

Nature based solutions voor de Noordzee kust: EU MANABAS-project

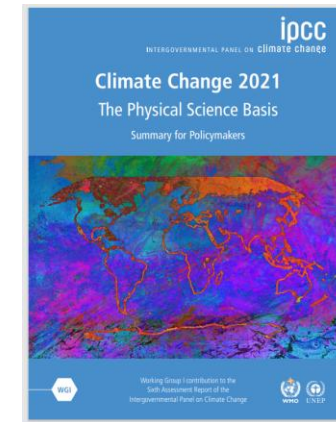
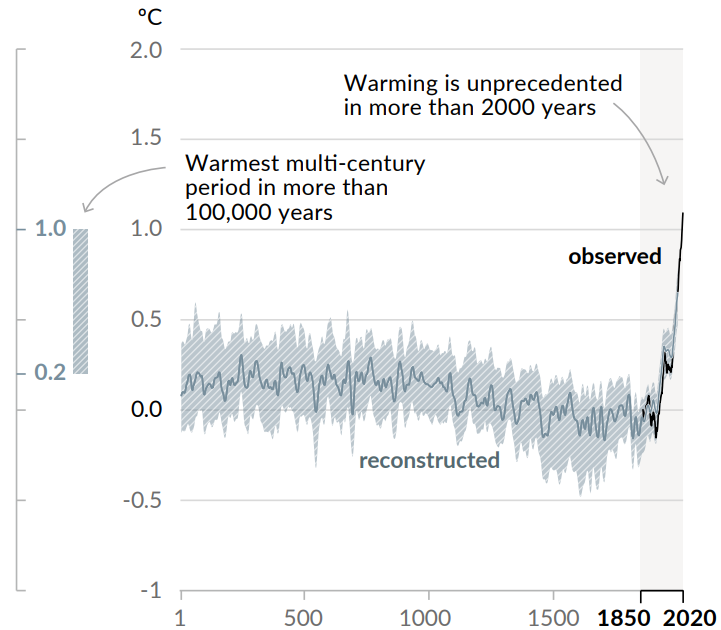
Saskia van Gool, programmamanager zeespiegelstijging
Rijkswaterstaat

Waarom en hoe?

- Problemen bij kust
- NBS als oplossing
- Bouwstenen
- Een Nederlandse kust met NBS
- Hindernissen (Barriers)
- Hoe kunnen we het mogelijk maken? (Enablers)

Climate change and human activities

a) Change in global surface temperature (decadal average)
as **reconstructed** (1-2000) and **observed** (1850-2020)



