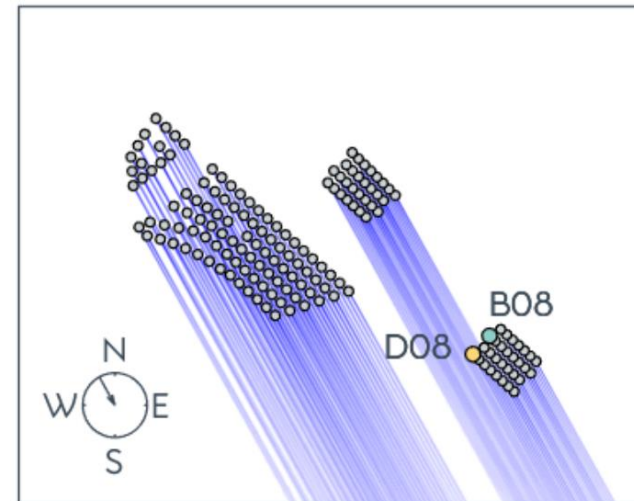
Model @ 280°



Model @ 302°



Model @ 315°



Model @ 331°



Trends & Looking forward; what is coming up?

- **Innovation**
  - **Energy hubs / islands**
  - **Offshore solar**
  - **Offshore hydrogen production**
  - **Battery technology is making huge steps**
  - **Improvements of wind turbines (i.e. Albatrozz)**
- **Society requirements**
  - **Ecology**
  - **Circularity**
  - **international Responsible Business Conduct (IRBC)**
  - **Cybersecurity**

<https://www.imvoconvenanten.nl/en>

<https://www.topsectorenergie.nl/en/tki-wind-op-zee>

## A selection of lesson learned from the perspective of a Dutch Policy Advisor

- Start early (governmental processes and procedures take time)
- Start with the end in mind, create blueprints, stay flexible
- Keep a holistic approach: system integration, ecology, marine security, etc.
- Involve stakeholders through out the process (and reach out as early as possible)
- Search for expertise; there are people that already accomplished what you like to do
- Assign area's (MSP)
- Align continuously with developers
- Go for quality

Thank you for your attention!





