



## Presentation on “Climate Change in Bangladesh: Policies, Current Situation, Opportunities and Challenges”

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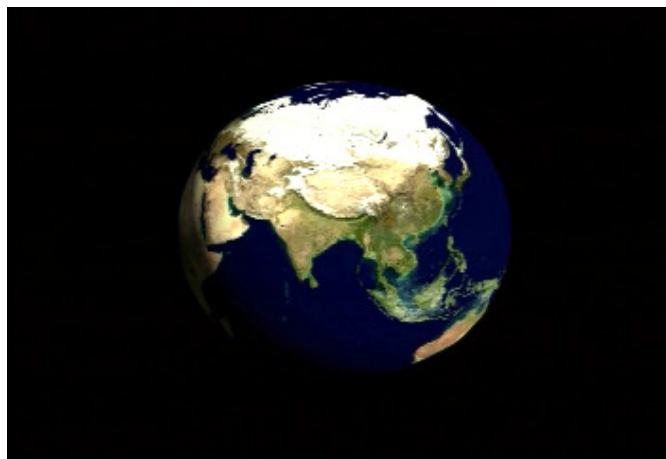
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## Outline of the Discussion

- Why Bangladesh is vulnerable?
- The complex river systems
- Issues of concern
- Climate Change Case Study: Bangladesh Vulnerability
- Climate Change and Poverty Linkages
- Climate Change, Poverty and MDG Linkages
- Impact-Vulnerability-Adaptation Relationship
- Climate, Development and Poverty Hysteresis
- Vicious Cycle of Disaster and Poverty
- CC-Livelihood-Health-WatSan-Poverty: The Linkage
- What is being done in Bangladesh

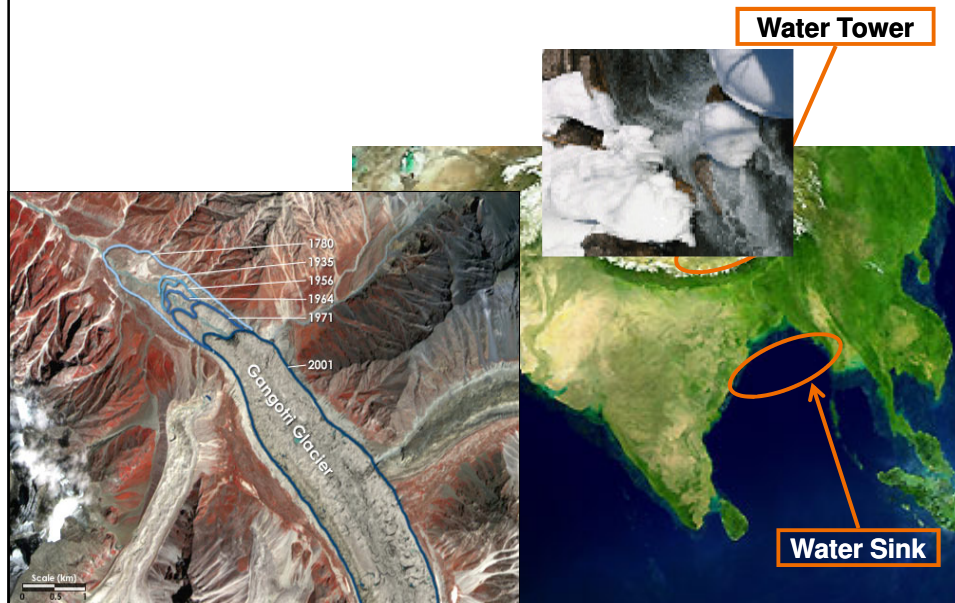


### WHY BANGLADESH IS VULNERABLE



**The Bengal Delta is the product of complex hydrological and sedimentation processes of the Ganges-Brahmaputra-Meghna (GBM) river systems and the Himalayas**

