Consultative Workshop on the Development and Implementation of the National Framework for Climate Services in IGAD and SADC Countries: Challenges and Opportunities

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Workshop Report

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AICCRA
Accelerating the Impact of CGIAR Climate Research for Africa

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Background

There is a growing demand to improve our understanding of climate, climate predictions and use of climate information to better serve society's needs. The foremost approach to address these needs would require the development of climate service capabilities. A climate service is here considered to be the provision of climate information in such a way to assist decision-making by individuals and organizations. The service component involves appropriate engagement, an effective access mechanism and responsiveness to user-needs. Consequently, climate information services (CIS) provide people and organizations with reliable, timely, user-friendly, and tailored climate-related information to reduce climate-related risks and losses, and thereby enhance benefits. Hence, factoring CIS into policy, planning and practices are crucial for Africa to achieve its aspirational goals for enhanced competitiveness, reduced poverty and sustainable socio-economic growth. Moreover, advanced knowledge of climate information coupled with appropriate advisory services enhance the capacity of the African society to adapt to climate variability and climate change, and therefore improve their capacity to manage climate-related risks. However, the relevance of weather, water and climate information to the beneficiaries and end-users are largely dependent on a number of factors including the ability of institutions and scientists to provide fit-for-purpose information, packaged in formats that can be integrated easily into decision-making processes, and applications.

The Global Framework of Climate Services (GFCS) was developed to enhance resilience in social, economic, and environmental systems to climate variability and change at national and regional levels. Conceived as the national declinations of the GFCS, the National Framework for Weather, Water and Climate Services (NFWWCS), which is used interchangeably in this concept note with the National Framework for Climate Services (NFCS) was introduced at the national level to serve as the national mechanisms to bridge the gap between the climate information being developed by scientists and service providers and the practical needs of users, from global to community levels. For such a Framework to be attained at the national level, however, national stakeholders must drive the process and its design in a manner that addresses national needs and priorities in weather, water and climate service provision and use. It is expected that the framework once developed will be coordinated by national government and key national organisations to ensure that all participants can express their needs and requirements for successfully implementing climate services that serve the population of the country.

The mainstreaming of weather, water and climate information and services in climate change adaptation initiatives will increase the ability of regional and national early warning networks to anticipate and respond to extreme weather and climate events, strengthening both national and sub-national capacities to complement other disaster preparedness systems that will ultimately help the most vulnerable populations. Supporting decision-makers, legislators, and civil society organizations with weather-, water- and climate-related information is critical to advance weather-, water- and climate-proof development.

Africa has greater intention to improve CIS, especially with the recent adoption of the Integrated African Strategy on Meteorology by the African Ministerial Conference on Meteorology (AMCOMET). Although weather, water and climate information are not adequately available in the continent, and even where available, it is not used effectively in decision-making process. Moreover, the existing donor-funded programmes on weather, water and climate service delivery are piecemeal, short-lived and not well targeted. Hence, an innovative CIS initiative that provides science-informed solutions to the prevailing climate science and policy challenges are vital for the

effective implementation of the Paris Agreement, Agenda 2063 and 2030 Agenda in Africa. Countries in Africa should, therefore, invest in robust weather, water and climate information and services delivery system for the effective implementation of Nationally Determined Contributions (NDCs) and establish associated mechanisms through the global climate governance processes.

African countries have taken tangible steps to enhance the resilience of the most vulnerable communities to the adverse impacts of climate variability and change, through promoting the use of climate services at all levels particularly in the priority areas of agriculture and food security, disaster risk reduction, energy, health, and water resource management. Moreover, the World Meteorological Organization (WMO) through the support of GFCS, is encouraging several African countries to develop the NFWWCS/NFCS. The framework is to coordinate, facilitate and strengthen collaboration among national institutions and other key stakeholders, to improve the co-production, tailoring, delivery, and use of science-based climate services. The NFWWCS/NFCS are multi-stakeholder user interface platforms enabling the development and delivery of climate services at country level. This key GFCS mechanism focuses on improving co-production, tailoring, delivery and use of science-based climate predictions and services geared towards the five GFCS priority areas: agriculture and food security, disaster risk reduction, energy, health, and water.

The NFWWCS/NFCS complement National Adaptation Plans (NAPs) by providing weather, water and climate services that help assess climate vulnerabilities; identify adaptation options; improve the understanding of climate and its impacts; and enhance the adaptation planning and implementing capacity of climate-sensitive sectors. NFWWCSs/NFCSs also support the Paris Agreement, which aims to strengthen the global response to threat of climate change, by helping Parties to the Agreement prepare, maintain, and communicate their Nationally Determined Contributions (NDCs). However, this should be done through permanent and sustained dialogue to identify needs and priorities for developing climate information and products tailored to the decision-making needs and contexts of different users in the country. Also, to encourage member states to step up their implementation of NFWWCS/NFCS and sharing of information about project activities at various level. However, African countries (IGAD and SADC member states) are found in different status level in terms of NFWWCS/NFCS development and implementation This prompts the needs for a platform for experience sharing to capitalize on good practices and innovative ideas in the formulation and implementation of NFWWCS/NFCS by recognizing the strength and weakness presented.

Purpose and Objectives

The purpose of this consultative workshop was to provide a platform for various stakeholders (including WMO Permanent representatives and experts) from the ESA countries to enhance their capabilities in shaping their NFWWCS/NFCS for effective delivery of weather, water and climate services and reduce climate vulnerabilities in the sub-regions.

The specific objectives of the workshop were to:

- Exchange knowledge, share lessons, best practices, and experiences in the development of the respective NFWWCS/NFCS.
- Identify challenges, a strengths and weaknesses encountered in the formulation/implementation of NFWWCS/NFCS.
- Identify the pragmatic approaches and solutions for better NFWWCS/NFCS implementation at country level.
- Identify the key enabling conditions existing at national and regional levels.
- Identify the capacity building needs of each country for effective NFWWCS/NFCS implementation.
- Identify concrete measures and next steps to be taken/developed at the country level.

Expected outputs of the workshop

Expected outputs included:

- Sharing and compilation of knowledge, lessons, best practices, and experiences from ESA countries.
- Establishment of a platform that facilitates better partnerships and networking between NMHSs, private partners, academia, and other relevant organisations.
- Effective dissemination of weather, water, and climate information and in a manner that lends itself more easily for practical action.

Organization of the workshop

The workshop started with short presentations by each of the NMHS Permanent Representative in attendance, followed by a reflection on the procedures, lessons, challenges and opportunities experienced at national level. The short presentations were followed by brainstorming, formulation and agreement on good practices identified, including the roadmap for establishing active platform for better knowledge sharing among countries. Further, small group work and discussions were employed to address key issues and questions stated under specific objectives to deepen interactive ways of sharing information and brainstorming on

Figure 1: Zanzibar Workshop participants, December 2021

Session 1: Opening Session and setting the stage

1.1 The role of RCCs in NFCS Development and Implementation: ICPAC Director Key Address:

"On behalf of the IGAD Climate Prediction and Applications Centre (ICPAC) and my own behalf, I would like to thank the organizers of the workshop for inviting me to attend the workshop and to grace the opening ceremony".

As you are aware, eastern Africa region like the rest of Africa has a highly variable climate and is prone to climate extremes such as droughts and floods that exacerbate food and water insecurity. Economies and livelihoods of much of African countries are dependent on rain-fed agriculture that is highly sensitive to climate variability and change. Rainfall plays a significant role in determining agricultural production and thus the economic and social well-being of rural communities. Climate change is likely to result in an increase in the frequency and intensity of extreme climate events, leading to more intensive flash floods and more recurrent drought and water scarcity. Climatic risks impacting the livelihoods and food security situation of pastoralists and agro-pastoralists are also increasingly associated with resource-based conflicts in some countries such as Kenya, Somalia, Ethiopia, Uganda and South Sudan just to name a few. This could lead to a further deterioration in vulnerability of the affected populations.

Whether an extreme event results in extreme impacts on humans and social systems depends on the degree of exposure and vulnerability to that extreme event (IPCC, 2012). In this regard, Africa is considered to have greater impact than other regions globally, because of its higher vulnerability and lower adaptive capacity. Adaptation activities and decisions must be informed by climate information availed well in advance with indication of specific implications to be addressed. Climate change could exacerbate the existing threats to food security and livelihoods through a combination of factors such as increasing magnitude of climate-related hazards, diminishing agricultural yields, impact on rangeland and reduced livestock production in vulnerable regions, human health and sanitation risks, water scarcity, crop and animal diseases, increase in conflicts over scarce resources and a wide range of adverse impacts on regional and national economic welfare. Reliable and detailed climate information, including current and future assessments of climate variability and change, is essential in designing effective strategies for management risks and adaptation to climate variability and change. Such information critically depends on the availability of good quality climate observations with sufficient spatial coverage over an extended period, on the adequacy of climate predictions to depict current and future climate, and on a thorough understanding and appreciation of the uncertainties and constraints associated with the use of data as well as global and regional models.

The organization of this workshop is very timely as ICPAC is in the process of implementing the Global Framework for Climate Services (GFCS) in the IGAD region, mainly through the development of the Regional Framework for Climate Services (RFCS) and the associated regional user interface platforms as well as assisting at least two member states to develop National Frameworks for Climate Services (NFCS) and associated national user interface platforms. It should be noted that ICPAC has already received from the Consultant the draft NFCS strategic plan and costed action plan for Kenya that is currently under review, and it is likely to be validated early next year. We intend to use the experience we have gained in Kenya to assist Uganda to develop their National Framework for Climate Services and costed action plan from early 2022.

Regional Climate Centres (RCCs) play key roles in the implementation of GFCS at regional level. RCCs can support national institutions with technical capabilities to develop effective climate services (WMO 2018). RCCs are well positioned to engage users and stakeholders through regional consultations to identify needs; bring together providers, researchers, and users of climate services for effective development of tailored products and services that address user needs; develop capacity to generate and use climate services; and mobilize resources to enhance member states capacities and development of improved climate products. For example, with initial funding by FCDO under the WISER Programme, ICPAC supports 11 NMHSs in the GHA to access and use a High Computing Platform (HPC) Cluster resources and tools to develop their national and sub-national climate information and products.

The main purpose of this consultative workshop is to provide a platform for various stakeholders from the Eastern and Southern African countries to enhance their capabilities in shaping NFCS for effective delivery of weather, water and climate services and reduce climate vulnerabilities in the sub-regions. In conclusion, I would like to assure you that ICPAC is interested in the outcomes of this workshop as they will make the implementation of our pending activities much easier".

1.2 Policy Enabling Policy Environment for NFCS in Africa: UNECA-ACPC

"It is my pleasure to be here today to represent Africa Climate Policy Center, a strong partner of CCAFS for the development and implementation of the National Framework for Climate Services. Climate Change and its impacts on livelihood has been the critical theme for the last many decades and more so when the humanity, especially on the developed world side, seems not to care so much about these negative impacts. To address the negative impact of climate change, frameworks such as NFCS and the GFCS have been put in place.

