



**ICPAC**

## **IGAD CLIMATE PREDICTION AND APPLICATIONS CENTRE**

### **KEY MILESTONES**

## Foreword

### Past successes for future progress

We are pleased to share with you this achievements report that captures the progress made by the Inter-Governmental Authority on Development (IGAD) Climate Prediction and Applications Centre (ICPAC) and its Programmes since its integration as an IGAD specialized institution in 2007.

The IGAD Strategy brought ICPAC as its specialized Institution into existence with the mandate that falls predominantly under its Pillar 1 that addresses Agriculture, Natural Resources and Environment issues.

Over the past 20 years, ICPAC and its predecessor, Drought Monitoring Centre Nairobi, has greatly contributed to humankind's ability to understand and predict climate through the regional coordination of climate research, modeling and prediction.

ICPAC has facilitated 49 Climate Outlook Forums since its inception to inform the region in advance of the season on how climate will look like in the next three months (season) for decision making and in building resilience.

There has been an unprecedented demand by many socio-economic sectors for relevant climate information and ICPAC is taking the lead in helping the regional climate user's community create a scientific foundation for meeting this demand.

The evolutionary process that ICPAC has undergone since 2007 has seen the organization improve its capacity to

provide information on climate services through its participating National Meteorological and Hydrological Services (NMHSs). Information has been provided on climate change, climate change adaptation and national mitigation strategies to the member states in the IGAD Region and Africa as a whole.

Over this period, ICPAC has grown fivefold in size from a project with a staff strength of 10 in 2008 to currently over 50 (core IGAD and project staff) with a similar increase in terms of funding from Member States and Partners.

To date, ICPAC and partners have successfully implemented a number of projects among them the construction of a modern complex in a 10 acres piece of land with a 13 rooms Guest House, laboratories, a library and Conference Hall with sitting capacity for 250 participants.

ICPAC is a World Meteorological Organization (WMO) Regional Climate Centre (WMO-RCC) of excellence. It is a member of AUC/NEPAD Network for Water Centres of Excellence and has an Observer Status with the UNFCCC.

I am therefore happy to present this report, and it is my sincere hope that you will enjoy reading the accomplishments so far as we strive to continue delivering better climate services for societal resilience in the GHA region.



Dr Guleid Artan  
ICPAC Director

## ACRONYMS AND ABBREVIATIONS

AMESD	African Monitoring of Environment for Sustainable Development
CCA	Climate Change Adaptation
CCAFS	Climate Change, Agriculture and Food Security
COFs	Climate Outlook Forums
DRM	Disaster Risk Management
EAC	East African Community
ECMWF	European Centre for Medium Range Forecasts
ENACTS	Enhancing National Climate Services
ENSO	El Niño Southern Oscillation
EU	European Union
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
ERA	European Centre for Medium Range Forecasts (ECMWF) Re-Analysis
FAO	Food and Agriculture Organization
FSFM	Flexible Seasonal Forecast Map room
FSNWG	Food Security and Nutrition Working Group
GEOGLAM	Group on Earth Observations Global Agricultural Monitoring Initiative
GFCs	Global Framework for Climate Services
GHACOF	Greater Horn of Africa Climate Outlook Forum
GMES	Global Monitoring for the Environment and Security
GOS	Global Observing System
ICPAC	Inter-Governmental Authority on Development (IGAD) Climate Prediction and Applications Centre
IGAD	Intergovernmental Authority on Development
IPSAS	International Public Sector Accounting Standards
IREWS	Integrated Regional Early Warning System
IRI	International Research Institute
MESA	Monitoring of the Environment for Security in Africa
MSG	Meteosat Second Generation
NDVI	Normalized Difference Vegetation Index (NDVI)
NMHSs	National Meteorological and Hydrological Services
PREPARED	Planning for Resilience in East Africa through Policy, Adaptation, Research and Economic Development
PDNA	Post Disaster Needs Assessment
RAU	Resilience Analysis Unit
RCC	Regional Climate Centre
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WRF	Weather Research and Forecast
WMO	World Metrological Organization



