

*Symposium*

# Living polder strategies for living delta:

## Tidal River Management (TRM) in Bangladesh



# TRM Process: a story in living polder

**Mega structure on river**



**Silted up tidal river**

**Severe waterlogging**



**Land development**

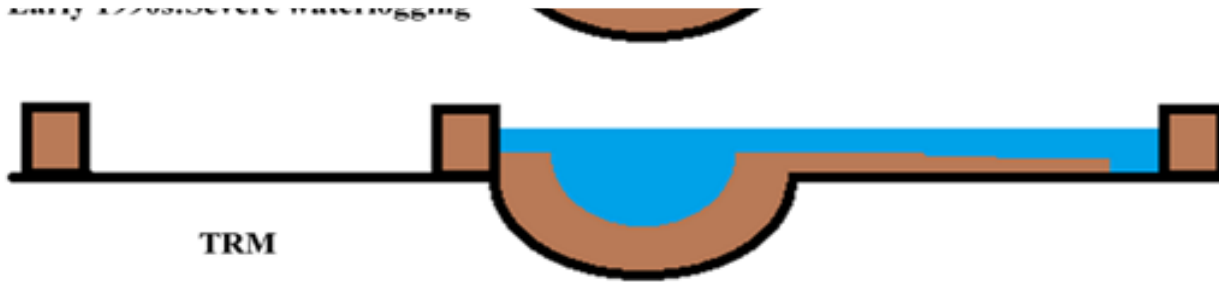
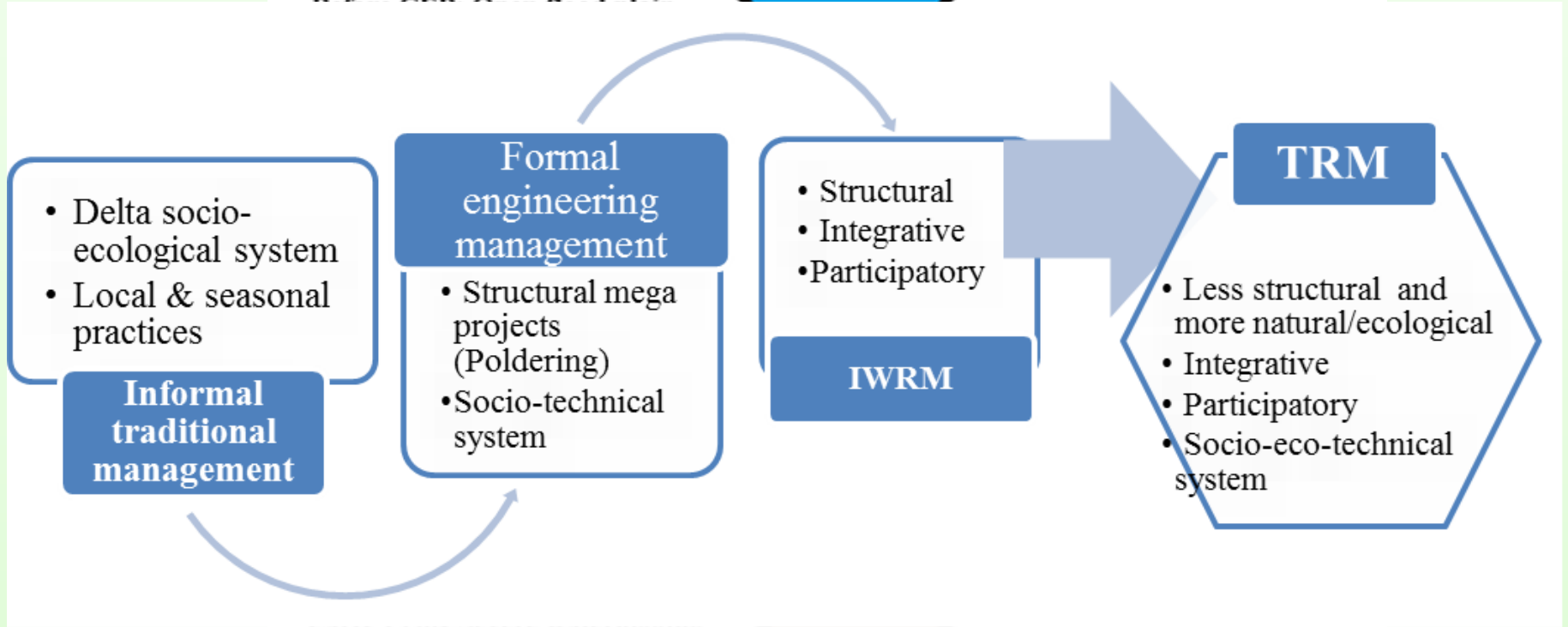


