

North Sea perspective

Wadden Sea World Heritage Climate Change Adaptation

Brussels, 28 February 2023

CWSS



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Wadden Sea World Heritage

- 11.400 km² conservation area
- 500 km coastline
- 3 states



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largest unbroken stretch of sand & mudflats
worldwide, undisturbed



10.000 species of flora and fauna



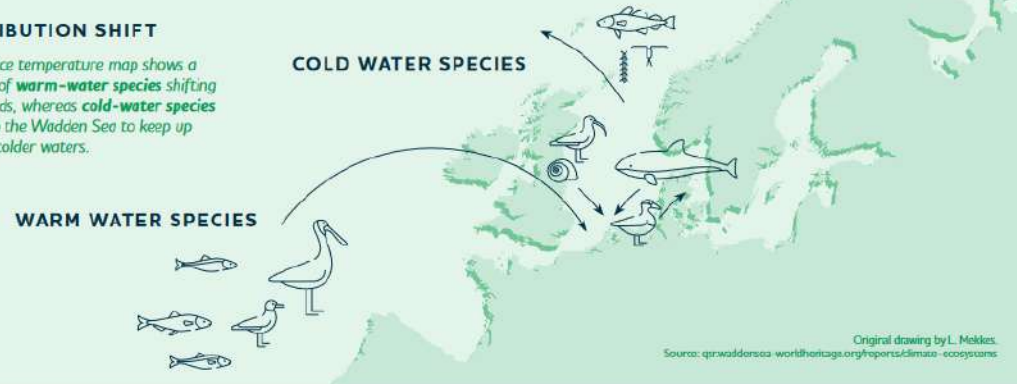
10 -12 million migratory birds
per year



Climate change in the Wadden Sea

DISTRIBUTION SHIFT

Sea surface temperature map shows a selection of **warm-water species** shifting northwards, whereas **cold-water species** retreat to the Wadden Sea to keep up with the colder waters.



SHIFT IN MIGRATORY SCHEDULE

Over the last 30 years, the **greylag goose** (*Anser anser*) has departed three weeks earlier and **lapwing** (*Vanellus vanellus*) four weeks earlier than in the past; in contrast, **barnacle geese** (*Branta leucopsis*) have postponed their departure by four weeks.



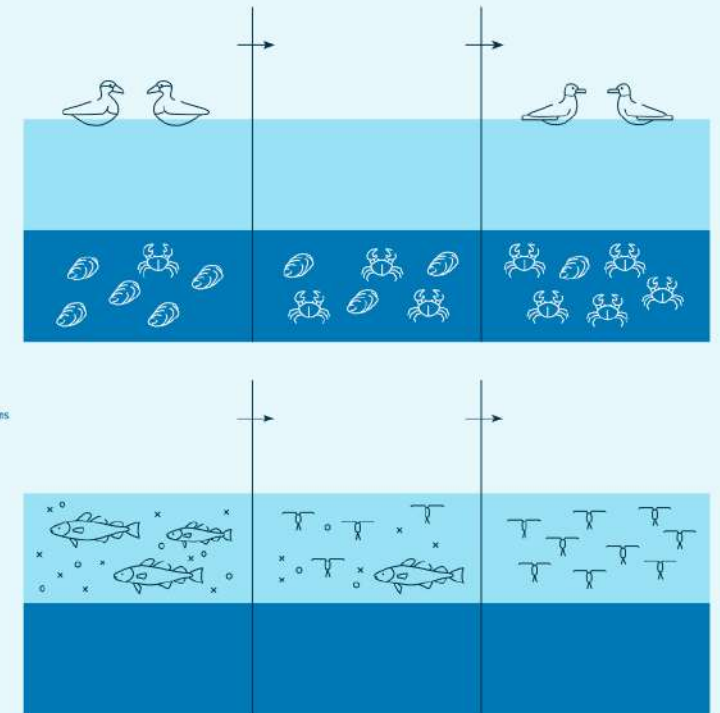
SHIFTS IN FOOD WEB

Possible **mismatches in species compositions** due to climate change.

Top panels: Warmer temperatures during winter causing epibenthic predators to survive, which increase predatory pressure upon bivalves (Beukema, 2009), which in turn result in a decrease in bivalve-eating birds (Camphuysen et al., 2002), while crab-specialists increase in number (Luczak et al., 2013).

Bottom panels: Increased water temperatures cause a shift in plankton composition. This causes an increase of grazing by zooplankton on phytoplankton (Wiltshire & Manly, 2004). As a result, cod recruitment reduces and cod stock declines.

