



AORAC-SA FAO Workshop



Making the ecosystem approach operational

Fr 22/01/2016, Copenhagen

**Building our Future can and should
be done together with Nature !**

Paris SAN SOGLOU

Secretary General

European Dredging Association

European Dredging Association 2016



Presentation's Objectives



Demonstrate that

- ⇒ Dredging is not a problem
... it is part of the solution !
- ⇒ Building our Future can and should be done
together with Nature !

Provide food for thought for an Ecosystem-Based Approach with examples of Nature-Based Solutions.



Dredging is part of the Solution



European Dredging Association 2016



Dredging is not a problem ... it is part of the solution !



Dredging is essential to support waterborne Transport Infrastructures

*“Around 80% of the largest population centres in the world are found in coastal areas”
R. Waterman*

👉 Port expansion in densely populated and urbanised areas

👉 *“Reclaim land on the sea”*



👉 Ports' access for bigger ships:

👉 *“Access channel deepening”*



👉 Guaranteed navigational depth:

👉 *“Maintenance dredging”*

👉 Contaminated sediments on seabed or riverbeds:

👉 *“Environmental dredging”*



European



Dredging is not a problem ... it is part of the solution !



Dredging also facilitates and protects other coastal activities worldwide

(Coastal) Cities need

👉 Energy and resources:

👉 *“Offshore Oil & Gas installations”*

👉 *“Offshore Wind Farms”*

👉 *“Aggregate Mining”*

👉 Protection from water

👉 *“Coastal and flood protection”*

👉 Recreation

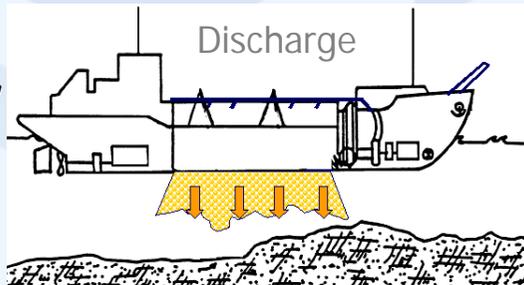
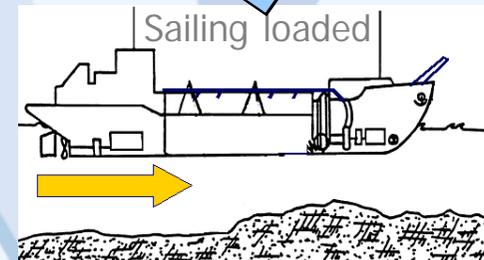
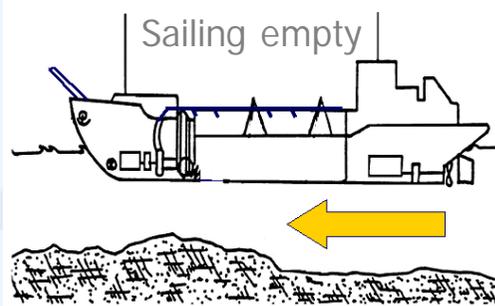
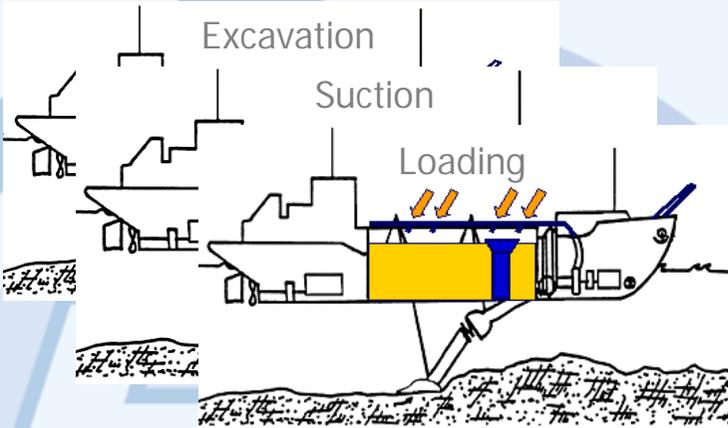
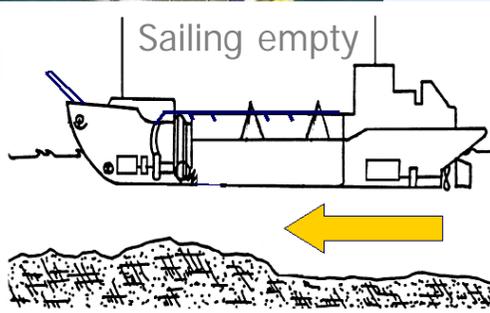
👉 *“Leisure infrastructures”*



Dredging means transporting



- Sand
- Rock
- Gravel
- Silt



ation 2016



European Dredgers' Business Model

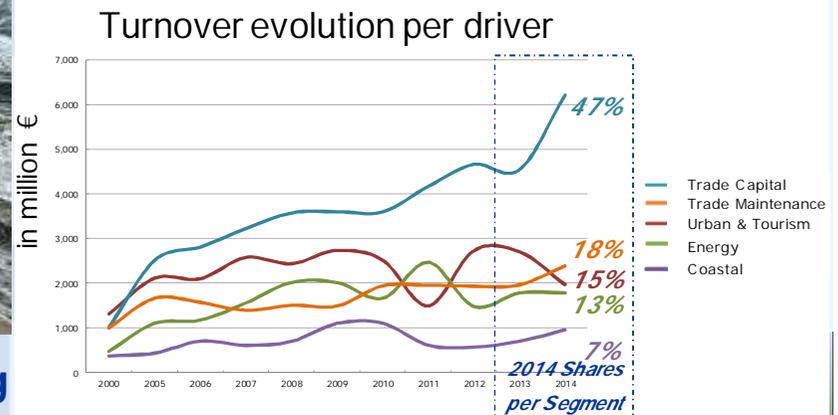
Dredging Plus



Dredging Plus: focus on dredgers' technology + focus on other sciences !
Paradox: Focus + No Focus ??