IPCC Asses

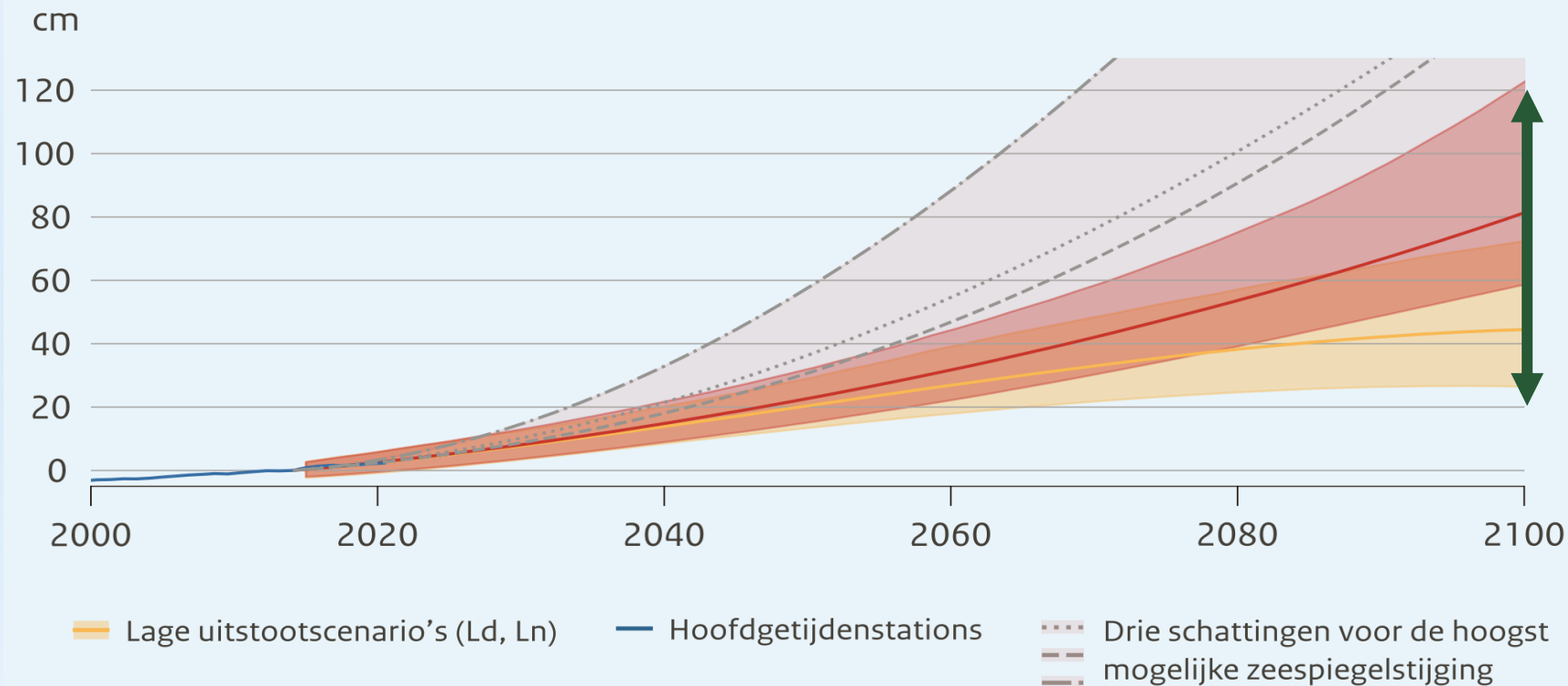




De zeespiegel stijgt

Scenario's tot 2100

KNMI 2023 klimaatscenario's



Bandbreedte scenario's



Kust erosie



Pressure on the coastal systems

