



# Assessing ‘Success’ of Human Adaptation to Climate Change in Indian Bengal Delta and Mahanadi Delta, in India



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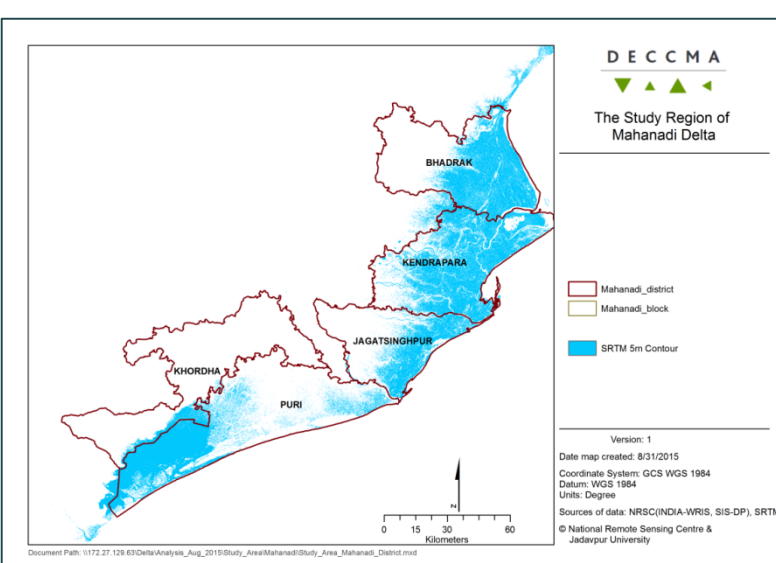
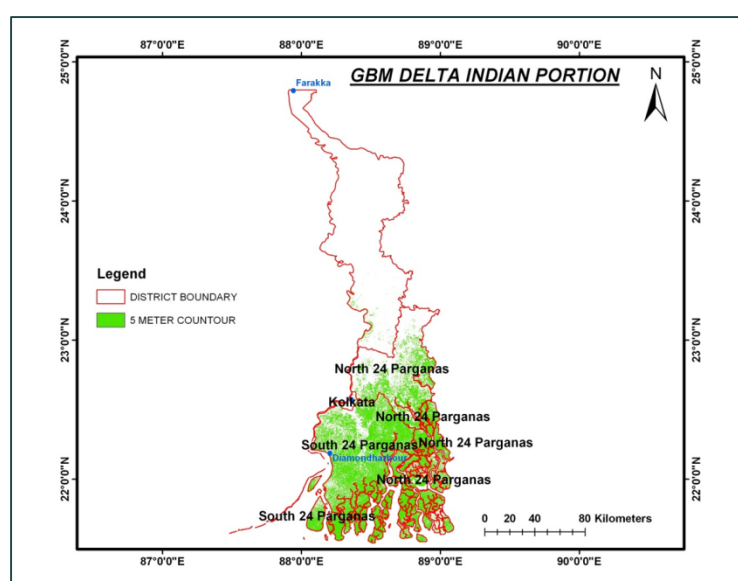
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## Introduction

The present research under DECCMA in Indian Bengal Delta (IBD) and Mahanadi Delta (MD) could identify three significant sectors viz. **Livelihood, Infrastructure and Capacity Building, which are witnessing Human Adaptation**, in response to or in anticipation of changing climatic threats or stresses.

## Study Areas

- The delta comprises of islands, interspersed with tributaries and distributaries of River Ganges.
- The region is dominated by diurnal tidal influxes and the largest Mangroves vegetation.
- It supports a population of 4.5 million and often frequented with intense Cyclones and Storm Surges.



- The “Arcuate” shaped delta formed by River Mahanadi and its two tributaries Brahmani, Baitarani.
- It spreads over five districts of Odisha, and it is characterized by sand beaches, mangrove swamps, lagoons and dominated by waves.
- The region has 4 major urban centres of the state and frequently faced major cyclones, storm surges as a result of depressions formed over Bay of Bengal.

## Successful Adaptation

- In the DECCMA defined context, ‘**Adaptation**’ is referred to the change in human practice and behaviour or both, in response to, or in anticipation of climate change induced stresses or shocks.
- ‘**Success**’ is often entailed with favourable outcomes or positive results.
- ‘**Successful Adaptation**’ can perhaps be identified as the human activities or practices undertaken anticipating future climate risk/s, and is often associated with desired or positive returns, ensuring self sustainability.
- ‘**Unsuccessful Adaptation**’ or ‘**Maladaptation**’, is referred as the human activities or practices, carried out to overcome immediate threats (without anticipating future climate risk/s), resulting undesired or negative returns, to both the practitioner and the society, further, accentuating vulnerability.