Results:

- ☞ high added value and capital intensive
- ☞ acyclical and diversified (geography & activities)
- ☞ innovative & creating new job opportunities



European Dredging



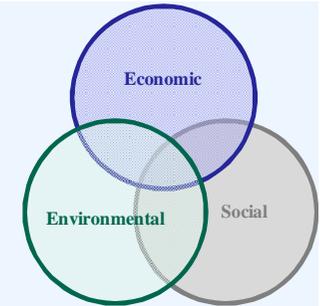
Issues with Waterborne Infrastructures





Any Problems ?

Large-scale Dredging Projects



- 👉 Development of large-scale projects characterised by
 - 👉 Complex environmental legislation (Directives ⇔ National Laws ⇔ Interpretation?).
 - 👉 Long-lasting procedures
 - 👉 Extensive environmental requirements
 - 👉 Uncertainties on project impacts
- ⇨ **Delays** (leading sometimes to cancellation).



Main Types of Obstacles to Building Waterborne Infrastructures



Mainly Legislative, Market & Governance Obstacles translating into:

- ⇒ Environmental legislation: multilayered & complex.
- ⇒ Costs Horizons: Life Cycle vs Project ?
- ⇒ Lack of Knowledge: go vs no go ?



Multilayered and complex Legislative Landscape





Design & Implementation Costs



Eco-dynamic Design

An ecodynamic design of a sand nourishment is characterized by:

- Design serves integral objectives: Guarantee coastal safety, create space for nature development and recreation
- Implementation of a large sand volume (10-20 mln m3 or more)
- Envisaged life span 20 years
- Incidental disturbance of ecosystem
- Use natural processes for distribution of sand. Gradual evolution, ecosystem capable of following morphological changes.



Traditional Design



A traditional design of a sand nourishment is characterized by:

- Primary objective: Shoreline maintenance. Other objectives of secondary importance
- Implementation of a medium sand volume (2-5 mln m3)

- Envisaged life span 5 years
- Frequent disturbance of ecosystem.

👉 Cheaper in the long term

👉 Minimise Disturbance/Compensation

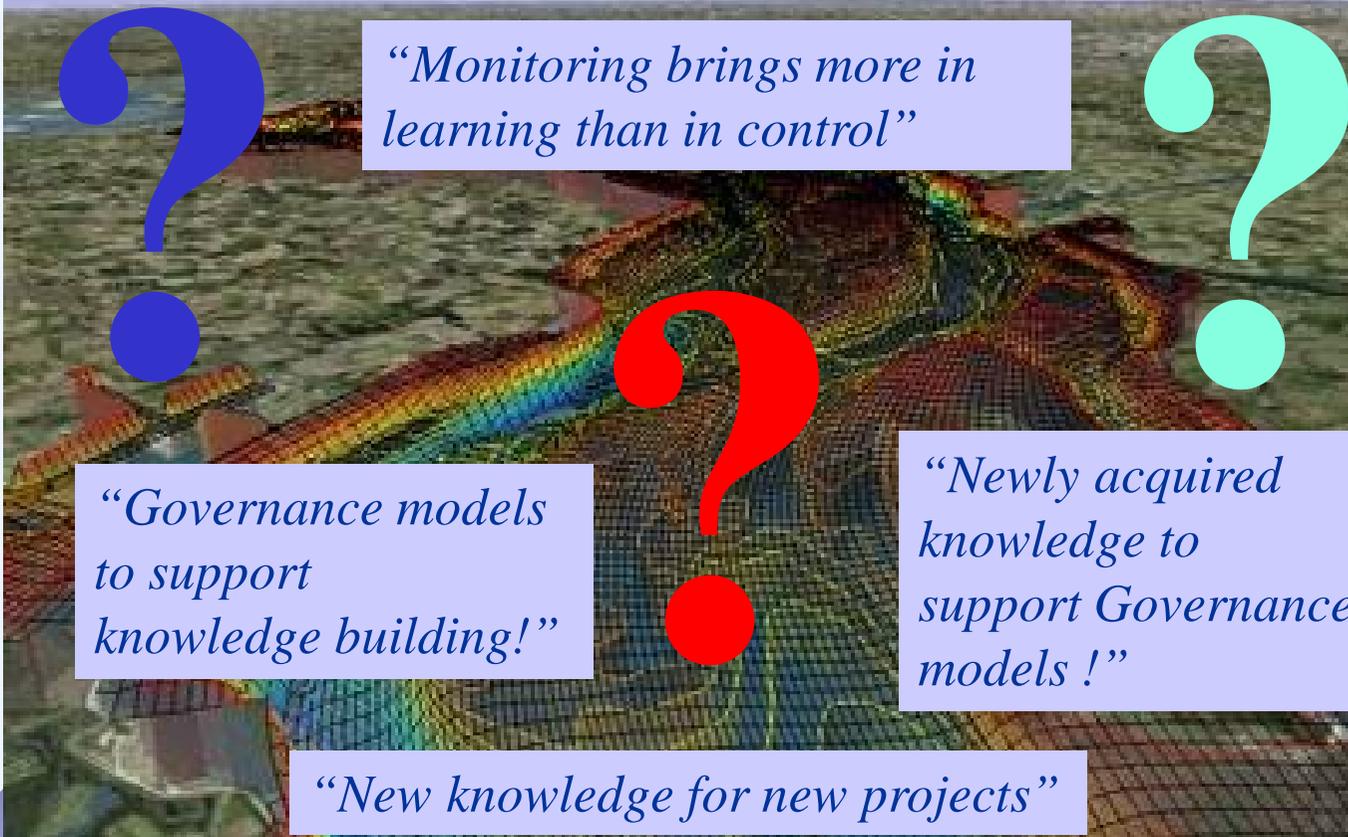
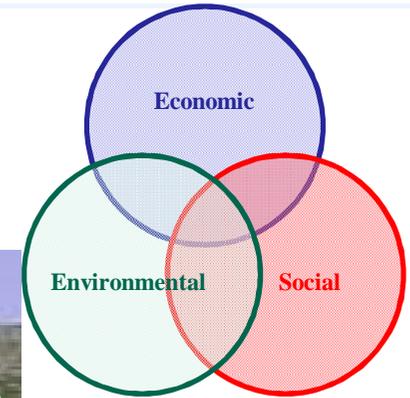
👉 Cheaper in the short term