## 1. BACKGROUND

ICPAC was established in 1989 as Drought Monitoring Centre in Nairobi, in response to the devastating drought of 1984. In 2003, the institution was renamed IGAD Climate Prediction and Applications Centre (ICPAC) in order to better reflect all its mandates, missions and objectives within the IGAD system. In March 2007, the summit of IGAD Heads of States and Governments approved a protocol providing full integration of ICPAC into the IGAD system as a specialized institution with a distinct mandate to support the formulation of development policy by providing relevant timely, actionable climate information with some budget allocation for operations. To date, ICPAC is a specialized institution of IGAD with a mission to provide climate information, prediction and timely early warning for applications in support of environmental management, disaster risk reduction and sustainable development in the Horn of Africa. Its member states are Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, South Sudan and Uganda – as well as Burundi, Rwanda and Tanzania.

ICPAC is a specialized Institution of IGAD with the strategic objective to contribute towards enhancing the livelihoods of the people of the Greater Horn of Africa region so as to mitigate climate-related risks and disasters. ICPAC's activities focus mainly on climate information, prediction and early warning applications in support of environmental management, disaster risk reduction for sustainable development in the region.

The IGAD Strategy brought ICPAC into existence with the mandate that falls predominantly under its Pillar 1 that addresses Agriculture, Natural Resources and Environment issues.

ICPAC plays an important role in providing the IGAD sub-region with weather and climate advisories and more importantly, timely early warnings on possible extreme weather and climate events.

### VISION

To be a world-class centre of excellence in climate services for sustainable development in the Greater Horn of Africa

### MISSION

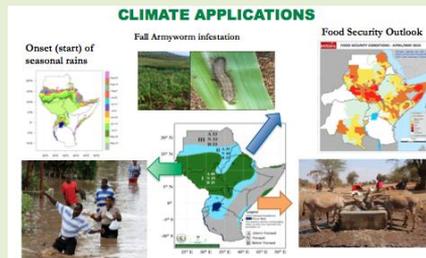
Foster climate services and knowledge to enhance community resilience for prosperity in the Greater Horn of Africa

## Programme overview

### Computer Services, Geospatial Technology, Data Management and Climatology



### Climate Monitoring and Prediction

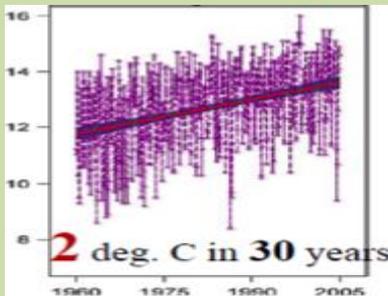


### Disaster Risk Management



### Climate Applications: Climate Information Services (CIS) for Improved Livelihood and Decision Making

... the region getting hotter ...



### Capacity Building



### Finance and Administration



### Cross-cutting interventions: Resource Mobilization, Research and Development, Gender and Youth



## 2. Programme Overview

### 1.1 Computer Services, Geospatial Technology, Data Management and Climatology

The key services under this programme include providing computing services, data management, and updating of IGAD region climatological statistics. Climate statistics at various time and space scales compared with past events have been routinely provided in order to quantify climate extremes observed at specific locations and time. Some of the products such as ten-day, monthly and seasonal rainfall amounts severity indices and minimum and maximum temperature anomalies have been given in a timely manner to the users for various applications.

**1.1.1 Supercomputing facilities** - ICPAC evolved from the use of one mini-super computer to an established cluster with 32 nodes for running in real time Weather Research and Forecast (WRF) Regional Climate Model at dekadal, monthly and seasonal timescales. In addition a WRF hindcast driven by 6 hourly simulation data from the National Centre for Environment Prediction (NCEP) Climate Forecast System (CFS) reanalysis for 1981-2010 has been conducted. Availability of an established cluster has greatly enabled the centre to provide dynamical and statistical forecasts for rainfall characteristics including the start, progression and end of rains, dry and wet instances (spells) within the season, as well as length of growing period for agricultural support decisions and applications in the region.

