



**Manila Bay Sustainable Development Master Plan**

# MBSDMP – Status and Overview

**Intertidal, nature-based, coastal management and protection, Northern Manila bay**

KNW – November 1, 2019

**JanJaap Brinkman, Deltares**

## Manila Bay

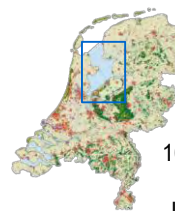


**Philippines**  
300,000 km<sup>2</sup>  
106 million people

**Indonesia**  
2,000,000 km<sup>2</sup>  
275 million people  
**Java**  
140,000 km<sup>2</sup>  
145 million people



**Manila Bay Catchment**  
20,000 km<sup>2</sup>  
32.8 million people 2015  
50.4 million 2055

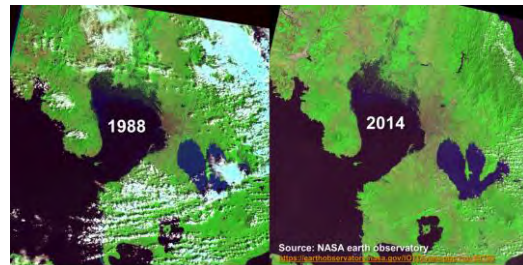
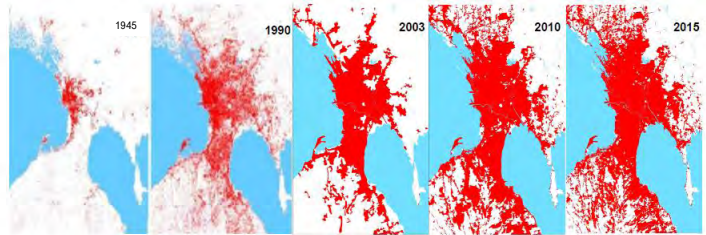
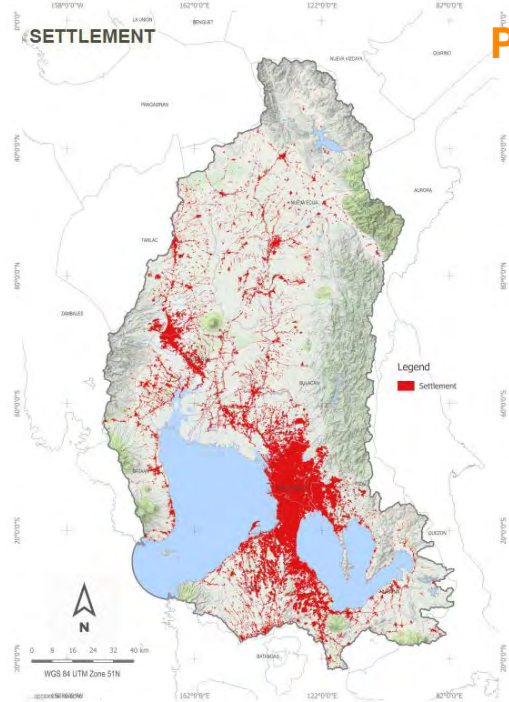


**The Netherlands**  
41,000 km<sup>2</sup>  
16.8 million people 2015  
18.4 million 2060  
IJsselmeer: 1,100 km<sup>2</sup>

