



National Consultation Session *Accelerating Adaptation through BwN Asia Initiative*

By Dato' Keizrul Abdullah @ Director of Wetlands International, Malaysia

20th January 2022



Who is Wetlands International?

- Wetlands International was formed in 1996 and has a network of offices around the world.
- Wetlands International is the only global, non-for-profit organization dedicated to maintaining and restoring wetlands — for their environmental values as well as for the services they provide to people.
- We are deeply concerned about the rapid loss and deterioration of wetlands such as lakes, swamps and rivers.
- We are driven by the knowledge that safeguarding and restoring wetlands are vital for water security, biodiversity, climate regulation, sustainable development and human well-being.

Our offices



What we do?

We connect technical knowledge, policy dialogue and practical projects in the field to advocate among various stakeholders for better policies and promote sustainable management of wetlands.

Using scientific knowledge makes us a well-trusted source of information, while demonstration projects inspire people to act.

By connecting our work across offices and through partner networks, we combine local experiences and successes and increase our impact on national, regional and global policies, practices and investments.

Field surveys



Capacity building



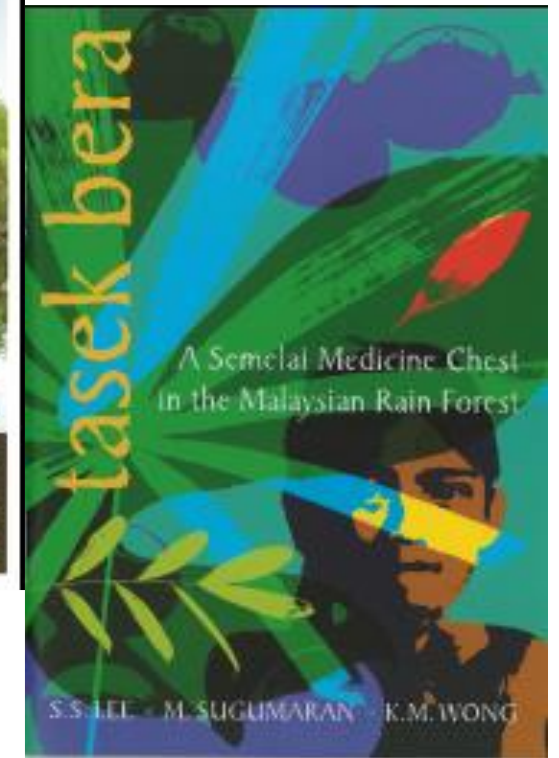
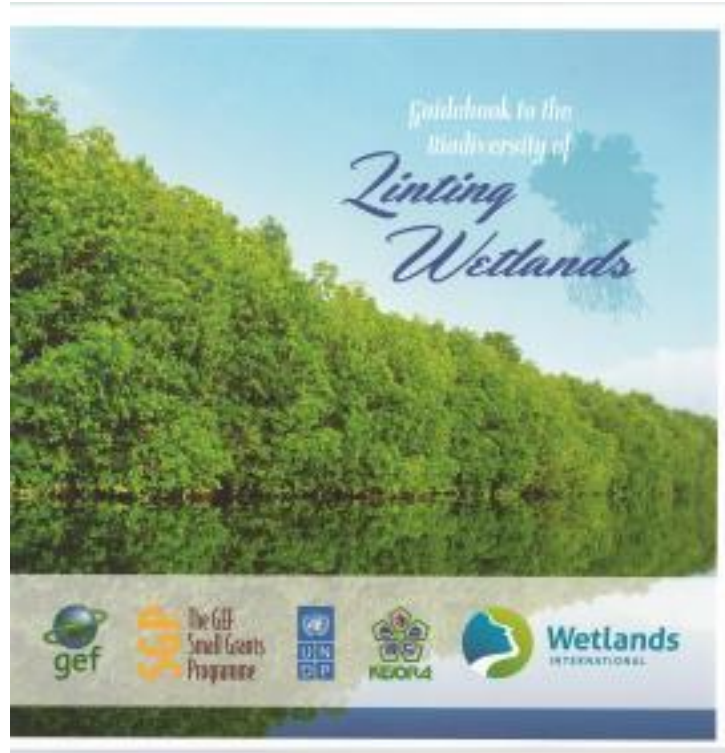
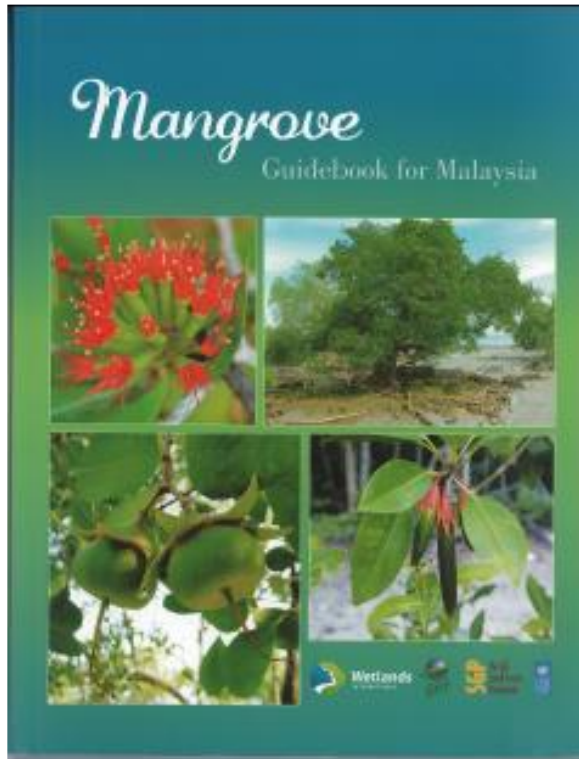
Awareness campaign