**1.1.2 Geospatial and remote sensing** - ICPAC has supported the use of spatially derived data in its efforts to resolve different environmental and security issues in the region. Since 2007, ICPAC has been implementing several successive projects related to geospatial and remote sensing putting emphasis on the accessibility and availability of a wide range of data and information. These projects include Africa Monitoring of the Environment for Sustainable Development (AMESD); Monitoring of the Environment and Security in Africa (MESA); Global Monitoring for the Environment and Security (GMES).

These projects have increased the capacity in information management, decision-making and planning of regional and national institutions mandated for environment, climate, food security and related responsibilities by enhancing access to and exploitation of relevant earth observation applications in the IGAD region.

Some of the main achievements are:

**Data Access:** Improved access by IGAD users to existing basic Earth Observation, field and ancillary data.

- 27 satellite receiving and processing stations were installed in member states for meteorological and environmental applications. These stations are very instrumental in accessing different EO data and alleviating demand for on the Internet, which is mostly weak or inaccessible in most African countries.

- Geo-portals were developed holding all thematic data and products.
- Databases of EO data were kept up to date and made available to member states and other relevant institutions.

**Thematic Services:** IGAD operational information services are established to improve decision-making processes in the fields of environmental management

Use of Earth Observation (EO) data have been proven essential for environmental monitoring and is therefore one of the best tools for assessing environmental challenges the region is facing. The geo-information services developed from EO data as a result of these projects are: -

- Land degradation mitigation and assessment
- Natural habitat conservation assessment
- Forest monitoring and assessment
- Agriculture monitoring and assessment

**Policy Frameworks:** Political and policy development frameworks have been strengthened to ensure an active and sustainable participation of IGAD member states in regional and global environmental surveillance initiatives.

In line with IGAD's mandate to foster regional cooperation, a regional framework to guide and promote collaborative efforts to enhance uptake and use of Earth observation for environmental monitoring in the region was ensured. Below are the activities and achievements

- National assessments of the current Status of Policies on Use of Earth Observation Data in the IGAD Region in 2012.
- Regional Earth Observation policy assessment for environmental monitoring in the IGAD region was developed in 2012 and updated and adopted by member states technical experts in April 2017 in Kigali. The assessment focused on assessing how EO is addressed in existing policy texts and regulatory frameworks
- Earth Observation Policy for environmental monitoring developed and adopted by member states technical experts in April 2017 in Kigali. The policy supports and complements existing national, regional and international policy frameworks in the areas of EO, space and environmental monitoring notably, the African Space Policy and Strategy of 2016 and IGAD policies and strategies and more importantly the IGAD Regional Environment Policy (2012), the IGAD Natural Resources and Environment Protection Strategy and Implementation Plan (2016) and the IGAD Biodiversity Policy (2016).

### 1.1.3 Climate Data and Management

Long-term, high-quality and reliable climate instrumental time series are key information required in undertaking robust and consistent assessments in order to better understand, detect, predict and respond to regional climate variability and change.

**Accessible gridded database:** -ICPAC's climate data has been transformed from sparse point stations into gridded 5km resolution for GHA domain with some country's missing data gaps reconstructed using satellite rainfall estimates. Based on this

achievement, ICPAC has built a tool that offers easy data access, statistical climate analysis, climate monitoring, generating maps and download data on the domain of interest in different data formats.

This developed high quality, accessible gridded climate data set that has widespread application in monitoring climate variability and change, supporting decisions around the risk management of natural hazards and disaster risk reduction, and supporting future climate predictions and projections.

The datasets are routinely used to monitor and provide regional climate information on 10-day, monthly and seasonal timescales. ICPAC website now hosts two libraries populated with climate datasets and accessible to users of climate information.

Users not only have access to data libraries but can also manipulate climate change data, projection scenarios and products that have been integrated into ICPAC Data Library.

## 1.2 Climate Monitoring, Diagnostics and Prediction

This sector is responsible for monitoring the evolution of weather and climate, their drivers, generating forecast information and issuing early warning in the Greater Horn of Africa (GHA) region.

**1.2.1 Climate Outlook Forums (COFS):** -ICPAC has facilitated 49 Climate Outlook Forums since its inception to inform the region in advance on how the next three months (season) climate will look like for decision support in building resilience. The forums have over time brought together hundreds of national, regional and global stakeholders in order to build resilience to climate shocks as well as take advantage of favourable seasonal weather conditions. This interaction with stakeholders has led to improvement of ICPAC products driven by ‘user needs’.