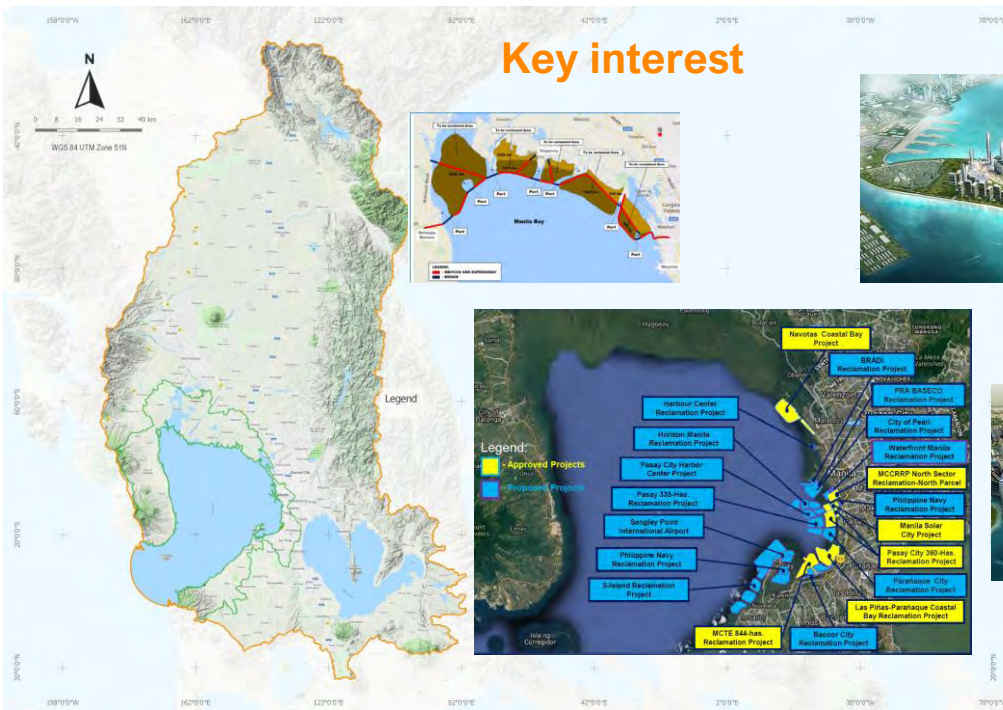


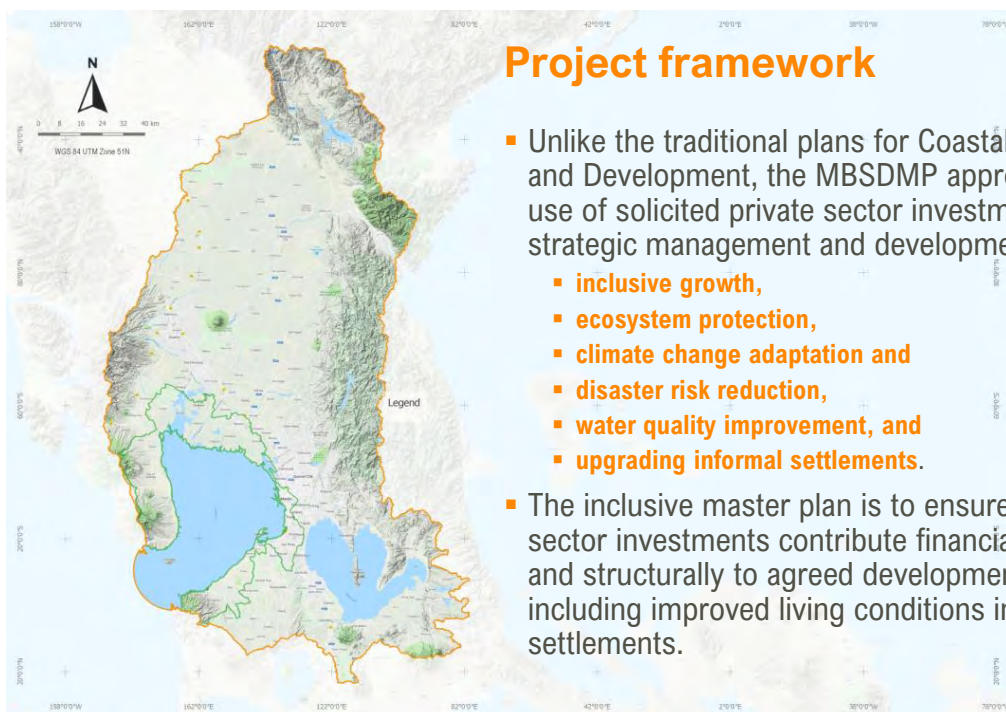
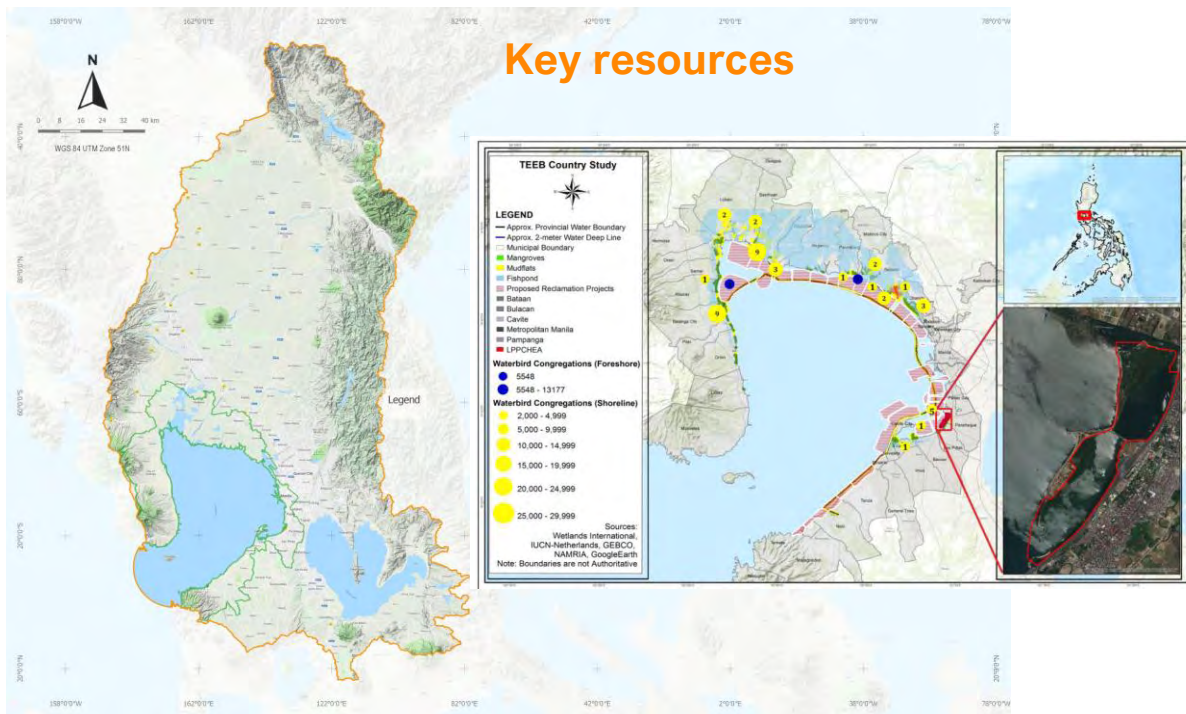
**Manila Bay**  
2,000 km<sup>2</sup>

# Project Overview



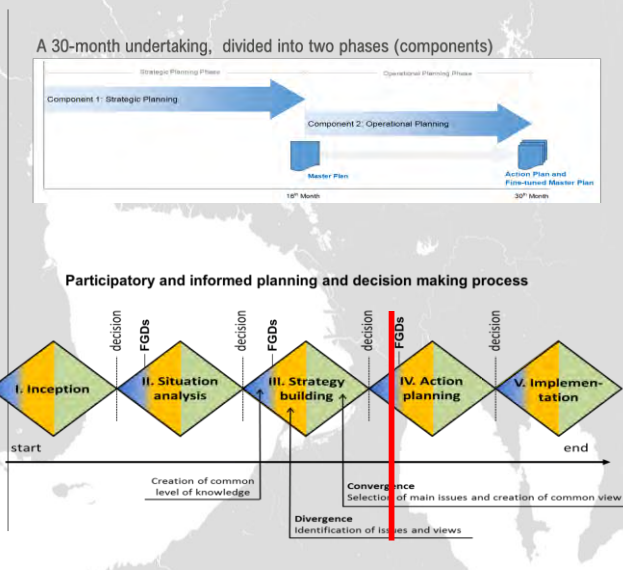
# Key interest





## Background & time schedule

- 2008 and 2010 Supreme Court decisions on Manila Bay that show the involvement of at least 13 government departments and agencies to address the water pollution issues
- 2013 Reclamation approval from PRA to NEDA
- 2015 DRR mission proposed with the institutional complexity and the socio-economic importance of the Manila Bay region for the Philippines
  - an inclusive Master Plan and a supporting institutional framework MBSDMP**