👉 Frequent Disturbance

👉 Compensation can be significant



Lack of Knowledge (≠ lack of decision/action)



“Monitoring brings more in learning than in control”

“Governance models to support knowledge building!”

“Newly acquired knowledge to support Governance models !”

“New knowledge for new projects”



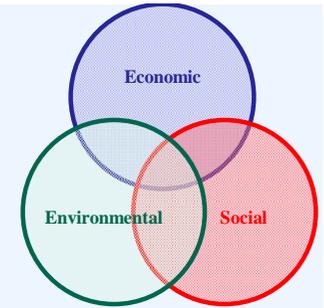
The Way Forward: Building with Nature





Any Solution ?

Need for a Paradigm Switch



⇒ From **defensive approach**,
minimising environmental impact,

“Environment = Constraint”

⇒ To **constructive approach**, optimising
full (socio-)economic and environmental potential.

“Environment = Opportunity”

Considering the project’s **added value** to:



Safety ?



Nature ?



Attractiveness ?



Sustainability ?



Society ?
Economy ?



Implementing Building with Nature

Eco-Dynamic Design & Development

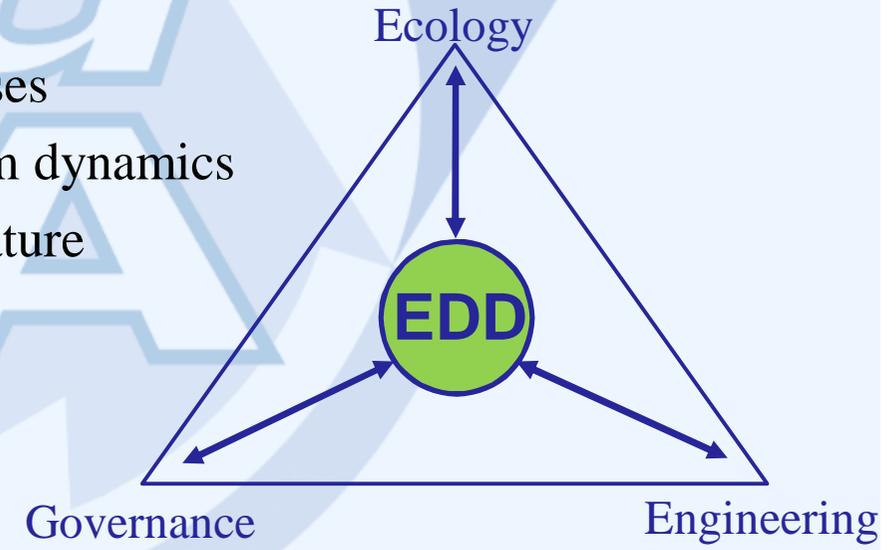


“Eco-Dynamic Design & Development”

⇒ the dynamics of the natural system become the starting point for design and realisation of maritime infrastructures:

- ✓ Make optimal use of natural processes
- ✓ Design fits with natural (eco-)system dynamics
- ✓ Explore opportunities to promote nature development

⇒ Key disciplines are integrated (Engineering, Ecology & Governance).





