ICPAC
IGAD Climate Prediction and Applications Centre

ICPAC GUIDE FOR ENGAGEMENT IN CO-PRODUCING **CLIMATE SERVICES**

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FOREWORD

In 1986, the then Intergovernmental Authority on Drought and Development (IGADD) was formed to provide a drought climate service for the region. This was to reduce impacts of droughts and other natural disasters. Since then, IGADD evolved to the Intergovernmental Authority on Development (IGAD) and the IGAD Climate Predictions and Application Centre (ICPAC) was born, with the evolution of new climate services serving 6 sectors - Agriculture and Food Security, Disaster Risk Management (DRM), Water and Energy, Livestock, Health and Conflict and Early Warning. The scope and importance of these services has continuously grown in the wake of increasingly devastating impacts of climate variability and change. As a result, there has been a growing demand for climate information to inform climate resilient development, early warning systems (EWS), Disaster Risk Management (DRM) authorities and strengthening of adaptive capacity and climate resilience among vulnerable populations.

The co-production approach has become a central tenet to ICPAC's role in effective provision of climate services in Eastern Africa and it has been instrumental for the improvement of the quality of climate services in the region. ICPAC envisages to enhance climate service capabilities at all levels in the region. Accordingly, co-production of climate services must be a key component of day-to-day ICPAC operations and management guidelines. There is a need for a paradigm shift in producers' roles, product and service development and collaboration among climate services actors in addition to climate service aspects to strengthen and enhance effective co-production processes, to develop decision-ready products and services.

With growing attention to the value of climate information in the context of a changing climate, the demand to address the challenge is growing. It is in this light that ICPAC, over the years, has implemented various initiatives to strengthen co-production of weather and climate services across the region. However, the availability, accessibility, uptake and use of information and services is still relatively low, which presents both a threat and lost opportunity in relation to social and economic development and integrating climate resilient development and risk management in all sectors. Climate scientists including meteorological services not only have the opportunity but also an obligation to contribute their knowledge to support responses to climate change. This guide aims to provide direction on how best to do so.

This document will steer ICPAC's engagement in the region with other IGAD agencies, National Meteorological and Hydrological Services (NMHSs) from 11 member countries in Eastern Africa , regional and national organisations, various initiatives and programmes within the region such as the IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI), the Food Security and Nutrition Working Group (FSNWG), and other key stakeholders. This guide will support ICPAC's work to provide a platform to support synergies among climate stakeholders' efforts within the region and create a roadmap with regard to climate services for resilience.

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ACRONYMS AND ABBREVIATIONS

ASP	Agricultural Seasonal Planning
CBO	Community-based Organisations
CDKN	Climate and Development Knowledge Network
CEWARN	Conflict Early Warning and Response Mechanism
CGIAR	Consultative Group on International Agricultural Research
CIS	Climate Information Services
CSIS	Climate Services Information System
CSW	Commission on the Status of Women
DRM	Disaster Risk Management
ECMWF	European Centre for Medium-Range Weather Forecasts
EWS	Early Warning System
EAGC	Eastern Africa Grain Council
ENACTS	Enhancing National Climate Services
EWSNET	Famine Early Warning Systems Network
FAO	Food and Agriculture Organization of the United Nations
FBO	Farmer-Based Organisations
FSNWG	Food Security and Nutrition Working Group
FCDO	Foreign, Commonwealth and Development Office of the UK government
FCFA	Future Climate for Africa
GFCS	Global Framework for Climate Services
GHACOF	Greater Horn of Africa Climate Outlook Forum
GPCs	Global Producing Centers
ICPAC	IGAD Climate Prediction and Application Center
ICPALD	IGAD Center for Pastoral Areas and Livestock Development
IDDRSI	IGAD Drought Disaster Resilience And Sustainability Initiative
IRI	Columbia University International Research Institute for Climate and Society (IRI)
KMD	Kenya Meteorological Department
NMHS	National Meteorological and Hydrological Services
NGO	Non-Governmental Organisations
NORCAP	Norwegian Capacity
NFCS	National Framework for Climate Services

NUIP	National User Interface Platforms
PICSA	Participatory Integrated Climate Services for Agriculture
Pre - COF	Pre - Climate Outlook Forum
PSP	Participatory Scenario Planning
RCC	Regional Climate Centres
RCOF	Regional Climate Outlook Forum
UIP	User Interface Platform
UNFCCC	United Nations Framework Convention on Climate Change
WISER	Weather and climate information services for Africa
WMO	World Meteorological Organisation
WCC-3	World Climate Conference-3
W2SIP	Weather and climate information services for Africa (WISER) support to ICPAC

CHAPTER 1:

INTRODUCTION

The scope and importance of weather and climate services information is growing in the wake of increasingly devastating impacts of climate variability and change. The World Meteorological Organisation (WMO), the United Nations Framework Convention on Climate Change (UNFCCC) and international agreements including the Paris Agreement, the Sendai Framework for Disaster Risk Reduction or the Sustainable Development Goals (SDGs) acknowledge the important roles of adaptation and risk management in achieving sustainable development and build resilient livelihoods ecosystems and economies.

1.1

The Global Framework for Climate Services (GFCS)

Amidst this, the (World Meterological Organization (WMO) highlighted the need for climate services development, delivery and use to involve relevant stakeholders to ensure sustainability of these programmes (WMO, 2011). They noted that improvements in climate information have not always translated into knowledge and action to inform effective adaptation and disaster risk reduction. Rather than continue with business as usual, the WMO through the GFCS calls for increased interaction between providers and users of climate information at global, regional, national and subnational levels (WMO 2011). This is in a bid to facilitate the development of appropriate climate services and their effective utilisation to address climate-related risks, through management decisions and policies.

The GFCS, an initiative of the United Nations system through the WMO, seeks to improve the provision and use of climate services. Launched in 2009 by the World Climate Conference-3 (WCC-3) as a global partnership of governments and organisations that produce and use climate services, the GFCS has a mandate to enable stakeholders in the climate services value chain (producers, knowledge brokers, intermediaries and users of climate information) to join forces to improve the quality and quantity of climate services worldwide, particularly in developing countries.

WMO systems especially the GFCS provide an overarching framework within which ICPAC has a mandate to not only create and strengthen its own structures and platforms such as the Greater Horn of Africa regional Climate Outlook Forums (GHACOFs) but also to support coordination and multi-stakeholder engagement by its partners in Eastern Africa, sectoral platforms, i.e National Meteorological and Hydrological Services (NMHS) and other actors. This is to be achieved through providing and facilitating access to climate services by users with different requirements through observations and monitoring; research, modelling, and prediction; capacity building; and the creation of User Interface Platforms (UIP). The GFCS is based on the following eight principles:

- Give a high priority to the needs of climate-vulnerable developing countries.
- Put the primary focus on better access to and use of climate information by users.
- Address needs at four spatial scales: global, regional, national and sub-national.
- Ensure that climate services are operational and continuously updated.
- Recognise that climate information is primarily an international public good and that governments will have a central role in the Framework.
- Encourage the global, free and open exchange of climate-relevant data.
- Facilitate and strengthen, rather than duplicate, existing initiatives.
- Build climate services through partnerships.

The GFCS advocates for creation of frameworks at regional and national levels to coordinate and promote activities that support co-production and user engagement in climate services. It engages these issues through 5 pillars: 1. User Interface Platform (UIP) 2. Climate Services Information Systems (CSIS); 3. Observations and monitoring; 4. Research, modeling, and prediction; 5. Capacity building.

Among these, the UIP is a critical component in achieving GFCS goals. It enables the involvement of users in helping to establish the needs, co-develop appropriate products,

identify capacity development requirements and influence the direction of observational investments and research efforts. As such it provides a structured opportunity for co-production principles, requirements and development of approaches for user-producer interaction to develop suitable climate services.

The Case for Co-produced Climate Services

Climate change risks and impacts and the need to respond and adapt are creating new demands for climate services which can deliver relevant and usable information to a diverse range of decision makers. Decisions that can benefit from climate services span from individuals to institutions and from climate vulnerable people to national government policy makers. Yet climate scientists, ('producers' as referred to in this guide), have not always been well connected to the people who need information to make decisions, (the 'users' in this guide), and may make assumptions on what is needed.

Traditionally, provision of climate services has been supply-driven where producers of climate information expect that their products would be useful to users. While a climate scientist perspective rightly considers that all climate information is potentially useful, in practice, information is more likely to be used when it is adapted to a context and purpose and provides information that can inform decisions and enable action.

However, producers' expectations and understanding of the requirements of users, their capacity to interpret and use weather and climate services, and the importance of non-scientific knowledge that users hold are easily disconnected from the users' perspectives. Evaluation of climate information systems in Sub-Saharan Africa in 2015 by the Climate and Development Knowledge Network (CDKN) showed a clear gap between the capacity of climate scientists to produce policy-relevant information and decision-makers' need for such information. Users of climate information at different levels have described climate information as inaccessible and unusable in terms of communication channels, language and complexity. A mismatch between available information and what is needed to support on-the-ground decision-making in addition to the technical nature of climate information has also led to misunderstanding of the uncertainties associated with it (Singh et.al 2018). The result has been that very few of the decision-making processes at various levels actually incorporate climate information. In fact, both Singh et. al (2018) and CDKN (2015) describe the information produced and disseminated by NMHSs and regional climate centres such as ICPAC is often ill-suited to inform decision-making at the local scale, particularly for farmers, pastoralists and sub-national governments. Issues around uncertainty in the forecasts and the clarity of advisories have made it difficult for decision makers to justify allocating funds to address projected climate related risks.

The process of developing climate services that fully meet decision making needs is not easy. With growing attention to the value of climate information in the context of a changing climate, the demand to address the challenge is growing. Also increasing are the experiences, approaches, successes and learning on what works and what does not in delivering climate services to the growing range of users. The immediate challenge is to ensure that climate information providers fully understand the diverse contexts in which users are making decisions, what information is needed and is useful and how producers and users can work together to contextualise and adapt information so that users are able to access, understand and incorporate it into decision making.

By the same token users need to be informed on the limitations of the underlying science and the uncertainties as well as strengths of information provided - so that informed and prudent use is made. These challenges have shifted the focus of both scientists and decision makers to holistic solutions derived from cross-disciplinary and participatory user-oriented approaches. In this way, climate scientists and service providers now strive to work closely with sectoral experts, practitioners, and policy makers in a process of joint problem solving to co-produce climate services that are more effective, relevant, usable, and better suited to users' needs. Hence effective services are developed, delivered and used by and with a wide range of actors.

1.2

Purpose of the guide

ICPAC, is a Regional Climate Center (RCC) designated by the WMO which offers regional climate services and supports its 11-Member States to deliver better climate services to their users. In light of this, the guide aims to:

- Help ICPAC develop fit for purpose climate services that respond to a wide range of decision making and information needs.
- Enable ICPAC staff to better understand and incorporate user-centred co-production approaches into their work.
- Support mainstreaming of climate services in ICPAC and the region including the roll out of the frameworks for climate services at regional and national levels under the GFCS.
- Enable staff to incorporate co-production in proposal writing.
- Improve ICPAC's support to its member countries in developing effective climate services at national and subnational levels.

Achieving these aims will in turn:

- Support the implementation of GFCS at regional and national levels and create an enabling environment to develop effective user-centred climate services.
- Support the cascading of the climate services engagement platforms from regional to national and sub-national levels in the region.
- Strengthen alignment to user needs in the context of current and anticipated risks and impacts of climate variability and change.

The guide primarily targets ICPAC staff (e.g. senior management, sectoral departments, project staff and communication department) engaged in co-production of user-centred climate services which respond to regional and national needs. The guide is also relevant for other RCCs to understand how climate services are developed and delivered at regional levels.

In addition, the guide can be used as a benchmark by regional institutions, NMHSs and other actors to better appreciate the respective roles of ICPAC, NMHS and other actors in the co-production of user-centered climate services in Eastern Africa.

1.3

How to use this guide

This document explains what co-produced climate services can look like in Eastern Africa. It does not give prescriptive instruction, making it adaptable to different levels and regions.

This guide should be used in conjunction with the WISER / FCFA manual- (Carter, Steynor, & Waagsaether, 2019) hereinafter named the WISER/FCFA Manual. The manual contains an overarching explanation and conceptual underpinning of co-production in climate services and draws learning from 18 case studies on co-production, including the W2SIP project implemented by ICPAC. The WISER/FCFA Manual is a key reference document on co-produced climate services. This ICPAC guide does not duplicate its content but builds on the WISER/FCFA Manual to provide guidance specific to ICPAC and the Eastern Africa context.

1.4

Outline of the content and flow

- **Chapters 1-3** introduces the guide and ICPAC's role in climate services, and explain co-produced and user-centered climate services concepts and principles in Eastern Africa.
- **Chapters 4-7** delves into who is involved and how to co-produce climate services, key elements, approaches, roles and activities and gender equity within the services. In this section, Chapter 4 looks into the actors involved and describes how to design and implement co-production with examples from ICPAC work. Chapter 5 adds more detail relating to producer roles. Chapter 6 explores co-production benefits, challenges and opportunities. Chapter 7 elaborates on important gender considerations in climate services.
- **Chapter 8** elaborates the ICPAC communication roles that support and enable effective and successful climate services.
- **Chapter 9** looks into monitoring, evaluation and learning and what is involved to ensure that ICPAC is generating evidence, learning iteratively and evolving approaches and services as a result.
- **Chapter 10** concludes with a roadmap for operationalising the guide within ICPAC including recommendations for strengthening capacity in ICPAC and NMHS towards their leadership of sustainable and quality co-produced climate services.