## Project Structure



Project Management Structure for the Formulation of the MBSDMP

## Dutch Expert Team (DET)

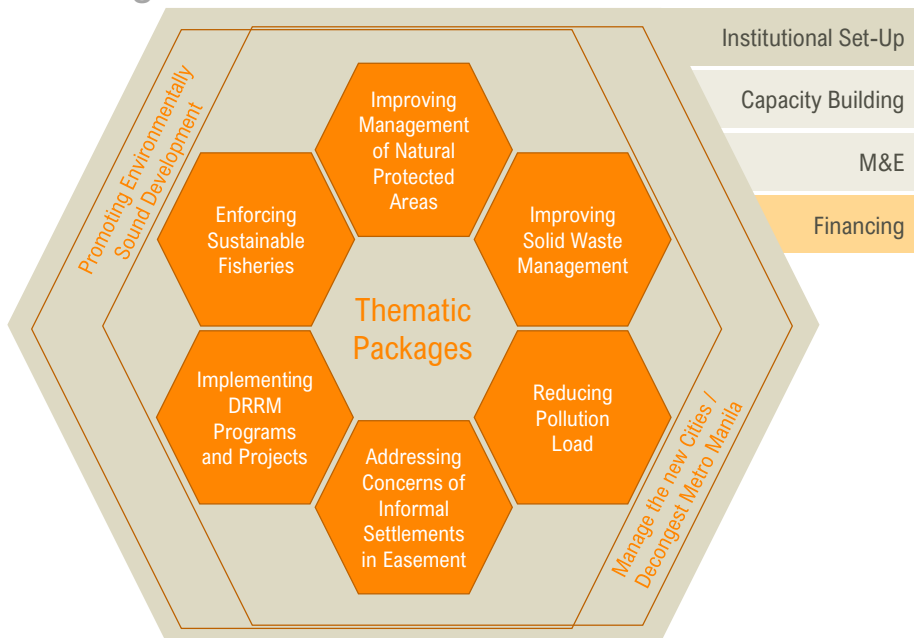
- Deltares
  - Coordination, Master Planning
- PfR – Partners for Resilience,
  - communities, drr, environment
  - Red Cross, Climate Center, Wetlands International, Care, Cordaid
- CMER or NCEA - Netherlands Commission for Environmental Assessment (NCEA)
  - strategic environmental assessment (SEA) partner for DENR
- PUM - Netherlands senior experts
  - Senior expertise solid waste, waste water, water, policy process
- VNGi – Dutch Municipalities association
  - LGU strengthening, assisting coastal municipalities
  - League of Cities Philippines (LCP)
- GoN – Financial engineering
  - innovative financing





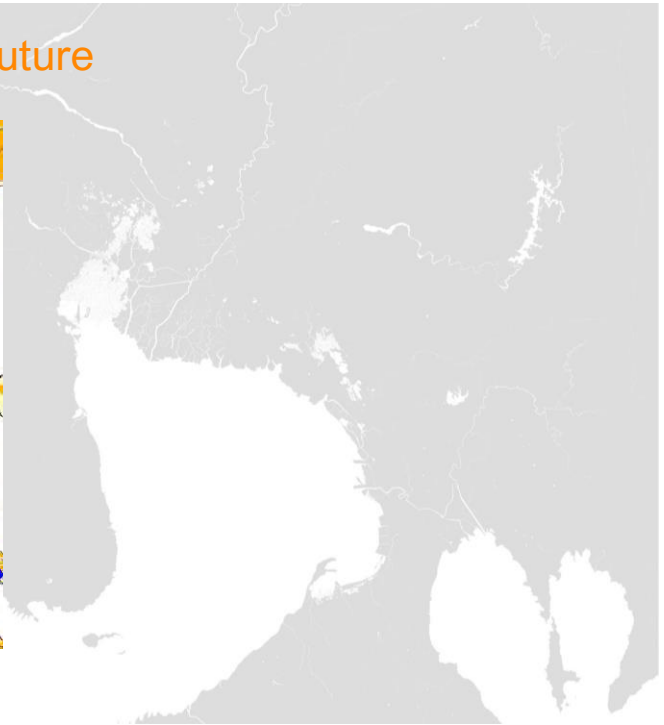
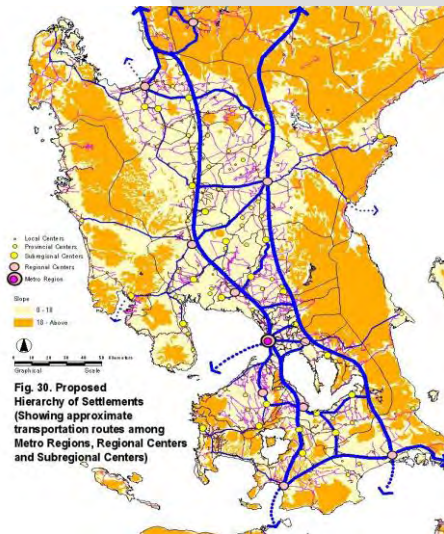
whatdoweplantodo

## Strategic Master Plan



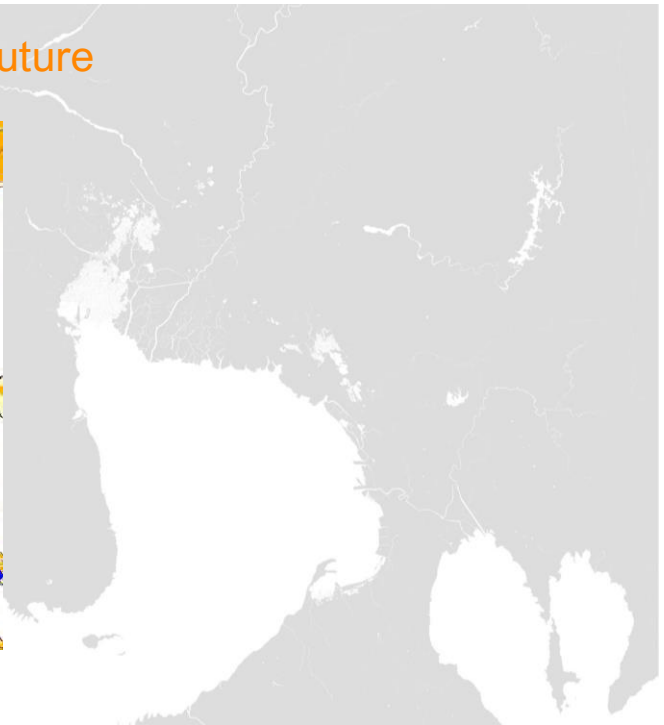
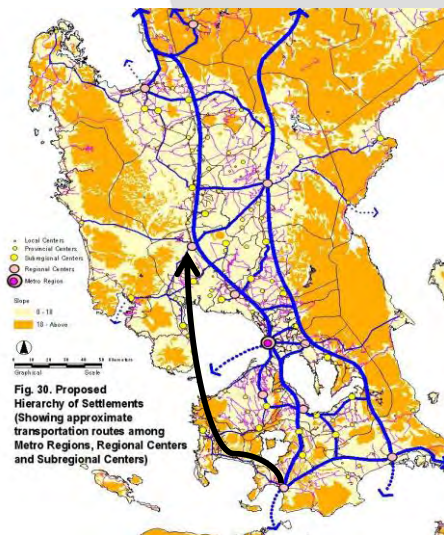
## Manila Bay Area – the Future

what will happen?



