

Climate Change Adaptation

Case Example: Adaptation in Bangladesh

Dr. Atiq Rahman

Executive Director: Bangladesh Centre for Advanced Studies (BCAS)

Founding Chairman: Climate Action Network – South Asia (CANSA)

*Visiting Professor: Fletcher School of Law and Diplomacy , Tufts
University and Harvard University, Boston, MA, USA*

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Bangladesh Centre for Advanced Studies

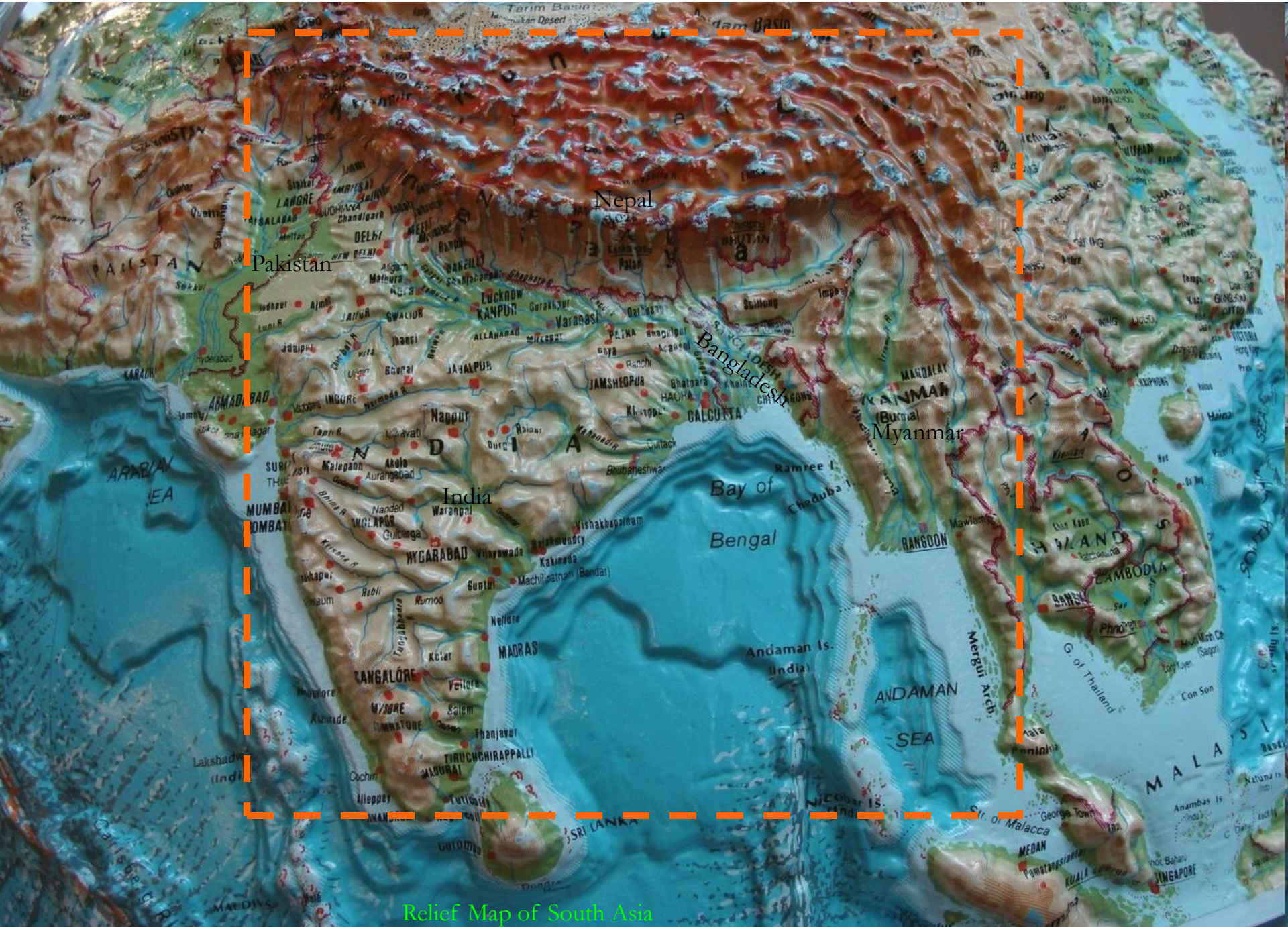


Outline of the Presentation

- Climate Change: Bangladesh Context
- Impacts of Climate Change
- Climate Change, Disaster and Development
- Bangladesh Climate Portfolio
- Climate Change Adaptation in Bangladesh
- AdMit

GROWING CLIMATE CHANGE IMPACTS & BANGLADESH VULNERABILITY

- **Sea Level Rise in the Coast**
- **Deeper Penetration of Saline Water**
- **Cyclone (Intensity & Frequency)**
- **Erratic Rainfall**
- **Flood (Intensity & Frequency)**
- **River Bank Erosion**
- **Drought & Heat Stress**
- **Landslide in the Hills**
- **Lightning Killing People**
- **Health Risks**
- **Food Security**
- **Water Security**
- **Human Displacement & Migration**
- **Climate Change, Disaster and Development Interface**



Relief Map of South Asia

Bangladesh occupies a unique geographic location spanning a stretch of land between the mighty Himalayan mountain chain on the north and the open ocean on the south. It is virtually the only drainage outlet for a vast river basin complex made up of the Ganges, Brahmaputra and the Meghna and their network.



