

Session 2:

Marker Wadden as example for other areas (upscaling and financing)

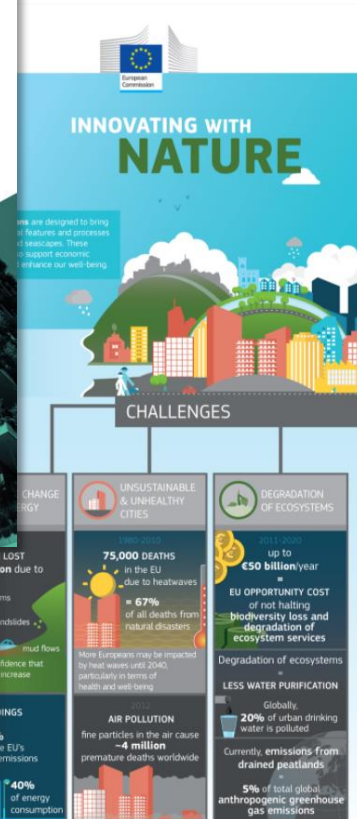
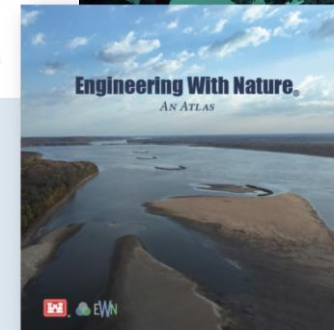
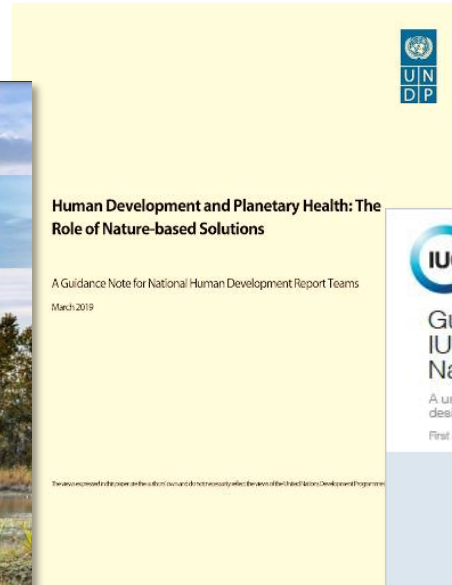
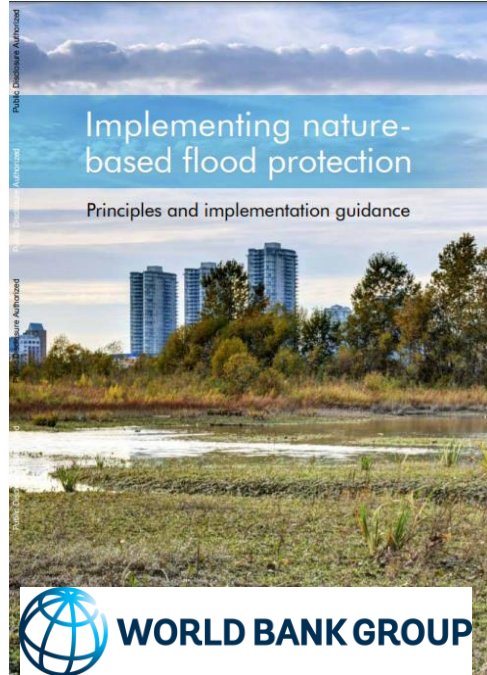
Fokko van der Goot - Boskalis | EcoShape

Stefan Aarninkhof - TU Delft | EcoShape



building with nature

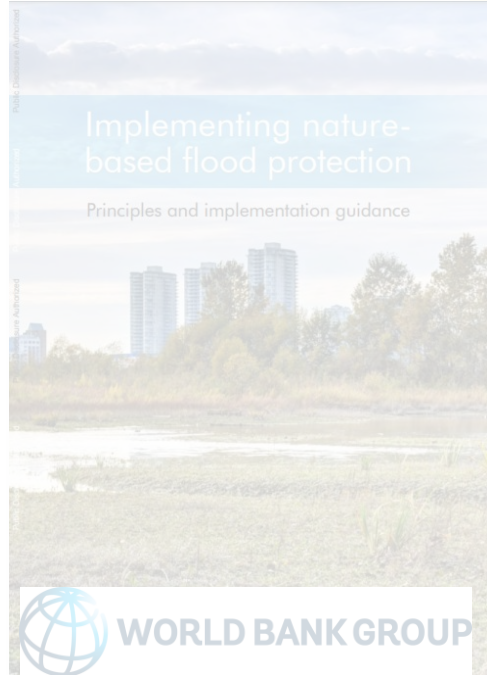
Global trend: Nature based Solutions



Global trend: Nature based Solutions

...but large-scale implementation is lacking.

