

# Status on Preparation of State Action Plan on Climate Change in West Bengal

Department of Environment  
Government of West Bengal

# Vulnerability of West Bengal

- Presence of highly vulnerable mega delta - the Sundarbans.
- High population density
- One biodiversity hotspots
- One of centre of origin of crop plants
- High incidence of cyclonic event in terms of per km occurrence
- Threat of Glacial lake outburst in Bhutan and Sikkim.
- Threat of climate change induced displacement

# Observed Trend

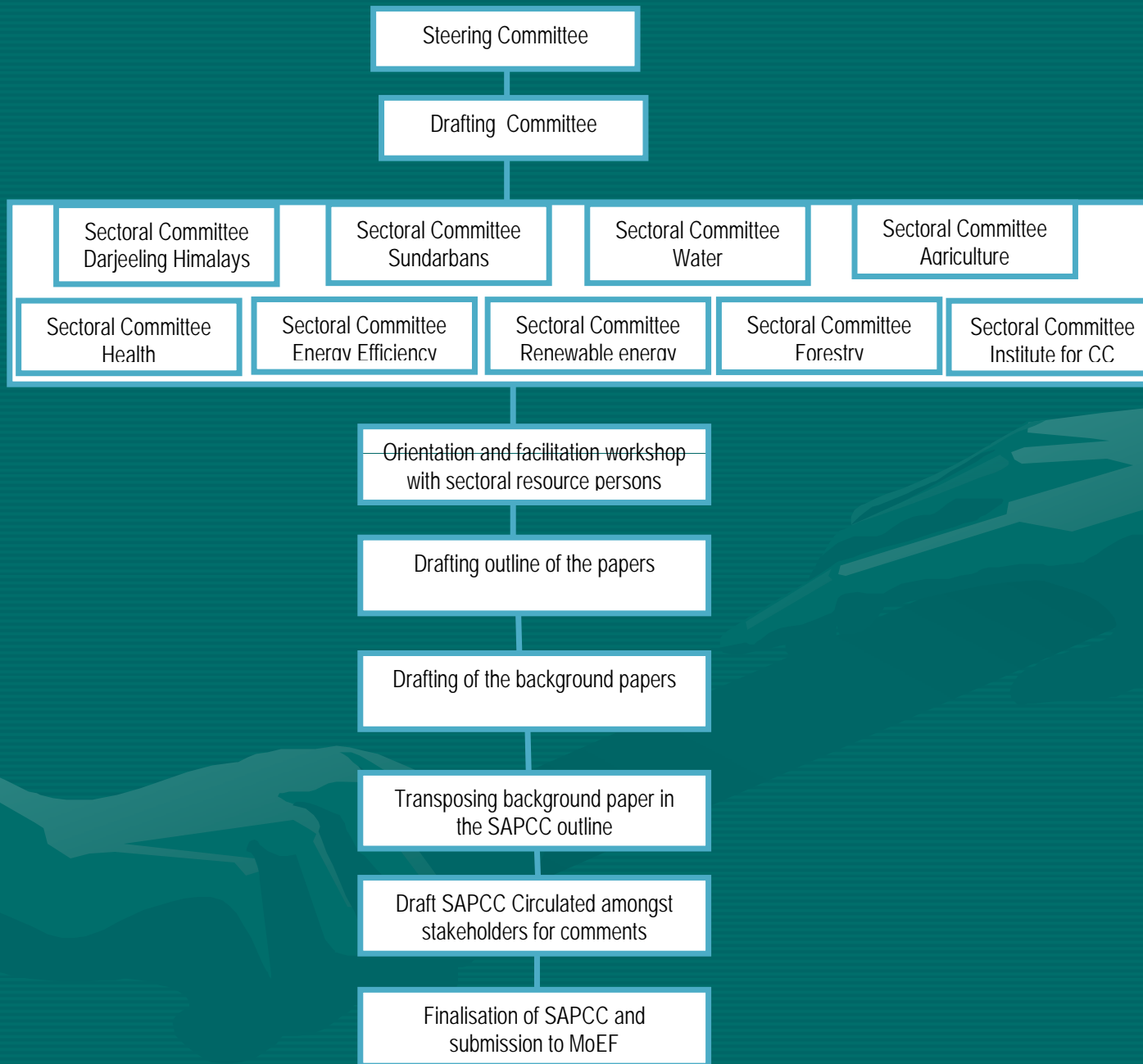
- Between 1969-2005 a net warming trend was seen
- Increase in minimum temperatures have been observed in the range between +0.25 to +1.5°C
- A clear positive trend in post monsoon (Oct-Nov-Dec) rainfall observed during 1969-2005
- The intensity of extreme rain fall events has increased
- In the coastal region, severe cyclonic storms are on the rise, though the total number of cyclones is annually declining.
- High rate of sea level rise (5.7 mm/yr) observed along West Bengal coast.

