



Nature-inclusive design Offshore Grid 2020

Annemiek Hermans

Introduction to TenneT



TenneT at a glance

2019



Workforce

4,913

Employees



EBIT

768

EUR million



Assets

21.8

EUR million



Investments 2019-2029

35

EUR billion



Grid

99,99%

Availability



Grid length

23,555

Km



Dutch State

100%

Shareholder



Footprint

27.4%

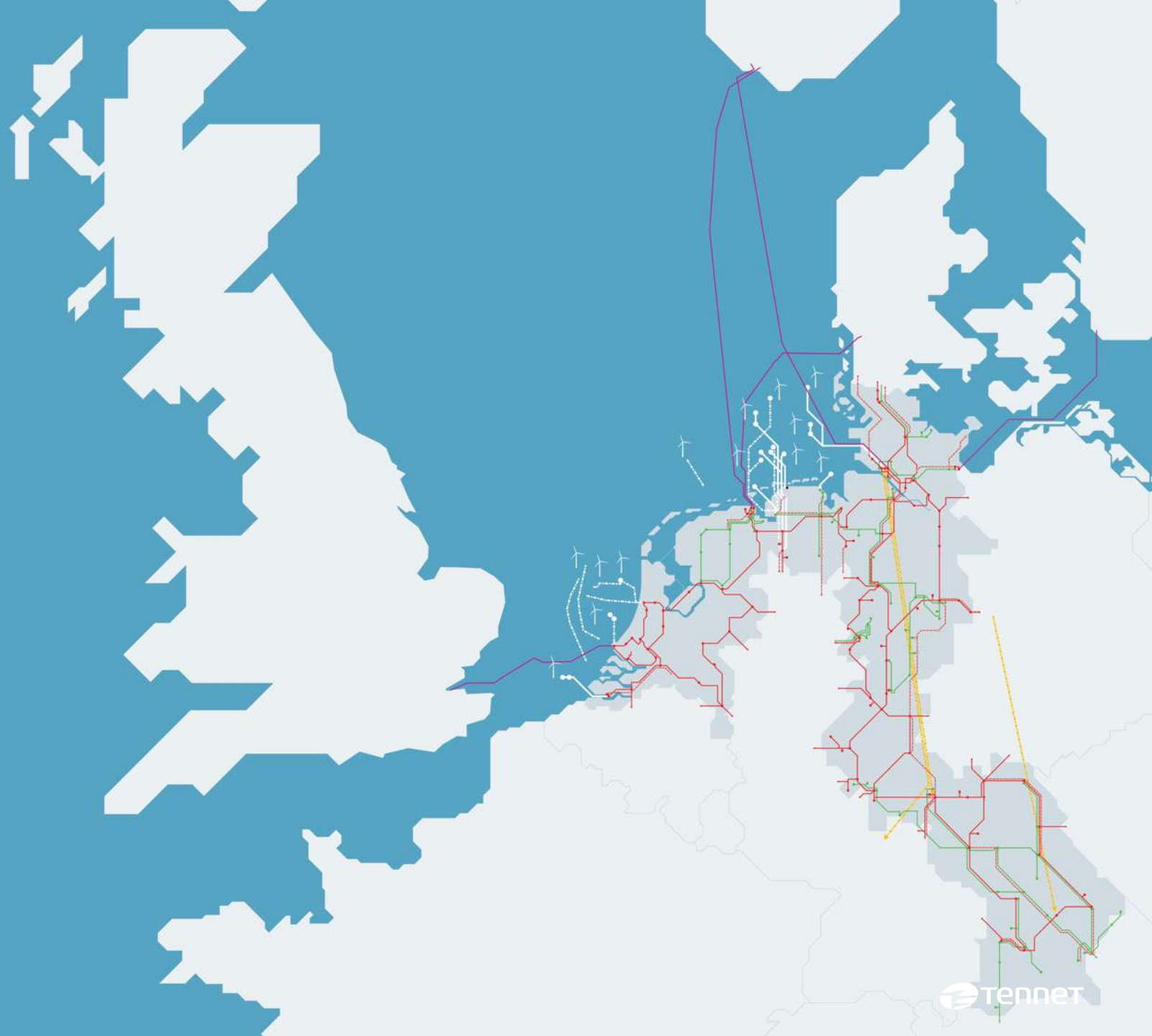
Greened

Offshore wind energy Pivotal in the energy transition

Paris climate agreement
80-95% CO₂
reduction in 2050

Roadmap 2030
+6,1 GW