Building with Nature works



soft solutions

hard solutions

Temperate

Tropical



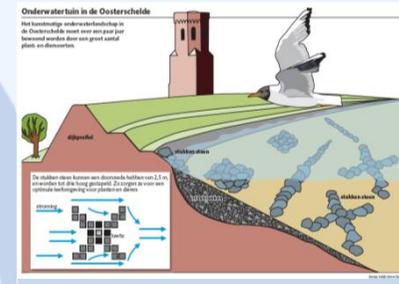
*Pilot Sand Motor
Delfland Coast*



*IJsselmeer
foreshore nourishment*



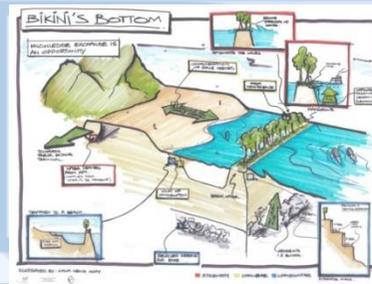
*ES: oyster reefs
as shore protection*



*Eastern Scheldt
Underwater garden*



*Coastal protection
Sea grass*



*BwN design Singapore
Labrador Park*



*Coastal protection
Mangroves*



*Singapore
'rich levee'*

focus on
ecosystem
functioning

focus on
infrastructure
development

Nature-Based Sandy Strategy



Pilot: Sand Motor

Knowledge: Nature Coast

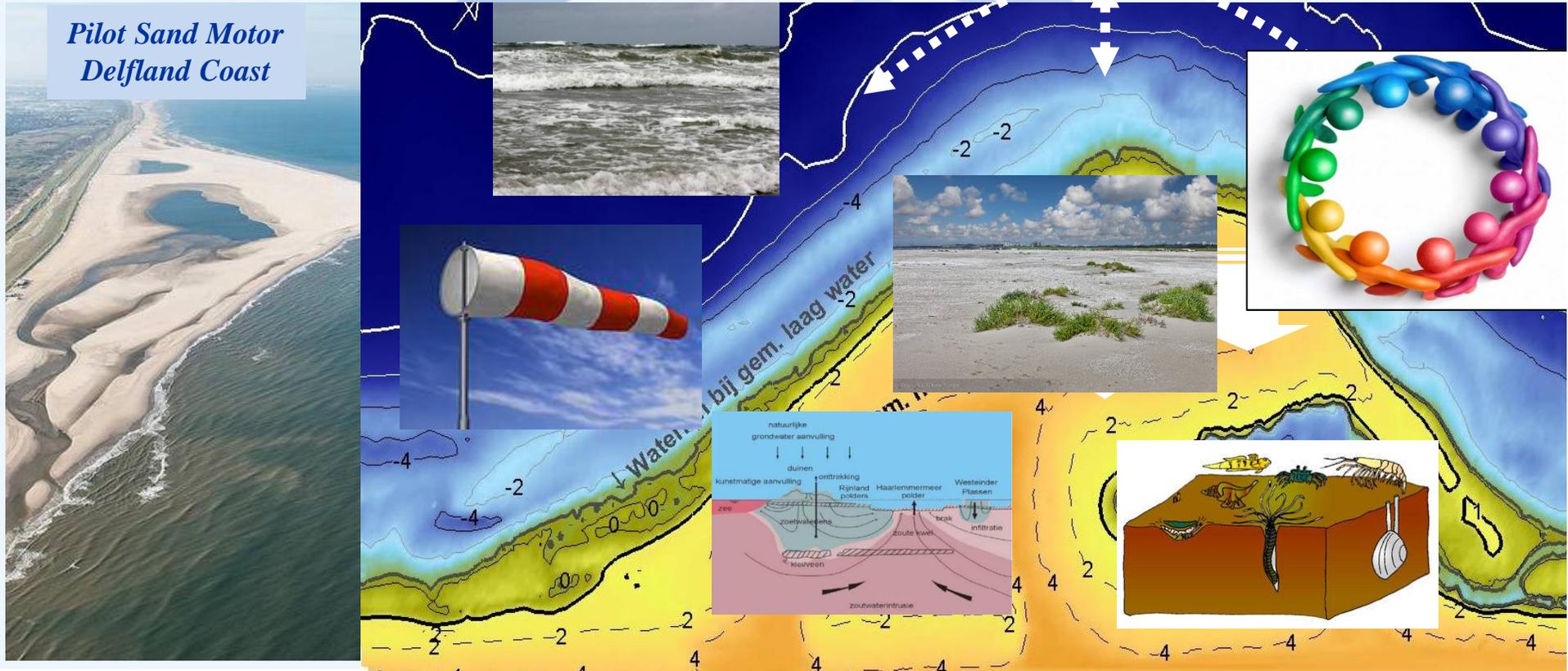
Upscaling: Along (Dutch) North Sea coast



Inter-disciplinary research Mirroring the Multiple Purposes



*Pilot Sand Motor
Delfland Coast*

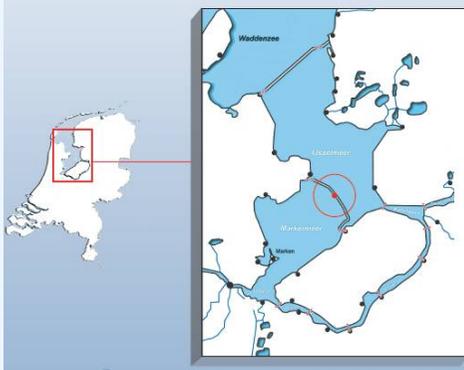


- Coastal Protection
- Dune formation
- Hydrology and geochemistry
- Marine ecology
- Terrestrial ecology
- Governance

Foreshore solutions mimicking Nature



Pilot Houtribdijk



De proefsectie wordt deels beplant met verschillende soorten vegetatie om te onderzoeken welke soorten het beste werken

Het stuifscherm zorgt ervoor dat het wegverkeer niet gehinderd wordt door stuivend zand

150 m

Rijsmatten

De helling varieert om te onderzoeken wat daar het effect van is.