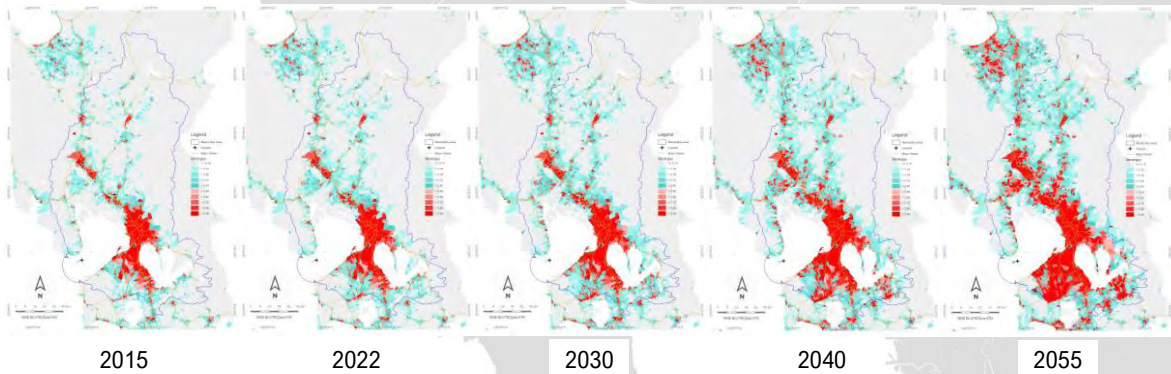
## Manila Bay Area – the Future

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## Manila Bay Area – the Future

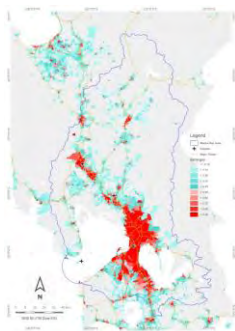
what will happen?



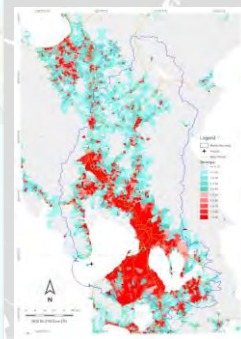
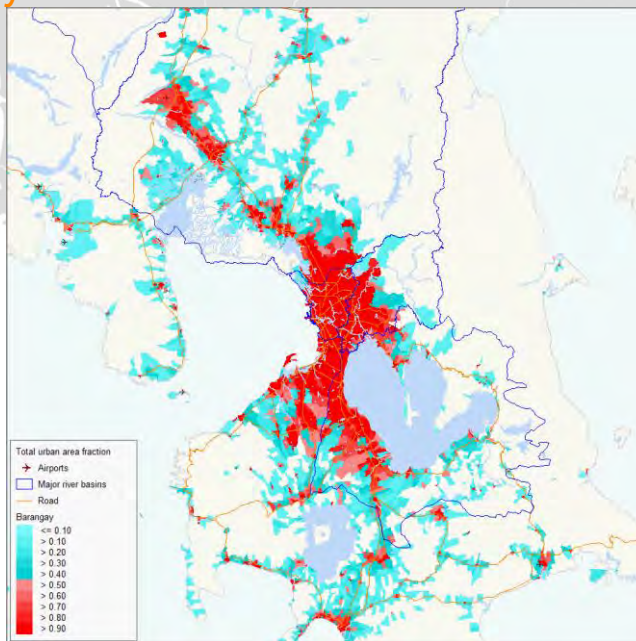
Spatial model preliminary results	2015	2022	2030	2040	2055
Reference case population (million)	32.8	36.6	41.2	45.9	50.4
Land reclamations case population (million)	32.8	36.9	41.6	46.4	51.1
Reference case urban area fraction (%)	13.8%	16.3%	19.2%	22.8%	28.0%
Land reclamations case urban area fraction (%)	13.8%	16.5%	19.4%	23.0%	28.3%

## Manila Bay Area – the Future

where are we now?



2015



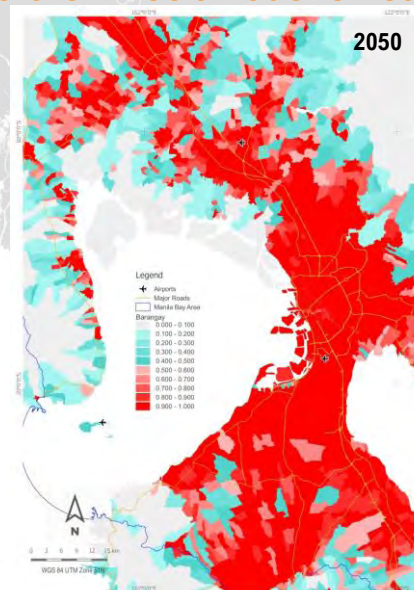
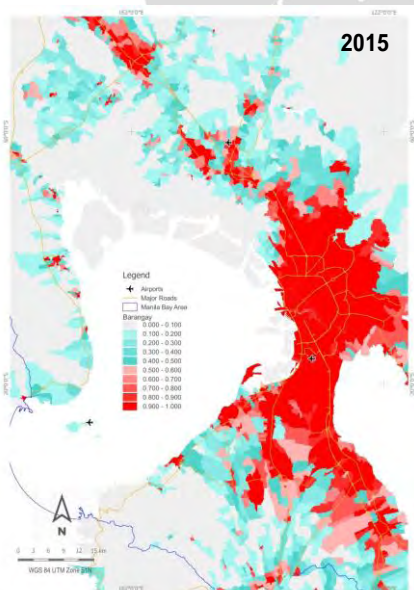
2055



what will happen?

