

# Cultivating solutions: the importance of nature-friendly food from offshore wind farms

*North Sea Foundation*

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# Who we are

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NSF is an independent nature and environmental organisation

Mission: A clean and healthy North Sea that is used sustainably

Core values: independent, science- en factbased, together and solution focused

“The voice” of the Dutch North Sea nature for over 40 years

4 themes/programmes

- Space for nature
- Sustainable food
- Nature-friendly energy
- Clean sea (clean shipping, waste, Boskalis Beach Clean up Tour)

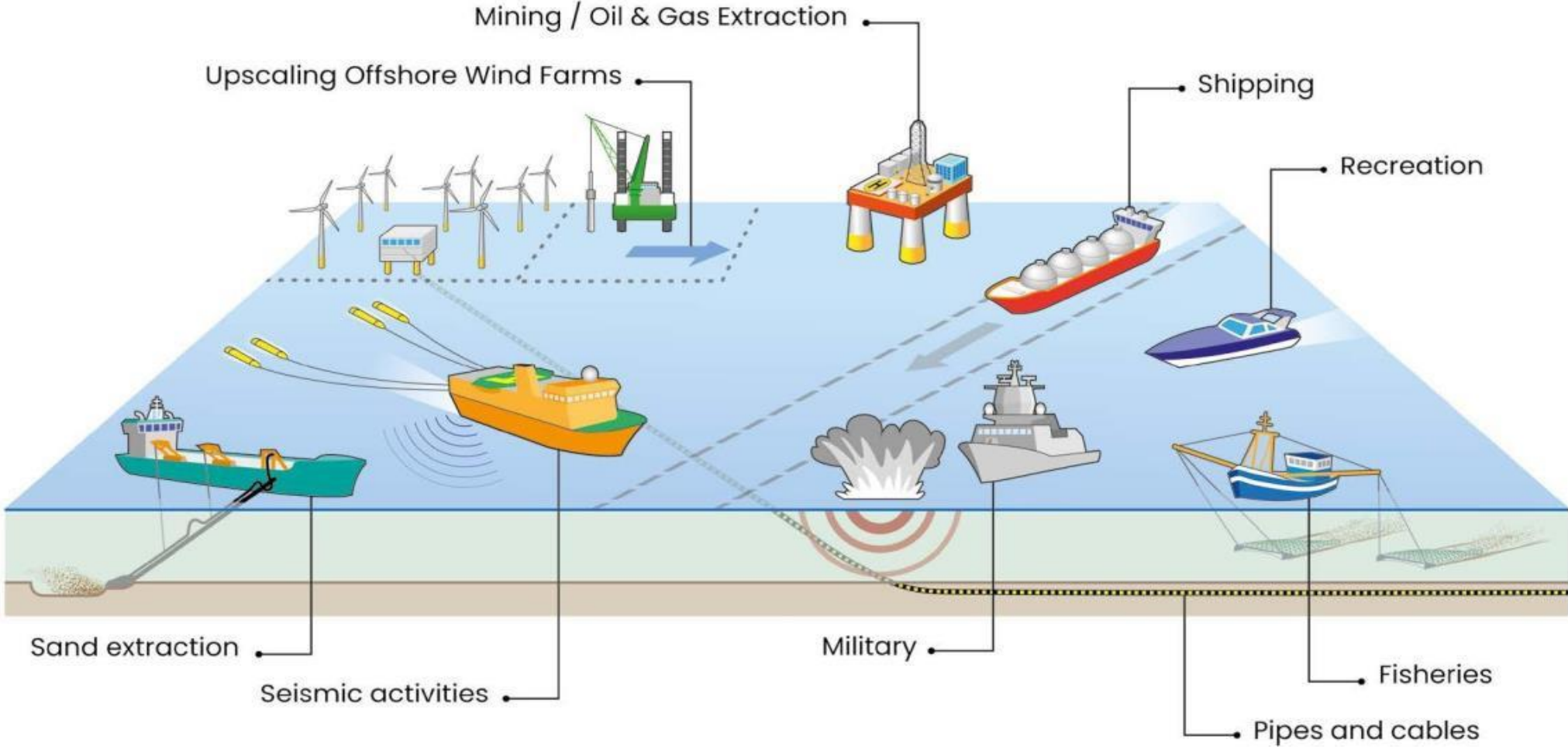
# Where we have come from

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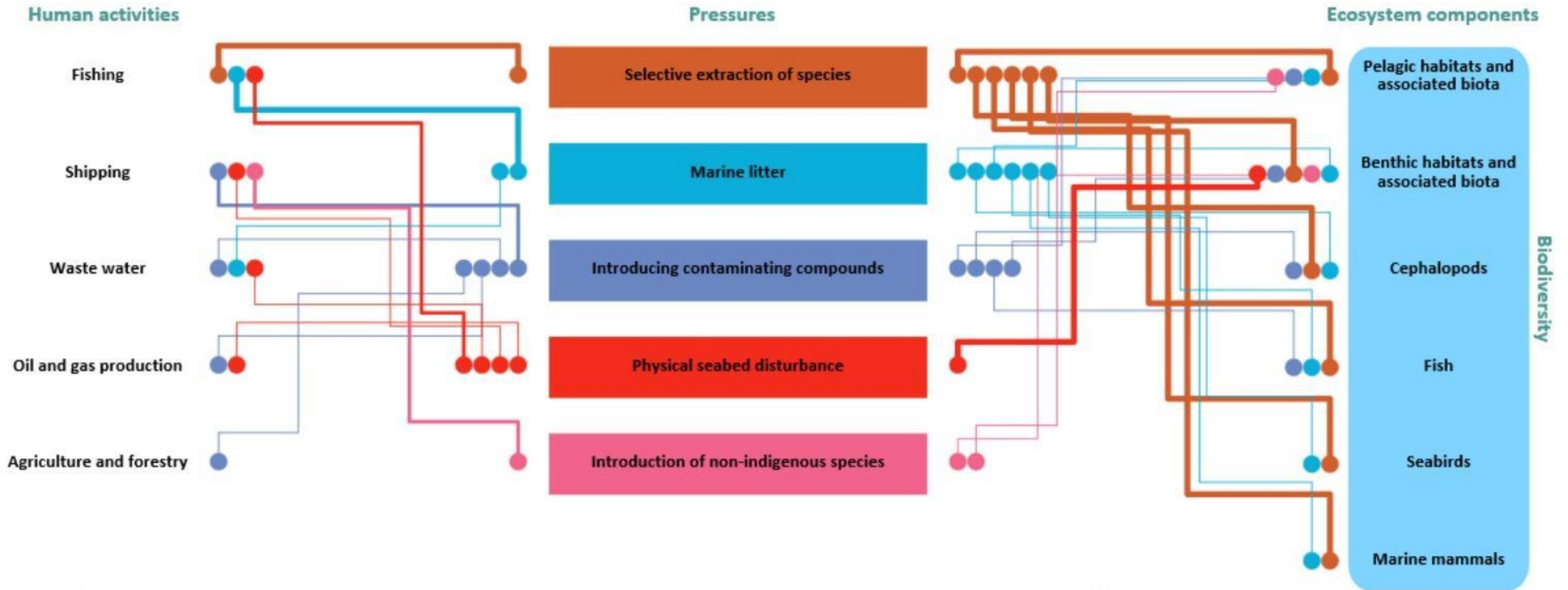
Source: Olsen, 1883

