



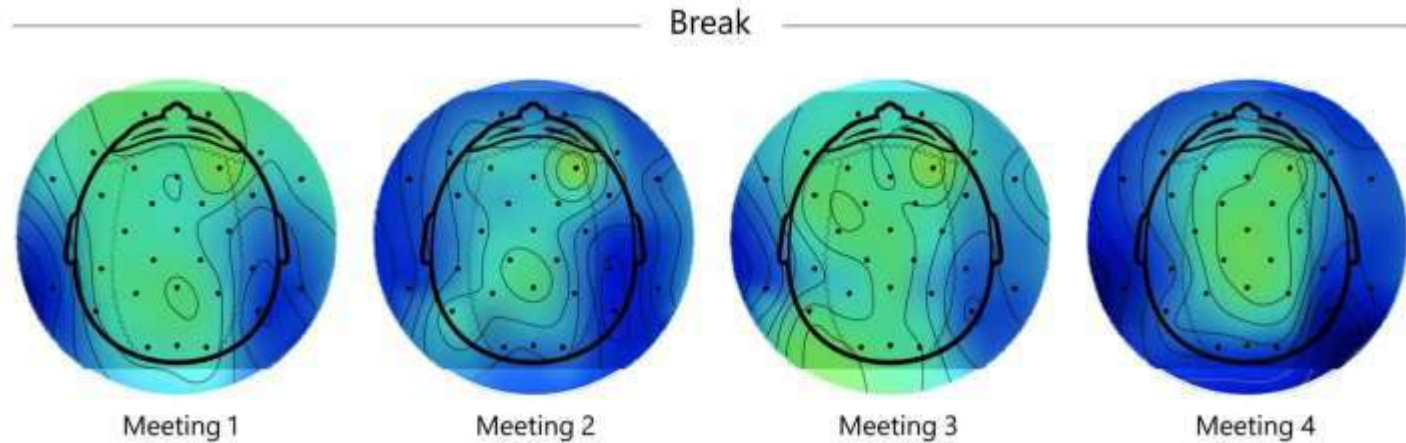
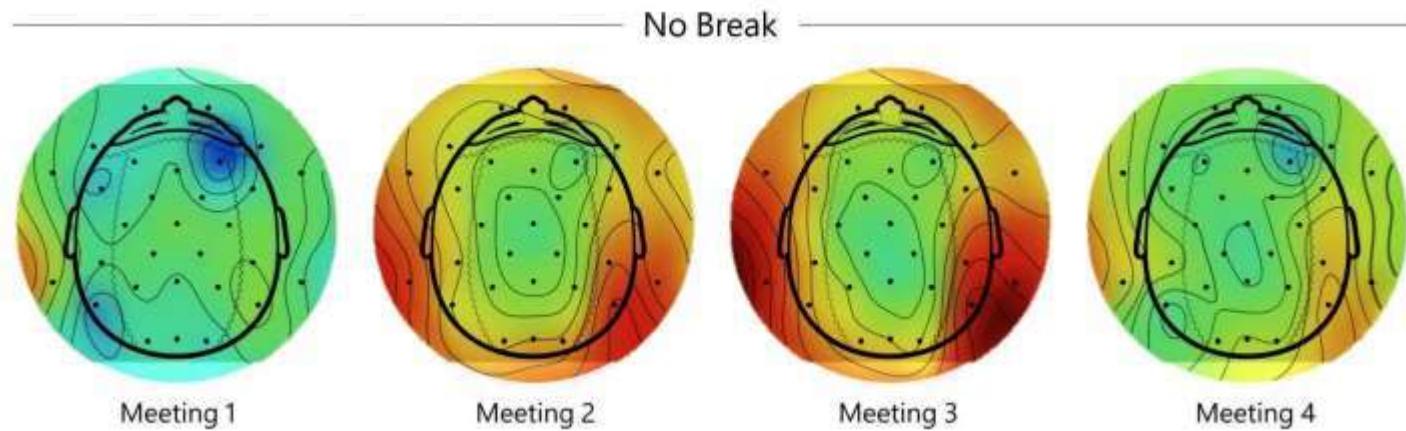
# Nature-inclusive design Offshore Grid

