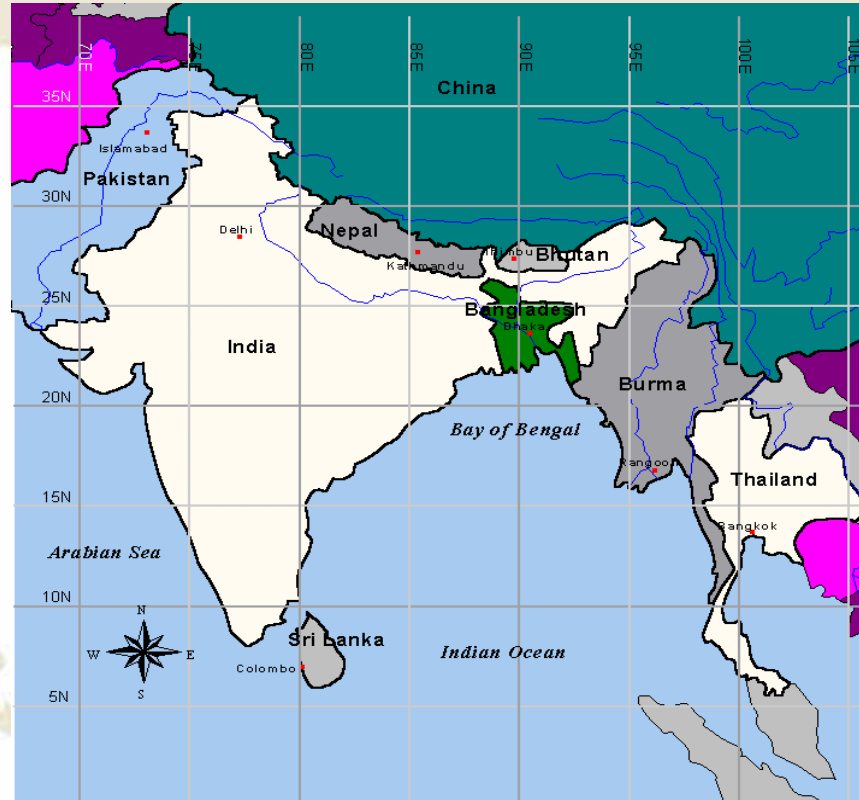


# Partnership Building for adaptation to Climate Change in South Asia for Land and Water Management.



Presented by

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# Land and water resources in South Asia

- The Himalayas lies in Nepal side which is the source of fresh water of world's mighty rivers - the Ganges, the Brahmaputra, the Indus and the Meghna .
- The combined peak discharge of the Ganges, the Brahmaputra and the Meghna is over 180,000 m<sup>3</sup>/sec during rainy season i.e from June to October—which is the second highest in the world after the Amazon but during the dry season (Nov to May) the combined discharge of the three rivers comes down to around 25000 m<sup>3</sup>/sec.
- All discharge during the rainy season (June –Oct) flow over flat country Bangladesh to Bay of Bengal.
- The World Heritage –the Sundarbans is situated in southern part of Bangladesh.
- Ground water of G-B-M basins is 232 BCM but depletion of GW Table is a great concern in the region.



# South Asia – One of the Hot Spots of Climate Change and most vulnerable region

- High density of population
- Agrarian livelihoods
- Human settlements along the coast lines and on the banks of mighty rivers of the Ganges- the Brahmaputra and the Ganges.
- High level of poverty.
- High dependence on natural resources and its services.
- Low elevation from the sea specially Bangladesh, Maldives and SriLanka



# Major Impacts of Climate Change on water resources

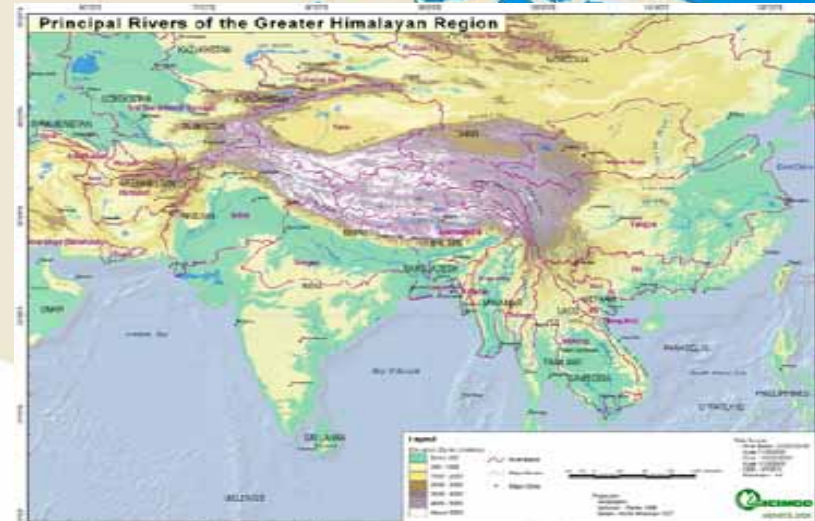
- Change in the hydrological cycle and water balance.
- Increased floods and droughts.
- Increase Saline water intrusion in SW and GW.
- Meeting water demand due to increased scarcity of freshwater.
- Increased river erosion.
- Threaten in the ecosystems.
- Impacts on health.
- Further increase water conflicts between upstream and downstream of a river basin and tension between countries on transboundary water issues.
- Migration of people.