# What we are working with now



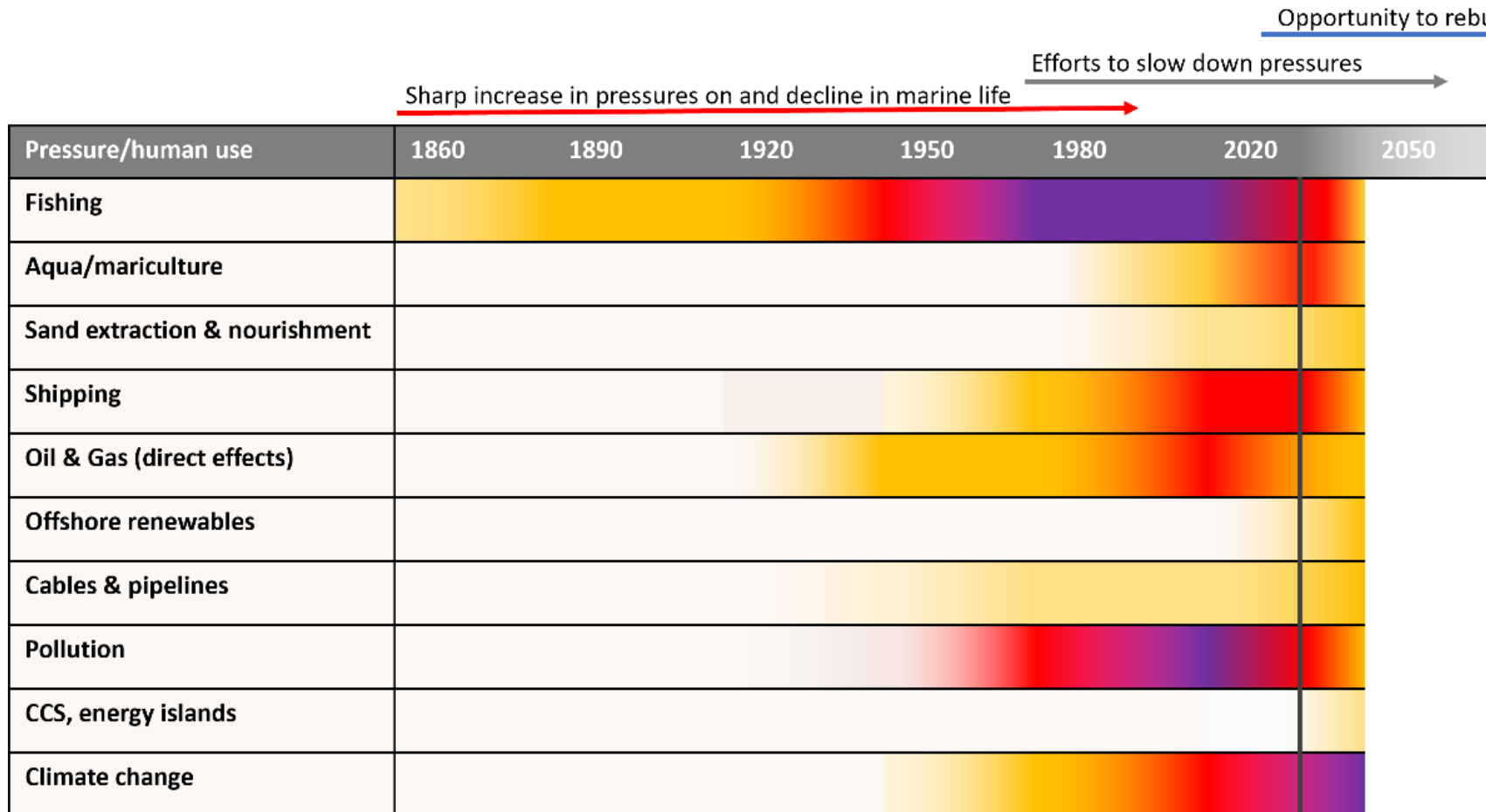
Source: North Sea Foundation

# Cumulative effects increased



Ecosystem overview of the Greater North Sea, including the major regional human activities, pressures and ecosystem state components. A broader line indicates a higher pressure. Source: ICES<sup>x</sup>

# Impact on nature by pressure factor through time



A pressure scale of human activities on the North Sea from 1860-2022.