Wetlands rehabilitation



Publication

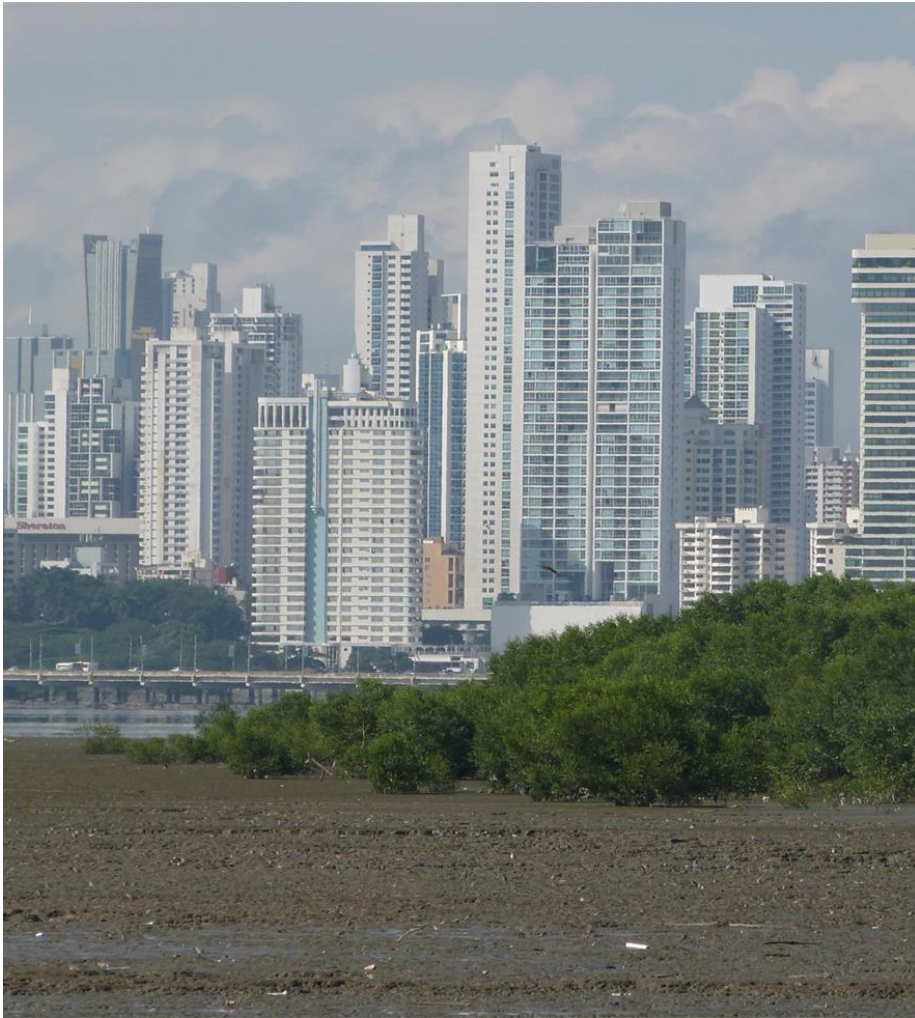


Context



Globally, coastlines are increasingly vulnerable due to population growth, degradation of protective ecosystems, erosion, subsidence, unsustainable infrastructure, climate change.

Infrastructure development is changing



- Investments in coastal infrastructure rising rapidly
- Increased risks and maintenance costs due to climate change
- More stringent environmental and social regulations
- Demand for solutions that address multiple stakeholder needs

Need for transition



From Building in Nature

To Building with Nature

Aligning economic development
with care for the environment

What is Building with Nature (BwN)



- A comprehensive engineering approach that enhance the use of natural ecological processes to achieve efficient & sustainable hydraulic infrastructural designs.

What is BwN

- **The guiding principle - to work with nature, not against it.**
- **It uses system understanding and the inclusion of *natural processes* as core of its solution.**
- **Restore hydrological connectivity**
 - ✓ **Fresh water, sea water, sediment**



