

Integrated beneficial sediment management in practice



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Beneficial Use of Sediments

Natural



Natural Systems and Impact of human activities

Natural



Human activities





Beneficial Sediment Use

CEDA and PIANC Definition

“the use of dredged or natural sediment in applications that are beneficial and in harmony to (human and natural) development”

(...as opposed to waste it at sea or store it in a remote deposit forever)

Flood risk management



Navigability



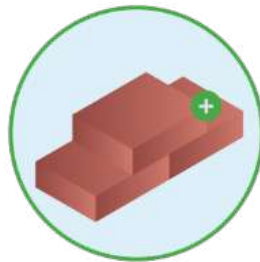
Nature development



Water quality



Building material



Local economy



Photo: EcoShape



Photo: Hunze en Aa's



Transforming
Dredged Sediments
*from Debris / Trash
to Resource/Asset*

CEDA Information Paper

SUSTAINABLE MANAGEMENT OF THE BENEFICIAL USE OF SEDIMENTS

A Case-studies Review



CEDA Position Paper

ASSESSING THE BENEFITS OF USING CONTAMINATED SEDIMENTS



Beneficial Sediment Use

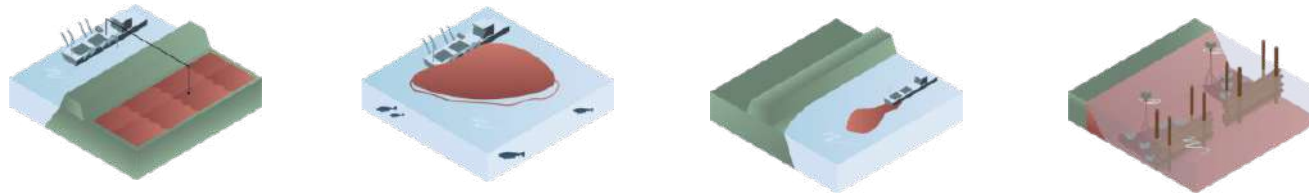
CEDA WG Beneficial Use 2019 Publication

- Collected 38 Case Studies in 11 Countries
- Clean and contaminated sediments
- Last 30 years - focus last 10 years

Explore and submit your case study @
https://dredging.org/content/case_studies.asp?q=&major_function=&major_technique=