REFERENCES

Carter, S., Steynor, A., & Waagsaether, K. (2019). Co-production of African weather and Climate services. Retrieved from Future Climate for Africa and Weather and Climate Services for Africa: https://futureclimateafrica.org/coproduction-manual/

Climate change agriculture and Food security. (n.d.). Climate Services and safety nets. Retrieved from Climate change agriculture and Food security: https://ccafs.cgiar.org/research/climate-services-farmers

World Metereological Organization. (2011). Climate Knowledge for Action: A Global Framework for Climate Services-Empowering the most vulnerable(WMO-No.1065). Geneva.

CHAPTER 2:

CLIMATE SERVICES IN EASTERN AFRICA

CHAPTER 2:

CLIMATE SERVICES IN EASTERN AFRICA

Eastern Africa has increasingly been plagued by extreme weather and climate related hazards such as droughts, floods, cyclones or pests. These hazards are increasing in severity, intensity and frequency, exacerbating the negative impacts on the vulnerable populations of the region. It is in this regard that ICPAC has sought to improve provision of climate services to the region by increasing its engagement with international, regional and national stakeholders. This includes supporting its member states to develop National Frameworks for Climate Services (NFCS).

ICPAC supports weather and climate information users within the region to manage climate related risks and opportunities for resilience. This section outlines these multiple roles, which form the foundation on which ICPAC is able to become a leader in promoting and supporting co-produced climate services in the region.

2.1

ICPAC's role in climate services in the region

Over the years, ICPAC has been moving away from a product-focused, academic-driven, and data-oriented production mode to a more user-driven, service-focused, context-driven, and decision-oriented approach. ICPAC as the WMO Regional Climate Centre (RCC) for Eastern Africa currently performs mandatory and recommended functions which include climate forecasting, monitoring, data services, training, generation of tailored products relevant to user needs and climate change related services among other functions. ICPAC facilitates implementation of all the five pillars of the GFCS and is mandated to implement and support climate services at regional, sub-regional, national and sub-national levels across the region. As such, ICPAC forms a regional node in the GFCS Climate Services Information System (CSIS) which is often described as the "engine room" for generating Climate Information Services. The GFCS CSIS and UIP structures promote 'spaces' such as the GHACOF and NCOF which embody the principle of co-production and capacity building - both key ICPAC commitments. ICPAC strengthens the capacities of its Member Countries NMHSs' in climate modelling, prediction, dissemination of services and user engagement and enhances linkages to Global Producing Centers (GPCs), research and specialised climate science institutions such as European Centre for Medium-Range Weather Forecasts (ECMWF), Columbia University International Research Institute for Climate and Society (IRI). This is in a bid to enable NMHSs to meet their national needs in weather and climate information services, improve their access, uptake and use of climate information, and improve delivery of climate services that are well aligned with the objectives of the GFCS. These developments have necessitated a clear need for an ICPAC guidance document on co-production, as it embarks on revamping climate services within the region.

2.2

ICPAC engagement at regional level

As an IGAD specialised institution, ICPAC supports climate products and services development and delivery at the regional level, and acts as a regional platform for interaction among Member Countries. In addition to regional and transboundary activities, ICPAC engages with other IGAD specialised institutions to support regional, sub-regional and transboundary measures to improve long term climate resilience. ICPAC also co-chairs with FAO a key regional multi-stakeholder Food Security platform, the Food Security and Nutrition Working Group (FSNWG) which is described in Chapter 4. Effective climate services provided by ICPAC aim to facilitate climate-smart decisions in climate-sensitive sectors and institutions that reduce the impact of climate-related disasters, improve food security, health, environmental and water resource management.

One of ICPAC's key roles in the provision of regional climate services is to bring together the producers of weather and climate information with those who use the information to make decisions (sectoral users and policy makers) mainly during Regional Climate Outlook Forums (RCOFs) and capacity building activities. A detailed description of how the GHACOFs contribute to co-production of climate services is given in Chapter 4.

ICPAC facilitates implementation of all the five pillars of the GFCS and is mandated to implement and support climate services at regional, sub-regional, national and sub-national levels across the region.

ICPAC supports climate products and services development and delivery at the regional level, and acts as a regional platform for interaction among Member Countries.

Many projects such as the Weather and Climate Information Services for Africa (WISER) project have a purpose to enhance community resilience through fostering climate services and knowledge.

2.3

ICPAC engagement in projects

Projects supported and funded by partners are key to strengthen the co-production of climate services in the ICPAC Member States. Many projects such as the Weather and Climate Information Services for Africa (WISER) project have a purpose to enhance community resilience through fostering climate services and knowledge. The projects are tailored to contribute to improve development and use of co-produced climate services to inform regional, national and sub-national policies and decision making. These projects are leading to an increased number of people in user and producer organisations that are trained in development, co-production and use of climate services. For instance, WISER projects have contributed to an increased number of regional and national organisations with enhanced capacity to participate in development and use of climate services, new and improved data/services access, new and upgraded technology such as the High Performance Computing (HPC) Cluster and Storage System, advanced interactive Enhancing National Climate Services (ENACTS) Maprooms, new and improved co-produced products and services and reporting on uptake of co-produced weather and climate services. In addition, implemented activities in these projects have strengthened the capacity of ICPAC and NMHSs to deliver value-added and co-produced climate services. Some organizations such as NORCAP have seconded experts to ICPAC in User Engagement, Climate Information and Programming to strengthen dissemination and tailoring of these Climate Services.

ICPAC's capacity as a knowledge and learning hub on co-production of climate services has been strengthened through project activities and through expert deployments. Staff have increasingly gained skills in co-production and other participatory approaches including facilitation skills to engage and support co-production grassroot users. The projects have helped provide learning platforms and training to NMHSs in their capacity as project partners and beneficiaries. See Chapter 4 for examples of how ICPAC integrates different aspects of co-production approaches to climate services within projects.

CHAPTER 3:

CO-PRODUCED CLIMATE SERVICES

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CHAPTER 3:

CO-PRODUCED CLIMATE SERVICES

This chapter explains the purpose of and concepts behind co-produced climate services. It draws on the WISER / FCFA Manual and on the outcomes of an Eastern Africa Regional Peer Learning workshop. The workshop was held in 2019 to build capacity of actors with a regional mandate and co-develop a regional understanding of co-production and how it is already being implemented. The learning workshop involved sharing of participants' knowledge and experiences in a range of interactive formats including a marketplace to share practical approaches, group work to co-create elements and principles of co-production, games to understand climate concepts, group rankings and prioritising of skills and capacity needs.

3.1

Climate services

Climate services refer to the production, delivery and use of climate information in order to assist decision-making by individuals and organisations. (World Meteorological Organisation, 2018) Effective climate services facilitate climate-smart decisions that will reduce the impact of climate-related disasters and improve socio-economic development, food security, climate resilience, adaptation and disaster risk reduction - leading to reduced climate-related vulnerability. Climate services aim to transform investments in producing climate information into societal benefits of preparedness for extreme climatic events and improved resilience. Climate services involve a wide range of actors in the production, translation, communication, and use of climate information for informed decision making and sustainable policy and planning (Climate Services Partnership, 2021). **(See Chapter 4 for information on actors)**

A climate service is relevant when designed to meet a specific purpose, such as informing a decision for investment or risk reduction, prevention and management. To achieve this, the actors who need the information to make decisions should be fully involved in the service design process i.e. development, design, delivery and evaluation of the service.

The following features are prerequisites to ensure appropriate design, delivery, and effective use of climate-related information for investment and risk management decisions (Tall et al. 2013):

- **Salience:** tailoring content, scale, format and lead time to decision-making.
- **Access:** ensuring timely, inclusive access to all at-risk people.
- **Legitimacy:** giving users an effective voice in the design and delivery of climate services intended to support them.
- **Equity:** ensuring that women, poor, older people and socially marginalised groups and livelihood groups have access to and can use available climate services.
- **Integration:** providing climate services as part of a larger package of assistance, enabling users to act on received information.

A climate service involves four interlinked core functions. In an effective service, each function interacts with and informs the others in a cyclic process.

- **Production of Information:** the generation of relevant and quality climate information products that are informed by and respond to expressed demand and feedback from users. The products are based on and drawn from accumulated climate science data sets and knowledge about the past, present and future state of the climate system including from scientific, local and traditional knowledge.
- **Interpretation for Use:** the process by which all concerned actors combine and interpret knowledge and translate the scientific information into locally contextualised, relevant, useful and usable information that fits the required decision context. Interpretation includes for example: unpacking the meaning of information for a particular decision context, developing contextualised and downscaled products and advice (or advisories) relating to a specific sector or enterprise and deciding early warning thresholds.
- **Communication:** collectively agreed channels and systems by which the information and products become accessible and usable by all those needing it.

- **Use of Climate Information:** Users make and act on decisions informed by and based on their assessment of the information they have accessed. Decisions may relate to sector service provision, livelihood or technology choices, socio-economic development, risk reduction where these are sensitive to climate extremes, variability and change.

While the functions are described sequentially below here, in practice they are cyclical and not linear. For example:

- The need for and use of information drives generation of new products.
- Translation involves all actors and may lead to new change in the products or uses.
- New products may drive new uses or connect with new users.
- Communication channels must be relevant and accessible to the intended audience, and;
- To function well, product development must be informed by user needs and their feedback on what they used, how they applied the products and what worked (or not).

The core functions therefore need to be supported by related functions and processes that ensure a cyclical and iterative process.

Important related functions involve coordination and feedback systems that facilitate and enable knowledge brokering (facilitated exchange of knowledge and information) among concerned actors so that they know and connect with each other, collaboratively engage in developing products, advisories and communication systems, learn from each other and develop relationships and contacts to allow for climate services to continue to evolve as climate change brings new risks and challenges. In Figure 1 these related functions are shown as the multiplier function and learning loops which cut across and connect all the core functions. An illustrating example is given in Box 1. Identification of the type and form of services to be developed or refined is informed by these connections and the relationships that are fostered between all the actors. Co-production is described in detail below and practical guidance provided in Chapter 4.

Figure 1 shows the core functions and the related functions (multiplier and learning (and feedback) loops) that create linkages across functions and enables the service to operate in a dynamic way. Linking climate knowledge to action is presented here as a knowledge value chain (as does the GFCS), (World Meteorological Organization, 2018) where supply and demand for climate information determines the service to be delivered, and where service delivery from producer to consumer and consumer feedback to producer is enabled by a range of actors and related support functions. A value chain representation is useful in understanding the components and actors involved in climate services and how they connect. It shows that:

1. A demand-led climate service has greater impact than a supply-driven one.
2. A weakness in one aspect of the chain will have consequences with respect to the usefulness of the information, products, and services provided.
3. A climate service is more than a climate product. A climate service may generate and use climate products but involves a wider range of elements and actions as required to deliver to and benefit the target audience.
4. A clear linkage is necessary between the production of climate services, their delivery, users' decisions, and the benefits that arise from them.
5. Inputs in the form of weather and climate science must be translated into user-specific products and services that aid climate resilient decision making, resulting in socio-economic benefits.
6. Interaction between all the different parts of the chain is what really makes a climate service, and not just an individual piece. Piecemeal investment in weather and climate services is likely to result in information that is not used or does not serve the intended purpose.
7. Feedback on client satisfaction is important for improving the product - i.e. climate products are enhanced by feedback on users' needs, the actions they take and the benefits and impacts they experience.

The value chain represents the elements that have to be considered to establish successful co-development of climate services with multiple actors. However, effective climate services do not follow the classical understanding of a linear "product to consumer" value chain. (Steynor, Vogel, & Manyuchi, 2019) As stated above and in Figure 1, climate services require a comprehensive iterative and interlinked process in which all actors have equal contribution to the service development and delivery, and "consumer" feedback and engagement in all stages is important.

A cyclic and dynamic approach to climate services is also essential to respond to the constant evolution of climate change and variability, climate science capacity and demands for information, none of which are static. Ensuring that a climate service delivers through a cyclic process enables decision-making for climate resilience action, also for new climate science, for new forms of engagement and communication over time and for new climate services as a whole.