Central Manila reclamations very attractive

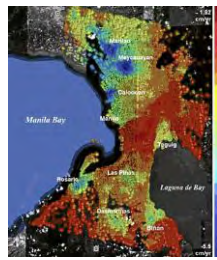
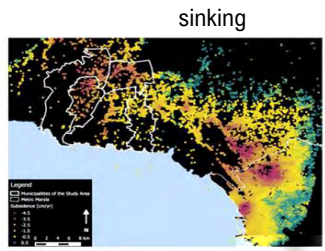
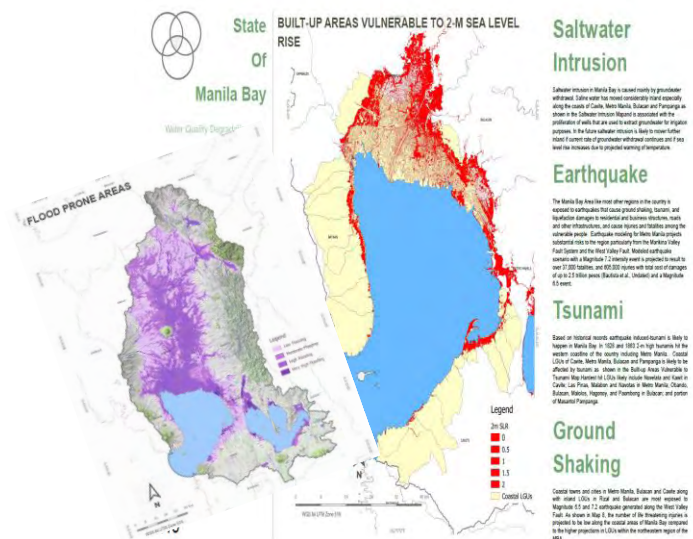
Northern reclamations not so



### Key Project Pillars

- **Manage the New Cities**
  - Strict building codes
  - Solid waste, sewer, piped water
  - Avoid doubling the problem
  
- **Fix the “current problems”**
  - Solid waste
  - Waste water
  - Scale-up the management
  - Municipality associations

# Manila Bay Area – a vulnerable place



## Options for Integrated DRR Flood Mitigation and Ecosystem Restoration - with Benefits for marginalized Fishing Communities



## DRR – Ecosystems – Biodiversity – Flooding Coastal Inclusive Growth



The land is sinking - even before the Climate Change  
Sea-level Rise has kicked in

November 2002

February 2018



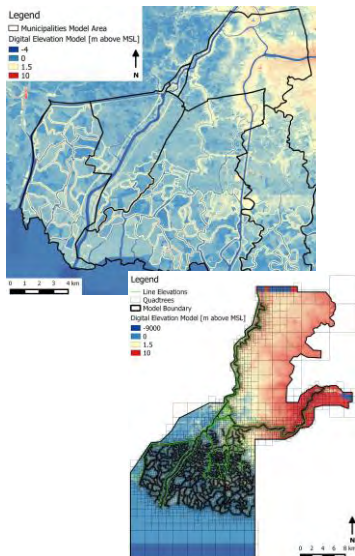
## Pampanga sinking



Building on top of houses

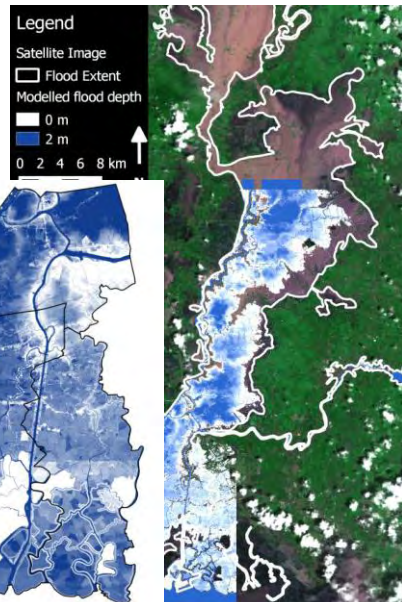
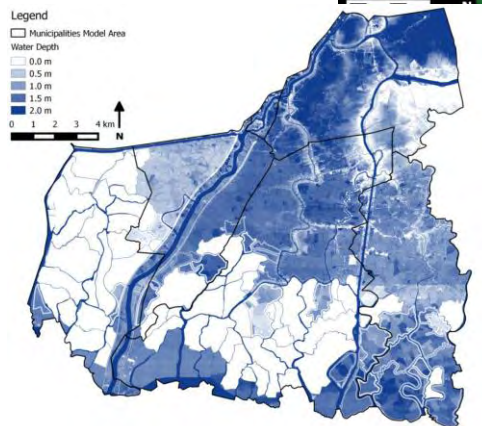


## Pampanga sinking, Pedring 2011



Pedring 2011: peak discharge of 2800 m<sup>3</sup>/s and Manila Bay with a storm surge enhanced tide of 1.8 m above MSL.