Provision and utilization of climate services are critical for sustainable socio-economic development of any country, particularly in the context of a changing climate. Many African countries experience impacts of climate variability and change which include severe floods, frequent and prolonged droughts, uneven precipitation, sea level rise, declining crop yields, increased incidences of crop pests and diseases, loss of livestock, decreased water availability as well as increase in vector and water-borne diseases. In recent decades, recurrent of climate related hazards with associated extreme disaster events have posed grave risks to development and have negative impacts on economy, environment, infrastructure, health, and livelihoods.

It is our common responsibility to respond to these challenges which implies taking effective steps to build climate sensitive enabling environment and policies to minimize risks and costs as well as to seize opportunities. It is critical for African countries to create policy enabling environment for NFCS, as climate change affects almost all development sectors. Being informed about climate change is already 50% of success. It also requires climate-informed decision-making at all levels. These initiatives call for efficient climate actions through inter alia, establishment of an NFCS. The framework enhances the provision and use of climate services in planning and decision making to reduce threats of climate variability and change to the achievement of development goals.
The framework provides a unique opportunity to enhance resilience to climate variability and change through promoting use of climate services, providing evidence for the impacts of climate variability and change and bridge the gap between producer of climate services and users.
The framework also provides an opportunity for involvement of users in establishing needs, develop appropriate products, identify capacity development requirements, and influence direction of observational investments and research efforts. This creates the notion of ownership and inclusive participation. The framework will help the implementation of the Paris Agreement through the review and implementation of the NDCs which are now key development conduits taking in consideration climate factors.

This will greatly contribute among others to improve agricultural productivity, increased yields, food security, and enhance preparedness and reduce disaster risks.
As we have seen the locust invasion in East Africa in the last two years in Kenya, Somalia, Ethiopia and elsewhere, weather and climate patterns and behaviour do not recognize institutional regulations or administrative boundaries, therefore what we need is partnership, enhanced cooperation among stakeholders to effectively meet society needs for weather and climate services.

What are the current Challenges?

- The policy and legislative environment in many countries do not provide sufficient incentives for the uptake and use of CIS. This could be attributed to weak institutional and human capacities as well as limited and poor-quality climate data and information.
- There are numerous fragmented initiatives which seek to support the production and uptake of CIS in Africa. However, many of these initiatives are small-scale and therefore unable to influence the policy and legislative agenda in Africa because of weak or complete absence of coordination mechanisms. At the same time there are global mechanisms that seek to promote the coordination of CIS in Africa, such as GFCS. There is therefore a need to promote GFCS implementation at continental scale.
- Existing partnerships for coordinated approaches for CIS delivery at the continental level - such as ClimDev-Africa, PACJA, CDKN and others – need to be strengthened and legitimized.
- Strategies for brokering and managing the information and knowledge produced from the numerous initiatives and interventions do not yet exist to enhance the impact of CIS for end-users as well as to fully engage with CSOs, private sector, as well as NHMS and various government ministries.
- There is a weak collaborative research platform in the continent for co-designing, co-resourcing and co-producing user-driven climate information and services.

The above are some of the challenges we must try to resolve at national, regional, and continental levels. I recognize and salute here the great effort of AICCRA-ESA (CCAFS) to partner with ICPAC, UNECA/ACPC, WMO, AICCRA ESA and national governments and other entities. That is the way to go. We need all hands-on deck approach including increased political support and institutional cooperation to make this work: I mean, the urgent need for enhanced weather and climate services delivery to end users, improved access to weather and climate services for agriculture (crop production and animal husbandry), health, and water resources sectors; and disaster risk reduction, etc. Successful implementations of the NFCS will enhance provision of accurate, reliable, and timely weather and climate related products and information in a cost-effective and sustainable manner. At ACPC we remain committed to contribute to the partnership for a successful NFCS and GFCS".

Climate Service: Is the provision of one or more climate products or advice in such a way as to assist decision-making by individuals or organizations. Global Framework for Climate Services: is the global partnership of governments and organizations that produce and use climate information and services.

National Climate Services: Are those services that, through a collaborative network of entities under a National Framework for Climate Services (NFCS), create and provide authoritative, credible, usable, and dependable science-based climate information and advice that is of value to government institutions, socio-economic sectors and the broader community.

National Framework for Climate Services (NFCS): Is a mechanism to enhance provision of science-based climate information and products and application for climate risk management

Global Framework for Climate Services (GFCS): Aims at enabling better management of the risks of climate variability and change. It enhances adaptive capacity to climate change, through the

development and incorporation of science-based climate information and prediction into planning, policy, and practice on the global, regional, and national scale. This is what Africa needs.

1.3 Role of international development partners in supporting NFCS co-developments and implementation in Africa: NORAD representative –

Partnership and cooperation for climate service delivery is essential. The types of partnerships are indicated in Figure 2, and the stakeholders in Figure 3.

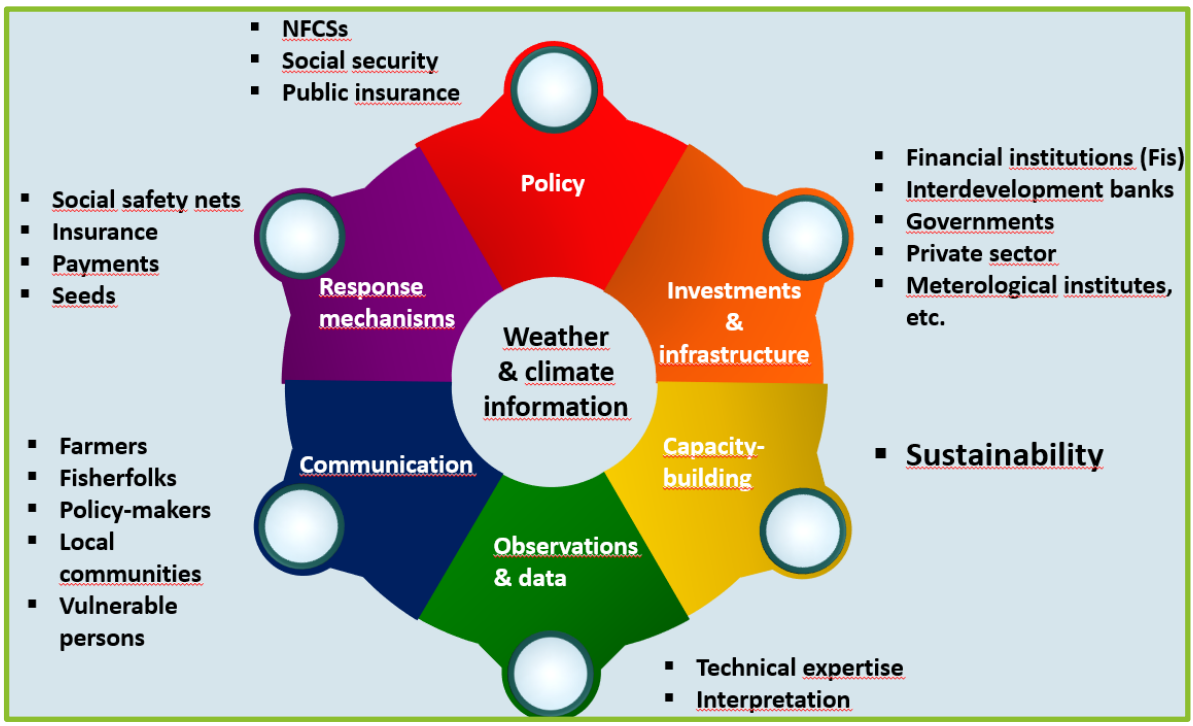

Figure 2: Types of partnerships needed for successful NFCS

Figure 3: The stakeholders in the partnerships for NFCS

1.4 Setting the scene and framing of the workshop: WMO Africa -

Humanity has all along been forced to respond to the challenges of the natural variations in climate. However, our improved scientific understanding of the causal mechanisms for climate change has indicated that human activities are accentuating the variability in climate, resulting in more frequent extreme weather events and unprecedented climate-induced disasters. These events, which constitute a major challenge to socio-economic development, are expected to occur with increasing intensity and frequency in future as a result of accumulated negative impacts on the climate system due to human activities.

Climate indicators from science-based knowledge in Africa have shown continued warming temperatures, accelerating sea level rise, and extreme weather and climate events such as floods and droughts and associated devastating impacts. The rapid shrinking of the last remaining glaciers in eastern Africa, which are expected to melt entirely in the near future, signals the threat of imminent and irreversible change to the Earth system. Annual average temperatures in 2020 across the continent were above the 1981-2010 average in most areas. The largest temperature anomalies were recorded in the northwest of the continent, in western equatorial areas, and parts of the Greater Horn of Africa. The geographical distribution of precipitation in 2020 shows excess and deficit compared with the long-term 1981-2010 averages. Higher than normal precipitation predominated in the Sahel, the Rift Valley, the central Nile catchment and northeast Africa, the Kalahari Basin, and the lower course of the Congo River. Dry conditions prevailed along the south-eastern part of the continent, Madagascar, and the northern coast of the Gulf of Guinea and in Northwest Africa. In 2020, COVID-19 further exacerbated climate resilience and recovery measures especially in investments to enhance early warning systems, including weather and climate observing systems and infrastructure to achieve Sustainable Development Goals (SDGs).

With expanding knowledge of climate science, ever-improving climate forecasts and growing understanding of how climate hazards impact society and the environment, we are now able to be more strategic in responding to climate-related risks and opportunities. What is required is timely and accurate climate information that address the need of end users. A common platform that brings together climate service providers and other stakeholders is also needed. A functional National Framework for Climate Services will address this need by offering expert climate advice, providing information and other value-added products that will strengthen the national capacity to manage climate-related risks and harness climate opportunities.

The World Meteorological Organization (WMO), having considered the impacts of these climate extremes and the imperative for an appropriate response, developed a Global Framework for Climate Services (GFCS) and recommended its adoption for use by developing countries. The development of this National Framework for Climate Services in countries, aims at addressing climate related socio-economic development challenges.

The National Framework for Climate Services (NFCS), hereinafter referred to as “The Framework”, is a coordinating mechanism that will enable development and delivery of climate services at national, state, and local levels. It brings together at the national level a partnership of national, regional, and local government institutions, Private Sector, Development Partners, Civil Society Organizations and other Organizations that produce and use climate information and services, as well as enabling the country to mainstream climate issues into its national development.

Vision, Goal and Objectives of the NFCS

Vision of the NFCS

The vision of the framework is to have a society that effectively manages the risks and harnesses opportunities associated with climate variability and change.

Goal and Objectives of NFCS

One of the goals of NFCS is to enable countries better manage climate related risks and harness the associated opportunities towards sustainable development. The specific objectives are to:

- Create partnership amongst various climate services producers, policy makers and planners, and users to provide climate information and services.
- Enable researchers, the producers, and users of climate information to join forces to improve the quality and quantity of climate services nationwide, particularly in vulnerable communities.
- Reduce the vulnerability of communities to climate-related hazards through better availability and provision of climate services.
- Mainstream the use of climate information in national development policies and strategies.