Annemiek Hermans



# A moment for safety

Article in Forbes  
<https://www.forbes.com/sites/brucerogers/2021/04/20/our-brains-need-breaks-from-virtual-meetings/?sh=7391160421e9>



An EEG cap to monitor electrical activity in the brain



Average beta activity across research subjects during four meetings



# TenneT offshore at a glance

2021

Current offshore transmission capacity  
(Germany and the Netherlands)

**8,532 MW**

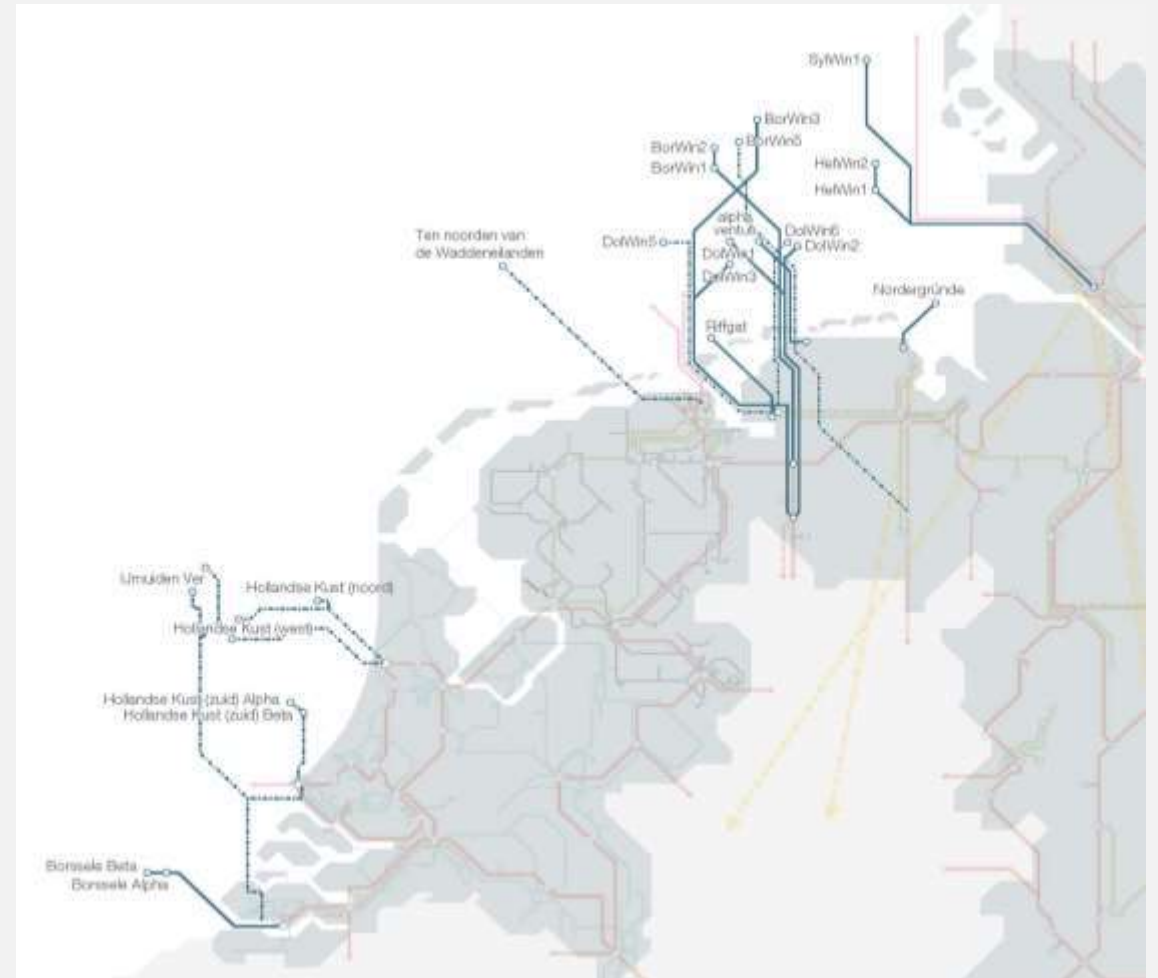
**4**  
interconnectors

**30 offshore**  
grid connections

**24.6 TWh**  
transmission of  
offshore wind energy

total cable length  
~ **3,700 km**

Length up to  
**250 km**  
per connection





# TenneT projects in Germany and The Netherlands



alpha ventus – 62 MW – AC  
Riffgat – 113 MW – AC  
Nordergründe – 111 MW – AC



SylWin1 – 864 MW – DC  
HelWin1 – 576 MW – DC  
HelWin2 – 690 MW – DC



DolWin1 – 800 MW – DC  
DolWin2 – 916 MW – DC  
DolWin3 – 900 MW – DC  
DolWin5 – 900 MW – DC  
DolWin6 – 900 MW – DC