White: no or negligible pressure, yellow: low pressure, red: medium pressure, purple: high pressure.

Fishing activity has been a prominent activity across the years, with increasing intensity and a drop in pressure following the Common Fisheries Policy and quota management.

Adapted from Duarte et al. 2020 for the North Sea.

# The consequence for nature

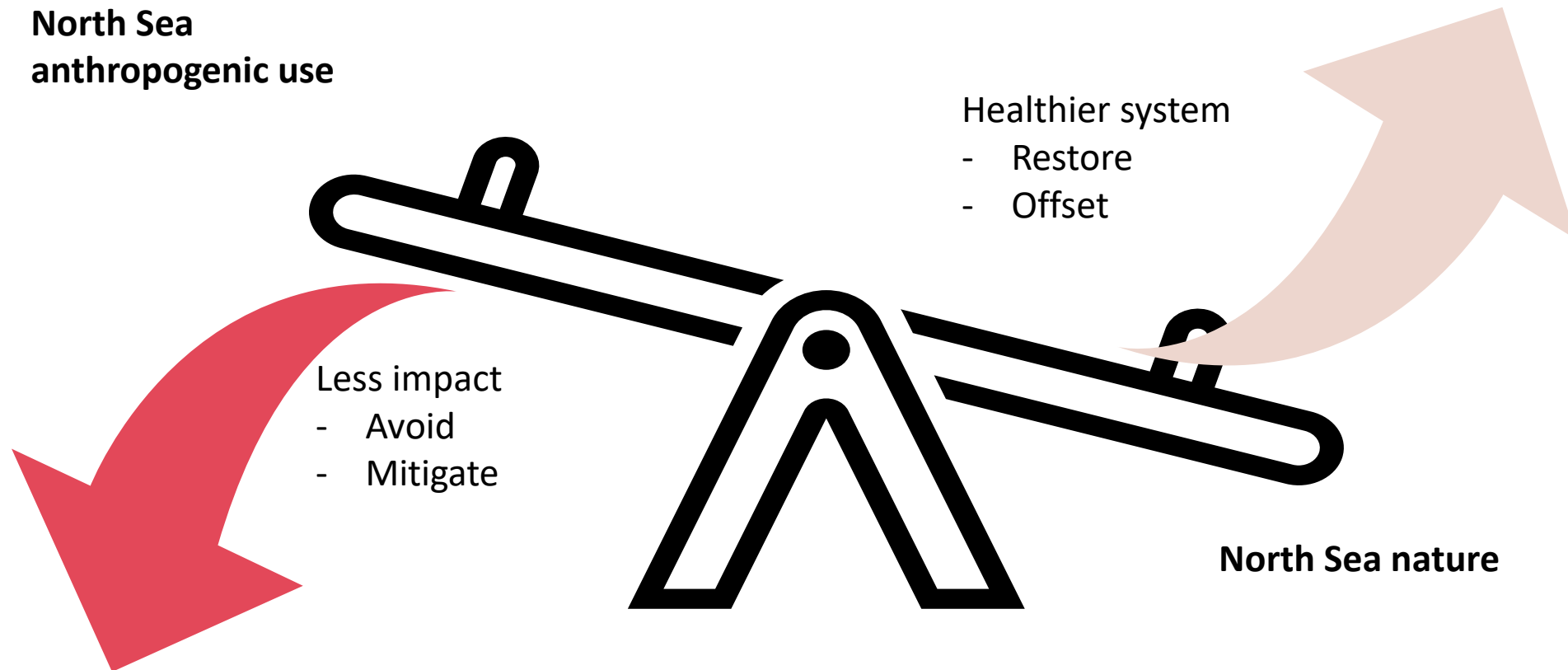
- Degraded ecosystems
- In most cases Good Environmental Status (MSFD) is not reached