NOAH 2013

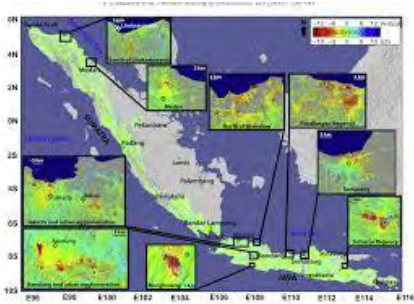


# Indonesia sinking

Jakarta



Semarang



# Jakarta Immediate government response New flood defence

November 26, 2007



December 23, 2007



November 15, 2008



November 15, 2008



**Pluit Febr 2011**  
Water level 2.28



"Sea level versus River and Sea Wall" Pluit Jakarta



**Pluit Seawall, October 18, 2013**



**Pluit Seawall, October 18, 2013**

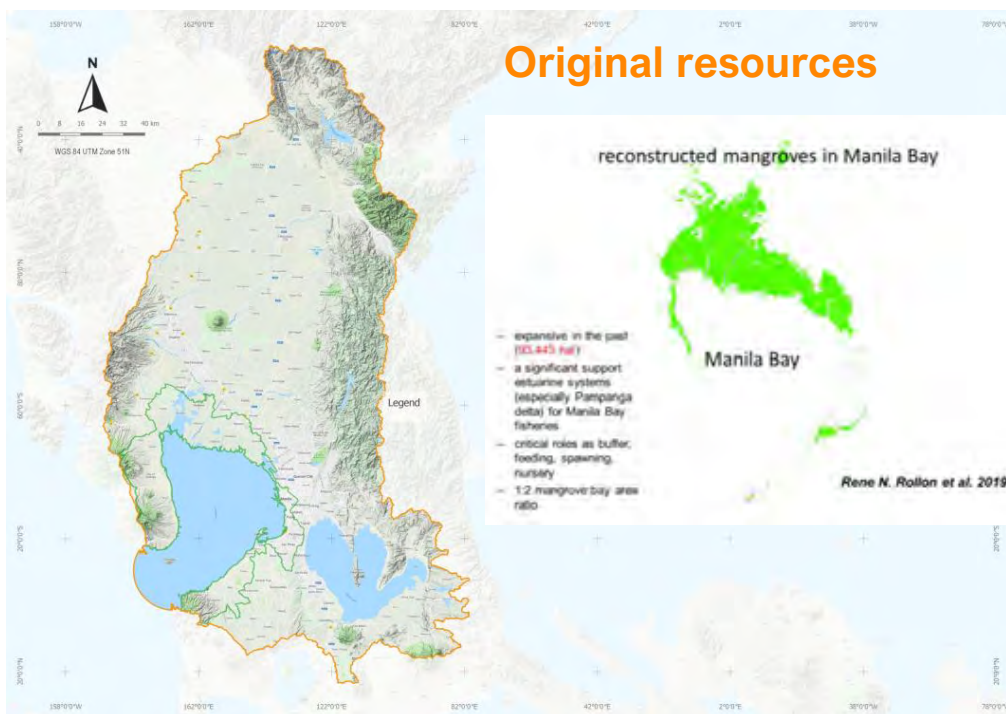
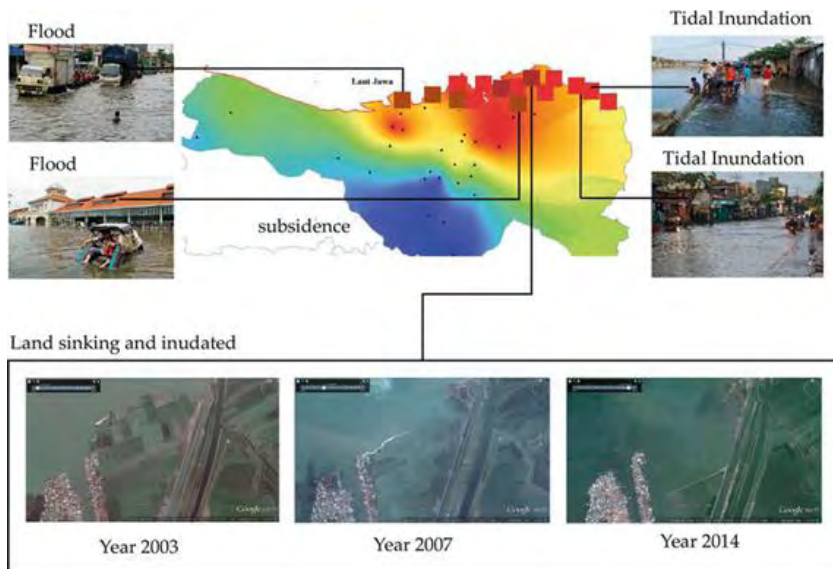


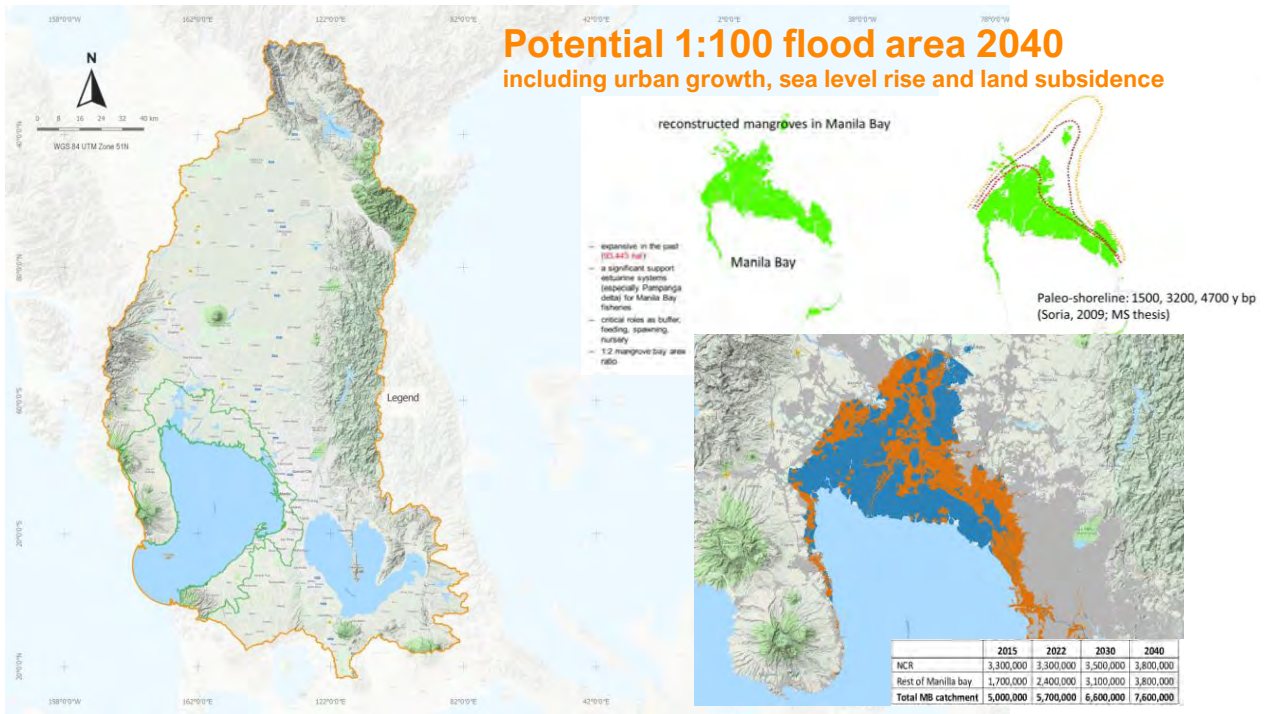
## Jakarta again new flood defence 2017

Jakarta "aman" safe, July 3, 2016



## Semarang – 3000 ha back to the sea

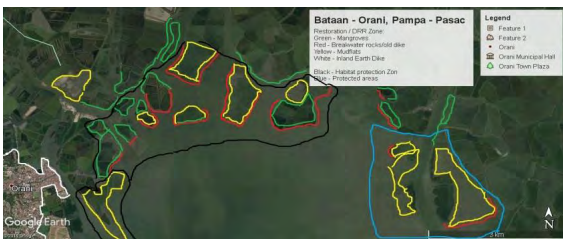




## Intertidal nature-based coastal defense



Integrated DRR Flood Mitigation and Ecosystem Restoration - with Benefits for marginalized Fishing Communities