BorWin1 – 400 MW – DC  
BorWin2 – 800 MW – DC  
BorWin3 – 900 MW – DC  
BorWin5 – 900 MW – DC



Borssele Alpha – 700 MW – AC  
Borssele Beta – 700 MW – AC  
Hollandse Kust (zuid) Alpha – 700 MW – AC  
Hollandse Kust (zuid) Beta – 700 MW – AC  
Hollandse Kust (noord) – 700 MW – AC  
Hollandse Kust (west) Alpha – 700 MW – AC  
Hollandse Kust (west) Beta – 700 MW – AC  
Hollandse Kust (wet) Gamma – 700 MW – AC  
Ten noorden v.d.Wadden – 700 MW – AC



# Our Sustainability Strategy

We strive to enhance the energy transition in a sustainable manner, leading the way in maximizing our societal contribution and minimizing our impact as a transmission system operator (“TSO”)

1

We contribute to society, creating maximum impact for **people** working for us and impacted by us



2

We commit to the environment, avoiding, minimizing and compensating our impact on the **planet**



3

We strive for a profit which provides an adequate **return** on capital and an affordable cost of electricity supply for society





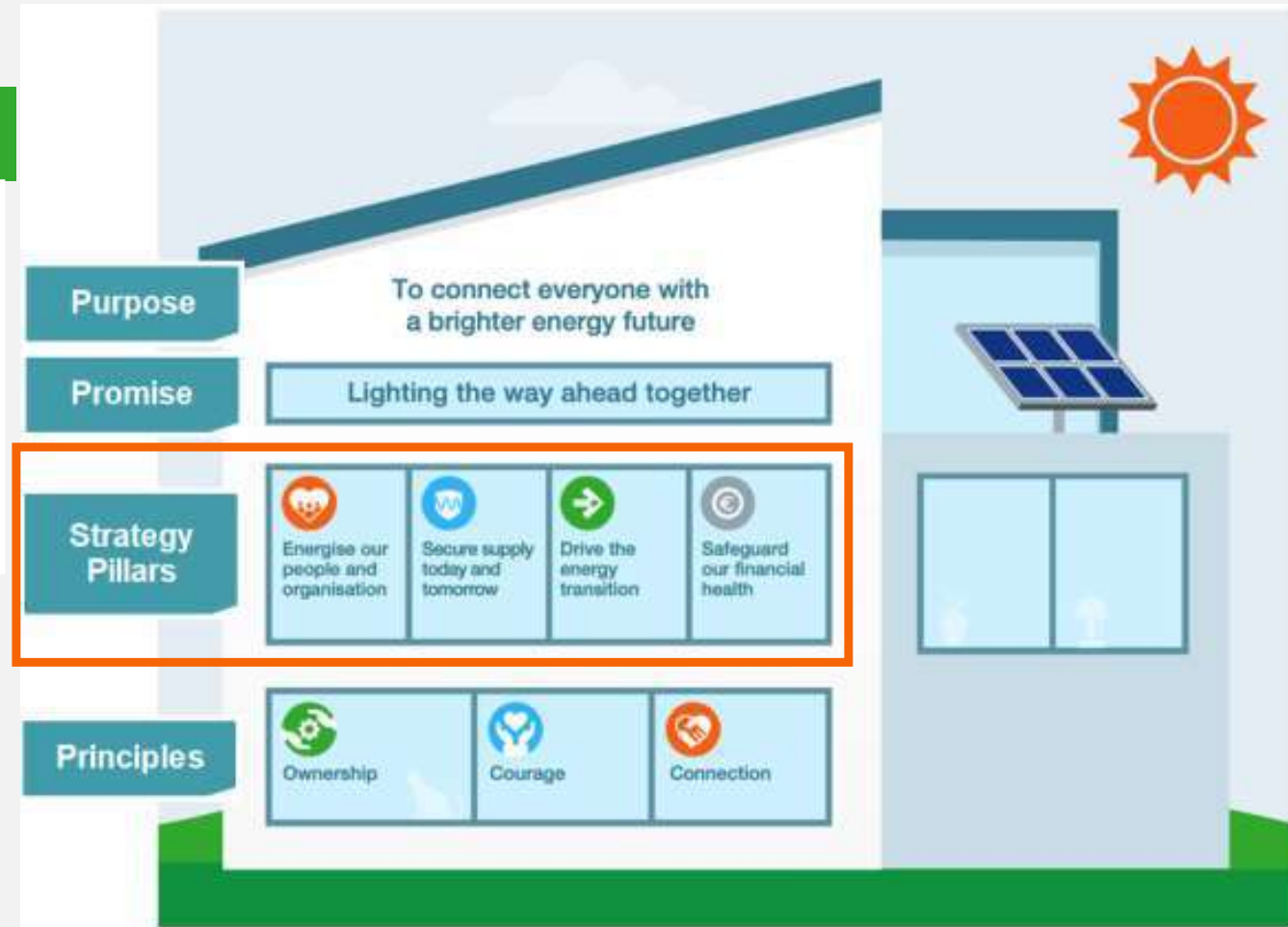
# Our CSR philosophy

Integrate CSR in the organisational DNA

## Drive the Energy Transition

Lead as a green grid operator

- Reduce direct and indirect CO<sub>2</sub>-equivalent emissions
- Procure green electricity to cover grid losses and electrify consumption
- Compensate remaining environmental impact to meet at least governmental goals



# Our promise to our People, Planet & Profit

Our targets are set for our own operations and our work with suppliers & contractors.



Ambition area	Description	Target
Society	We address our stakeholders' concerns by living up to our values, i.e. being responsible, engaged and connected	To be developed
Diversity	We recognize diversity as a key contributor to our success as a high-performing organisation	In 2021 Female inflow 30% Non Dutch and non German inflow 10%
Safety	Safety is our number one priority in every activity that we undertake	In 2023 TRIR < 3.74