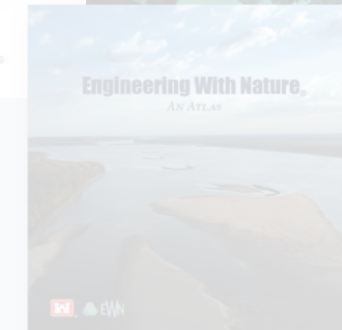
so HOW to do it?



Human Development and Planetary Health: The Role of Nature-based Solutions

A Guidance Note for National Human Development Report Teams
March 2019

The views expressed in this document are those of the author(s) and do not necessarily reflect the views of the World Bank Group.



Nature-Based Solutions are

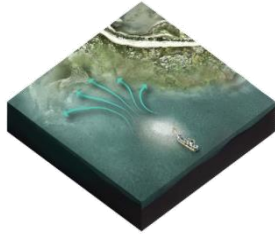
- ... dynamic
- ... multi-functional
- ... innovative for dealing with water issues
- ... local and context-specific

You need to **think**, **act** and **interact** differently!

Upscaling: not the project...



...but the concepts



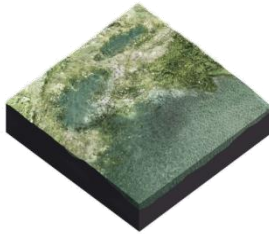
Strategically placing fine sediment



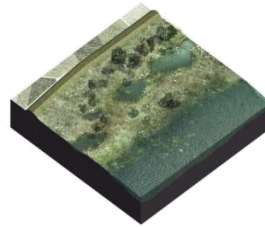
Constructing nature islands



Restoring connections



Developing wetland areas



Integrating vegetated foreshores



Creating sedimentation basins

Example: Trintelzand

- Part of the reinforcement of the Houtribdijk
- Constructed with residual material from sand extraction activities
- Provides benefits for nature (bird habitat), water quality and water safety (although not considered in the safety design)



Example: Waterdunen

- Combination of different functions:
 - Nature development
 - Recreation
 - Water safety
 - Salty aquaculture
- Blended finance structure



<https://www.zeeland.nl/waterdunen/>



<https://geoinfra.nl>

building with nature

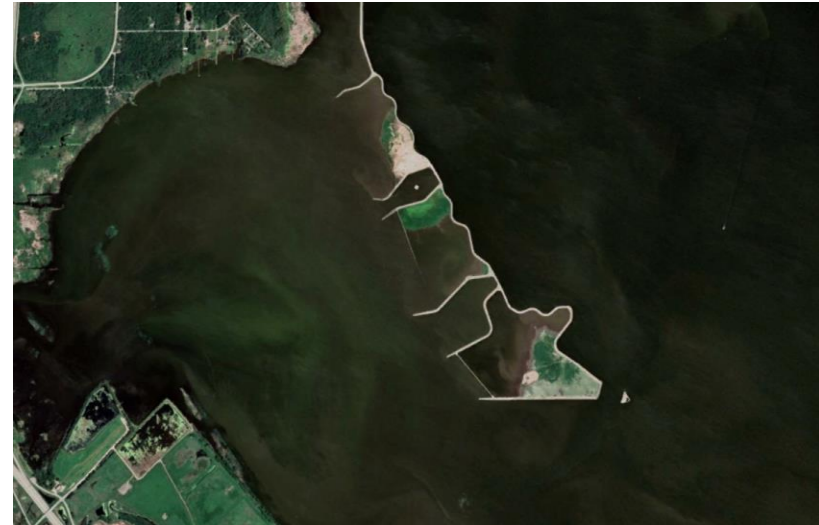
Example: Cliff Pools, UK

- Restoration of former deep gravel pits
- Filled with locally (Thames basin) dredged and tunnelled material
- Controlled water levels <https://www.rspb.org.uk/>
- Joint planning application by Boskalis and RSPB