In addition, the framework will:

- Enhance development opportunities and reduce communities' vulnerabilities to extreme climate events. Vulnerable communities which stand to gain the most from better climate information are often located where climate services are weakest. It will give priority attention to the key sectors including agriculture and food security, water resources, health, disaster risk reduction, energy resources and transportation. Appropriate climate information and services will enhance development opportunities.
- Enhance preparedness against climate change hazards. The effective management of the present climate risks will guarantee adequate coping strategies for future climatic risks.
- Improve the lives of the population. The marginal utilization of climate information and services by citizens will have immediate impact on their livelihoods.
- Strengthen collaboration among government and private sector institutions. The Framework will strengthen existing capacities in MDAs, private and other user organizations as well as enhance synergy among them.

Justification for the Framework

Climate variability and change are posing significant challenges to national socio-economic development. It is a known fact that climate information plays a vital role in national development planning, managing risks and optimizing development opportunities. Timely communication and application of climate information, therefore, reduce the economic setbacks and humanitarian disasters that can result from climate extremes and long-term climate change. Efficient application of climate services requires that climate information be integrated into planning and implementation of projects and programmes in various sectors of the economy. It is for these reasons that the development of the Framework is imperative.

Components of the Framework

In line with the GFCS, the NFCS will consist of the following components:

- User Interface Platform (UIP) — provides ways for climate service users and providers to interact to ensure the effectiveness of the framework.
- Climate Services Information System (CSIS) — produces and distributes climate data and information according to the needs of users in line with agreed standards.
- Observations and Monitoring (OM) – ensures that the climate observations necessary to meet the needs of end-users are collected, managed, and disseminated.

- Research, Modelling and Prediction (RMP) — harnesses science capabilities for research to meet the needs of climate services.
- Capacity Development (CD) — supports the systematic development of the institutions, infrastructure and human resource needed for effective climate services.

User Interface Platform (UIP)

The User Interface Platform (UIP) enhances and coordinates the development of a formal mechanism for strengthening interactions between users and providers of climate information products, as well as improves climate related decision-making processes at various sectors and levels of the economy.

The principal objective is to bridge the gap among climate services providers, decision-makers and users in the various socio-economic sectors and the public. In addition, the platform inter-alia:

- Helps users to express their climate information needs, as well as the required frequency and modes of delivery of such information.
- Prioritizes users' needs of climate information.
- Promotes, enhances and coordinates focused interdisciplinary research and development to design user-specific products and services, including inter-ministerial collaborations and liaisons.
- Facilitates communication and use of climate information, including integration of the associated uncertainties in decision-making.
- Captures and disseminates climate knowledge in diverse socio-economic settings.
- Obtains user-feedbacks to drive the expansion of the observing networks and improvement of climate research and modelling needed to underpin the service provision system.

Climate Services Information System (CSIS) Platform

The CSIS platform is concerned with the use of climate information and products derived from climate studies and tailored to meet the specific needs of users in the climate-sensitive sectors of the economy. It also includes the provision of informed decisions aimed at maximising climate as a resource in the sectors. Activities of the CSIS include routine generation, exchange, and dissemination of high-quality climate information in a timely manner.

Critical information required to meet the needs of all users, including governments, policy makers, planners and rural people are presently inadequate. The gaps are wider when addressing challenges in the rural areas due to users' inability at that level to access and even understand some climate products. These have exacerbated the challenges and require the CSIS to improve the situation.

As changing patterns of climate and associated weather hazards become more frequent, better assessments of climate risks are required. In this regard, Climate Services Information System (CSIS) will provide current climate information, including historical climate data for monitoring and predictions of future climate for the benefit of users. As one of the pillars on which the NFCS stands, the CSIS needs to guarantee seamless flow of climate information from producers to users at all levels by setting up all necessary infrastructure to generate, produce and disseminate quality and critical information with good lead-time and in the most user-friendly and easy-to- understand format.

In developing the CSIS, certain general pre-requisites for climate services were taken into consideration. These include (i) availability; (ii) dependability; (iii) usability; (iv) credibility; (v) authenticity; (vi) responsiveness and flexibility; and (vii) sustainability.

Thus, for effectiveness, a climate service must be available at time and space scale that the user needs. It must be delivered regularly and on time and presented in user specific formats so that the client can fully understand. In addition, it must be very credible enough for the user to confidently

apply the decision-making. It also must be authentic enough to be accepted by stakeholders in the given decision context. Moreover, the climate service needs to be responsive and flexible to the needs of users. Above all, it must be affordable and consistent over time for it to be sustainable.

Functional CSIS in the Framework would require:

- Expanding of the existing climate infrastructure and strengthen coping capacity.
- Collaboration with relevant stakeholders in the climate issue, including universities, research institutions, and Non-Governmental Organizations (NGOs).
- Encouraging the diversification of critical climate activities, including the exchange of climate data, predictions, conduct of climate watches, issuance of warnings, alerts, and advisories.
- Seeking to expand professional capabilities to develop new range of special climate products.
- Facilitating access to a wider database and internet-driven data which will improve prediction skills, etc. through enhancement of interaction among stakeholders.
- Consistently build and maintain operational infrastructure and capacity to promote climate information services that will benefit the citizenry to cope with climate extremes.

Capacity Development (CD)

The Capacity Building component of the Framework supports the systematic development of the necessary institutions, infrastructure, and human resource to provide effective climate services and application of products by the end-users. Therefore, establishment of the Framework will require capacity building through - i) strengthening existing institutions and infrastructure, establishing new ones where necessary and aligning their responsibilities; and ii) development of human skills and training. In this regard, there is the need to:

- Support climate-related education and training programmes, including the awards of scholarship.
- Strengthen networks of climate-relevant training centres.
- Encourage partnership among climate information providers and the media for effective communication to end-users.
- Ensure standards and share best practices in climate service provision.
- Provide adequate funding to establish and/or strengthen climate services and aeronautical meteorological services infrastructure.
- Enact legislation and regulations that will strengthen national capacity for climate service delivery.
- Encourage the establishment of a professional body to regulate the practice of climate service provision.
- Support training for downscaling global and regional climate information for national needs.
- Increase the capacity of MDAs to provide climate information and products to national users for Climate Risk Management and adaptation.
  Enlighten relevant stakeholders on the Framework and the role they are expected to play therein.
- Collaborate with sectoral partners in their efforts to include climate components in their training materials.
- Promote the upgrading of existing national climate institutions to serve as Climate Centres.
- Expand the technical capability throughout the training institutions to work with IPCC scenario datasets and prediction outputs.
- Promote the strengthening of Information Technology (IT), internet and telecommunication facilities of MDAs to facilitate access to global and regional climate products.

Priority Areas

There are many sectors that are sensitive to climate variability and climate change. These include agriculture and food security; cultural heritage protection; disaster risk reduction; ecosystems and the environment; energy; forestry; health; megacities; oceans and coasts, tourism; transport; and water resources. However, emphasis will be laid on the following key priority areas:

- Agriculture and food security
- Water resources
- Health
- Disaster risk reduction

Benefits from NFCS to the Targeted Priority Areas

Below are the benefits of climate service information to some priority areas:

5.1.1 Agriculture and Food Security

- Better-informed decisions, using climate services, by agricultural decision makers including government policy makers, agricultural extension services, farmers, research and university institutions, agribusiness and the crop insurance industry and farm management groups.
- Climate information would enhance agricultural productivity and food security, as well as give early warning of impending food crises.
- Key climate variables for agricultural decision making are more easily available and understood by agricultural and rural communities, thereby improving yields and livelihoods.
- Agricultural decisions can be disseminated through agriculture users already known and trusted (farmer associations, Non-Governmental Organizations, village leaders).

5.1.2 Health

Health sector supported with appropriate climate information and services will:

- Help health workers and decision makers to achieve their priorities in addressing climate-related health risks.
- Promote understanding of the patterns of diseases and their linkages to the environment and climate for proper integration into Early Warning Systems for improved preparedness.
- Ensure availability of high-quality data from different sectors that can be applied to complex environment-health issues.
- Make available timely seasonal forecast for improved planning in the health sector.
- Forge effective collaboration and joint action in support of existing national health priorities, goals and technical agendas.

5.1.3 Water Resources

Availability of accurate and reliable climate information services in the water sector will:

- Enhance management of water resources by decision makers and end users.
- Result in greater efficiencies and effectiveness in using water resources sustainably across the sector.
- Result in robust design and construction of water-related structures such as culverts, bridges, and dams, thus safeguarding large investments.
- Improve water resources management as well as prioritization of allocation of resources to the wide variety of water demand sectors, including urban water supplies, irrigation systems, flood storage capacities
- Enhance greater understanding of the impacts of climate variability on water resources.
- Benefit other secondary users from the water sector, including power generation, fisheries and conservation, navigation, and recreation.

5.1.4 Disaster Risk Reduction

Disseminating early warnings of approaching middle- and long-range hazards will:

- Ensure protection of lives and properties through appropriate preparedness and enhanced lead-time to respond.
- Reduce risk on land use by ensuring that vulnerable populations and ecosystems by locating critical infrastructure carefully and distancing industries that could contaminate soil and water supplies.
- Help prevent the development of settlements in high-risk areas such as unstable mountain slopes and flood-prone land.
- Ensure adjustment to disaster through planning based on short, medium, and long-range hazard forecasts to protect lives and properties from extreme weather conditions.
- Support disaster risk financing and weather index-based insurance thereby allowing more users in climate-sensitive sectors to achieve increased security of lives and properties.

Principles for Implementing the Framework

The implementation of the framework is guided by the following principles:

- High priority for the needs of climate-vulnerable communities.
- Primary focus on better access and use of climate information by users.
- Needs are addressed at all levels of governance (Federal, State and LGAs).
- Climate services are operational and continuously updated.
- Climate information is primarily a public good and governments will have a central role in the framework.
- Free and open exchange of climate-relevant information and products.
- Facilitate and strengthen institutions.
- Build partnerships.

Governance of the Framework

The success of the framework is predicated on a well-coordinated and sustained governance structure in which the national government plays a central role. Such a governance structure will enable high level representation from key government agencies while bringing experts in appropriate fields and sectors into its substructure. Some countries have established National Steering Committee to be chaired by the Presidency. It is designed to oversee the implementation of projects, programmes, and activities under the Framework with NMHSs serving as the NFCS Implementation Secretariat. NMHSs shall coordinate the activities of the Climate Service Providers and Climate Service Enablers (e.g., private sector, Legislatures, etc.) in the country. The NMHSs play a central role in the implementation of this Framework at the national, regional, and global levels. The NMHSs shall engage with other organizations at these different levels, providing coordination for establishing and operating climate services at the national level.

The proposed governance structure for the framework shall assist in the following:

- Set and review policy direction as well as monitor progress.
- Ensure accountability for realising the vision of the Framework.
- Ensure adequate technical and professional guidance.
- Provide oversight to ensure resources are used efficiently.
- Promote synergy among relevant stakeholders in line with their mandates.
- Facilitate resource mobilization.

The framework will enable our countries to better manage the risks while maximising opportunities arising from climate variability and change. It will build partnership, mobilise resources, coordinate national response and activities as well as develop infrastructure for climate services. A partnership approach, involving all relevant stakeholders at all levels as well as adequate funding, will ensure its success. A concerted and coordinated national effort in the framework will contribute to improving

the well-being of our population in the continent, particularly communities that are most vulnerable to impacts of climate extremes. A major success factor for the implementation of the framework is predicated on a functional institutional arrangement and adequate funding. By virtue of your mandate as National Meteorological and Hydrological Services, you are largely responsible for providing climate information and should have established infrastructure to deliver climate services in your countries. In view of your comparative advantage in this regard, it is envisaged that you will drive the implementation process of the framework, and this is where leadership and management of the Framework becomes at stake. I wish us all a successful workshop."