The Complex River Systems

1. Unique geographical location
2. Dominance of flood plain
3. Himalayan drainage eco-system

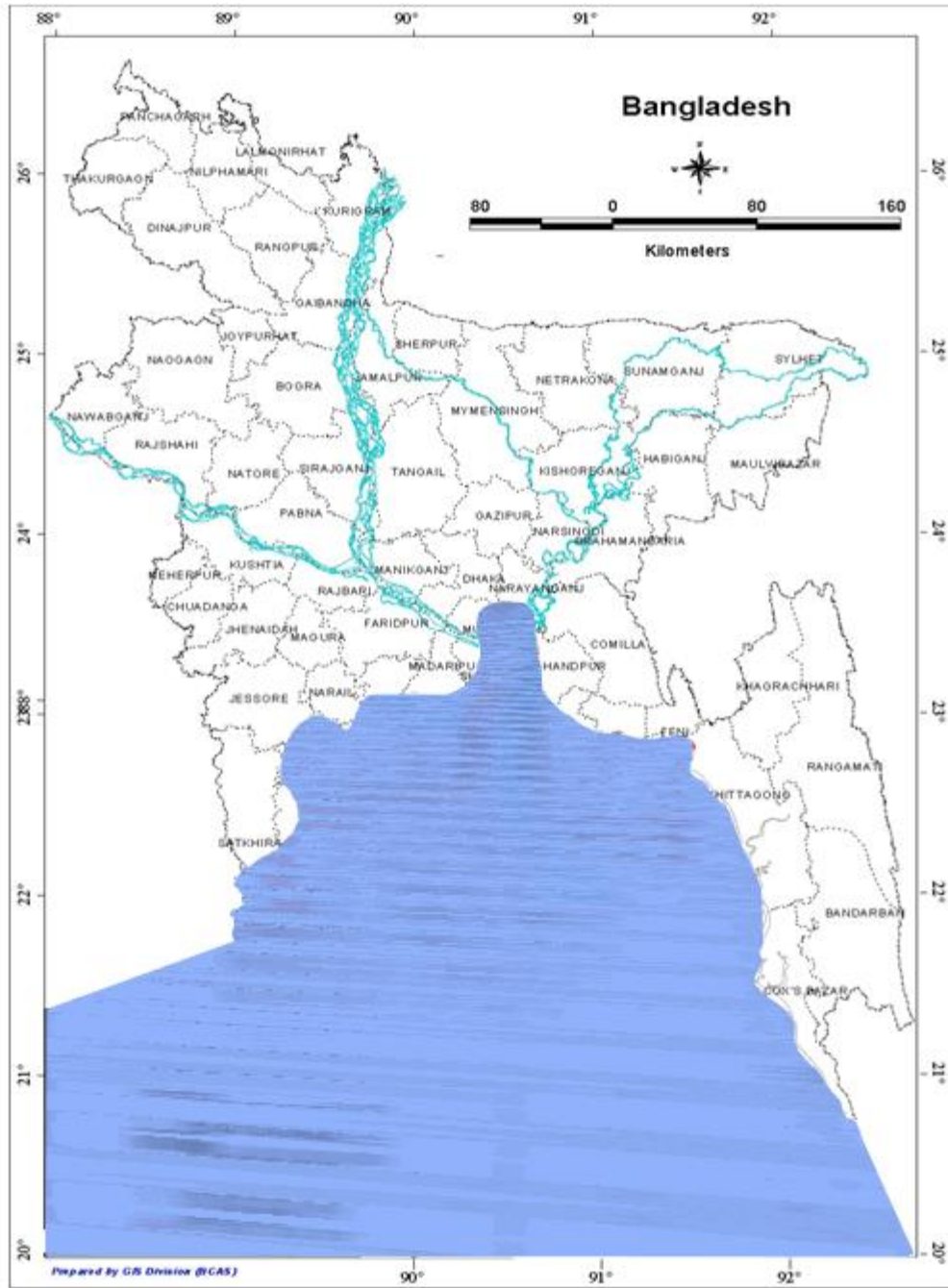


Water Tower



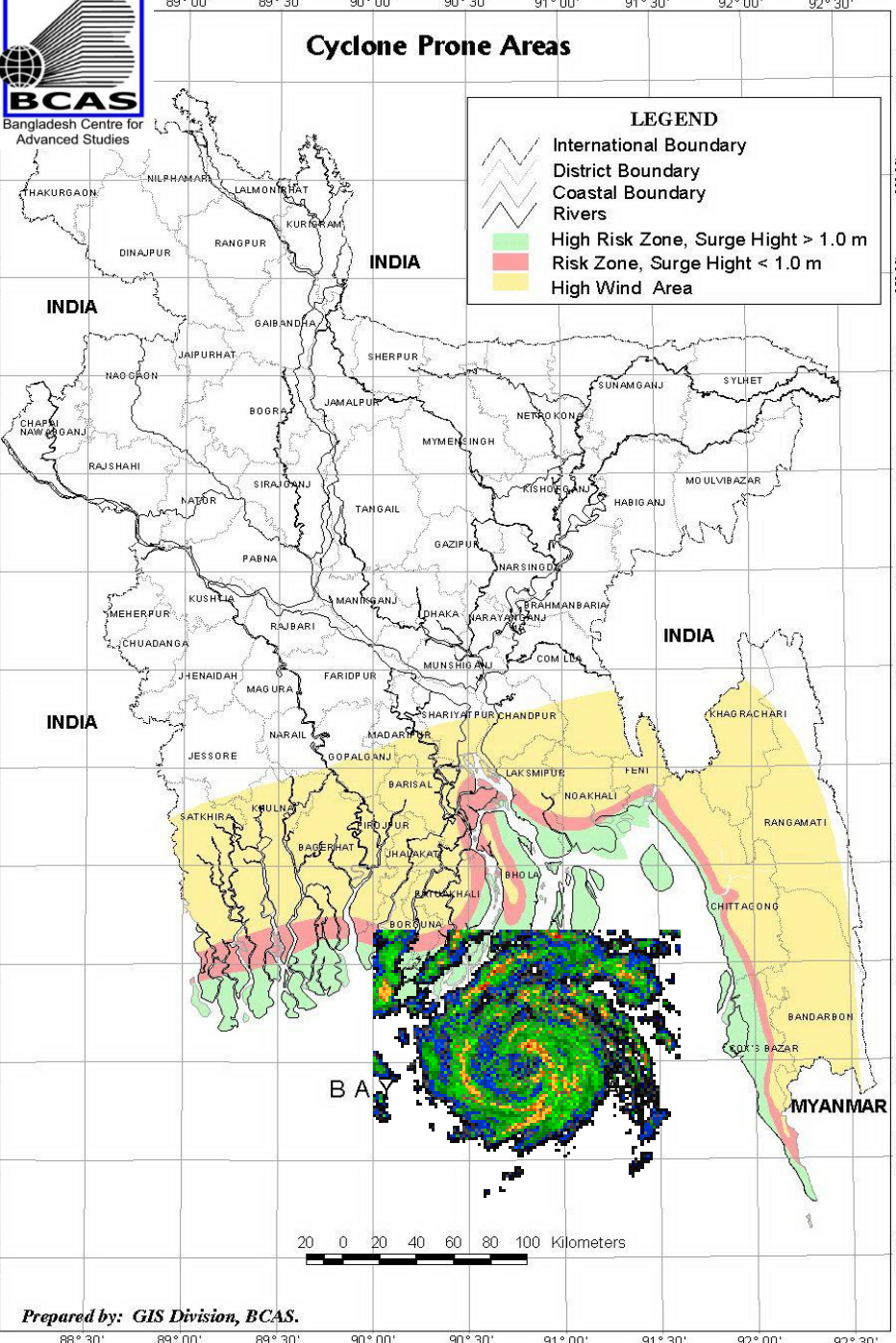
Water Sink

1 Meter Sea Level Rise



Sea Level Rise