**More production**

**Restored tidal river**



# TRM in Delta Management Transition



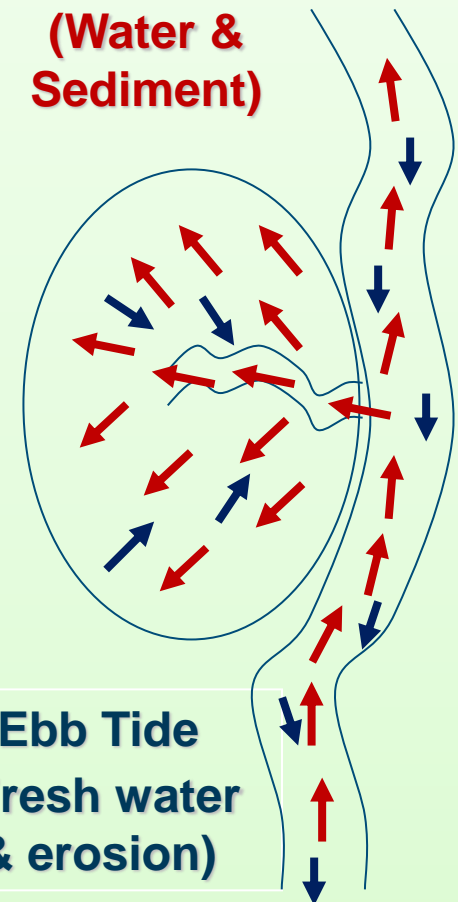
# Tidal River Management

## *Technical Concept .....*

1. Water allowed to enter tidal basin during high tide
2. Sediments get deposited in the basins
3. During low tide, sediment free water goes its way back and washes up the silted river beds
4. Conveyance capacity of river increases