**1.2.2 Network with other global climate centres:** -ICPAC has established networks with other advanced global climate centres, and currently downscales 5 Global Model Outputs for the region. In this regard, operational forecasts are downscaled and updated 1 to 2 months in advance on a rolling basis for IGAD member States that have no such capabilities.

**1.2.3 Real time monitoring of severe weather:** -ICPAC acquired access to satellite products provided by European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) under the Global Observing System (GOS) of the World Metrological Organization (WMO). These products that are updated on near-real time basis provide ICPAC with the capacity to monitor and predict the evolution of severe weather such as tropical cyclones over the region.

## 1.3 Disaster Risk Management

The program aims at strengthening IGAD's coordination, planning and policy advisory capacity for Disaster Risk Management (DRM) and Climate Change Adaptation (CCA), while fostering a strong regional collaboration and knowledge exchange.

**1.3.1 Institutionalization of the Disaster Risk Management:** - Disaster Risk Management institutionalized at IGAD secretariat moved to ICPAC to synergize and strengthen collaboration with Climate Change Adaptation capacities. DRM has also been institutionalized at national level and now all IGAD Member States have DRM institutions and national platforms.

**1.3.2 DRM Policy, Strategy and Institutional Support:** - The DRM program advocated and supported IGAD member States develop their DRM Policy/Strategy at national level. Since its establishment in 2004, the DRM programme has contributed towards a paradigm shift from disaster management to disaster risk management as witnessed by recent evolutions in policies, strategies and legislations governing the institutional arrangement and systems in Member States.

**1.3.3 Contribution to DRM Development and Networking:** - The IGAD DRM program is an active participant and contributor to the Global and Continental Disaster risk Reduction Frameworks, these include:

- The Hyogo Framework for Action (2005-2015) and the Current Sendai Framework for Disaster Risk Reduction (2015-2030). The program voices the regional priorities to the global agenda.
- Several global platforms on disaster risk management (e.g., at the 2 yearly UNISDR fora, World Reconstruction Conferences (WB initiative in collaboration with EU), ACP-EU DRM programme development events for Africa, etc.,).
- to the design and development of the Africa Program of Action (PoA) for the implementation is Sendai Framework under the leadership of the African Union Commission and contributes towards its implementation by integrating the Continental DRM agenda in the Regional Agenda DRM agenda and through its active participation in the Africa Regional Platform, the Africa DRR Working Group & the Programme Steering Committee of the ACP-AU DRR Project, respectively
- Contributes to defining project priorities of the multi-annual ACP-EU DRR Programme

**1.3.4 Capacity Development and Technical backstopping support:** - The DRM program been undertaking several capacity building activities to member states which were aimed at enhancing the capacity of the DRM institutions and staffs in the member countries, some of which were based on outcome of DRM Research commissioned by the DRM programme. Amongst others, these included:

- National DRM training for DRM institutions,
- Regional Community Based DRM training
- Regional Training on Training in Early Warning Systems and Disaster Contingency Planning; and Indigenous Early warning Systems

- Training for the Media and the Members of Parliament in DRM and CCA
- Mainstreaming of DRM in sectoral institutions,
- National Post-Disaster Needs Assessment and Disaster Recovery Frameworks (PDNA-DRF)
- A regional technical training on Hazard assessment, monitoring and early warning delivered for technical staffs of the DRM institutions from member states/countries
- Supported the development of national disaster risk management policy of Djibouti and Sudan
- Exposure visits to TAC Members to Asia
- DRM institutions participate in the regional climate outlook forums which serve as a platform to discuss and set a plan for mitigation and preparedness based on the climate outlooks given, etc.,

As a result, hundreds of experts have benefited from the multi-disciplinary trainings that have been undertaken by the program. So-doing, IGAD DRM contributed to the emergence of a community of practice in DRM among DRM practitioners in DRM institutions, the academia, the civil society and the media.