Session 2: NFCS Status by Country

A summary of the status is found in Table1.

Operational challenges:

- Infrastructure
- Human capacity
- Mobilization of financial resource at national and international level.
- ICT facilities.

Strategic challenges:

- Legislation
- Governance
- Funding

Opportunities:

- User involvement
- WMO support of programmes
- Co-production of climate services
- Meteorological services - nationally developed research relevant checks.
- National training courses in climate change and finance
- Increased demand for Climate Service and tailoring climate service to meet demand of the user.
- Increasing extreme events frequency and intensity of meteorological phenomenon, due to climate change, hence NFCS can help address.
- Regional integration and cross-learning.
- Climate Change is big opportunity.

How do countries see this as addressing challenges?

- Starting point is guidance from the template – NFCS way forward
- Governance - identification for local conditions
- Next steps – guidance practical training
- Monitoring and evaluation
- Lessons learnt/opportunity

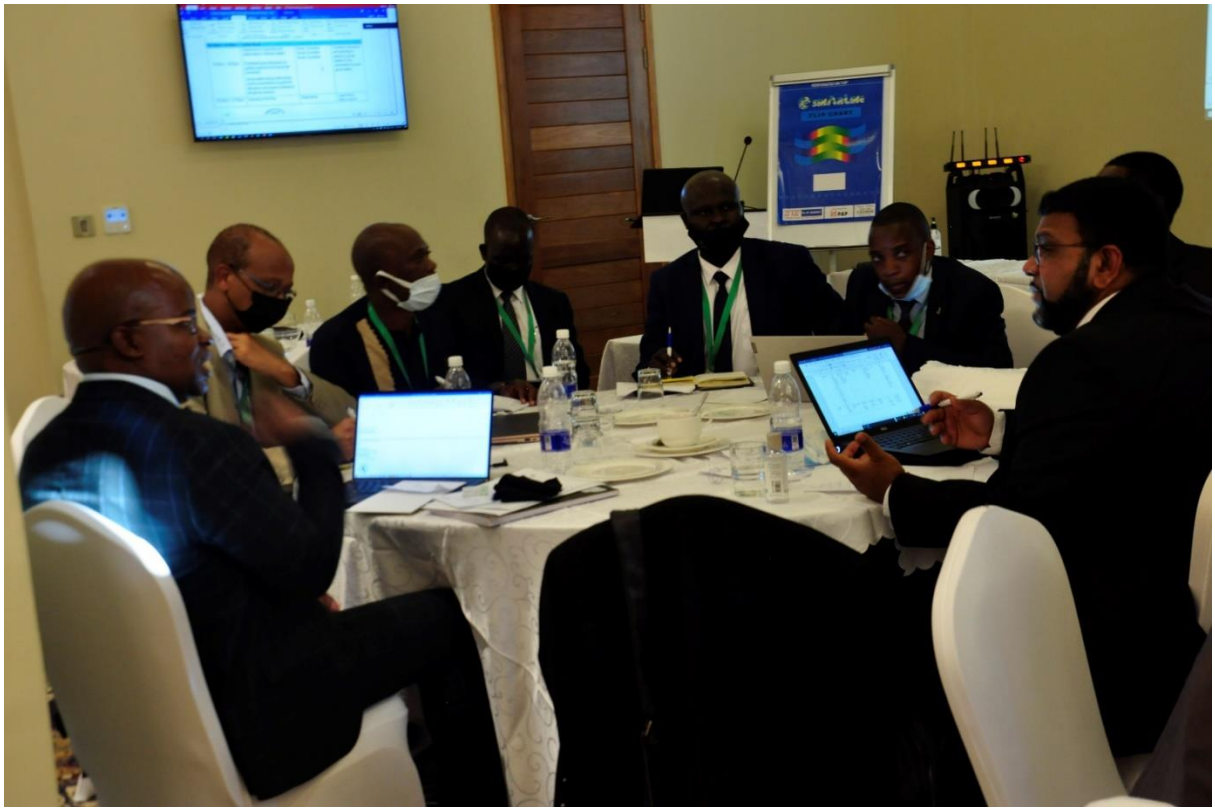

Figure 4: Participants in a group discussion

Table 1: Status of NFCS, the challenges, opportunities, lessons, and recommendations for IGAD and SADC countries.

Key types of CIS produced, stakeholders in climate service, and existing user interface platform	Status of NFCS development and implementation	Challenges		Opportunities to close the gap/ challenge	Lessons learnt	Recommendations and way forward
		OPERATIONAL	STRATEGIC			
Burundi						
-Provide short, medium, and long-range and special CIS forecasts -Various sectors	Step 0: At initial preparation stage	-Human capacity -Observation infrastructure -Lack of sufficient financial/ resource	-Lack of guideline to develop NFCS -Lack of legal framework for collaboration	–	-Need for coordination	-Improve capacity on human, institutional and communication
Kenya						
-Provide short, medium, and long-range, and special CIS forecasts -Various sectors -National Climate Outlook Forum (NCOF)	Step 3: Develop the strategy plan and accompanying action plan	-Funding -Last mile users are excluded -Capacity -Lack of feedback mechanism	-Lack of structure institutions	-Improving funding model -Mode of engagement -Co-production and capacity	- Establishment of NACOF -Stakeholder engagement	-Engage actors at all levels -Ensure ownership of NFCS
Mozambique						
-Provide short, medium, and long-range CIS to various sectors -GFCS priority sectors and related sectors -Existing user interface platform and NCOF	Step 0: Did not start NFCS. -Water, agriculture, and health -NACOF	Human capacity	Budget	-Willingness from ministry -NACOF -Experienced consultant -Resource	none	-NFCS should be established -Provide clear ToR for consultant -Engaging decision makers (top-down and vis-versa)
Uganda						
-Hourly, daily, decadal, monthly, and annual CIS -Ministry of Agriculture, department, and agencies, CSO, NGO -NCOF and Disaster Risk Reduction (DRR) platform -ICPAC supported User Interface Platform (UIP)	Step 0: planned phase. ICPAC to support NFCS	-Infrastructure -Capacity building -Limited discrimination channel	-Establishment and implementation challenges of NFCS -Limited partnership -Rationalization/ Merger/ Mainstreaming to line ministry	-Regional influence needed -Tap to the funding opportunities -Operationalization of UIP -Improve ICT infrastructure embarrass lessons	-Learn from neighbouring countries	-Continual interactions within region -Technical, financial support -Establish UIP -Embrace best practices of NFWCS -Need for partnership
Zimbabwe						
GFCS and Tourism	Step 3	-Weak climate database	Governance issues	-	-	-Co-production -Governance structure

	-NFCS brainstorming workshop -Stakeholder mapping -Baseline assessment -Technical committee established -Recruitment SP and AP	-Lack of institutional memory -Limited human and financial resources				-Establishment of technical committee
Zambia						
-Develop sectors -Stakeholders selected followed WMO guideline	Step 0: Prepare letter of intent to WMO -Request for financial support submitted -ToR finalized	-Lack of resource	-	-	-	-
Ethiopia						
-From hourly to long-range forecasting -GFCS priority areas + environmental sector	Step 4: -NFCS steering committee -Sectoral task force -NMA technical team -Baseline assessment conducted -NFCS 10 years strategy	-Sensitive sectors -Coordination -Infrastructure technology finance -Low capacity	-Human resource -Knowledge management infrastructure -CIS governance	-High-level endorsement UIP NFCS guideline -NFCS governance structure -Coordination unit -Implementation plan -Resource mobilization -M&E -Risk management	-Gathering intensive baseline information from various stakeholders through consultation workshop	-Identify co-products lists -Proper documentation -Resource mobilization (143mill)
Malawi						
-Short, medium, and long range, specialized, sever weather	Step 3 done: -Assessing the baseline	-Infrastructure -Financial	-Lack of understanding of CS -Unavailability of Met Act	-Starting of NFCS process -Increased awareness -Increased	-Power of collaboration	-Need for support to finalize/launch NFCS -Mainstreaming CIS

-Government sectors, academic/research, NGOs -NCOF, Participatory Integrated Climate Services for Agriculture (PICSA), Awareness campaign, mainstream and social media	Organizing a NFCS stakeholder -Developing NFCS	-COVID-19 to do the consultation with the stakeholders (step 4) -Human capacity		-Availability of national Met Policy -Establishment of district climate centres -Public Private Partnership (PPP)	- Strength/established UIP	-Use existing structure to advance CIS
South Africa						
–	Step xx: -Roadmap developed -Consultative process -Technical leadership established -Bilateral meetings with various stakeholders	-Resources -Human capacity -ICT Connectivity -Quality data	-Understanding on Link between open data and socio-economic benefits -Reliance on contract or service providers	-Climate information -Developing new funding model -Free and open data policy -Deteriorating public good weather and climate observation infrastructure -Establishment of national climate services	-Start with what we have -Do thing at a time -Look for partnership -Do not enter into service level agreement -communicate with relevant stakeholders	–
Djibouti						
-Monthly, decadal, daily, seasonal, aviation -For different sectors -TV and radio	Step 0: Initial stage	-Less equipment -Lack of training -Financial -Limited knowledge	-Structural institutional arrangement to provide CIS -Lack of interaction between sectors	-Insufficient budget	-	-Training -Financial support from development partners

Session 3: Capacity Development in NFCS

3.1 Guideline for National Framework for Weather, Water and Climate Services: The blueprint for the National Framework

The consultant presented the blueprint purpose of the assignment which is to: i) Develop step-by-step guidelines to expand the concept of a user driven NFCS to cover weather, water and climate services; ii) Develop guidelines for the establishment of Regional Frameworks for Weather, Water and Climate Services (RFWCS) at regional and sub-regional level. An NFCS is an institutional mechanism to coordinate, facilitate and strengthen collaboration among national institutions to improve the co-production, tailoring, delivery and use of science based and indigenous knowledge in climate information and services.

Common challenges in developing frameworks

Governance and Institutional Arrangements

- Lack of credible governance and operationalization models to catalyze the development and implementation of the frameworks.
- Understanding suitable institution at both national and regional levels to provide oversight, host and operationalize the frameworks. There is need for high authority ministry or institution to provide oversight and coordination.
- Institutional models for implementing the framework.

Coordination, Engagements and User-Platform

- Lack of user and producer interaction.
- Lack of credible coordination models, roles, and responsibilities.
- Lack of strong relationship between NMHSs, ministries and other participating institutions.
- Lack of credible, reliable, and robust User Platform to establish a user-driven framework.

Structured Development Processes and Knowledge

- Member states need to understand what the WMO compliant Framework looks like i.e., key building blocks of the framework.
- Limited and lack of integration between the NSP and frameworks.
- Need to improve the WMO standard approach (Step-by-step guidelines) expanded to cover the value chain holistically.
- Lack of structured approach for developing the implementation plans for the frameworks and the costing model in alignment with the GFCS IP.
- Limited knowledge and capacities in member states.
- Weak institutional capacities of NMHS.