Cyclone Prone Areas

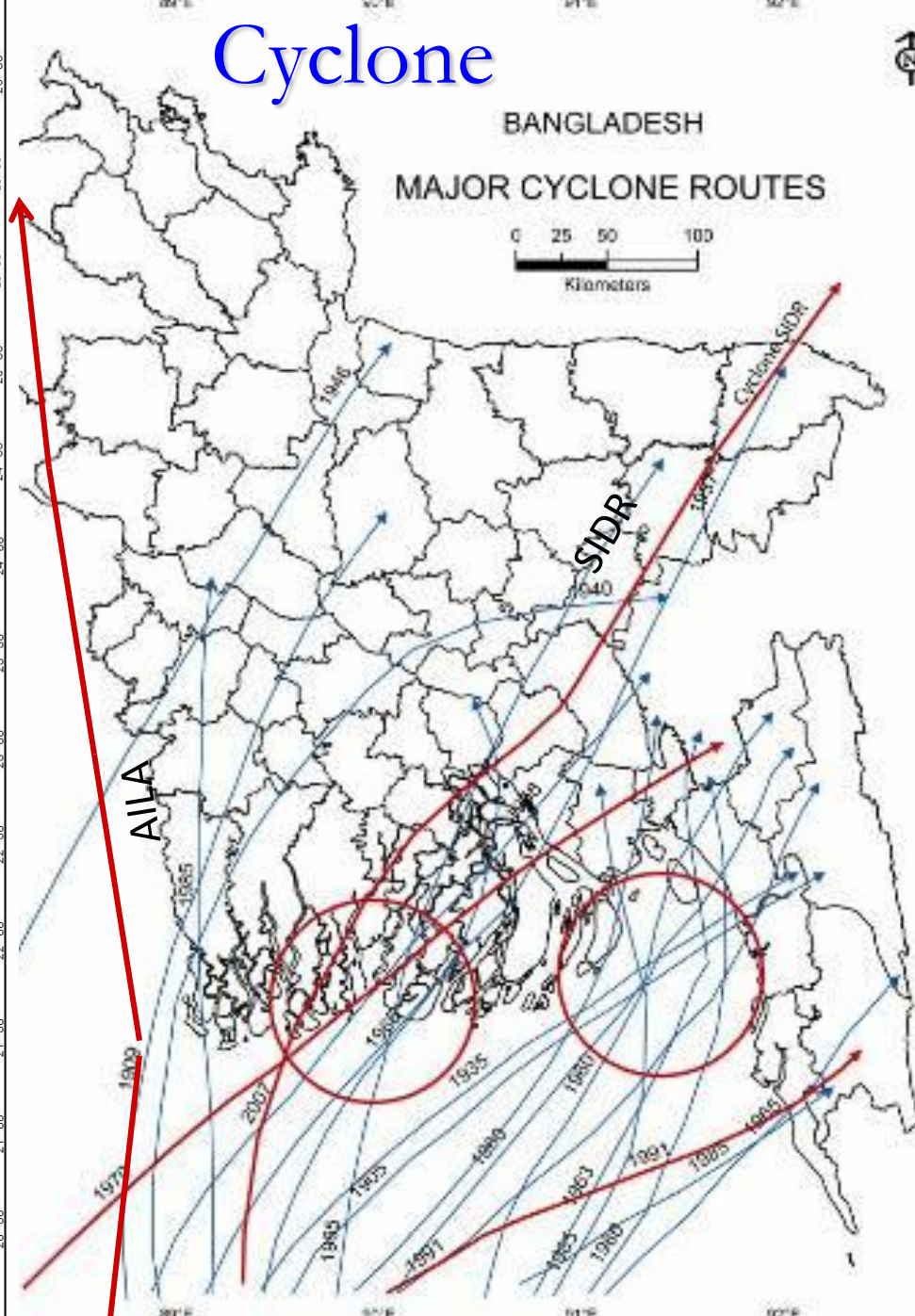


LEGEND

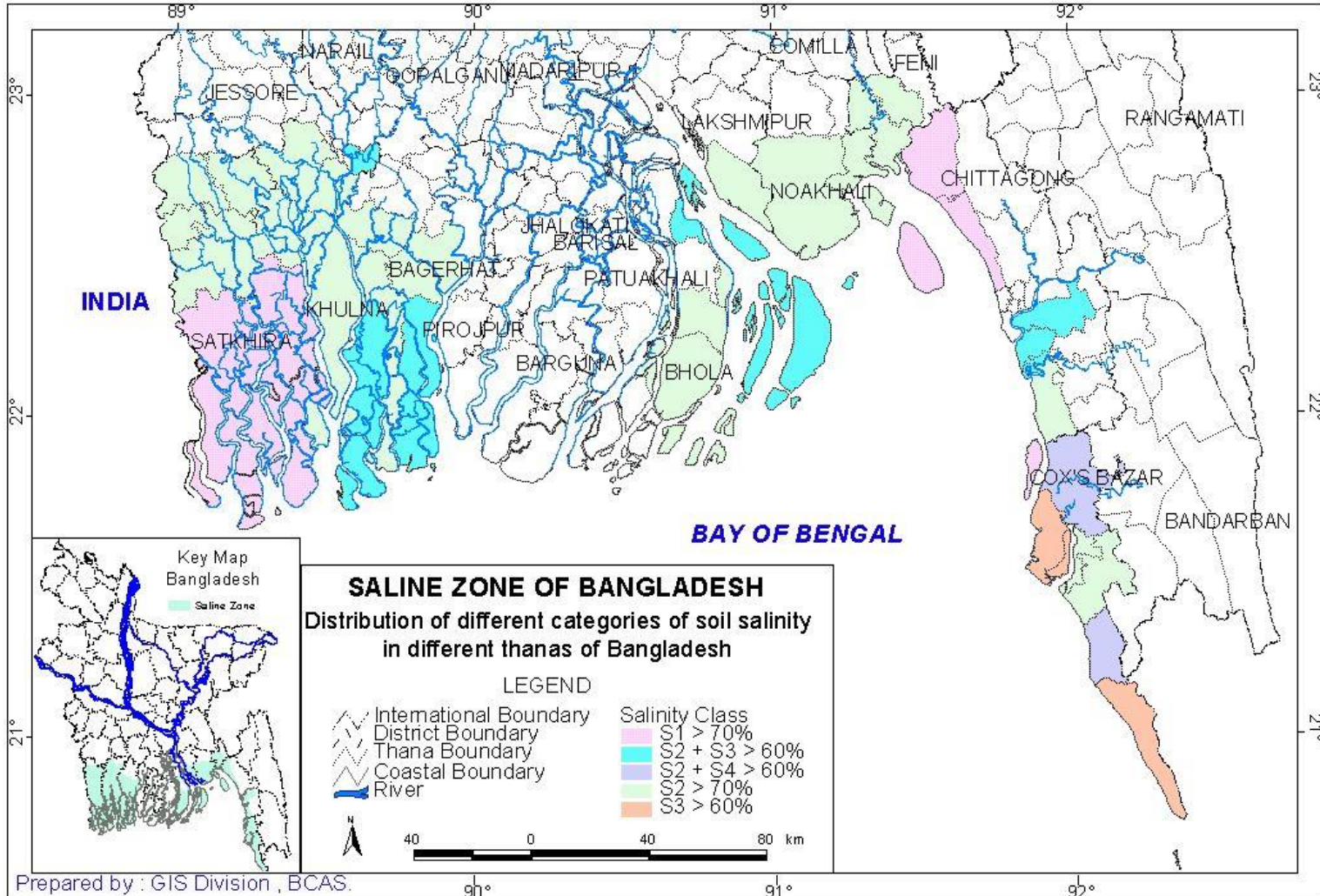
- International Boundary
- District Boundary
- Coastal Boundary
- Rivers
- High Risk Zone, Surge Hight > 1.0 m
- Risk Zone, Surge Hight < 1.0 m
- High Wind Area