- **Increasing Flood Risk**
- High cost of grey infra
- Biodiversity loss
- **Degradation of ecosyst**
- Increase salinity
- i.e. Coastal Squeeze

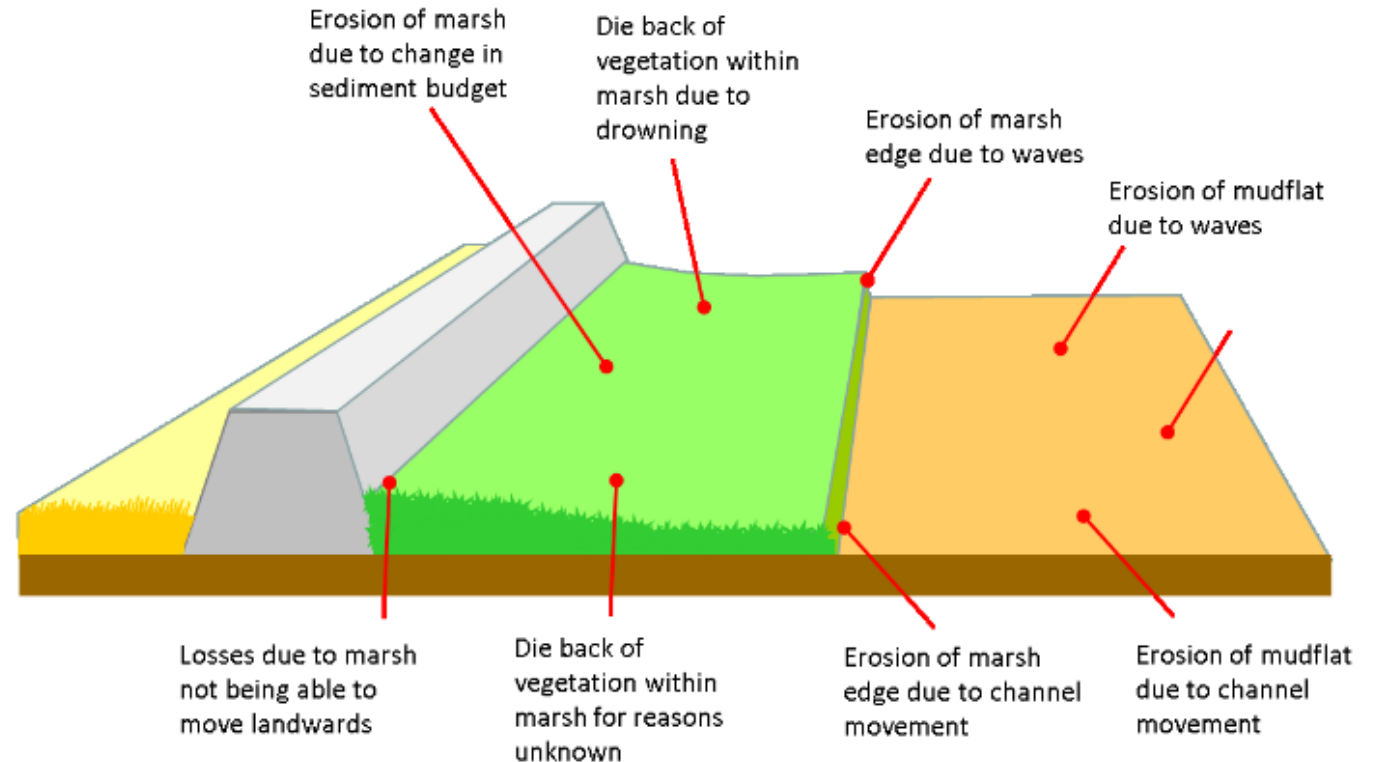
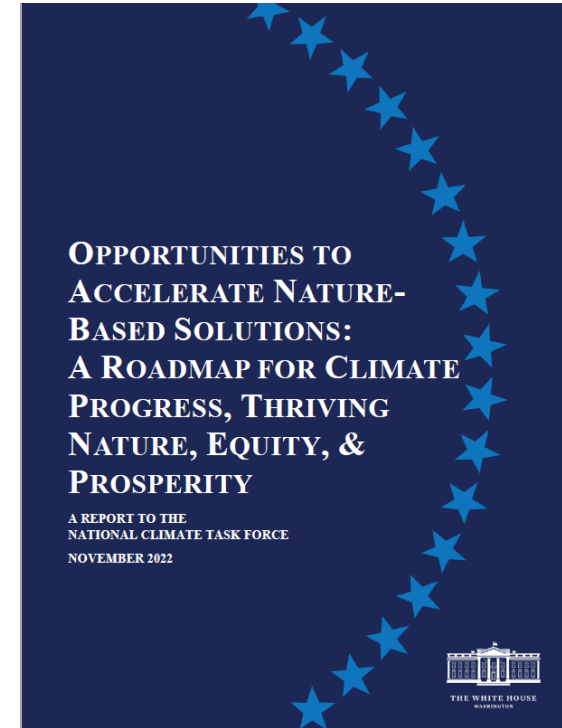