## The Complex River Systems



## Characteristics of Bengal Delta

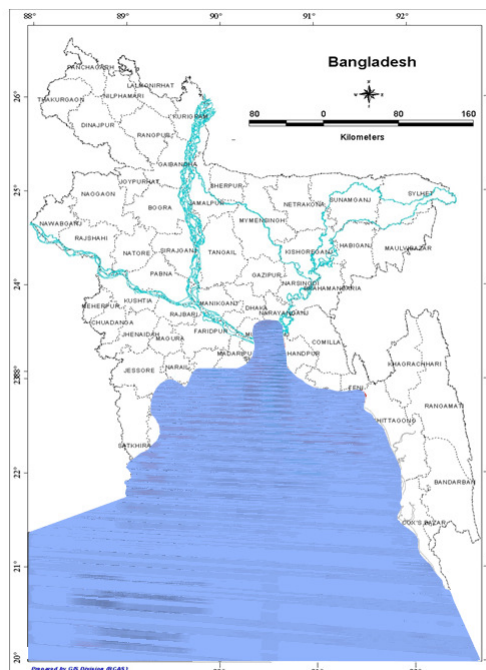
1. Unique geographical location
2. Dominance of flood plain
3. Himalayan drainage eco-system
4. Nascent delta of three major river systems: Ganges-Brahmaputra-Meghna (GBM)
5. High Sedimentation load and complexity of sedimentation processes and land formation under turbulent conditions
6. The complexities of infrastructures (e.g. Polders) under the condition of Sea Level Rise and their interactions

## CLIMATE CHANGE CASE STUDY: BANGLADESH VULNERABILITY

1. Sea Level Rise
2. Cyclone (Intensity & Frequency)
3. Deeper Penetration of Saline Water
4. Erratic Rainfall
5. Flood (Intensity & Frequency)
6. Drought
7. River Bank Erosion
8. Health
9. Food Security



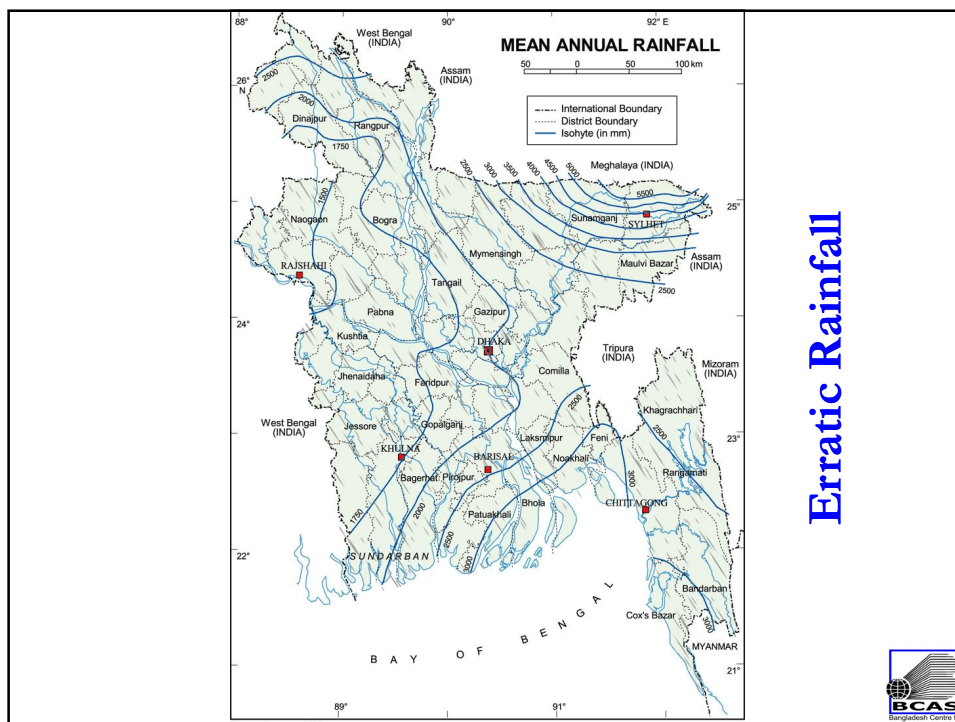
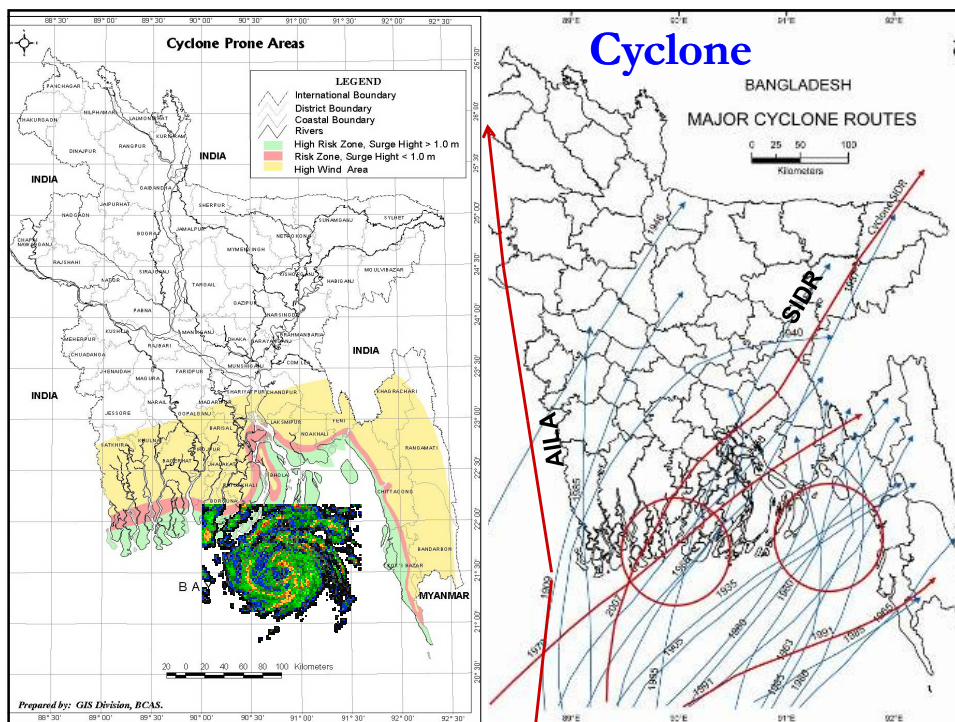
### 1 Meter Sea Level Rise



