

Bangladesh: Water Resources Senerios and Climate Change Impact and Adaptation Programs

Md. Mofazzal Hossain

Member, Joint Rivers Commission, Bangladesh

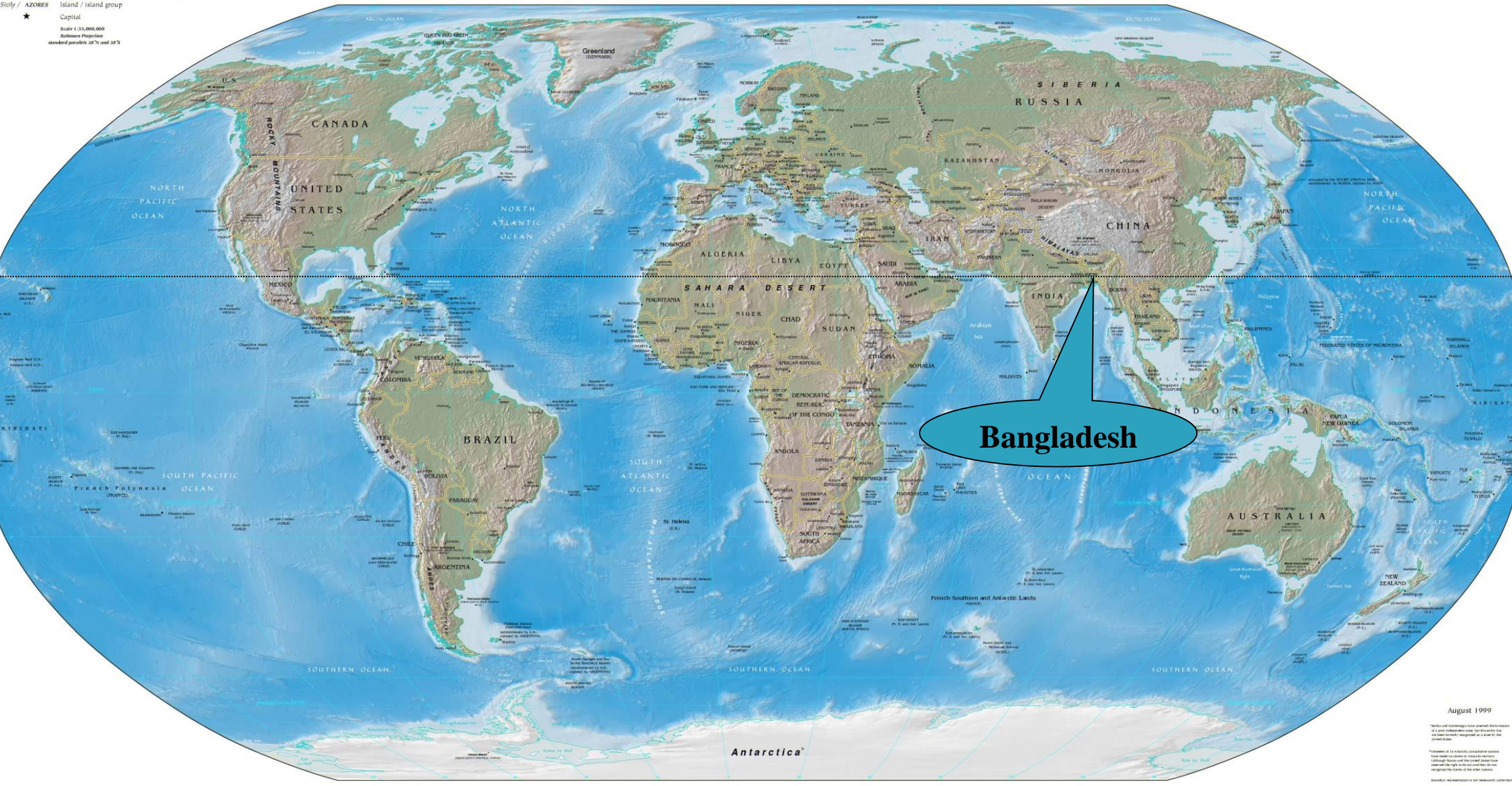


□ Bangladesh is one of the most climate vulnerable countries in the world due to its geographic location on globe

Geographic Locations of Bangladesh in Regional Context

AUSTRALIA Independent state
 Bermuda Dependency or area of special sovereignty
 Sicily / AZORES Island / island group
 ★ Capital