Figure 1.2: An illustration of some of the causes of changes in intertidal habitat extent in front of defences. Some of these changes are due to the presence of the defence, while others are due to other causes.

Environment Agency, 2021: What is coastal Squeeze?

Nature-based Solution is a way forward

- NbS an efficient way to tackle these growing challenges
- The importance NbS is increasingly recognized globally (flexible)
- **EU Commission:** It is time for action, and mainstreaming **Nature-based Solutions**



Many of us implement NbS already

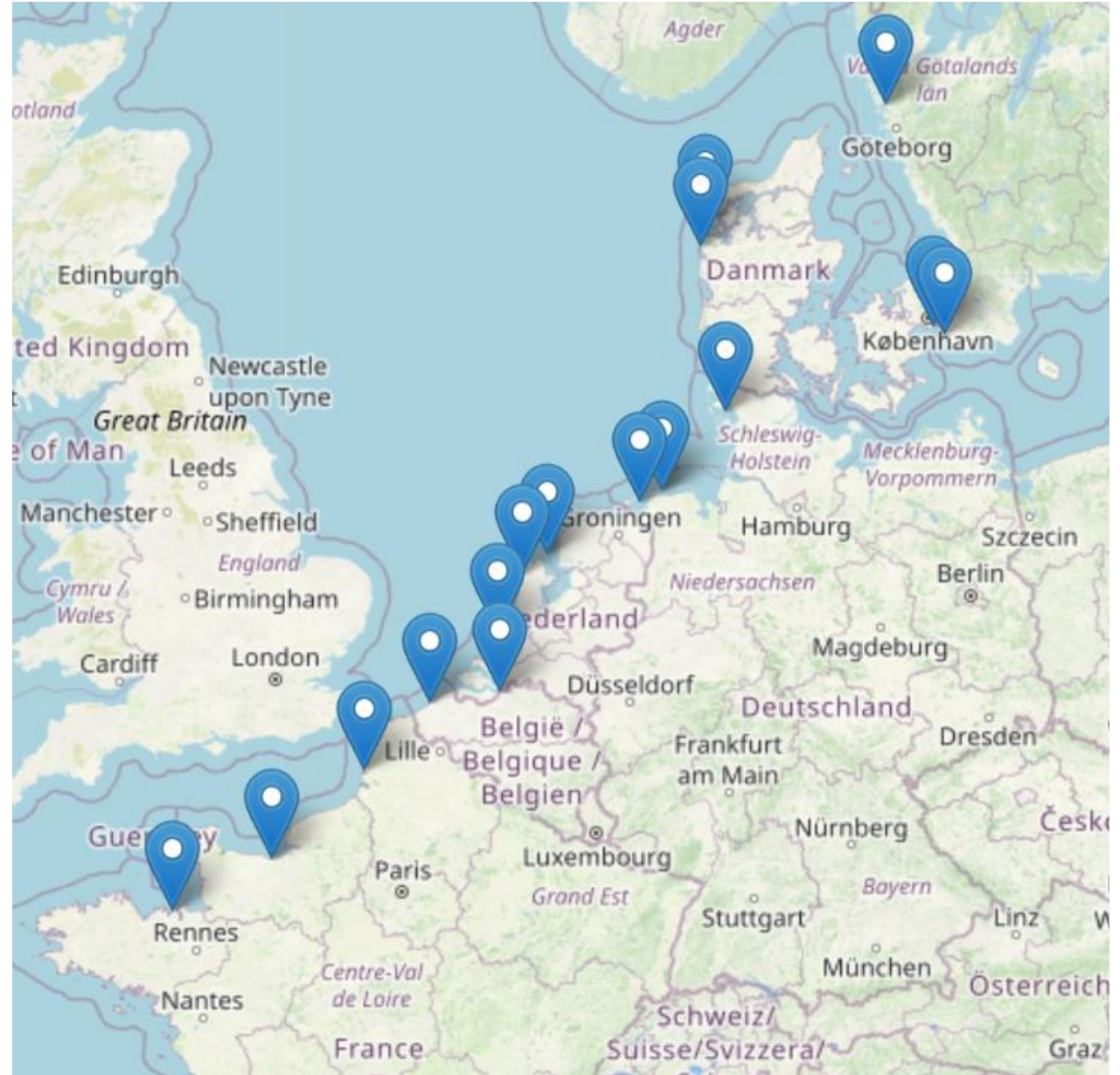


MANABAS COAST

Objective:

“Setting the stage for wide scale application of NbS by developing an accessible **framework**, based on **pilot examples**, to enable integrated policies for the joint delivery of FRM and biodiversity.”

Manabas Coast Pilots



Partners

Sweden

1. Lansstyrelsen Skåne
2. Lansstyrelsen Västra Götaland
3. Statens Geotekniska Institut

Denmark

4. Kystdirektoratet
 - Environment Agency Denmark
 - DK municipalities

Germany

5. Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz Schleswig-Holstein
6. Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz
7. Common Wadden Sea secretariat

Netherlands

8. Rijkswaterstaat
 - Resilience Services
9. Hoogheemraadschap Hollands Noorderkwartier
10. HZ Univ. of Applied Sciences
11. UniversityTwente

Belgium

12. Departement Mobiliteit en Openbare werken, Vlaamse overheid

France

13. Conservatoire du Littoral

Pilot examples

Halligen islands (DE)



f.	Ecosystem-based protection of the Halligen under stronger sea-level rise – ECOHAL (D)
contact	LKN.SH together with WWF Germany
Situation: The Halligen are small marsh islands that have been strongly reduced in size the last centuries due to cliff erosion. Challenge: Stone revetments have been placed to prevent further shoreline retreat, but it reduces sediment accumulation and salt intrusion on the salt marshes. Accumulation of sediment on the salt marshes is necessary to balance sea-level rise, and regular salt intrusion is crucial to avoid deterioration of the salt marshes. Mainstreaming and results: Multi-stakeholder approaches will be used to develop a set of locally accepted solutions. The preferred solutions will be modelled to test the full scale application. This knowledge will actively contribute to the development of NbS elsewhere.	
stakeholders	Local residents, WWF, state and regional agencies



Pilot examples



a. **Salt meadows in the 8 Fjordar area (S)**
contact Länsstyrelsen Västra Götaland (County Administrative Board of Västra Götaland)

Situation: Nature-based Solutions within the 'living-shoreline' concept will be implemented (e.g. breakwalls consisting of wood material) to reduce flood risk and erosion, and to restore salt marshes.

Challenge: The area of salt meadows (N2000-habitat 1330 'Atlantic salt meadows') is decreasing due to intensified wave exposure, and stronger flooding.