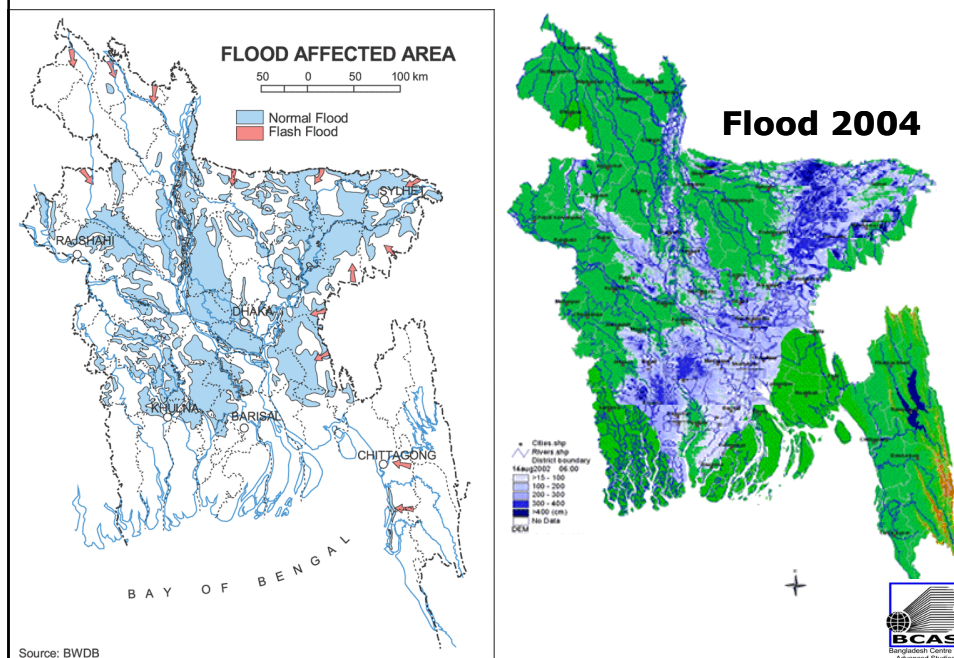
### Sea Level Rise







## Flood

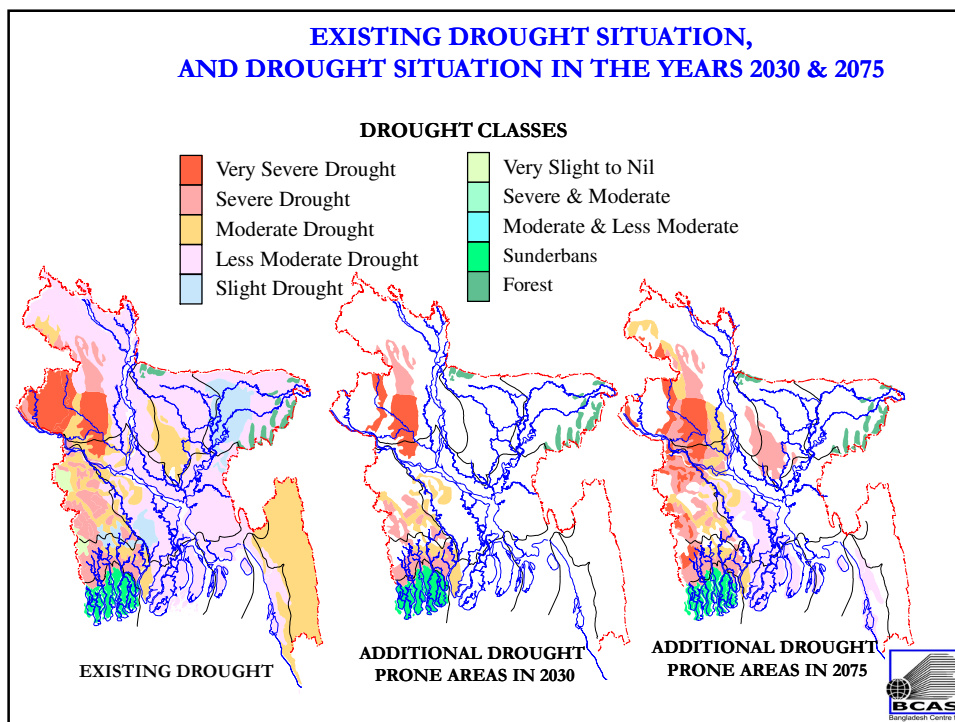
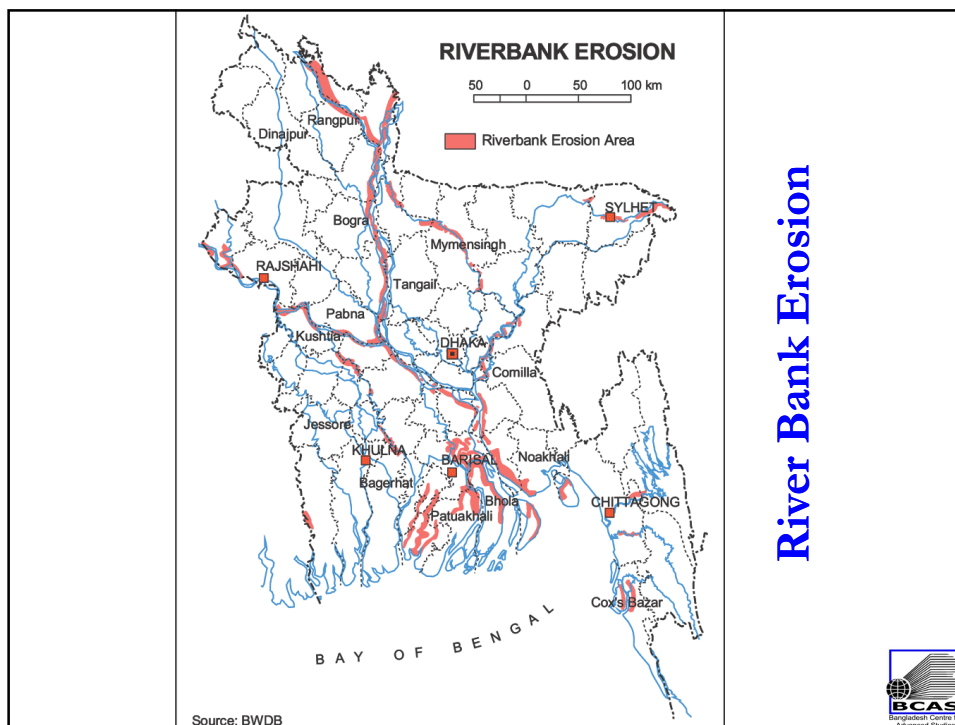









## Flood

**Inundated Area during Different Floods and Number of Occurrences in Last 30 Years**

Flooded Area	Return period (Years)						
	2	5	10	20	25	50	100
Area affected %	20	30	37	43	52	60	70
Last 30 years			5	3	2	2	
Last 10 years			3	2	1	1	

For Example: A flood event with return period of 20 years has already occurred twice during the last 10 years.