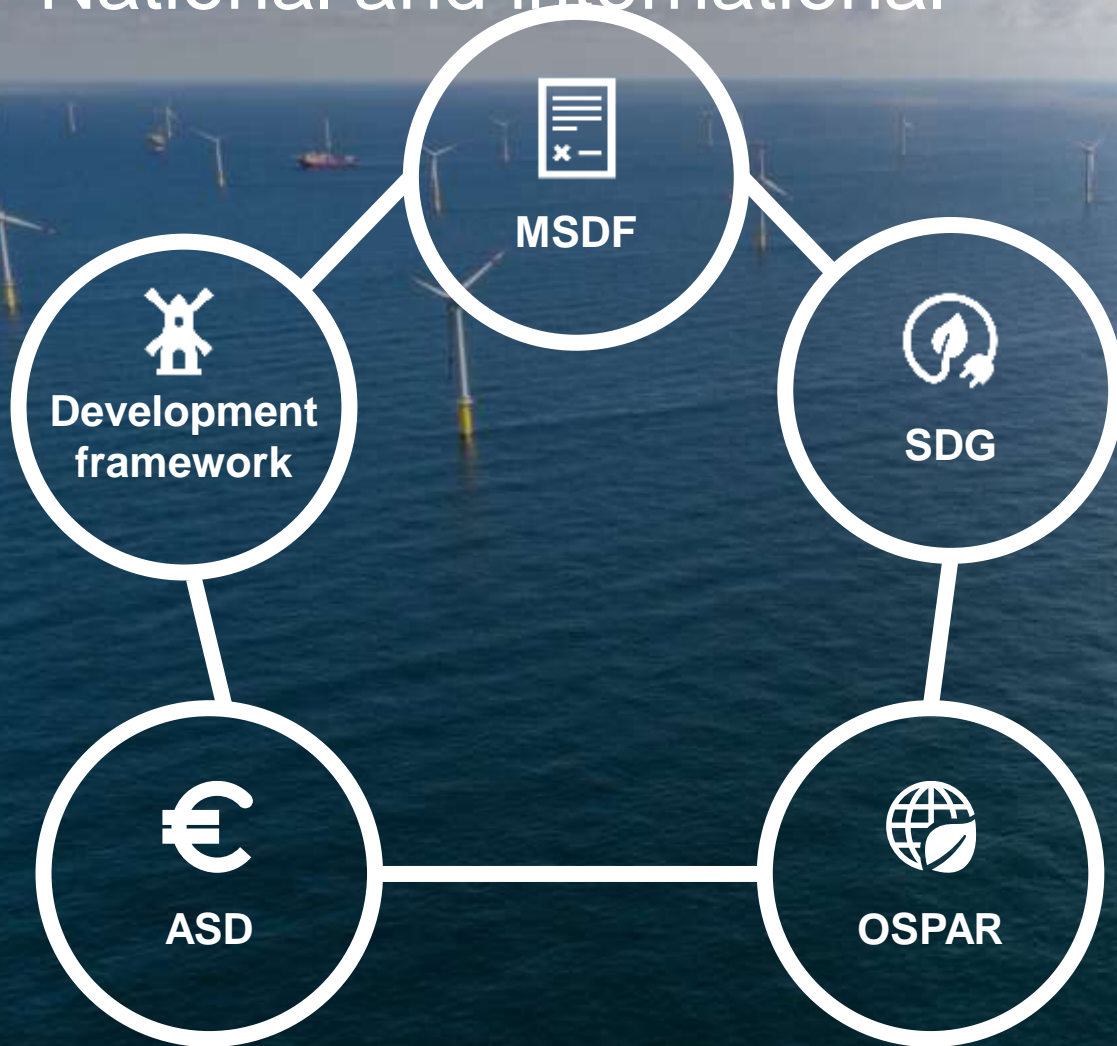
Ambition area	Description	Target
Circular	Circularity is minimizing use of scarce materials, reusing materials and reducing waste in our operations	In 2025 25% less impact on virgin copper use and non-recyclable waste
Climate	Climate impact of our operations is our responsibility and we strive to reduce our impact	In 2025 climate neutral
Nature	Our commitment to nature is to take our responsibility to minimise our impact and protect and improve local nature	In 2025 zero impact (net) on nature



Ambition area	Description	Target
Profitability	Profitability and return on capital (how effective is TenneT in turning capital into profit) are important to remain attractive for capital providers in order to finance our business and anticipated growth	Return on capital ≥ regulatory determined return on capital (KPIs: return on invested capital (ROIC) and return on equity)

# Drivers for NID

## National and international



- **Marine Strategy Framework Directive (MSFD)** as it is legislation of the European Union put in place to protect the marine ecosystem and biodiversity upon which our health and marine-related economic and social activities depend.
- **United Nations Sustainable Development Goals (SDG)**, an agenda developed and adopted by all United Nations member states to act as a blueprint for peace and prosperity for people and the planet, now and into the future. TenneT entire business revolves around SDG 7 - affordable and clean energy.
- **The OSPAR convention (Oslo and Paris Conventions)** as it is aimed at the protection and conservation of the North-East Atlantic and its resources). Specifically, the parameters are matched to the OSPAR Guidance on Environmental Considerations for Offshore Wind Farm Development.
- **Aandeelhoudersbeleid Staatsdeelnemingen** by Ministry of Finance. Revised policy with explicit focus on CSR:  
<https://www.rijksoverheid.nl/documenten/kamerstukken/2022/07/01/nota-deelnemingenbeleid-rijksoverheid-2022>  
Accompanying Letter to Parliament :  
<https://www.rijksoverheid.nl/documenten/kamerstukken/2022/07/01/kamerbrief-nota-deelnemingenbeleid-rijksoverheid-2022>.
- **The Development framework for offshore wind energy** by the Ministry of Economic Affairs. Specifically, chapter 3.12: “*Shared services en natuur-inclusief ontwerp*”.



