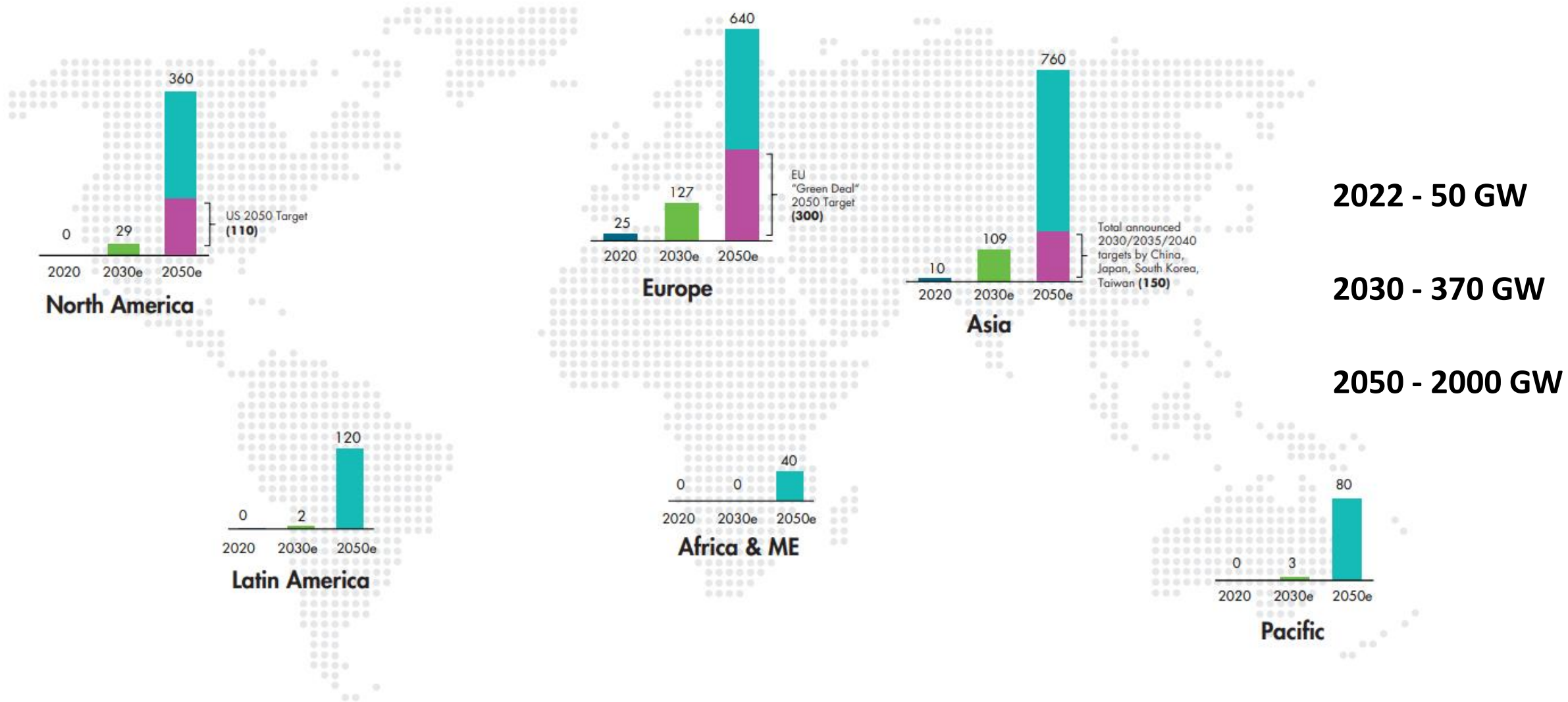


The Rich North Sea

Nature
enhancement and
offshore wind

– A future filled
with opportunity?

