An Update from CEDA: Perspectives from the Beneficial Use Working Group

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WGBU Members

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CEDA (Delft)


AMORAS (Antwerp)


Slufter (Rotterdam)

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Scope of WGBU

- Prepare two publications on the beneficial use of sediment in the context of sustainability and working with nature practices
  - Information Paper focused on recent advances and best practices
  - Position Paper supporting a risk management approach to promote the beneficial use of sediments, not open-water disposal
  - Case Studies

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Why do we dredge?

- Navigation infrastructure
  - Commercial ports and waterways critical to keep commerce and trade functioning
  - Recreational uses
- Environmental remediation
- Restoration of coastal areas and wetlands
- Infrastructure for coastal development and climate change adaptation

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“Humans move more sediments than nature”, The Economist

Most economical solution is for offshore placement beyond coastal zone

- Sediment is permanently removed from the system, working *against* nature;
- Cause a net negative sediment balance, and no value:
  - Coastal and river banks erosion
  - No counteraction to subsidence
  - Higher risk for flooding
  - Need for land to support developments

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Sediment is a Resource, not a waste

- **R**edevelopment: Brownfield redevelopment, manufactured building materials
- **R**emediation: closure of landfills and mines
- **R**eclamation: creating or elevating land
- **R**estoration: creation of habitat to improve ecological resources and water quality
- **R**esiliency: shoreline nourishment and reinforcement for climate change

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A Word Considering Contaminants…

- **No show stoppers**: focus on addressing and managing risk and uncertainty with adaptive management
  - Important to understand current and future site conditions
  - Technical tools
    - Risk assessment
    - Contaminant migration and coastal/hydrodynamic modeling
    - Contaminant treatment and stabilization studies
- Evaluate all constraints *and* benefits
- Engage stakeholders and policy makers

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Case Studies

Central Dredging Association

Marker Wadden, The Netherlands

Boskalis
Dredging & Marine Experts

Marker Wadden, The Netherlands

- Reclamation and Restoration
- Constraints:
  - Turbidity
  - Loss of ecological value

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Marker Wadden, The Netherlands

- Solution: Ecological restoration to a freshwater marsh system
- Benefits:
  - Partnerships with NGOs
  - Use of monitoring and adaptive management
  - Management of fines/turbidity
  - Improvement in habitat
  - Improvement in water quality

Imperial Beach, California

- Resiliency (x2)
- Constraints:
  - Sediment catchbasin maintenance needed
  - Washout threat to large ecological research reserve and State Park
  - Fines placement taboo

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Imperial Beach, California

- Solution: Beach Replenishment with high fines (55%) sediment
- Benefits:
  - Management of fines/turbidity consistent with natural processes
  - Partnerships with NGOs, Research Institutions
  - Prevention of Habitat Impacts through BMPs
  - Intensive monitoring to document no impact

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Mosjøen Port, Norway
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Mosjøen Port, Norway

- Remediation and Redevelopment
- Constraints:
  - 30,000 m^3 of PAH-impacted sediment
  - Working Harbor
- Evaluated synergistic alternatives to expand port and dispose of sediment

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Mosjøen Port, Norway

- Solution: new cofferdam and sediment stabilization
- Benefits:
  - Remediation needs met
  - Creation of new waterfront commercial/industrial area