Mainstreaming and results: The goal is to maintain and restore habitats and biodiversity in designated Natura 2000 areas, while co-creating NbS with local entrepreneurs and land owners. This will be achieved through enhancing system knowledge (creating guidelines on NbS for other municipalities), testing and optimizing monitoring techniques, and capacity building (providing trainings and creating story maps).

stakeholders Municipalities, several national agencies, community and land owner associations



Pilot examples



Salt marshes Wadden Sea (NL)

h. **Salt marshes Wadden Sea (NL)**

contact Rijkswaterstaat

Situation: Salt marshes are an important part of the Wadden Sea. Salt marshes are more and more recognized as a Nature-based Solution to reduce flood risk. Many initiatives are undertaken to employ salt marshes for flood risk management, which often do not align with priorities set for nature conservation.

Challenge: There are many stand-alone projects, but these lack an overarching vision or approach. The challenge is how to deal with the different services provided by salt marshes, and develop a collective approach that helps individual initiatives.

Mainstreaming and results: The aim of this pilot is to define a set of collective working principles to use salt marshes as NbS. Working principles will be translated into tools and instruments that will be used in other projects in the Netherlands and abroad. This project will enable collaborative and integrated assessment of salt marshes as NbS, reasoning from a systems perspective.

stakeholders PAGW, Rijkswaterstaat, water boards, nature organizations, provinces, and more



Salt marches East Frisia Waddensea DE



Hedwige-Prosper polder (NL)



Pilot examples



Sand Motor (NL)

j.	The Sand Motor (NL)
<u>contact</u>	Rijkswaterstaat
<u>Situation:</u> Larger nourishments are expected to be used in the Sand Motor to minimize flood risk in the coastal areas when the sea-level rises.	
<u>Challenge:</u> There is still a lot of uncertainty regarding the potential of the Sand Motor as a sustainable coastal management tool on the long-term, especially in regard to accelerated sea-level rise, coastal erosion, and socio-economic challenges.	
<u>Mainstreaming and results:</u> Use the Sand Motor as living laboratory, and solve blind spots which are vital for the further application of sand nourishments in the Netherlands and abroad. This project will enhance system knowledge, and actively share this with monitoring optimization projects along the Dutch coast. In this way the Sand Motor can contribute to the broader application of sand nourishments in different morphological contexts, and thus promote mainstreaming.	
<u>stakeholders</u>	Rijkswaterstaat, Provinces, water boards, knowledge institutes and universities



Pilot examples

Platier d'Oye (FR)



m.	Platier d'Oye (F)
contact	Conservatoire du Littoral/délégation Manche Mer du Nord

Situation: Climate change is increasing the erosion rates of dunes, which is partially inhabited and designated as nature reserve. Also, coastal flooding and sea-level rise increases the chance of saltwater intrusion in the adjacent embanked marshes.

Challenge: Co-design NbS with inhabitants and local authorities in a highly erosion sensitive space; dyke planning (for the embanked area); and plan for a long-term relocation in a challenging legal context.

Mainstreaming and results: Mainstreaming activities will include the co-creation of NbS, setting up monitoring protocols, institutional embedding through e.g. local response plans, and developing an awareness program. The goal is to plan collectively for coastal adaptation in the short-, medium, and long-term, while preserving nature and private interests.

stakeholders	Municipality, local residents and authorities, nature reserve managers, knowledge institutes
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Skåne coast (SE)



Pilot examples

- Raversijde BE



Pilot examples



Orne Estuary (FR)

o. **Orne estuary (F)**

contact Conservatoire du Littoral

Situation: The Orne estuary is heavily canalized, and lacks flood retention areas. During high tide the water level already reaches the dike crests, and sometimes overflows during storm events.

Challenge: The risk of flooding of surrounding agricultural and urban areas will increase in the coming decades due to climate change. Due to the variety of activities and interests around the Orne estuary, there is a challenge in considering the estuary as a whole and working towards a common objective.