Exponential growth offshore wind



2022 - 50 GW
2030 - 370 GW
2050 - 2000 GW

Unit: GW

Source: GWEC Market Intelligence

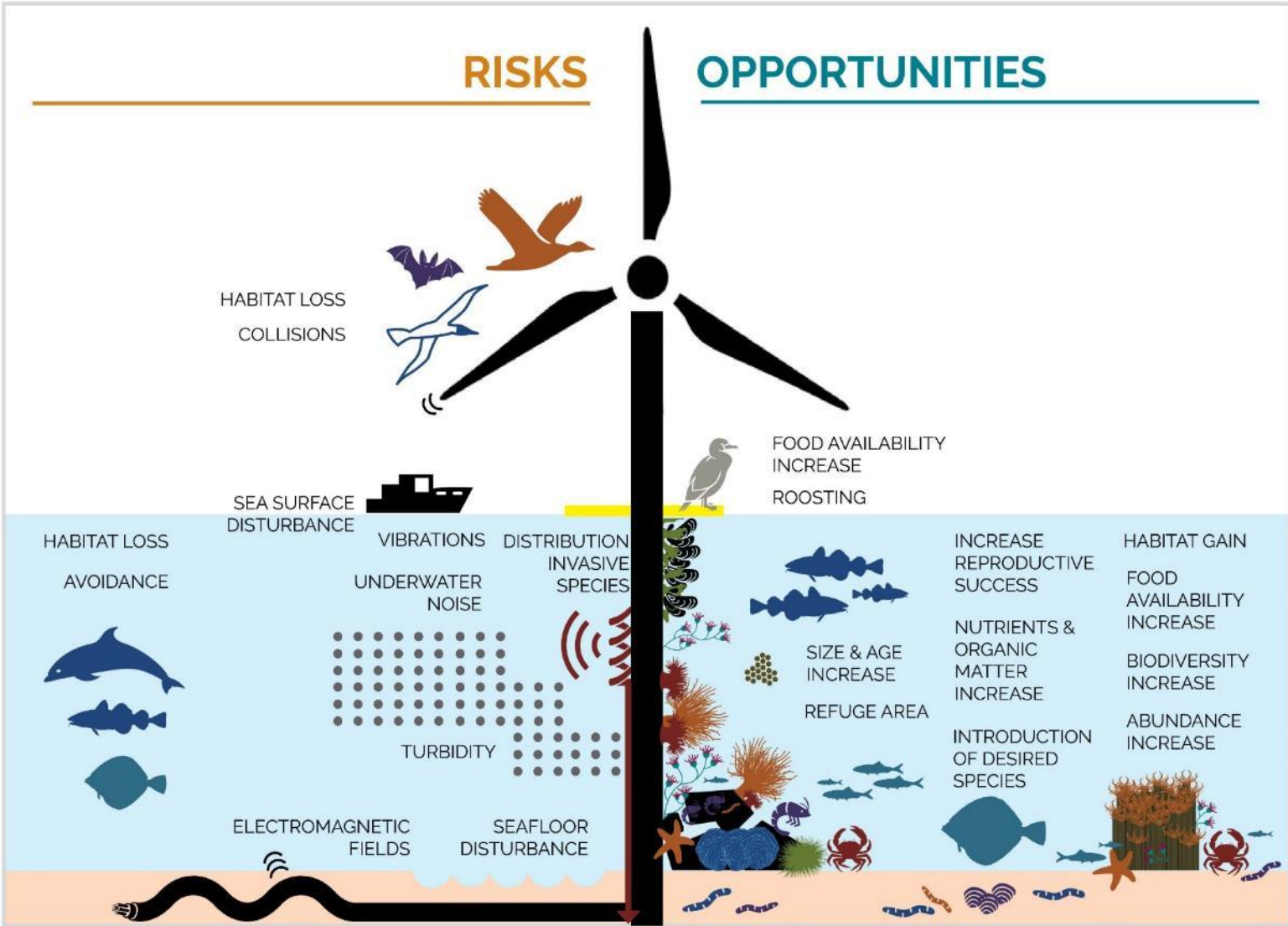
■ Installations as of 2020

■ Installations by 2030 under current policies

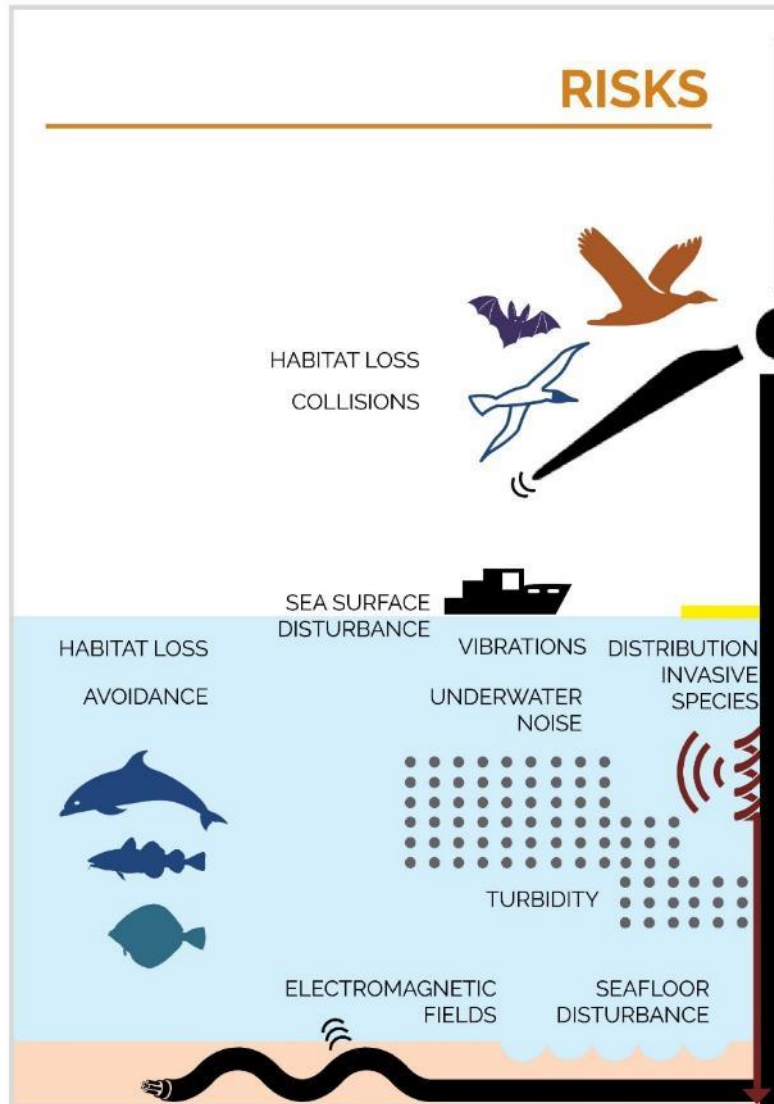
■ Regional forecast by 2050, based on 2,000 GW global target