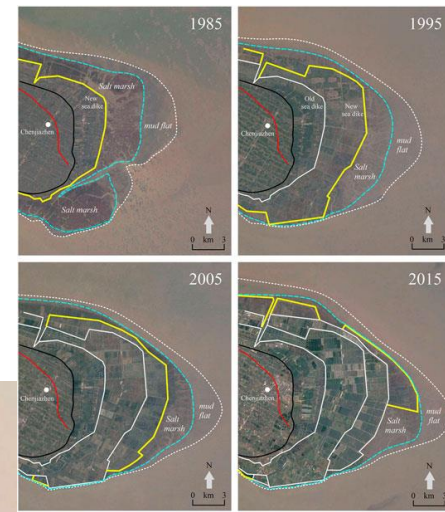
Example: Cat Island Chain Restoration, US

- Multi purpose development:
 - Ecosystem restoration
 - Barriers island for safety and wetland protection
 - Reuse of dredged material from shipping channel
- Takes 40 years to complete



Example: Chongming Island, Shanghai, China

- Transformation from the reclamation-oriented utilization to wetland ecosystem protection
- Coastal communities to remain in place
- Planners, scientists, and policy makers collectively devised solutions, based on historical experiences



Creating an enabling environment



Technology and system
knowledge



Multi-stakeholder
approach



Management, monitoring
and maintenance



Institutional
embedding



Business Case



Capacity building

Discussion

- Explore together which concepts and enablers from the Marker Wadden development are ready for upscaling and replication
- We have selected 7 outcomes which you can rate 1 – 5 on upscaling potential
- Log in to: <https://www.mentimeter.com/>
- Enter code: **4199 3451**

Outcome 1:

Ecology – creation of bird habitat

Marker Wadden has shown you can achieve bird habitat objectives in terms of landscaping, dry/wet, substrate, vegetation and trigger species. This concept is extendable to other lakes, estuaries and embayed areas

Outcome 2: Ecology – water quality

Marker Wadden have shown that you can improve water quality (lowering SSC) by filtering water movement, capturing sediment through vegetation development. Through this principle we have reached system-based impact. This outcome has potential for upscaling.

Outcome 3: Improvement of living environment

Marker Wadden has boosted the quality of living environment for surrounding provinces. This outcome has potential for upscaling.

Outcome 4: Circular economy

Marker Wadden has shown that reuse of typically unsuitable dredged material can offer great value to enable development that where otherwise not realised. This outcome has potential for upscaling.

Outcome 5: Technology

Driven by large scale storm induced circulation flows, sandy coastal protections in shallow and enclosed bay environments show fundamentally different morphological behaviour compared to open coast lines. This technology has major upscaling potential

Outcome 6: Governance - Learning by doing

Marker Wadden & KIMA have shown that full scale NbS projects combined with an in-depth research programs are of key importance for learning for the next project, hence to enable broad uptake mainstreaming of NbS.

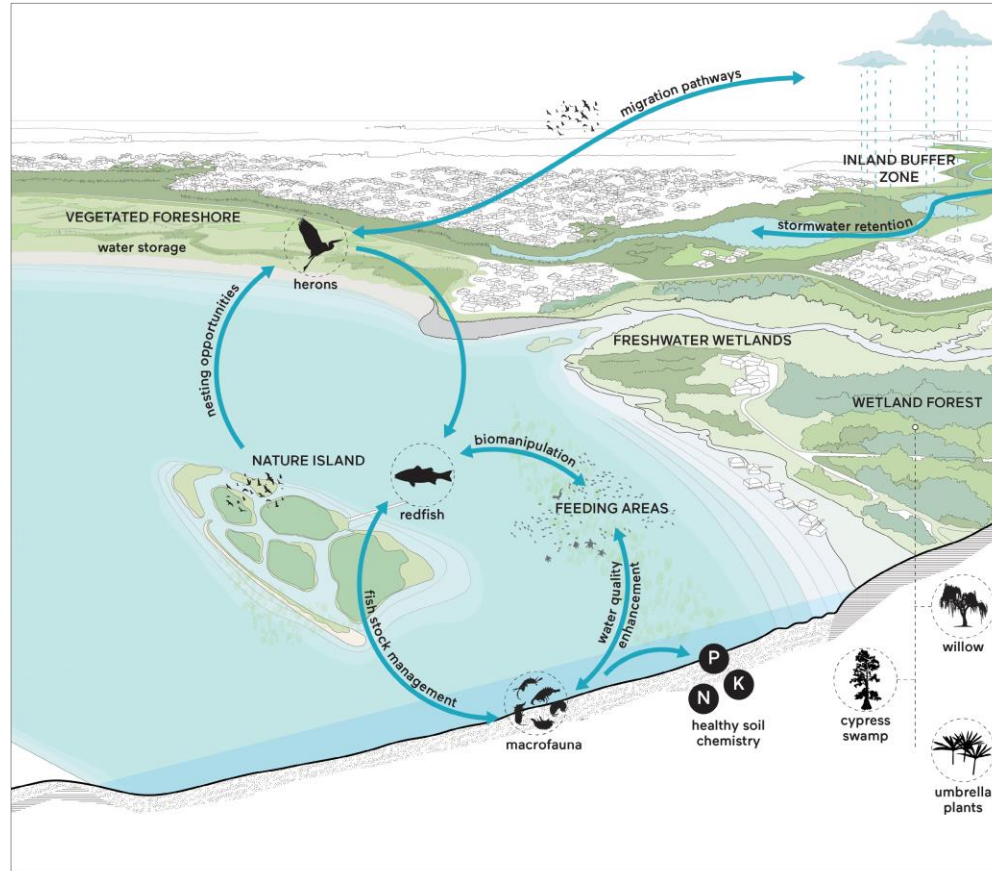
Outcome 7:

Finance

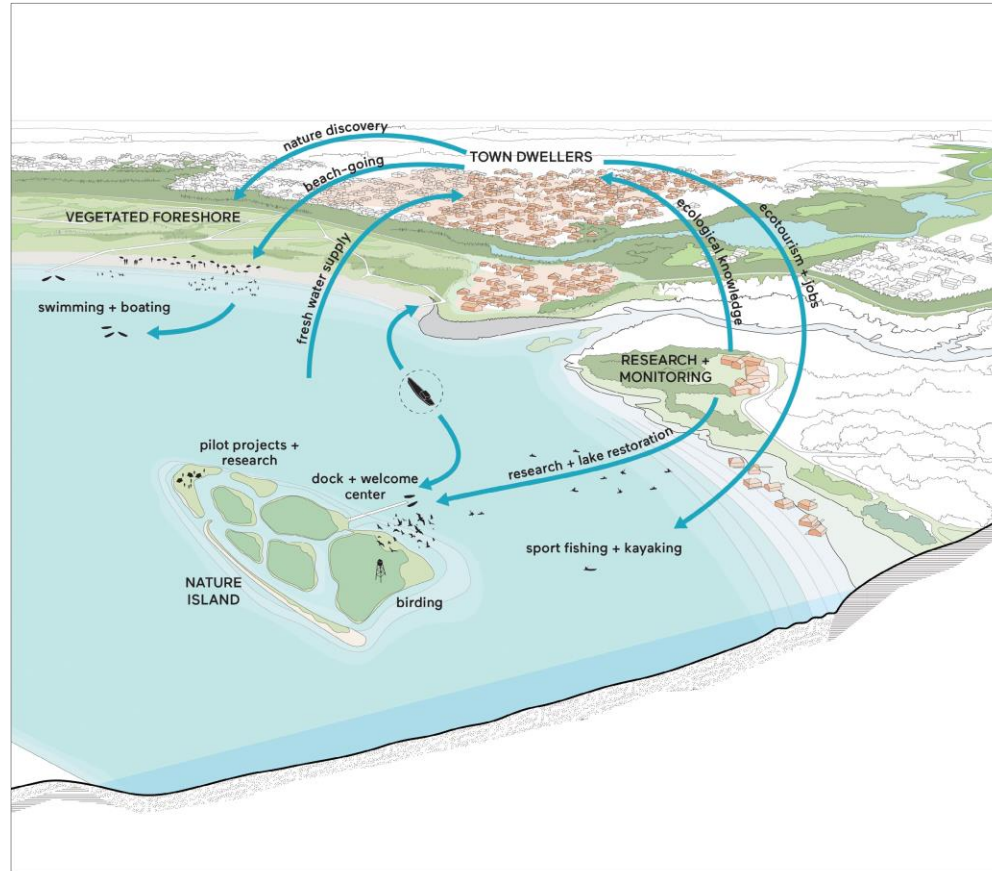
Blended financing (Public and private) is the only way projects like Marker Wadden get funded.