500 m

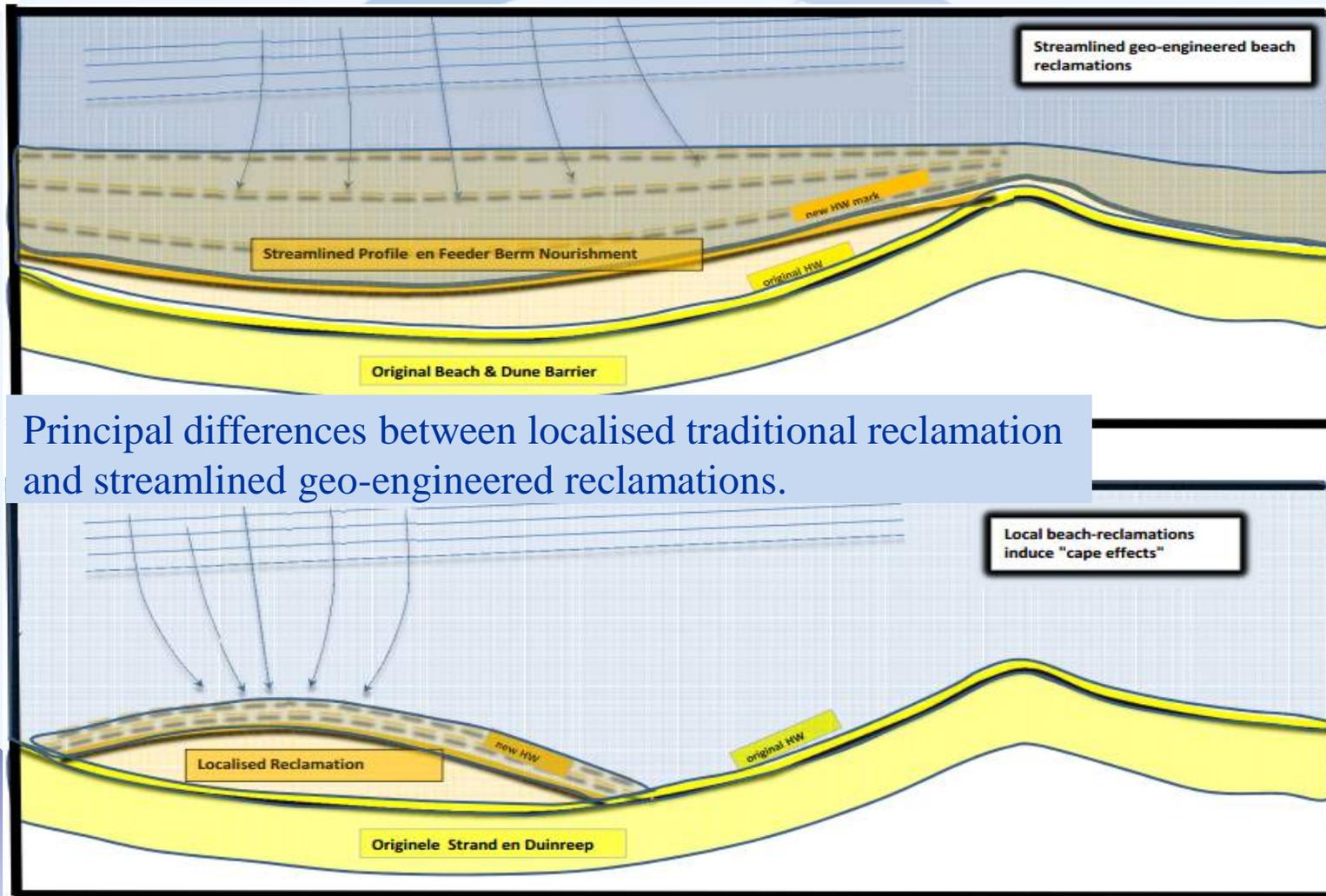


Een mast met camera registreert de werking en ontwikkeling van het voorland.

A 3D perspective rendering of the dike and foreshore. The dike is a raised embankment with a road on top. The foreshore is a sloped area with various types of vegetation, including tall grasses and reeds. A camera mast is visible on the left side of the dike. The water is shown in blue, and the sky is light blue.



