

TRANSFORMING WEATHER, WATER, AND CLIMATE SERVICES: SYNTHESIS REPORT

This synthesis report captures lessons from the Climate Investment Funds' (CIF) Pilot Program for Climate Resilience (PPCR) experience in investing in hydrological and meteorological ("hydromet") services. Specifically, it synthesizes key learnings and strategic insights that can be taken by national hydromet agencies, as well as national and international funding institutions, to develop, deliver, and strengthen hydromet and climate services. These lessons are derived from three PPCR case study countries, which were selected to reflect diversity in geographical settings, institutional frameworks, and sectoral foci for the climate services generated.

CONTEXT

Livelihoods and economies in lower- and middle-income countries are dependent on natural resources as well as vital infrastructure and services, many of which are particularly susceptible to adverse weather and climatic conditions. Weather and climate information, such as forecasts and Early Warning Systems, help reduce risk and maximize economic opportunities. Access to accurate and timely weather and climate information is therefore critical for these countries to pursue sustainable socio-economic, climate-resilient development in a changing climate.

However, access to reliable weather and climate information in many of these countries is severely undermined by inadequate and unevenly distributed monitoring and data processing infrastructure, and technical capacity. Investment in upgrading the essential hydromet infrastructure and strengthening the technical capacity of hydromet agencies is an imperative.

"Climate services" entail delivering useful and useable climate information to decision-makers to reduce climate risks. The generation of climate services involves several stages, as represented in the climate services value chain (see figure 1). Simply put, climate services entail i) quality data collection and management, ii) development of relevant and useful information, products, and services, iii) dissemination of these products and services in a timely and easily accessible manner, and iv) application to inform decision-making and ultimately support climate-resilient development outcomes. A range of actors are deeply engaged throughout these stages, including institutional actors, service providers, intermediaries, and end-users.

Recognizing the importance of climate information for adaptation and building climate resilience, the CIF's PPCR has been investing in strengthening hydromet services in several



QUICK FACTS

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RELEVANT CIF PROGRAM

Pilot Program for Climate Resilience (PPCR)

IMPLEMENTING AGENCY

The World Bank

RELEVANT COUNTRIES

Jamaica, Mozambique, and Nepal

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countries, including Jamaica, Mozambique, and Nepal. These PPCR projects (see box 1) provide an opportunity to synthesize experiences from different contexts and draw lessons across the climate services value chain on how investments at scale can be done effectively to foster climate resilience.

KEY FINDINGS

Findings are organized along the stages of the climate services value chain (figure 1):

- 1 Data collection and management, identified as a key priority in all three countries, has been improved.** Given these projects were launched when climate services were less well developed in the project countries, data gaps were addressed through the installation, upgrading, and modernization of surface hydromet stations and monitoring equipment, as relevant to each country's context.
- 2 New climate information, products, and services, targeted at a range of sectors and user needs, have been developed.** For example, these new climate services have supported longer-term sectoral planning in Jamaica; cyclone preparedness and response in Mozambique; and early warning for farmers during monsoon season in Nepal.
- 3 Dissemination of climate information, products, and services has been enhanced by harnessing a range of delivery means and intermediaries.** Examples of different delivery channels include traditional mass media (newspapers, radio, television), social media, websites, and specialized applications. In addition, intermediaries, such as non-governmental organizations (NGOs) and international organizations, have played a critical brokering role by translating technical concepts into more accessible terms, deploying community representatives to communicate information among local populations, and relaying feedback from users back to producers of this information, products, and services.
- 4 The new climate information, products, and services have informed climate-resilient decision-making.** For example, they have improved maritime navigation, aviation flight planning, agriculture planning, and disaster risk reduction, for both governmental authorities and local communities.
- 5 Strengthened partnerships and collaborations among the actors in the climate services value chain have resulted in better-quality climate information, products, and services.** This includes collaborations on improved data production, management, and sharing between producers of information (both within countries and regionally),

as well as between intermediary users (e.g. government ministries, agencies, and NGOs) and end-users. This has reduced the duplication of efforts and ensured the consistency of procedures.

- 6 Despite these improvements, the production and delivery of climate information, products, and services in these countries are still affected by insufficient resources and capacity.** Currently, there is still a lack of infrastructure and trained staff to process and analyze the increased supply of data generated from the improved monitoring equipment. Furthermore, there is a need to build the capacity of users to understand the value of climate information, get involved in the stewardship of stations, and provide constructive feedback to producers on services received.