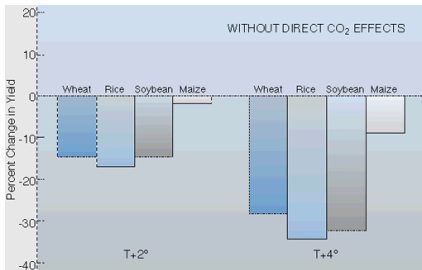
Health	
	<div>Negative impact</div> <div>Positive impact</div>
<b>Very high confidence</b> Malaria: contraction and expansion, changes in transmission season	
<b>High confidence</b> Increase in malnutrition Increase in the number of people suffering from deaths, disease and injuries from extreme weather events Increase in the frequency of cardio-respiratory diseases from changes in air quality	  
Change in the range of infectious disease vectors Reduction of cold-related deaths	 
<b>Medium confidence</b> Increase in the burden of diarrhoeal diseases	
Source: IPCC AR4, 2007	



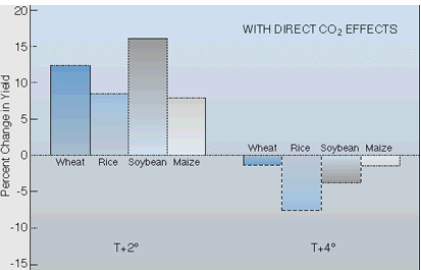
## Food Security

- IPCC estimates that, by 2050, rice production in Bangladesh could decline by 8 percent and wheat by 32 percent

WITHOUT DIRECT CO<sub>2</sub> EFFECTS



WITH DIRECT CO<sub>2</sub> EFFECTS



- Decrease production of livestock,
- Increase of pest attack
- Decrease production of fisheries



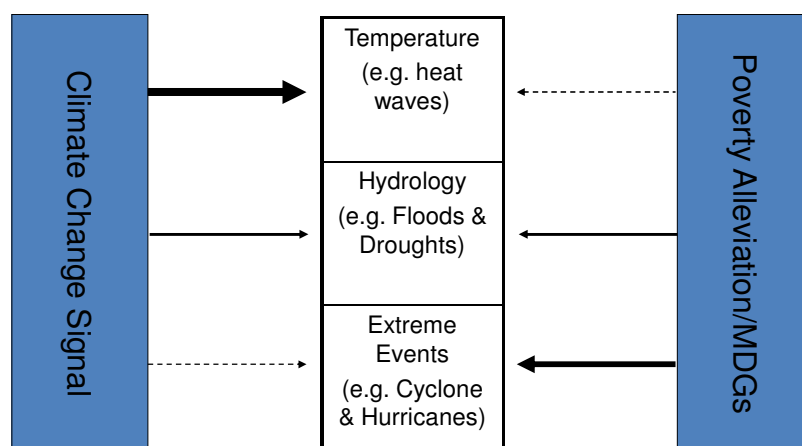


## Climate Change and Poverty Linkages

- Climate change will hit the poor earliest and the hardest
- Because, they are in the forefront in climate disasters and various risks
- Climate change will compound the existing poverty
  - Many non-poor could be forced to be poor
  - Moderate poor may be extreme poor
- The poor has the least capacity to take shocks and adapt with adverse impacts of climate change
- Thus, poor are the most vulnerable to CC impacts and disaster risks
- How?
- Vulnerability=  $\frac{\text{Risks} \times \text{Hazards}}{\text{Capacity}}$