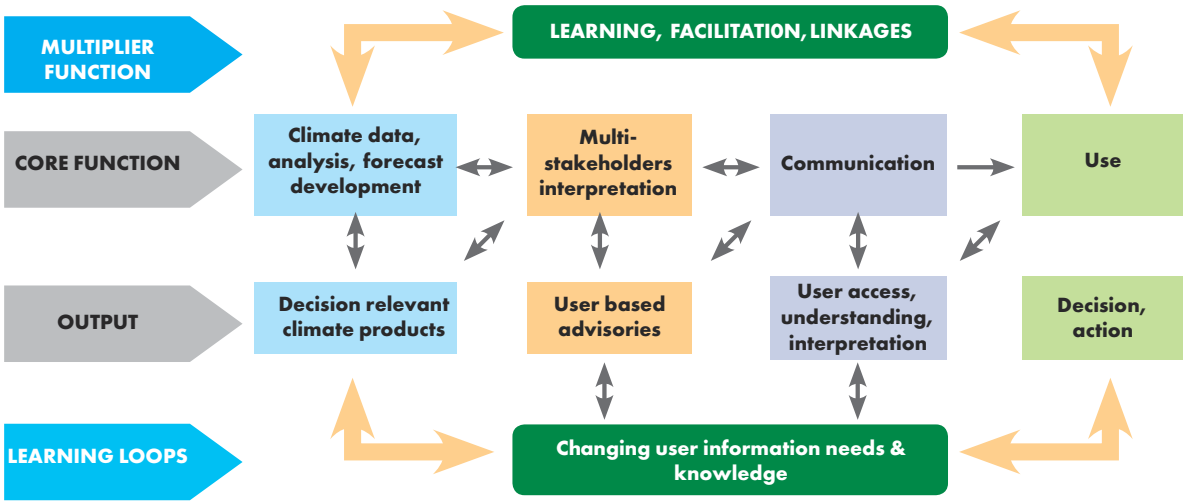


Figure 1: Knowledge value chain for user centered climate information

Box 1: Knowledge value chain for user centered climate information

The knowledge value chain in Figure 1 is illustrated here through a summarised example from one climate service, which uses the Participatory Scenario Planning (PSP) approach. More details on actors and how climate services work in practice are provided in Chapter 4.

Core functions:

- **Data analysis and forecast development:** This is done by NMHSs to produce the seasonal forecast. This may be enhanced with involvement of other actors for sector or location downscaling. It is informed by the initial needs of the users of the service and subsequent feedback from them and other actors on the usefulness and impact of the climate products they received.
- **Output:** Seasonal forecast.
- **Interpretation:** A multi-stakeholder forum is held at sub-national level with NMHSs staff and a range of sectoral, intergovernmental, non-governmental and community actors whose services and livelihoods are climate sensitive. The forecast is shared, combined with the local traditional forecast and interpreted in relation to the past season, current situation and context specific knowledge and needs.
- **Output:** Localised seasonal forecast and advisories for below normal, normal and above normal scenarios.
- **Communication:** Participants in the forum make a communication plan and implement it, so that the forecast and advisories are shared to the communities and services in the location. They may use channels such as local and vernacular radio, WhatsApp, SMS, community meetings or extension services.
- **Output:** E.g. Climate Information mainstreamed into Radio programming, Chiefs' announcements, Extension advisory messages.
- **Use:** Sectoral services and community members use the information to make decisions for their investments and risk management in the coming season. For example, farmers decide on which crops and varieties to plant and when to plant or irrigation requirements; livestock keepers decide on grazing and fodder plans and animal health requirements; agri-businesses decide on inputs and markets to target.
- **Output:** Decisions and actions taken by people with climate sensitive lives and businesses.

Related Functions:

- **Multiplier function:** Awareness raising on the opportunity for a seasonal climate service; support to establishing a design and planning team at sub-national level with key actors and strengthening relationships; support resource mobilisation, identification of actors to engage and invite including securing NMHSs presence and media representation; organisation of the multi-stakeholder forum; design of the programme and facilitation plan for the forum; give guidance to all those with a role to play, facilitation of the forum, ensure documentation of the outcome and plans made, conduct a debrief session after the forum, follow up to see that plans are implemented and relationships between different actors are sustained; ensure that the climate service core functions continue to be connected, inform each other and are iterative and cyclic.
- **Learning loops:** Establish a feedback and monitoring system; support collection of feedback and information on reach, use, impact and benefits of the forecast and advisories; support mechanisms for the information to be shared with the communicators and producers of the information; convene review and learning meetings with the core team and across several locations between seasons to review the outcome and re-design the forum for the next season, increase learning among peers, and inform NMHSs of any changes and new demands; support the implementation of improvements and new services based on feedback.

3.2

Timescales in Climate Services

Climate extremes, variability and change occur at different intervals of time, with widely varying impacts. Climate information is needed to support early warning for daily or even hourly decisions at one end of the timescale and to support long term investment decisions at the other. Scientific climate information in turn is available for different timescales from hourly, daily and weekly considering intra and inter annual variability and long term relating to climate change. Predictions and forecasts are made for short term to seasonal time scales while projections based on probabilities and scenarios are made for near- and long-term time scales. All carry some limitations in their reliability, although very short term are generally more accurate. Note however that climate change is not limited to the long term, it also affects short term weather events leading for instance to increased extremes, variability and seasonal patterns, adding new elements of risk and adding challenges for climate science.

Climate services will therefore be most beneficial when they are designed to suit a particular purpose at a particular timescale and location. For example, they can help political leaders make decisions on Public Expenditures, Strategies and Plans based on (Climate Change projections; Ministries and the Private Sector) make medium-term decisions related to planning based on inter-annual climate variability or help communities and agriculture and food security stakeholders make short-term decisions on what to plant or when to sow.

Decisions can relate to daily operations or long-term planning. For example, in the context of Eastern Africa, short term and seasonal information is useful for humanitarian and emergency response organizations that work to reduce impacts of extreme events and initiating early warning systems to guide people's preparedness to and respond. This would include using remote sensing to identify worst hit areas needing immediate response. It also helps farmers to make decisions on when to plant and what varieties to choose and make choices for crop and livestock management in the coming season, such as deciding on migration routes for livestock during drought and improving food storage options if an unusually wet season is forecasted.

Longer term climate information is useful for decisions that will have long term impacts including policy decisions, infrastructure and urban planning and investments and design decisions such as irrigation infrastructure systems, integrating roads development with water run off storage and management, forestry (species choice) and changing crop and varieties to respond to observed and projected conditions under a changing climate. Figure 2 provides more examples for agricultural decision making.

It is important that the timescale of a climate service is identified at the start and matches the timeframe, type and level of decision-making process it is intended to support. Climate services must therefore have an orientation that extends from sub-daily (weather forecasting) to centennial (future climate change scenarios) time scales.

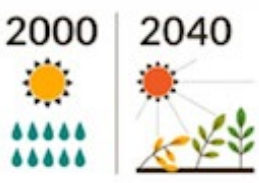
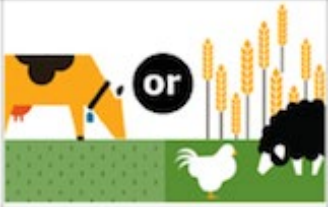
	Type of information	Vehicles for delivering information	Farmer decisions affected
WEATHER **Days to weeks**			
	• Observed rainfall and temperature • Daily forecasts up to one week ahead of time • Alerts on pests and diseases • Early warning of extreme weather events	• Mobile phones • Radio • Television	• Timing of planting and harvest • Timing of fertilizer, pesticide, and irrigation application • Protecting lives and property from extreme events
CLIMATE VARIABILITY **Months to Years**			
	• Probabilities for seasonal rainfall and temperature conditions • Seasonal climate variables targeted to particular agricultural risks (dry spells, rainy season start date, etc) • Historical variability of climate variables	• Workshops with experts • Conversations with agricultural extension agents (farm educators)	• Selecting crops and varieties • Livestock stocking rates and feeding strategies • Intensity of input use (fertilizer, pesticides) • Labor or marketing contracts • Intensifying and diversifying crops • Diversifying sources of income
CLIMATE CHANGE **Decades or longer**			
	• Projections of future rainfall and temperature • Historical trends in rainfall and temperature • Historical changes in extreme events	• Workshops with researchers, agricultural extension agents, and meteorological services.	• Major capital investments (buying or expanding landholding, irrigation systems, farm equipment etc) • Changing farming system or livelihood strategy • Deciding whether or not to farm

Figure 2 : Examples of decisions made by farmers at different timescales. (Climate change agriculture and Food security, n.d.)

3.3

Co-produced climate services

Co-production aims at improving the availability, accessibility, quality, use and impact of weather and climate services to meet identified needs, address a shared concern or interest and to encourage better use of these services in a range of decisions across many sectors.

Definition: Co-production is a process which brings together different knowledge sources and experiences to jointly develop new, combined and relevant knowledge and systems to enable its intended use in specific decision-making contexts.

Co-production guides how the core and related climate service functions described above can be designed and delivered in a collective way with all relevant actors. It involves joint or collective processes which result in new or refined climate products and forecasts answering a specific need; systems for collective interpretation into actionable advisories; collective agreement on communication; development of delivery and feedback systems. All actors who take part in co-production actively inform the content, format and delivery of climate services in the different core and related functions, thereby making them more context-specific and relevant to a decision or intervention. Effective co-production is a facilitated learning and planning process that enables all actors to better understand one another's needs, constraints and preferences and supports them to produce, facilitate and use new or improved information and services.

From a producer perspective, co-production helps to transform climate data into information and then into client-tailored climate services, including relevant forecast-based advisory services and decision-making tools that the client can make use of. Co-production makes clear that a climate service is focused on use and purpose and is much more than climate information. Co-produced climate services are increasingly being adopted across the Eastern Africa region to support institutional and individual climate-sensitive decision-making. This is in line with the increasing attention that ICPAC has on integrating climate change into its forecast products. Box 2 describes ICPAC's support to integrate co-production processes at national level through the roll out of National Frameworks for Climate Services (NFCS).

Box 2: ICPAC support to Co-production in National Frameworks for Climate Services (NFCS)

WMO systems and especially the GFCS provide an overarching framework within which ICPAC has a mandate to create and strengthen its own structures and platforms for climate services (such as the Greater Horn of Africa regional Climate Outlook Forums (GHACOFs) and to support coordination and multi-stakeholder engagement by its partners. ICPAC has a role to play in bringing the GFCS into operation at regional level and supporting development of the roll out at national level. It advocates for co-production of climate services to be adopted in all member states as outlined in the GFCS. At national level, countries are developing National Frameworks for Climate Services (NFCS) and National User Interface Platforms (NUIPs). Tanzania has finalised its NFCS National Action Plan for 2018 to 2025 as part of an earlier WMO project to develop NFCS (Tanzania Metereological Agency), Ethiopia is already advanced in developing one and Rwanda is being supported by UNDP to develop theirs.

ICPAC is supporting the NMHS in the member states to use a co-production process at the national and sub-national level in line with the guidelines for NFCS, providing capacity building to NMHS on request (World Meteorological Organisation, 2018). Since 2020 WMO has been partnering with ICPAC to facilitate the development of more NFCS in the region, starting with Kenya and Uganda, working together with the Kenya Meteorological Department (KMD) and Uganda National Meteorological Authority (UNMA), for four priority sectors (Agriculture and Food Security, Health, Disaster Risk Management and Water). Kenya and Uganda were selected following WMO's recommended guideline for selection of a country which includes (i) Demonstrated demand and political commitments in implementing and sustaining the GFCS; (ii) Commitment by regional partners; (iii) Enabling environment including relevant on-going and planned projects; (iv) Existing opportunities to realise strategic synergies with other international mechanisms; and (v) Willingness to share data in accordance with WMO resolutions (25, 40, 60); and Article 7 of the Paris Agreement on sharing of information, good practices, and experiences and lessons learned; and (vi) Risk assessment. ICPAC will expand this support to other Member Countries over time.

Table 1: The WMO guidelines for NFCS development lay out the following steps

WMO Steps for NFCS development	Related co-production building block
Step 1: Assess the baseline on climate services capacities at national level, to identify users and providers, map existing services and establish capacities.	Identify key actors and build partnerships.
Step 2: Organise a national consultation workshop on climate services to bring together all relevant stakeholders and identify gaps and key elements for the development of a national action plan for NFCS implementation.	Build common ground and co-explore need.
Step 3: Develop a national strategic plan and costed action plan on climate services for establishment of the NFCS.	Co-develop solutions.
Step 4: Endorse the strategic plan and a costed action plan with timelines for NFCS implementation.	Co-develop solutions.
Step 5: Launch the NFCS, implement the national action plan on climate services and conduct rigorous monitoring and evaluation.	Co-deliver solutions and evaluate.

ICPAC's role in supporting the NFCS process is an opportunity to strengthen capacity and commitment among NMHSs for co-produced climate services as a mainstream component of their national climate services action plan. Co-production can be integrated particularly into Steps 1, 2 and 3, using a combination of the WMO guidelines and the co-production building blocks (see Chapter Four). ICPAC should ensure the principles of co-production are also followed in the approaches that are developed, supported and enabled by the structures and coordination mechanisms that the NFCS will establish.

The key to a co-production approach is in connecting all the actors in order to ensure the climate service responds effectively to its purpose and solves a problem where weather and climate information is relevant. This connecting function is critical to ensure that the identification of actors, and the convening, collaboration and co-production process with all actors concerned is well thought through, well designed and well facilitated with oversight of the needed linkages in the overall climate service. Facilitators of co-production processes must enable the actors to understand opportunities and constraints to availability, awareness, access, interpretation and adaptation to context, communication, uptake, use, benefits and needs for improvement of climate services. That understanding is needed to enable multiple actors to learn and work together to collectively develop the overall climate service and its components, including feedback loops. Chapter 4 describes the actors and steps to implement co-production in detail.