Original drawing by L. Mekkes.
Source: qrwaddensea-worldheritage.org/reports/climate-ecosystems

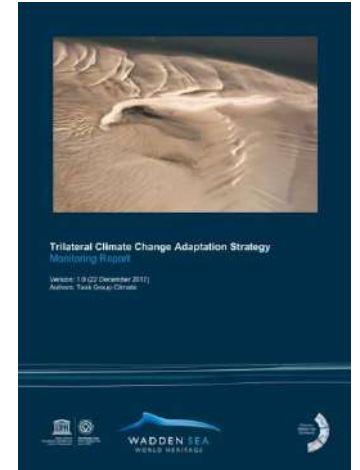




Climate Change Adaptation Strategy 2014

Resilience at its core

Natural dynamics	The Wadden Sea ecosystem has adapted to environmental changes for millennia. Allowing and restoring natural dynamics increases the resilience of the Wadden Sea to climate change.
Interconnectivity	Interconnectivity of habitats allows species and communities to follow shifts of climatic conditions; thereby preventing extinction and securing adaptation of characteristic biodiversity.
Integration	Climate change is a cross-cutting theme and requires an integrated approach across borders and disciplines
Flexibility	To cope with uncertainties of predictions, a flexible approach is required. Adaptive management facilitates timely responses to new information on actual and projected changes.
Long-term approach	Climate change and accelerated sea level rise are gradual processes that need a long-term management approach.
Site specific approach	Challenges and optimal adaptation may differ throughout the Wadden Sea Region, hence cooperation and knowledge exchange on best site-specific solutions are required.
Participation	Active involvement of a wide range of stakeholders should lead to awareness for the challenges of climate change and acceptance of adaptation measures.



[CCAS Monitoring report 2017](https://www.waddensea-worldheritage.org/resources/trilateral-wadden-sea-climate-change-adaptation-strategy-monitoring-report)
www.waddensea-worldheritage.org/resources/trilateral-wadden-sea-climate-change-adaptation-strategy-monitoring-report

Climate Vulnerability Index (CVI)

Key Climate Stressors:	Temperature trend (air and/or water)	Extreme temperature events	Sea level rise (trend)
Exposure	Very likely	Likely	Very likely
Temporal scale	On-going	Frequent	On-going
Trend	Rapid increase	Moderate/Rapid increase	Slow/Moderate increase
Exposure	Very likely ○○○●	Very likely ○○○●	Very likely ○○○●
Sensitivity	Moderate	Moderate	Low
Spatial scale	Widespread	Extensive	Extensive
Compounding factors	Medium/High probability	Medium probability	Medium probability
Sensitivity	High ○○○●○	Moderate ○○●○○	Moderate ○○●○○
Potential impact	Extreme ○○○●	High ○○○○	High ○○○○
Local management response	Low	Low	High
Scientific/technical support	Moderate	Moderate	Moderate/High
Effectiveness	Low	Very low/Low	Moderate/High
Adaptive capacity	Low ○●○○	Very low ●○○○	High ○○○●
OUV Vulnerability	High ○○●	High ○○●	Low ●○○
Combined OUV Vulnerability	High ○○●		

Management perspectives?

- Wadden Sea is a natural dynamic system
- Wadden Sea (eco) system will change due to CC
- Major interventions?
- Accept changes?

However

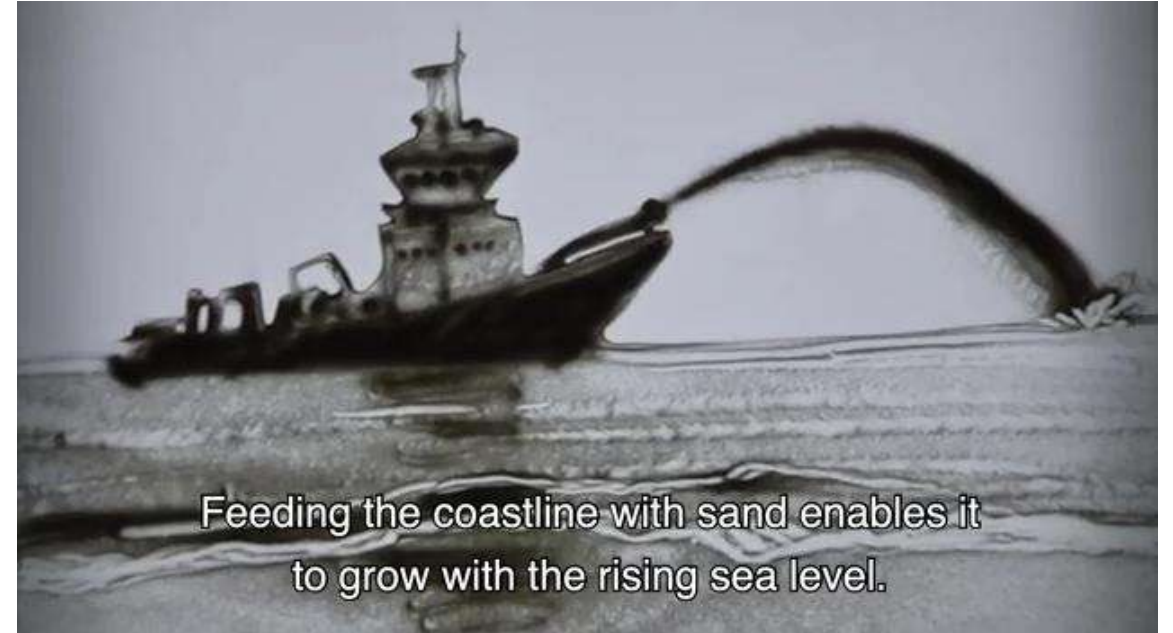
- We can/should manage pressures
- We can/should support adaptive capacity of natural system