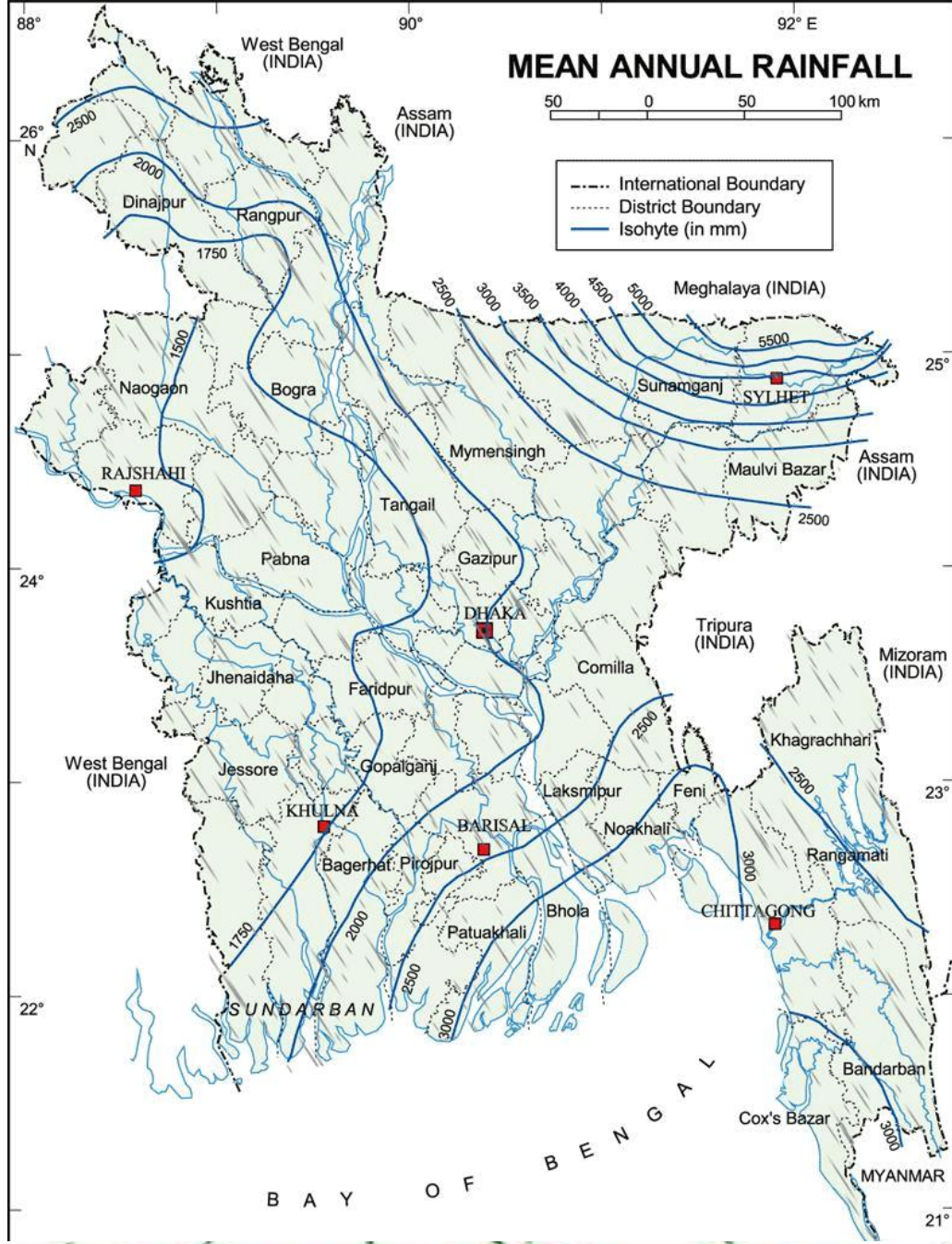
Cyclone

BANGLADESH MAJOR CYCLONE ROUTES



Saline Zone of Bangladesh





Erratic Rainfall



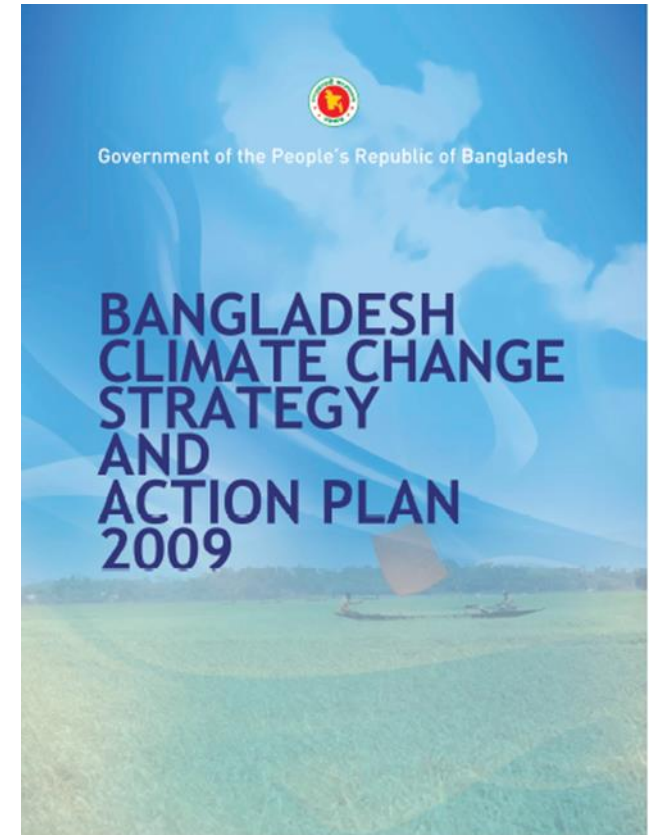
Bangladesh Flood 2017

ICIMOD Bangladesh Flood 2017



Bangladesh Climate Portfolio

- First LDC to prepare NAPA in 2005
- Bangladesh Climate Change Strategy and Action Plan in 2009
- Process of initiating NAP
- Climate Fiscal Framework in 2014



Bangladesh Climate Portfolio

- Champion of the Earth