3.4

Guiding principles for co-producing climate services

The WISER/FCFA Manual introduces and explains in detail ten overarching principles of good co-production. These principles are based on experiences and learning from various projects on co-production and climate services over time and provide an excellent reference. However, it is also important to contextualise these principles as appropriate, which has been done for ICPAC through the W2SIP project. The Regional Peer Training and Learning workshop on climate services in 2019, with 70 participants from the region, facilitated co-development of co-production principles important for climate services. The principles developed for the Eastern Africa region listed below have a strong overlap in their meaning with the principles outlined in the WISER/FCFA Manual, though some are described in slightly different terms.

Box 3: Eastern Africa region co-production principles:

Co-production ensures that climate services in the region include:

1. Multi-stakeholder cooperation and coordination.
2. Mutual respect among all actors and diversity.
3. Shared vision and common objective to ensure value for all actors.
4. Inclusivity, accessibility and participation.
5. Flexibility and innovation.
6. User-centred, customer satisfaction focused purpose.
7. Sustainability, consistency and timeliness.
8. Reliable, evidence-based information.
9. Accountability and transparency, efficiency, commitment.
10. Ownership and actor responsibility.

Two principles in the Manual that were not included in the regional list and are also acknowledged that to be key are:

- Conscious facilitation (of the whole process) and
- Communicating in accessible ways

REFERENCES

Carter, S., Steynor, A., & Waagsaether, K. (2019). ***Co-production of African weather and Climate services***. Retrieved from Future Climate for Africa and Weather and Climate Services for Africa: https://futureclimateafrica.org/coproduction-manual/

Climate change agriculture and Food security. (n.d.). ***Climate Services and safety nets***. Retrieved from Climate change agriculture and Food security: https://ccafs.cgiar.org/research/climate-services-farmers

Climate Services Partnership. (2021). ***What are climate services?*** Retrieved from Climate Services Partnership: https://climate-services.org/about-us/what-are-climate-services/

Dorward, P., Clarkson, G., & Stern, R. (2015). ***Participatory Integrated Climate Services for Agriculture (PICSA):Field Manual***. Walker Institute, University of Reading. Retrieved from https://hdl.handle.net/10568/68687

Hewitt, C., Mason, S., & Walland, D. (2021). ***The Global Framework for Climate Services, Nat.clim.change, 2***. Retrieved from doi:10.1038/nclimate1745.

Steynor, A., Vogel, C., & Manyuchi, A. (2019). ***Climate Services in Africa: Re-Imagining and inclusive, robust and sustainable service. Climate Services.***

Tanzania Metereological Agency. (n.d.). ***National Framework for climate services 2018-2025***. Retrieved from https://gfcs.wmo.int/sites/default/files/FINAL%20SIGNED%20NFCS%20PRINT%20TANZANIA.pdf

Tall, A., Kristjanson, P., Chaudhury, M., McKune, S., & Zougmore, R. (2014). ***Who gets the information? Gender, power and equite considerations in the design of climate services for farmers. CCAFs Working Paper No.89. CGIAR Research Program on Climate change, Agriculture and Food Security.*** CopenHage, Denmark. Retrieved from www.ccafs.cgiar.org

Taylor, A., Scott, D., & McClure, A. (2017). ***Trans-disciplinary, Co-Production and Co-Exploration: Intergrating Knowledge across Science, Policy and Practice in FRACTAL.3.*** Retrieved from http://www.fractal.org.za/wp-content/uploads/2017/03/Co-co-trans_March-2017.pdf

Vaughan, C., & Dessai, S. (2014). ***Climate Services for society: Origins, institutional arrangements and design elements for an evaluation framework: Climate Services for society. Wiley Interdisciplinary Review: Climate change***.

World Meteorological Organization. (2018). ***Step-by-step Guidelines for establishing a National Framework for climate services, WMO-No1206.*** Retrieved from https://library.wmo.int/doc_num.php?explnum_id=4335

World Metereological Organization. (2011). ***Climate Knowledge for Action: A Global Framework for Climate Services-Empowering the most vulnerable(WM0-No.1065).*** Geneva.

CHAPTER 4

IMPLEMENTATION OF CLIMATE SERVICES

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CHAPTER 4

IMPLEMENTATION OF CLIMATE SERVICES

This chapter describes the actors and practical processes involved in climate services. It gives detailed information on what co-production is and how it can be applied at ICPAC, using GHACOF as a core example as well as illustrating aspects of co-production in other areas of work.

4.1

Actors involved in implementing climate services

A wide range of actors and relationships are involved in each part of the core value chain cycle and in the related functions of climate services development. Actors fall into three main categories: producer, intermediary and user, and this guide uses these terms in the same way as the WISER/FCFA Manual (see Chapter 2.2.3). The WMO NFCS guide also gives a detailed breakdown of actors which are referred to in this chapter within the three categories.

Box 4: Categories of climate services actors

Producers of climate information include actors who hold or produce raw scientific data (e.g. meteorological station data, remote sensing data, model outputs) and/or have the responsibility for converting this data and/or already processed data and products into a form that is appropriate for the user of information. They may be observers, modelers, forecasters, product developers, in-country or external and include research institutes, climate science institutes and meteorological services such as GPCs, RCCs and NMHSs. They also include community level traditional forecasters whose local knowledge is important for understanding, downscaling and validating information at the local level. While different producers often use climate information and products, they do so in order to produce better products and services. For clarity in this guide, this is not considered as climate information use.

Intermediaries have content knowledge and play the role of a knowledge broker, or connector, in co-production. Intermediaries cover the range of actors who enable the value chain to operate, provide or facilitate the related functions, bring additional knowledge and connect producers and users. They may include sectoral experts and ministerial departments (e.g. Agriculture, DRM, Water, Health, Energy), communicators and boundary organisations (e.g. Broadcast Media, ICTs, vernacular radio, Telecom companies, Agricultural Extension Officers, NGOs, CBOs), enablers and partners from government, public and private institutions, Non-Governmental Organisations (NGOs), Community-Based Organisations (CBOs) and Faith or Farmer-Based Organisations (FBOs). Boundary organisations or 'spanners' which play a role in connecting diverse actors and overcoming obstacles to co-production such as institutional silos also fit in this category.

Users are defined as people, or organisations, that benefit from access to, and the use of, climate information. The ultimate benefits relate to enhanced socio-economic development, more resilient livelihoods and ecosystems, and reduced risk. The use of climate information for decisions may enable more successful innovation, technology development and sector service provision. Users may be regional, national, sub-national or community level, and may be individuals or organisations.

Users who are directly affected by weather and climate change risks and impacts need actionable climate information. They may include individuals such as farmers, pastoralists, fishermen, forest, water and natural resource users and managers, small enterprises depending on natural resources or infrastructure developers, where climate information enables decisions and actions that increase their climate resilience.

Users may also be institutions such as climate sensitive sector departments, relevant specialised institutions, planning officials, decision- and policy-makers, relevant ministries and authorities, public and private media, NGOs, CBOs, FBOs who use climate information to make and implement well informed and strategic decisions and plans for their business, public service or any other intervention. When designing a climate service, it is helpful to distinguish between individual users, and institutional users as the approaches and intermediaries needed to interact with them are quite different.

Relationships between actors and multi-stakeholder engagement

The relationship between user, producer and intermediary is important. The generation and communication of climate information products should be user-driven, and based on feedback on the usefulness and challenges related to the access and use of the information. The process of co-production in developing decision-relevant climate services recognises users (whether institutional or individual decision-makers/livelihood groups or other) not as 'end' or 'last mile' users, but as equal partners in the ongoing dialogue and cycle of product development, use, feedback, review and product improvement. Developing climate services requires clarity on who to involve, their roles and responsibilities and collaboration between all these actors. Intermediaries facilitate interaction between the different actors and functions, and build capacity in playing these functions.

Beyond the individual roles of these three types of actors, multi-stakeholder collective interaction lies at the centre of co-production processes, bringing together the range of actors concerned and allowing them to fully understand each other's different interests, needs, aspirations, knowledge and skills. The quality of the design and facilitation of this interaction is a determining factor of success. It involves a range of process-related actions and the related function in the climate services value chain: convening, coordination, designing and facilitating multi-stakeholder decision making processes, ensuring all actors are clear on the purpose of the climate service involved, enabling communication, monitoring and feedback mechanisms between all actors and at all levels and directions, focusing on impact, and seeking ways to improve service components, interactions and delivery in the face of ongoing and future climate risk, uncertainty and resilience. These tasks usually, but not always, are to be undertaken by an intermediary and require considerable specific skills. (See Chapter 10 for more information on capacities and skills needed.)

The interactions enrich climate services by linking market, sectoral, livelihood or risk management needs to available climate services while paying due attention to usability and applicability of the services. Hence, rather than thinking only of producer-user engagement, the discourse has moved on to multi-stakeholder, interdisciplinary engagement where all actors who have a role to play are involved. This interaction means that users, intermediaries and producers work together to co-explore, co-develop and co-deliver climate services that respond to evolving needs in an iterative process. Multiple roles are also common. As can be seen from the list of possible actors, a single organization may function in more than one actor category, in different departments or different situations, and/or play different roles within one of the three categories. This is the case for ICPAC.

ICPAC is a producer and an intermediary

As a producer, ICPAC provides climate data, information and products directly to user and intermediary organizations at regional and national levels, and to other producers, particularly the NMHSs in the 11-member countries.

ICPAC's role as an intermediary organization relates to its involvement beyond climate science, supporting information delivery and capacity development in climate services to regional actors in Eastern Africa, sectoral services, NMHSs, implementers in projects ICPAC is part of and other intermediaries. Intermediaries working closely with ICPAC include Media, international NGOs such as CARE and the Red Cross, United Nations Agencies and programmes such as the Food and Agriculture Organization of the United Nations (FAO), the World Food Programme, and networks and institutions such as the Food Security and Nutrition Working Group (FSNWG), the Eastern Africa Grain Council (EAGC), the Famine Early Warning Systems Network (FEWSNET) other IGAD specialised institutions, among many. These organisations are often both institutional users of climate information and intermediaries and hence are able to support ICPAC's knowledge of user needs and support users to access information. ICPAC also supports NMHS to improve their knowledge and skills to work with intermediaries.

Table 2 gives examples of the different ways in which ICPAC, with its regional mandate, operates as a producer and as intermediary. Box 4 and 5 presents two more detailed examples of the roles of some actors working closely with ICPAC.

Table 2: Some key target institutions and related ICPAC Producer and Intermediary Roles

Target Institution	Climate Service Engagement (P = Producer, I = Intermediary, U = User)	ICPAC role / contribution (P = Producer, I = Intermediary)
IGAD specialised institutions and Initiatives (I, U).	• Conflict Early Warning and Response Mechanism (CEWARM). • IGAD Center For Pastoral Areas and Livestock Development (ICPALD). • IGAD Food Security, Nutrition, and Resilience Analysis Hub (IFRAH). • IGAD Sheikh Technical Veterinary School. • IGAD Disaster Risk Management Programme. • IGAD Drought Disaster Resilience Sustainability Initiative (IDDRSI).	**P:** Co-production of climate information and services. **I:** Communication, networking, facilitation, capacity support, partner in projects.
Regional networks and working groups (sector based) (I).	• Food Security and Nutrition Working Group (FSNWG). • Network of Climate Journalists of the Greater Horn of Africa (NECJOGHA).	**P:** Climate information tailored to need. **I:** Co-chairing. Media communication of forecasts and other CI across the GHA.
National climate science and NMHSs.	• National Meteorological and Hydrological Services (NMHS) (P). • Climate science focused Universities and Research institutions (P, I, U)- Producers create climate predictions, applications, and early warning information on a day to day basis from climate data, e.g. GPC data, and from existing products. (P). Collaboration through the sharing of climate research and resources published by students and lecturers.	**P:** Co-production of climate data, information and services. Receive national observation data, use GPC data. Develop and provide new, tailored products which NMHSs can use to develop improved products. **I:** Capacity support, create opportunity to meet and engage users - such as at GHACOFs, facilitate co-production processes, networking.
Institutions of higher learning and research.	• Public and private universities and colleges researching and teaching courses relevant to climate services. • Research institutions in climate sensitive sectors. • Research to support development of new climate services.	**P:** Climate science and information tailored to need. **I:** Invitation to events e.g. GHACOF. Facilitate co-production of climate services
National Government Sectors (I, U).	e.g. Agriculture, water resources, disaster management, energy, forestry, urban development, health, fisheries. Require user focused climate information for decision making and supporting decision making at sub-national to community level. - Provide important sector data. • Provide feedback on status of use and needs of climate information at sub-national and local levels.	**P:** Co-production of climate information and services. Support to downscaling of regional Information. **I:** Enable participation in GHACOFs and convene sectoral discussions. Disseminate regional sector specific information, partner in projects.