■ Current regional or national targets

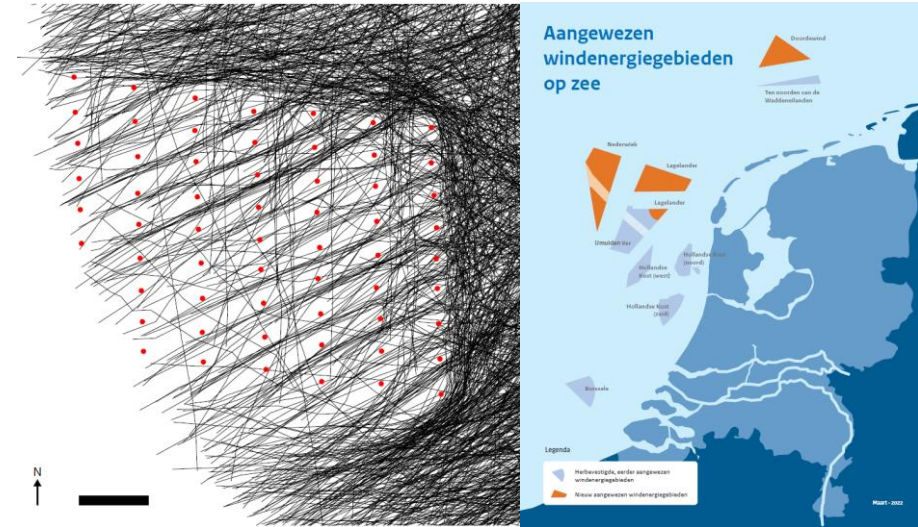
Wind & nature



Reducing risks



Avoid



Minimize

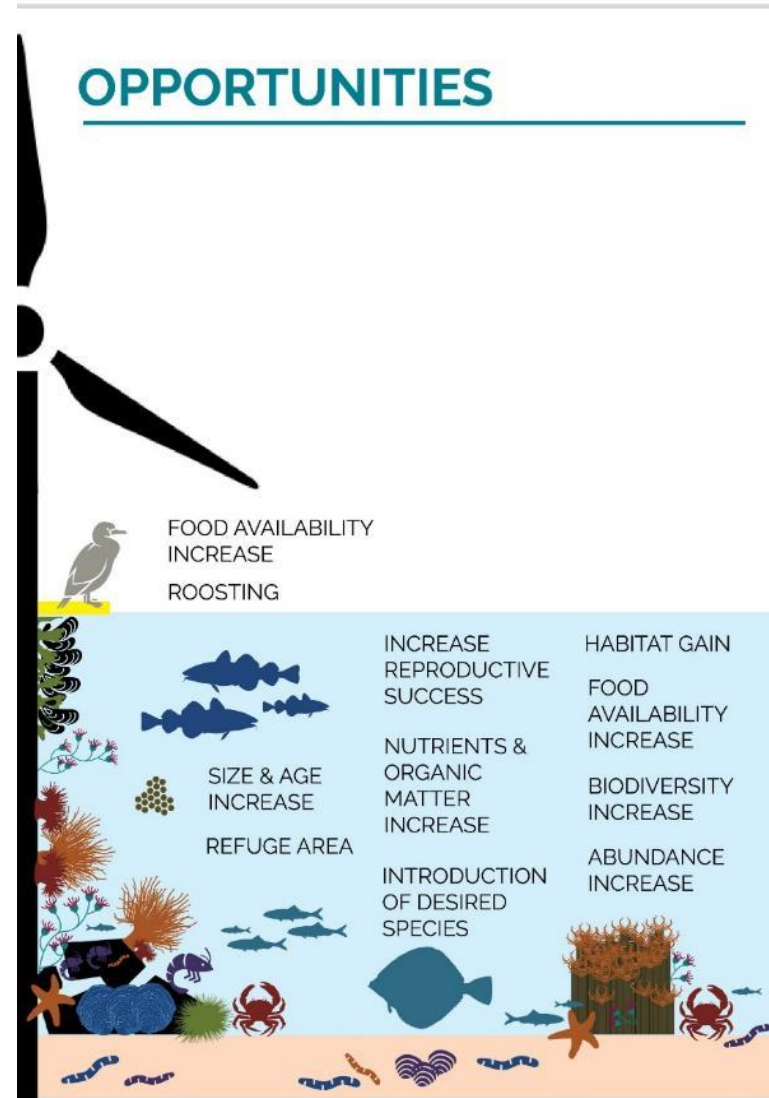


Taking opportunities

Restore



Offset



Depth: 17.72m

The “Reef-effect”

Man-made structures as reefs

