



Climate Change Adaptation



Approaching adaptation

- Finding out **Impact of climate change**
- Assessing **Vulnerability**
- Developing a strategy for **Adaptation**, especially to safeguard interests and protect the poor who will be impacted the most



India's global stand on adaptation

- Not clear, yet
- Make GCF operational; get it going
- Tending towards **not asking for resources for adaptation**. This will serve as a bargaining strategy: “Do not insist on arbitrary mitigation cuts. Let poorer countries take resources for adaptation”
- Classic conflict of what India is: rising/emerging economy with an extensive population of poor in the country



India's stand on adaptation: in house

**“There are things we have to do. And we have to keep doing them. We cannot wait for money”—
Abhijit Sen, Member, Planning Commission**

**“You can't have two inconsistent goals. You can't have a goal for development and a goal for climate change; then you are going to have all kinds of contradictions in the system. They will have to be integrated”—Dipak Dasgupta,
Principal Economic Adviser and Head, Climate Change Finance**



Adaptation Framework

Guided by:

- **National Action Plan on Climate Change**
- **State Action Plan(s) on Climate Change**



National Action Plan on Climate Change

- **National Solar Mission**
- **National Mission for Enhanced Solar Efficiency**
- **National Mission on Sustainable Habitat**
- **National Water Mission: Rs 89,101 crore**
- **National Mission for Sustaining the Himalayan Ecosystem: Rs 195 crore**
- **National Mission for a Green India: Rs 46,000 crore**
- **National Mission for Sustainable Agriculture: Rs 108,000 crore**
- **National Mission on Strategic knowledge on climate change**



Potential barriers

Agriculture: Absence of priorities, clear strategies, mechanisms for synergy and collaboration

Green India: Mistrust between forest department and communities that depend on forests, lack of meaningful decentralisation, flow of funds unclear and land availability a challenge

Forests: Fragmented authority between centre and state, weak institutional structures, no separate strategies for different geographical regions, such as Himalayas, Indo-Gangetic basin, peninsular rivers



State Action Plans on Climate Change

- **Being readied**
- **Ministry of Environment and Forests, UNDP, GTZ, World Bank assisting state governments to draw up plans.**
- **Plans of five states with the Planning Commission for approval. These include:**
 - Arunachal Pradesh**
 - Sikkim**
 - Rajasthan**
 - Tripura**
 - Madhya Pradesh**



Financing the plans

- **Current government spend on adaptation: 2.82 per cent of the GDP—Not clear how it arrived at this figure, especially when there is no clear strategy to address adaptation**
- **Counting on Green Climate Fund**
- **Rs 200 crore taken from the National Clean Energy Fund, which is fed by a cess on coal**
- **13th Finance Commission has recommended three types of grants to state governments of Rs 5,000 crore each—for forest, renewable and water sectors**
- **But these do not cover gaps**
- **Also, little clarity on how states will be funded**



Adaptation programmes

- **Crop Improvement:** Development of arid-land crops and pest management, as well as capacity building of extension workers and NGOs
- **Drought proofing:** Minimize the adverse effects of drought on production of crops and livestock, and on productivity of land, water and human resources, so as to ultimately lead to drought proofing of the affected areas
- **Forestry:** Afforestation



Adaptation programmes

- **Water:** Inter-basin transfers, artificial recharge of groundwater, and desalination of brackish or sea water, traditional water conservation practices like rainwater harvesting
- **Coastal regions:** Cyclone shelters, plantation of coastal forests and mangroves, saline resistant crops
- **Health:** Surveillance and control of vector borne diseases such as Malaria, Kala-azar, Japanese Encephalitis, Filariasis and Dengue



Adaptation Programmes

- **Risk Financing:** The Crop Insurance Scheme supports the insurance of farmers against climate risks, and the Credit Support Mechanism facilitates the extension of credit to farmers, especially for crop failure due to climate variability.
- **Disaster management:** The National Disaster Management programme provides grants-in-aid to victims of weather related disasters, and manages disaster relief operations. Also, dissemination of information and training of disaster-management staff.