Natural dynamics – while guaranteeing safety of inhabitants



VS



Video from Interreg project Building with Nature
<https://www.youtube.com/watch?v=O9lZ6B1nB1Y>

Interreg
North Sea Region
Building with Nature
European Regional Development Fund



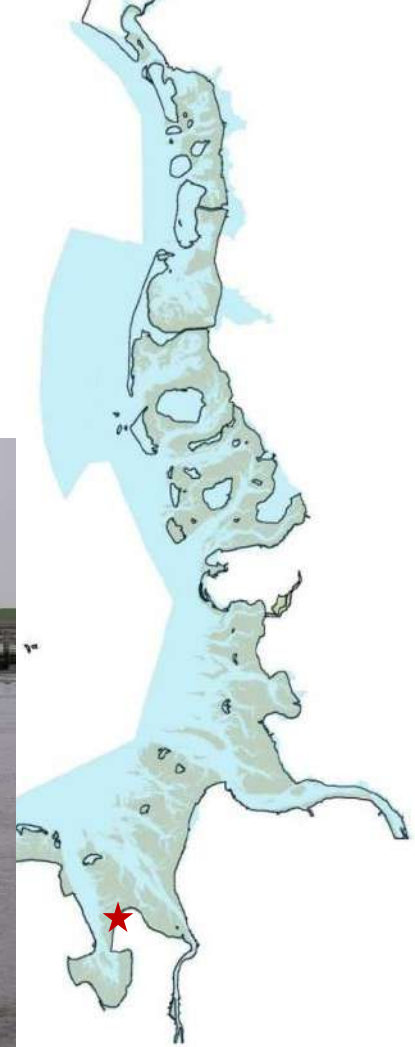
EUROPEAN UNION

Double Dykes



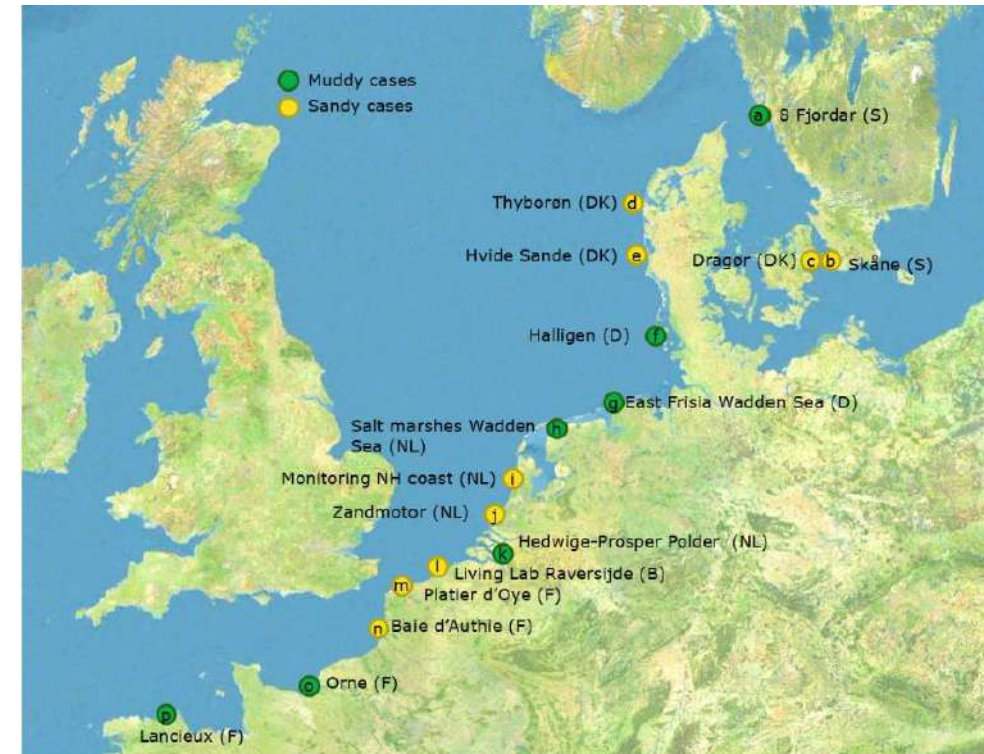
Natural dynamics – while guaranteeing safety of inhabitants

- Example: Langwarder Groden
- Former polder, dike was opened
- Extensive mud flats, shallow water areas and salt marshes - habitats for many breeding and resting birds



Natural dynamics – while guaranteeing safety of inhabitants

- ..and biodiversity
- MAinstreaming NAture BAsed Solutions through COASTal systems (MANABAS COAST)
- Integrating Flood and Coastal Erosion Risk Management (FCERM) with biodiversity goals
- Generic framework for mainstreaming, including regional NbS implementation strategies



Adaptability needs flexibility

- In mindset
- In policy
- In management

- but

Stop global warming!

THERE IS A PLACE – WHERE HEAVEN
AND EARTH SHARE THE SAME STAGE

Photo: DeP Wotterkamp

THANK YOU for
your ATTENTION