Beneficial Sediment Use

CEDA Classification



Technique

Raw Material
Remediation
Reclamation
Restoration
Resilience

Function

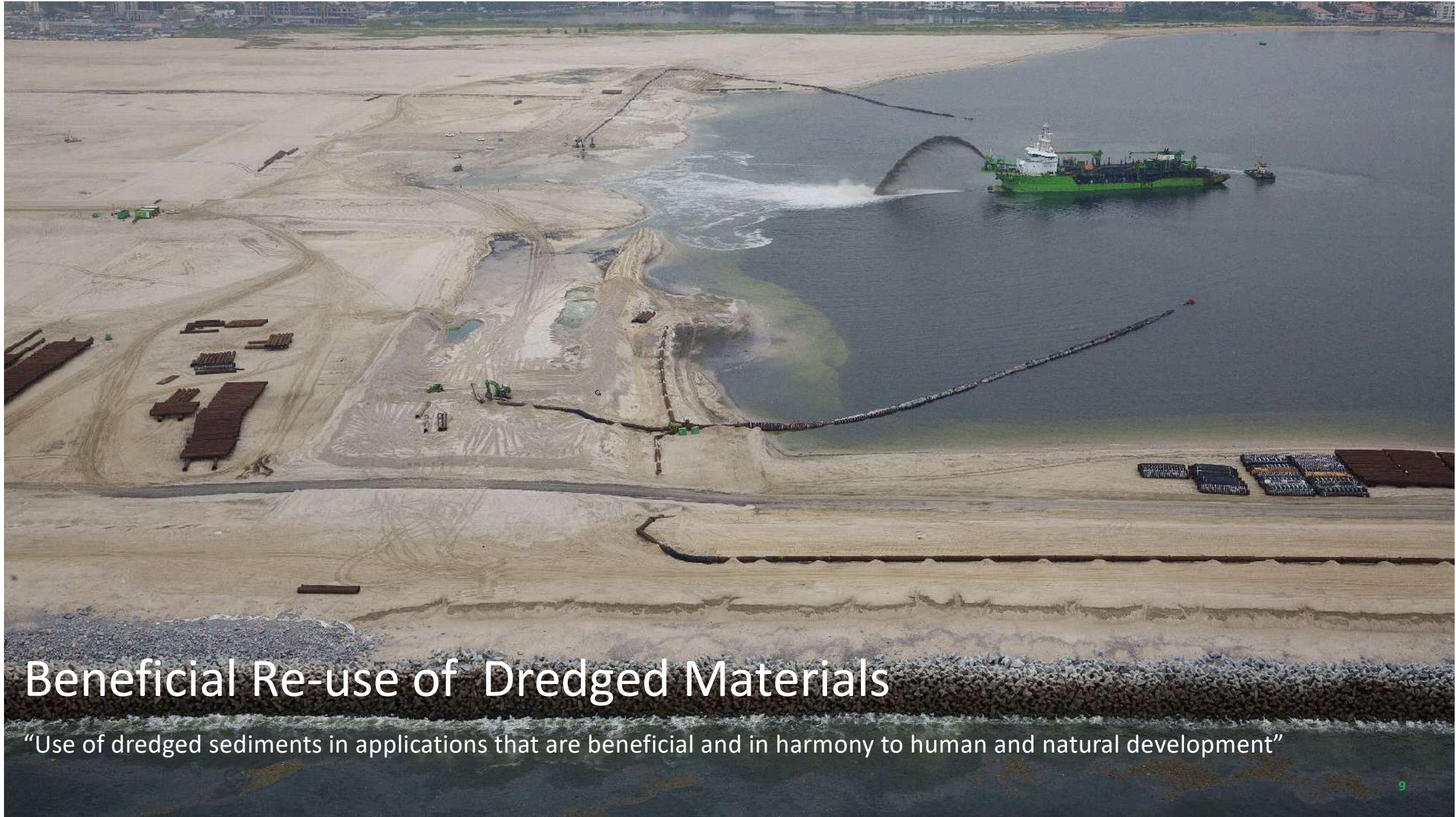


Treatments and contaminants

With Nature (NBS)

Photo: DEME

Photo: DEME



Beneficial Re-use of Dredged Materials

“Use of dredged sediments in applications that are beneficial and in harmony to human and natural development”

BENEFICIAL USE FOR SUSTAINABLE WATERBORNE TRANSPORT INFRASTRUCTURE PROJECTS



EnviCom Working Group Report N° 214 – 2023



The PIANC 2023 Beneficial Use Guidelines

PIANC ENVICOM

Report on Sustainable use of dredged material



Guidance Report Goals

- Increase industry-wide Beneficial Use (BU) practices globally
- Develop strategies to overcome barriers to BU
- Advance circularity and sustainability goals by managing **sediment as a resource**



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Overall Approach

Create a framework for users to promote sediment as a beneficial resource

- Build on existing documents
 - CEDA, USACE, PIANC , WEDA, SEDNET
 - More focus on governance than technologies
- Identify key barriers / catalysts
- Understand regional differences
 - Country / continent / region
 - Learn from different regions and case studies

**Seven Mile Island Innovation Laboratory
(SMIIL), New Jersey Coast, US:
Transforming Practice from Dredged
Material as Waste to Dredged Material as a
Resource**