Scale 1:35,000,000
 Robinson Projection
 Standard parallels 34°N and 34°S



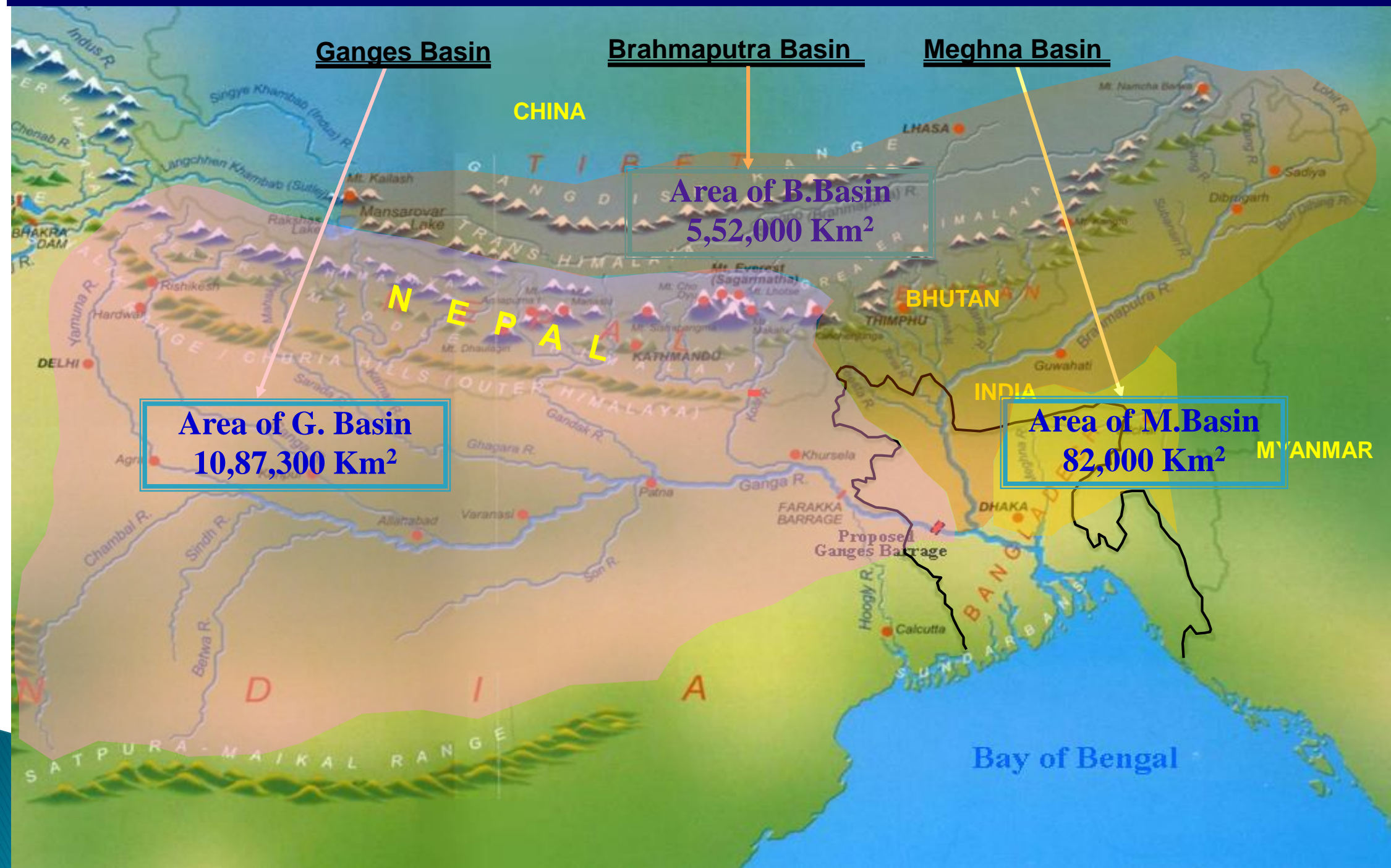
August 1999

Map data and boundaries have been derived from the best available information and are not necessarily authoritative. The map is for general information only and should not be used for navigation or other purposes where accuracy is essential.