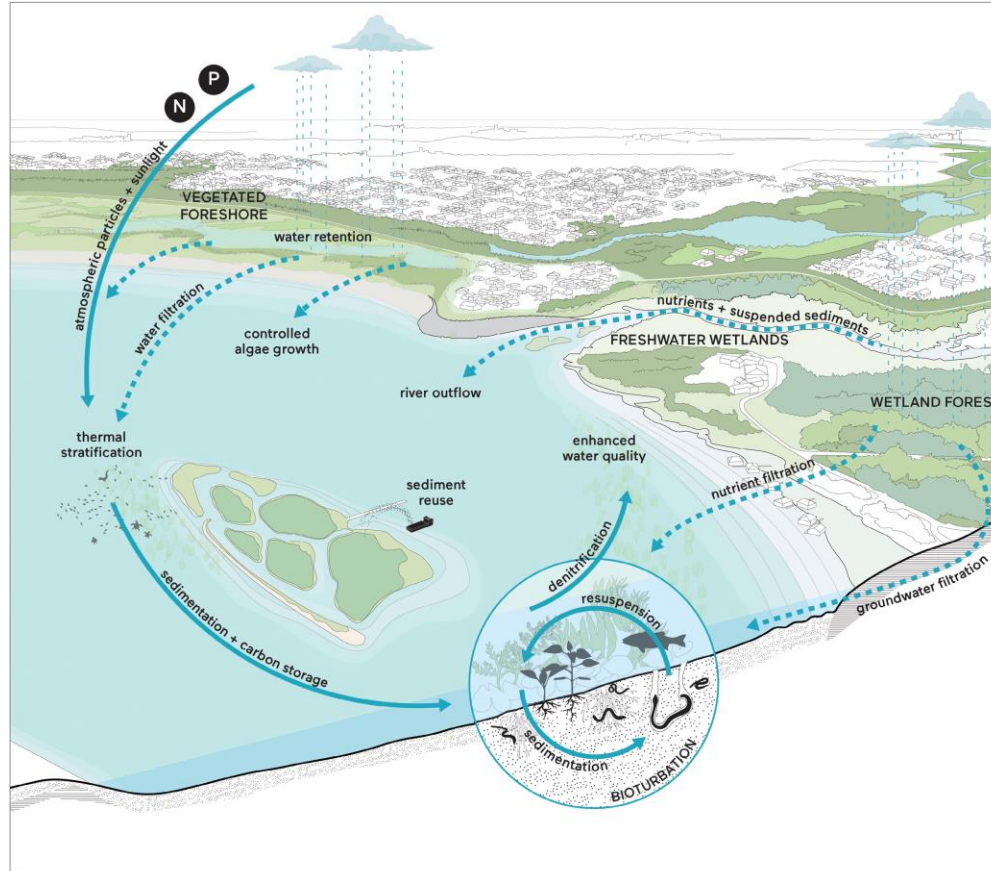
Lowland Lakes: Ecological benefits



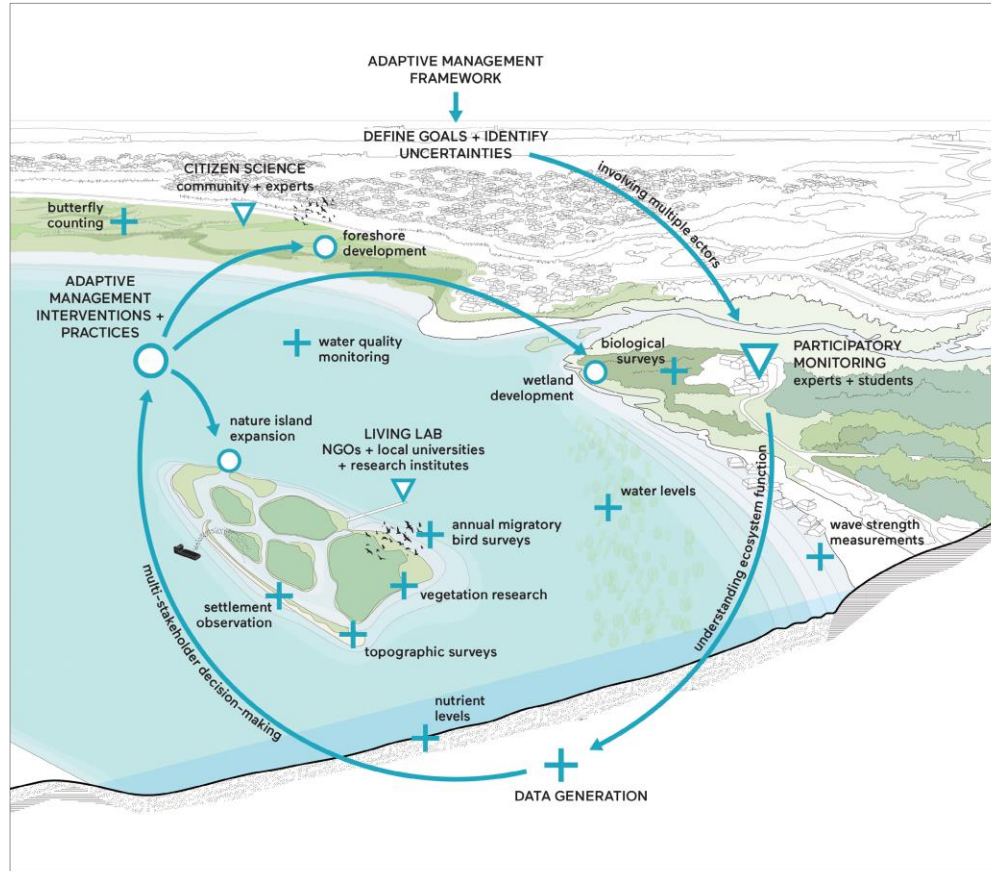
Lowland Lakes: Places to live, work, and visit