What Has Changed: Sustainability and WwN

Key events and publications

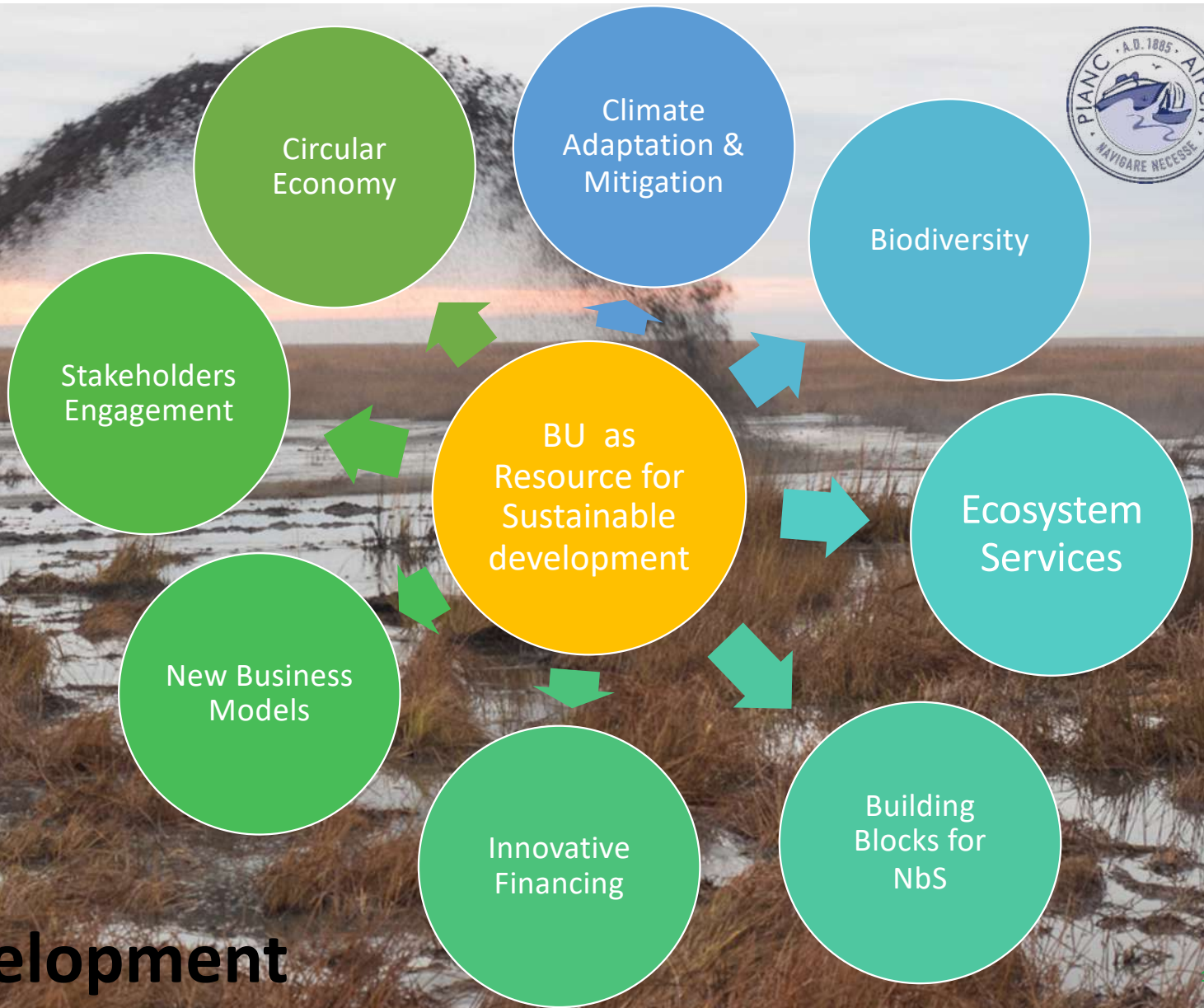
- UN SDGs/COP21/EU Green Deal (EU Biodiversity Strategy – EU Soil Strategy 2030)
- COP26 Climate Change & Sediment Management Pledge (2021)
- Kunming-Montreal UN Biodiversity Conference (COP15,2022)

towards developing business models that leverage sustainability, natural capital and circularity

- PIANC Guide on WwN (2018) - Building with Nature (BwN) and Engineering with Nature (EWN®) established **Implementing WwN in practice**
- IADC and CEDA guide on delivering dredging projects that enhance economic, social, and environmental values in a sustainable manner **“Dredging for Sustainable Infrastructure” Handbook**



Collectively advancing BU through Nature based Solutions (NbS) for achieving multiple benefits and resilient natural systems (IUCN – World Bank – Environment Agency - ..)



Beneficial Use and Sustainable Development



From Barriers to Catalysts

Economic, social, and environmental barriers that constrain implementation

- **Economic barriers** involve the *cost* of BU, if perceived as unacceptable or not fairly distributed
- **Social barriers** involve public *perception*, limited stakeholder support and suboptimal governance
- **Environmental barriers** involve categorizing sediment as *'waste'* and *legislation* limitations to BU, often linked to contamination or concerns about negative impacts to ecosystems