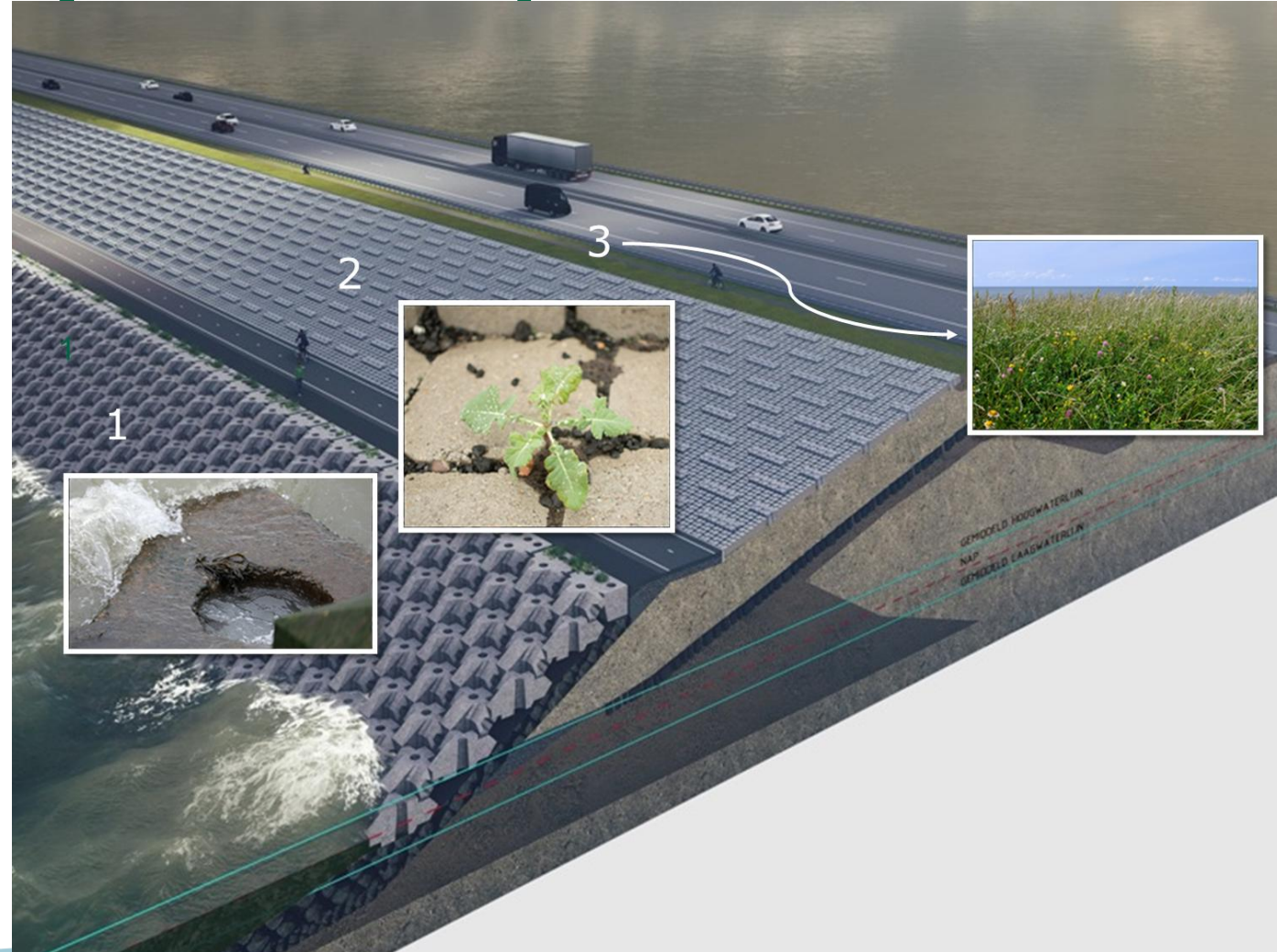
Mainstreaming and results: Co-creation of NbS with local stakeholders, implementing monitoring protocols and executing them, and translating results in regional and national coastal adaptation strategies for mainstreaming purposes.

stakeholders Residents, farmers, industry, regional and state agencies, knowledge institutes



The NBS opportunity Afsluitdijk

- Ecological enhancements, like pools and bulges, can provide room for vegetation on gray solutions.
- By doing so, gray solutions can be colonized by marine life.
- This NBS has been realised on the dam northeast of Den Oever in the Wadden Sea.



Hoe kan Nature based eruit zien in NL?