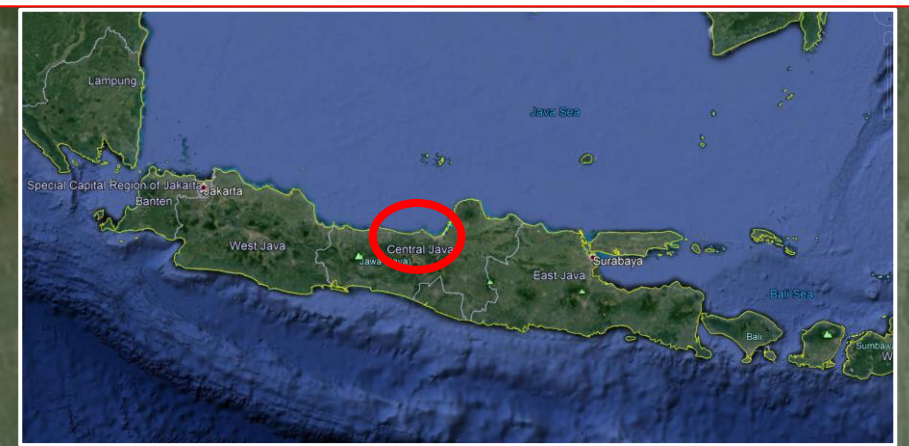
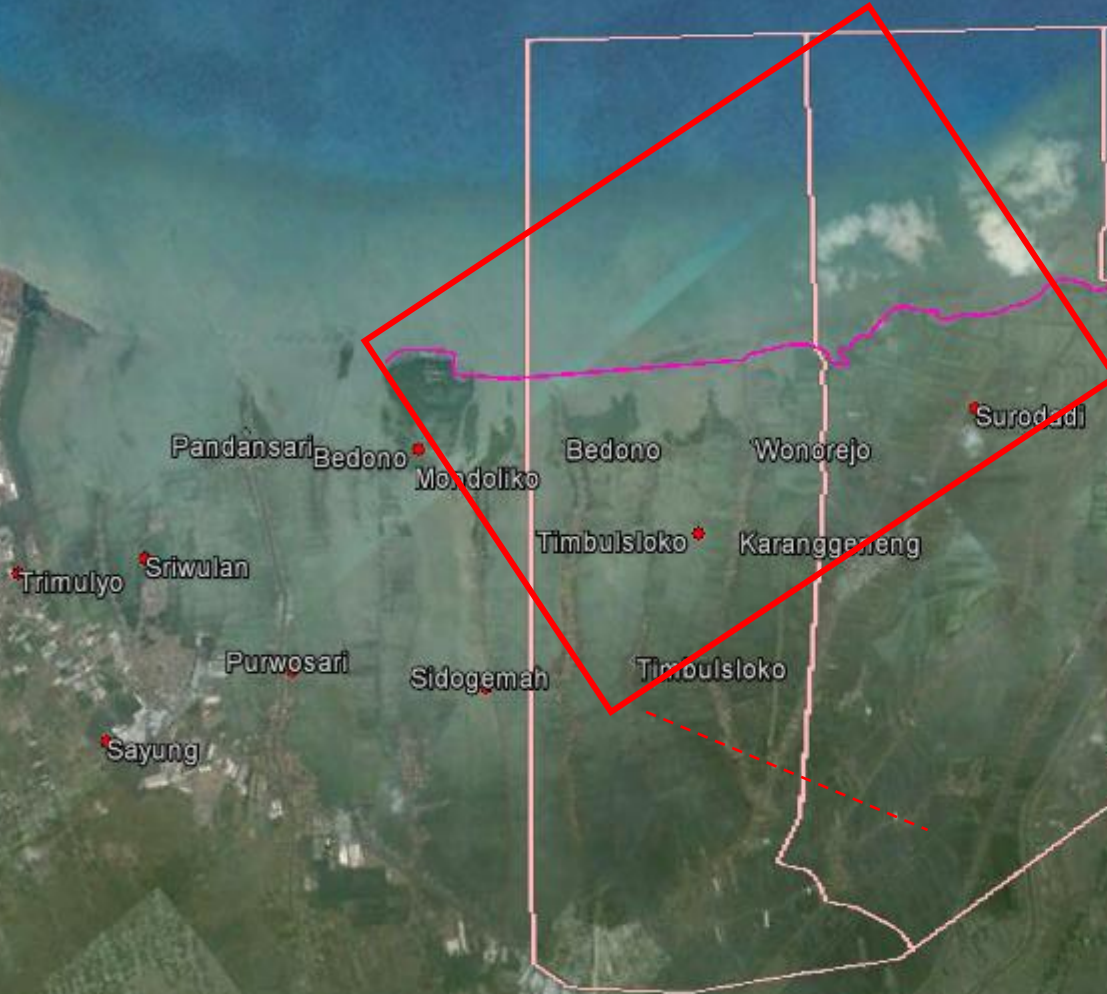
BwN in different settings



Applicability at different landscape



Demak district from outer space



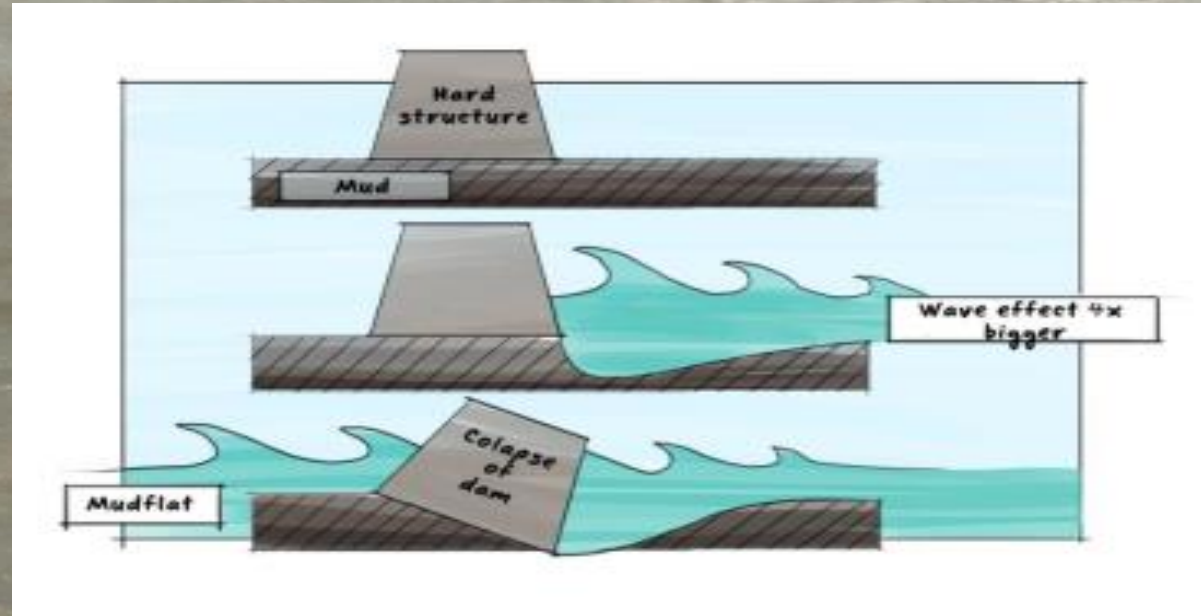
Present situation...