- Submitted TNC to UNFCCC
- Submitted NDC to UNFCCC
- Approved as Ministry of Environment, Forests & Climate Change



Bangladesh Climate Portfolio

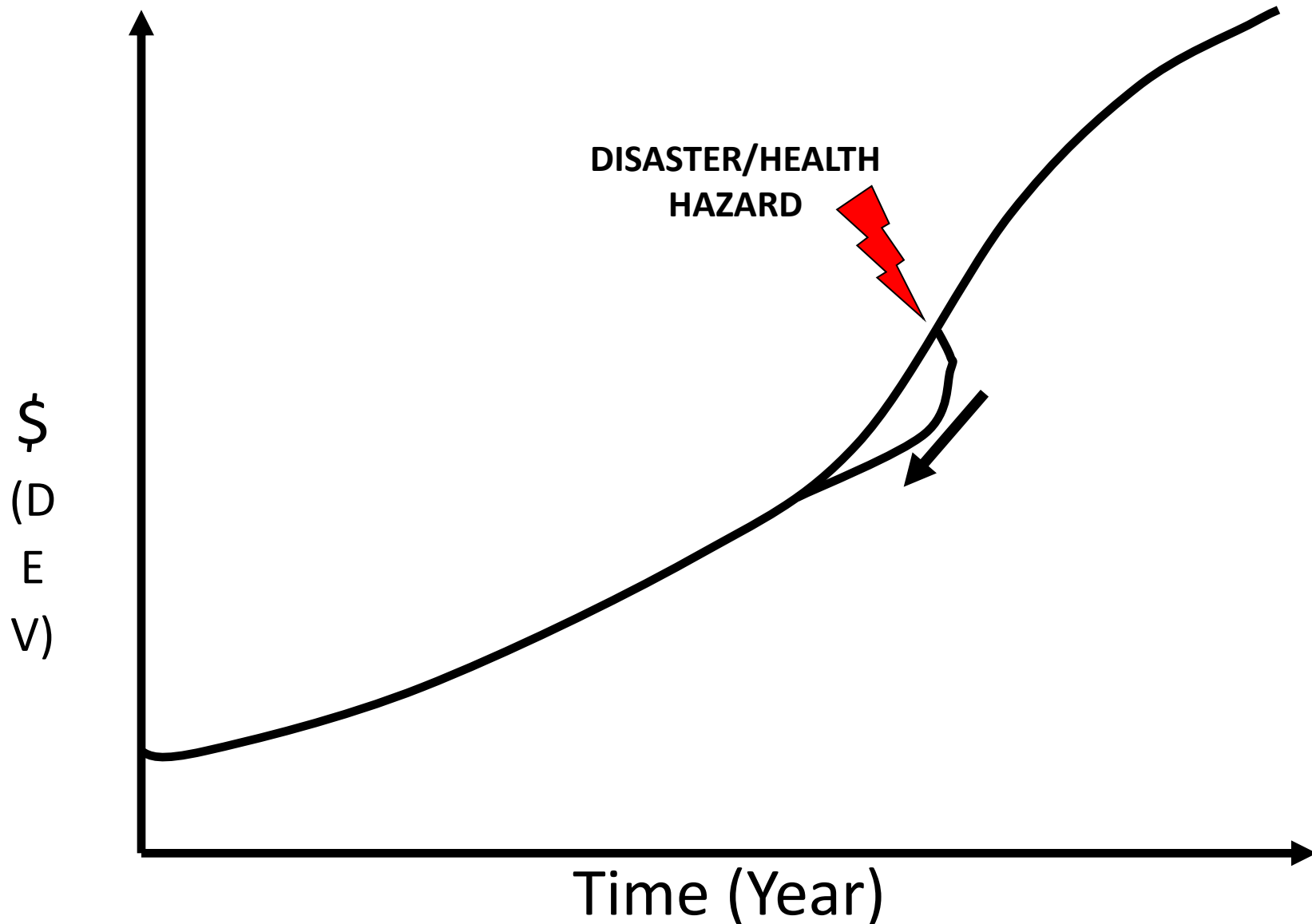
- From 2010-2016, **71%** of the total investment on climate change related activities is on adaptation (total investment \$5.5 billion) (BCAS-CFTM Report).
- Leadership in adaptation discourse in UNFCCC and IPCC
- Ten International Conferences on Community Based Adaptation (CBA) worldwide