Foreshore solutions mimicking Nature Geo-Engineered Approach

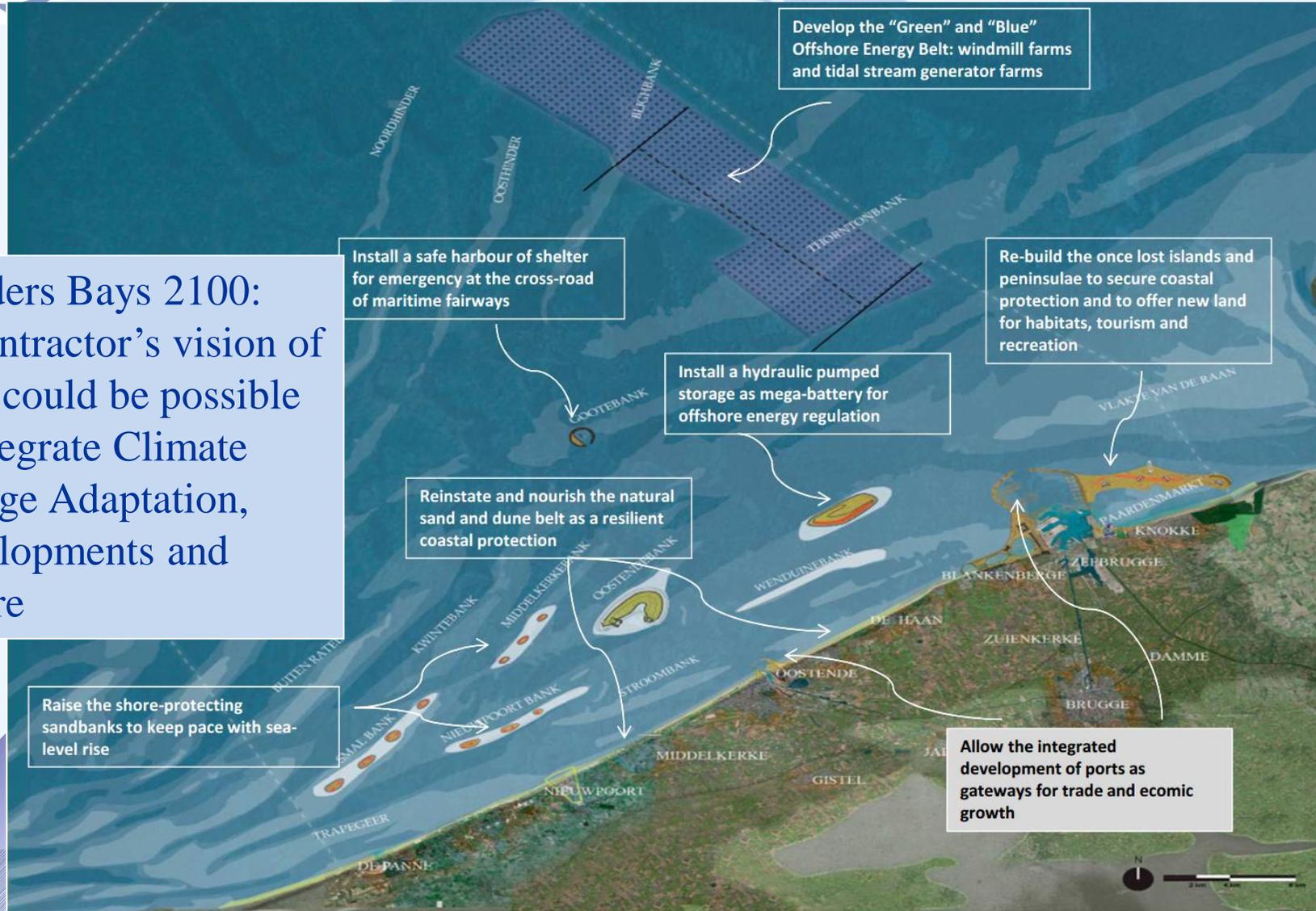




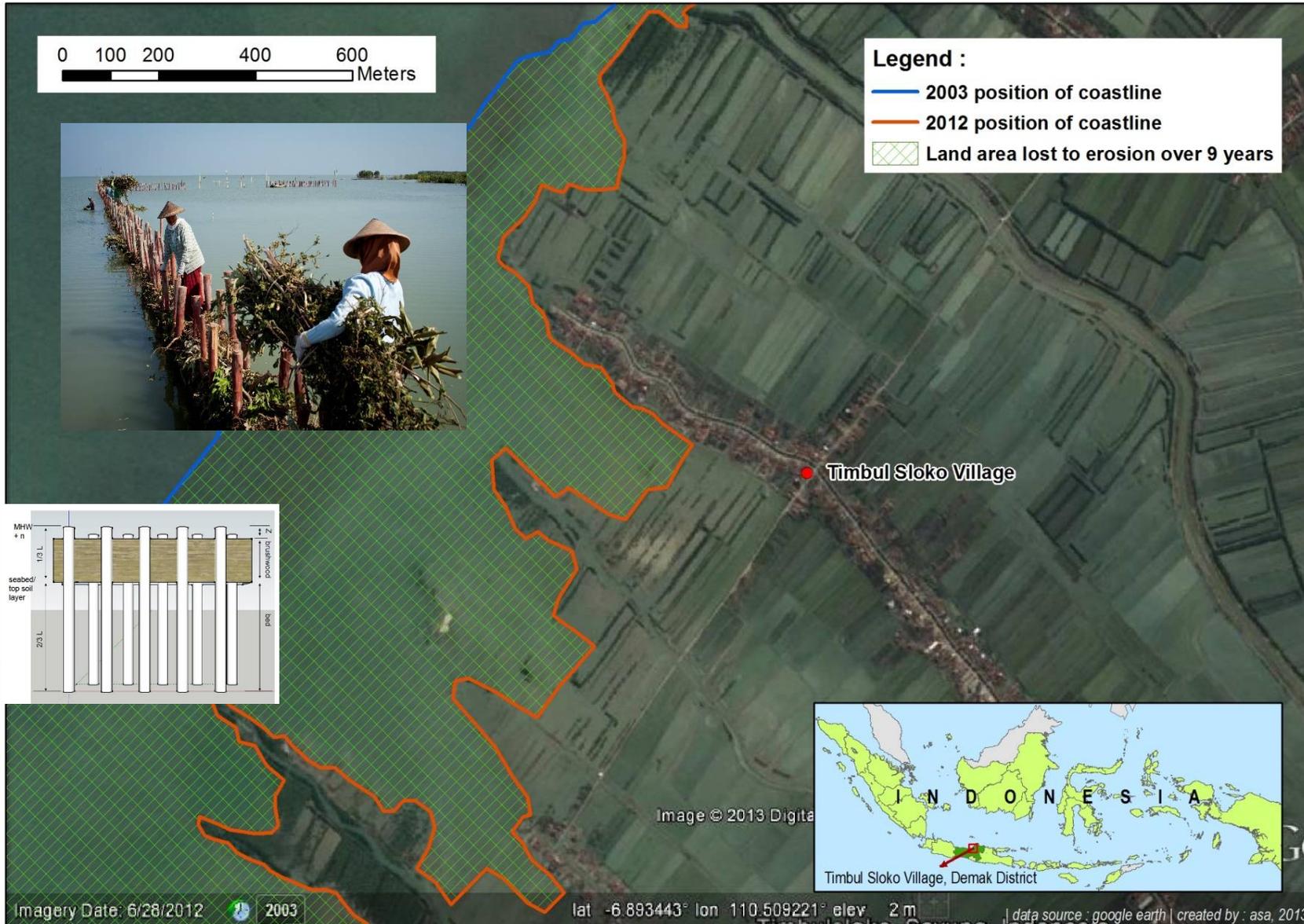
Climate Change Adaptation Flanders Bays Vision for 2100



Flanders Bays 2100:
A Contractor's vision of
what could be possible
to integrate Climate
Change Adaptation,
Developments and
Nature



Building with Nature in Indonesia





Blue Carbon

An Innovative Instrument for CO₂ Policy



Blue carbon:

- ✓ oceans & coastal biotopes that are **natural carbon sinks** (mangroves, seagrasses, salt marshes, coral reefs, etc.);
- ✓ captures atmospheric CO₂ through the plants' **photosynthesis**;
- ✓ stores carbon in the **long-term** through the natural growth processes in the ecosystems' plants and animals (respectively the **gross primary and secondary productions**).