Integrated DRR, Habitat restoration and zoning



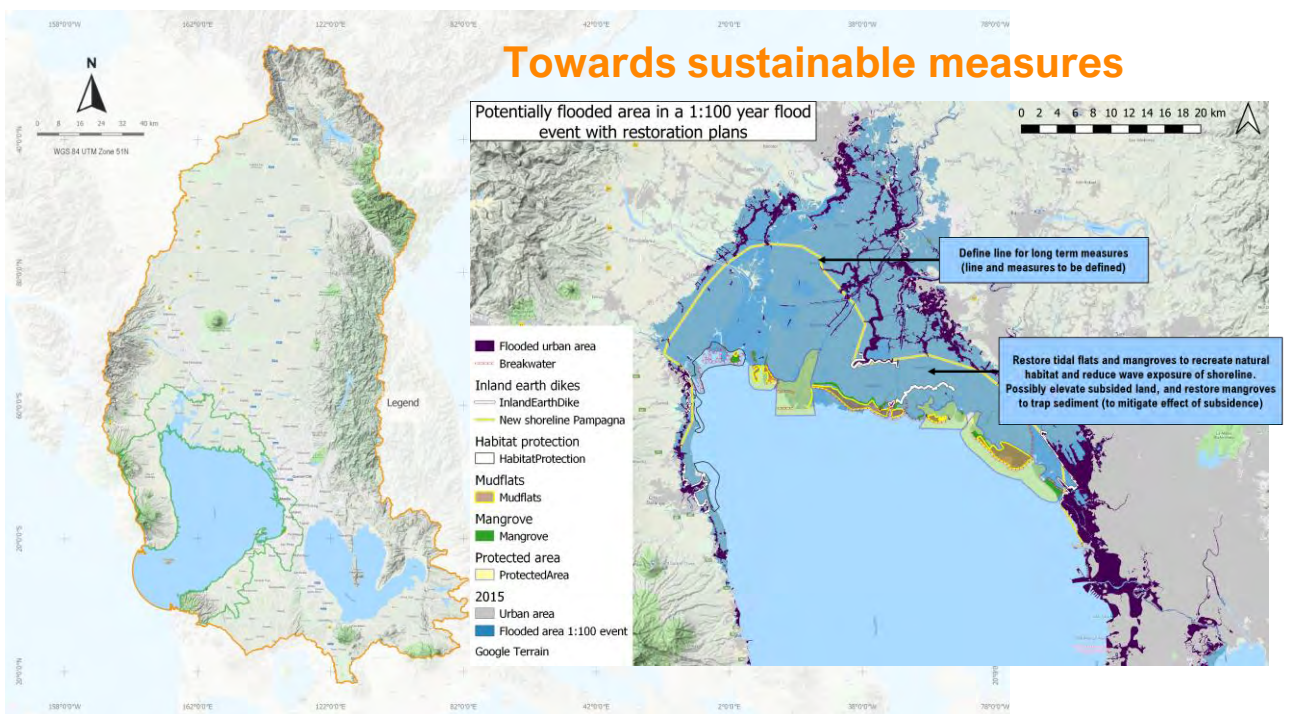
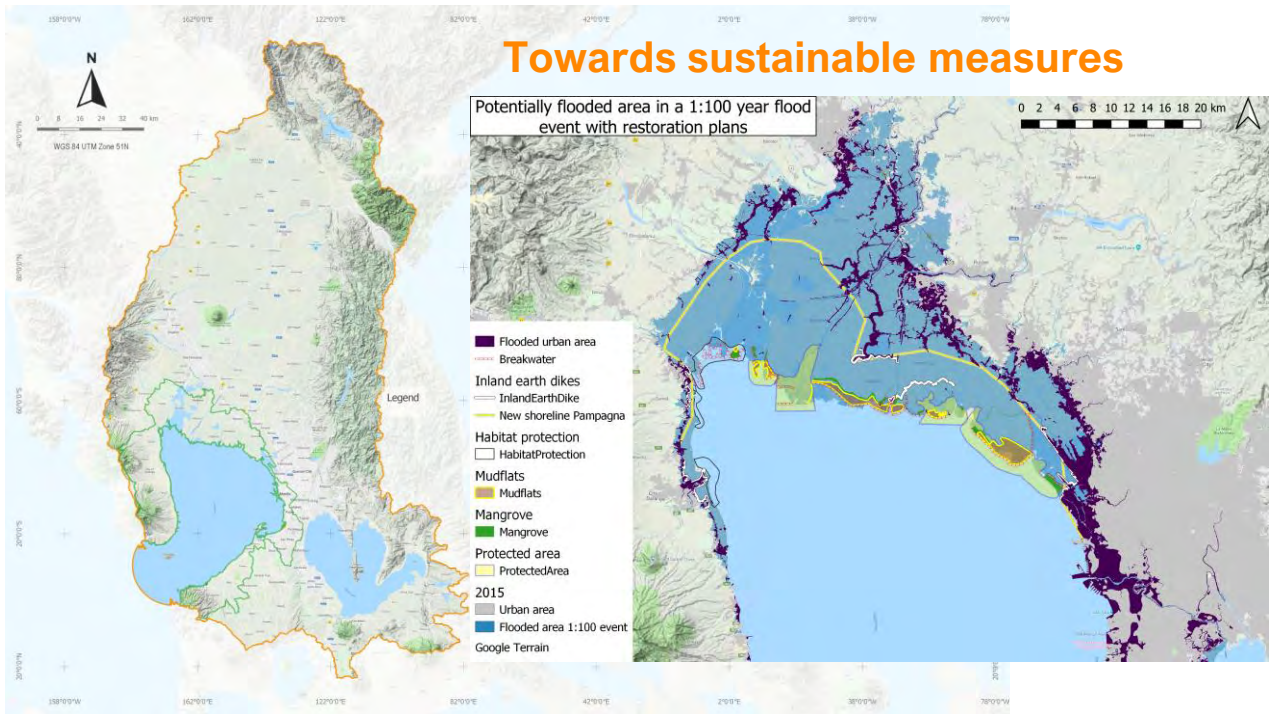
## Integrated DRR, Habitat restoration and zoning Pampanga at Bataan Border



### Combining all: Integrated DRR, Habitat restoration and zoning

- First coastal zone very difficult to protect due to
  - land subsidence: 1 – 1.5 meters by 2040
  - Sea level rise: 1.10 meter by 2100 (IPCC 2019)
  - Many coastal fishponds marginal and / or abandoned
  - Current coastline unclear
- First coastal zone very high potential for
  - Livelihood restoration
  - Ecosystem and habitat restoration and development
  - Stepping stone towards sustainable fish stocks and biodiversity
- The current coast line already moved inland
  - What is the most effective “line of defense”