# Development framework for offshore wind energy by MinEAC

## Mandate from Dutch Government – ministry of economic affairs

As much as reasonably possible taking into account:

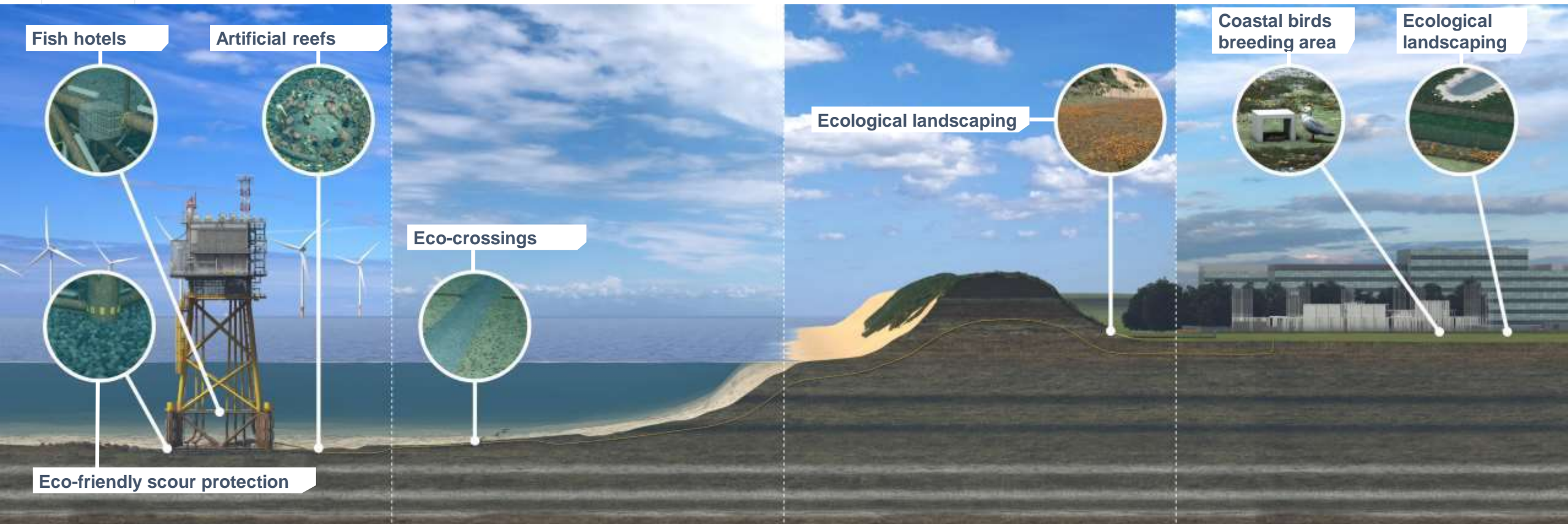
- Technical feasibility
- Risk
- Costs (comparable to park developers)
- Project specific circumstances

Om invulling te geven aan de afspraak in het Klimaatakkoord voor het nemen van aanvullende bredere maatregelen om de staat van instandhouding van kwetsbare soorten, rekening houdend met hun biotopen, te verbeteren en negatieve effecten op de natuur (zoals de biodiversiteit) te verminderen, **ontwerpt en legt TenneT het net op zee voor zover dat redelijkerwijs mogelijk is natuur-inclusief aan.**

Deze maatregelen dienen in verhouding te staan tot de inspanningen die de vergunninghouders van de windparken treffen op grond van een inspanningsverplichting dan wel voorschrift in het betreffende kavelbesluit om het windpark zodanig te ontwerpen en te realiseren dat het windpark actief bijdraagt aan versterking van een gezonde zee en versterking van behoud en duurzaam gebruik van soorten en habitatten die van nature in Nederland voorkomen. **De toepassing van maatregelen wordt per project afgewogen op technische haalbaarheid, risico, kosten en project-specifieke omstandigheden (projectfase en locatie).**

[par. 3.11, versie najaar 2019]