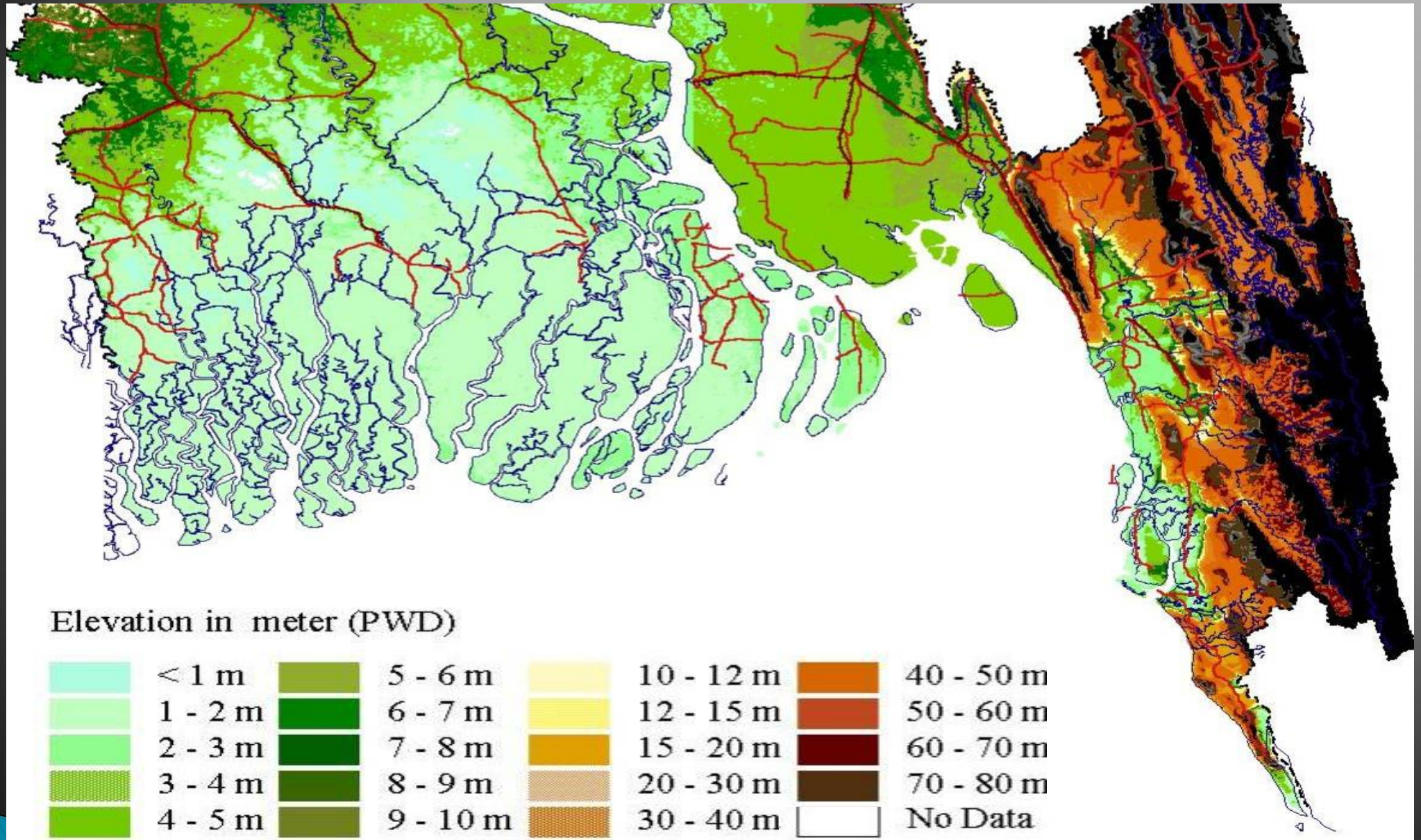
© Cartography Center 8/2019 (R0001)



Geographical location of Bangladesh and Catchments of GBM



Most Vulnerable Coastal Zone of Bangladesh



Most Vulnerable Coastal Zone of Bangladesh

- About 80% of the catchment area is outside the international boundary
- Most of the rainfall occurs during monsoon. Hence monsoon flooding here in Bangladesh is a common phenomenon
- The rivers of Bangladesh drain run-off of upstream catchments of area about 1.7 Million square km
- About 37% of Bangladesh lies in the Coastal zone out of which 62% are has an elevation up to 3 m and 80% area has elevation upto 5 m above mean sea level
- The combined effect of monsoon flooding and climate change-induced sea level rise make the Coastal Zone highly vulnerable to climate change