Target Institution	Climate Service Engagement (P = Producer, I = Intermediary, U = User)	ICPAC role / contribution (P = Producer, I = Intermediary)
The Media (I).	• Radio, TV, Print, Online journalists from Eastern Africa. • Disseminate regional and downscaled climate information through various communication networks.	**I:** Collaboration in communicating and disseminating regional and downscaled climate information and advisories to sectors. Convene media at GHACOFs. Source of information for media. Mediate between complex climate science terminology and communication to the public. **Example:** NORCAP Assessments and subsequent deployment of experts to develop Climate Information and user engagement capacity at regional and national levels.
Politicians, policy makers, and Government officials (U)	• Decision makers and planners from a wide range of sectors – and ministries, including planners and economists, social scientists, liberal arts, lawyers, accountants or administrators. • Require synthesised information to support decisions for climate-proof medium- to long-term plans, policies, investments and budgetary allocations.	**P:** Climate information to guide policy. **I:** Collaboration, policy engagement, policy briefs and communications.
Private sector and umbrella organisations such as Private Sector Associations.	Multiple roles e.g. they; • Require tailored climate information to inform decisions to avoid risk and vulnerability, reduce losses, increase resilience or profits or environmental responsibility (U). • Market technology solutions needed for climate services (I). • Are climate information producers (P).	**P:** Climate information. **I:** Collaboration, partnerships to improve climate services.
NGO Sector (I, U)	• Work in climate sensitive sectors (agriculture, environment, water etc.) and in adaptation, climate resilience and DRR where they need information for planning and decisions (U). • Act as boundary agents, facilitators and communicators with project beneficiaries (I). • Facilitate co-production processes and convene actors (I).	**P:** Climate information. **I:** Collaboration, project partners.

One of the main platforms that ICPAC uses for connecting stakeholders are GHACOFs (described in detail in section 4.3 of this chapter). Sector-specific engagement platforms are also pathways for ICPAC to facilitate delivery of climate information and mechanisms for feedback. At national level, the NMHSs and the sector-specific focal points are contact points for ICPAC's engagement.

In order for this to take root, ICPAC has established certain structures and institutional arrangements for the operationalisation and sustainability of climate services. These include the establishment of a Communications Department and the formulation of a Communication Strategy (see Chapter 8), and revamping the GHACOF process and its feedback mechanisms.

Box 5: Research institutions

Research institutions with climate science expertise provide ICPAC and other producers with complementary climate data in many forms, including future projections from climate models and derived products such as impact analyses and other user-focused products. Research institutions or networks that work at the interface between climate science and sectoral decision-making can also play an intermediary (or boundary spanning) role, helping non-specialist users understand current and potentially available climate information products, contributing to user engagement processes, and helping producers develop information that is better tailored to user needs. As an example, the International Research Institute for Climate and Society (IRI) is a multidisciplinary institution with researchers from climate science and from climate-sensitive sectors working together to advance climate services. The ENACTS Climate & Health and Climate & Agriculture Maprooms are a result of these engagements, developed with input from IRI climate researchers.

Access to both climate and agricultural expertise through the IRI in partnership with the CGIAR research program on Climate Change, Agriculture and Food Security (CCAFS) supported major progress in the development and use of climate services for agriculture in Rwanda. Understanding of the challenges that smallholder farmers face, and adaptation of the Participatory Integrated Climate Services for Agriculture (PICSA) approach guided the development of climate information products for farmers. Making the set of historical and forecast climate information products and formatted graphs for any 4-km grid cell location available through PICSA and Meteo Rwanda's online Maprooms, intermediaries overcame a key hurdle to scaling up localized climate services for farmers. As a result, eighteen hundred extension personnel were trained and then facilitated 112,000 farmers to access, understand and incorporate climate information into their decision-making. There is evidence of substantial benefit to participating farmers and a multiplying effect through informal farmer to farmer communication. (Climate Change Agriculture and Food Security)

Box 6: The Agricultural Seasonal Planner: multiple roles for ICPAC

In early to mid-2010s in Kenya, ICPAC, Kenya Meteorological Department (KMD) and partners from the Kenyan Ministry of Agriculture, Livestock and Fisheries and national level Non-State Agencies convened every season, to jointly interpret the seasonal climate forecasts released by ICPAC and KMD and propose an Agricultural Planning Calendar for that season. This initiative was piloted in Kenya drawing experiences from Participatory Integrated Climate Services for Agriculture (PICSA) led by CCAFS, the Participatory Scenario Planning approach (see case study 5 in the WISER/FCFA Manual) led by CARE and the Community-Based Climate Services for Agriculture project led by ICPAC. PICSA is an approach for engaging farmers in accessing, interpreting and using local historical data and forecasts for agriculture decision making. The Agricultural Seasonal Planning (ASP) forum brought together experts ranging from Agronomists, Livestock experts, Trade, Agro-industry, Cooperatives, Agro-input dealers, Insurance Companies and Banks, and Climate Modelers together.

During the forum, climate scientists presented and expounded on a downscaled seasonal forecast to enable non-climate scientists to understand and utilise this information to anticipate the behaviour of weather in the forthcoming months. Thematic experts would then draw from their skills and long-term experiences in agriculture and come up with an agricultural calendar (plan) with details on how to take advantage of a good season or mitigate the impacts of bad weather in order to maximise food production. The national agricultural planner was a generalised snapshot with advice for each agro-climatic zone, which was then sent to county teams for further tailoring. Preliminary findings from feedback from counties indicated that indeed this planner gave agricultural and livestock farmers and other value chain actors useful information to prepare for strategic investments ahead of the season, and that it was paying off. It demonstrated the power of multi-stakeholder joint analysis and provision of essential services in improving food security. Unfortunately, due to lack of a permanent coordination office (secretariat) for this new initiative, it did not continue after producing approximately 6 planners for major seasons (Long and Short rains).

This initiative demonstrated the value of bringing together users and climate scientists before a seasonal forecast is produced to share lessons and feedback as well as agree on the climate information the next forecast should contain. This practice could be replicated both at regional and national levels and in other sectors with a strong linkage to GHACOFs and NCOFs.

4.2

How to Co-produce Climate Services

Implementing co-production of climate services involves six building blocks and outcomes, implemented in line with the climate services knowledge value chain and co-production principles. They are well explained in the WISER/FCFA Manual (see Section 2.4). In this section we provide examples of approaches and activities to implement the building blocks in Eastern Africa and highlight important issues for the region, drawn from ICPAC and others experiences. Note that these are not hard and fast rules and that the time and level of effort involved in a co-production process depends entirely on the purpose of the climate service. It could be only a few months to several years. In all cases, room should be made for continued learning and improvement as the service evolves over time.

Leadership of the co-production process sets the scene and creates the needed systems and linkages for design, development and delivery of a climate service or parts of a climate service. A climate service may be driven by any of the actors, and the leadership, starting point and details for each step will be determined by this. For example, ICPAC is the lead for the co-production process that takes place in the Pre-COF and GHACOF forums. ICPAC supports NMHSs to lead co-production processes at the national and sub-national level in line with the GFCS. The lead for a co-production process does not have to be ICPAC or the producer, it will be the institution (producer, user or intermediary) that is leading the activity where climate services is included or where a demand for climate services arises.

Equally, the starting place for co-production does not always have to be with Block 1 and end with Block 6. The context in which co-production takes place and the actors and relationships concerned will determine the most appropriate starting point. Starting the design of a climate service from the point of a specific use and users (Block 1) enables the process to be driven from a clear purpose and allows identifying the relevant range of actors to participate. However, the starting point could be evaluating an ongoing service and user feedback (Block 6) in order to replicate the service with new actors (Block 1) or re-design and improve it with new information (Block 3); or could be focused on solutions development in Block 4 based on already known needs.

Implementing the Co-Production Building Blocks in Eastern Africa

The purpose and possible activities for implementing each building block of co-production are described in detail below. They are also informed by the co-production principles presented in Chapter 3. The elements of the climate services value chain are detailed in the co-development building block (Block 4) where the full service is designed, but they are also relevant in shaping the activities in all other building blocks.

Examples are given from approaches already in use by ICPAC and section 4.3 goes into detail on co-production within GHACOFs processes. Participatory Scenario Planning (PSP) exercises for seasonal forecasts are good examples of a sub-national multi-stakeholder co-production approach that addresses many of the building blocks.

Co-production activities in all the blocks involve multiple intermediary roles, bringing people together in workshops, virtual meetings, reaching out to existing forums, networking and convening actors from different disciplines and levels. Research, mapping and analysis, regular surveys and polls with follow-up feedback and a range of non-climate related skills and activities are also needed.

Hence, whichever actor takes the lead, it is essential that they incorporate experienced facilitators to support the implementation of the multi-stakeholder co-production process and facilitate collective identification of the expertise needed and specific processes and activities to implement.

Building Block 1: Identify Key Actors and Build Partnerships

The goal of this building block is to know and understand potential roles of all concerned actors. Identifying stakeholders to engage in climate services can be done as soon as a demand or need for climate information or improved services is known to a lead actor (which could be a user, producer or intermediary). The step is important to ensure that no stakeholders are overlooked and that the co-production process connects pro-actively with all actors involved.

Activities and approaches aim to:

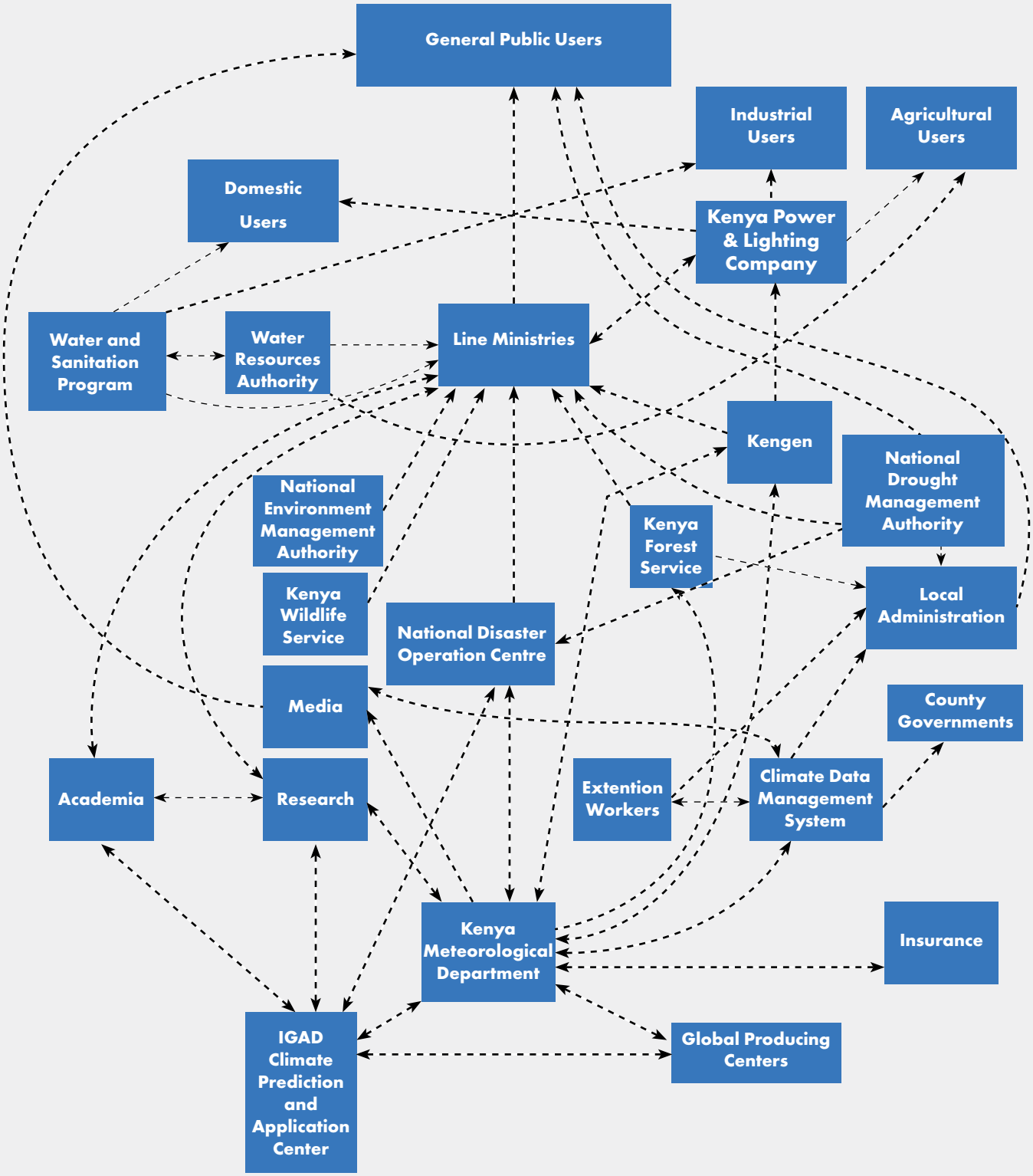
- **Develop a good understanding** of the demand or need and the scope of relevant producers, users and intermediaries, sectors, vulnerable groups, institutions and locations involved. Understand broadly the decisions that the actors make related to the demand or need that is being looked at and that could be informed by climate information. What is the timeframe of these decisions? Timeframes may help to determine which types of producers and intermediaries should be involved.
- **Follow the pre-requisite features** of a climate service and the principles of co-production when designing the process to identify actors for each of the functions in the full climate service value chain. For example, is the communication channel you are considering accessible to all of the targeted users - for example are you targeting men, women and youth; farmers and pastoralists; men and women fisherfolk; agriculture producers, processors, traders, extensionists and policy makers etc. Identifying and connecting with actors may be led by any actor in the value chain, depending where the demand and proposal for climate services has arisen.
- **Ensure relevant and inclusive representation** in the co-production process. Representation is similar across sub-national, national and regional levels, but varies in relation to the purpose and sector of the climate service. Representation at local level requires an understanding of gender, ethnicity, livelihood, land use, language and cultural differences.

