

Indian Sundarbans Delta: Vulnerability, vision & beyond

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Deltas in Times of Climate Change II

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Indian Sundarbans Delta: A Vision

VISION

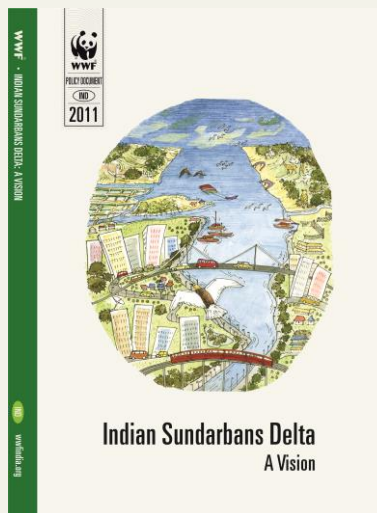
Enhanced protection for human economic activities together with restoration of mangrove forests, and encouragement of phased and systematic outmigration by 2050

AIM

reasoned public discussion leading to investments and subsequent improvement in quality of life of the human population with reduced threats from extreme events and restoration of the ecosystem

WHY?

It is not politically responsible or economically sensible to try to promote economic development in inherently hazardous areas

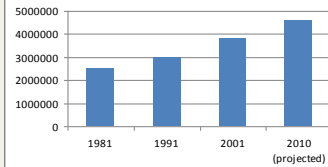




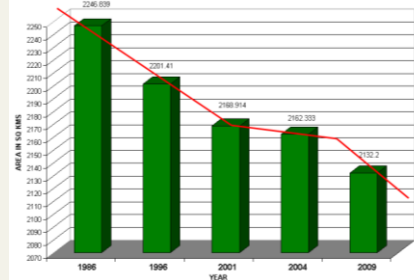
A Vision for Indian Sundarbans

- Challenges posed by:
 - High population growth
 - High development deficit
 - Climate change impacts
 - Conservation imperatives
 - Recurring disasters and the impacts on humans
- Gravity of these challenges not fully understood and acknowledged
- Early, proactive, highly informed and bold changes in policy and governance are required to cope with pressures of predicted changes

Population in Indian Sundarbans Delta



TOTAL FOREST COVER AREAL CHANGE (1986 - 2009)- INDIAN SUNDARBANS



Development challenges in Indian Sundarbans

Access to electricity in Indian Sundarbans Delta

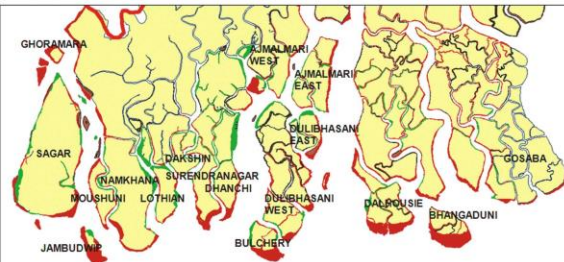
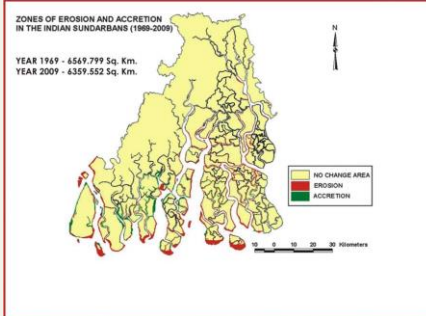


- About 99.99% revenue area of Indian Sundarbans Delta is rural
- Population 4.2 million (Census 2011)
- Average population density 1000 persons/sq.km
- Average decadal growth rate (2001-2011): 17%
- About 50% population below the poverty line
- Access to infrastructure very poor; more than 55% of the villages lack access to electricity



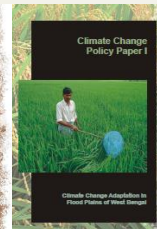
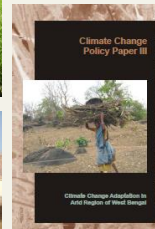
Global Warming Impacts in Indian Sundarbans Delta