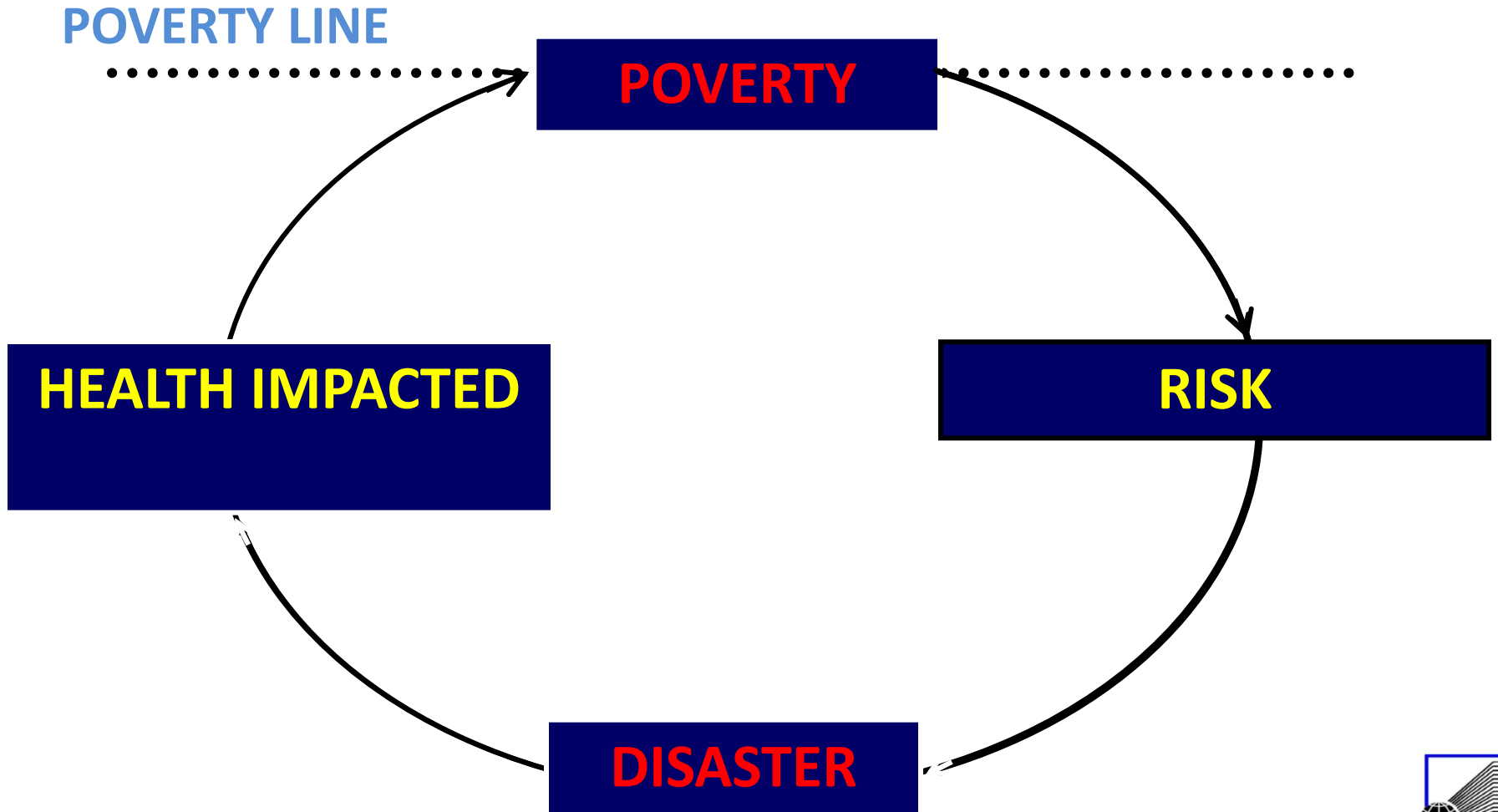
Climate Change, Disasters and Development Nexus