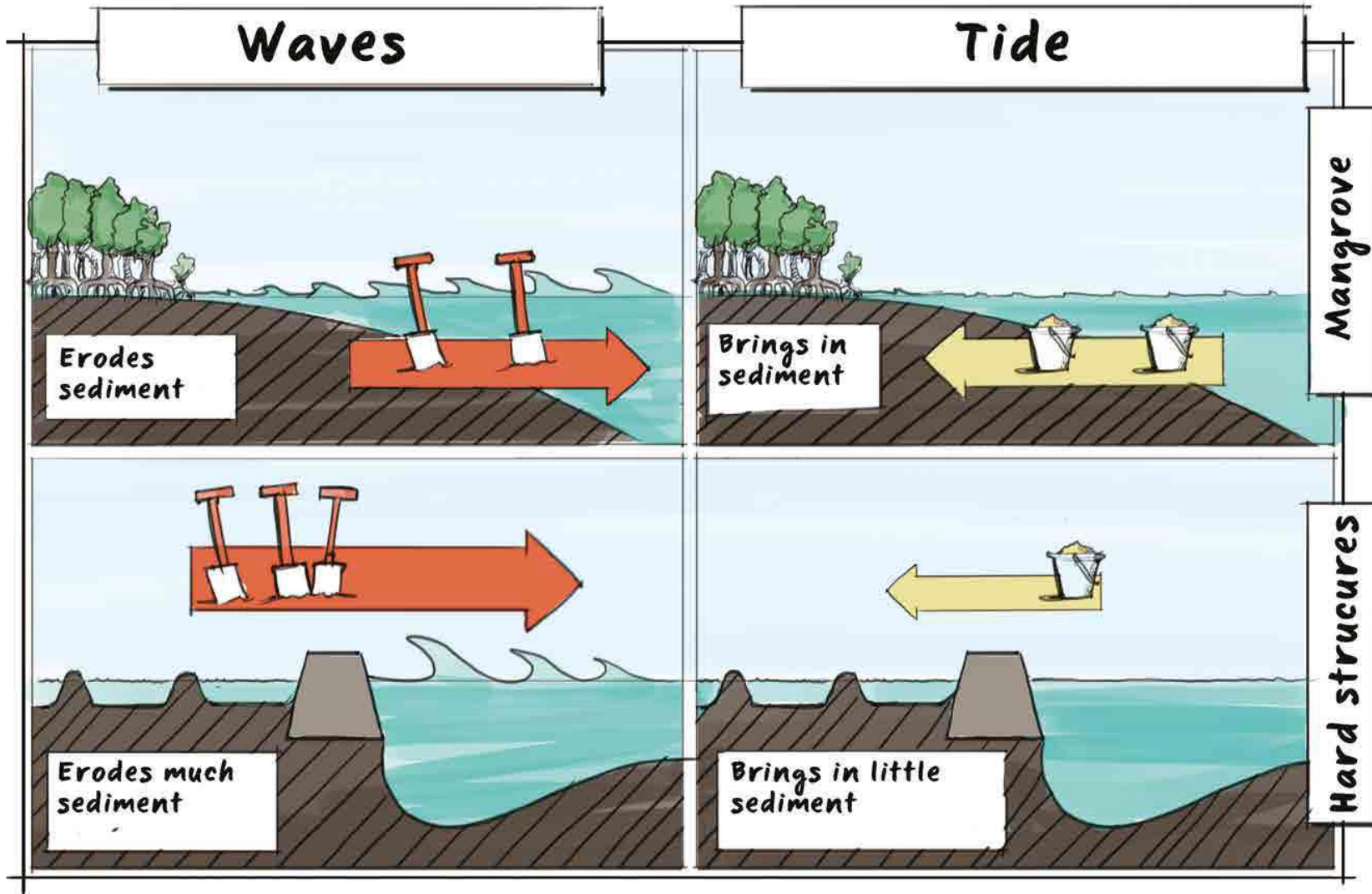
- Massive erosion due to groundwater extraction, mangrove conversion and infrastructure development, affecting 70,000 people
- Key assets at risk: Semarang harbor, highway and industry
- Failure of small scale defense structures

Traditional solutions no longer suffice

- Single purpose and static
- Expensive
- Can disturb sediment and water flows
- Societal resistance
- Regulatory & legal frameworks