- Sea level rise 1990-2000: 3.14 mm/year
- Sea level rise 2000-2009: > 8 mm/year
- Net land loss 2000-2009: 44 sq. km
- 26% rise in frequency of high to very high intensity cyclones: 1881-2001



Not maladaptation but neither adaptation

- Salt tolerant paddy
- Salinity shock resistant fish
- Disaster Risk Reduction – Shelters, Response teams and Relief
- Climate Adaptation Centre
- Climate Change Policy Papers





Ecological Significance of the Sundarbans

- Amongst the largest mangrove patches in the world
- Globally, 4.3% of mangroves are in the Sundarbans
- Rich biodiversity; flora, fauna, terrestrial and aquatic
- Only coastal tiger habitat with a large population of tigers
- World Heritage Site
- Biosphere Reserve

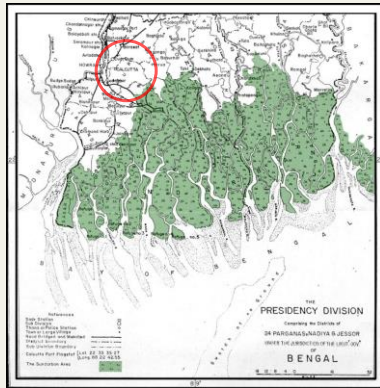


Ecological and Economic Interrelationship

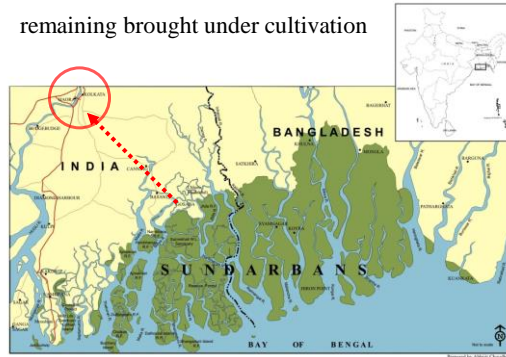
- The forests of the Sundarbans form a powerful natural barrier that protects Kolkata Metropolitan Region's roughly 14 million inhabitants and other human settlements from adverse natural events that otherwise would have taken a massive toll on human life and property
- Further destruction of these mangroves would threaten the long-term survival of the globally endangered Bengal tiger and the many species of fish that rely on the mangroves as a reproductive/nursery ground



Sundarbans and the City



- Human use of the Sundarbans Delta for agriculture is at least 1000 years old
- Discontinuous and sporadic settlement until 1795
- By 1943, less than half the forest cover remained, remaining brought under cultivation



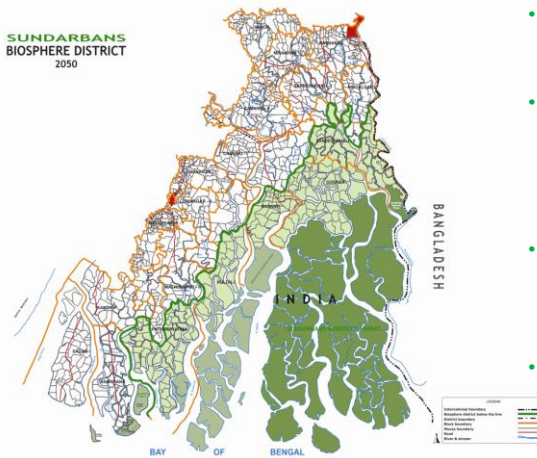
A Vision for Indian Sundarbans

- WWF, with other experts has suggested the - **INDIAN SUNDARBANS DELTA IN 2050: A VISION** - for stimulating reasoned public discussion
- The Vision 2050 scenario is indicative and aims at improved quality of life of the human population with reduced threats from extreme events and restoration of the ecosystem
- The Vision envisages four phases by 2050