Zuidwestelijke Delta



Zachte kustverdediging
in combinatie harde infrastructuur



Ontwikkeling zoetwaterbuffers
op basis van oude krekenspatroon



Dubbele dijksystemen
wisselpolders



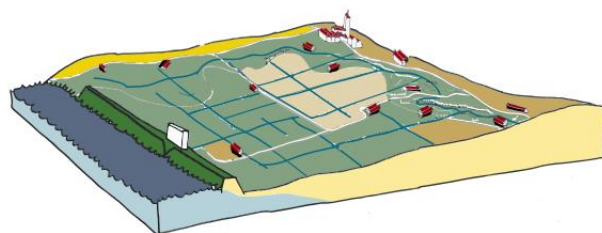
Kringlooplandbouw zoet en zout
met gescheiden watersystemen en groenblauw
raamwerk



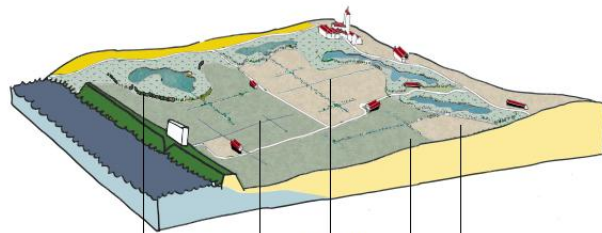
Grootschalige zoet-zoutgradienten en
vergrote connectiviteit bekken