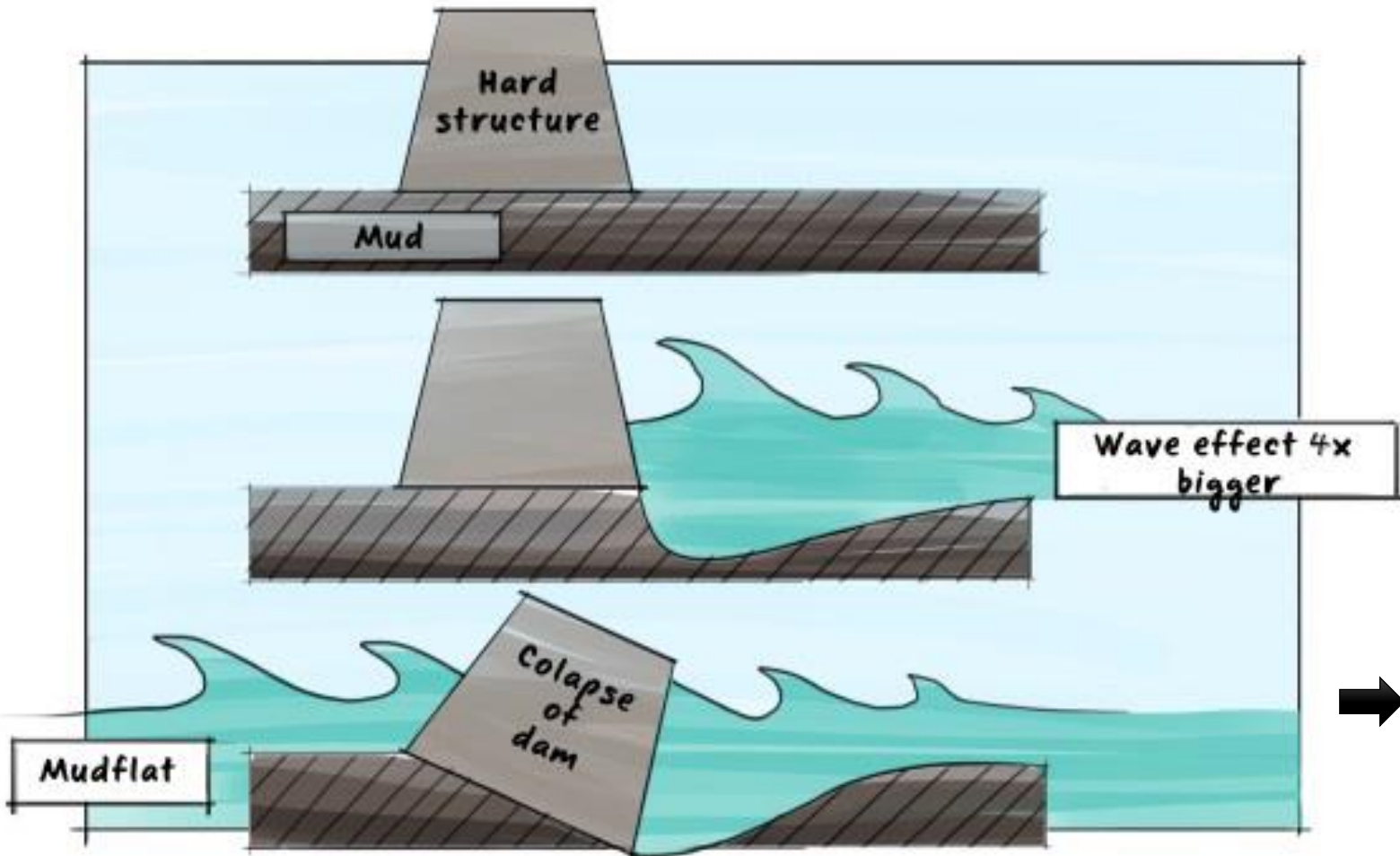


BwN at coastal landscape



- Hard structures will not work here
- Disturb the balance of incoming & outgoing sediment

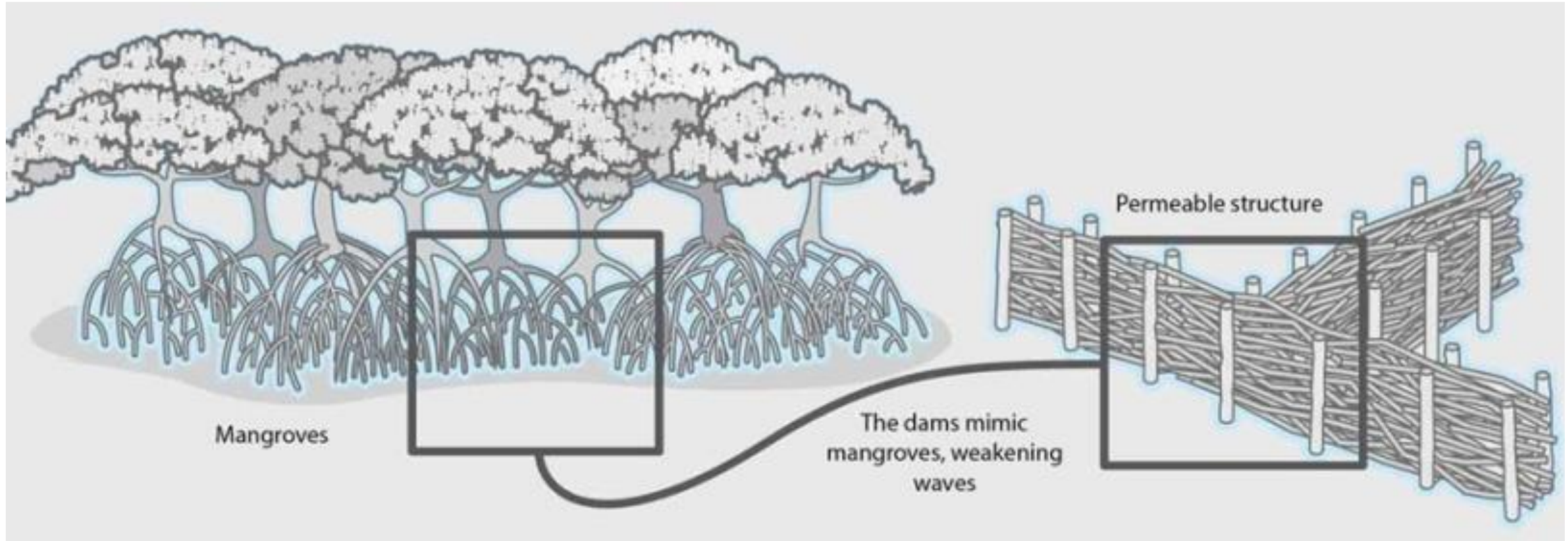
BwN at coastal landscape



- Waves get bigger when they reflect on a hard structure
- These bigger waves can erode 2X-4X more soil in front of the hard structure