GES Descriptors	Features	GES achieved		
Pressure-based descriptors	D2 Non-indigenous species	Newly-introduced non-indigenous species	GES achieved by 2018	
	D5 Eutrophication	Eutrophication	GES expected to be achieved later than 2020, Article 14 exception reported	
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	D7 Hydrographical changes	Benthic broad habitats	GES achieved by 2018	
		Hydrographical changes	GES achieved by 2018	
	D8 Contaminants	Acute pollution events	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Contaminants - non UPBT substances	GES expected to be achieved later than 2020, Article 14 exception reported	
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		Contaminants - UPBT substances	GES expected to be achieved later than 2020, Article 14 exception reported	
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		Marine species	GES expected to be achieved later than 2020, Article 14 exception reported	
	D9 Contaminants in seafood	Contaminants - in seafood	GES achieved by 2018	
	D10 Litter	Litter in the environment	GES expected to be achieved later than 2020, no Article 14 exception reported	
D11 Energy, incl. underwater noise	Impulsive sound in water	Unknown		
State-based descriptors	D1 Birds	Benthic-feeding birds	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Grazing birds	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Pelagic-feeding birds	GES expected to be achieved by 2020	
		Pelagic-feeding birds	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Surface-feeding birds	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Surface-feeding birds	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Wading birds	GES expected to be achieved later than 2020, no Article 14 exception reported	
	D1 Mammals	Small toothed cetaceans	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Seals	GES expected to be achieved later than 2020, no Article 14 exception reported	
	D1 Reptiles	Not reported		
	D1 Fish	Demersal shelf fish	GES expected to be achieved later than 2020, no Article 14 exception reported	
	D1 Cephalopods	Not reported		
	D3 Commercial fish and shellfish	Commercially exploited fish and shellfish	GES expected to be achieved by 2020	
	D1 Pelagic habitats	Pelagic broad habitats	GES expected to be achieved later than 2020, no Article 14 exception reported	
		D6 Sea-floor integrity/D1 Benthic habitats	Benthic broad habitats	GES expected to be achieved later than 2020, no Article 14 exception reported
			Other benthic habitats	GES expected to be achieved later than 2020, no Article 14 exception reported
			Other benthic habitats	GES expected to be achieved later than 2020, no Article 14 exception reported
		Physical disturbance to seabed	GES expected to be achieved later than 2020, no Article 14 exception reported	
		Physical loss of the seabed	GES expected to be achieved later than 2020, no Article 14 exception reported	
	D4 Food webs/D1 Ecosystems	Ecosystems, including food webs	Unknown	

# Paying lip service to nature is no longer an option

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In light of the state of our ecosystems, and our dependence on them: we need to tip the scale





# The European wind industry is the first offshore sector that wants to be nature positive by 2030

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- Non-price criteria in offshore wind tenders are being applied in the Netherlands
  - The industry wants it, nature and industry need it
  - An industry cannot call itself green, if it damages nature
- Focus on minimizing ecological risks
- Focus on maximizing ecological opportunities

A healthy ecosystem is essential to realise the energy transition which we need to meet climate and biodiversity goals



