

# Regional Program for Hydromet Services and Resilience

South Asia: Program Brief

## Economic and Social Impact of Disasters and Climate Risks in South Asia

South Asia is highly prone to weather and water related disasters such as flooding, drought, thunderstorms and cyclones. In the past two decades, over 50% of South Asians, that is, more than 750 million people have been affected by at least one natural disaster. The social and economic costs of such hazards have been staggering with almost 230,000 people dead and USD 45 billion in damages between 1970 and 2008. In India, direct losses from natural disasters constituted 2% of the country's GDP and approximately 12% of central government revenue in 2003. Pakistan has suffered losses in the order of USD 16 billion since 2005 due to natural disasters. In Bhutan, damages related to the 2009 cyclone Aila were close to USD 17 million.

## Transboundary Characteristics of Weather and Natural Hazards

In South Asia, weather patterns and climate risks are trans-boundary requiring a sub-regional or regional response. For instance, cyclones occurring in the Bay of Bengal affect a number of countries particularly Bangladesh and eastern coastal states of India. Between March and May, severe thunderstorms develop that commonly affect northeastern India, Bhutan, Nepal and Bangladesh. Though not as visible as tropical cyclones, they silently take their toll on livelihoods and property causing damages worth millions of dollars across the sub-region. The South Asian monsoon system delivers 70% to 80% of the rainfall to most South Asian countries. Seasonal changes in the timing, duration and variability of precipitation pose serious risks to key sectors such as agriculture and hydropower in a number of countries. The Indus, Ganga and the Brahmaputra, all of which are trans-boundary, provide a lifeline to over a billion people in the region. However, during the monsoon season, they carry large amounts of silt-laden runoff, contributing to flooding and extensive damage over large areas, often cross border in nature.

## Productivity and Performance of Key Economic Sectors influenced by Weather, Water and Climate information Services

The performance of the region's key economic sectors such as

agriculture, aviation, water, urban infrastructure, fisheries, hydropower, and tourism depends upon weather information based services. However, users and communities have limited access to weather information products tailored to these sectors. For instance, in countries across the region, the weather dependent agriculture sector provides employment to a large section of the population. Yet, farmers typically do not have access to agro-weather advisories, bulletins or seasonal forecasts to support decision making at the farm level, thus impacting agricultural productivity. In Bhutan, home to one of the most dangerous airports in the world, aviation safety is compromised due to limited access to information about visibility and turbulence. Some of the most flood prone mega-cities are located in South Asia. Yet, urban infrastructure operators often do not receive early warnings about extreme events to efficiently manage urban drainage systems. Development of hydromet services can make a critical contribution in enhancing the performance of these weather dependent economic sectors and strengthening resilience of local communities. International experience suggests that for every dollar invested, the estimated benefits are in the range of two to ten US dollars.

### **Rationale for a Regional Program**

While strengthening hydro-meteorological services and associated institutions at the country level

is an essential first step, regional collaboration is crucial. First, weather patterns such as tropical cyclones, monsoons and severe thunderstorms are trans-boundary and best monitored, understood and predicted by taking a regional and global perspective. Second, there is a demand from each country in the region for regional information on weather and climate [such as tropical cyclone forecasts over the Bay of Bengal or regional drought or monsoon forecasts] and a demand from regional centers--for example, from the Regional Specialized Meteorology Center [RSMC] located at the Indian Meteorological Department [IMD]--for weather related information [such as for atmospheric observations over Bhutan or sea level information in the Bay of Bengal] to enable them to make improved forecasts of regional and sub-regional weather phenomenon [such as severe thunderstorms, storm surge forecasts] that can benefit all affected countries. Regional collaboration can help facilitate this exchange. Third, there are economies of scale in regional collaboration. For instance, at present, Bangladesh does not have the capacity to forecast extreme events such as cyclones, thunderstorms and flash floods with sufficient lead time and accuracy, or the capacity for long term climate monitoring and prediction. Regional collaboration can allow it to build on information products and forecasts already being produced by regional entities rather than investing in developing such capacity from the start. It can also foster learning and innovation in the development and delivery of weather, water and climate information based services.