BU Catalysts

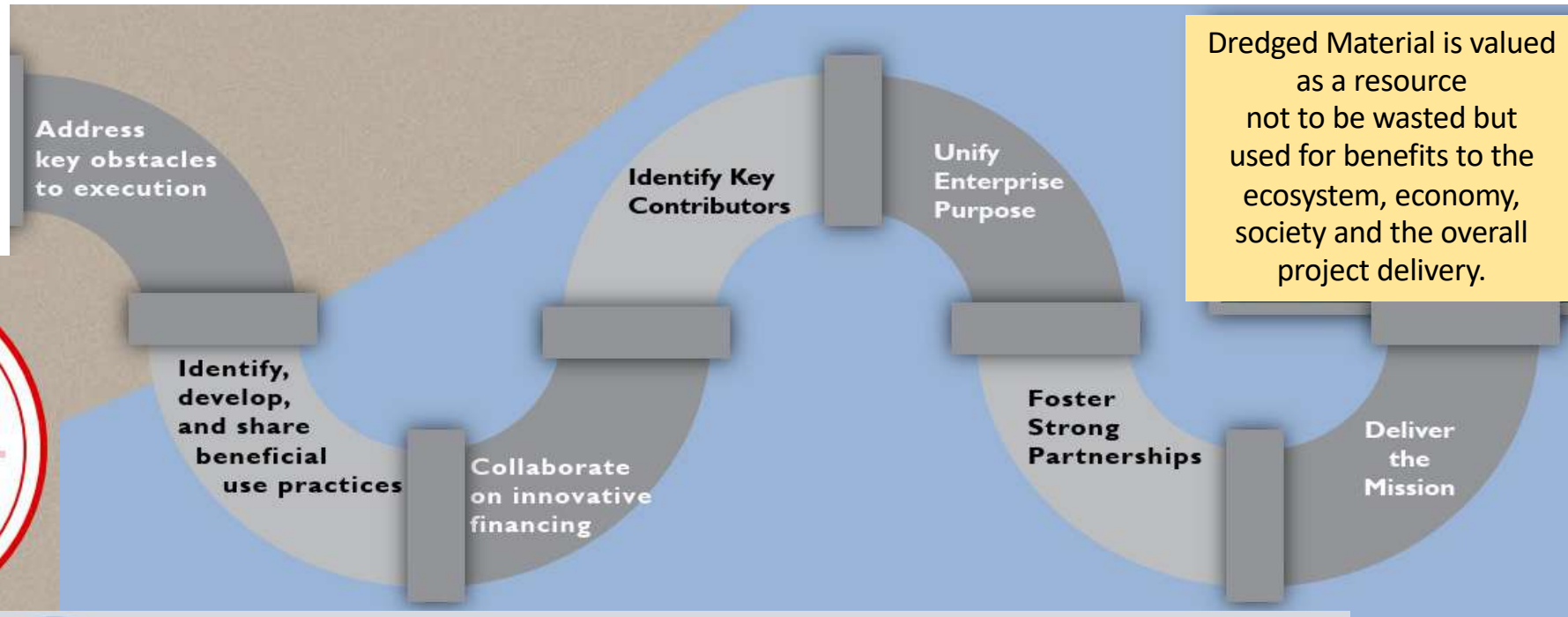
- Redefine **cost to value** – Natural Capital valorisation
- **Connect** supply and demand (long term + larger scales)
- Enlarge explicit and active **stakeholders'** involvement – right from the start



- Evaluate broad **(ecosystem) benefits – add on values**
- Use contaminated sediments on a **risk-management** basis
preserving safety for human and nature
- Project owner to **target 100% BU** as a guiding principle
- **Ecosystem restoration** as a driver for (BU) projects



US Army Corps of Engineers.



Dredged Material is valued as a resource not to be wasted but used for benefits to the ecosystem, economy, society and the overall project delivery.



Dredge Material is a valuable resource

- Increased dredging investments create beneficial use of dredge material management opportunities
- Benefits the ecosystem, economy, and can effectively and efficiently deliver the USACE mission.