- No bottom disturbance in Offshore Wind Farms
- Hard substrate offers settlement opportunities

Start of the Program



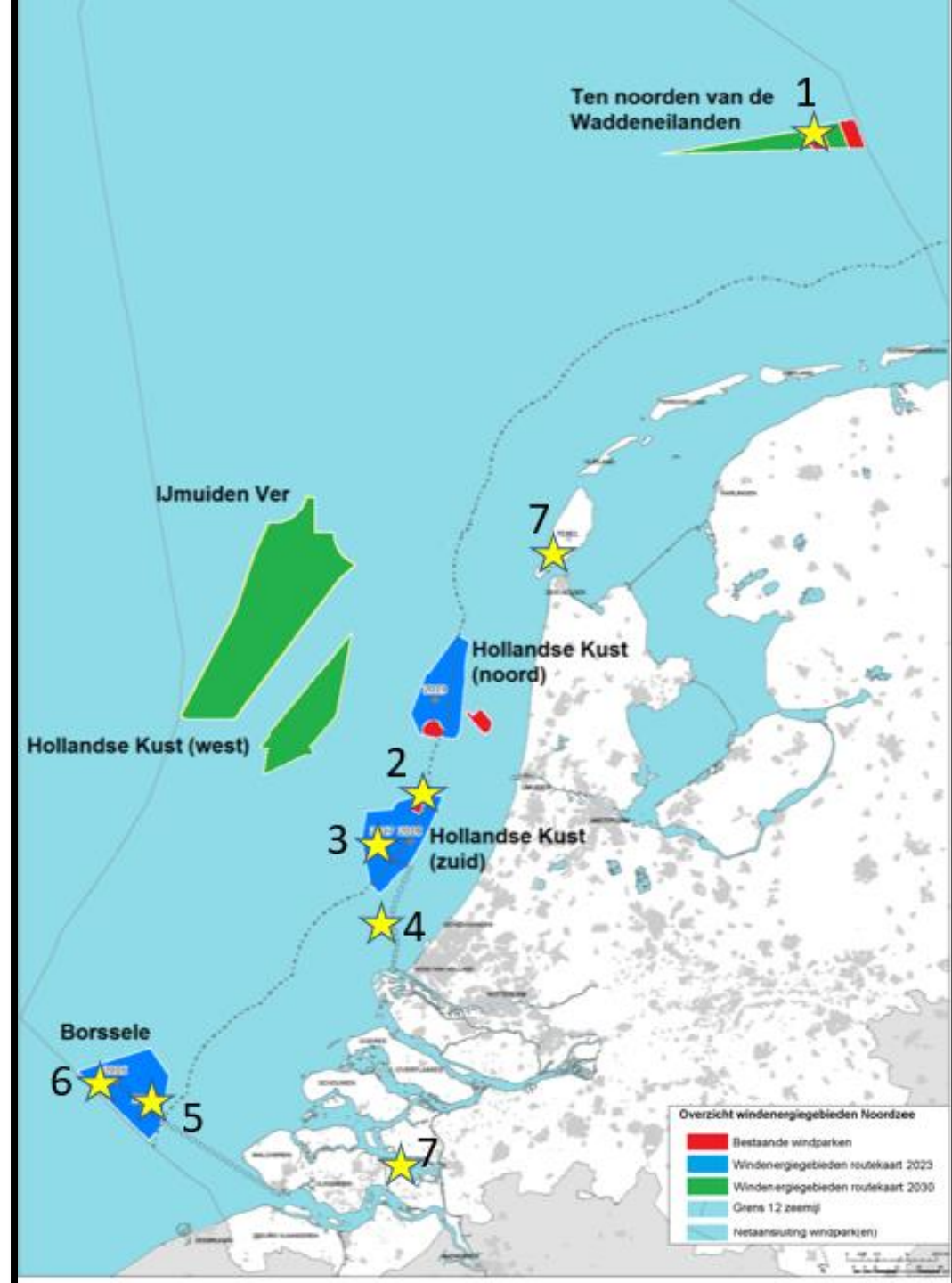
Sponsored by: The Dutch Postcode Lottery
Collaboration between: The North Sea Foundation and Natuur & Milieu





