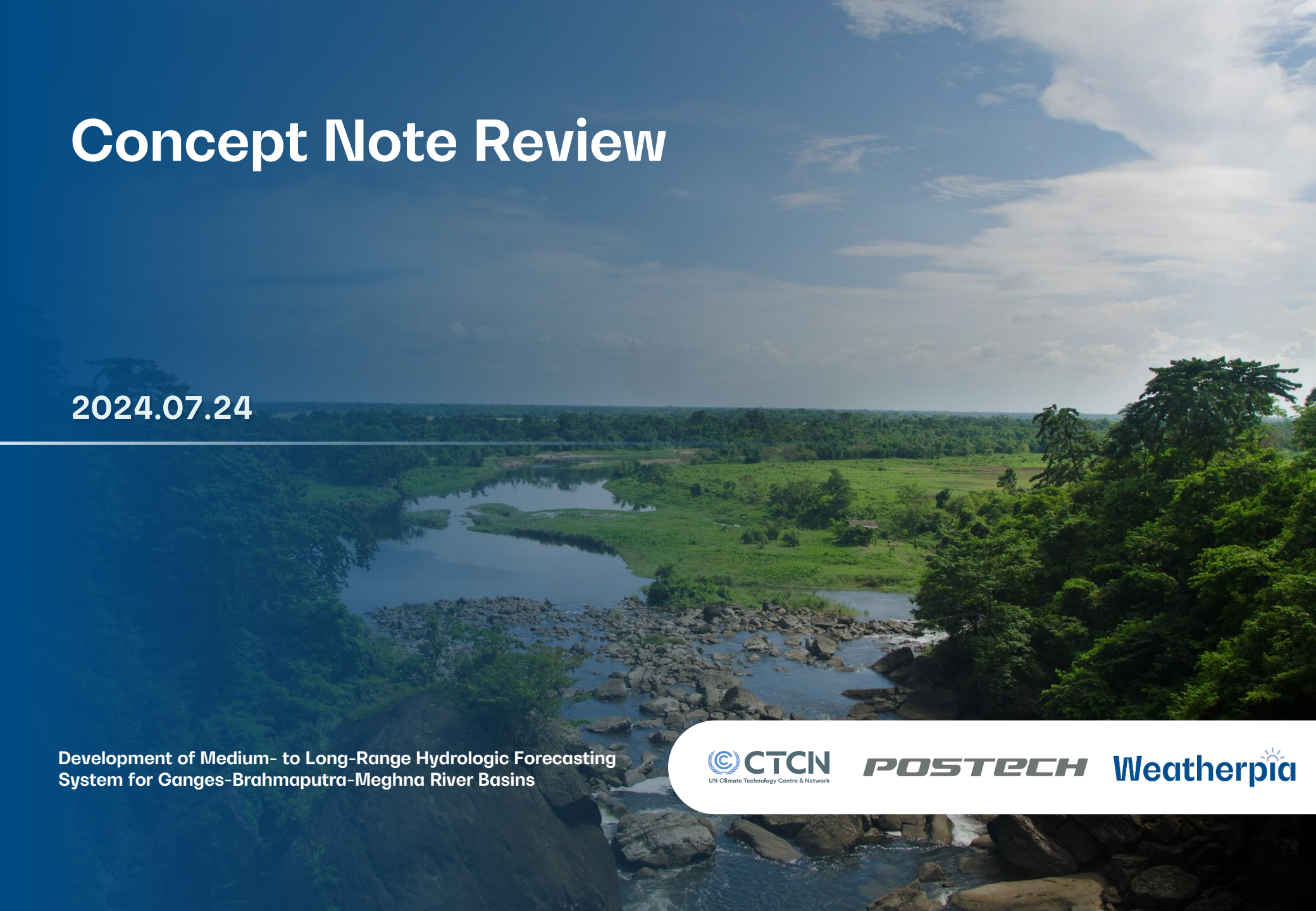
Concept Note Review

2024.07.24



Development of Medium- to Long-Range Hydrologic Forecasting System for Ganges-Brahmaputra-Meghna River Basins

