



Policy Brief

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Climate Science, Information and Services in Africa: Status, Gaps and Needs

Building resilience against the negative impacts of climate and maximising the benefits from favourable conditions will require designing and implementing effective climate risk management strategies. These strategies must address vulnerability to current climate variability as well as the risks induced by climate change. Resilience can be built when climate considerations are mainstreamed into development planning and practice. Climate information and services are critical inputs for effective climate risk management. Science-informed policy, planning, and practice will ensure that development is more resilient and less vulnerable to the negative impacts of climate, thus fostering sustainable development. However, the use of climate information and science in Africa has been limited. The main obstacles include lack of appropriate climate information and services, lack of awareness about the existence of specific climate information, lack of understanding and capacity to use climate information, reluctance to incorporate climate concerns in management practices and poor understanding of scientific uncertainties.

Key messages

- Current monitoring systems are not adequate for supporting growth and sustainable development.
- Climate services in Africa are not well developed.
- Scientific understanding of the African climate system is limited, and the level of understanding varies significantly from region to region.
- The ACPC can play a role as a knowledge broker at the science-development-policy interface.

Climate data, information and services

National Meteorological and Hydrological Services (NMHSs) in Africa provide a range of information and services. Regional and sub-regional entities also provide some climate information and services. These include:

- Current and historical data of different climate variables (rainfall, temperature, humidity, wind speed and direction, sunshine hours, etc.);
- Analysed information (minimum, maximum, and mean of climate variables, dry/wet spells, frequency of extreme events, etc., in tabular and map formats);

- Forecasts at different time scales (daily, 10-day intervals, monthly, and seasonal);
- Products targeting specific users (10-day and monthly climate reports and outlooks, agrometeorological, hydrometeorological, and health bulletins, etc.); and
- Other specific and/or specialised information and products in response to such demands as drought early warning, flood monitoring, desert locust monitoring, etc.

The quantity and quality of information and services offered by the NMHSs vary significantly across Africa depending on the capacity of the individual NMHS. Some of the problems that need addressing are that:

- The current monitoring system is not sufficient to support growth and sustainable development because it is oriented more toward meteorology than climate and more toward global interests and the needs of sectoral managers than to the needs of local communities;
- In too many countries, the NMHSs are not sufficiently engaged with the national development agenda, and thus services for rural poor populations are limited;
- Among NMHSs, there is a lack of knowledge and understanding of user needs and how development decisions are made, so the capacity to tailor information is low;
- Services based on climate scenarios are not yet well developed in NMHSs, and the capacity to develop and provide climate information at decadal to multi-decadal timescales is not yet available in most. Locally downscaled climate projections are not easily available or accessible because extensive research and development is required to deliver such advanced services.

Climate science in Africa

Climate science deals with: (1) developments in the scientific understanding of past and present climate, climate variability, climate predictability and climate change, including feedback from climate impacts; (2) modelling and projection of global and regional climate and sea level change; (3) observations of climate, including past climates, and assessment of trends and anomalies; and (4) gaps and uncertainties in current knowledge. Scientific understanding of the climate system is vital to improve our ability to predict climate and to help users incorporate its inherent uncertainty into their decision-making. However, scientific understanding of the African climate system is limited, and the level of understanding varies significantly from region to region. Although it is improving, our understanding of the drivers of African climate and its complex interactions is still poor. This lack of knowledge limits our ability to analyse and understand African climate variability, detect and attribute climate change, and predict the climate with an appreciable degree of accuracy. This in turn limits our ability to manage climate variability and adapt to climate change.

Some of the problems associated with climate science in Africa include the following:

- A chronic lack of investment in postgraduate education and research infrastructure for climate science;
- Lack of availability and/or accessibility of reliable historical climate data;
- Lack of human resources and computational capacity to expand the available databases (in particular, running dynamical downscaling models requires considerable computational capacity, and there are currently few computers available on the continent powerful enough to run these models);

- Lack of a coordinated programme of research on climate and climate change supported by governments or other bodies. (Research findings and other activities tend to appear through largely disconnected projects and often with different approaches or scenarios);

The Role of ACPC

One of the major obstacles to integrating climate issues into development activities in Africa has been the lack of appropriate institutions to facilitate incorporation of scientific findings into policy and ensure that this knowledge is effectively shared with policy-makers in a timely and relevant manner. There is wide consensus on the need for intermediary organisations that serve as knowledge brokers at the science-development-policy interface and capacity builders for researchers and policy-makers. The African Climate Policy Centre (ACPC) is an appropriate organisation to undertake this role at the continental level. Among other things, it is responsible for the operations of the ClimDev-Africa Programme, and it has a role to play in facilitating the science-policy and science-practice interfaces by building the capacities of both researchers and policy-makers. It is well placed to play a bridging role between the research, policy and practice communities, and it can advocate and support the development of a solid foundation of applied climate science for assessments of climate vulnerability, risks and impacts, and for analysis and formulation of policy options to better integrate climate concerns into development practices.

Some actions that the ACPC can undertake include the following:

- Facilitate the strengthening of climate services in Africa in collaboration with

regional organisations (e.g., ACMAD, ICPAC, SADC-CSC, AGRHYMET) and international institutions (e.g. WMO, GCOS);

- Promote and support the creation of a regional centre or network of centres of excellence for climate science and applications;
- Ensure Africa fully participates in and derives maximum benefit from the Global Framework for Climate Services.

Some key steps

Some key steps that could be taken by African governments and relevant organisations to address these challenges include:

- Investing in improving the capacities and competencies of NMHSs, national climate training and research institutes, regional climate centres and other climate-related organisations to develop adequate and reliable science-based climate information;
- Promoting and supporting the mainstreaming of climate issues into development policy, planning, and practice;
- Facilitating the establishment of an African climate services user interface platform to build trust between providers and users of climate information; and
- Building the capacity of decision makers and scientists to use climate science and information for decision-making.

Abbreviations and acronyms

ACMAD African Centre of Meteorological Application for Development

ACPC African Climate Policy Centre, UNECA

AGRHYMET A contraction of AGRometeorology, HYdrology, METeorology, AGRHYMET operates in the West African Sahel region

CLIMDEV-AFRICA Climate for Development in Africa Programme

GCOS

Global Climate Observing System

ICPAC

IGAD Climate Prediction and Applications Centre

IGAD

Intergovernmental Authority on Development

NMHS

National Meteorological and Hydrological Services

SADC-CS

Southern African Development Community-Climate Services Centre

WMO

World Meteorological Organisation

ClimDev-Africa



For more information on ACPC and the entire ClimDev-Africa Programme, visit the ClimDev-Africa website at <http://www.climdev-africa.org>

This document is an output from research carried out by the African Climate Policy Centre (ACPC) in collaboration with selected experts and editors. ACPC is part of the Climate for Development (ClimDev-Africa Programme, a joint initiative of the African Union Commission (AUC); the United Nations Economic Commission for Africa (ECA); and the African Development Bank (AfDB). The programme is supported by several development agencies and governments. However, the views expressed and information contained in the brief are not necessarily those of or endorsed by these partner institutions which can accept no responsibility for such views or information placed on them.

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