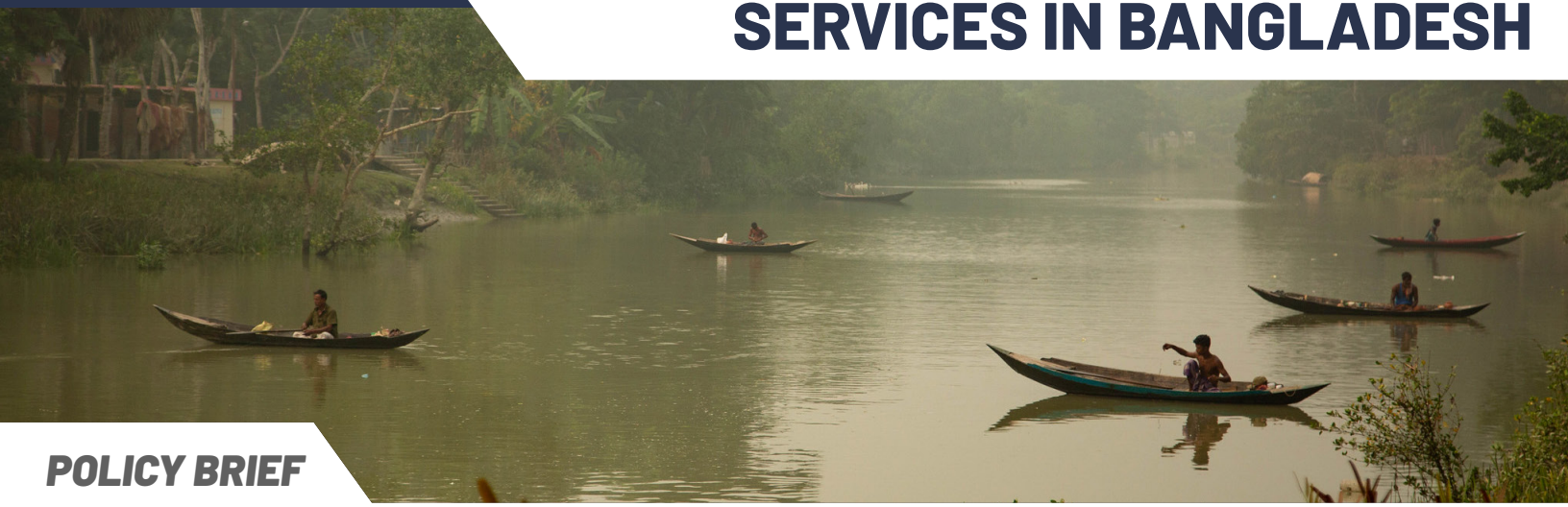
#ACToday

# POLICY PLANNING FOR CLIMATE SERVICES IN BANGLADESH



**POLICY BRIEF**

## SUMMARY


***While Bangladesh is recognized*** *as one of the most vulnerable countries to long-term climate change, it is also highly vulnerable to current climate variability on shorter timescales. Decision makers need climate information at timescales of weeks, seasons and years to adequately manage the range of risks that stem from this variability. However, the most visible–and often the most easily accessible–climate information typically focuses on long-term changes in climate averages, such as that found in reports by the Intergovernmental Panel on Climate Change (IPCC). In other words, there exists a mismatch between the timescale of climate information commonly prioritized and the timescales needed for most decision making.*

*Climate services can address this mismatch because they are designed to provide the best available science at decision-relevant scales and help decision makers understand, anticipate, and manage climate-related risks. In Bangladesh, there are efforts in some sectors and locations to adapt to short- and medium-term climate variability. However, there is no scope in current national policies in Bangladesh to more clearly identify the importance of climate services to bridge the gap between decision makers and information providers, and improve the integration of decision-relevant timescales of information in policies and practice.*

*Guided policy integration, through key national documents such as the 8th Five-Year Plan, could provide a valuable opportunity for Bangladesh to help sectors that make decisions at timescales of months to decades to increase climate resilience and improve preparedness for climate extremes. The recognition and integration of climate services into national planning documents would also align well with Bangladesh's demonstrated leadership on adaptation and loss and damage topics in the UNFCCC climate negotiation space.*


## KEY POINTS

- *Bangladesh is particularly vulnerable to natural climate variation at timescales of weeks to decades, which climate change may make worse;*
- *Most readily available climate information addresses end-of-century changes in average temperature and precipitation, but decision makers need information at shorter timescales;*
- *Climate services are not currently identified or integrated in major planning documents in Bangladesh;*
- *Providing targeted policy support for climate services efforts would help planning and decision making in certain key sectors, including agriculture, public health, energy, and disaster-risk reduction.*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## SCALES OF VULNERABILITY

Bangladesh is particularly vulnerable to floods, droughts, heatwaves, and other extremes. Floods are a concern because 88% of the country's land lies in coastal areas or flood plains. For example, major flooding events in 1988 caused a 45% reduction in agricultural production[1]. During heatwaves, deaths in Bangladesh increase by 20%[2]. Droughts impact Bangladesh both due to lack of rain (meteorological drought) and the impact of increased temperature on soil moisture (agricultural drought). In the 1990s, drought in the northwest part of the country led to shortages in rice production totaling 3.5 million tons.