Approaches for identifying actors

- Approaches can include mapping and analysis of stakeholders, desk review, participatory action research to understand the stakeholder landscape in the area of operation. The analysis should look at the above three issues and:
- The current and potential users and producers of climate information and climate services
- Who and where are the users and how will they benefit, looking at individual climate vulnerable people, or institutions implementing sector services, development projects, private sector etc.
- Stakeholders who have the potential to be producers, users and intermediaries all along the climate services value chain, and their strengths and limitations for existing or new roles.
- Gender and cultural differences.
- Communication channels and actors available and accessible to producers and users.
- The relationships between users, producers and intermediaries - these are usually complex and multi-purpose and will need to be well understood and fostered.
- Opportunities, enablers and barriers with regards to policies and governance structures.

Figure 3 shows examples of Actor Maps developed by multi-stakeholder groups in Kenya and Uganda.

Figure 3: Water and Energy actor map showing linkages among actors developed by participants during Weather and climate information services for Africa (WISER) support to ICPAC (W2SIP) stakeholder mapping session in Kenya.



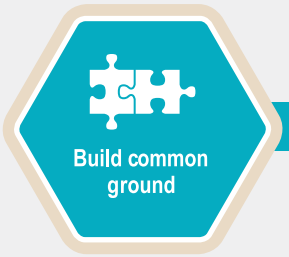
Partnership Building

Partnership building enhances mutual understanding of the disciplines of all actors which is further continued in blocks 2 and 3 outlined below.

Activities include:

- For new actors, take time to fully explain the purpose of the service and reason for their involvement, learn from their perspective and knowledge base and build a collegiate relationship.
- Where actors are already known, the emphasis is on building the partnerships and relations between actors around the service to be developed, strengthening collaboration and ensuring that all actors know each other's decision-making needs, constraints, information requirements and possibilities.
- New networks and partnerships can be initiated, recognising the roles they may play.
- Relationships between actors can be discussed and formalized if needed, clarifying roles, expectations and commitments, and agreements made on joint and independent activities.
- Clarify funding, purpose and plans envisaged and contractual requirements with all prospective partners.

Partnership-building involves an ongoing process of iterative dialogue and feedback among providers, users and intermediaries of climate services. Effective interdisciplinary and cross-sectoral collaboration is an important prerequisite for the transformation of climate data and information into climate services, blending climate knowledge with sector-specific knowledge. (World Meteorological Organization, 2018)



Building Block 2: Build common ground

The goal of building common ground is to create an informed co-production team which is representative of the relevant producers, intermediaries and users for the climate service to be developed. This team works together to design and make decisions on all the co-production processes. They bring in other actors for different parts of the process as they go along. To create a climate service which responds to a need for climate information, user engagement, iterative dialogue to understand and address user needs, and testing and refinement of the product based on client feedback, are necessary. (World Meteorological Organisation, 2018)

Blocks 2 and 3 deepen relationships and implement a process to arrive at a shared understanding of the different goals, decision-making contexts and contributions among the identified actors, as relates to the need and purpose of co-producing a climate service.

Activities in building common ground aim to:

- **Strengthen decision-makers and users' understanding and confidence** in key climate concepts and the use of climate information. They articulate their requirements and gain realistic expectations of the levels of skill of climate science
- **Strengthen producers' understanding of the users' and intermediaries' context,** values, needs, capacities, roles and activities based on their priorities, key objectives, decisions they make and the timescales they work with. They share the opportunities and challenges involved in meeting the expressed climate information needs.
- **Strengthen all actors understanding of a climate service value chain** and the multiple and interconnected roles producers, users and intermediaries play. Discuss the value, reliability, accuracy and limitations of current climate science.
- **Agree on the multi-stakeholder process and steps** that will be followed to co-produce the climate service.
- **Establish the co-production team or teams** and define which combination of actors will take part in which steps of the agreed process, including which activities will be undertaken to strengthen relationships and ensure strong communication.

Training on climate basics is increasingly in demand and can be included in blocks 2 and 3 . It recognises the need for users to understand complex probabilistic information. This supports increasing the trust in and ability to use information correctly, knowing its limits and uncertainties. As users start to better understand what producers can provide including the type of localised information products, communication channels and language they prefer, they are more likely to value it and increase service demand. Both users and producers need to work closely to bridge this gap. The sectoral Pre-COF described in section 4.3 is one example of how ICPAC is addressing this.

Exploring the policies and governance structures that may enable or constrain the climate service is an important part of building common ground and exploring needs. This may include the processes governing the interaction between the users and producers.

Building partnerships and common ground can be time-consuming but should not be rushed as they create the basis for trust, strong relationships among diverse actors and the type of open communication needed to fully understanding needs and collaboratively design, develop and deliver a climate service that meets the agreed need.

Box 7: Creating partnerships and the core team: County Climate Outlook Forums

County Climate Outlook Forums in Kenya use the Participatory Scenario Planning (PSP) approach to co-produce downscaled seasonal forecasts and advisories for different actors and service providers. While KMD climate service plans include PSP forums for the March-April-May (MAM) and October-November (OND) seasons each year, their occurrence and leadership varies from county to county usually depending on the source of funds. It may be KMD, County planners, the Ministry of agriculture livestock and fisheries, Agricultural Sector Development Support Programme (ASDSP), the National Drought Management Authority (NDMA), or adaptation or resilience projects.

The first step to take when planning for a PSP exercise is to create a working group or task force with all the actors present in the county, to ensure all sectoral and technical experts from producer (KMD), user and intermediary (sectors, projects, media) organisations contribute to the planning. This core team ensures the participants at the PSP are also representative of all users and needed intermediaries. With the passing of the Kenya Climate Change Act, counties are mandated to establish a County Climate Change Unit, which provides a sustainable county level foundation. Further information can be found in the PSP success stories by the ASDSP project and the Kenya Climate Information Services Country Report.

Box 8: Partners at multiple levels: The Agricultural Climate Resilience Enhancement Initiative (ACREI)

ACREI is being implemented at pilot sites in Kenya, Ethiopia and Uganda, by ICPAC and FAO together and NMHSs in partnership with local partners in each country, and with WMO as lead organization. ACREI aims to improve resilience of smallholder farmers through, among other interventions, improved access to climate information. (IGAD Climate Prediction and Application Centre, 2021) ICPAC builds capacity and supports the participating NMHSs in ensuring location specific seasonal forecasts and updates are available at the sub-national level. ICPAC and CARE International support NMHSs to facilitate the PSP approach at the sub-national level to involve all stakeholders including government actors from various sectors, NGOs, media, traditional forecasters and farmers to co-produce advisories that are translated to local language for dissemination. In addition to the PSP, ICPAC is facilitating the training of the NMHSs, extension officers from the Ministries of agriculture and farmers to interpret their historical data in addition to the information from weather forecasts, to make livelihood decisions through the Participatory Integrated Climate Services for Agriculture (PICSA) approach.

The ACREI project showcases how ICPAC can partner with different stakeholders at different levels to reach community-level users. Through such pilot projects, co-production processes have allowed sectoral services and communities to identify the climate services they want as opposed to the NMHSs providing products and services they think the users want.

Building Block 3: Co-explore needs

This block results in a joint agreement on the purpose of the climate service to be improved or developed. It should be an iterative process which is revisited to incorporate new feedback from delivering and using the service, as understanding increases of what is currently and potentially available, how to act on information delivered and the values and benefits this action offers. Co-exploration informed by feedback ensures a cyclic approach to co-production and enables improvement and new products and services over time in response to the new demands and opportunities that arise.

Co-exploring needs involves collectively exploring and implementing activities which result in a shared agreement on the service to be developed. 'Collectively' means bringing together the relevant actors who will facilitate interactions, develop, deliver, use and benefit from the climate service and agreeing with them on the process, roles and actual participants in each step of the climate service co-production. Different steps and blocks may require a different mix of actors. For example, a Service Development Team (SDT, see Box 8) can be set up as a small core group of producers, users and intermediaries who will oversee the process and ensure the right people participate as needed through the process.

Activities are not prescribed, but would include the following:

- **Identify the climate risks and decision-making contexts** of the participating actors and sectors, allowing for mutual learning and understanding and agreement on the decision the climate service will support. Review existing or conduct participatory analyses with users on their vulnerabilities to current and future climate risks and impacts. Are the users directly vulnerable to climate risks and impacts and making livelihood, business and economic decisions, or are they institutional sectors and services making organisational service delivery and project decisions? Or both?

- **Brainstorm the climate information and sectoral information that could support the selected decision context:**
- Explore what information and climate services are available already, in what form and for who.
    - What timescales are products available for and what are the relevant timescales of the selected decisions to be addressed by the climate service? This may include climate data and products, early warnings and alerts, forecasts and climate change projections, weather, climate and forecast advisories. It may also include information specific to the sector, user, risks and vulnerabilities of users and ecosystems, communication channels, beyond climate information, as relevant to the decision context.
    - Which new products would be useful?
- **Map and analyse the knowledge, capacities and roles of producers, users and intermediaries** to contribute to the climate service. Understand the role indigenous and local knowledge plays in understanding climate and influencing decisions.
- **Analyse the opportunities and gaps**. Who do the existing information and services reach and what is their impact? Which part of the climate service value chain do they focus on and which may need more attention? What are the existing modes of delivery? What new climate information or products, services and channels might be needed to inform the identified decision need?
- **Analyse the enabling environment.** Explore existing multi-stakeholder platforms, decision making systems and communication preferences. What strategies are in place for each of the main actors? What policies and mainstream services will support or block the intended service?
- **Jointly identify the climate service to be developed** that will address the need prioritised by the users.
- **Map out co-production actors, and their roles and responsibilities** for the next co-production building blocks.

Box 9: Service Development Teams (SDTs) in the co-production process

In the WISER Strengthening Climate Information Partnerships - East Africa (SCIPEA) and W2SIP projects, development of co-produced climate products tailored to a specific user demand was guided by Service Development Teams (SDTs), which were established early in the project timeline. SDTs consist of members representing all organisations concerned and have a mandate to coordinate the co-production process and guide the service implementation. SDTs were used to successfully develop and implement customised seasonal forecast services from KMD to Kenya Red Cross Society and KenGen. The SDTs led and managed the process of development, trial, revision, implementation and monitoring of the co-produced service – communicating and interacting with all necessary actors in the process.

The core composition of the SDT comprises an individual or individuals from the user organisation with decision making mandate on the service content and individuals from the producer organisation who will generate and communicate the tailored information. Other members were drawn from the same institutions including technical staff and senior management, from research institutions and GPCs (University of Nairobi, IMTR, UK Met Office and IRI), to assist in the design of new services as well as from ICPAC senior climate scientists and forecasters who helped centralise learning at ICPAC as part of developing a regional hub to support co-production. The SDTs are formalised with inter-institutional agreements to ensure commitment to the process.

Workshops with SDT members were used for in-depth exploration of the information needs of the two institutional users and to co-create visions and detailed roadmaps for the needed products and services. The resulting products include development of an explicit reservoir inflow forecast for KenGen, in addition to a rainfall forecast. This has provided an objective, well-evaluated alternative to the common, more subjective, practice of using the inflow observed in a past "analogue" year (a year when climate features like El Niño were in a similar phase) as the best estimate. For the Kenya Red Cross, a key point in mutual understanding was appreciation of the use of anticipated "best", "moderate" "or worst-case" scenarios in contingency planning for both flood and drought. This led to development of a product with predicted probabilities for 1 in 5 year rainfall extremes, which is more appropriate than the three categories "above" "normal" "below" format for anticipation of extremes.

Building Block 4. Co-develop climate services

This block results in a jointly agreed detailed and feasible plan for establishing and operationalizing a fit for purpose climate service. It is where the new or improved climate service is collectively developed in detail, resulting in an agreed service with clear components and roles for all actors. The group of producers, users and intermediaries who have already come together in the co-exploration block work together here to generate context specific ideas, solutions and systems that are needed to meet the identified sectoral, institutional and livelihood climate information needs.