## Indian Bengal Delta



Sl. No.	Successful Adaptation Practices (indicating pictures on left)	Unsuccessful Adaptation Cases (indicating pictures on right)
1.	Integrated Agriculture & Aquaculture Practices	Concretisation of embankments are increasing instability of the islands in IBD, resulting ecological imbalance (e.g. of Maladaptation)
2.	Practicing Salt tolerant (farmer's) paddy varieties	Using submersible pumps to draw ground water for irrigation (e.g. of Maladaptation)
3.	Raising the plinth of dwelling house & tube- well platforms	Migration of people from the submerged islands of Lohachara and Ghoramara (submerging) to Sagar Island, which lacks pre-planning
4.	Active Participation in Self help Groups (SHG's)	Catching prawn spawns ( <i>meen</i> ) by the local women, destroying aquatic biodiversity



## Mahanadi Delta



Sl. No.	Successful Adaptation Practices (indicating pictures on left)	Unsuccessful Adaptation Cases (indicating pictures on right)
1.	Awareness and training on Disaster Preparedness and Response	Failure of both (1) National Agricultural Insurance Scheme (NAIS) 2000-2010, under Agricultural Insurance Company of India Limited (AIC) due to low coverage, poor financial performance & less effectiveness, and (2) Weather Based Crop Insurance Scheme (WBCIS) 2008 onwards, covering (only) <i>khair</i> paddy crop, and anticipate loss from only adverse rainfall incidence, either deficit or excess
2.	Using solar drying fish units as a means of alternative livelihood options	
3.	State Plumbing Training Institute	
4.	Active Participation in Self help Groups (SHG's)	



## Adaptation Policies/Plans Addressing Deltas & Coastal Areas

Study Areas	West Bengal State Adaptation Policies Indian Bengal Delta (IBD)	Odisha State Adaptation Policies Mahanadi Delta (MD)
State Climate Change Action Plan	SAPCC (2012) - Integrated Farming, Rehabilitation Strategies & Package, Strengthening Embankment, & Communication, Climate Resilient Housing, Disaster Preparedness, Mangrove restoration	OCCAP (2010) - Multipurpose Shelters, Disaster resilient housing & public infrastructures, Integrating CC in State Health Policy, Community resilience build up, Mangroves Restoration & Plantation
State Disaster Management Policy	WBSMPFW (2012-2013) - Creation/Retrofitting of destroyed/damaged structures, Awareness Build up, Special thrust on women in disaster management	OSDMP (2005) - Strengthening infrastructure & Communication, Involving stakeholders in DM, Decentralization of DM, women participation
State Agricultural Policy	WBSAP (2009) - Agricultural Training Centers for Farmers, Capacity building of Women SHG's	OSAP (2013) - Linkages with Rural Dev. Mission & Market, emphasis on women farmers & women SHG's
State Water Policy	WBSWP (2011) - Focus on Flood (proofing, insurance, forecasting) as a part of Disaster management	OSWP (2007) - No emphasis on coastal areas & deltas
Integrated Coastal Zone Management Policy	ICZMP (2001-2002) - Livelihood shift from agriculture to pisciculture & small business, Mangroves plantation on the berms of aquaculture area and mud flats	ICZMP (Yr. NA) - Construction of embankments increasing women participation in both private & govt. sectors, Mangroves plantation
Resettlement & Rehabilitation Policy	NA	OR&RP (2006) - No emphasis Environmental Stress or Climate Change Induced Displacement
State Policy for empowerment of Women & Girls	WBSPEW (Yr. NA) - To be encouraged for self employment & small entrepreneurship at Gram Panchayat level	OSPGW (2014) - Dissemination of information (local language) through SHG's & PRI's on women skill building-employment-entrepreneurship

## Discussions

- The concept & practice of identifying ‘Successful Adaptation’ are recent.
- In India, there is no separate document providing the criteria or guidelines or benchmarks for evaluating the success of Adaptation processes/activities undertaken.
- The present comparative review of **Successful & Unsuccessful Adaptation cases** has considered only the reported outputs/results.
- There is no separate policy (state) dedicated for Climate Change Adaptation
- There is **no Rehabilitation & Resettlement Policy (in West Bengal)** for IBD; for MD (in Odisha State R&R Policy) **no emphasis on Environmental Stress or Climate Change Induced Displacement**
- In majority of the Climate Change Policies & Plans, **there is no separate emphasis on addressing Gender Issues**

## Conclusion

In country like India, irrespective of bio-geographical boundaries, with low cost technologies and/or low adaptive capacity, **the array of adaptive options perhaps, can become limited due to financial constraints**. The present comparative review is an attempt to assess successful & unsuccessful adaptation practices in IBD & MD, and the role of existing (related) Government policies. This will require further study.

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