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Content

0 Contents of Concept Note

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A. Project Summary	B. Project Information				C. Indicative financing information			Annex 1 Environmental and Social Screening Checklist
	B.1 Context and Baseline	**B.2** Project description	**B.3** Expected performance against the GCF investment criteria	**B.4** Stakeholders consultation and engagement	**C.1** Financing by components	**C.2** Justification of GCF Funding Request	**C.3** Exit Strategy and Sustainability	

B.1 Context and Baseline

Country Background

- Due to its geography and topography, Bangladesh is highly prone to flood with the fifth most disaster-prone country in the world
- During monsoon (May – September), 20-30% of the country is inundated and experiences flooding
- These recurrent floodings lead to loss of life, disruption of livelihoods, and significant damage to crops, livestock, and infrastructure, and almost 75% of the population living in rural areas are impacted
- Due to the climate change, the intensity and frequency of the flooding increased

Current forecasting capacity

- The FFWC within the BWDB, is responsible for generating flood forecasts and issuing early warnings
- Through collaboration with RIMES, FFWC generates 1-10-day probabilistic forecasts for 38 locations
- Current 3-5-day deterministic flood forecasts are often insufficient
- Existing flood forecast products are underutilized due to weak dissemination to remote flood-prone communities

B.2 Project description

Component 1: Enhancement of hydro-meteorological infrastructures and data integration system

- Hydrometeorological Infrastructure development
- Integrated data management system
- Network development

Component 2: Integration of flood forecasting model into existing Multi Hazard Early Warning System

- Acquisition of weather and hydrological forecast data
- Evaluation of flood hazard modelling and forecast
- Early warning dissemination
- Preparedness and response

Component 3: Strengthening climate-adaptative resilience in local communities

- Institutional capacity strengthening
- Community Engagement
- Knowledge sharing

B Project Information

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Goal Statement

IF early detection system of multiple hazards is developed, timely and effective dissemination of relevant information is ensured, and continuous investment in the sector of climate change and natural disaster response is promoted, **THEN** resilience, engagement and awareness on climate change and relevant threats of the local communities will be enhanced, **BECAUSE** technical capabilities of the government will be strengthened, enabling implementation of standardized disaster response and management system, as well as for the whole country, through further project scaling-up and expansion.

Outcome 1	Outcome 2	Outcome 3
Meteorological monitoring, data collection equipment and observation network are expanded and upgraded	Resilience to climate change and climate induced natural hazard of the disaster-prone region is increased	Damages and repercussions of climate-induced natural disasters are minimized in the regional and national level

Output 1.1	Output 1.2	Output 2.1	Output 2.2	Output 3.1	Output 3.2
Hydrometeorological data collection and monitoring capacity are enhanced	Integrated information system and information network is developed	MHWES is developed and integrates natural disaster forecasting model	Advancement of institutional capacity of the government for disaster response	Establishment of disaster response, forecasting and warning information system for local communities	Response capacity development of local communities by climate change and natural disaster action plan implementation

Input 1	Input 2	Input 3
Installation and operation of meteorological equipment with capacity building program for system maintenance	Development and operation of AI-based MHEWS (Landslides etc.) such as modelling and hazard mapping, with operation of sensors for the developed MHEWS	Modernization of the national public warning system, with expanding the coverage of the warning system and cell-broadcast technology and technical support for the cell-broadcast system

Barrier 1	Barrier 2	Barrier 3
Limited infrastructure and human resources for hydrometeorological observation, risk modelling and assessment	Insufficient institutional capacity and local technique expertise to utilize the data for the forecasting	Climate observation data and derived information not disseminated to public with risks in a timely and effective manner

Problem Statement

- Vulnerability of Bangladesh to natural disasters is becoming more severe and frequent by climate change.
- Lack of infrastructure, monitoring and forecasting capacities to properly respond to threats.
- Habitant of the most affected region of the country is not equipped with effective warning system and weather station.