Activities are suggested below in relation to the full service and each part of the climate service value chain:

a) Develop the overall system:

- Design a process for all actors to engage in service and product requirements, delivery channels and timing. The process should ensure the full participation of users, intermediaries and producers in the core team (e.g. see Boxes, 6 and 8 for examples).
- Design and develop the full service. This includes the systems that will enable climate product development, access, interpretation, communication and triggering of actions and decisions informed by the service. The following should be considered:
    - Ownership, coordination, communication, sustainability and all the principles of co-production in the design.
    - Which of the value chain components need most attention or are most important for the service development, who is involved and how to focus on them?
    - Review the information from the earlier building blocks to identify what is already in place that the service can build on.
    - Ensure the service and its level of effort will align with the required timescale.
    - How will the service enable seamless linkages and timeliness of delivery between the collective process for product development, interpretation, communication channels and users?
    - Ensure good design and facilitation of the co-development process, noting and addressing any barriers and where any of the actors may need more awareness, capacity or knowledge to fully contribute.
    - If needed, trial a prototype service.
- Agree the specific actors and roles required to facilitate, deliver and use the service. Which levels do they operate at (e.g. regional, national, sub-national, community). Assess

their capacities and develop plans to strengthen on the same based on the identified capacity gaps. Identify trusted networks, platforms, projects, local service providers and other groups that will contribute to delivering climates services and decide how they will be involved during co-development.

- Develop a budget and resourcing plan to be clear who will finance the climate service and its maintenance. The cost of service development and delivery should be aligned with the value of its benefits and impacts (Value for Money), and should be sustainable.

b) Product development

- Review the decision context and specific use requirements of the climate service being developed and elaborate it further considering what information is needed to enable action, for example, learn or develop metrics or thresholds for triggering action or investment at different timescales.
- Connect with relevant climate science and sectoral experts that can provide technical inputs which are not available among the core co-production team.
- Review available climate information products and determine whether any are targeted towards the decision context by matching the metrics/ thresholds with existing products.
- Decide on adapting or tailoring already available products or co-developing new products that better meet the decision needs.
- Design how probabilistic information and uncertainty in forecasts will be handled and expressed so that the product includes both climate information and information on levels of reliability / uncertainty.
- Develop and test or improve existing climate products with identified actors taking the above points into account.

c) Interpretation

- Design how the climate products and information will be interpreted and shared for use with all actors in a way that ensures all users will understand and be able to use the information.
- Design how complex, complicated and uncertain information on weather, climate and climate change will be broken down, connected with non-climate information and adapted to be relevant for the decisions the service addresses (e.g. technical, livelihood, ecosystem or sector-specific decisions).
- Ensure plans and timing for collective interpretation are aligned with the timescale of the climate information. For example, extreme event warnings require rapid interpretation to allow for immediate risk prevention and reduction measures. Developing Standard Operating Procedures (SOP) that can be quickly rolled out by a small team would greatly benefit the process. Seasonal and longer-term information gives time for involving a wider group of actors and taking time to fully unpack and interpret the meaning of the information in the local context and the potential impact scenarios. In this case interpretation results in collectively developed downscaled information and actionable advisories.
- Design systems, including multi-stakeholder forums, to:
    - Combine climate information from scientific and local knowledge sources to develop localised and locally interpreted climate information (See box 10).
    - Link information on the current and past livelihood, sector or infrastructure situation including vulnerability and exposure information, with the locally interpreted climate forecasts and collectively interpret them into advisories that support decisions.
- Design how to include the co-development of impact-based forecasts and advisories as relevant to the process and service.

d) Communication

- Design communication strategy, including the best mix of channels, timescales, messaging and formats for each target audience. The strategy needs to take into consideration the need to increase trust and confidence in the service.
- Conduct user and audience research to understand preferred channels, languages, formats and schedules.
- Organise the staffing and budgeting of Producer's (Regional or NMHs) Communication Department to be able to deliver a tailored product to multiple target audiences. This involves having in house capacity in Public Information, User and Media Engagement, Video production, Graphic Design and Digital Marketing.

e) Use

- Plan, together with user representatives and other actors, how users will be supported to access, understand and take decisions and actions based on the service.
- Link the support to existing climate resilience, climate smart and disaster risk reduction local institutions and services (Governmental and Non-Governmental).
- Ensure all targeted users have systems that work for accessing and understanding the information they need as well as providing feedback on their use of the information and its value.
- Ensure the service enables all targeted users to be informed and empowered to make decisions based on the climate products and knowledge of uncertainty and probability.

f) Feedback systems

- Design how the climate products, the climate service system and the use and impact of both, will be measured and evaluated.
- Link with the evaluation systems of associated projects and local services.
- Design systems for learning, continuous feedback, sustainability and refinement of services.
- Map how feedback will be used to refine and improve the service and inform new opportunities, sustainability, capacity needs and other gaps to address.

Building Block 5: Co-deliver climate services

The co-delivery of climate services involves operationalisation of the service by the range of concerned actors. Successful delivery means that the co-produced service and the related climate products and advisories have reached, are being used by, and are benefiting the targeted users and that their feedback is informing continued improvements of the service.

Activities. Co-delivery involves operationalising the planned climate services together with the agreed actors. To do this:

- Create and cost a detailed plan for operationalising the co-developed climate service. This includes all the steps and details described in the co-development block above.
- Agree and hand over leadership of each piece of the service to the relevant actors who have the skills and mandate, and operate at the level needed.
- Provide oversight and overall facilitation of the delivery process, and implement regular monitoring.
- Revisit the plans and principles of co-production, be aware of gaps, refine the service and strengthen capacity on an ongoing basis.
- Implement the plan including all the processes and activities from the co-development stage.

Building Block 6: Co-evaluate climate services

Co-produced climate services are by definition dynamic and adaptive to context and change over time. This raises the importance and need for constant monitoring and evaluation of:

- Efficiency and effectiveness in achieving positive results for users.
- The match between information provided and evolving needs.
- The reach, access, stakeholder engagement, communication, use and benefits of the service

Evaluation activities in the co-production building blocks are specific to the service and should be built into the whole service, implemented by the service deliverers and sustainable. This is different from project evaluations, and evaluation that ICPAC needs to do in relation to its own activities in co-production (which are described in Chapter 9).

Activities may involve:

- Implement the feedback action plan designed in the co-development building block and support all actors to implement their part. Ensure that users are able to communicate their evolving demands for new services and products.
- Regularly review and co-evaluate the product, the co-production process and the service. Design and implement strategies and approaches for monitoring and documenting the outcomes of interpretation, communication, access and use of the climate service, as well as its benefits and impacts for different actors.
- Establish ongoing learning and continuous feedback loops, in particular setting up systems for evidence on use, impact, benefits and challenges of the climate service to be gathered and shared back with all actors along the value chain.
- Document and share successes and failures in the process. Create and implement systems for the information and evidence gathered and collated to reach other users and the intermediaries and producers involved, so that it informs further refinement, improvement and development of the climate service, revisiting relevant building blocks.
- Continue to monitor and reassess the products and services as they are rolled out.

Box 10: Using feedback to review and refine the PSP approach in Kenya.

The ASDSP programme implemented PSP at county level in Kenya each season together with KMD, sectoral departments and community members. Midway between two PSPs, ASDSP officers and County Meteorology Directors from up to 20 counties held a workshop to review the process they followed during the last season; how successful they were in terms of farmers use and actions as a result, and whether the actions taken were successful in the season. The outcomes of the joint review were used to inform the planning for the next season's PSP. The process followed at the PSP itself also includes a community review of the past season, their actions and their assessment of the value of the forecast they had received.

ICPAC values feedback on use and impact of its products and services. Methods used at ICPAC to collect feedback include digital surveys, in-depth interviews, focus group discussions, and calls to action to provide feedback on all email marketing channels

However, creating and implementing effective feedback systems is an area which needs significant strengthening, with coordination between all actors in the climate services value chain to agree on how best to conduct and sustain the systems and ensure they result in a continuous iteration of the climate service provided. Design thinking and monitoring and evaluation approaches present high potential to strengthen climate services development processes. Climate services requiring greater focus. ICPAC together with NMHSs could usefully develop strengthened monitoring, evaluation and learning systems.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4.3

Co-production processes during the Greater Horn of Africa Climate Outlook Forum (GHACOF)

Background

The GHACOF has been coordinated and convened by ICPAC since 1998, aiming initially at reducing risks through seasonal forecast services and pre-season contingency planning of climate sensitive sectors. Regional Climate Outlook Forums (COFs) take place globally under the auspices of the WMO with the support of the NMHSs. GHACOFs take place three times a year in February, May and August to prepare guidance for the major rainfall seasons namely: March–April-May (MAM), June-July–August (JJA) or September and October-November–December (OND).

The GHACOFs consist of three phases: 1) Planning and development led by a steering committee convened by ICPAC, 2) The Pre-COF in which ICPAC and NMHSs in collaboration with global partners co-produce the seasonal forecast and 3) The main two to three-day Forum which is the formal mechanism and platform for sustained interaction and consensus building. The main forum uses deliberately multi-stakeholder and participatory approaches to: review the past season climate impacts and sectoral responses, interpret the forecast in relation to each climatic zone and country in the region; develop the potential implications for the coming season, co-produce a final forecast with sector-based advisories, and last communicating the seasonal forecast widely to media and sectoral users. See Figure 4 for a visual presentation of the traditional GHACOF process. The seasonal forecast supports key regional and national decisions and triggers development of national seasonal forecasts, providing a scientific and objective forecast for countries.

With 57 GHACOFs hosted by ICPAC over 22 years, they are a valuable source of information and learning on co-production. Regional and National COFs provide an opportunity to learn and provide broader insights on co-producing climate services through:

a) Continuing to refine the way the Forum approaches production, analysis and dissemination of the seasonal forecast

b) Creating a platform that allows discussing various climate products and services of different timescales, both sub-seasonal and long term and;

c) Enabling multi-stakeholder discussions on approaches, successes and lessons learned on the design, development and delivery of user-centred climate services.

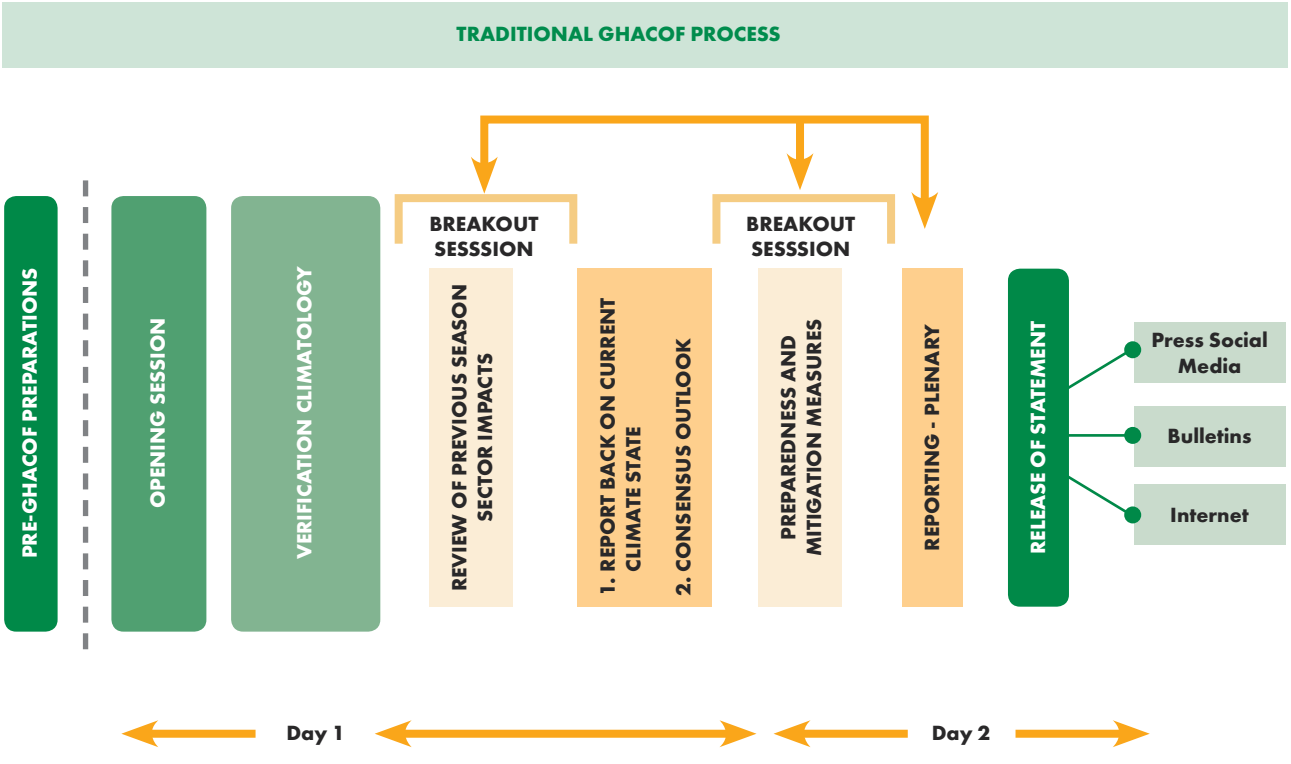


Figure 4: Traditional GHACOF process

GHACOF and co-production in detail

The GHACOF is described below as an example of how ICPAC are facilitating co-production at regional level. The following section focuses on elements of the GHACOF that contribute to co-production, structured by the building blocks and the value chain, and does not attempt to be a fully comprehensive description of all aspects of GHACOFs. It shows how the process has evolved over time, with continuous iteration of the Forum still ongoing, especially during the COVID-19 pandemic, when migrating to a Digital Conference format required some structural changes. The recent additions and future proposals were prompted by: Internal reviews and discussions, WMO recommendations, the roll out of the GFCS, the need to integrate climate change and the support of the WISER Programme and other partners during learning sessions.

