



# SPOTLIGHT SERIES: LEARNING AGENDA ON CLIMATE SERVICES

in Sub-Saharan Africa

Farmers inspect a rain gauge in Kaffrine Region, Senegal (Credit: Jim Hansen)

## THE CASE FOR AGRICULTURAL CLIMATE SERVICES IN AFRICA

*Ninety percent of the world’s farms are managed by small-scale farmers, feeding millions of people. Unfortunately, those farmers face significant impacts from climate variability and change. These impacts disrupt their ability to meet livelihoods and sustenance needs, and to produce enough food for a growing world. Climate services provide information about these impacts and aim to support agricultural decision-making for improved livelihoods, resilience, and food security.*

### WHAT ARE CLIMATE SERVICES?

Well-functioning climate services can play a critical role in managing the risks of a changing and variable climate, helping decision-makers understand, anticipate, and manage climate-related risks across a range of time scales, from days to decades. In Africa, climate services are increasingly seen as an important part of the climate adaptation toolkit and a crucial contribution to resilience, with the potential to enhance agriculture production, improve incomes, and reduce harvest loss. For farmers, climate services can support a range of farm- and household-level decisions about what and when to plant, cultivate, and harvest; how and when to sell or store crops; and whether to take on alternative livelihood activities. The wide range of climate-sensitive decisions that farmers and other agricultural decision-makers face creates the need for multifaceted climate services that provide diverse suites of information, cover different time scales, and are provided through multiple communication channels.

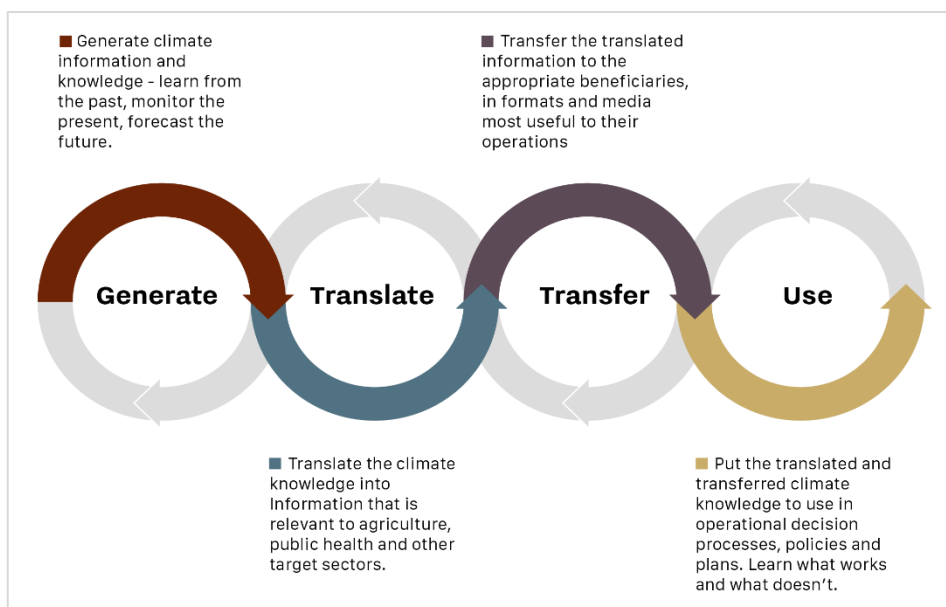
- TOPICS FEATURED IN THIS SPOTLIGHT SERIES:**
- 1) User-centered design
  - 2) Government capacity development
  - 3) Private sector solutions
  - 4) Gender inclusion
  - 5) Working at scale
  - 6) Impact evaluations

**DISCLAIMER:** This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of its authors and do not necessarily reflect the views of USAID or the United States government.



Agricultural climate services can also inform the larger investment decisions made by a range of actors (e.g., input distributors, commodity markets, rural financial services) who make up the agricultural value chain. On a continent where climate-related risks are a major obstacle to food security and prosperity, climate services are expected to improve the capacity of Africa's agricultural actors to manage those risks — and, in so doing, to transform investment in this important sector. For example, input distributors may be able to better predict seasonal demand for particular seed types, while insurance companies can develop more accurate weather index insurance products.

Climate services involve the production, translation, transfer, and use of climate knowledge and information in decision making, policy, and planning ([Climate Services Partnership](#)). Climate services ensure that the best available climate information is effectively communicated with agriculture, water, health, and other sectoral actors, to develop and evaluate adaptation strategies. Climate information is often packaged with weather and hydrological information to provide easily accessible, timely, and decision-relevant scientific information that can help society cope with current climate variability and limit the economic and social damage caused by climate-related disasters.



Source: [https://iri.columbia.edu/wp-content/uploads/2018/06/CWP\\_MAP\\_STATS-02.png](https://iri.columbia.edu/wp-content/uploads/2018/06/CWP_MAP_STATS-02.png)

## KNOWLEDGE GAPS

### Who provides climate services in Africa?

National Meteorological and Hydrological Services (NMHS), with technical support from several regional climate centers, are the primary source of climate information in Africa. Unfortunately, much of the climate information infrastructure is in disrepair, partly because many African NMHSs lack reliable funding to build and modernize observation infrastructure, operate and maintain data collection systems, build staff capacity, and purchase the information technology and communications services required for data transmission and analysis (see Spotlight 2).