Bangladesh's focus on improving climate resiliency—laid out in the Delta Plan 2100, the 7th 5-Year-Plan, and other guiding policy documents—is a welcome prioritization of long-term planning. This proactive stance reflects Bangladesh's strong leadership on tackling adaptation to climate change nationally and on the international scene, through its active participation in the UNFCCC negotiations. Bangladesh's efforts are part of a global movement toward prioritizing climate resilience in policy design, spurred by the increased availability of climate-change information.

Climate-change information that focuses on long-term trends and projections is readily available and easily accessed. But this information on its own is insufficient to support climate resiliency. Dozens of modelling centers around the world release updated versions of climate-change projections from their global climate models every few years. The climate projections are used to guide both mitigation plans and broad adaptation strategies. Reports by the IPCC, which provide a synthesis of the state of science, impacts, and policy, have become major reference documents and provide entry points to discussions on adaptation. However, while long-term information is needed, it cannot address the more immediate needs of planning, preparedness, and disaster risk reduction.

People and institutions need to respond to, or plan for, how climate may fluctuate across many timescales. For example, water managers may need to make major infrastructure decisions several decades in advance, but they must also manage short-term fluctuations in water demand and availability[3]. However, most public- and private-sector decisions span a few days to a few years. In the context of agriculture, for example, decisions are made on multiple timescales: decades (e.g., timber management or long-term policy planning); years (e.g., perennial crop establishment), seasons (e.g., crop selection); and weeks (e.g., fertilizer application or pest management)[4].

***The most readily-available climate information often addresses end-of-century changes in averages, while decision makers need information at shorter timescales.***

Weather and climate hazards already adversely impact vulnerable populations around the world. Society is not well-adapted to that variability. Existing patterns of climate variability, such as the El Niño phenomenon, affect regional climates and are potentially predictable. Consideration of only long-term trends may overlook these patterns, which will continue to dominate climate risk for some decades[5]. For example, we can look at historical rainfall trends in Bangladesh to illustrate the relative importance of climate variability over long-term change: over the past century, only about 5% of the total variation of June-July-August rainfall amounts can be explained by long-term changes in the climate, while nearly 80% are linked to year-to-year climate fluctuations[6]. Even for temperature, where the climate-change signal is more easily evident, the long-term trend only explains around 20% of the total observed variation. In other words, most of the dangerous climate extremes faced by Bangladeshis today are explained by year-to-year climate variations, which climate change may worsen in the future.

## THE ROLE OF CLIMATE SERVICES IN BRIDGING THE SCALE GAP

Climate services are a critical component of adaptation, because they address the need for better integration of short- and medium-term climate information into decision making.