# Standardised set of NID measures





Nature inclusive  
options so far

## Fishhotels

### Fishhotels

Jacket November 2021

Topside October 2022



Nature inclusive options so far

## Ecocrossings

### Eco crossings

Installed summer 2021

Monitored summer 2022





Nature inclusive options so far

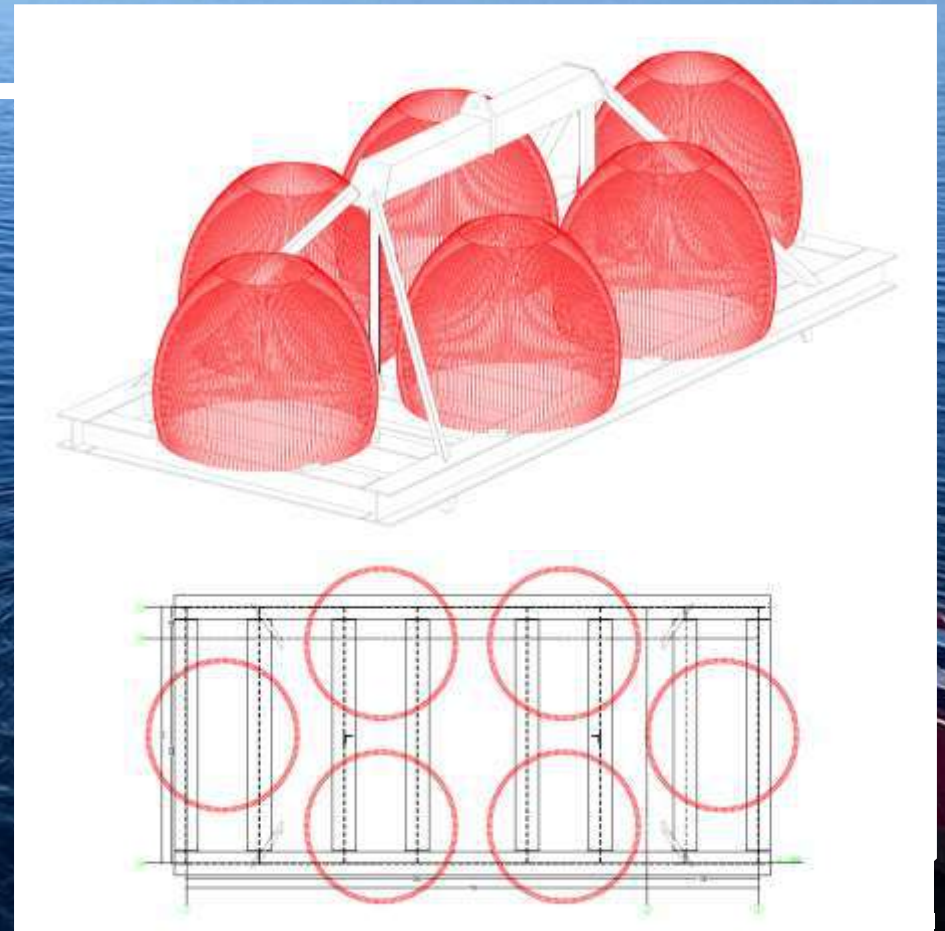
## Artificial reefs

### Artificial reefs

To be placed Q1 2023

Designed on frame to allow easy placement

Using jack-up barge down time



# Tendering process Changing over time



- **MEAT criteria:** gaining innovative ideas from the market, often costly and did not match TenneT process. Kept decision processes in the execution – not ideal
- **Basic design:** including our NID in the design, as part of the base case. Worked well for a single platform or cable. But you have to have the experience to work in this way.
- **Contractor journey** – 14 platforms in one, contracts for almost 20 year, ..



# Monitoring programme

## From single campaigns to a programme



- Cost reducing and quality enhancing
- Comparing data between NID's and others – parameter selection
- Link-up with scientific research
- Not that many suppliers
- Embedding costs in projects – ACM approval
- When are we successful?



More information?

**[Saskia.jaarsma@tennet.eu](mailto:Saskia.jaarsma@tennet.eu)**

**[Annemiek.hermans@witteveenbos.com](mailto:Annemiek.hermans@witteveenbos.com)**



# Disclaimer

This PowerPoint presentation is offered to you by TenneT TSO B.V. ('TenneT'). The content of the presentation – including all texts, images and audio fragments – is protected by copyright laws. No part of the content of the PowerPoint presentation may be copied, unless TenneT has expressly offered possibilities to do so, and no changes whatsoever may be made to the content. TenneT endeavours to ensure the provision of correct and up-to-date information, but makes no representations regarding correctness, accuracy or completeness.

TenneT declines any and all liability for any (alleged) damage arising from this PowerPoint presentation and for any consequences of activities undertaken on the strength of data or information contained therein.