**High Tide  
(Water &  
Sediment)**

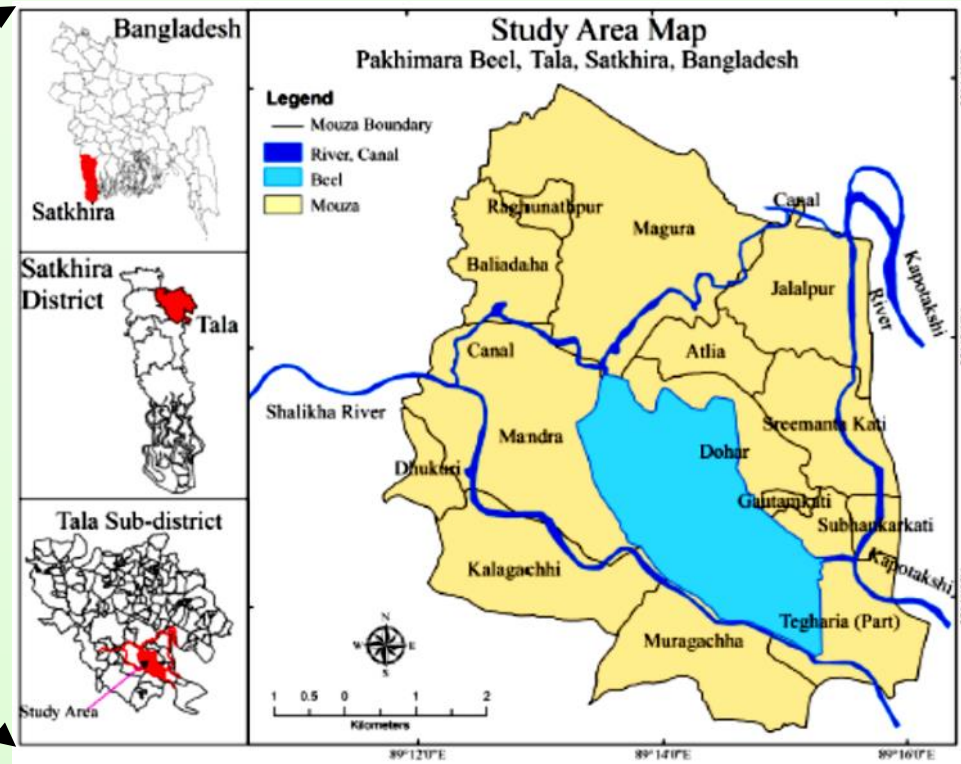
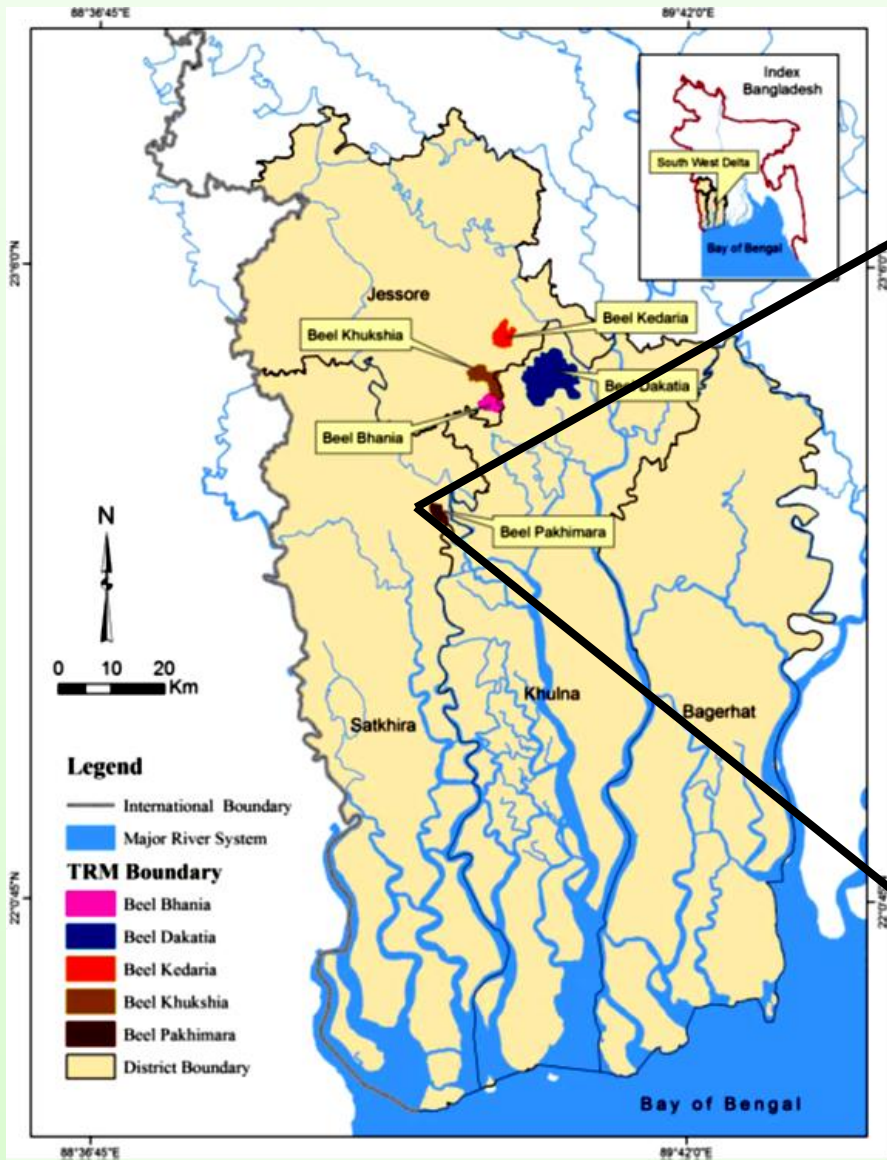