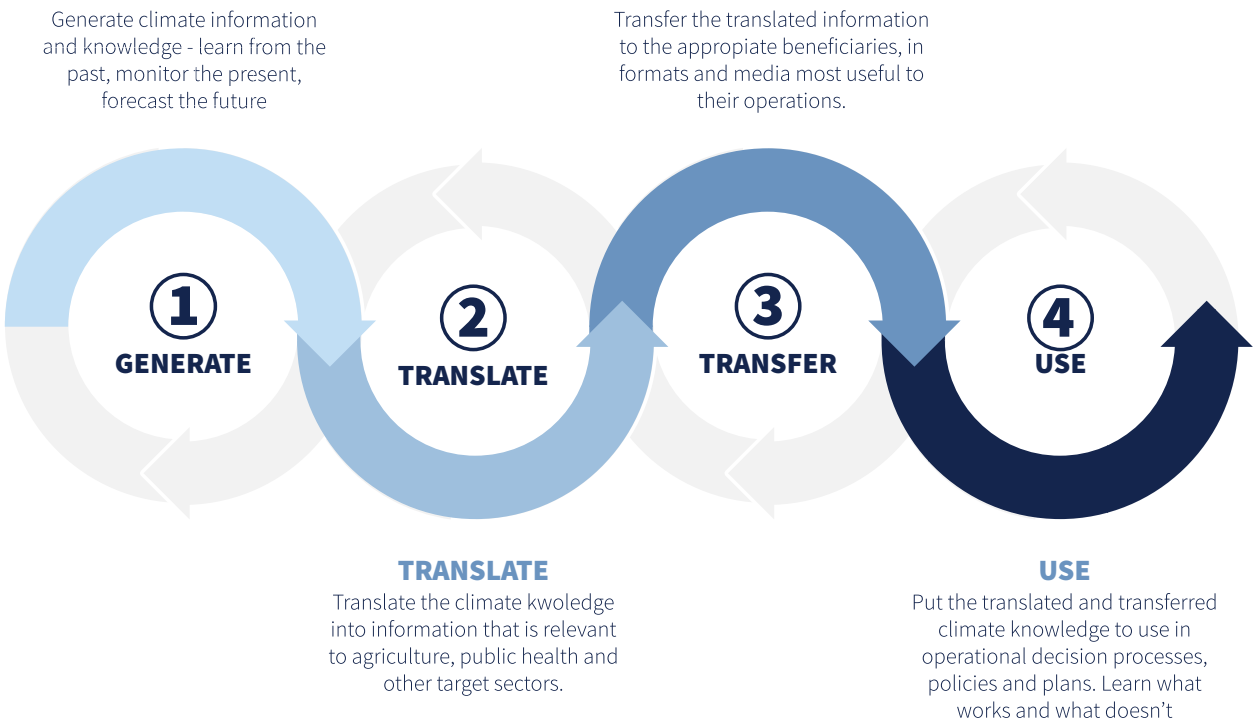
Climate services involve the generation of climate information, translation of that information to relevant sectors such as agriculture and public health, transfer of this knowledge to beneficiaries through suitable platforms, and the use of this information in decision-making processes, policies and plans (see Figure 1). A successful climate-services framework requires coordination between different organizations at each step of the process. For example, in the agricultural context, the Bangladesh Meteorological Department may *generate* real-time monitoring of the climate and near-term forecasts. The climate information may then be *translated* by the Department of Agricultural Extension into information about expected yields, crop types, and planting/harvesting dates. The interpreted information, in the form of outlooks or advisories, is *transferred* to those that need it, via radio, smart phones, and agricultural extension services. If the relevant information is received in a timely manner and from a trusted source, the information will be *used* by farmers and farmer organizations. In a well-functioning climate service, all four aspects (generation, translation, transfer, and use) are active and involve feedbacks that can iteratively improve the service.

Of course, the foundation of any climate-services infrastructure is the existence of a strong national meteorological service with a robust monitoring system and decades of historical high-quality observational data. In many countries, including Bangladesh, there can exist significant gaps in historical meteorological records. The Enhancing National Climate Services (ENACTS) initiative (launched in Bangladesh in June 2019) and other efforts that merge satellite and weather-station data are helping improve the capacity of national meteorological services to maintain and share quality-controlled data.[7]

The provision of climate services is a two-way process. In order to issue relevant weather and climate information, climate-service providers can contextualize climate uncertainty, tailor the data to relevant spatial and temporal scales, and/or improve monitoring and forecasting techniques. However, the actual usefulness of the information can only be assessed and measured through its integration by stakeholders, who are often not currently aware of the range of information available.

Bangladeshis are already adapting in many ways to the threats posed by climate variability and change.

Fig. 1 A graphical representation of the climate services process (graphic by IRI).



These include using crop varieties that are tolerant to specific risks (drought, flood, salinity), sorjan systems in frequently flooded areas, or faster-growing varieties of rice in anticipation of the cyclone season. The adoption of such practices by communities could be further enhanced by climate services. For climate hazards like floods, droughts, and heatwaves, an integrated climate-services strategy could help mitigate Bangladesh's vulnerability to climate variability. The need to consider shorter timescales is relevant in the case of many particular major threats to Bangladesh:

***Floods***. While end-of-century climate information may be useful to the development of long-term flood-control measures, information about the upcoming season could allow farmers to make better decisions about flood- and salinity-resistant crops, and allow the government to plan emergency service for potential evacuations, and/or disaster-relief preparations. Close coordination between flood-information providers and stakeholders has guided identification of the most relevant metrics of risk and the most useful information to reduce exposure to damages from flood variability. Current forecast-based financing efforts in Bangladesh use 5- and 10-day flood forecasts to trigger immediate flood anticipation measures. There are good examples of work using seasonal forecasts developed with disaster managers and electric-grid operators in China[8], and some research groups have indicated that seasonal flood predictions may be possible in Bangladesh[9].

***Droughts***. While long-term trends in drought occurrences may inform irrigation plans, seasonal information can allow farmers to adopt more efficient agriculture and water-management practices given the most likely seasonal climate outcome (e.g., relatively dry or wet year). Predictions of upcoming droughts may also lead farmers to adjust crop management practices, or accelerate the adoption of irrigation. Advance warning for droughts is usually possible in northwest Bangladesh during the rabi season, through seasonal prediction of rainfall and temperature[10].