# Projected Changes in 2021-2050

- A likely increase in temperature between 1.8 to 2.4°C
- Total amount of precipitation during monsoon, is not likely to change much
- The winter and summer seasons likely to experience lower rainfall with respect to base line
- Sundarbans and Darjeeling Hill area are however projected to have more rainfall with respect to base line scenario.

# Projected Changes in 2021-2050

- The intensity of cyclonic events is likely to increase further
- Sea surge heights might increase to 7.46 m with a hundred year return period
- Sea level will continue to rise in consonance with the global rise, however, the rise in absolute terms is likely to be higher along the West Bengal coast due to continuous subsidence



# Steps in Preparing SAPCC

- Constitution of drafting committee
- Identification of state plan components
- Constitution of sector wise working groups comprising of line departments and experts
- Review of published literature
- Consultation with those involvement in drafting of State Action Plan / National Action Plan
- Identification of the strategies and studies to be carried out
- Finalizing of implementation mechanism.
- Synthesising the sectoral plans into Sate Action Plan

# Thrust Areas Identified for West Bengal

## GEOGRAPHICAL AREAS

- (1) Sundarbans
- (2) Darjeeling Himalayas

## SECTORS

- (3) Water
- (4) Health
- (5) Forestry
- (6) Energy Efficiency
- (7) Non conventional Energy Sources
- (8) Agriculture & Horticulture
- (9) Habitat
- (10) Knowledge Management



# Support by External Agencies

- GIZ is assisting West Bengal in preparation of State Action Plan on Climate Change
- Inter-Cooperation has been engaged as consultant for the overall SAP preparation.
- INRM is engaged as consultant for vulnerability assessment.

# Timeline

|                                                                 |                      |
|-----------------------------------------------------------------|----------------------|
|                                                                 |                      |
| <b>Constitution of Drafting Committee, Monitoring Committee</b> | <b>March, 2010</b>   |
| <b>Constitution of 7 Sectoral committees</b>                    | <b>May 2010</b>      |
| <b>Identification of thrust areas</b>                           | <b>May 2010</b>      |
| <b>1<sup>st</sup> draft of SAPCC</b>                            | <b>February 2011</b> |
| <b>Final draft of SAPCC</b>                                     | <b>May 2012</b>      |

The background is a solid teal color. In the center, there is a faint, semi-transparent image of two hands shaking, rendered in a lighter shade of teal. The text "A FEW EXAMPLES" is centered horizontally and vertically over the image.

A FEW EXAMPLES

The image features a solid teal background. In the center, there is a faint, semi-transparent illustration of two hands shaking, symbolizing agreement or partnership. The word "SUNDARBANS" is written in a white, serif, all-caps font, centered horizontally and partially overlaid by the shaking hands.

SUNDARBANS

# Adaptation Proposed

- Assessing salt and submergence tolerance of mangroves.
- Redesigning and retrofitting embankments
- New architecture for houses
- Strengthening communication
- Better early warning system

# Adaptation Proposed

- Conserving heat and salt tolerant cultivars
- Promoting alternate livelihood like vegetable crops
- Provide access to market through better communication
- Ensuring drinking water availability through RWH and piped water supply

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# DARJEELING HIMALAYAS

# Adaptation Proposed

*Aligning all activities with National Mission for Sustaining Himalayan Ecosystem is important*

- Promote agroforestry
- Conservation of indigenous heat-tolerant germplasm
- Soil Conservation
- Availing opportunity of Rabi crop
- Regulation of invasive species
- Planting short rotation species in degraded forest
- Preventing forest fragmentation and conserving corridors
- Facilitating species migration



# Adaptation Proposed

- Creating additional reservoir to store excess runoff of monsoon as well as water from additional rainfall to be received in winter
- Planning for higher incidence of landslide, flash flood, road blockade etc.
- Research on developing tea cultivars that will grow well in projected climatic condition and yet retain aroma and flavour