PHASE I



- Sundarbans Biosphere Reserve could be made a separate district with special status
- Demarcate areas within Biosphere District by 'Green Line' where development is not politically responsible or economically sensible, and ecological restoration is essential
- Restrict land transfer within the Green Line (not a new idea – such restrictions were enforced during the third and fourth decade of the 20th century)
- Provide economic opportunities and encourage people to graduate to geographical areas where future development is sustainable and possible



PHASE II

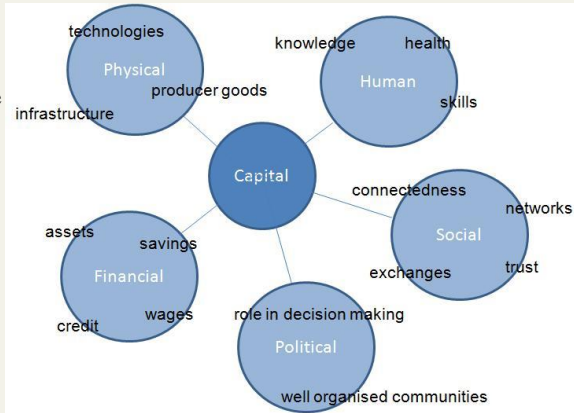


- Physical infrastructure to be developed in Biosphere district outside the 'green line'
- Physical infrastructure to take into account current and predicted sea level rise and high intensity events
- Newly developed places to preferentially provide secure housing and opportunities for human capital development and off-farm/livelihoods



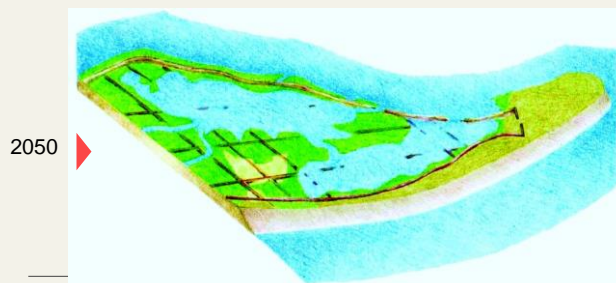
PHASE III

- Engage the population within the 'green line' to adopt opportunities in the newly developed areas in the Biosphere District
- Provide strong financial offsets for land holdings in critical areas
- Provide for enhancement of human, social, financial and physical capital
- A major focus should be on higher education



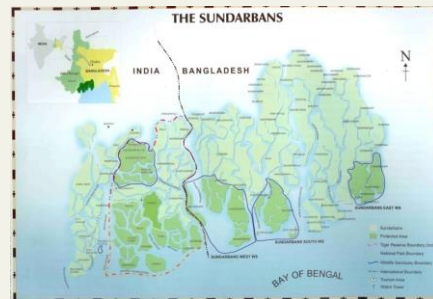
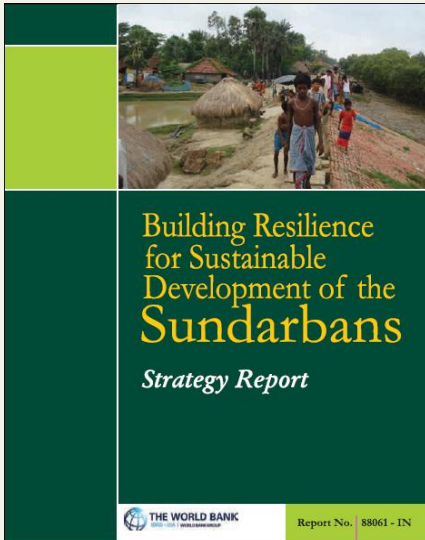
PHASE IV

- As the population migrates to the newly developed areas due to enhanced opportunities
- Vacated area are restored to mangrove forest
- Future investments to focus on ecosystem restoration





Way Forward



- This is a work-in-progress and to be effective, following next steps are needed:
 - Sharing and dialogue on the vision among key decision-makers
 - Wider consultation with the population of the Sundarbans on their vision of future and risk communication



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