National legislation gaps

- Inadequate political support and no inclusion of framework in national budgetary processes.
- No legislative mandates at national levels to support the governance, planning, development, funding and implementation of framework.
- Lack of collaboration amongst producers, no clear ownership model on products and services.
- Data ownership and competition of products and services

Political Support and Policy Mainstreaming

- Policy Mainstreaming: No alignment between framework development efforts and the National Adaption Plans (NAPS), and emerging broader climate change legislations and sustainable development plans.

- Model/Approach to align to the National Determined Contributions (Article 4).
- Limited alignment with relevant regional and national plans.

Other types of challenges

- Lack of funding to enable implementation and operationalization of the Frameworks.
- Need to provide a One-Time-Effort: Strategic Planning + Framework + Action Plan
- Lack of coordinated Reporting, Monitoring and Evaluation.
- Lack of platform to integrate national and regional initiatives.
- Limited Regional support and lack of vertical and horizontal integration.
- Limited User-Driven research at National and Regional Level.

WMO is considering development of the NFCWS Blueprint as shown in Figure 5 to guide the process of the development of the Frameworks, providing the critical building blocks of a framework, templates, and tools. The Blueprint will provide the Member States with a structured and standardized approach to developing Frameworks, enabling the Member States to develop credible and robust Framework in line with WMO standards.

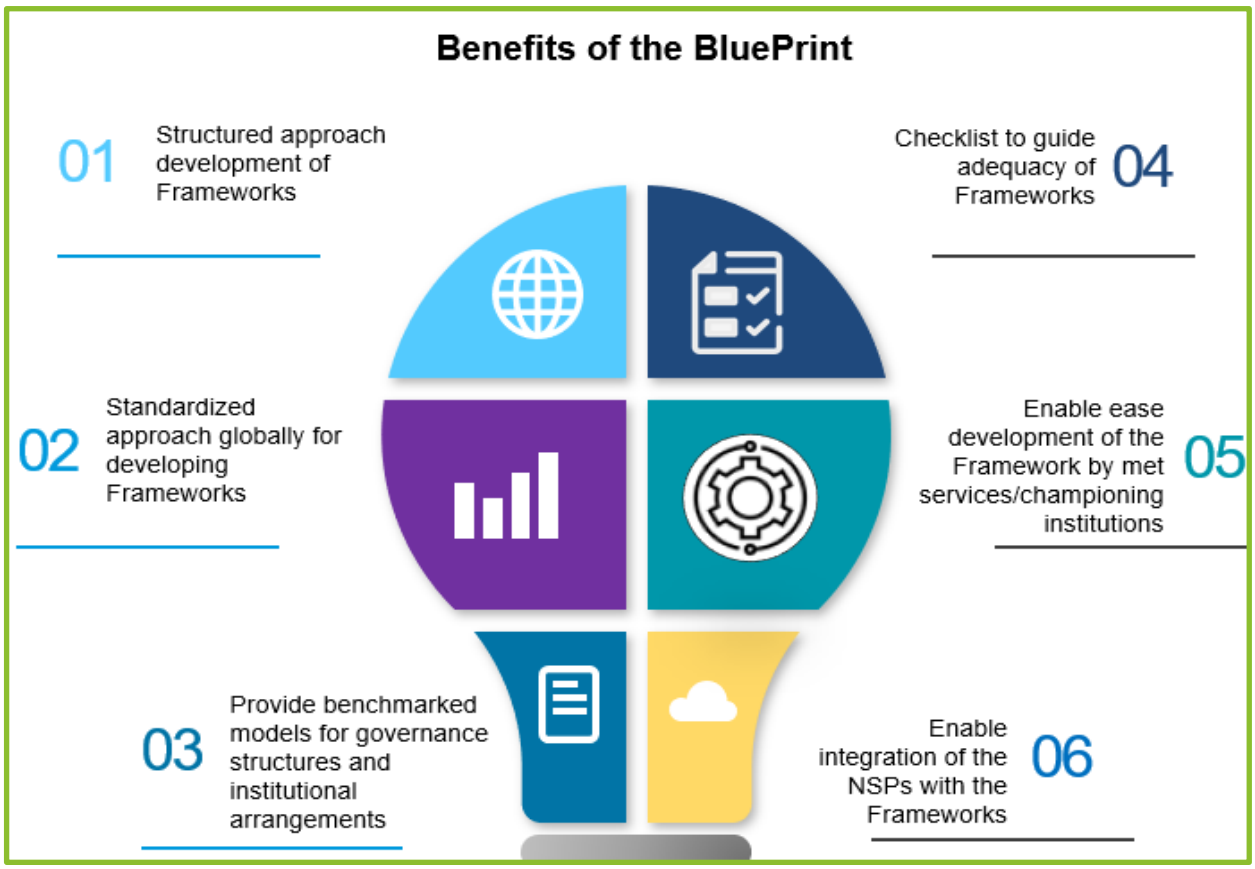

Figure 5: Benefits of the NFCS blueprint

Figure 6: Participants in plenary session discussions

3.2 Development and implementation of NFCS

WMO contributions in provision of templates and training opportunities.

ICPAC contributions include:

- Helping member state to build human capacity through training in step-by-step fashion based on availability of funds.
- Exploring opportunities within the existing enabling framework (regional and nation policies, programmes).

Intervention areas needed to help member states in NFCS include:

- Creating awareness at various levels, especially among the policy makers, decision makers, local community, etc. ACPC will use existing platforms such as the CCDA, ARFSD, AMCEN, AUC-STC, and others to enhance the level of awareness about CIS, which is identified by the meeting participants as a major problem that impedes NFCS development and implementation in their respective countries.
- Training: Since we cannot reach all CIS last mile users, ACPC can use its convening power to provide trainings to trainers (ToT) on how to mainstream the uptake and use of CIS in various development planning and policy formulation.

It was emphasized that an analytical study be conducted on the Socioeconomic Benefits (SEB) of CIS in climate sensitive sectors and make a case for better investment in NMHS infrastructure. It was also important to put in place practical mechanisms to coordinate and match WCS providers (supply side) and the users (demand side) as per Figure 7.

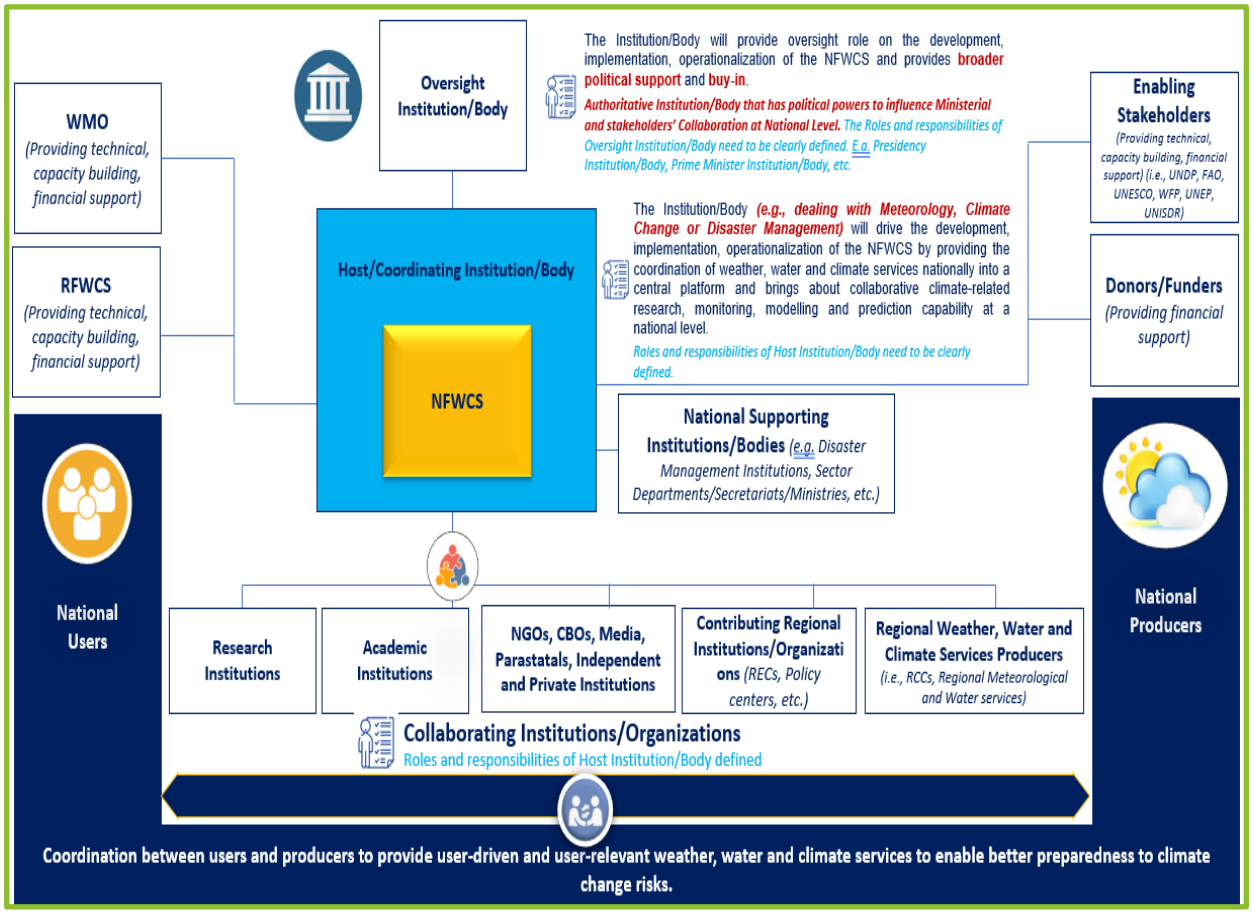

Figure 7: Practical mechanism to coordinate and match WCS providers (supply side) and the users (demand side).

Session 4: Climate Service Delivery

4.1 Global Framework for Climate Services (GFCS) and how Climate Services Address Sectoral Need

The Global Framework for Climate Services (GFCS) provides a unique platform for guiding and supporting activities across the value chain for climate services, which contribute to adaptation, mitigation and reduction of loss and damage, as indicated in Figure 8. Availability and access to these products will be expanded and broadened to benefit all Members. Climate Services Information System (CSIS) is the principal GFCS mechanism through which information about climate – past, present, and future – is archived, analyzed, modelled, exchanged, and processed. The CSIS is the "operational core" of the GFCS. It delivers authoritative climate information products through operational mechanisms, technical standards, communication, and authentication.