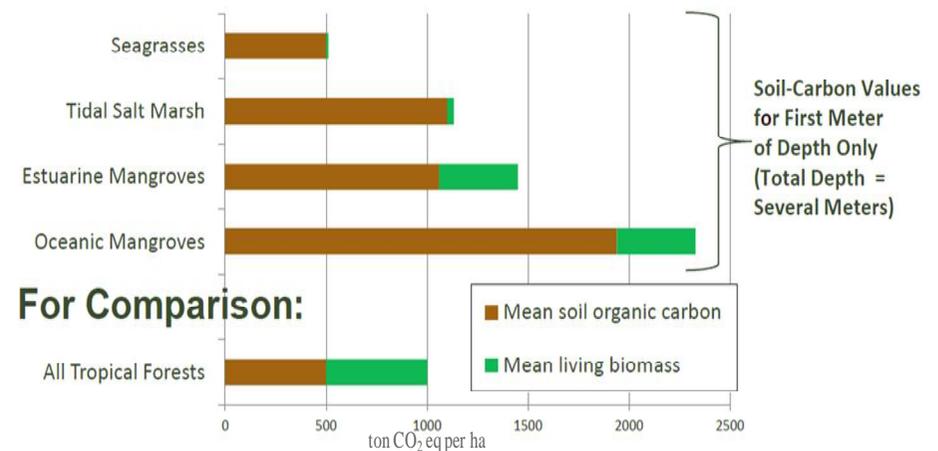
Prerequisites

- ✓ Establishment of **Market Based Measures (MBM)**;
- ✓ **Political recognition** (IMO, EU); and
- ✓ direct link (market certification) to MBM;
- ✓ Functioning MBM market.

CO₂ emissions reduction:

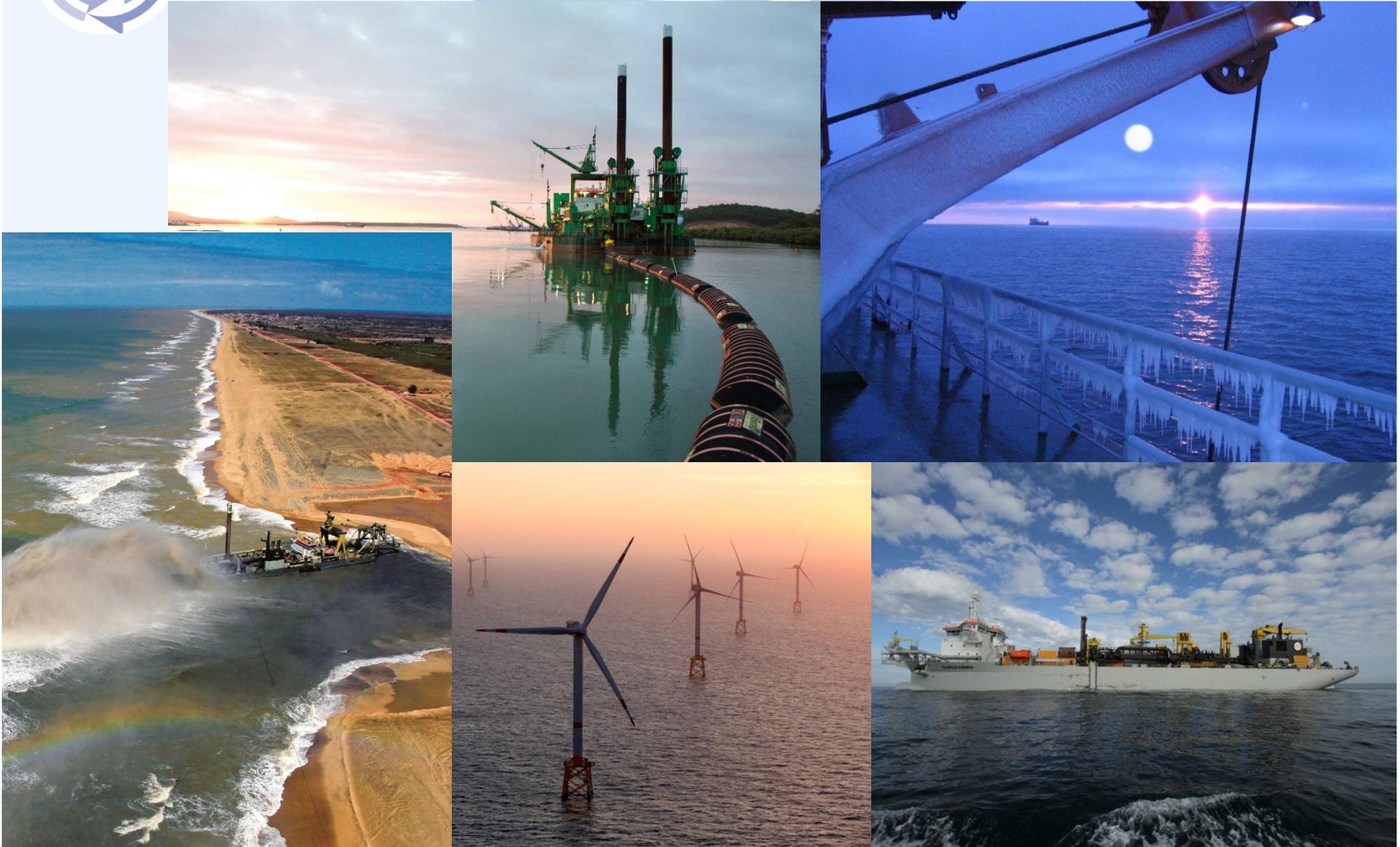
- ✓ emissions reductions cannot be disconnected from **global economy** (and global trade);
- ✓ **-40% by 2050** are **impossible** to achieve if only acting on the **emission sources**;
- ✓ Blue Carbon reduces **CO₂ atmospheric concentrations**
= offsetting opportunities that can **be bought/sold**.