Assumptions

- Frequency and severity of the natural disasters and impact on the site are similar.
- Government's strong will, capacity and continuous support at both regional and national level.
- Inter-agency cooperation is available. No budget or staff cuts in NDA and.
- Strong commitment and engagement of community population in the site.
- Communication system in the site is enough for observing and dissemination data and alarm.

B.3 Expected performance against the GCF investment criteria

Impact potential

- The availability of mid- to long-term hydrological forecasts will equip the Bangladeshi government with crucial data for better preparedness and response to both floods and droughts within a 15- to 30-day window which would enhance flood risk management and improve the socio-economic resilience of Bangladesh

Country ownership

- Disaster management, such as flood, was a key priority included in the adaptation plan released by Bangladesh. Water resource management is also essential for food security, and thus the Ministry of Water Resources is establishing several projects for climate change adaptation.

Sustainable development potential

- SDG 02) The project will mitigate the impact of hydrological disasters, thereby promoting sustainable agriculture
- SDG 06) Ensure availability and sustainable management of water and sanitation
- SDG 11) Would minimize the damage to densely populated cities, enabling them to become more resilient
- SDG 13) The supply of scientific-based information will help strengthen their resilience and adaptative capacity to climate-related hazards and natural disasters

B.3 Expected performance against the GCF investment criteria

Needs of recipient

- The country's vulnerability is exacerbated by insufficient capacity and resources. By providing forecasting tools and community dissemination practices, the impacts of flooding and build resilience against future climate-related disasters would be mitigated.

Paradigm shift potential

- Through VIC-River Routing Model, more accurate flood forecasting would be available. As accuracy and reliability of the hydrological models improve, this enhancement will significantly boost community response and management capabilities across all affected regions. It is poised to foster a transformational shift towards sustainable development in Bangladesh, reinforcing the country's resilience to climate-related disasters

Efficiency and effectiveness

- The deployment of advanced flood forecasting is a foundational element for establishing a comprehensive long-term strategy for climate crisis management and disaster risk reduction. The reduction in flood damage and costs will not only improve community resilience but also contribute to the financial stability and growth of Bangladesh, demonstrating a compelling case for economic and financial support of the initiative

C.1 Financing by components

Component 1
- Enhancement of hydro-meteorological infrastructures and data integration system
- GCF financing: $10,000,000
- Financial instrument: Grants

Component 2
- Integration of flood forecasting model into existing Multi Hazard Early Warning System
- GCF financing: $9,000,000
- Financial instrument: Grants

Component 3
- Strengthening climate-adaptative resilience in local communities
- GCF financing: $6,000,000
- Financial instrument: Grants

C.2 Justification of GCF Funding Request

- Government of Bangladesh is currently allocating 6 to 7 (USD 1 billion) percent of its annual budget to climate change adaptation, the World Bank estimated that the required financial allocation by 2050 should be around USD 5.7 billion a year

- Given Bangladesh's limited financial resources, the project will rely heavily on GCF grants to overcome structural barriers and achieve its goals

- The Green Climate Fund (GCF) emphasizes adaptation projects are designed to mitigate the impacts of climate change on developing nations and marginalized communities

- This initiative stands out as a significant climate change adaptation effort that directly benefits the local population

C.3 Exit Strategy and Sustainability

Component 1

- Technicians utilizing the infrastructures and the technologies would be involved in the project from the consultation of the construction. Throughout this process, stakeholders would learn how to construct each elements of the infrastructures to improve their skills to fix and maintain the quality of the infrastructures

Component 2

- Pohang University of Science and Technology (POSTECH) have hosted regular monthly technical meeting to transfer technology for the prediction of the flood in the landscape. This technical meeting would enhance the capacity of observers and forecasters to forecast better of the flood in the region by collecting and analyzing the data

Component 3

- Populations in the local communities would have training sessions and would be recommended to participate in the sessions. The trainings would include proper actions that need to be taken after they receive warning messages and the nearest evacuation places to evacuate from the severe flood

End of document

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