# However, to achieve nature positive wind farms, their multi-use should also be subjected to high ecological standards

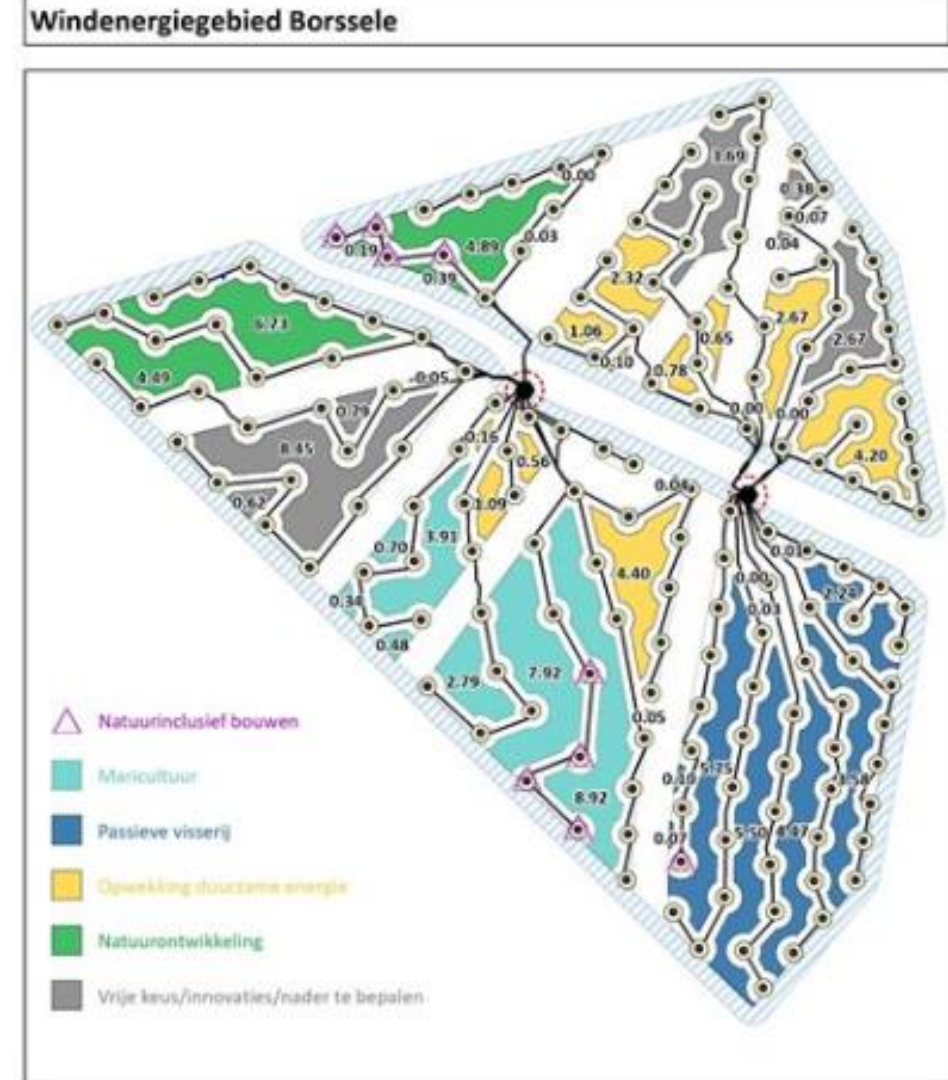
Ambitions for multi-use are high within the European blue economy

Example of an area passport in a Dutch wind farm:

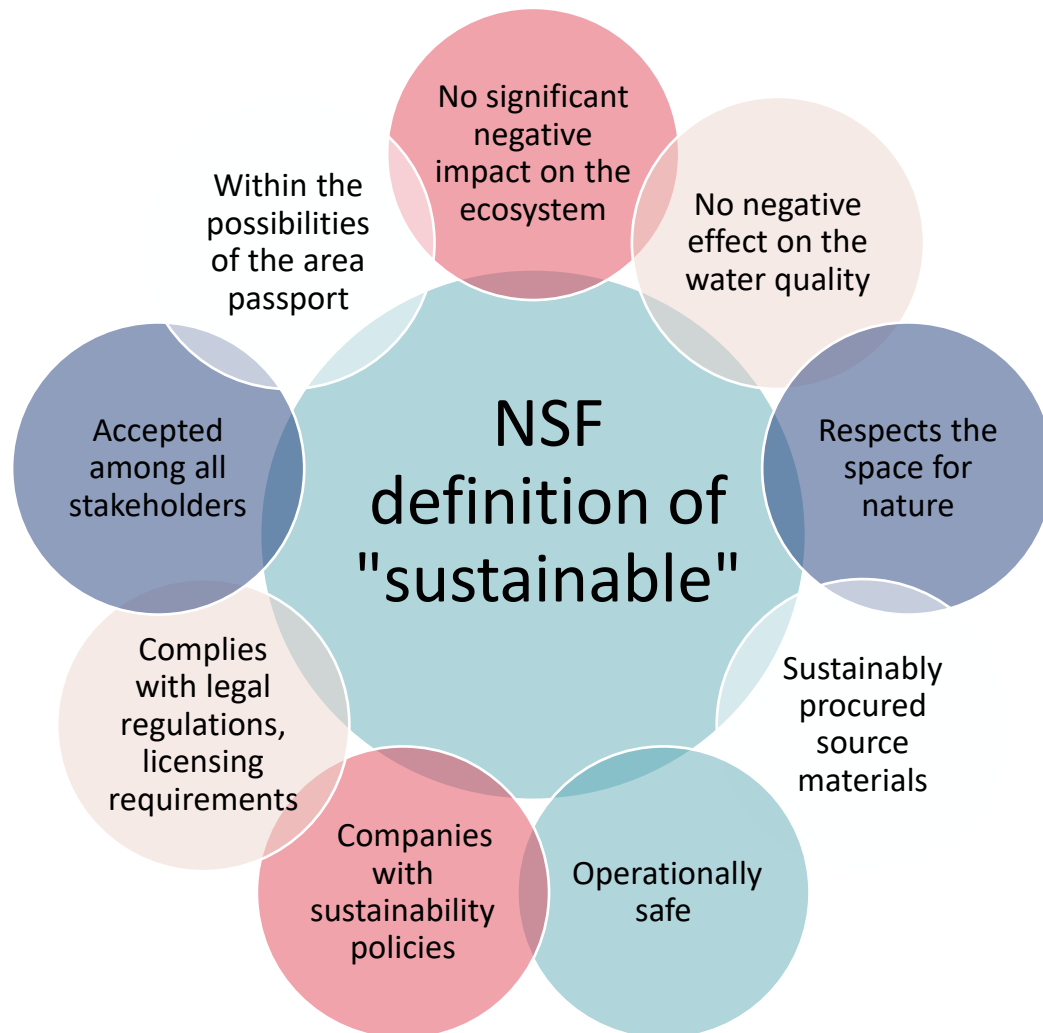
Not allowed are bottom trawling fisheries