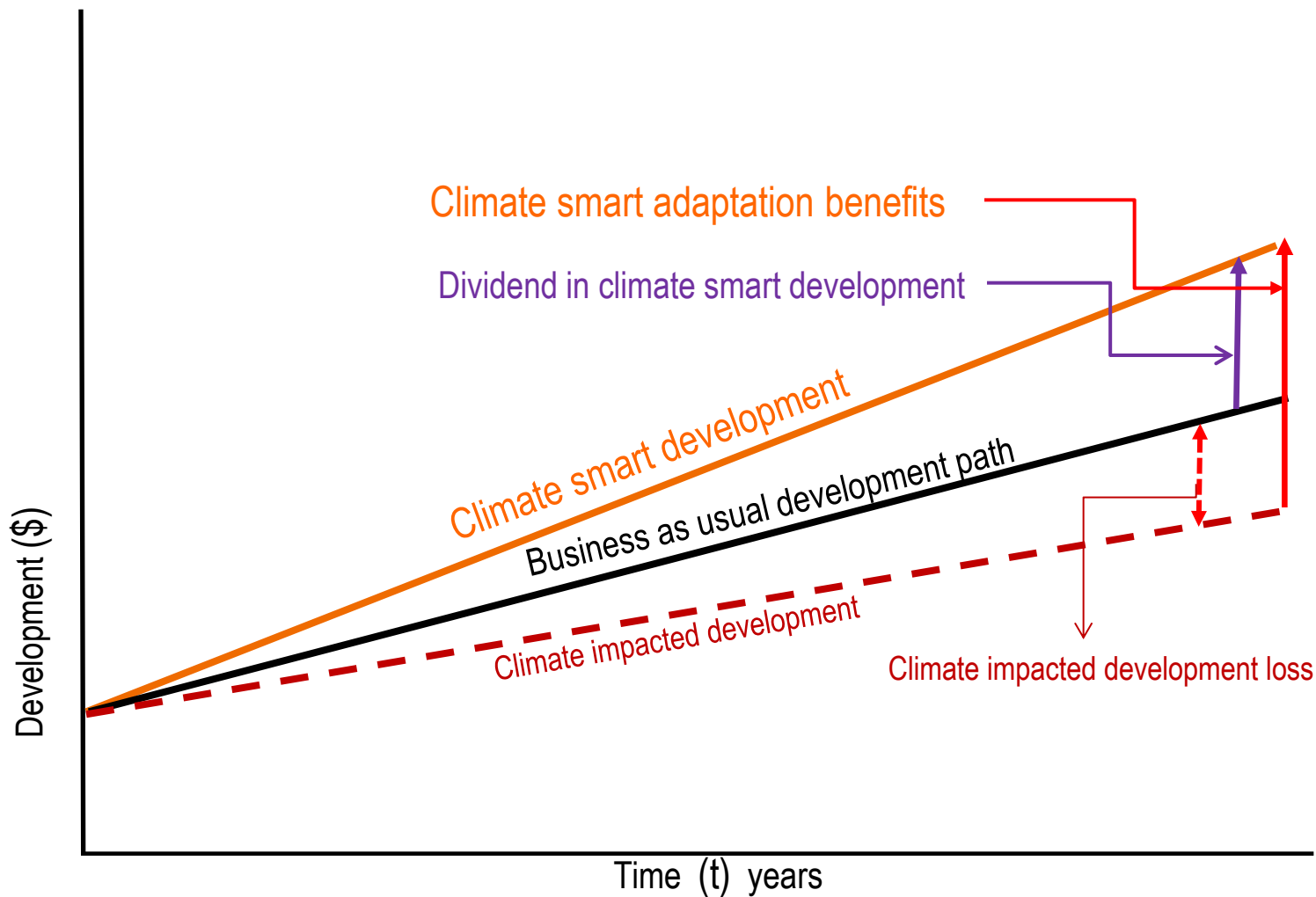


Diagram Showing Severe Impacts of Disasters and Health Hazards on Development



VICIOUS CYCLE OF DISASTER AND POVERTY





Climate Change Impacts, Development Pathways and Adaptation Benefits

Global Upscaling and Replication

Community Based Adaptation: 10 International Conferences

Partners:

**Bangladesh Centre for Advanced Studies
(BCAS)**



**International Institute for Environment and
Development (IIED)**



Community Based Adaptation: International Conference (CBA 1-10)

Sl. No.	Year	Place	Major Themes
CBA 1	2005	Dhaka, Bangladesh	Conceptualization of CBA and Linkages with Development and DRR
CBA 2	2007	Dhaka, Bangladesh	Climate Change Science, CBA Approaches and Partnership
CBA 3	2009	Dhaka, Bangladesh	Knowledge and Practices of CBA, Sectoral Approaches and Up-scaling CBA
CBA 4	2010	Dar-es-Salam, Tanzania	CBA practices across the world: Research and policy guide
CBA 5	2011	Dhaka, Bangladesh	Scaling Up CBA: Beyond Piloting
CBA 6	2012	Hanoi, Vietnam	Communicating CBA
CBA 7	2013	Dhaka, Bangladesh	Mainstreaming CBA into National and Local Planning
CBA 8	2014	Kathmandu, Nepal	Financing Local Adaptation
CBA 9	2015	Nairobi, Kenya	Measuring and Enhancing the Effectiveness of Adaptation
CBA 10	2016	Dhaka, Bangladesh	Enhancing Urban Resilience

Upscaling and Replication in Global South

ARCAB : Action Research on Community

Adaptation Bangladesh

70 countries are covered by **13 International NGOs** such as CARE, Oxfam, Action Aid, Practical Action, Christian Aid, VSO, Islamic Relief, etc. Using their country offices across the world to undertake

-Adaptation Knowledge

-Awareness

-Adaptation Activities

-Training

-Adaptation Actions

Upscaling and Replication

Adaptation Tailor Made Courses and MSc Course in **Climate and Development** at International Centre for Climate Change and Development (ICCCAD)

Partners:

Bangladesh Centre for Advanced Studies (BCAS)