**Ebb Tide  
(Fresh water  
& erosion)**

# TRM Practices in Bangladesh

Contents	TRM in different Beels (Natural wetland)				
	Beel Dakatia 1990–1994	Beel Bhaina 1997–2001	Beel Kedaria 2002-2005	Beel Khukshia 2006–2012	Beel Pakhimara 2015- till now
River system	Shandhar Khal, Hamkura	Hari- Mukteshwari	Hari- Mukteshwari	Hari- Mukteshwari	Kobadak river
Size of Beel	11,609 ha	900 ha	600 ha	781 ha	700 ha
Land elevation change	>0.5 m on average	1.5–2 m near cut point, 0.2 m at far ends	Insignificant	1.5–2 m near cut point, 0.5 m at far ends	1–1.5 m near cut point and 0.05 m at far ends
River scouring	Depth > 9 m, widened >8 times	Depth 10–12m, widened 2–3 times	Not measured	Depth 10–11 m, widened 2–3 times	Exact figure is not found yet
Land use change	From one crop (rice) to two crops (rice and fish)	From one crop (rice) to multiple crops (rice, fish and vegetables)	No major change	From one crop (rice) to two crops (rice and fish, mainly shrimp farming)	Two crops (rice and fish) were practiced before TRM
Implemented by	Community	Community	BWDB	BWDB	BWDB

# Current case : Beel Pakhimara in Kobadak River Basin



# Physical Changes and Agro-ecological Conditions



Kobadak River in 2013 (Before TRM)



Kobadak River in 2017 (During TRM)

- ❑ Waterlogging is removed
- ❑ River channel becomes wider (2-3 times)
- ❑ Drainage connectivity of the catchment is improved
- ❑ Land level is increased within beel (about 1.0 m)
- ❑ Transformation of agro-ecological system: *fresh water to brackish water*
- ❑ Salinity level may increase in beel surroundings