## Climate Change, Poverty and MDGs Linkages



Source: Saleem et al., 2006

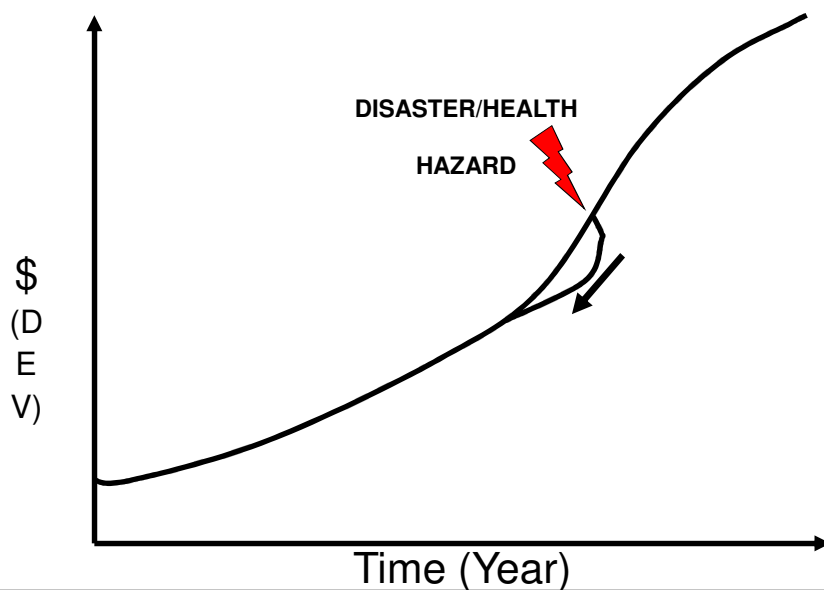


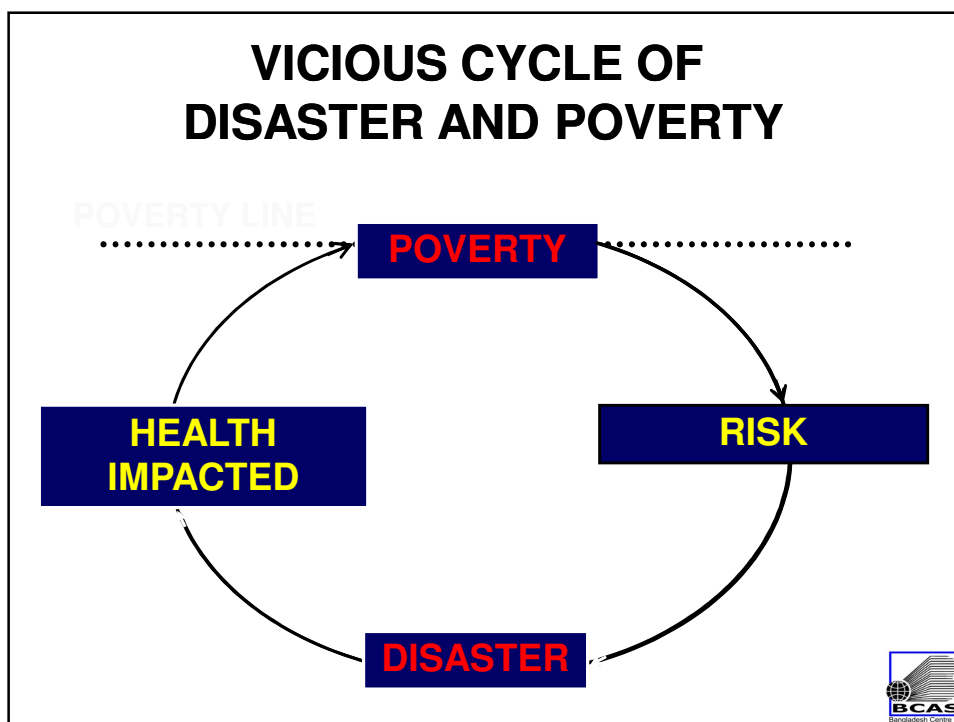
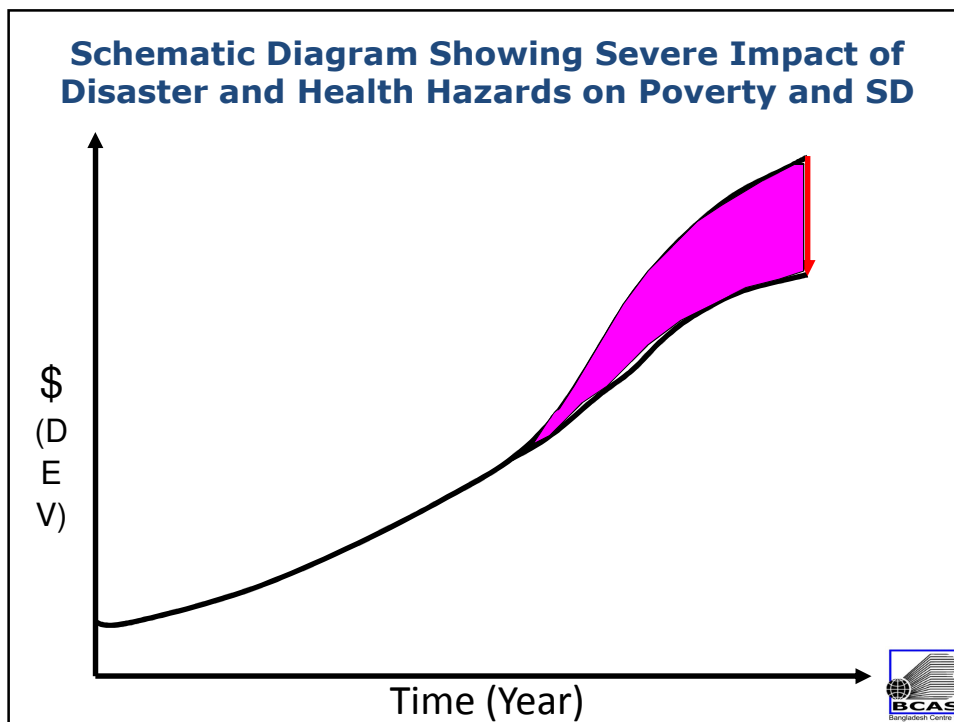
## Impact-Vulnerability-Adaptation: Relationship