The next steps for Global Framework for Climate Services

- User Interface Platform: Means for users and climate service providers to interact.
- Observations and monitoring: Climate observations necessary to meet the needs of climate services are generated.
- Research, Modeling and Prediction: Needs of climate services within research agendas
- Capacity building: Development of necessary institutions, infrastructure, and human resources to provide effective climate services

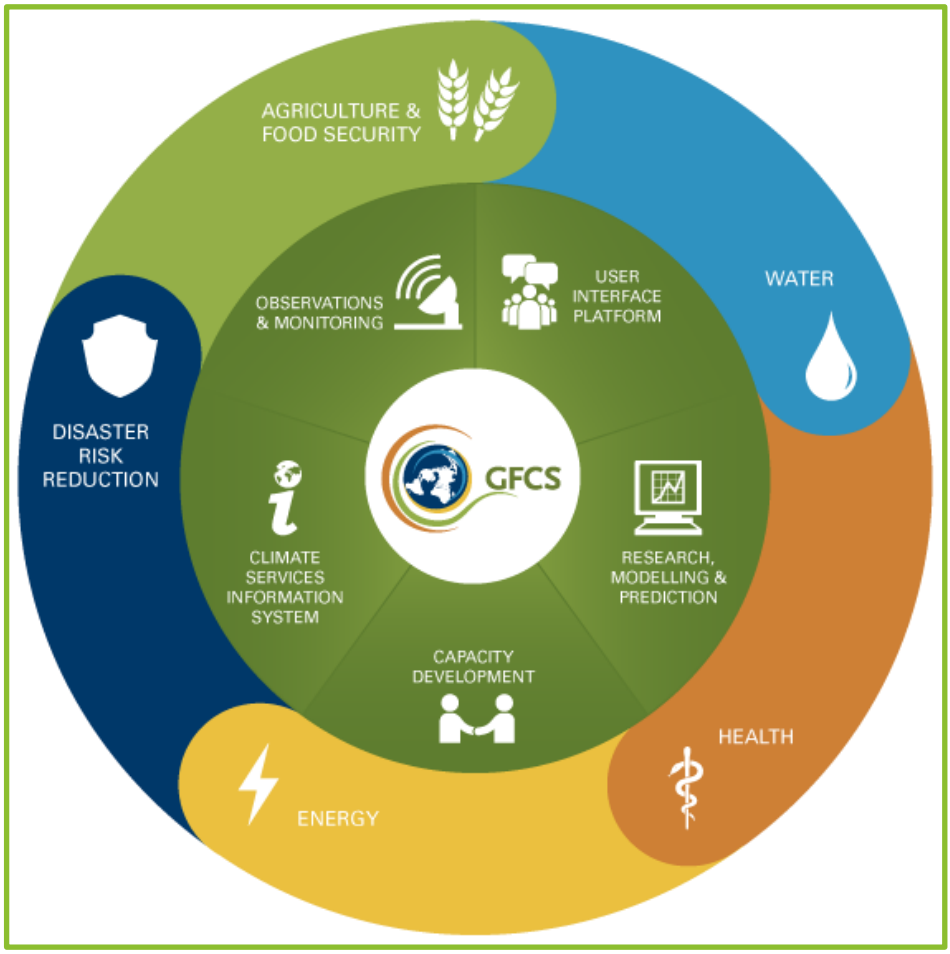

Figure 8: Steps in Global Framework for Climate Services (GFCS)

Enhanced GFCS implementation and effectiveness comes about when the following enabling environment exists:

- Implementation aligned with, and supportive of, the main international climate policy frameworks and financing mechanisms
- Greater reliance on established WMO procedures and regulations as a basis for operationalization of climate services
- "Bottom up", country-focused, country-driven implementation with Member peer-to-peer, sub-regional and global support
- Partnerships based on "business" relationships, not just roles in GFCS governance
- Rather than a linear, fixed term duration, implementation timeline, implementation is iterative, with continuous tracking of progress and increasing ambition
- Rather than addressing climate services separately, adopt a more seamless integration of weather, water and climate systems and services
- A clearer framework and tools for private sector partnership and engagement

The Vision of new GFCS generation

The vision is to enable better management of the risks of climate variability and change and adaptation to climate change, through the development and incorporation of science-based climate information and prediction into planning, policy, and practice on the global, regional, and national scale. Building blocks for GFCS are indicated in Figure 9.

Climate priorities

- NDC/NAP analysis – identifies country and sub-regional priorities
- Climate science basis – with GCF and partners, identifies science-based actions

Climate services gaps and needs assessment

- National/sub-regional capacity data collection and analysis
- Portfolio analysis – to aid support already available

Implementation support – by WMO experts and Members

- Hydro-met project component design/implementation
- Co-development of operationalized tailored products
- Technical Advisory Services

Quality Management System

- Climate Services capacities (basic, essential, full, advanced)
- WMO guidance (e.g., standards and competencies)
- Member capacity data

Climate policy and finance support

- State of Climate Services report
- Regional and Global State of Climate reports
- Global climate finance portfolio analyses

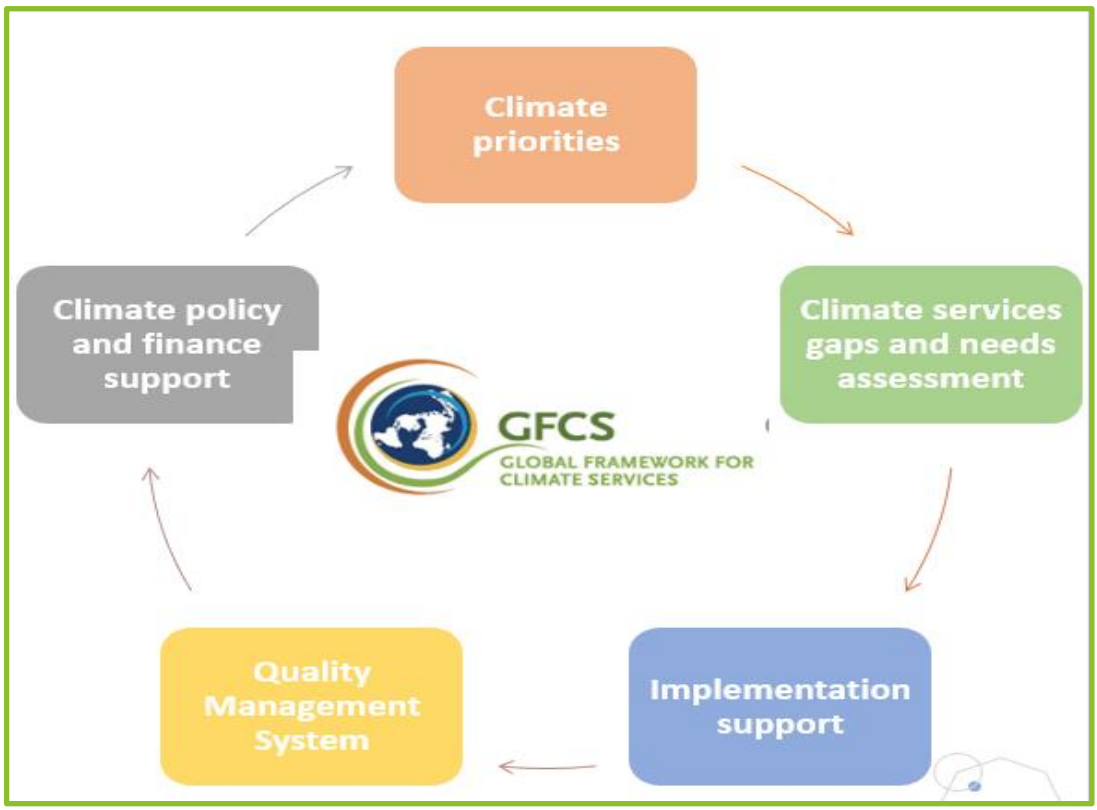

Figure 9: The building blocks, which are already in place, that, in combination, can provide a framework for a next phase of implementation. Any of the blocks in the diagram can serve as an entry point.

4.2 Development and implementation of NFCS in Eastern and Southern Africa

Drivers of NFCS

- National stakeholders must drive the process and design it in a manner that addresses national needs and priorities in climate service production, provision, and utilization.
- NMHSs and their partner institutions at national level engaged under the five pillars of the GFCS to establish a National Framework for Climate Services NFCS.

The methodology of NFCS involves working together by the national institutions (Figure 10) in charge of the development of climate, weather, and hydrological information, and involving key potential end-users (civil protection, agriculture, livestock, health, energy, disaster risk reduction management, tourism, infrastructure, transport, and research). The joint work and exchange of information brings out relevant elements, actions (Figure 11), needs, policies, road map, follow up and assessment, and making recommendations for optimal management of climate risk in all the social and economic sectors.

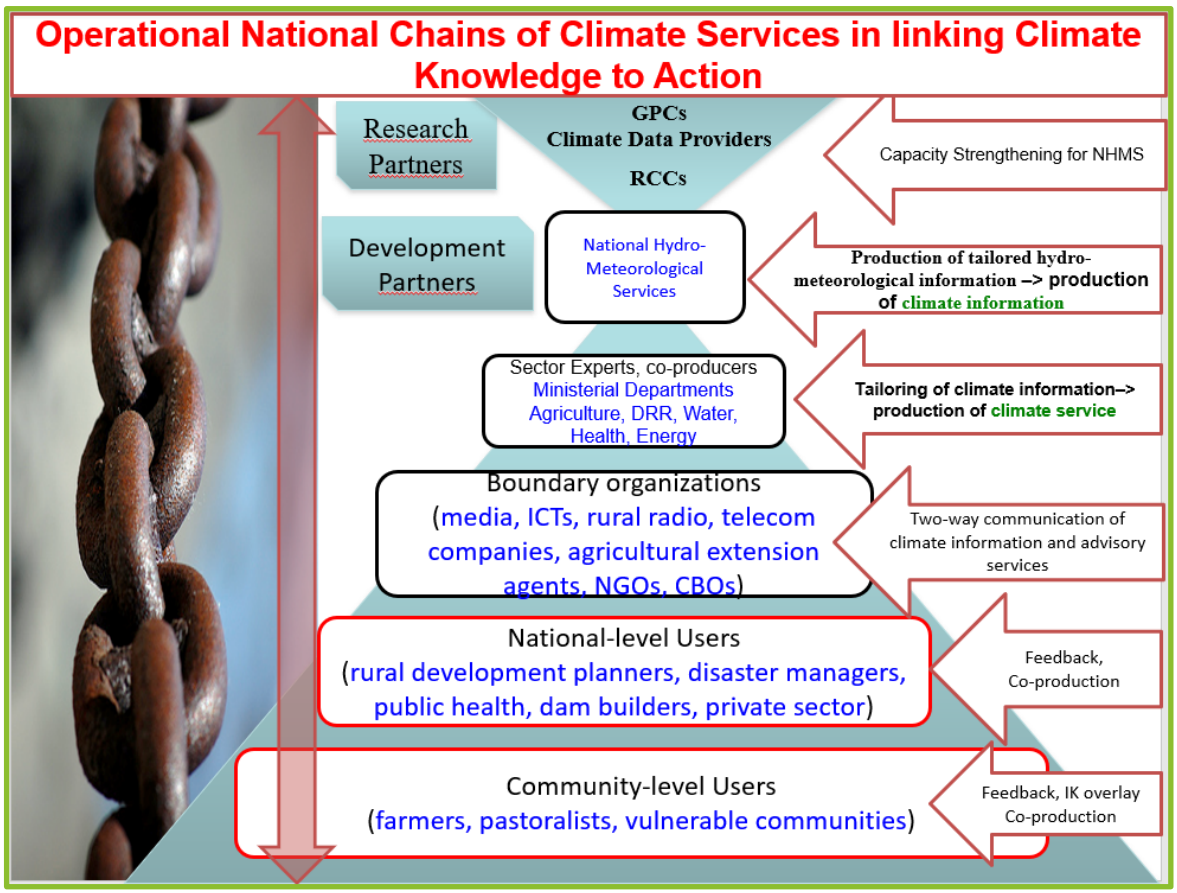

Figure 10: An example from agriculture depicting linkages with different stakeholders and their roles in climate service production, tailoring and communication.