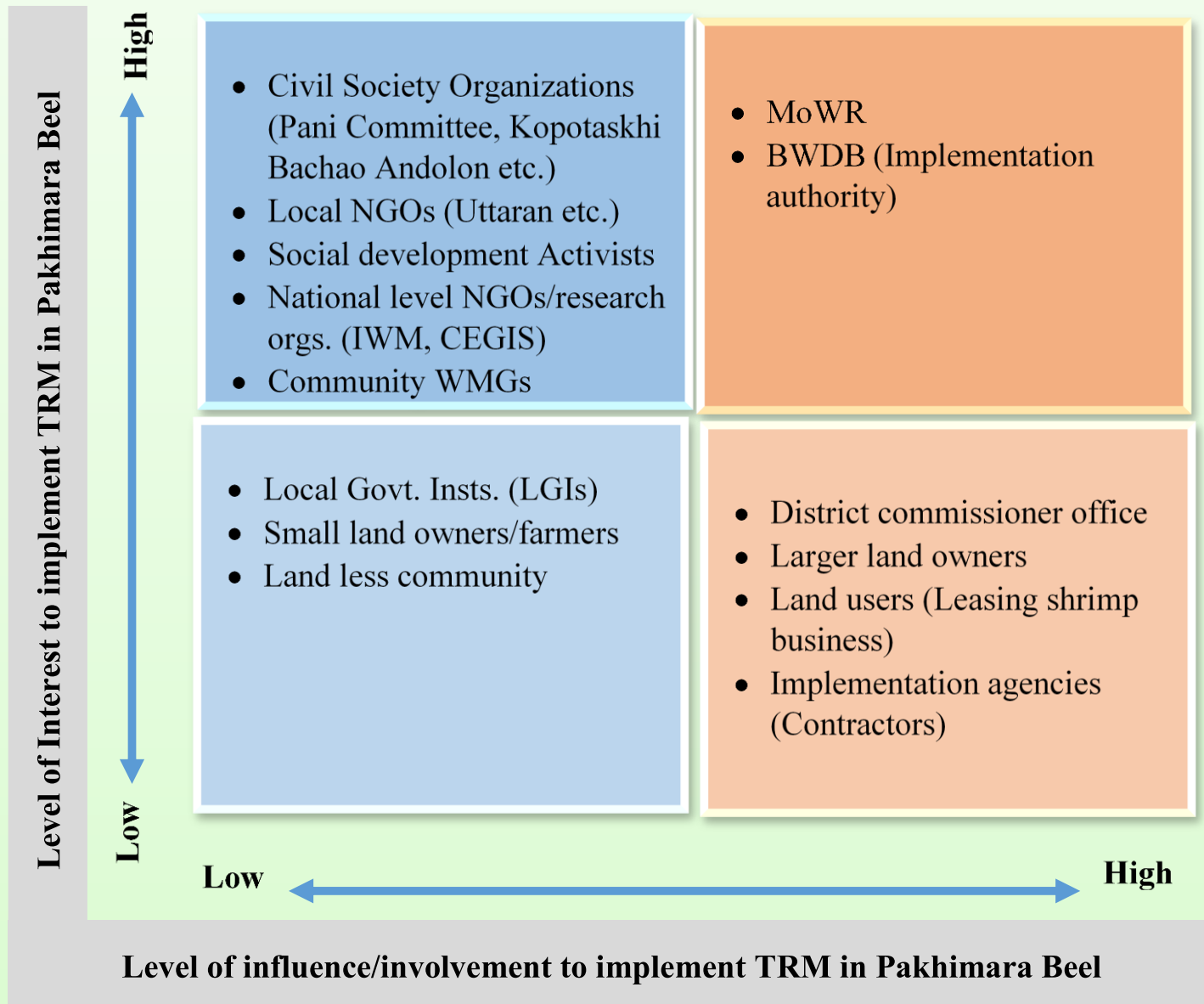
(Source: Suhala, 2020; Mutahara et al. 2020)

# Socio-economic Perspectives

- ❑ More productive: agro-fishery mixed production pattern
- ❑ Changes in livelihood system: agro-farmer to shrimp farmer
- ❑ Compensation: need proper and timely distribution
- ❑ Higher land price: due change from low to high land
- ❑ Income generation: for land owner and shrimp business holder
- ❑ Loss of livelihood services: fisher men loss fishing ground, small farmers become wage laborers
- ❑ Migration: landless beel depended people may need to migrate



# Participation and Institutions



## **Operational challenges: learning of the community**

- Widely ignored community access and acceptance
- Significant gaps in construction of structures in TRM projects
- Construction agencies have no concern to social and environmental benefits
- Gaps in interact with local affected communities or small farmers
- No strong time planning for TRM implementation
- No emergency (i.e. Cyclone, storm surge etc.) planning

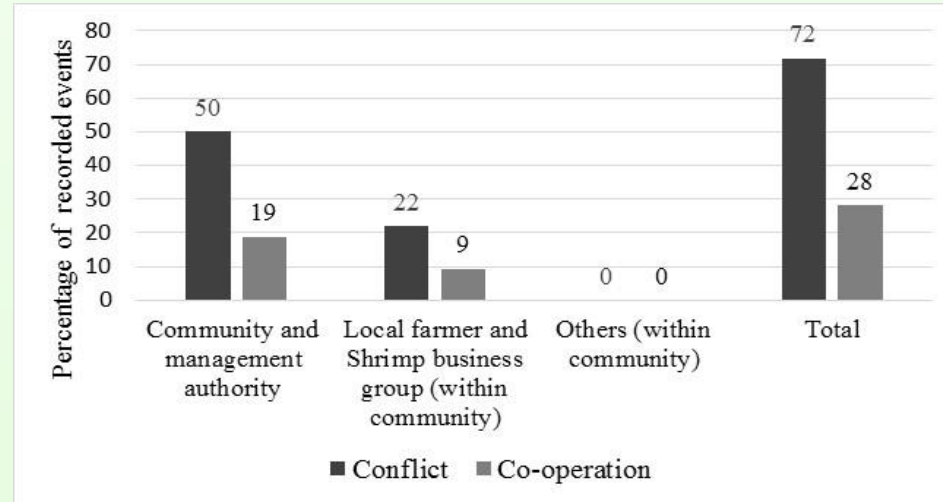
## *Towards Sustainable Adaptation of TRM*