Yet climate services involve more than just generating climate information, and therefore NMHSs are part of the larger community of public, private, academic, and development organizations that work together to translate weather and climate information into advisories, deliver services to users, and help users to understand and act on the information. While private sector involvement in climate services is still nascent in Africa, private-sector companies already contribute to climate services in many countries, from observations to forecasts to delivery of products to users (Spotlight 3).

## Who uses agricultural climate services in Africa?

Climate services support a wide range of decision-makers, from international humanitarian organizations, to ministries of agriculture, to individual farmers. Use of weather and climate information in Africa varies by region, livelihood strategy, demographic characteristics (gender, education, and socioeconomic status), and information type (see Spotlight 4). Differences in use among countries and regions appears to reflect differing capacity and effectiveness of NMHSs, and differing degrees of development of national agricultural extension systems and other delivery channels. Within a given country, farmers' capacity to access and act on weather and climate information varies by agricultural system, infrastructure development, wealth and gender. A review of evaluations of access and use by farmers shows that a majority of farmers who access climate services act on the information.

However, pastoralists report using climate information less frequently and in fewer ways as compared to crop farmers. Several studies have also explored understanding of climate forecasts, showing that users are able to recognize and adapt to the uncertainty implicit in such forecasts.

Furthermore, there is growing recognition that climate services are more effective when users are not treated as passive recipients of information but engaged as active participants in the co-production of services (Spotlight 1).

### PERSPECTIVE FROM THE FIELD

"TODAY, WITH CLIMATE INFORMATION, WE AFFIRM AN AGRICULTURE BASED ON GOOD CROP PLANNING AND CULTIVATION CHOICES IN THE FACE OF CLIMATE CHANGE. CLIMATE INFORMATION IS AT THE CORE OF OUR ACTIVITIES."

- OUSMANE THIAL, a rain gauge manager in the village of Daga Birame, Senegal, and a participant in the multi-stakeholder mapping workshops as part of piloting the Participatory Climate Information Services Systems Development Methodology (Spotlight 1)

## What do we know about the benefits of using climate services?

Climate-related risk is a major obstacle to food security and prosperity across Africa. The coping strategies that vulnerable households employ to cope with extreme events, such as droughts and floods, can erode their capacity to build a better life by depleting their productive assets. When faced with uncertain climatic conditions, smallholder farmers reduce investment in production technologies, and employ precautionary strategies to protect themselves against catastrophic loss in bad years but sacrificing production and income in most years. The impact of unanticipated extreme events on farmers' assets, combined with the impact of climate uncertainty on farmer decision-making and investment (including by rural finance markets and supply chains) contribute to poverty traps that lock many farmers in climate-vulnerable livelihoods. The cost of climatic uncertainty suggests that any information that reduces that uncertainty would have considerable potential to improve farmers' wellbeing.

While there is good reason to expect that use of climate services improves agricultural production and farmers' livelihoods, measuring those benefits is challenging (See Spotlight 6). A limited but growing set of evaluation studies based on survey data, participatory approaches, willingness-to-pay and economic modeling still only provide an incomplete picture of the benefits farmers experience. Estimates of the impact of climate services are generally positive, but vary considerably with context, agricultural system and evaluation method used.

## SPOTLIGHT SERIES ON CLIMATE SERVICES FOR AGRICULTURE IN AFRICA

To start to fill knowledge gaps, the Learning Agenda for Climate Services in Sub-Saharan Africa produced a series of briefs on a range of topics relevant to policy and programming. This “spotlight series” synthesizes new and existing evidence, outlines recommendations about good policy and practice related to climate services, and offers insights on further research needed to foster continued learning and improvement.

### THE CLIMATE SERVICES SPOTLIGHT SERIES COVER THE FOLLOWING POLICY AND PROGRAMMING TOPICS:

- *SPOTLIGHT 1 – USERS AT THE CENTER OF DESIGN: A FOCUS ON SMALL-HOLDER FARMERS*
- *SPOTLIGHT 2 – STRENGTHENING GOVERNMENT AGENCIES TO ENHANCE CLIMATE SERVICES*
- *SPOTLIGHT 3 – PRIVATE SECTOR SOLUTIONS FOR CLIMATE SERVICES*
- *SPOTLIGHT 4 – BENEFITING ALL USERS: GENDER EQUALITY AND INCLUSION*
- *SPOTLIGHT 5 – MAKING CLIMATE SERVICES WORK FOR AFRICA’S FARMERS AT SCALE*
- *SPOTLIGHT 6 – ADVANCING IMPACT EVALUATIONS OF AGRICULTURAL CLIMATE SERVICES IN AFRICA*

*The Learning Agenda on Climate Services in sub-Saharan Africa generates new information, evidence, and learning on the effective and sustainable production, delivery, and use of climate information to improve rural agricultural livelihood decision-making and outcomes. More information can be found at: [climatelinks.org/projects/learningagendaonclimateservices](https://climatelinks.org/projects/learningagendaonclimateservices).*