## Objective

The main objective of this program is to strengthen institutions, facilitate knowledge exchange and enhance cooperation with respect to hydro-meteorological risks and hydromet services between South Asian countries. Specifically, activities carried out under this umbrella program aim to strengthen the capacity of participating countries and institutions to respond to weather and water related hazards and climate risks at the national and regional levels, by supporting improvements in monitoring, weather and flood forecasting, community based early warning systems and delivery of hydromet services to users and communities. The Program is embedded in the conceptual shift from management of water related disasters to management of risks and emphasizes strengthening both the supply and demand aspects of hydromet service delivery.

## Framework and Activities

The program has 2 pillars:

### Pillar 1: National level Preparedness, Resilience and Services

**Objective:** The main objective of this pillar is to strengthen the capacity of national/sub-basin institutions to manage hydro-meteorological hazards (e.g. flooding, drought, GLOFs etc.) and weather based information service delivery.

Activities under this pillar include

- USD 113 million IDA project on Bangladesh Weather and Climate Services Regional Project Board Approval: June 2016
- Bhutan Hydromet Services and Disaster Resilience Regional project USD 3.8 project. Approved in September 2016.
- Bank supported USD \$31 million investment project in Nepal (under implementation)
- Technical Assistance: Bhutan Roadmap for Modernization: Report published (Sept 2015), additional technical studies ongoing);
- Technical Assistance in Afghanistan to develop a Roadmap and design of Early Warning System (EWS) and strengthening hydromet services (ongoing).
- Building on technical studies under the ongoing USD 152 million IDA Climate Resilient Improvement (CRIP) Project in Sri Lanka, the IDA funded CRIP II (under preparation) is expected to support enhancement of hydromet services.
- USD 155 million Pakistan Hydromet and Climate Services Project IDA project (Under Preparation)

### Pillar 2: Regional Cooperation to Strengthen Resilience

**Objective:** The main objective of this pillar is to strengthen disaster preparedness and climate resilience through cross-border/regional dialogue, sharing lessons learnt and scaling up ongoing sub-regional collaborative activities. Activities under



this pillar include

- Regional Capacity Strengthening of Hydromet Institutions- in collaboration with IMD, India (under discussion).
- Sub-Regional Consultations
- Report on Transboundary Flood Early Warning Systems

## Strategic Vision/Approach

- Main focus is on strengthening community resilience, not data sharing. Data sharing is a tool for strengthening resilience, not the goal
- Focus is on strengthening information services and managing trans-boundary weather risks, not on trans-boundary water resources sharing
- Starting point is strengthening national level capacity; regional cooperation is important next step
- Understanding needs, incentives and building trust with counterparts in each country to set the stage for regional dialogue
- Engage not just with water agencies or disaster management agencies but broaden engagement to include national weather agencies and user sectors such as agriculture and aviation.

## Balancing Priorities

- *Partnership:* Managing the dialogue so that relevant stakeholders are briefed
- *Demand Driven:* Country Focus within Country Partnership Strategies of participating countries
- *Ownership:* All national level activities based on requests from participating countries

**Partners:** Key government partners include Departments of

Meteorology, Water Resources, Agriculture, Disaster Risk management, and other sector agencies; Regional and Global organizations such as the WMO, ICIMOD and research universities [e.g. Columbia University].

**Funding:** Regional Program is funded through IDA resources, Bank Budget and Trust Funds from multiple sources (Water Partnership Program, GFDRR, South Asia Water Initiative, Climate Investment Funds; EU Trust Funds, Japan-GFDRR Trust Funds). It includes fully IDA funded and also trust funded operations and activities.

**Implementation:** The South Asia Regional Hydromet Services and Resilience Program is being managed by the DRM and Climate team, South Asia, GSURR. Activities are closely coordinated with colleagues in the Water, Agriculture and Environment GPs, GFDRR and CCSA. For more information, please contact: Poonam Pillai at [ppillai@worldbank.org](mailto:ppillai@worldbank.org) or Erika Vargas at [evargas@worldbank.org](mailto:evargas@worldbank.org).

## South Asia: Program Brief