➔ leading to the collapse of the structure

BwN at coastal landscape



Source: <https://makeasmartcity.com/2016/06/16/permeable-dams/>

Permeable structure





Permeable structure

Dampen erosive waves

**Trap & stabilize
sediment**

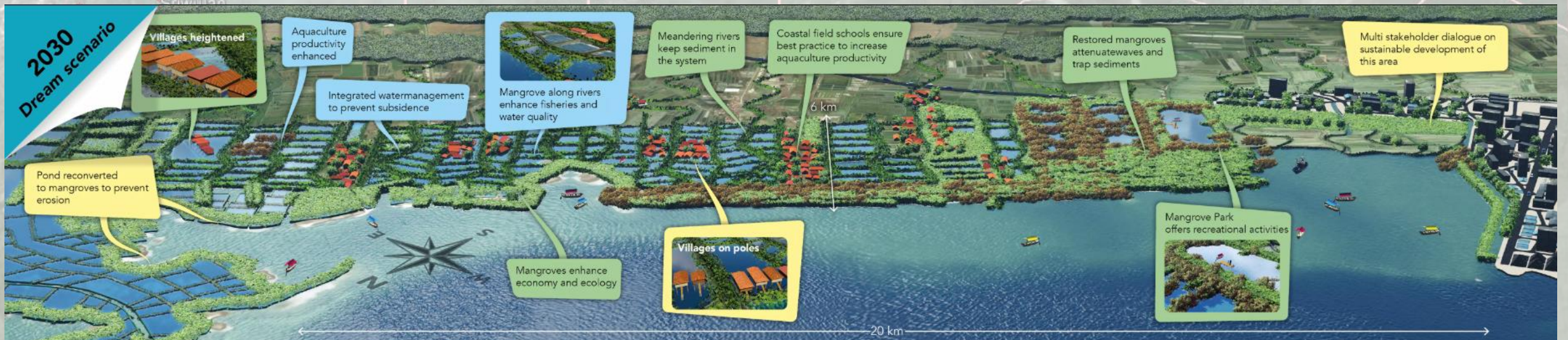
**Protection against
flooding**

**Protection salt water
intrusion**

Our strategy: create a mangrove based economy through Building with Nature




A prosperous local economy enables maintenance of mangrove greenbelt

Mangrove greenbelt provides coastal safety enabling economy to prosper



Communities ready for transition : Biorights mechanism

Proposed bio-rights activity with ponds:

-  : Converted to mangrove green belt
-  : Mix mangrove aquaculture
-  : Revitalization aquaculture

Legend

-  Green belt area
-  Village



400 ha of sustainable aquaculture, incl. riverine mangrove restoration
50 ha of coastal mangrove restoration

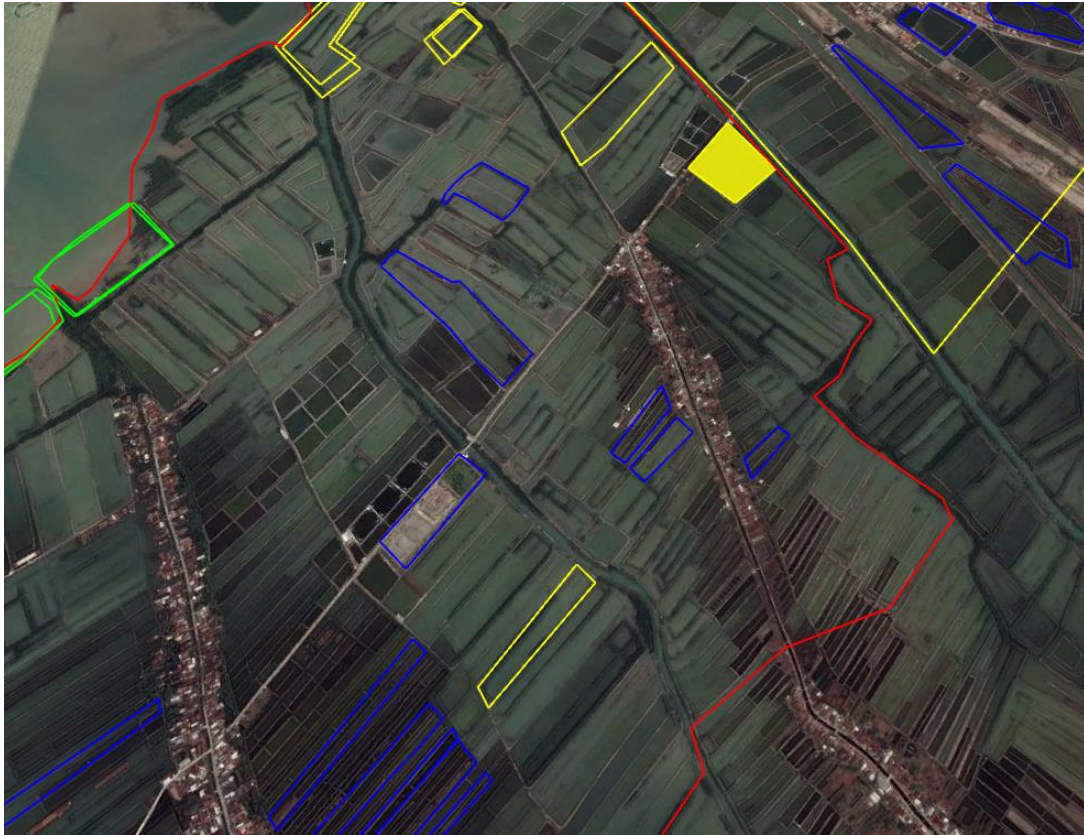
Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2016 DigitalGlobe
Image © 2016 TerraMetrics

Revitalisation of mangrove green belt



Mixed mangrove aquaculture



Bund and sluice relocated.

Natural filling up of sediment, already natural recruitment of mangroves in former pond area.