Main projects

1. Gemini
2. Eneco & Van Oord
3. Vattenfall
4. Offshore Test Site
5. Ørsted
6. Blauwwind
7. Oyster hatchery



Gemini

Lost oyster reef is being restored

- Large-scale reef
- Comprehensive research
- Together with:

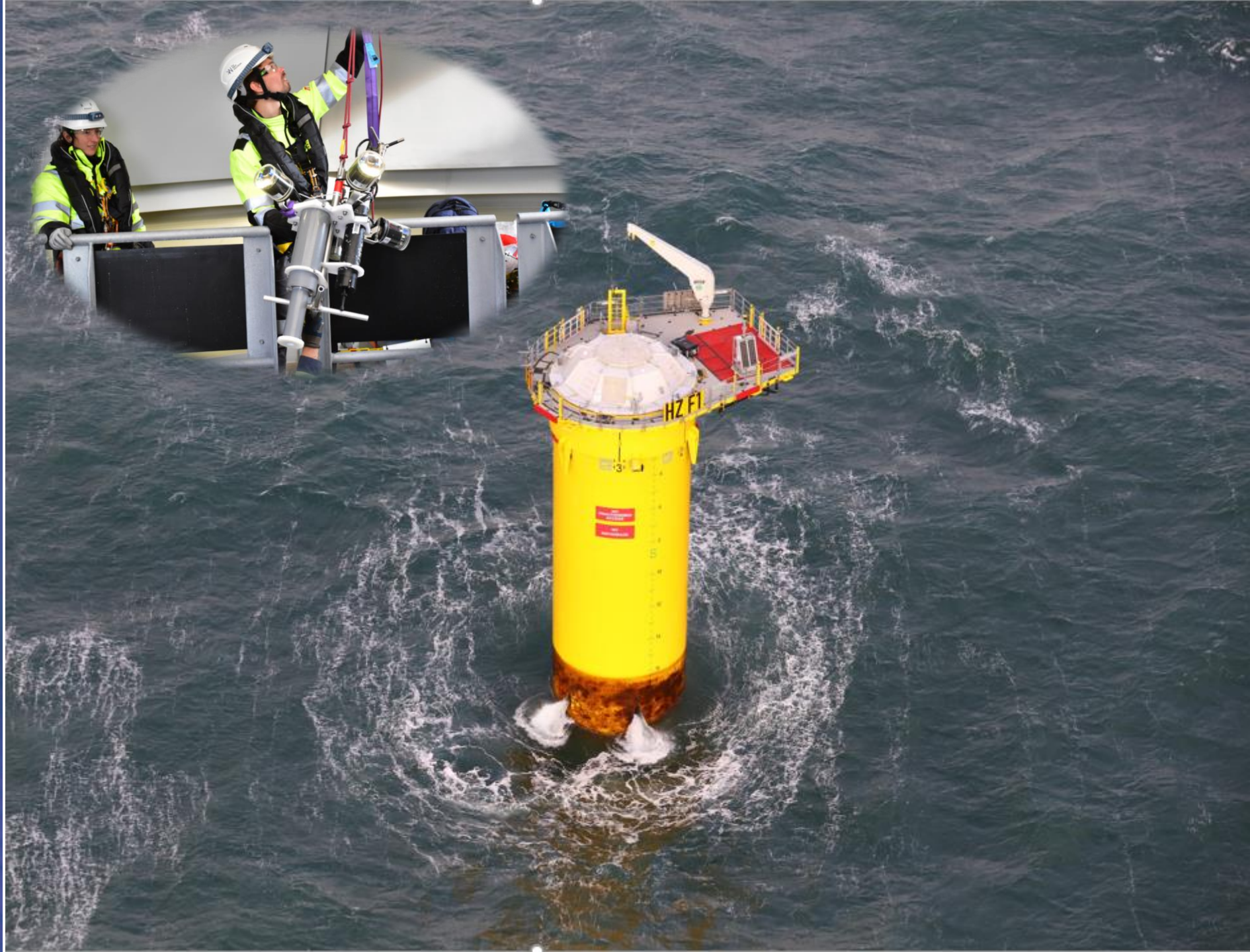
WaterProof, Wageningen Marine Research, NIOZ, Waardenburg Ecology