Water resources challenges in Bangladesh

- ▶ **Population booming:** a population of 160 million in a country of only about 150,000 sq.km is expected to rise to 181 million by 2025 and 224 million by 2050
- ▶ **Rapid urbanization and industrialization:** which leads to put additional pressure on agricultural and wetland utilization
- ▶ **Changing pattern of natural disasters:** such as rainfall pattern, flooding, drought, river bank erosion, drainage congestion, tidal and cyclonic surges and so on
- ▶ **Decrease of upland flow:** upstream diversion induces sedimentation in the river bed that leads to river dying and loss of river functionality in Banglades.
- ▶ **Arsenic contamination in the groundwater**
- ▶ **Pollution of river water:** is a threat to health and hygiene of the people
- ▶ **Shift of saline and fresh water meeting line towards the country due to decreasing freshwater flow which will be aggravated due to climate change–induced sea level rise**

Impacts of Climate Change in Coastal Landscape

- ❖ **About 60% of the worldwide deaths caused by tropical cyclones in the last 20 years in Bangladesh.**
- ❖ **Southwest Region and Southern area will experience severe water logging problems by climate change induced Sea Level Rise and increase of Precipitation**
- ❖ **Damaging of infrastructures of Rural landscape including water supply and sanitation systems in the coastal region**
- ❖ **Stressed water quality and availability**