# Climate change is an additional threat to the region

- The 4th IPCC Report predicts that in South Asia, monsoon rainfall will be higher, resulting in increased flow in the rivers (the Ganges, the Brahmaputra and the Meghna river basins) which flow into Bangladesh from India, Nepal, Bhutan and China. These flows are likely to further increase in the medium term due to the melting of the Himalayan glaciers.

- The IPCC also forecasts that global warming will result in sea level rises of between 0.18 and 0.79 metres, which could increase coastal flooding and saline intrusion into aquifers and rivers across a wide belt of the seas though part of the seas are already protected by polders.



Source: UNEP/GRID Geneva, University of Decca, JPO Munich, The World Bank, World Resources Institute, Washington D.C.

# The South Asia is already experiencing climate change impacts

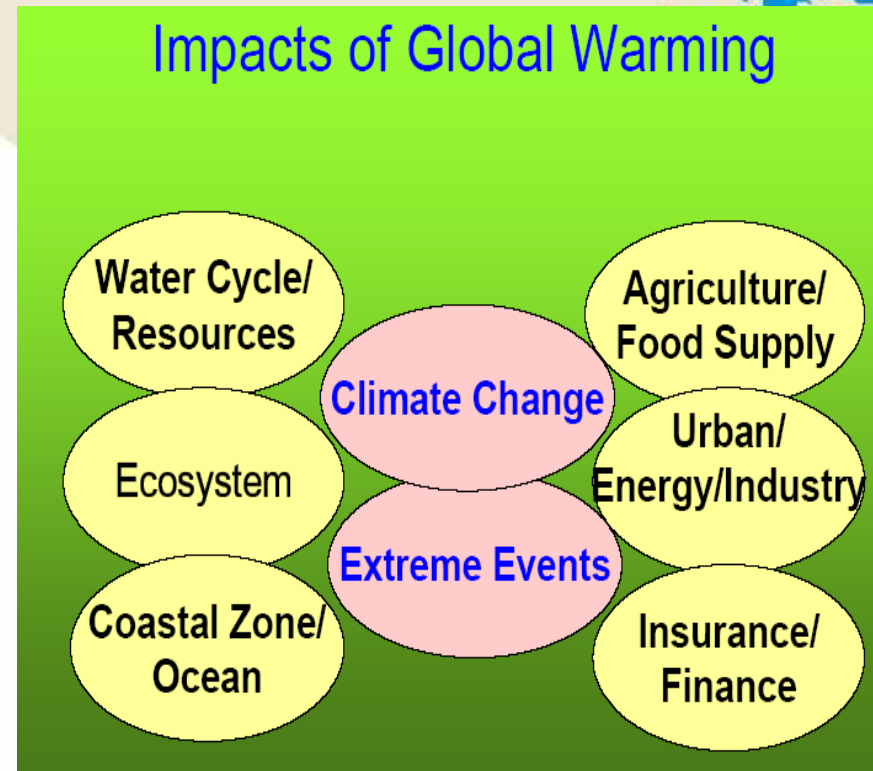
- **Summers are becoming hotter**, monsoon irregular, untimely rainfall, heavy rainfall over short period causing water logging and landslides, very little rainfall in dry period,
- **Increased river flow** and inundation during monsoon, increased frequency, intensity and recurrent floods, crop damage due to flash floods and monsoon floods, crop failure due to drought,
- **Sudden, severe and catastrophic cyclones** and storm surges like Tsunami, Sidr, Aila. Two-third of the disasters that the region experience is related to climate change.
- **Prolonged cold spell, salinity intrusion** along the coast leading to scarcity of potable water and redundancy of prevailing crop practices
- **Coastal erosion, river bank erosion,**
- **Death due to extreme heat and extreme cold,**
- **Increasing mortality, morbidity, prevalence and outbreak of dengue, malaria, cholera and diarrhea.**

# Climate Change is an additional challenge for South Asia

Climate Change is an added challenge for the countries of South Asia to achieve MDGs and land and water management is critical in meeting such challenge.

Energy -----→ Mitigation

Land and water resources ---→adaptation.



