



**Ocean Health**

An initiative by Van Oord



## Mangrove Engineering

Mangrove ecosystems provide coastal protection by attenuating the height and strength of sea waves and by reducing the impacts of storm surges. They furthermore provide other ecosystem services such as water filtration, carbon storage, and are a habitat for marine life including commercial fish species, creating opportunities for fisheries.

We aim to protect and restore mangroves by combining ecological restoration practices and local community involvement. In addition, we believe applying hybrid engineering using mangroves for coastal protection is a resilient, cost-effective and nature-friendly alternative for hard-structured coastal defence systems in tropical coastal areas.

**Ocean Health is developing long-term partnerships, and innovating techniques to implement this 'Building with Nature' solution at a large scale.**

### Recent project - 2022

## Mangrove restoration pilot in Mozambique

- Conduct social and ecological baseline studies to determine factors affecting the local mangrove ecosystem
- Design for hydrological and social interventions required to effectively restore the mangrove forest



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## Our solutions

- Restoration of mangrove habitat through hydrological restoration, to allow for nature to naturally re-establish
- Create sustainable livelihoods and align economic development with mangrove conservation

## Processes

- Use of rapid assessment tool to estimate spread of sediment plumes in coastal systems, generated by dredging activities
- Experiments with fine sediment placement and spread-under various (hydraulic) conditions
- Identify best practices in design for modifying environmental conditions to enable mangrove development
- Facilitate mangrove reinstatement through ecological interventions

## Creating value



Diversifying  
mangrove habitat



Coastal  
protection



Local tourism  
development



Economic  
value



Enable CO2  
compensation

## Our added value

### Scale

Unique expertise to design and build large scale coastal landscapes and seascapes according to pre-defined specifications

### Ingenuity

Contrary to merely planting mangrove trees, we create the physical boundary conditions for natural development to kick-start thriving mangrove ecosystems

### Mangrove restoration in Mozambique



More info

### Enhancing coastal resilience by mangrove restoration in Indonesia



More info

### Wood versus waves: Natural flood protection



More info