offshore wind

Netherlands
9,6 GW by 2030
Germany
9,8 GW by 2025



Roll-out strategy Dutch Offshore Grid

**Standardisation,
lean and mean**

Cost efficient

- 8 x 700 MW
- Export cable: 220 kV

**Steady pipeline,
aligned planning
with OWF**

**Less impact on
environment**

— AC
— DC



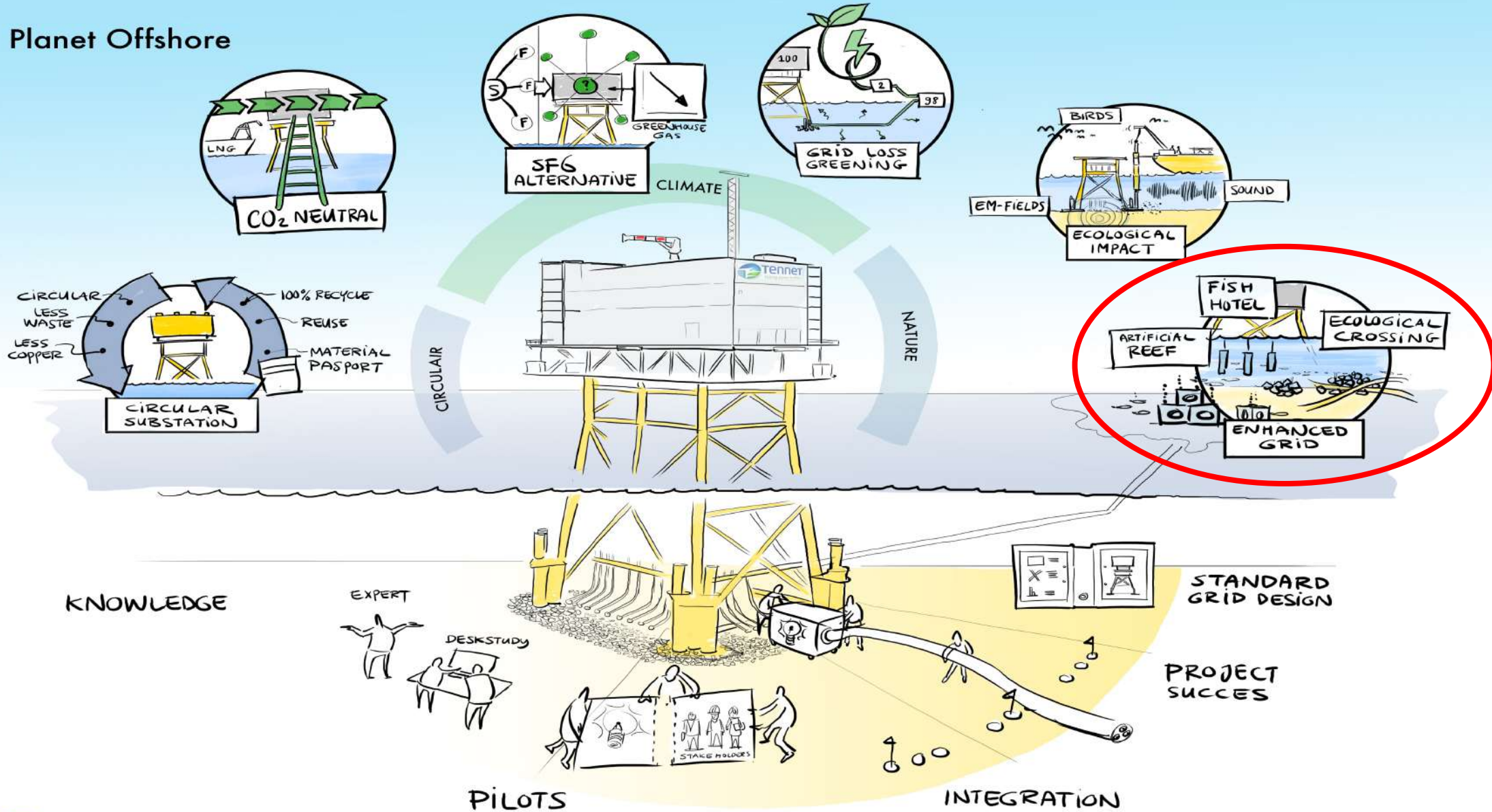
Balancing the grid

The ultimate challenge



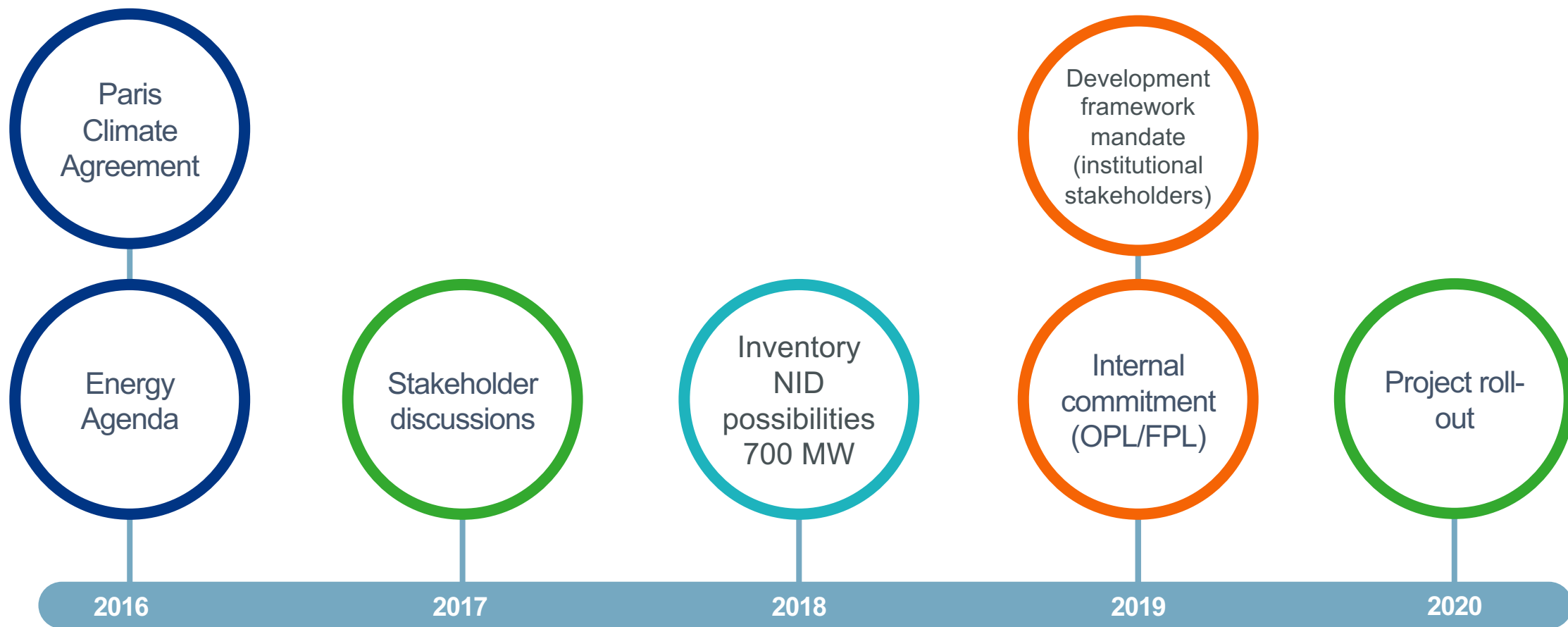
Ambition area	Description	Target
Circular	Circularity is minimizing use of scarce materials, reusing materials and reducing waste in our operations.	In 2025 25% less impact on virgin copper use and non-recyclable waste.
Climate	Climate impact of our operations is our responsibility and we strive to reduce 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 2020 zero impact (nett) on nature

Planet Offshore



Good Electrons

The nature-inclusive design story so-far



Development framework for offshore wind energy by MinEAC

Mandate from Dutch Government – ministry of economic affairs

As much as reasonably possible taking into account:

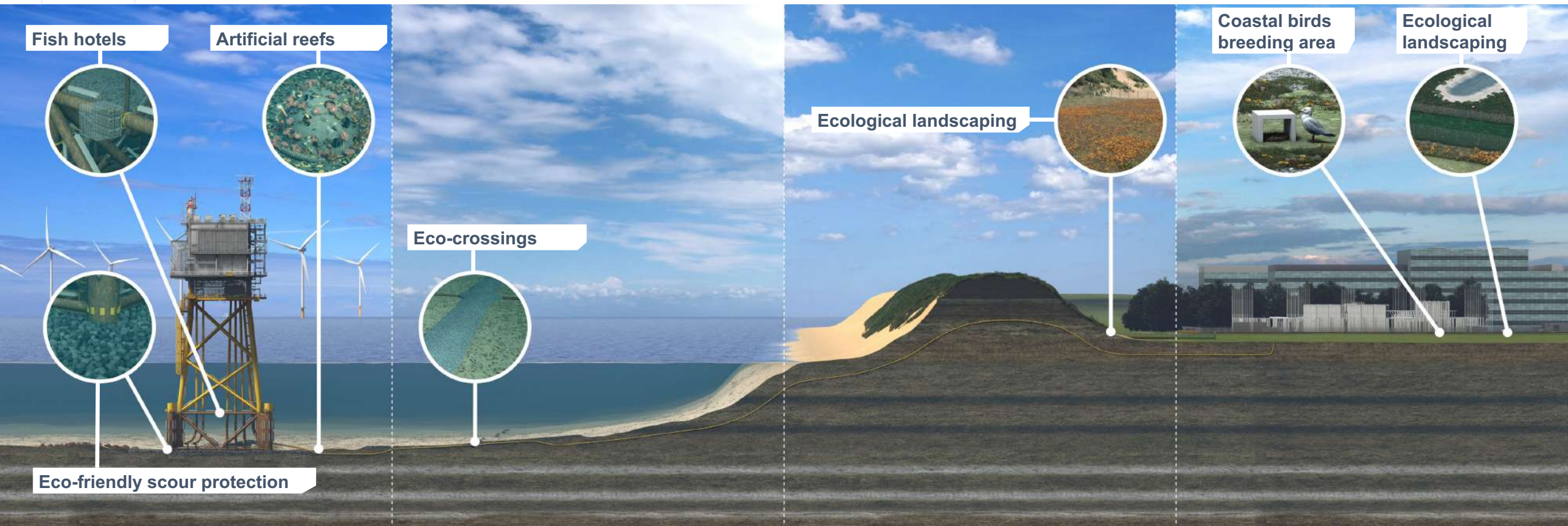
- Technical feasibility
- Risk
- Costs (comparable to park developers)
- Project specific circumstances

*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



— AC
— DC

Ten noorden van de Waddeneilanden 700 MW (AC) 2026

1 2 3 4 5 6

NID in Dutch offshore projects

IJmuiden Ver Beta 2,000 MW (DC) 2027

IJmuiden Ver Alpha 2,000 MW (DC) 2029

1 2 3 4 5 6

Hollandse Kust (west) Alpha 700 MW (AC) 2024

Hollandse Kust (west) Beta 700 MW (AC) 2025

1 2 3 5 6

Hollandse Kust (noord) 700 MW (AC) 2023

1 3 5 6

Hollandse Kust (zuid) Alpha 700 MW (AC) 2021

Hollandse Kust (zuid) Beta 700 MW (AC) 2022

4 5 6

Borssele Beta 700 MW (AC) 2020

Borssele Alpha 700 MW (AC) 2019

3



1 Fishhoteis on jacket



2 Ecofriendly scour protection



3 Artificial reef elements



4 Ecological cable crossings



5 Ecological landscaping



6 Breeding area coastal birds

Partners in nature-inclusive design



Samenwerkingsovereenkomst 2019-2020
Tennet, Natuur & Milieu en Stichting De Noordzee
19 augustus 2019



M.J. van Beek

M. Demmers

F. van Hest

Tennet
Marjolijn van Beek

Natuur & Milieu
Marjolijn Demmers

Stichting De Noordzee
Floris van Hest

Stakeholders

NGOs



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