Bottom trawling fisheries destroy the capital invested in making offshore wind farms nature positive

Nature-negative activities need to go down, while nature-positive activities go up



# What a sustainable and nature-friendly maripark entails



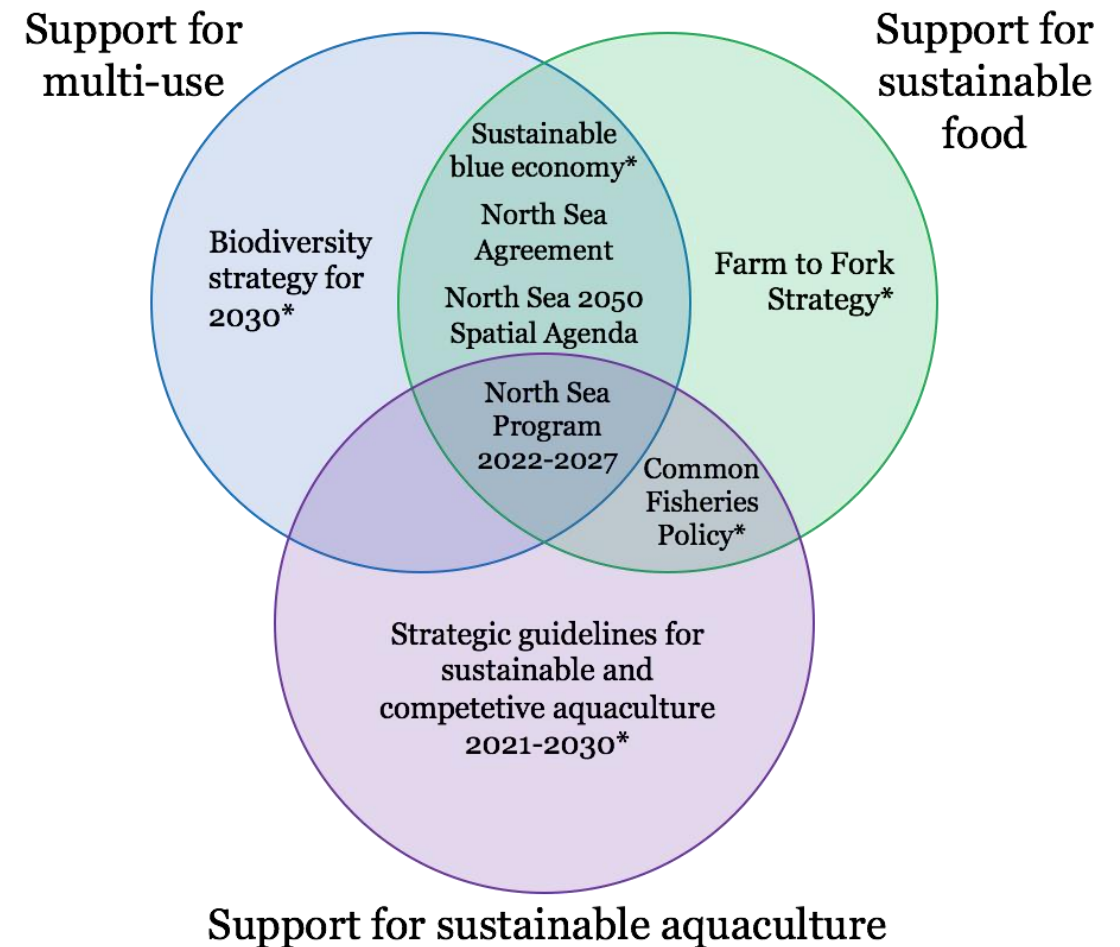
Potentially positive impacts:

- Create habitat
- Act as food source
- Produce larvae

Potentially negative impacts:

- Eat plankton
- Changes in water movement

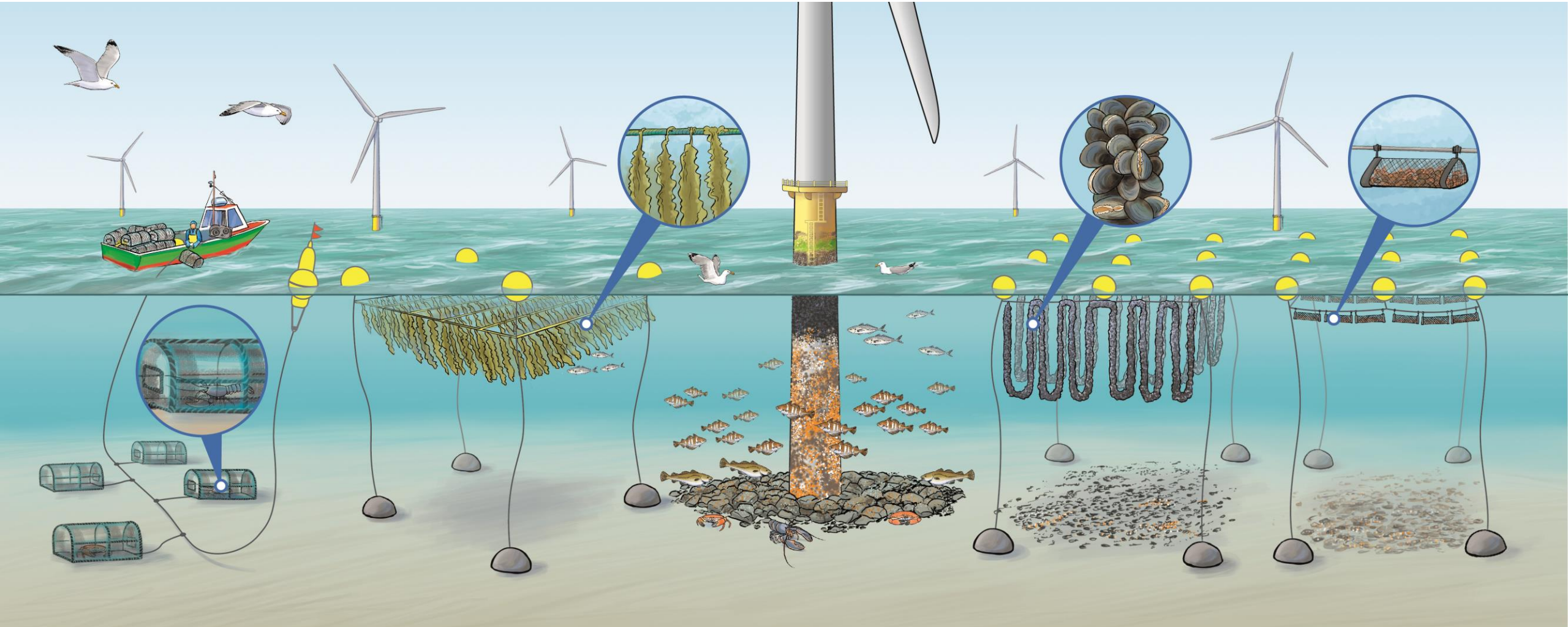
- Policies generally supportive
- Still very little multi-use happening despite being open for permit applications
- Bottlenecks:
  - Business case
  - Long permitting process
  - Ownership and responsibility in wind farm
  - Scientific uncertainty regarding carrying capacity
  - Hydrodynamic effects of farm design



\* Indicates European Union policies. Those without are Dutch national policies

# What a sustainable and nature-friendly maripark could look like

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# Mussels and oysters form biogenic reefs

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# Best practices we suggest

- Use native species such as flat oysters and blue mussels in the Dutch North Sea
- Don't harvest an entire farm at once in order to maintain more consistent habitat provision
- The scale of the farm should not exceed the local carrying capacity
  - While it also has to fit within the wider carrying capacity of the ecosystem
- Use seed capture installations or hatchery seed instead of seed dredging



# Use knowledge from nature enhancement projects in offshore wind farms

## The Rich North Sea

- Programme under The North Sea Foundation and Natuur & Milieu
- Focus on opportunities for nature in OWFs
- 6 offshore projects, learning-by-doing
- Flat oyster breeding line
- Scientific partnerships and projects
- Toolbox (knowledge sharing)