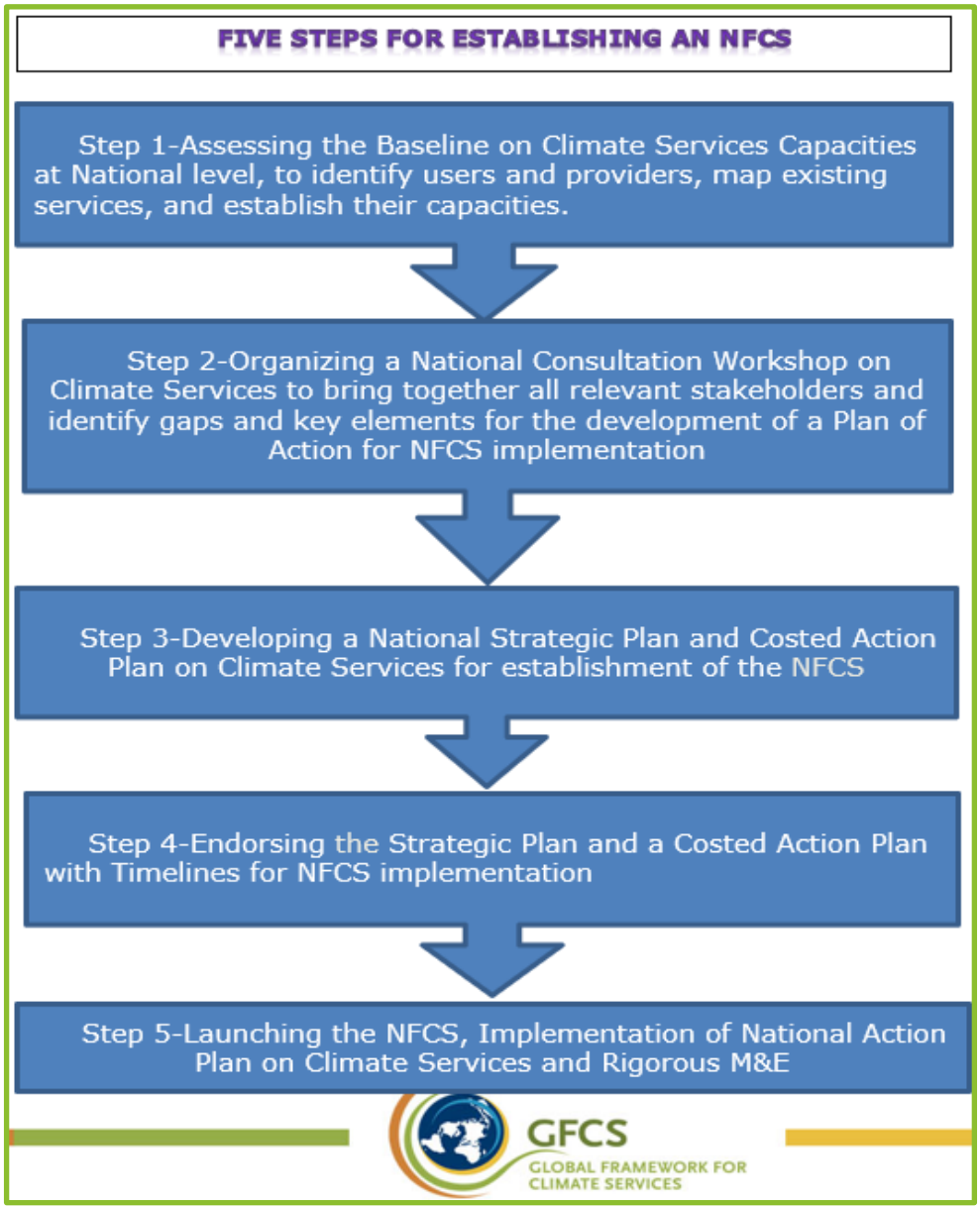

Figure 11: Steps for establishing NFCS.

Main Tasks Toward the Implementation of the NFCS

- Meetings and sensitization of the national main stakeholders, government high officers, (Ministers), NGOs – UN - Development partners and successfully holding the National Consultation workshop towards the development of the NFCS.
- Ensuring vulnerable communities' full participation in the development of the NFCS.
- Delivering the road map for the development of the NFCS action plan (agriculture, DRR, water resources, meteorology, health, energy, transport, tourism, etc).
- Delivering recommendations for the joint monitoring and evaluation of the development of the NFCS action plan.
- Follow-up and assess for the development of the NFCS action plan by the consultant.
- Holding of the national workshop for the validation of the NFCS action plan.
- Lobbying for the full support of the top Government officers, stakeholders, NGOS, UN and development partners for the sustainable implementation and operationalization of the NFCS action plan.

- Continual assistance to the PR's and NMHS General Directors for the political endorsement of the NFCS (decree) and resources mobilization for the full operationalization.

4.3 Open facilitated discussion on country experiences in climate services:Generation, translation, communication and governance.

Definitions

- Deterministic forecasting: - What is the weather like?
- Impact based forecasting: - What will the weather do?

Table 2: The challenges, and opportunities in generation, translation, communication, and governance of climate services for IGAD and SADC countries.

Challenges	Opportunities
Climate Services (Generation and Translation)	
NMHSs are relying on their own experts and not sector experts.	Use economic data to relate impacts; e.g issues to do with settlements and malaria.
	Tailor products to meet user needs hence feedback is critical
Users want information, which we cannot produce.	Educate users – what can science do practically and not over promise
	Incorporate Indigenous Knowledge Systems
NMHS have no multi-sector platforms which address tailoring	Research: Consider time for research in all sectors to tailor climate products.
Communication	
NMHSs provide information late, and they downplay risk.	
Low confidence in climate products hence we don't embrace some feedback	Co-production and co-ownership of climate products
Indigenous Knowledge Systems in Forecasting is localized	Incorporate Indigenous Knowledge Systems in Forecasting
Users do not understand our information and NMHSs also fail to understand the users. NMHSs try to do it alone	Create synergies to deliver
Governance	
NMHSs are working in silos	
Competition from private players in the provision for climate services	Opportunity to work with private players who are better resourced.

Discussions on Generation and Translation in climate services

We need the triggers of drought forecasting to come up with impact-based forecasting.

Example from ICPAC within eth IGAD region.

The main forecast is provided by ICPAC and is downscaled to national levels by member states. At national level, the forecast will focus on Onset and Cessation of the season. Then this is followed by communication, whereby the forecast will be translated into national local languages. Then there will be feedback from users after dissemination whereby the impacts will be discussed.

Governance

- NMHSs are working in silos. How can we break these silos?
- Integration is a huge issue; climate change needs holistic approaches.
- How do we engage other sectors?
- Bring sectors at design stage not at implementation stage.

Important steps

- Generate products through co-production.
- Carry out vulnerability mapping and risk profiling.
- Second experts from other sectors to NMHSs and get access to sector data.
- Analysis should be done by NMHSs, and then other impacts will be analyzed by experts from relevant sectors.
- Work with Universities and improve on research
- In terms of communication, the NMHSs are going to encounter Private Weather Information services providers, so there is need to improve communications systems and climate products.
- NMHSs should develop competitive CIS like Applications (Apps).
- There must be strategies for NMHSs to work with Private Players in the production of competitive climate products.
- There must be policy in place and the policies must be followed in terms of implementation
- Strengthen intermediaries like extension workers in agriculture because NMHS might not have direct access to farmers.
- In future conferences, we need to invite countries that have already developed products. To see what they have done and how it can be improved, including sharing success stories in development processes.

Session 5: Strategic Development of NFCS

5.1 Strategic Planning for Use by the NFCS

Strategic Planning (SP) template was developed as per Figure 12, and Strategic Framework as per Figure 13, in order to:

- To establish an NFCS and to develop a national strategic plan and an associated national action plan for improving climate services.
- Taking into consideration the WMO strategic plan, the GFCS action plan, regional strategic plans, and international, regional, and national development initiatives.
- Based on the WMO 's Integrated Strategic Planning Handbook (WMO, 2016).