Revitalisation of aquaculture



- **Results : Average shrimp yield 3 - 20 x => income: 3 to 9 x**
 - ✓ Average shrimp yield was about 259 kg/ha (baseline of 43 kg/ha).
 - ✓ Average milkfish yield was > than 700 kg/ha (baseline of 192 kg/ha).
- **Voluntary replication in > 100 ha**

Update

- Stakeholder meetings with identified government agencies – to garner support

- ✓ Ministry of Energy and Natural Resources
- ✓ Ministry of Environment and Water
- ✓ Department of Irrigation and Drainage (Political Partner)
- ✓ Department of Forestry
- ✓ Forest Research Institute of Malaysia
- ✓ National Hydraulic Research Institute Malaysia
- ✓ GEF Small Grant Program

- National Workshop in February 2020 – BwN Core group formed (representative from six agencies)

- ✓ DID
- ✓ FRIM
- ✓ NAHRIM
- ✓ Universiti Malaya
- ✓ Universiti Sains Malaysia
- ✓ Universiti Malaysia Terengganu

- Series of training webinars



INTEGRATED PROTECTIVE COASTAL ZONE

Harbor Breakwaters with Sediment Capture
 Elevated Salt Road with Eco-Roofs Island
 Sediment Capture and River Diversion
 Retention
 Reformation
 Water Treatment Plant
 Cluster Rejuvenation
 WATER-NEUTRAL INDUSTRY
 East Flood Canal
 RESILIENT KAMPUNGS

Customer Terminal
 Passenger Terminal
 Harbor Dredging
 Retention and Filtration
 General Cargo Zone
 Evaporation Pond

Building with Nature to accelerate adaptation
Online Training

23 June 2020

Logos: Wetlands International, EcoShape, and others.

19 November 2020
 9.00-10.30am UTC+1 | 3.00-4.30pm UTC+7

www.indonesia.buildingwithnature.nl
admin@wetlands.or.id

The event will also be livestreamed on Wetlands International's YouTube

WEBINAR
 "Accelerating adaptation through Building with Nature in Indonesia"

Logos: Wetlands International, EcoShape, Kota Peta, UNISCO, TU Delft, Deltares.

Zoom Meeting Grid with 20 participants:

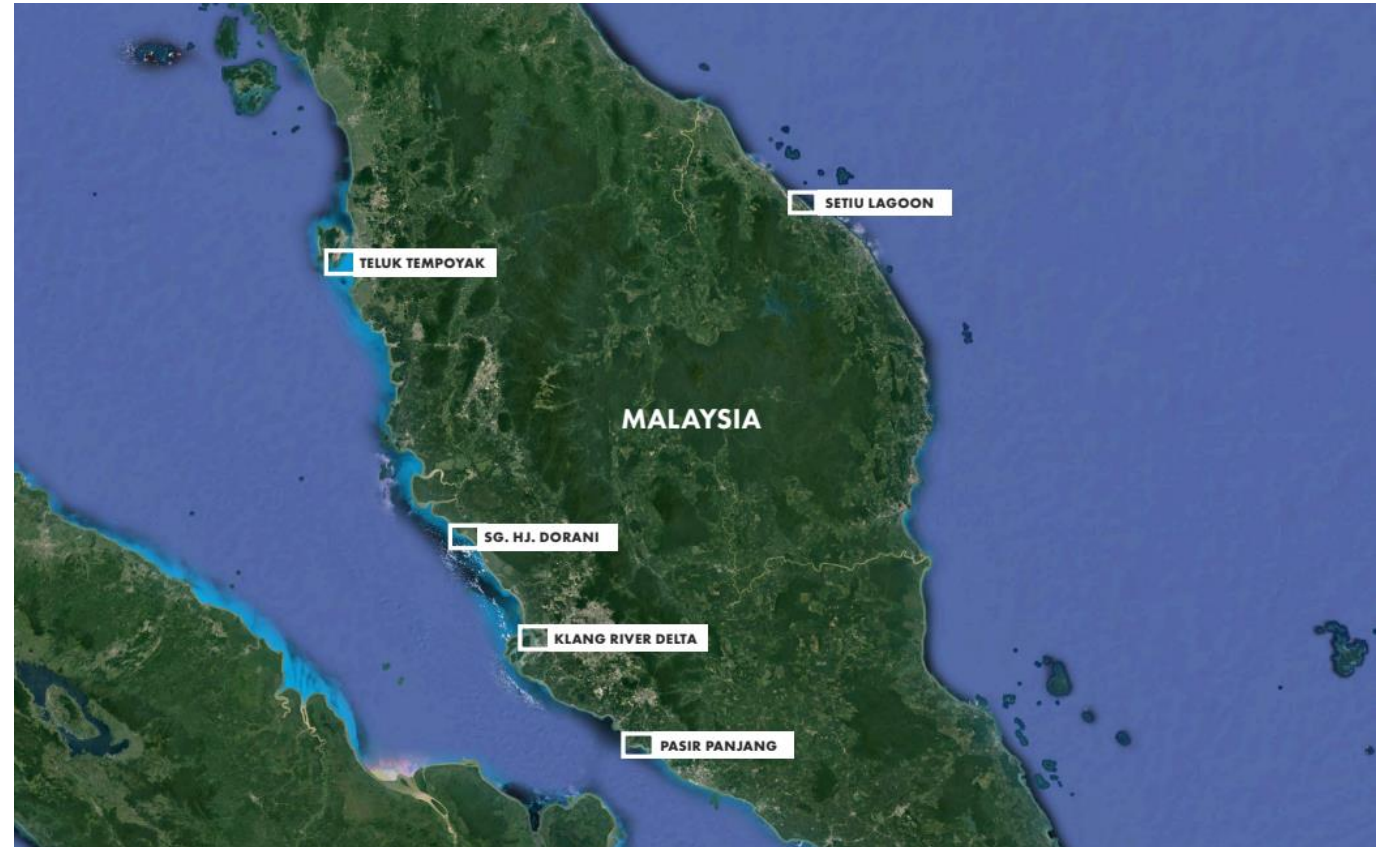
- 1. Pepijn Nicolas LY...
- 2. 4 Huaimei
- 3. Geoff Wilson
- 4. keizvul
- 5. Susanna Tol
- 6. 5 Racquel Malubag
- 7. 3 Joost Noorder...
- 8. ARD Elmer Basco
- 9. 5 Joseph Literal
- 10. 5 Alma N. Abug
- 11. 5 Nestor Lisondra
- 12. 9. Fokko Van der ...
- 13. Dan Fries
- 14. 9 Frank Hoffmann
- 15. 9 Pieter van Eijk
- 16. 3 Bambang Sidhartha
- 17. 5 Beth Sotele
- 18. 5 Beth
- 19. 5 Annadel Caban
- 20. 5 Christelle Ira In...
- 21. 4 Teo Fang Yenni
- 22. 5 Almir Buisak
- 23. Rolando Dizon
- 24. Arne Jensen
- 25. 5 Guillermo Tabios