Lowland Lakes: Resource flows

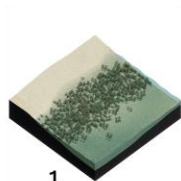


Lowland Lakes: Integrated approach

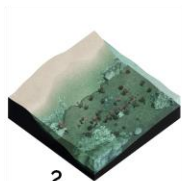


Building with Nature concepts

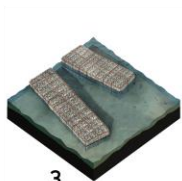
- 1 Restoring seagrass meadows
- 2 Facilitating coral development
- 3 Building shellfish reefs
- 4 Rehabilitating mangrove belts
- 5 Growing salt marshes
- 6 Establishing wetland forests
- 7 Developing wetland areas
- 8 Creating hanging and floating structures
- 9 Creating rich revetments
- 10 Integrating vegetated foreshores
- 11 Applying mega-nourishments
- 12 Constructing nature islands
- 13 Enhancing dune dynamics
- 14 Landscaping the seabed
- 15 Constructing perched beaches
- 16 Strategically placing fine sediment
- 17 Clay ripening and consolidation
- 18 Creating sedimentation basins
- 19 Managing coastal retreat/realignment
- 20 Developing inland buffer zones
- 21 Developing double dike systems
- 22 Restoring connections
- 23 Restoring salinity gradients
- 24 Restoring tidal dynamics
- 25 Creating tidal parks
- 26 Constructing secondary channels
- 27 Optimizing flow patterns



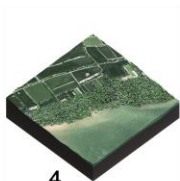
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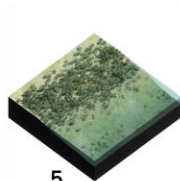
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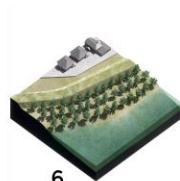
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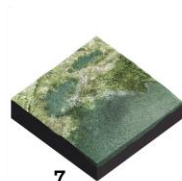
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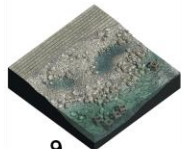
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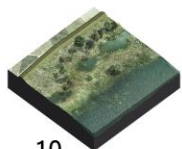
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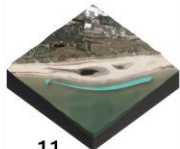
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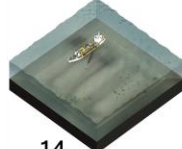
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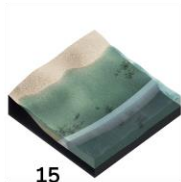
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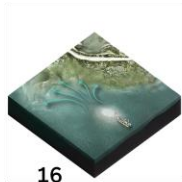
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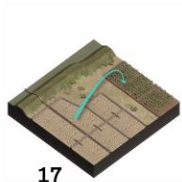
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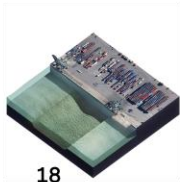
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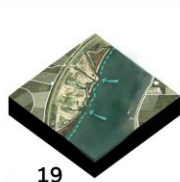
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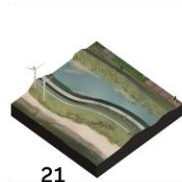
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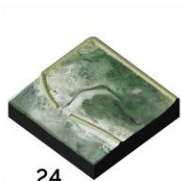
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