Examples





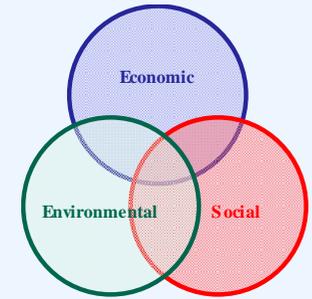
Conclusions





Conclusions

A Nature-Based Concept



Building with Nature

is a partnership with Nature, integrating both physical and biological aspects of Nature into a project's design, EcoDynamic Design or Geo-Engineering, and its implementation so that the project integrates more harmoniously and more harmlessly into Nature and when possible to Nature's benefits.

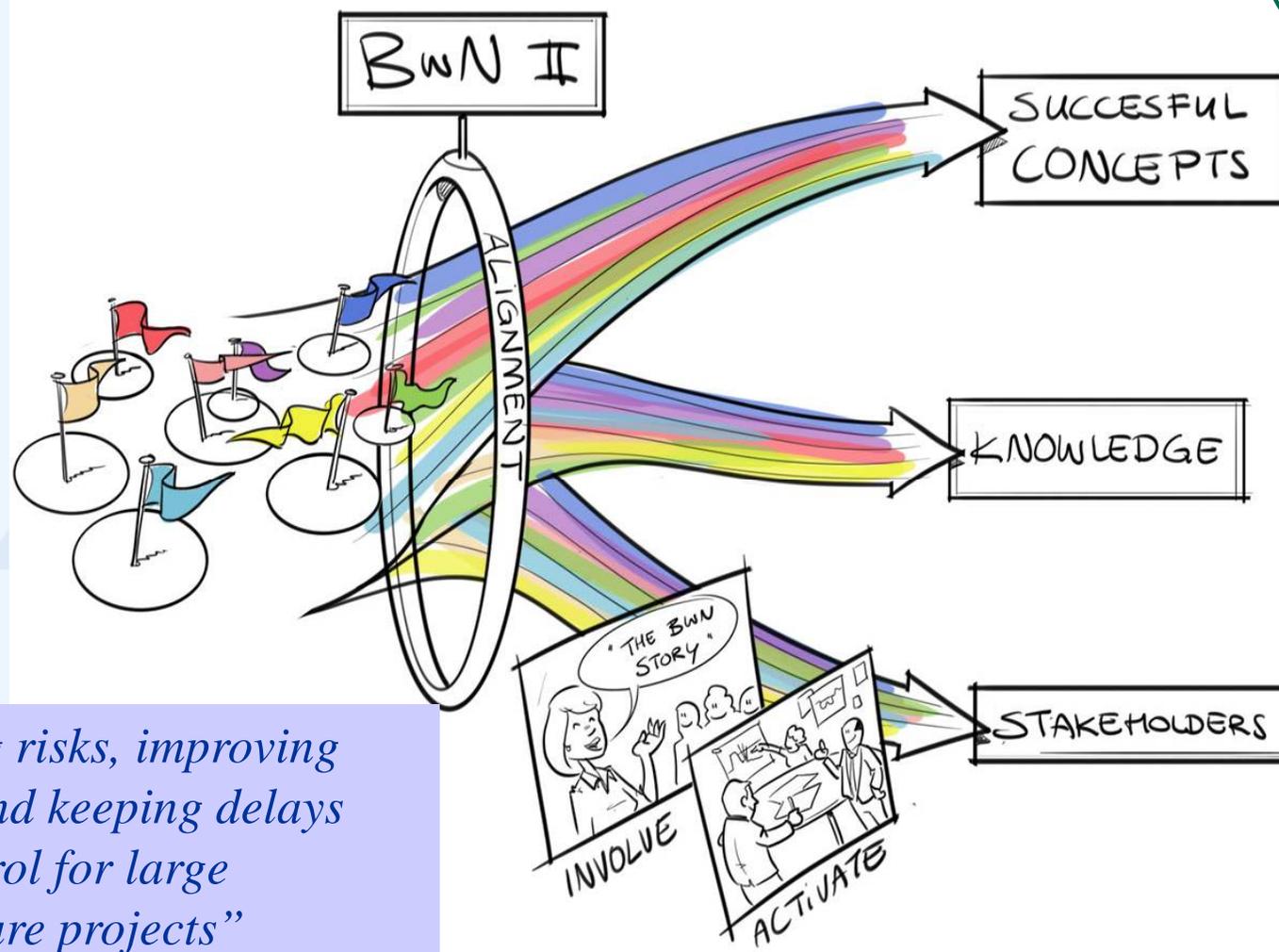
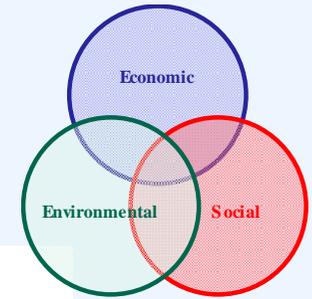
“Where Nature and Man work together for their mutual benefit.”





Conclusions

A Framework for Cooperation & Innovation



“Managing risks, improving certainty and keeping delays under control for large infrastructure projects”



Conclusions



- ⇒ Dredging is not a problem
... it is part of the solution !
- ⇒ Building our Future can and should be done
together with Nature !

Building with Nature provides a frame to approach waterborne infrastructures from cradle to grave (design, authorisation, building, operating, decommissioning).



Thank you !

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More on Building with Nature @:



EcoShape

www.ecoshape.nl



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What is EuDA about ?



EUROPEAN DREDGING ASSOCIATION





EUROPEAN DREDGING ASSOCIATION



“EuDA is the official interface between the European dredging industry and the European Institutions”

- founded in 1993
- represents the European Dredging Companies
- from 16 EU Members States
- world leaders (top 4)
- with a turnover (2014): €9.2 bn
- +/- 25,000 European direct employment
- >50,000 indirect employment (*supply and service companies*)