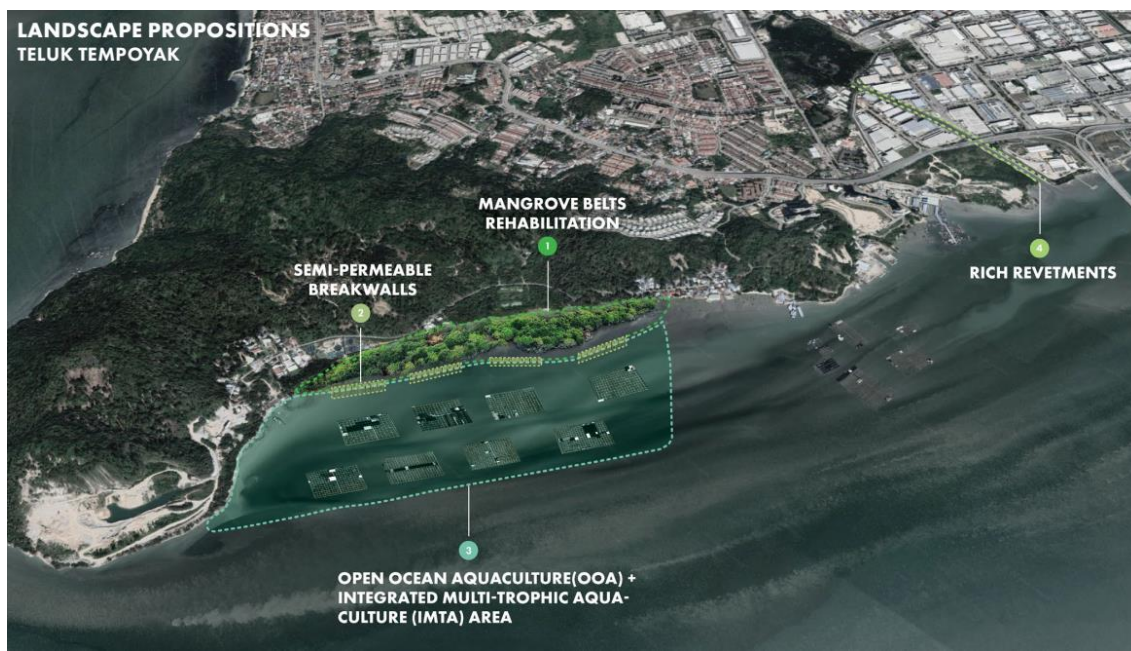
Update

- **Landscape proposition – sites suggested**

- ✓ Setiu Lagoon, Terengganu
- ✓ Teluk Tempoyak, Penang
- ✓ Sungai Hj Dorani, Selangor
- ✓ Klang River Delta
- ✓ Pasir Panjang, Negeri Sembilan



**LANDSCAPE PROPOSITIONS
TELUK TEMPOYAK**



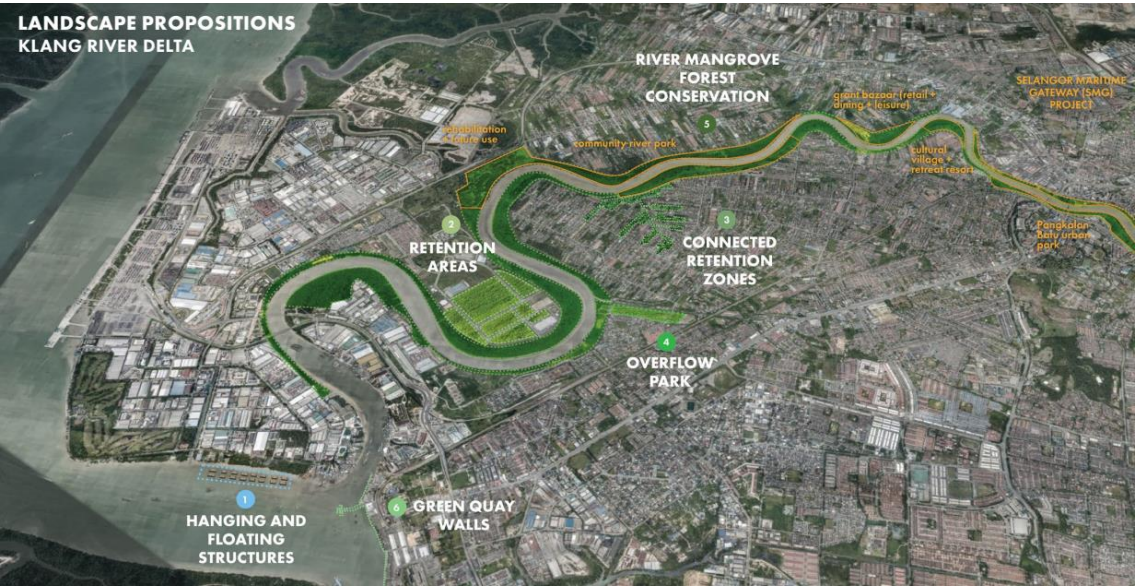
**LANDSCAPE PROPOSITIONS
SG. HJ. DORANI**



**LANDSCAPE PROPOSITIONS
SETIU LAGOON**



**LANDSCAPE PROPOSITIONS
KLANG RIVER DELTA**



Landscape proposition – our priority @ Pasir Panjang



Update

- CAS 2021 side event – supporting statement from Political Partner recorded



Share your story
#PowerofWetlands