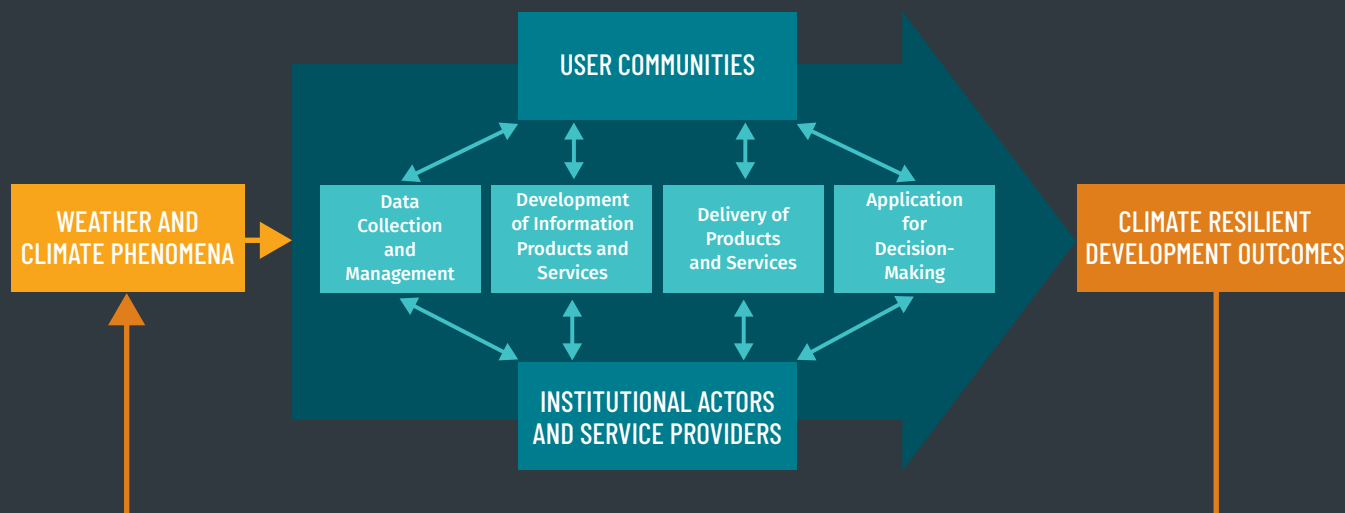
RECOMMENDATIONS

- Ensure high-quality data collection and management.** Adequate infrastructure, equipment, and staffing should be ensured to maintain standards and optimize efficiency in data collection and management. This includes the collection, quality control, storage, and analysis of climate data.
- Encourage active user engagement.** It is essential to pay increasing attention to assessing and meeting the needs of users. To ensure the development of fit-for-purpose climate information, products, and services, in terms of content, presentation format, and compatibility with user needs, two-way dialogues between producers and users should be conducted to inform the design of climate products and services. This includes periodic feedback loops to make course corrections and improve services.
- Forge partnerships along the climate services value chain.** Strategic partnerships with institutional actors and service providers can augment production and dissemination capacities. In addition, effective feedback mechanisms between providers and users from the start of the process can improve the design and usability of these products and services.
- Design to ensure long-term sustainability.** Ensuring the sustained provision of hydromet services along the climate services value chain will require addressing several cross-cutting issues, namely 1) establishing and institutionalizing a monitoring and evaluation system; 2) building human capacity at all stages of the climate services value chain; and 3) establishing a robust cost-recovery mechanism and sufficient budget to cover the costs of generating the needed information, products, and services.

BOX 1. SNAPSHOT OF PPCR'S CLIMATE SERVICES INITIATIVES IN JAMAICA, MOZAMBIQUE, AND NEPAL

	JAMAICA	MOZAMBIQUE	NEPAL
Project Name	Improving Climate Data and Information Management in Jamaica	Climate Resilience: Transforming Hydro-Meteorological Services in Mozambique	Building Resilience to Climate-Related Hazards in Nepal
Duration	Sep 2015 - Apr 2022	Sep 2013 - Dec 2019	Jun 2013 - Nov 2020
Objective	Improve the quality and use of climate-related data and information for effective planning and action at the local and national levels	Strengthen hydrological and meteorological information services' delivery of reliable and timely climate information to local communities, as well as support economic development	Enhance government capacity to mitigate climate-related hazards by improving the accuracy and timeliness of weather and flood forecasts and warnings for climate-vulnerable communities, as well as support the development of agricultural management information system services to help farmers mitigate climate-related production risks
Implementing Multilateral Development Bank (MDB)	World Bank	World Bank	World Bank
Target sector(s)	Agriculture, water, and health	Agriculture, transport, and aquaculture and fisheries	Agriculture and aviation

FIGURE 1. THE CLIMATE SERVICES VALUE CHAIN



The value chain highlights the different stages, as well as roles and responsibilities of the actors in the “hydromet ecosystem”, for producing, disseminating, and using climate information, products, and services that contribute to climate-resilient development outcomes.

Source: World Bank, 2021.