Vattenfall

Nature inclusive design

- Measurements inside and outside foundation
- First life already visible
- 6 offshore missions



Offshore Test Site

Ability to test structures on technical and ecological functioning

- Reef Cubes – ARC Marine
- (T)REE(F) & WERC-dock – NIOZ & Waardenburg Ecology

Installed: Feb 2021

Monitoring: Sep 2021

~25 species

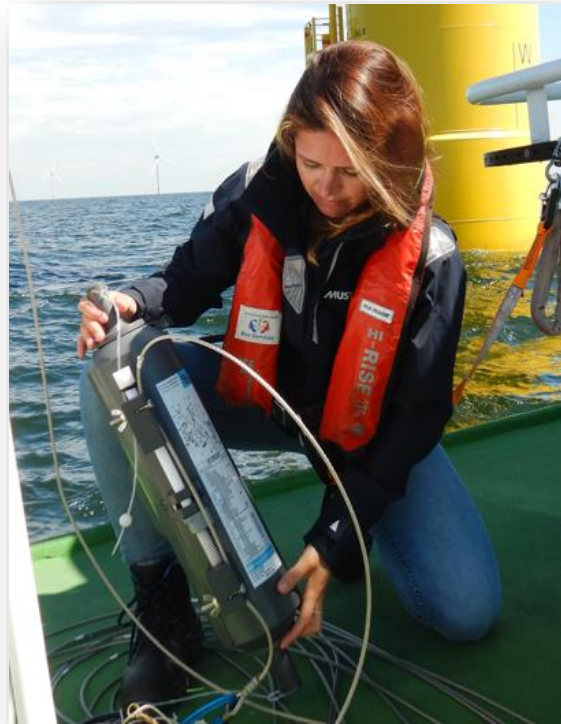


Ørsted

Borssele 1 & 2

- Development of biodiversity around artificial reefs
- Behaviour of cod and North Sea lobster.

*Together with Wageningen
Marine Research*



Blauwwind

Borssele 3 & 4

- October 2020:
2400 European flat oysters
- Monitoring with ROV and eDNA
- July 2021:
>96% survival, growth, high biodiversity around the oyster tables





Offshore Wind Farms & Nature Future Outlook

- Start and learn by doing
- Seize opportunities by installing nature enhancement during construction phase
- Monitoring is a prerequisite – Share knowledge and data internationally
- Use local ecology as basis
- Potential for scale-up:
 - Nature enhancement outside of Offshore Wind Farms
 - Regulations on decommissioning

Be bold, think **BIG!**



Thank you!



Made possible by:



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