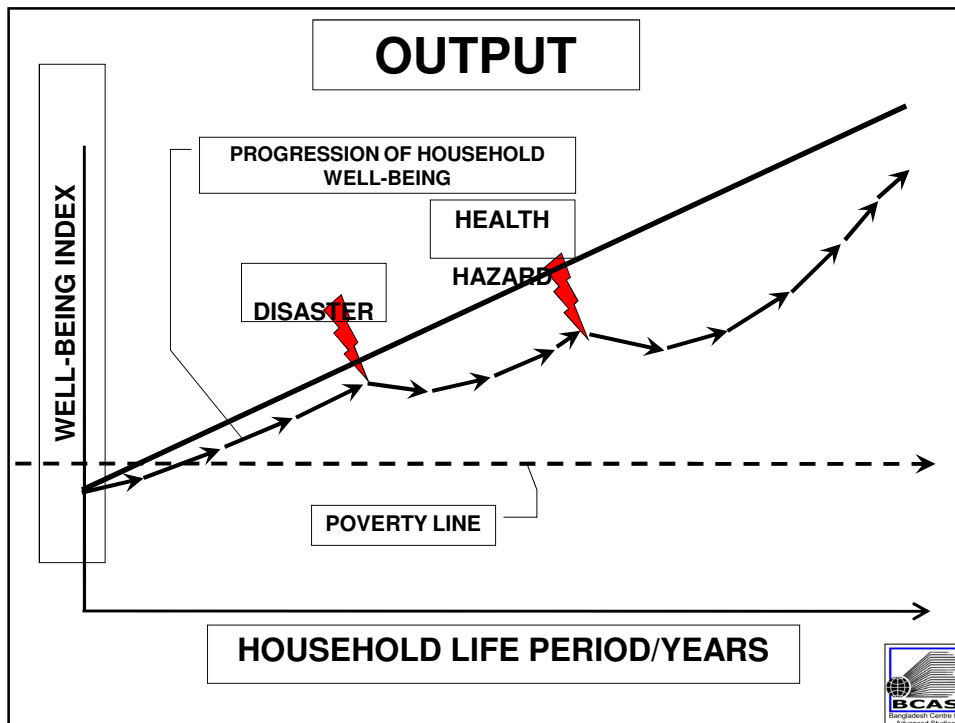
$$\text{Impact Event} = \sum \int \text{Intensity of Event} \times \int \text{Baseline Conditions} \times \int \text{Adaptive Capacity}$$



## Schematic Diagram Showing Severe Impact of Disaster and Health Hazards on Poverty and SD



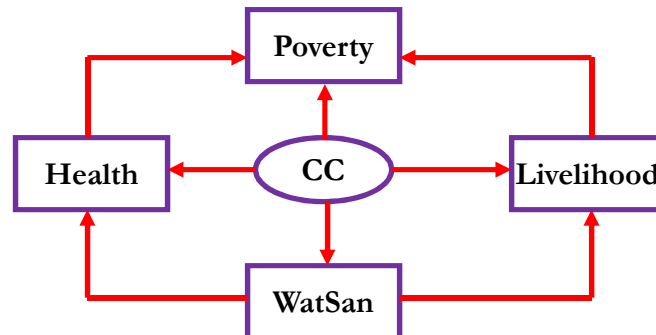




## MAJOR CONCERNS

- Water Security
  - Food Security
  - Livelihood Security
  - Health Security
  - Energy Security
- 
- **ALL ARE LINKED WITH POVERTY**
  - **EACH AFFECTED BY CLIMATE CHANGE**