#### **1.3.4 Other Institutional and Organic Milestones**

**IGAD Hazard Atlas:** - The '*IGAD Regional Hazard Maps and Atlas*' was first developed and endorsed by the IGAD DRM Ministerial Committee, in April 2013 in Khartoum, Sudan. It has been improved and transformed to '*IGAD Climate Risk and Food Security Atlas*' that maps past climate trends, identifying geographic patterns of hazards, vulnerability, and aligning with trends in food security. The later give details of food security and climate risk analyses at regional, national and sub-national scales for ICPAC member States.

**IGAD Disaster Response Fund:** - Also endorsed by the IGAD DRM Ministerial Committee in 2013, in Khartoum, the IDRF (IGAD Disaster Response Fund) aims to provide a quick-response preliminary disaster response fund to member states that declare that the given disaster is beyond their capacity to handle. IGAD decided to establish a disaster response budget in line with IGAD's establishment agreement and the successive calls by IGAD Council of Ministers (Jan. 2002, Oct. 2003, March 2006, June 2008 and Sept 2011). The IDRF establishment document sets out the policy, modus operandi and resource mobilisation strategy of the Fund. The IDRF needs to be endorsed by the IGAD Ministerial Council to become operational, which involves contribution from member states through regular IGAD budget.

### **1.4 Climate Applications**

The Greater Horn of Africa Climate Outlook Forums (GHACOFs) produce consensus-based, user-relevant climate outlook products in real time in order to reduce climate-related risks and support sustainable development for the coming season in sectors of critical socioeconomic significance for the region.

Through partnerships with climate-sensitive sectors in the region such as agriculture, water and energy resources, health, livestock, etc., the application of climate information to support decision-making in climate adaptation and risk management has been greatly promoted in the region. ICPAC has engaged different stakeholders in order to provide user-targeted climate services to support specific applications.

#### **1.4.1 Agriculture and Food Security**

ICPAC closely collaborates with relevant agricultural institutions to provide climate information and early warning in support of societal livelihoods in the region and the IGAD Agriculture program. This is attained through translating the probable climate outlooks in the region as predicted by ICPAC's climate outlook forum into a regional food security outlook in response to food security risk through development of climate related crop monitor for agricultural areas and quantified skills of the food security outlook.

**Crop Monitor:** - ICPAC and partners have developed and operationalized a regional crop monitor portal for early warning. This portal has become a platform for sharing information on current crop conditions, which are important inputs to early warning systems for agriculture in the region. Through information shared on crop conditions and market information, ICPAC publishes the Easter Africa Crop Monitoring seasonal bulletin.

**Maproom:** - ICPAC and partners have developed a regional suite of climate information provided via an easy to use Maproom (collection of maps and other figures that monitor climate and societal conditions at present and in the recent past) interface and linked to a powerful Data Library. The interface provides tailored, location-specific agro-meteorological information that is of great relevance to agricultural user communities across the Greater Horn of Africa.

**Food Security and Nutritional Working Group (FSNWG):** - ICPAC together with FAO co-chairs monthly regional Food Security and Nutritional Working Group (FSNWG) that develops regular monthly consensus food security updates.

#### **1.4.2 Water and Energy**

The seasonal forecast information has greatly improved water management for agriculture and helps water managers in their critical decisions concerning flooding, Hydroelectric Power production and domestic uses.

**Flood forecasting:** - ICPAC has established a Live-Web map service for flood forecasting known as "Flood-FINDER". The Flood-FINDER system is a modelling chain that includes meteorological, hydrological and hydraulic models that are accurately linked to enable the production of warnings and forecast flooding scenarios up to three weeks in advance. Together with this is an automated flood forecasting for 10 days using MIKE-Hydro and GEOSFM models covering all the major river basins in the GHA region.

With these flood-forecasting capabilities, an online flood hazard risk map with 90-meter resolution and a 25-year return period has been established for the region.

#### **1.4.3 Health**

**Climate Information for Health Decision Making:** - Information on seasonal variation in temperatures, changes in precipitation patterns, increases in the frequency and intensity of some extreme weather events accruing from forecasts has been effectively used in health decision support.