Living with climate change: Indian Sundarbans





A typical Sundarbans Saga



Radhakant Mahakal, 56, of Brajaballavpur village, Patharpratima block

- Cultivated a small piece of land which was sufficient for the family
- Subsequently, a large chunk of the land eroded away
- After his daughter's marriage, only 0.26 hectares of land was left – not enough for his family of eight
- Enrolled in MGNREGS. Procedural complications did not make it a viable alternative
- Then came the Aila in 2009. Lost almost the entire land. Salinity was too high to farm
- Sons migrated to work as daily wage labourers, they were not skilled or educated.
- Food insecurity is high and options nonexistent.



Adaptation for the adaptable?

- **People of Sundarbans have been living a difficult terrain reeling under absence of development**
- **So why talk about adaptation now?**
- **Because global warming is causing irreversible changes in the nature systems that constitute Sundarbans**
- **Therefore, development has become more expensive, must take into consideration the additional climate burdens and has to be much more strategically focused**



Elements of the crisis: Climatic

- **Rising sea levels higher than global averages (Range: 5.7-10mm a year between 2000 and 2004)**
- **Rising sea surface temperature (0.5° C per decade)**
- **Rise in major cyclones**
- **Rise in salinity**
- **Erratic monsoons**
- **Unusual heat across different seasons**
- **Aggravated erosions**



What do the poor face then?

Impact	Secondary Impact (s)
Rise in sea surface temperature	Additional sea level rise, affects aquatic life, particularly fish distribution
More severe cyclones	Increase in soil salinity, higher tidal surges, damages to lives and livelihood
Sea level rise	Soil salinity, risky seas for fisherfolk, higher risk of flooding, inundation, more acute erosion of land
More rains but less rainy days	Agriculture yield affected because of temperature and rainfall variations.



Development deficits

- **About 44 per cent of the population live below the poverty line**
- **About 60 per cent of the households don't have access to clean drinking water**
- **About 87 per cent people live with some sort of food shortage**
- **About 47.55 per cent households own no land**
- **Only about 30 per cent of the families live in pucca or partially pucca houses**
- **Only 17 per cent of households have grid connectivity**
- **About a third of the population have no access to institutionalised health care**
- **Absence of colleges, technical institutions**



Land: At the heart of the crisis

- **Total area eroded about 250 sq km since 1930 but the rate of loss has doubled over the past decade from approximately 2.85 sq km a year to 5.5 sq km a year**

And, population is increasing:

- **Population density is over 900 per sq km already (2001 census) and is over 1,000 per sq km now. Almost the entire population depend on the natural resource based livelihood patterns**



Embankments: When solutions create problems





The problems

- **Aggravated erosions in many places**
- **Heightened flood risks and increased soil salinity in many places**
- **Contributed to sea level rise through subsidence**
- **But they are essential nevertheless for human settlement**



How to enhance adaptive capacity?

- **Foolproof embankments: as much an engineering challenge as a social one**
- **Managing disasters: early warning, disaster shelters, communication systems, post-disaster management**
- **Ensuring optimum utilisation of the region's productive capacity**
- **Ensuring alternate livelihoods**



Ground realities

- **Absence of planning and institutional support**
- **Absence of targeted strategies**
- **Absence of options**
- **Increasing vulnerability**
- **Reducing capacity to cope**
- **Large scale out migration**



The idea is...

Save people and the ecosystem



Demystifying the Development – Adaptation Paradigm

Lessons we learnt:

- Adaptation in the Sundarbans is inseparable from development
- However, this development is now much more expensive
- The development strategy must internalize present and future climate change impacts in each and every area of life, livelihood and infrastructure
- This needs long-term planning and wider research on impacts and vulnerabilities
- Global funds are needed to pay for the incremental development cost