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WATER

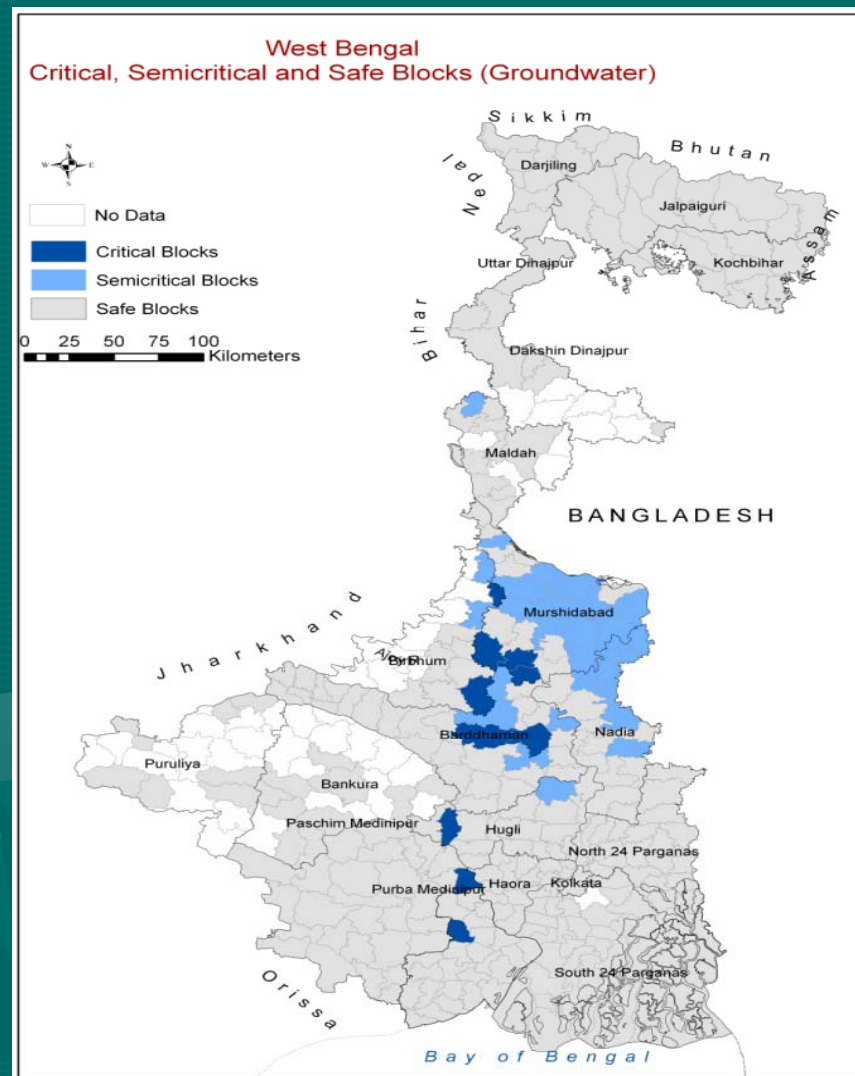
# Impact of CC on Water Flow

- The blue water flow (water yield—quantified rainfall plus deep aquifer recharge), will from 1000 - 5000 mm/yr in base line scenario to 800 to 1000 mm/year in the midcentury scenario
  - Exceptions 24 Pgs (N & S), Darjeeling.  
Coochbehar
- Green water flow (actual evapotranspiration), will increase in the mid century as well as end of century scenario to  $> 1000$  mm/yr .This has a direct relationship with increase in temperature leading to higher evapo transpiration rates.

# Impact of CC on Water Storage

- There is decrease in green water storage (soil water) in the South Western Part of West Bengal. The decrease is from 101-125 mm/yr in the base line scenario to 76 to 100 mm per year in the mid century.

# Critical, Semi critical and Safe Blocks



# Adaptations Proposed

- Undertaking rain water harvesting.
- Initiate development of reservoirs intercepting River Jaldakha, Manas, Sankosh and other rivulets for transfer of water from Surplus Basin to Deficit Basin in this region.
- Construction of check dams, wherever, feasible
- Increase water storage capacity by building household, and village level reservoirs and Repairing existing water bodies

# Adaptations Proposed

- Removal of siltation from present reservoirs
- Greater recycling of wastewater in industries
- Enhance artificial recharge in over exploited ground water areas
- Undertake resuscitation of derelict channel with provision of sluice gate
- Making rain water harvesting compulsory in towns.

## Key Concerns in Agriculture due to Climate Change

- Reduced productivity of Darjeeling tea
- Decline in size and quality of citrus such as Mandarin orange
- Increase in winter temperature affecting potato and wheat
- Drying of natural water bodies due to extensive use of water for irrigation
- Productivity decline of oilseed and pulses beyond 45-46 °C.
- Degradation of seed quality
- Progressive salinization of agricultural land in coastal areas.



# Adaptations Proposed

- Appropriate crop diversification by enhancing ISOPOM
- Encouraging indigenous cultivars particularly those able to tolerate heat and water stress
- Popularizing hardy cereals, pulses and oilseeds in Red and Laterite zone
- Upscaling Resource Conservation Technology (RCT) like “no tillage”

# Adaptation

- Real time crop monitoring and weather forecasting
- Setting up agriculture BPO in each district
- Extending crop insurance to all small and marginal farmers.
- Create seed banks

<http://www.enviswb.gov.in/main/SAPCC%20Approved%20by%20Steering%20Committee.pdf>

Thank You