**ICPAC Climate and Health Working Group:** - This was established to address crosscutting issues related to climate and health. The purpose of the Working Group is to provide a forum for communication, coordination, and education across agencies and with stakeholders.

#### **1.4.4 Livestock**

The milestone in application of climate information for Livestock sector includes carrying out advocacy programmes for member States to include climate and early warning information in national and regional livestock management policies, collaboration with partners in forage prediction by use of Normalized Difference Vegetation Index (NDVI) data.

ICPAC has embarked on Rangeland Early Warning System including analysis of land cover and rainfall dynamics on rangelands as well as rangeland drought prediction.

### **1.5 Capacity Building**

ICPAC strategy on capacity development focuses on promoting and strengthening capacity building of Member States to deal with climate change, empowering relevant capacity building institutions, regional networks and facilitating sharing of experiences, information and best practices, enhancing communication, education and awareness-raising at all levels in relation to climate change impacts.

It also facilitates the development of tools, methods and technologies in support of climate prediction and applications, supporting and strengthening participatory and integrated approaches in mainstreaming of climate change impacts into planning and decision making processes.

**1.5.1 Knowledge base enhancement:** - National Met scientists and sectoral users from IGAD member States have been enabled to enhance knowledge base in access, development, and use of climate information together with services in planning for resilient development strategies and plans.

**1.5.2 Climate services:** - Science-based climate information services and predictions have been provided to assist decision-makers to manage the risks and opportunities of climate variability and change and to adapt to climate change.

**1.5.3 Awareness creation:** - Heightened awareness to climate end users, policy and decision makers from GHA member countries on how to access meteorological data, climate information and make use of them for decision-making at national and sub-national levels.

**1.5.4 Climate Information providers and users engagement:** - Strengthened engagement between climate information providers and users, to co-produce user oriented meteorological and climate products.

**1.5.5 Geospatial and remote sensing:** - An adequate technical capacity level of IGAD stakeholders has been enhanced. Capacity building aims at ensuring that the human and institutional capacities in accessing, processing and utilizing earth observation products and services are improved and information is communicated in the right channels to inform decision making throughout IGAD region.

The trainings focused on:

- Maintenance and administration of the infrastructure in place (satellite receiving stations)
- Earth observation data types, reception, processing and analysis
- Products and service production and dissemination
- Decision makers awareness trainings on the use of EO data and products
- Communication of EO data to different end users

**1.5.6 GHACOFs users' specific workshops:** - There are break-out sessions for users' specific workshops during GHACOF dedicated to sectoral analysis, implication and mitigation strategies of key sectors such as agriculture, livestock and food security sectors to improve understanding of the impacts of climate variability in the next coming season in the region. The strategies include identification of appropriate management options to capitalize on opportunities and threats based on advance information about the forthcoming season.

## 1.6 Knowledge Management, Documentation, Research and Development

Knowledge Management (KM) has increasingly become a key component of improving ICPAC's organisational effectiveness. Knowledge Management is the process of achieving organisational goals through a strategy-driven motivation and facilitation of knowledge workers to develop, enhance and use their capability to interpret data and information through a process of giving meaning to data and information.

### 1.8.2 Research and Development

Encourage collaborative research work with local universities, research centers and other international research institutions in the area of applied research.

ICPAC has hosted several Masters (MSc) and Doctor of Philosophy (PhD) students working on new knowledge and innovations for improved climate prediction, and early warning applications.

Several publications, journals and reports ensuing from these research studies have been archived but are accessible through ICPAC webpage (<http://rcc.icpac.net/index.php/r-d/peer-reviewed-publications/climate-modelling-and-seasonal-forecast>).

Pilot Application Projects reports and good practices relevant to specific socio-economic sectors in the region have been documented in readiness for replication to other areas.

Other documentation such as the Regional Climate Outlook Forum, assessments, and Atlases among others have been archived in the form of reports.

The main publications for ICPAC have been the Dekadal bulletin (10 day), monthly and seasonal bulletins including the GHACOF early bulletin at the end of every climate outlook forum. The GHACOF bulletin is distinct because it provides a sector analysis and mitigation strategies for the seasonal outlook with the targeted audience being users, policy makers and partners.

