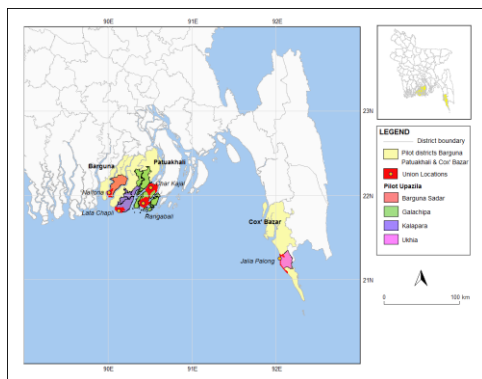
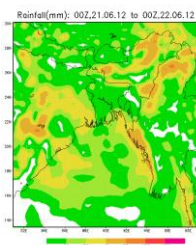


FACTSHEET

Piloting of Bay of Bengal depression and cyclone track and landfall projections for enhanced warning accuracy and improved lead time for disaster risk reduction in Nobo Jibon Program areas, Bangladesh



Pilot Unions: Noltona, Latachhali, Rangabali, Char Kazal & Jaliapalong



Meso-scale modeling using Weather Research and Forecasting (WRF) model for end-to-end early warning in Bangladesh



Enhancement of cyclone and hydro-meteorological warning systems of the Bangladesh Meteorological Department

Disaster risk reduction in coastal areas involves prevention, mitigation and preparedness actions at local, national and regional levels. Effective early warning is vital to disaster preparedness, and therefore is a key element in reducing disaster risks. Communities at the coast should have access to timely risk-based early warning of all coastal hazards, including heavy rainfall, cyclones and storm surge, and capacity to respond to warning information.

In southern Bangladesh, USAID is supporting the “Nobo Jibon” program to reduce food insecurity and vulnerability. Strengthening household capacity for cyclone and flood preparedness is one of the program’s strategies to enhance livelihood security in vulnerable communities. Current capacity in the early warning of and preparedness for cyclone and associated coastal flooding, however, has the following gaps:

- Cyclone track prediction error is higher than the acceptable level of less than 100km
- Cyclone prediction remains subjective, using statistical methods
- Inadequate capability within the Bangladesh Meteorological Department (BMD) in storm surge and coastal inundation forecasting
- Inadequate capability for warning dissemination
- Lack of capacity to translate warning into potential impacts and response options
- Lack of cyclone risk maps on which to base evacuation mapping
- Absence of 24/7 emergency operations centers (EOCs) at union level

APPROACH

With recent advances in the science of cyclone forecasting, it is now possible to monitor favorable conditions for cyclone formation, up to 7 days in advance. RIMES shall integrate this information into its customized Weather Research Forecasting (WRF) model to provide projections of cyclone track and landfall and associated surge and rainfall at a horizontal resolution of 9km. These forecast information shall then feed into storm surge and inundation model to generate water depth forecasts at the coast. A decision-support system translates cyclone and coastal inundation forecast information into an impact outlook to guide disaster managers in preparing response options for minimizing potential losses in human life, livelihoods and property. Experimental forecasts shall be generated for five coastal Unions under the Nobo Jibon program, where their application in reducing disaster risks shall be tested. A cyclone event within the project period would provide an opportunity to evaluate cyclone and coastal inundation forecast accuracies, warning dissemination efficiency and effectiveness of the decision and response systems at the demonstration sites. Outcomes of the evaluation shall feed into the improvement of the forecasting and information delivery and application systems.



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GOAL AND OBJECTIVES

The project shall improve cyclone early warning and preparedness in Bangladesh by:

- Developing BMD capacity to forecast, up to 7 days in advance, cyclone formation, track, and landfall, including associated surge and rainfall, with a 9km resolution
- Enhancing BMD capacity in forecasting coastal inundation from surge and heavy rainfall that are associated with cyclones
- Demonstrating the use of these experimental forecasts in reducing disaster risks in Barisal Division in southern Bangladesh.

AREAS OF INTERVENTION

The project supports:

Technology development

- Continuous monitoring of depressions and cyclone formation at the Bay of Bengal, including other severe weather events
- Customization of the Weather Research and Forecasting (WRF) meso-scale model, combining risk thresholds and user requirements
- Establishment at BMD of 9km x 9km resolution cyclone tracking system using WRF model
- Enhancement of storm surge forecasting using Japan Meteorological Agency's Medium Range Forecast (JMA-MRF) model
- Development of coastal inundation model that integrates GIS layers and storm surge model outputs
- Development of risk-based decision-support system (DSS) for potential impact assessment

Demonstration of technology application

- Demonstrations in 5 coastal unions for the application of risk-based warning information in decision-making

Technology transfer and capacity building

- Capacity building of BMD on the use of models developed under the project
- Transfer of models to BMD
- Capacity building of national and local level institutions, including CPP volunteers and local NGOs to translate forecast information into impact outlooks and menu of response options
- Capacity building of Save the Children staff and partner NGO, farmers, and Upazila Disaster Management Committee members on forecast products for weather, cyclone, storm surge, and coastal inundation, agro-meteorological forecast products, DSS tool, and their application in planning and decision-making, including data archiving and GIS-based risk mapping.
- Enhancement of observation system to increase data availability for forecasting and warning
- Establishment of model EOC at union level

The **Regional Integrated Multi-Hazard Early Warning System (RIMES)** is an international and intergovernmental institution that is owned and managed by its Member States for the generation and application of early warning information. RIMES interfaces with global centers of excellence to bring the best of science to the doorsteps of at-risk communities in 31 Member States and collaborating countries in Africa and Asia. RIMES helps to build capacity of Member States in the observation and monitoring of seismic, tsunami, oceanic, meteorological, hydrological, and climate phenomena, and in the communication of associated risks, for appropriate and timely responses to warnings.