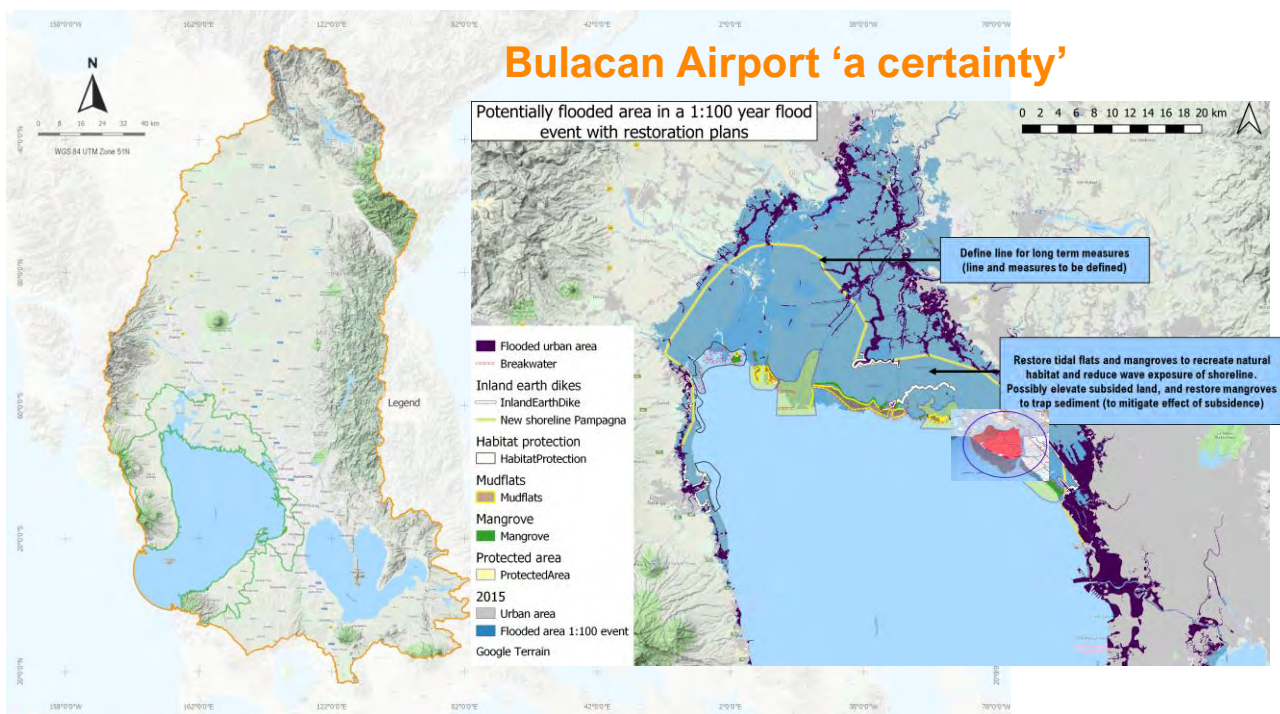
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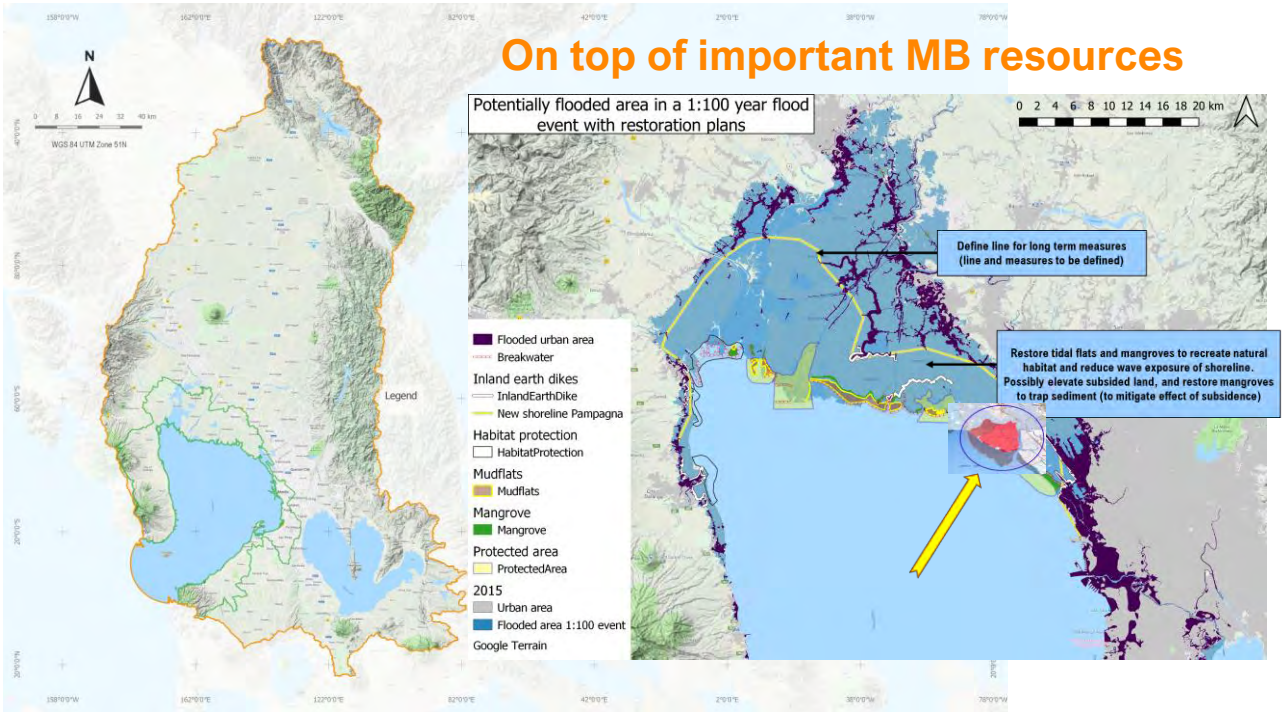
# What is required?

## Towards motivation and understanding

- Assist all people to move to safer (higher) places
  - Stimulate the people to leave the First Coastal Zone
- Assist the LGUs to create safer places above 'the coastal defense line'
  - Stop the groundwater abstraction
  - Raise the land
  - Stimulate the people to move to better places
  - Develop proper evacuation zones, shelters
- Assist and motivate local fishpond owners to handover for the livelihood and safety of Manila Bay
  - Move fish production to more profitable areas
- Add a Sustainable Resources Management organization
- **Create a Manila Bay resilience fund**



## On top of important MB resources



## Connect with remaining MB resources?