Impacts of Climate Change on some physical processes

➤ Damage of Coastal Embankment



Impacts of Climate Change on some physical processes

➤ Inundation due to storm surge After Cyclone Aila at ShamNagar



PROBLEMS OF COASTAL POLDER

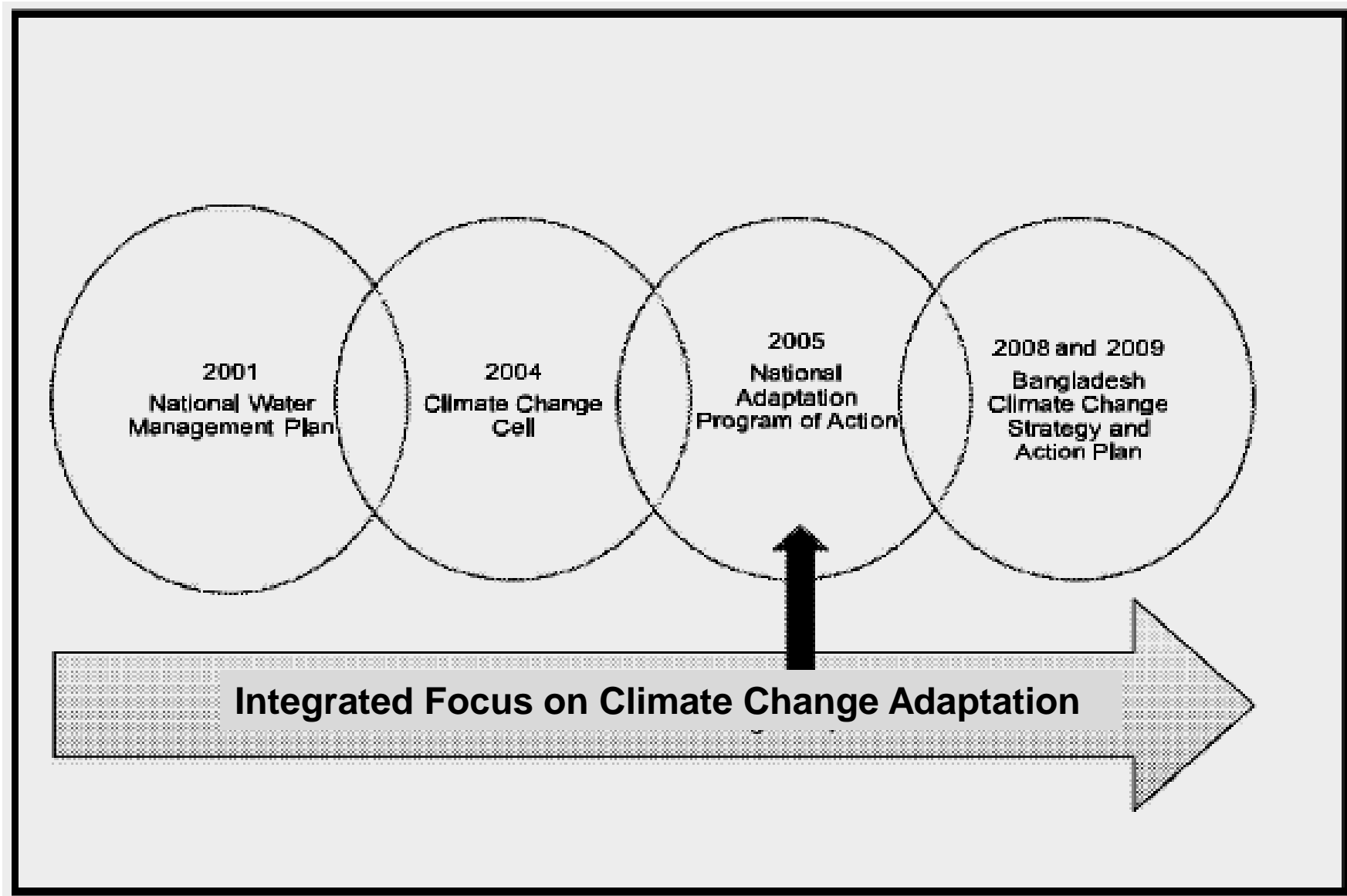


- Drainage congestion
- Degradation of environmental and Socio-economic

Embankment near overtopping



Climate Change Adaptation Strategy of Bangladesh



Adaptation to Climate Change in Bangladesh

- **Flood Management schemes to raise the agricultural productivity of low-lying areas**
- **Flood protection and drainage schemes to protect urban areas**
- **Coastal Embankment Project to raise agricultural productivity in coastal areas by preventing tidal flooding and salinity intrusion**
- **Construction of Cyclone Shelter for affected communities from tidal surge**
- **Comprehensive disaster management projects involving community-based programmes and early warning systems for floods and cyclones**
- **Irrigation schemes to enable farmers to grow crops in the areas subjected to heavy monsoon flooding as well as in the drought-prone areas**
- **Agricultural research programmes to develop saline, drought and flood-adapted high-yielding varieties of rice and other crops**
- **Coastal “Green Belt” project involving mangrove planting along the shoreline**

Private Participation in Adaptation plan

To adapt the water in the changing climate, coordination among all government and non-government organization is imperative. As climate change is a cross-cutting issue, a coordinated institutional response should be based on integrated planning with community participation including NGO and Civil societies at different levels. They are already actively involved in the awareness building program for the anticipated climate hazards and potential adaptation measures among the affected people

Present cooperation among the Coriparian Countries

- ▶ Bangladesh faces unique challenges – abundance in water during monsoon and scarcity of water during dry season. The country's vulnerability is further increased by the fact that 92% of its surface waters originate from the outside of its border. Sharing trans-boundary river water is a complex issue. Two decades back, Bangladesh succeeded to enter into a long-term water sharing arrangement with India on the Ganges waters.
- ▶ Presently Bangladesh has been receiving flood related data and information of the major Transboundary rivers from India, China and Nepal which are successfully using in the non-structural adaptation approach to climate change such as flood forecasting and early warning system of Bangladesh.

Conclusion

- **Funds for implementation of the adaptation programs have to be collected from developed nations, because the need has been arisen due to historical emission of green house gases (GHGs) by the industrialized countries. The Government of Bangladesh is trying to raise the voice through LDC and G-77 countries to get the purely grant based fund from donor agencies**
- **Being the lowermost riparian country of the three mighty Himalayan rivers (GBM), the implementation and sustainability of Adaption action plan largely depends on the trans-boundary cooperation with the upper riparian countries**
- **The Government of Bangladesh and India have signed a "Framework Agreement on Cooperation for Development" in September 2011. Both side have inter-alia agreed to enhance cooperation in sharing of the waters of common rivers and explore the possibilities of common basin management of common rivers for mutual benefit. This has opened the opportunities towards establishment of joint bodies for IWRM at River Basin Level.**
- **Bangladesh believes that the regional and transboundary cooperation manly depends on strong political will, mutual trust and change of mind set among the riparian countries are a pre-requisite.**