## CC-WatSan-Health-Livelihood-Poverty

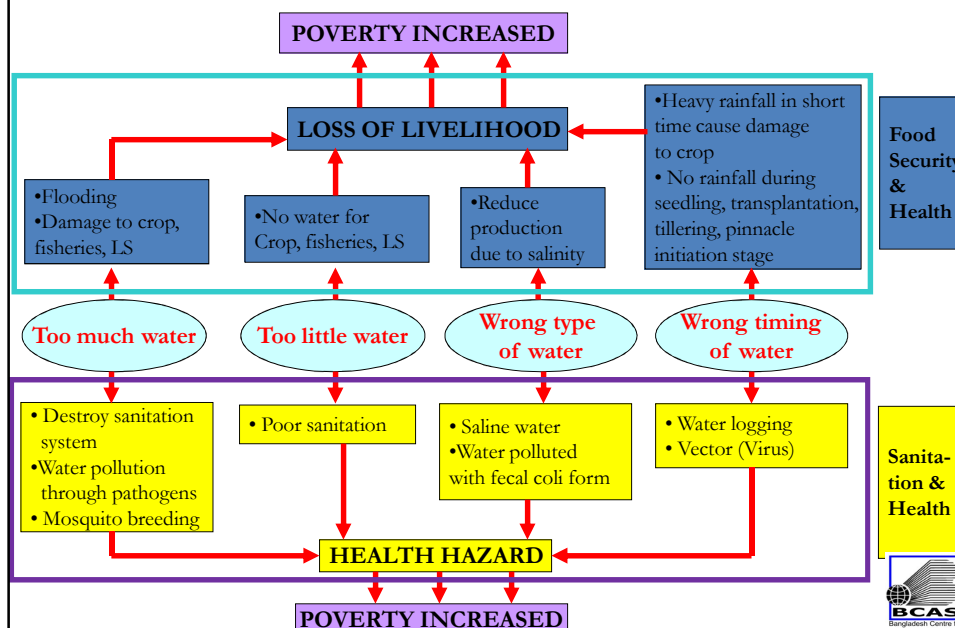


Majority of global impacts of climate change can be reflected in water. This is:

- Too much water
- Too little water
- Wrong type of water
- Wrong timing of water



## The Linkage





## What is being done

- DNA
- Climate Cell & CDMP
- NAPA
- LDC Leadership
- CDM Projects
  - BCAS
    - *Solar PV with Grameen Shakti*
    - *Efficient Florescent Bulb with Grameen Shakti and EnergyPac*
  - Waste Concern
    - *Municipal Waste Management*

### GEF Funding

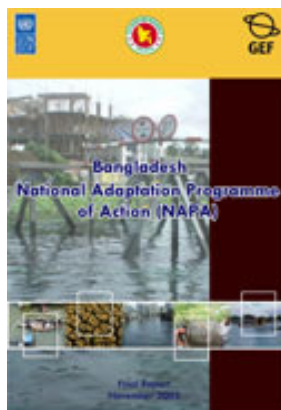
- NAPA
  - Institutional Team
  - Projects

### Experiences

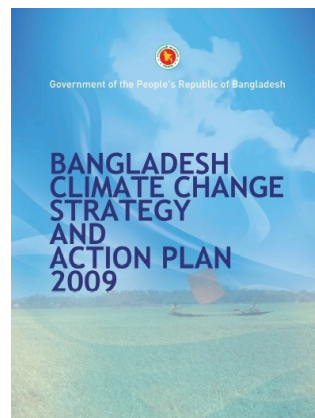


## Bangladesh Response to Climate Change

### NAPA



### BCCSAP



## **SIX PILLARS of Bangladesh Climate Change Strategy and Action Plan (BCCSAP)**

- (1) Food Security, Social Protection and Health;**
- (2) Comprehensive Disaster Management;**
- (3) Infrastructure Development;**
- (4) Research and Knowledge Management;**
- (5) Mitigation and low-carbon development; and**
- (6) Capacity Building and Institutional  
Development**

**The Action Plan consists of 44 programmes and 145 projects for implementation within the time period of 2009-2018. BCCSAP will be an integral part of national development policies, plans and programmes.**



# **THANK YOU**