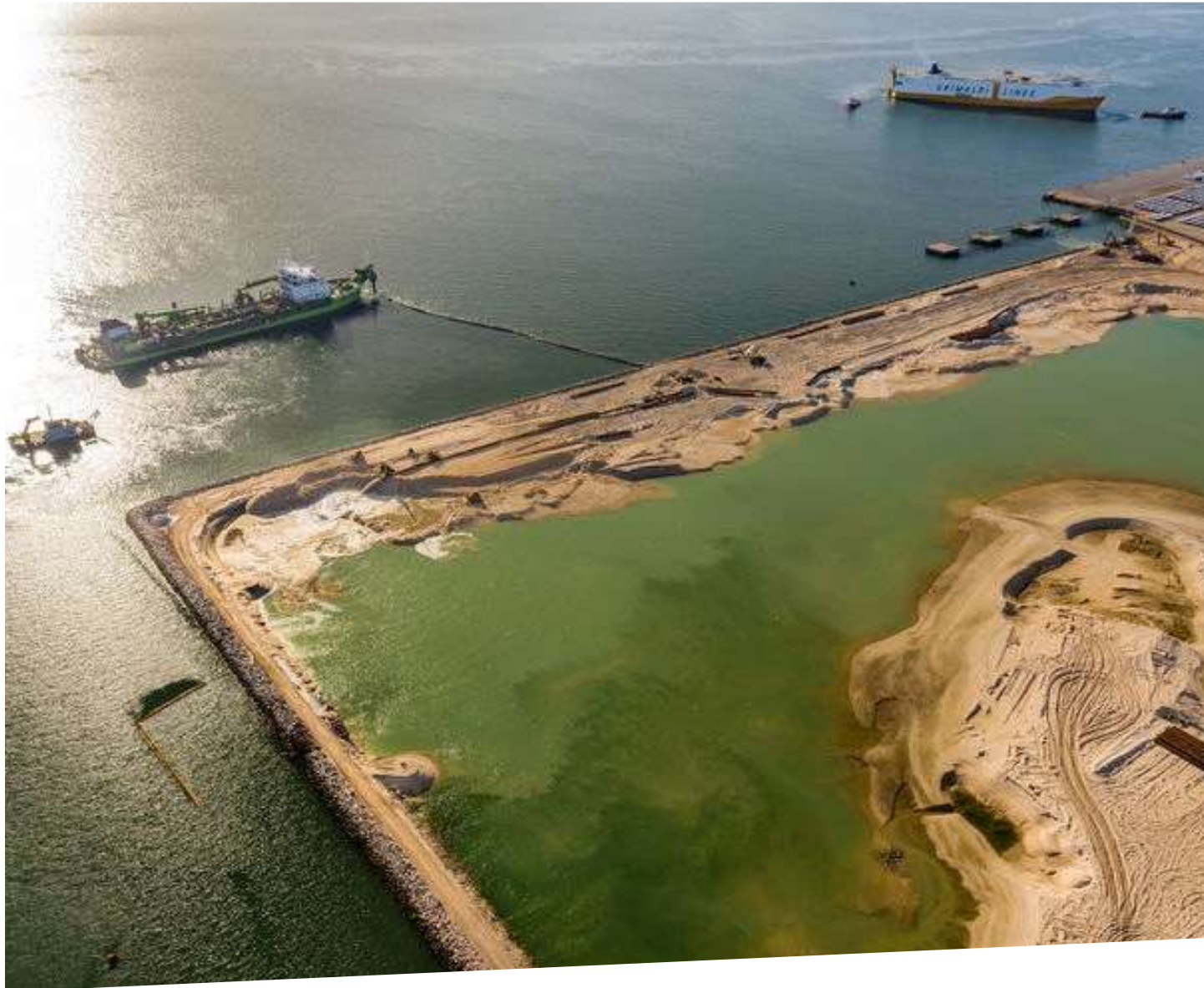
There are opportunities to expand beneficial use within the Federal Standard

- Operational strategy should inherently include beneficial use placement options.
- If material is needed to implement a project, beneficial use from dredging operations should be considered as an option in the planning and execution strategy.



Partner collaboration is key to our success

- Innovative pursuit, both internally and externally, with partners and stakeholders will:
 - Maximize available solutions, strategies, and tools
 - Develop and apply new approaches and technologies



Integrated Beneficial Use in practice



There is a lot of
dredged material
available...

*How to deal with
it?*

*What can we do
with it?*

Netherlands, Waterdunen Beach & Marsh Land Restoration





Swinoujscie-Szczecin Fairway
(Poland)



Bird islands - Protected Nature Reserves
Dedicated marine and land habitats





**Rehabilitation of Fort Sint-Filips site
in port of Antwerp, along the river Scheldt**

Hedwige & Prosperpolder reintegrated in estuarine environment of Scheldt-estuary



We must no longer just do better, we must do what nature needs.