ICPAC utilizes media as avenues for dissemination of knowledge/information i.e. mainly the website; social media, Facebook, Twitter, YouTube; the newsletter, brochures and fliers. ICPAC utilized these avenues to share products thus enabling wide dissemination of its activities to a diverse audience.

## 1.7 Finance and Administration

ICPAC Administration and Finance Function has adopted and implemented Finance and Accounting management system based on the IGAD system that establishes an effective, efficient and transparent management structure. ICPAC works in compliance with IGAD Financial and Administration procedures manual, Internal Control policies manual, Procurement and Grants manual as well as sub delegation manual.

IGAD is in the process of adopting International Public Sector Accounting Standards (IPSAS) and ICPAC is playing key roles in the realization of this new financial reporting structure through participation in the IGAD/IPSAS Steering Committee as well as in the various Working Groups.

**ICPAC Staffing:** - Over the last 10 years ICPAC has grown fivefold in size from a staff strength of 10 in 2008 to now over 50 with a similar increase in terms of funding from Member States and Partners.

**ICPAC Headquarters:** - ICPAC constructed a new headquarters in NgongTown, 25km from Nairobi City Centre. The Complex has modern offices, laboratories, a library and conference Hall with sitting capacity for 250 participants as well as a 13 roomed Guest House, spread over 10 acres of land donated by the Kenya Government. The construction of the New ICPAC Headquarters was funded by the African Development Bank (AfDB) at a cost of approximately USD 4 million including furniture.

**Finance mobilization:** - ICPAC has built a strong, sustainable financial resource base and mobilization through project preparation and proposal writing.

## 1.8 Projects

### 1.8.1 Projects

**Strengthening the Capacity of IGAD in Building Resilience in the Horn of Africa:** - The UNDP-IGAD Resilience Partnership initiative that strengthened the capacity of IGAD

in Building Resilience in the Horn of Africa. The key areas of success have been the establishment of IGAD Integrated Regional Early Warning System (IREWS); support to Resilience Analysis Unit (RAU) operation and Strengthening of Public Private Partnership in Climate Risk Financing; Knowledge Management; Strengthening Coordination for preparedness and early action; Peace-building and Conflict Resolution.

Planning for Resilience in East Africa through Policy Adaptation, Research and Economic Development (PREPARED) strengthened the resiliency and sustainability of East African economies, transboundary fresh water ecosystems and communities. The key areas of achievement of the project have been in the areas of capacity building, generation of climate change adaptation decision support tools and strengthening partnership and collaboration among the PREPARED partners in implementing the program.

### **Planned Activities**

1. Through WISER Support to ICPAC Project (W2SIP) which is funded by the UK government, ICPAC will improve its computational capacity with a purchase of 32 nodes supercomputing cluster. This additional resource will allow ICPAC to conduct dynamical ensemble forecasting and development of user-targeted products to improve climate services in the region.
2. In collaboration with W2SIP partners (CARE International, UK Met Office, International Research Institute for Climate and Society, IRI of USA, North Carolina University), ICPAC will employ the concept of co-production in all its activities through engagement of Climate Information users and stakeholders in the region to improve the effective utilization and improvement of Climate Information Services. The project will also help ICPAC develop a well-tested unified forecasting system through the assessment of the skill of GPC models in forecasting seasonal and sub-seasonal weather and climate
3. Through UK-funded African Science for Weather Information and Forecasting Techniques (SWIFT) Project, ICPAC will conduct operational research to improve ICPAC's sub-seasonal to seasonal forecasting capability, identify and document the performances of several dynamical models their skill in forecasting weather and climate events including high impact severe weather and extreme climate.
4. Through the implementation of the African SWIFT and RCMRD support to ICPAC projects, ICPAC will perform operational research to customize the Weather Research and Forecasting (WRF) regional model and identify the best physics parameterization schemes applicable for the Greater Horn of Africa.

5. Through the implementation of the African SWIFT and WISER projects, ICPAC will document and share best practices in forecasting and model assessment with met services for regional improvement of forecast skills and enhance the overall GHACOF process
6. Undertake the establishment and implementation of climate thresholds to trigger action and advisories to different applications, in order to support user forecast-based actions.