Nieuwe kering en nieuwe dynamiek
strategisch sedimentmanagement



Zeekleipolders delta zuid-west: huidige situatie

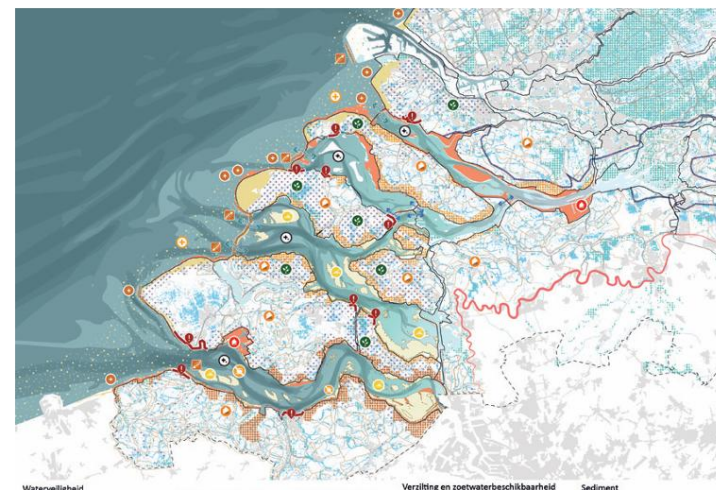


Zeekleipolders delta zuid-west: toekomstige situatie

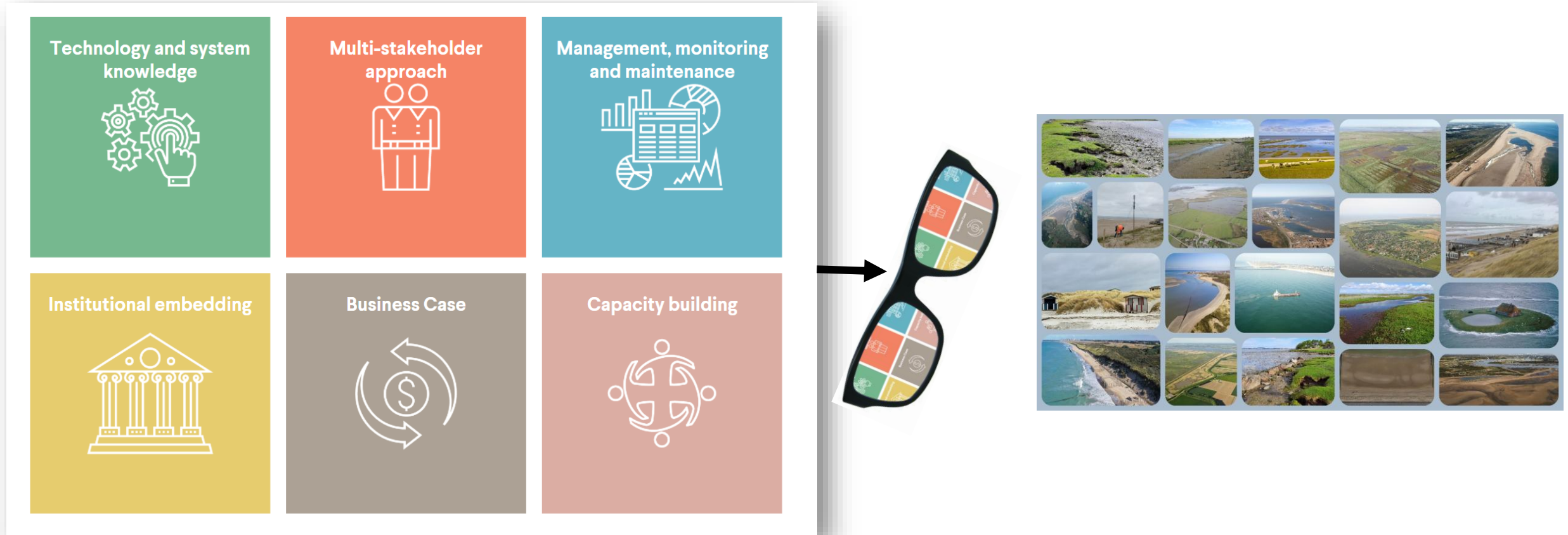
NL2120



KPP ZSS

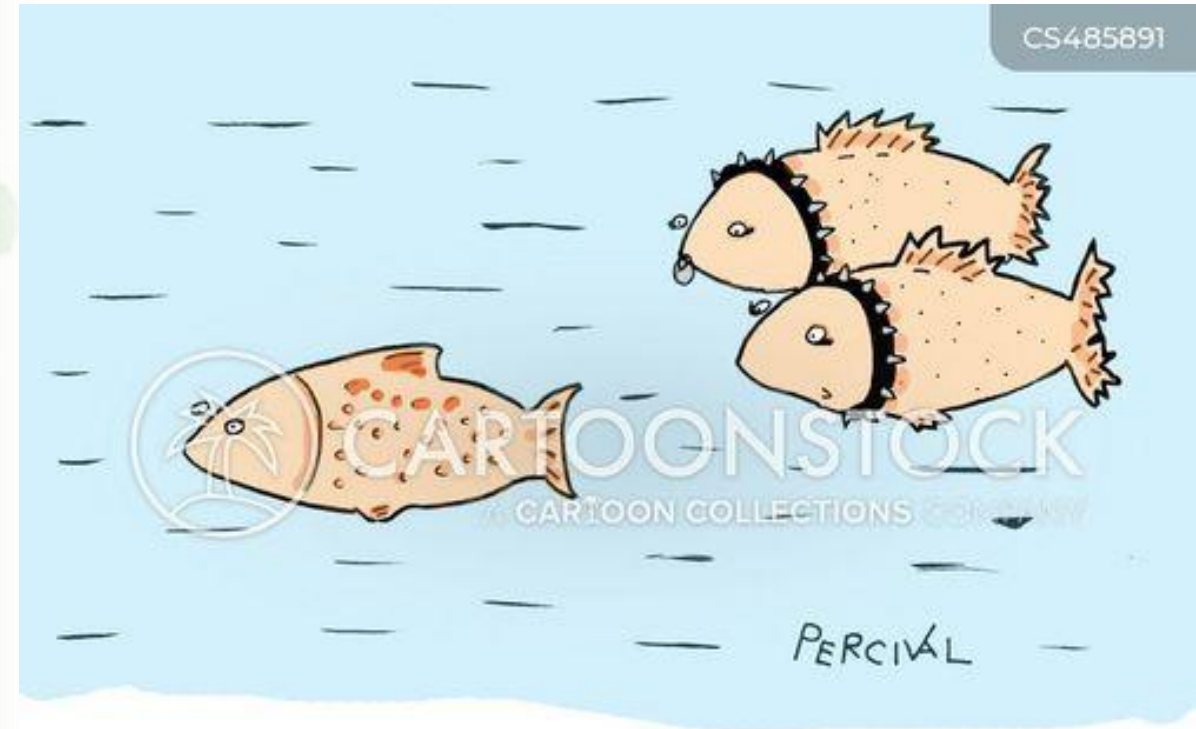


MAinstreaming NAture BAseD Solutions through COASTal systems (2022-2027)



Barriers for NbS

- **Legislation – N2000**
- **Landownership**
- **Higher coster**
- **Cilos in authorities**
- **Other interests**
- **Loss for stakeholders**
- **Fear of change**
- ...
- ...



“He’s gone mainstream.”

Challenges and Enablers for mainstreaming NbS.. Based on earlier work..



Use a systems approach to leverage existing components and projects and their interconnectivity.



Engage communities, stakeholders, partners, and multidisciplinary team members to develop innovative solutions.



Identify sustainable and resilient solutions that produce multiple benefits.



Anticipate, evaluate, and manage risk in project or system performance.



Expect change and manage adaptively.

Technology and system knowledge



Multi-stakeholder approach



Management, monitoring and maintenance



Institutional embedding



Business Case



Capacity building





Website is online:

<https://www.interregnorthsea.eu/manabas-coast>

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