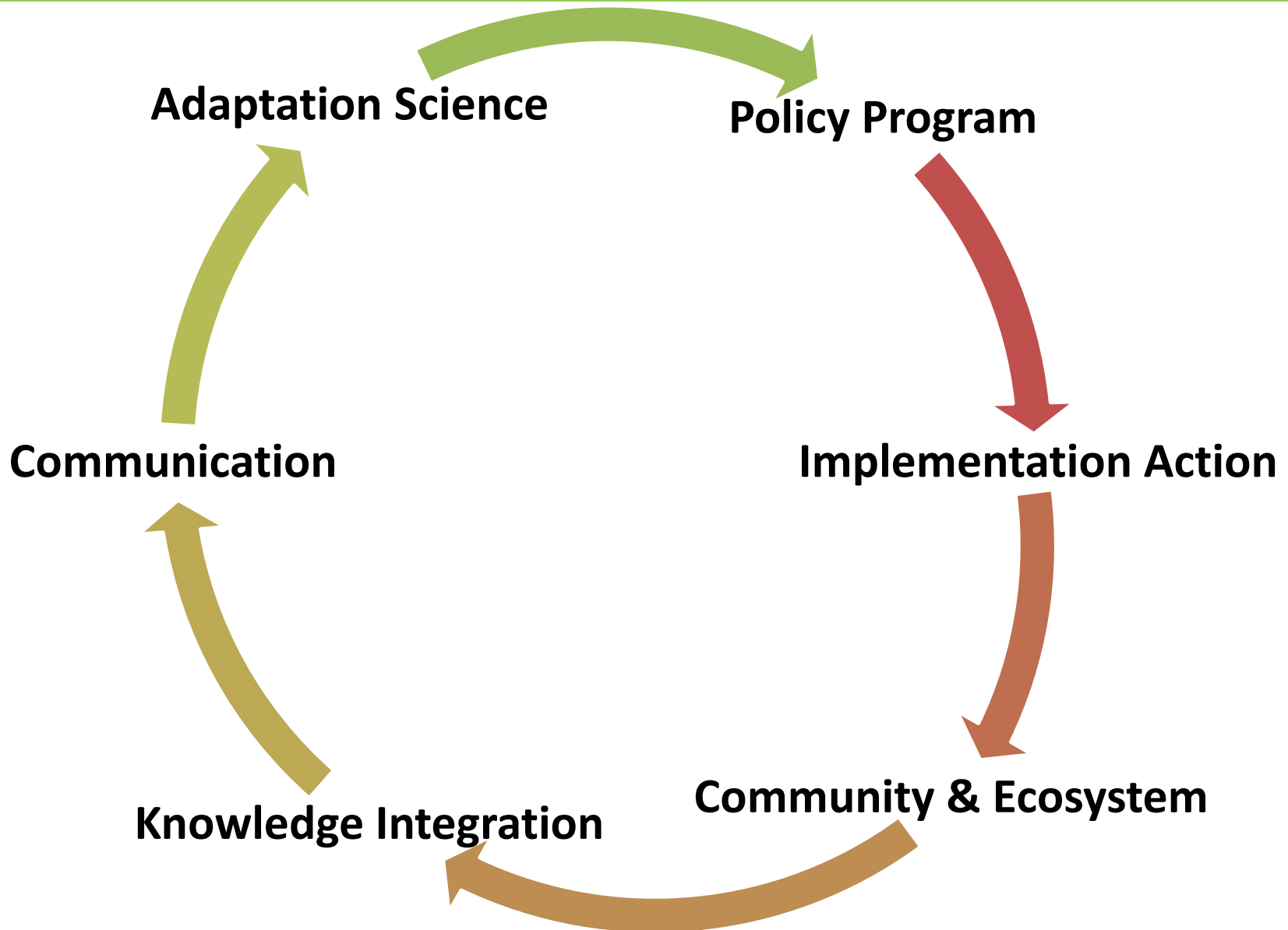
International Institute for Environment and Development (IIED)



Independent University of Bangladesh (IUB)



Upscaling and Replication



Adaptation in Agriculture

- Saline tolerant rice varieties

Salinity tolerant rice shows promise

Bangladeshi scientists develop first transgenic rice infusing pea gene; up to 50pc higher yield potential



PHOTO: COLLEGE

The team of scientists who have developed four salinity-tolerant rice varieties.

IAZ AHMAD
Bangladeshi scientists have developed four transgenic rice varieties capable of growing in high soil salinity, far better than conventional rice available in the country.



Molecular Biology Professor Zeba Islam made it possible after a decade of research. Agriculture Minister Matia Rahman yesterday called Zeba to congratulate her team for the breakthrough. A transgenic rice variety containing a pea gene or gene for salt tolerance was developed using genetic engineering techniques.

The Zeba Islam team first procured the gene from the International Centre for Genetic Engineering and Biotechnology (ICGEB) and used it to develop the salt-tolerant rice variety.



Adaptation in Agriculture

- Floating Garden



Adaptation in Agriculture

- Homestead garden on raised plinth



Adaptation for Drinking Water

- Rain water harvesting



Adaptation for Drinking Water

- Raised tube well



Adaptation for Drinking Water

- Artificial Aquifer
Tube well- placed by a pond to treat surface water for domestic use in the coastal region



Adaptation in Infrastructure

- Plinth raising
- Embankment



Adaptation in Disaster Response

- In the recent flood in Bangladesh, the government is providing seeds, fertilizer and other agricultural inputs as relief to the farmers to raise their adaptive capacity
- Farmers of haor areas are encouraged to focus on production of variety of items rather depend on one crop





PHOTO: MIRZA SHAKIL/ KM REZAUL HOQUE

Vast Aman fields remain under water from the overflowing Jamuna river at Char Bhabla in Kalihati upazila of Tangail. *Bottom left*, a farmer shows flood-damaged paddy plants at his field of Durgapur village in Gaibandha's Saghata upazila, and *right*, Aman saplings lie unsold at Elenga in Kalihati upazila of Tangail as paddy fields are still under floodwater.

Flood takes toll on crops

Crops on 22,000 hectares of land in Tangail, T-Aman worth Tk 14 crore in Gaibandha damaged

AdMit

Adaptation + Mitigation

- Solar Photovoltaic
- Improved Cooking Stove
- Biogas
- Solar Irrigation



Thank You