### **Institutional challenges: learning for the organizations & policy makers**

- Very weak implementation of IWRM approach
- Information and communication gap between technical and implementation agencies
- BWDB gives priority to construct structural interventions
- Complex land requisition policy and bureaucratic system
- Less interaction and integration between LGOs and NGOs
- Lack of regular advocacy and awareness building programme

# *Towards Sustainable Adaptation of TRM*

## Socio-political challenges



**More conflicts less co-operation :**

- ❑ Community vs WM authority (BWDB)
- ❑ Local people vs shrimp business holder (Socio-political power)

## **Technical challenges: learning of the researchers**

- Information gap between technical experts and local stakeholders
- Insufficient options for provisional management (i.e. sediment modeling, livelihood management and compensation etc.)
- No scientific land use planning
- Local WMGs do not sustain due to lack of functioning cost
- Strong institution is found in paper but very weak in action
- Non-integration between activities of government agencies

Complex system relationships and participatory learning gaps as well as lack of mutual trust and commitment across the major stakeholders

# Recommendations for Sustaining TRM in Living Delta

- Socio-eco-technical conservation
- Negotiative approach in dealing conflicts
- Strong motivation and advocacy
- Transdisciplinary management

**Improve interventions for sustainable management**

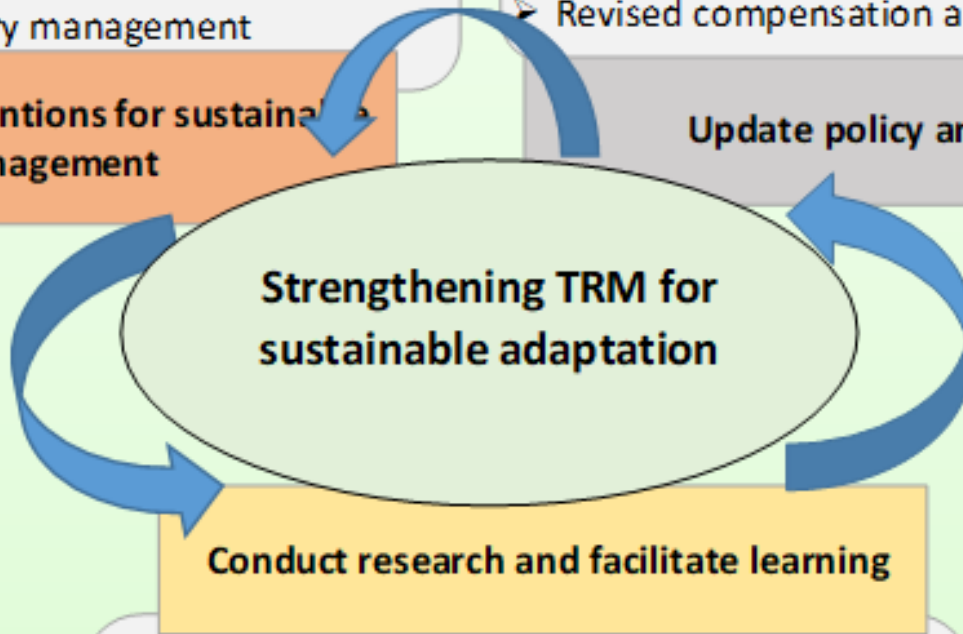
- Operational IWRM
- Multi-stakeholder governance and partnership policy
- Revised compensation and rehabilitation policy

**Update policy and actions**

**Strengthening TRM for sustainable adaptation**

**Conduct research and facilitate learning**

- Transparent and accessible scientific studies
- Integrated action researches
- Comparative studies on different deltas
- Reflexive or learning-oriented approach in community level





**Thanks to All...**