# What can governments do?

- Not everything can be fixed by multi-use in wind farms
- Realise that your biggest problem is not nature, but (historical) harmful activities to nature, meaning a sustainable and nature-friendly food transition is vital, also for the realisation of the energy transition and nature transition
  - Sustainable aquaculture is part of this desperately needed food transition
  - It adds to nature enhancement if done correctly
  - An undisturbed seabed contributes to natural CO<sub>2</sub> storage
- Include multi-use planning in the tender criteria for wind farm permits and publish area passports earlier in the process

# What can governments do?

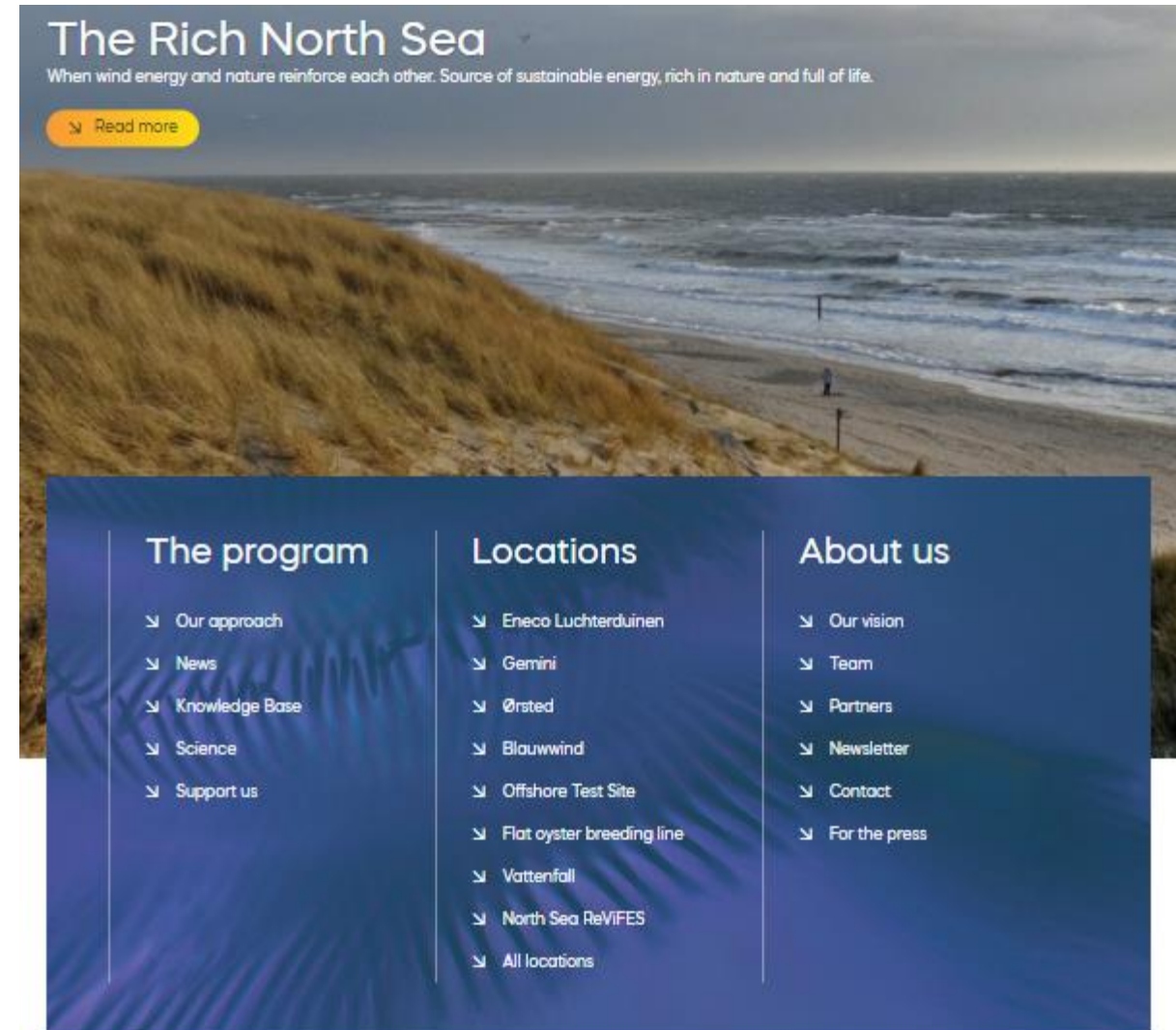
- Facilitate pilot projects to test feasibility, build a business case, and monitor ecological impacts of offshore aquaculture before increasing the scale
- Set up subsidies for additional hatcheries research
- Integrate multi-use within the broader MSP process: keep a holistic view
- Link nature strengthening activities such as a nature-friendly maripark to conservation goals and explore the application of OECMs

# To learn more, please go to

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