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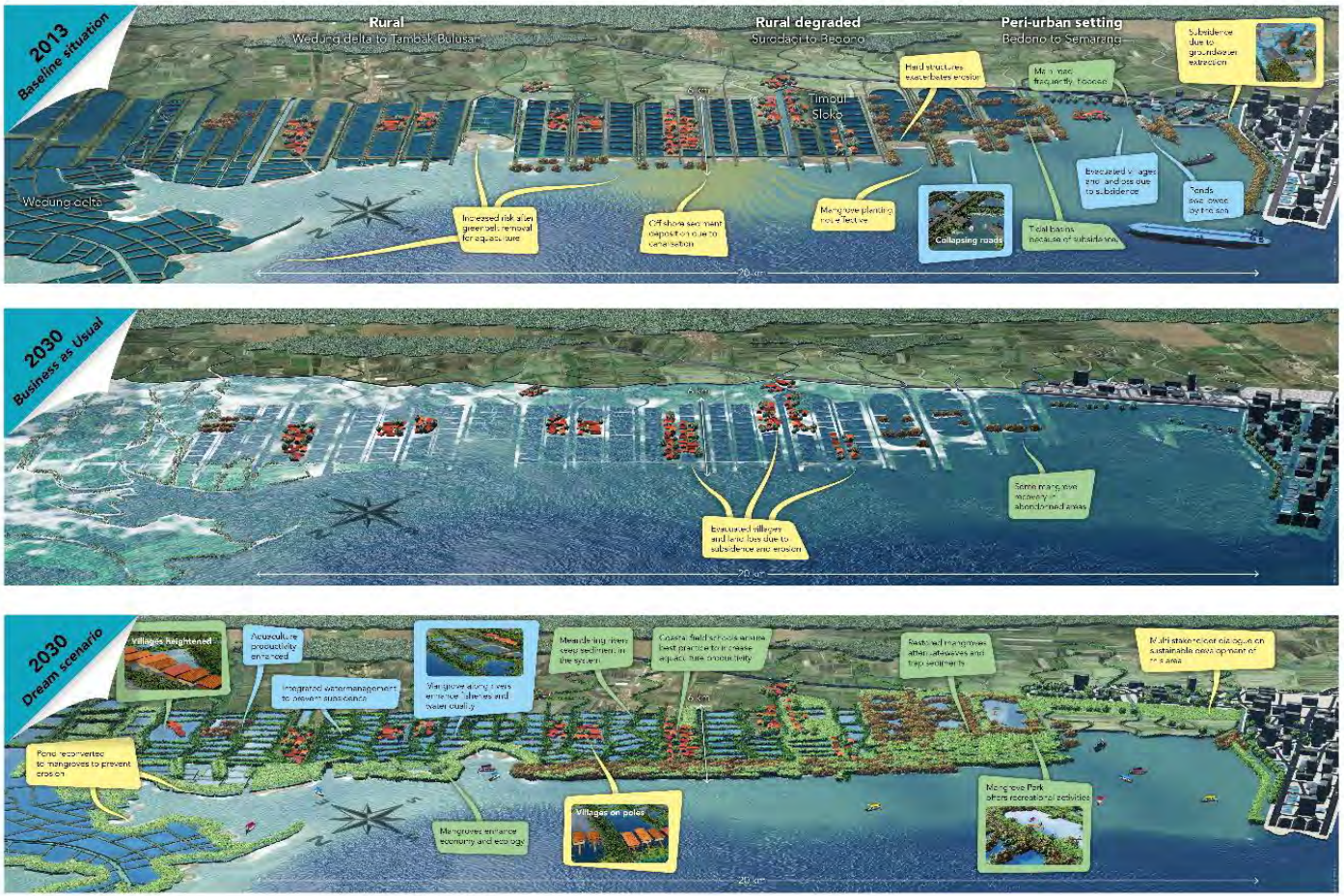
Demak, Indonesia

- Resilience and Restoration
- Degradation of coastal aquaculture farms from subsidence and erosion
- Constraints:
  - Subsidence
  - Ongoing erosion
  - Threat of sea level rise

EcoShape
building with nature

Demak, Indonesia



EcoShape
building with nature

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Demak, Indonesia

- Solution: Use of available natural materials to enhance sediment trapping and mangrove re-establishment
- Benefits:
  - Promotion of community engagement
  - Enhancement of sedimentation
  - Establishment of mangrove forest
  - Preservation of coastal resources

EcoShape
building with nature

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Closing thoughts

- Sediment is a valuable resource for sustainable development, including climate adaptation
- Beneficial use of sediments should be based on creating socioeconomic value, managing risk, and encouraging natural functions
- Regulations that govern sediment management have not evolved at the same rate as sustainability policies
- Stakeholder engagement is key to gaining project acceptance and identifying cost-effective opportunities

We invite the community to reach out and contribute with additional case studies.

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Take home message

Sediment (and dredging) is a critical resource for sustainable development and climate adaptation

For more information, see:

https://dredging.org/resources/ceda-publications-online

Thank you

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