***Heatwaves***. Heatwaves are weather phenomena, but their frequency in a particular year is also influenced by large-scale climate variability such as El Niño. Forecasts of interannual patterns in heatwaves could, for example, drive humanitarian funding mechanisms for preparedness[11] and provide extended response time to mobilize and deliver much needed aid. Prioritizing information of relevance to decision-makers may guide prediction efforts on changes in the timing of heatwaves within a year, changes in the frequency or likely duration of heatwaves, or on identifying the first and last heatwaves within a year[12].

## PREPARING FOR CLIMATE SERVICES IN BANGLADESH

There are some encouraging examples and emerging efforts for the development of climate services in Bangladesh. The country's cyclone preparedness program is well recognized around the world and has drastically reduced the number of casualties during natural disasters. In addition to direct disaster preparedness, early-warning systems for cyclones and heavy rain through text message alerts are used for management activities across sectors. More recently, several projects have emerged, including the WorldBank-funded Bangladesh Weather and Climate Services Regional Project[13] that led to the development by the Department of Agriculture Extensions (DAE) of Bangladesh Agro-Meteorological Information System (BAMIS) portal[14], to support the dissemination of agro-meteorological information services. Another recent initiative is the creation of the Bangladesh Academy for Climate Services (BACS) in 2018, which aims to facilitate a trans-sectoral dialogue on climate services between government and nongovernment stakeholders and develop capacity building programs. BACS was founded by the Bangladesh Meteorological Department (BMD), the International Center for Climate Change and Development (ICCCAD), the International Maize and Wheat Improvement Center (CIMMYT), and the International Research Institute for Climate and Society (IRI) at Columbia University. The most recent BACS training highlighted the significant interest of aquaculture stakeholders in improving integration of climate services in their sector.

However, a full realization of the potential for climate services requires a holistic policy approach. While the focus on climate change is present in national policies

and the need for seasonal forecasts for farmers has been emphasized, a clear focus on climate variability and climate services is not currently present in major planning documents such as the Delta 2100 plan or the 7th Five-Year Plan. More guided policy integration, based on the understanding of how climate on different timescales affects decision-making systems in different sectors, could vastly improve the efficacy of sector-specific adaptation strategies.

Building national climate services around sectoral priorities and well defined responsibilities defined in planning documents could help support inter-ministerial coordination around climate services. While the Delta Plan clearly identifies the importance of a coordinated ministerial approach, it also highlights its complexity. Similar to the several government institutions sharing different levels of responsibilities on water resources, authority over climate services spans across several ministries and departments. The Bangladesh Meteorological Department, under the Ministry of Defense, is accountable for the issuance of "accurate meteorological and climate forecasts on timely basis, combating and reducing meteorological disaster, protecting public life and property, proper use of climate resources and making meteorological services strong, consolidated, target-oriented and updated", as per the Meteorological Act[15]. BMD, the Department of Agriculture Extension (DAE) and the Water Development Board each lead efforts under the WorldBank-funded Bangladesh Weather and Climate Services Regional Project[16] to modernize the country's weather, water, and climate information systems. The Ministry of Environment, Forest and Climate Change is leading Bangladesh's climate policies, and the Ministry of Disaster Management and Relief is overseeing response to extreme events.

***Priorities for development of a well-functioning climate service should :***

1. Ensure the generation of good quality (short- and medium-term) climate information by supporting national meteorological services;
2. Identify sector-specific climate information needs in order to align the provision of climate information with decision-makers' contexts, and thereby improve the usefulness of nationally-produced climate information;
3. Develop explicit planning related to climate variability, in addition to that on climate change, and integrate that into multi-sectoral plans;
4. Consolidate access to climate knowledge and expertise, which is typically handled by national meteorological agencies;
5. Improve coordination between providers and users of climate services.

The current, ongoing development of the 8th Five-Year Plan in Bangladesh is a valuable opportunity for the country to institutionalize climate services into national planning processes. The recognition and integration of the importance of climate services in national plans would provide the institutional support required to develop needed climate services infrastructure, such as high-quality and easily usable national climate records and monitoring systems, developing better characterization of seasonal weather statistics with stakeholders, and developing subseasonal products. It would also improve awareness of decision makers in different sectors of the range of information available to them. On the global stage, it would further strengthen Bangladesh's leadership on climate-change adaptation and on addressing loss and damage. And most importantly, the development and national level support for climate services would go far in reducing and better managing the climate vulnerabilities that many millions of Bangladeshis currently face and will continue to face in the years and decades to come.

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