## Focus of IPCC on Capacity Building and IWRM

Accordingly to IPCC *“a high priority should be given to increasing the capacity of countries, regions , communities and social groups to adapt to climate change.....”*

IPCC 2007 states that *“the paradigm of Integrated Water Resources Management (IWRM) will be increasingly followed around the world .. which will move water, as a resource and a habitat, into the centre of policy making*

*This is likely to decrease the vulnerability of freshwater systems to climate change”*

# Challenges for adaptation to CC

- Uncertainty in prediction of impacts
- Multidimensional issues
- Multi-stakeholders issues
- Lack of awareness
- Lack of climate data and information
- Lack of capacity of individuals as well as institutions.
- Lack of knowledge and research for risk management
- Lack of Conceptual framework for adaptation
- Limited land and water resources
- Political and social boundaries
- Weak institutions
- Lack of integration
- Lack of coordination among sectors and agencies
- Lack of regional cooperation.
- Lack of financial resources

All these challenges address the need for partnership building and regional and international cooperation



## Preparation for Adaptation

- Need to know the **range and degree of the potential impacts**, and vulnerable sectors and areas (hotspots) at country, regional and global level.
- Need to know **what are needed** to increased preparedness against the impacts.
- Need to know **strategy and tactics for adaptation**
- The adaptation plan should be incorporated in the mainstream policies such as **disaster prevention, environmental management, agriculture, forestry, and fishery, urban infrastructures, and national development plan.**
- Adaptation should be part of sustainable development plan in each country
- Adaptation should meet the social acceptance. Therefore, need to raise **people's awareness on the vulnerability.**

Ref: Prof. Nobuo Mimura, Ibaraki University, Japan

## Regional Initiative on Adaptation to Climate Change in South Asia

GWP-South Asia has undertaken a regional programme on Adaptation to Climate Variability and change through partnership and capacity building involving India, Nepal, Bangladesh, Pakistan, Bhutan, SriLanka. Bangladesh is the lead country for the project.

**Funded by: Global Water Partnership**

### Key Institutions in the region:

Bangladesh: BWP and CEGIS

Pakistan: Pakistan Water Partnership

India: India Water Partnership

Nepal: ICIMOD, Ministry of Power

SriLanka: SriLanka Water Partnership and Ruhuna University

Bhutan: Bhutan Water Partnership

Goal

# Climate proofing survival and development in the region

Objective

Understand climate change and sharing of knowledge and experience

Develop knowledge & technologies for adaptation & mitigation of climate change risks

Sustain and maintain development incorporating climate change risks

Ensure regional harmony and societal well being considering climate change risks

Outputs

- Establish knowledge and experience sharing network
- Regional capacity development for adapting new technologies for adaptation & mitigation
- Develop well coordinated, climate resilient action plan addressing incremental knowledge and resource needs

Bangladesh

India

Pakistan

Nepal

Bhutan

Sri Lanka

National Activities

Develop implementation strategy for adaptation and mitigation of climate change risks

- Identify country specific issues and concerns
- Identify possible adaptation and mitigation measures
- Evaluate the measures in terms of environmental, social and economic aspects

Regional Activities

- Coordinate and integrate national perspectives
- Accumulate country specific findings & recommendations
- Develop Regional strategy for climate change harmonizing national and regional perspectives

Regional Initiatives

- SAARC
- SAFTA
- Abu Dhabi Initiative

Stakeholders

Vulnerable Communities

Governments

Knowledge Partners (National & International)

Development Partners

NGOs

- A kick-off Workshop held back to back with the Regional Council Meeting of GWP-South Asia in November 2008 in New Delhi.



- Second workshop was held on 4 January 2009 in Dhaka to get feedback on the project design and its implementation.



# Immediate Regional Focus on Climate Change Adaptation emerged from Dhaka Workshop

- Integrating climate change into national development strategy and plans in the countries.
- Building resilience to Climate change
- Developing a common vision and political commitment for reducing vulnerabilities of natural disasters
- Mapping of climate change impacts in South Asia
- Sharing knowledge & technology
- Developing regional forecasting and early warning tool
- Developing a framework for basin-wide integrated Water Resources Management (IWRM) planning approach
- Research on impact of climate change on i) Vulnerable communities and their livelihood ii) Environment and biodiversity, iii) Floods in the Ganges, Brahmaputra and Meghna River Basins iv) Snow melt and water availability v) Coastal resources and communities, vi) River bank erosion and soil erosion vii) Water quality viii) Water Transport
- Research on mitigation of climate change impacts
- Financing mechanism for adaptation and mitigation.

This regional Action Plan (South Asia perspective) was shared in Hanoi Dialogue (Asia Dialogue) on Adaptation to climate change for Land and Water Management and integrated into five principles adopted in the concluding session of the dialogues in Nairobi for Land and Water Management as led by Danish Government

## Five Principles:

- 1) Sustainable development
- 2) Focus on Resilience
- 3) Knowledge and Information sharing
- 4) Governance
- 5) Economics and Financing

Implementing these Guiding Principles will be strengthened through the establishment of partnerships as mentioned in the Nairobi statements that enable the combining of strengths, mandates and institutional capacities.

Forging partnerships and working through networks will create the diversity and creativity necessary to support land and water management for adaptation to climate change.





**THANK YOU**