

Africa Regional Centres of Excellence - ArcX

Climate Change Resilience

The Climate Change Resilience component of the Africa Regional Centres of Excellence (ArcX) Programme aims to enhance climate change and disaster resilience throughout sub-Saharan Africa by strengthening regional scientific, technical, and institutional capacities. It emphasises improving the availability of climate data, tailored forecasting, innovation, and supporting the utilisation of climate information in decision-making. Led by the European Commission's Directorate-General for International Partnerships (DG INTPA), ArcX – Climate Change Resilience component is implemented by the European Centre for Medium-Range Weather Forecasts (ECMWF) in partnership with the European Commission's Joint Research Centre (JRC). The initiative is further supported by key collaborators, including the World Meteorological Organization (WMO), the African Union Commission (AUC), EUMETSAT and a broad network of African and European partners.

Background

Sub-Saharan Africa is increasingly exposed to climate variability with significant impacts on food security, water resources, health, energy systems and disaster risk. While regional and national institutions play a critical role in monitoring, forecasting, and service delivery, challenges remain in data availability, digital infrastructure, advanced regional and national modelling capacity, and operational uptake of innovative forecasting approaches.

To strengthen the scientific, technical and innovation capacities of Regional Centres of Excellence (RCoEs), the ArcX Climate Change Resilience component builds on existing African and European initiatives, as well as the expertise and contributions of the WMO-designated Regional Climate Centres (RCCs).



ClimSA, Joint Research Centre (JRC) activities, alongside data, services and innovations developed through Destination Earth (DestinE), Copernicus services and contributions from ECMWF and its Member States, provide key inputs.

These RCoEs will serve as regional hubs for climate data, AI-enabled forecasting, training, innovation and policy-relevant climate services, while fostering collaboration and knowledge exchange among African and European partners.

Objectives

1. Strengthen climate change and disaster resilience in sub-Saharan Africa by enhancing regional scientific, technical and institutional capacities.
2. Establish and support a network of up to six Regional Centres of Excellence for climate change resilience.
3. Improve the availability, quality and accessibility of climate observation data, including data prepared for AI and machine-learning applications.
4. Enhance sub-seasonal to seasonal forecasting capabilities through advanced modelling approaches and innovative, portable forecasting systems.
5. Promote peer-to-peer knowledge exchange between African institutions, European partners and Regional Centres of Excellence.
6. Strengthen human capacity through targeted training activities and programmes, as well as competitive innovation challenges.
7. Foster sustainable regional ownership, coordination and long-term institutional development through a tiered and evolving RCoE system.
8. Use enhanced capabilities to tailor input to Climate Statements and Regional Climate Outlook Forums (RCOFs) to regional needs.

Areas of Impact

- Climate change adaptation and resilience
- Disaster risk reduction and early warning systems
- Climate data management and digital infrastructure
- Sub-seasonal to seasonal climate forecasting
- Innovation and application of AI and machine learning in climate services
- Capacity development and skills enhancement
- Evidence-based policy support and decision-making



Target group

Regional Centres of Excellence and African regional climate institutions, National Meteorological and Hydrological Services (NMHS), climate practitioners, forecasters and data specialists, climate scientists and AI practitioners, policymakers and planners at regional and continental level, universities, research institutions and innovation centres, private sector actors using climate information and services.

Final beneficiaries

Populations across sub-Saharan Africa exposed to climate-related risks, communities dependent on climate-sensitive sectors such as agriculture, water, health and energy, disaster risk management authorities and humanitarian actors, African institutions benefiting from improved climate services and early warning capabilities, young professionals and women engaged in climate science, digital innovation and forecasting.

Organisational set-up

Implementation period: 48 months (2026-2029)

Approach:

- Establishment of a tiered network of Regional Centres of Excellence with differentiated capacities;
- Periodic review of institutional capacities and tier allocation;
- Combination of grants, peer-to-peer partnerships, fellowships, training activities and innovation challenges;
- Fostering knowledge transfer, sustainable partnerships and ownership
- Close coordination with African and European institutions, including the Joint Research Centre and the World Meteorological Organisation.

Lead Organisation: European Centre for Medium-Range Weather Forecasts (ECMWF)

More information: www.arcx.green | ecmwf.int



This factsheet will be updated regularly as new information becomes available.