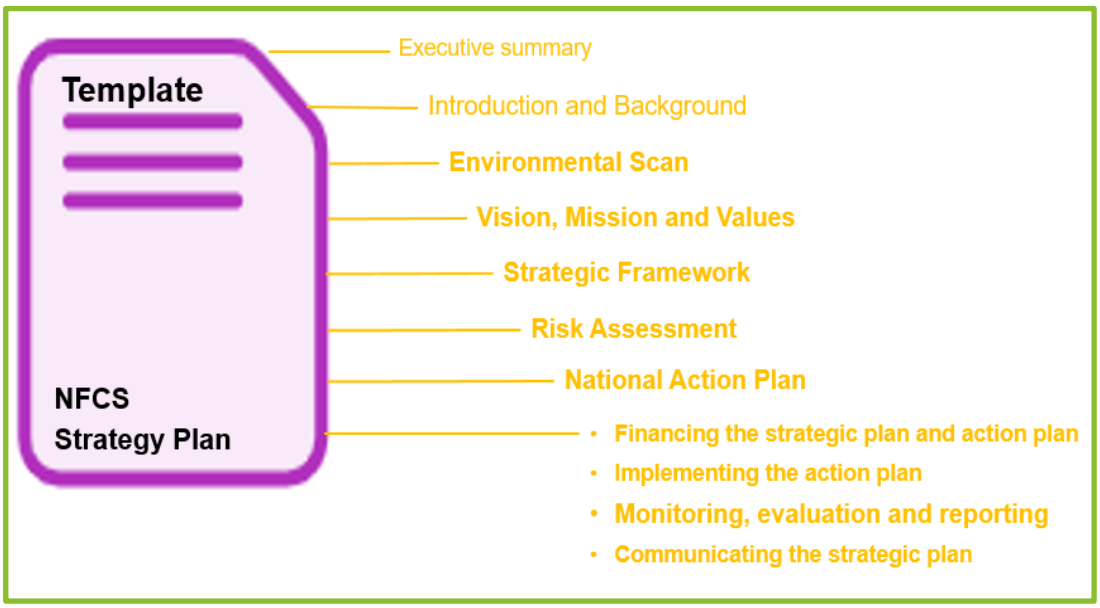

Figure 12: Steps for establishing NFCS strategy plan using the template

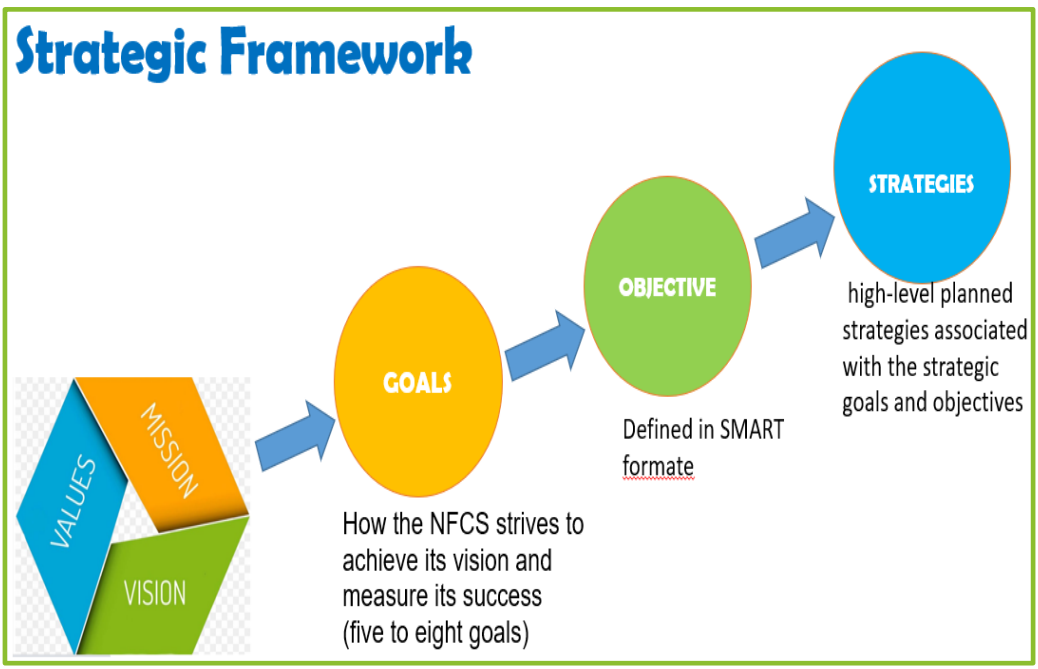

Figure 13: Components of the strategic framework.

5.2 Plenary session: Governance structure for co-design and co-production of climate products and services

The guiding questions were as follows:

1. NMHS are working in silos? Where did we go wrong? What are the challenges?
2. Are NMHS reaching out at individual or institutional levels?

This was followed by sharing of experiences by countries:

Malawi

- Malawi is one of the first countries to start the NFCS implementation process, so there were partnerships during the development process.
- There are projects being implemented in collaboration with partners e.g., fisheries, DRR, agriculture.
- Partners come to NMHS when they want Malawi NMHS to do something because they have seen existing capacity during the NFCS implementation process.

Kenya

- Partnerships have been ad hoc.
- NMHS has been working in task forces
- There is a proposal to have an NFCS steering committee to be chaired by Permanent Secretaries who technocrats who work with Ministers.
- NFCS Steering Committee will be inter-ministerial

Mozambique

- Mozambique NMHS engages stakeholders especially during downscaling of the seasonal forecast.
- There is no documentation of the working structure with stakeholders.
- The arrangement is supply driven.

South Africa

- There are plans to hold a data workshop with stakeholders.
- There has been a stakeholder identification process for example the South Africa Space Agency, Research Council.
- There has been Ad hoc outreach to other departments like the Water Department.
- Have a working document.

Djibouti

- There is no official document but there are efforts to try to formalize stakeholder relations.

Uganda

- Uganda Meteorological Authority is a semi-autonomous department.
- Uganda has just made official the Climate Change Department Act.
- There have been collaborative engagements between Climate Change Department and Uganda Meteorological Authority but there is no formal or official documentation of the structure.
- The Uganda National Development Plan moved from sector-based approach to programme based approach. The component of collaboration is covered in the Uganda National Development Plan.
- The Uganda Meteorological Authority coordinates the Uganda Climate Forum.

- The Uganda Meteorological Authority is part of Disaster Management Committee that is chaired by the Prime Minister.

Zambia

- Early warning (EWARN) is under the Vice President
- There are existing MOUs with research institutions, e.g., University of Zambia, WFP – Capacity building, Red Cross, FAO – Capacity Building
- Interaction is done with stakeholders during the Seasonal Forecast User Forum.
- Zambia Meteorological Authority working with the Department of Agriculture is producing the Agro-meteorological Bulletin.

Burundi

- There is a Platform where Ministers meet monthly to discuss climate information.
- There is no legal framework
- Burundi NMHS organizes and invites stakeholders during the seasonal forecast dissemination exercise.
- There is an existing partnership with Red Cross.
- Burundi NMHS attends Disaster Risk Management meetings to explain met information to stakeholders.
- Burundi NMHS is usually invited by International Organizations to provide them with meteorological information, but none is helping to build capacity.

Zimbabwe

- Zimbabwe works with sectors during the National Climate Outlook Forum.
- There are existing MOUs with development partners, Universities, NGOs
- Produces products for insurance companies.

From the discussion, it looked like the structure was flat. There must be a hierarchical structure, for example in Ethiopia, where the governance is structured and comes from the Deputy Prime Minister's Office. The countries were encouraged to follow the Governance Structure in the WMO Step-by-Step Guidelines for Establishing the National Framework for Climate Services

Conclusions and Way Forward

The following conclusions were derived from the meeting.

- Following successful co-development and endorsement of AICCRA-supported NFCS in Ethiopia, AICCRA-ESA partnered with WMO-Africa, UN-ECA's-ACPC and ICPAC and organized cross-regional and south-south consultative learning and knowledge sharing workshop.
- AICCRA-ESA in partnership with WMO-Africa, UN-ECA's ACPC, IGAD's ICPAC and the NMS of 10 ESA countries identified that the status of IGAD and SADC member states in terms of NFWWCS/NFCS issues including formulation, co-development, and implementation
- As per the guidance of the GFCS, some countries are in step five (those that have launched the NFCS, are implementing the national action plan and are conducting rigorous M&E). Other countries are in step three (those that have developed a national strategic plan and costed action plan), and other in step one (those assessing the baseline on climate services capacities or on the planned phase).
- The workshop provided a platform for the 10 countries from IGAD and SADC to enhance their capabilities in shaping their NFWWCS/NFCS for effective delivery of weather, water and climate services and reduce climate vulnerabilities.
- Developing of blueprint/step-by-step guide for Global Framework for Weather, Water, and Climate Services (GFWWCS) is ongoing and involves about 50 NMS permanent representatives to WMO, country NFCS experts, IGAD-drafting Regional Framework for Climate Services (RFCS), and WMO-team are involved

In terms of the way forward, this cross-regional and south-south consultation reviewed and passed key recommendations for action at national and regional levels, including policy influencing implementation, and joint investment mobilization as summarized below:

- NFCS and climate services status and assessed specific cross-sectoral needs for weather, water, and climate services
- Status of interfacing mechanisms and interactions among climate service providers and end-users, identified major gaps and needs for improvement, and recommended mechanisms to address it.
- Articulated infrastructure, human and technical capacity-building needs to co-develop, strengthen, and implement NFCS.
- Recommend arrangements for improved production, better access, and sustainable operations for climate predictions and services to facilitate flow of climate information from global and regional scales to national and local levels.
- Agreed on blueprint and step-by-step guide contents, implementation frameworks, and governance structure for GFWCS and NFWCS/NFCS, and work together to mobilize resources.
- Carry out user need assessments, at national level on users' needs and what NMHS can do.
- Develop communication strategies within the producers, users, and link with intermediaries.
- Be prepared to migrate from current structures and move to the WMO recommended structure.
- Identify stakeholders and assign roles according to competences.
- Strengthen user interface platforms at national level.
- Address governance issues, coordination can be done by NMHS and chairing should be done by a stronger Department or Ministry.
- Enhance data sharing in climate services.
- Work closely with local and international universities.
- Research must be clearly defined in a participatory manner involving key stakeholders.

- Partner with organizations which are already doing research.
- Encourage youths to engage in climate information related activities and help disseminate the information even on social media.
- Share successful capacity building case studies.
- Resource mobilization, there is need to raise funds within government to complement external funds, this should be backed by legislation or MoUs in the short term.
- Sharing best practices in terms of implementation of NFCS.

Annex 1: Workshop Progamme

Date: 06 – 07 December 2021 **Venue: Zanzibar, Tanzania**			
Time	Description of Activity	Moderator / Presenter	Facilitator
	Session 1: Opening Session and setting the stage		
08:45am - 10:00am	Welcome and introduction statement on behalf of the conveners Goodwill messages and importance of NFCS for Africa ICPAC Director (5 mins) the role of RCCs in NFCS Development and Implementation UNECA-ACPC (Policy Enabling Environment for NFCS in Africa) NORAD representative – Role of international development partners in supporting NFCS co-developments and implementation in Africa WMO Africa - Setting the scene and framing of the workshop	Dawit Solomon (CCAFS) - 15 mins Guleid Artan – Director of ICPAC (10 mins) Nassirou Ba – UNECA ACPC (10 min) Julie Louise- NORAD (10 mins) Ernest Afiesimama WMO Africa (20 mins)	Ernest Afiesimama WMO Africa
	Session 2: Country NFCS status presentations		
10:00am -10:40am	ESA countries experiences on the challenges and opportunities in the co-development and implementation of NFCS (Presentations on baseline, status, challenges, opportunities and future perspectives - lessons learnt from Eastern and Southern Africa countries)	Group 1 – 10 mins each Botswana Burundi Djibouti Kenya	Teferi Demissie– AICCRA ESA
10:40am -11:00am	Coffee Break		
11:00am -11:40am	ESA countries experiences on the challenges and opportunities in the co-development and implementation of NFCS	Group 2 – 10 mins each Mozambique Uganda Zimbabwe Zambia	

11:40am -12:10pm	(Presentations on baseline, status, challenges, opportunities and future perspectives - lessons learnt from Eastern and Southern Africa countries)	Group 3 – 10 mins each Ethiopia Malawi South Africa	Teferi Demissie – AICCRA ESA
12:10pm -13:00pm	*Q & A session* (Three group leaders will take notes on challenges and opportunities on the development and implementation of NFCS in group 1, 2 and 3 countries in IGAD and SADC countries to lead the discussion under session 3).	Time for country specific questions Time for group interactions on general questions and answers	Teferi Demissie – AICCRA ESA
13:00 – 14:00	Lunch Break		
	Session 3: Capacity Development in NFCS		
14:00pm - 14:30pm	Guideline for National Framework for Weather, Water and Climate Services: The blueprint for the National Framework	Mabu Mamadi -	Zewdu Segele – ICPAC
14:30pm - 15:00pm	Development and implementation of National Frameworks for Climate Services	Pascal Yaka - WMO	
15:00pm – 15:30pm	Leadership and Management in NMHSs for Climate Service Delivery	Ernest Afiesimama WMO	
15:30pm – 15:45pm	Coffee Break		
15:45pm - 16:00pm	Assessment of capacities and stakeholders in Member States (Facilitated group discussion on guiding questions to be set by the conveners) Group leaders taking notes during country presentations to guide the discussion and present synthesis to the plenary session)	Group 1 countries Group 2 countries Group 3 countries	Facilitation discussion and reporting to plenary by group leaders (5 min presentation by each group leader)
16:45pm – 17:00pm	Summary of the Day	Rapporteurs	Yosef Amha – UNECA-ACPC

Annex 2: Workshop Participants

National Framework for Climate Services (NFCS) workshop participants			
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