1. GHACOF actors and partnerships

GHACOF brings together:

- ICPAC staff from all divisions and sectors.
- NMHS Management and Permanent representatives to the WMO in Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan and Uganda as well as Burundi, Rwanda and United Republic of Tanzania; as well as forecasters, public weather service and communication staff from the region's Meteorological Departments. Global climate scientists, particularly the UK Met Office, IRI and WMO and research scientists from Universities and research institutions both in Africa and internationally (e.g. NORCE, KIT, University of Cape Town, University of Leeds)
- A wide range of intermediaries at regional and national levels, including representatives from Media houses (e.g. BBC Media Action and local Broadcast stations) international, regional and national intergovernmental organisations such as UN and Agencies (e.g. FAO, WFP, IOM) and IGAD Agencies (Eg. IGAD Secretariat, ICPALD, CeWARN) INGOs (e.g. CARE, the Red Cross), Donors (e.g. EU, FCDO, NORCAP) or Private initiatives. All from different sectors working in development and resilience such as climate change adaptation, mitigation, emergency and humanitarian response, disaster risk reduction or service providers in agriculture, livestock, energy and water.
- Sectoral users from National Government Ministries in: Health, disaster risk management, agriculture and food security, livestock, water resources management, energy, conflict and communication, and from climate services projects from the Eastern Africa region.

Recent changes: Policy makers and members of parliament concerned with national climate change policies started to attend GHACOF in 2019. Official climate change focal points were invited formally for the first time to GHACOF 54 (in Mombasa, Kenya), in January 2020.

New actors are identified and invited from one GHACOF to the next and recent meetings have involved over 300 people. With the addition of co-production and side event days as well as sharing lessons learned from climate services projects and climate change adaptation, mitigation and resilience programmes which both facilitate and use climate services in different sectors.

Proposed changes: it has been noted that the national sectoral and NMHS representatives have been the same for many years and have no direct link to contingency planning and budgeting at the country level. There is a need for a new process of active identification to ensure that the relevant sectoral and climate change decision makers are identified and invited and that those attending GHACOF also attend national level COFs. The NFCS development provides a possible vehicle for this.

Partnership building: ICPAC leads the GHACOF in collaboration with the NMHS, WMO and IGAD specialised institutions particularly ICPALD and CEWARN. Development partners funding each GHACOF participate in the selection of a theme, agenda setting and participant sponsorship. ICPAC sector heads bring in their key partners for specific sessions. A steering committee and a programming group convene planning sessions and take charge of agenda development, communications and logistics.

2. GHACOF Building common ground

Creating a common understanding among the actors and partners is revisited at each GHACOF, but has also been an ongoing process over the years, to bring in new actors, new thinking on seasonal forecasts, new themes and new opportunities. There is a creative tension between ICPAC leading new ways of working and maintaining the essence and formal structure that is agreed by all. Decisions were made early on to rotate the location of the GHACOF around the region, with the host NMHS taking a formal hosting role together with ICPAC. Protocols for deciding which country is next were also agreed.

Political buy-in from governments is achieved through the NMHS member presence, formal opening sessions led by the host country and a formal closing statement and press release of the seasonal outlook which becomes the main reference and input to subsequent national seasonal forecast production.

Planning each GHACOF involves a range of actors and contributes to creating a common ground and approach to the event. The programming group involves sector heads from ICPAC, ICPALD and CEWARN, actors from projects, NMHS and others that contribute through supporting the GHACOF agenda design, facilitating sessions, making presentations or hosting side events. NECJOGHA journalist network and other media actors may also be involved in planning communication sessions.

Recent changes include broadening the remit of the GHACOF beyond the seasonal timeframe to include considerations of climate change, climate services approaches and learning which involves a wider range of actors to build common ground with. The shift to a virtual format has changed the nature of participation with wider diversity but less close engagement with target country sector experts. Exploration of the longer term impacts and opportunities of the virtual format in relation to partnerships and building common ground is an ongoing process.

3. Co-exploring needs, co-developing and co-delivering the GHACOF

GHACOF is a seasonal climate service which is developed and delivered iteratively each time. Hence building blocks 3, 4 and 5 are described together here, using the value chain functions to describe the full GHACOF process.

a) Product development

The GHACOF process starts with developing a scientific seasonal forecast during a pre-COF training with scientists, meteorologists and forecasters from the global centres, ICPAC and NMHSs. They review the state of the global and regional climate systems and their implications on the coming seasonal rainfall over the region. Among the principal factors considered are the observed and predicted Sea Surface Temperatures (SSTs) in the global oceans. The skills and types of seasonal forecast products have been evolving over time, with information on rainfall, temperature, probable rainy season onset and cessation dates, intra-seasonal variability and extreme events and more.

Recent changes:

- Development of objective forecasts which are presented in more specific detail in regional maps which is replacing the consensus forecast.
- Forecasting the distribution of dry/wet spells through the season.
- Efforts to integrate climate change science into seasonal forecasts and consider climate change risks and impacts in the sector discussions explicitly started in 2018.
- A process of co-exploration of needs and co-development of new forecast products tailored to the agriculture and water sectors was tested in 2020 during the science pre-COF and in a sector pre-COF workshop. Sectoral experts worked with forecasters to explore needs for and then develop additional sector specific information that would support sector decisions. The new products were able to combine technical sectoral information such as lake water levels and crop water requirements with weather and climate information. This was expanded to all sectors in February 2021.

The intention going forward is to ensure that new forecast products are developed in relation to needs that arise not only during the GHACOF but through feedback systems and stronger links with climate services projects and sectors.

b) Interpretation

Co-exploration of needs and co-development of products occurs in the main GHACOF meeting where sectoral groups are multi-stakeholder and represent all types of participants related to each sector. The sector groups review lessons and experiences from each sector for the past season, how the past seasonal products were used and what proposed measures were implemented.

Plenary sessions follow where the past season review is presented and discussed by sectors and the regional climate outlook for the coming season is shared by global centres and ICPAC.

The past season review and next season forecast are used as inputs to the next sector group meeting in which participants collectively interrogate the forecast for each country in each climatic zone and deliberate on their expected implications and impacts for the coming season for that sector in light of the current situation. They formulate sector strategies and response measures for the different probabilistic forecasts and zones. This co-production process both explores needs and develops advisories by sector. There is an opportunity to interpret the meaning of the forecast for different users in the sector and feedback needs for additional information to the climate scientists present.

Sectors present back to the plenary and a final statement for the forecast plus advisories is prepared.

Recent changes:

- ICPAC through the WISER programme has included additional interactive sessions that allow participants to build relations and collectively interpret information. A market-place for projects to showcase climate services approaches and impacts allows scientists to learn about how their products are applied and used, and the value placed on climate services for different decisions. It allows users and intermediaries to learn about different ways in which climate services are being developed and implemented. ICPAC is currently exploring the inclusion of a Marketplace in current digital GHACOF Conference format. Round tables in plenary are being used to enable small group discussions within plenary sessions which allow for more collective deliberation on issues that arise and more structured feedback from groups rather than only individuals. Learning sessions have been designed which require participants to interact in a group task around themes of concern going forward - gender issues, climate change, climate services and so on.

- Structuring the sector discussions to explore and co-create implications and expected impacts of the forecast in different climatic zones, before suggesting measures to take by country. This aims to further develop information on what the forecast means for the sector - similar to developing impact-based forecasts - while the climate scientists are present to give more detail and provide more information which can be used at country level to make informed decisions. It aims to move away from jumping straight to proposing measures applicable for each forecast probability which can often be repeated season after season.

Proposed changes:

- Rather than focusing on the sector advice, detailed advisory development could take place at national level in NCOFs where more sector users for the country can be present, and use the more and more detailed and tailored forecast products and impacts that are developed at regional level.
- More work is needed on how best to integrate climate change into each sector discussion, understanding the impacts on a sector for the coming season and also with a longer-term perspective. Climate change focal points are valuable actors to participate in the sector discussions but also need time to discuss climate change risks and impacts, and adaptation responses as a group and together with other participants who work on adaptation and resilience projects. Approaches for these need to be worked out.

c) Communication

ICPAC communications and media representatives are critical actors at GHACOF. They prepare the press release and a summary for decision makers, all of which serve as the main communication tools for sharing the regional forecast and triggering NMHS to work on their national forecasts.

Recent changes: ICPAC has significantly improved its website, public communication materials, mailing lists, and access to data and information products in the last two years. See Chapter 8 on communications for more detail. All of this allows the GHACOF and the co-produced outcomes to be communicated before, during and after the GHACOF. In 2020, registration for GHACOFs and the meetings themselves were digital due to the COVID 19 pandemic. Digital registration allowed for access to a completely new set of participants who were never traditionally invited or informed about the GHACOF. This also led to a boost in the amount of people signing up to receive climate information from ICPAC.

Proposed changes:

- There is great potential to build on the start made of digital and virtual communications with multi-stakeholder participants. Platforms that offer digital Conference Solutions also offer a great opportunity for a Forum like GHACOF to be taken to the next level, in line with international conference standards.
- With the addition of climate change there is the opportunity for the GHACOF statement and other communications products to include information beyond the seasonal time frame such as in relation to climate change, learning from thematic discussions or research outcomes shared at the GHACOF.
- The media have always been part of the GHACOF, in fact it was originally spearheaded by NECJOGHA. Their role during the meeting has changed over time and continues to need more thought and attention.

d) Use and Feedback

The GHACOF relies on the data and public information it produces being the main source of information for use at regional and national level by a wide range of organisations to guide decisions on development investment and humanitarian action. It is expected that NMHS use them as the basis for preparing and communicating a national forecast together with national sector experts and users, and that regional organizations and networks (such as FSNWG and IDDRISI) including intergovernmental organizations and INGOs use them to inform their programming decisions.

More needs to be done to build this mechanism into the GHACOF systematically - starting with a stronger link between national participants at the GHACOF and subsequent NCOFs. National participants attending GHACOFs should have a mandate and commitment to:

a) participate in national meetings and share and use the forecast and;

b) return to the next GHACOF with information on how the forecast and advisories were further downscaled and used and what happened as a result.

4. Evaluating GHACOF

A number of studies have been done on the RCOFs, and GHACOF in particular, including by WMO, which is also assessing ways to improve the RCOFs and has provided recommendations for good practice in the past. (World Meteorological Organisation, 2016). At GHACOFs in order to obtain feedback, participants are invited to complete evaluation surveys to recommend how to improve the organization of the GHACOF. The findings from these surveys are used to inform the design of the next ones. GHACOF 53 in 2019 created a half-day session for participants to deliberate on possible changes to the COF systems that would improve participant interaction and co-production processes, provide for greater opportunities to learn at the GHACOFs, propose activities that should be added (e.g. climate change) and suggest how to link them to the roll out of GFCS and NFCS.

ICPAC hosts debriefing sessions with the sector leads to evaluate the approaches used and quality of their group sessions and subsequent presentations. This is intended to inform the plan for the next GHACOF.

Recent changes to enhance collective learning and feedback:

- Extending GHACOF to 3 days to include one to one and half days for peer and cross disciplinary learning beyond the seasonal forecast itself, focusing on topical themes. From 2018 to 2020 the themes centred around learning on co-production of climate services in a range of different interactive sessions for all participants and in smaller groups led by WISER W2SIP and WISER TRANSFORM projects. Outcomes of these learning sessions have informed the WISER/ FCFA Manual and this guide.
- Structured participant sharing and learning through 'marketplace' sessions for projects to showcase approaches, successes and challenges and capacity building sessions (for example these have included integration of gender, exploring co-production of climate services and specific approaches such as Climate Risk Narratives).
- Facilitated small group discussion and analysis of emerging learning after knowledge sharing sessions (market place, presentations, group exercises, panel discussions, side events).

Further proposals to increase the impact and reach of GHACOFs

The following suggestions go beyond the GHACOF to what is needed to ensure the GHACOF contributes effectively in delivering seasonal and longer-term climate services across the region which impact positively on climate resilient development and risk reduction. They are also important elements for strengthening ICPAC's leadership in co-production.

1. Review participation at GHACOFs and strengthen the link and accountability between GHACOF participants and national to sub-national preparations in advance (e.g. reviews of past season) and action thereafter (e.g. NCOFs) to ensure the GHACOF outcomes are used to inform downscaling and advisory development at these levels. Participation from NMHS, sectors and other actors at GHACOF and NCOF should be based on agreed criteria and mandates.
2. Review what the regional meeting should focus on and how it can add value and generate information and guidance for later action from the multi-stakeholder discussions, avoiding duplicating existing knowledge and encouraging generation of more detailed messaging at national and sub-national levels. There is a need to strengthen the co-development of sector specific impact-based forecasts while considering probabilities and uncertainty in the forecasts.
3. Strengthen the user pre-COF to unpack underlying vulnerabilities, what causes impacts and exposure and to review the outcomes and impacts of the last season and the strategies that were taken. This would allow for the GHACOF itself to focus on combining the outcomes of the user and producer pre-COFs and developing impact-based forecasts and would enable consideration of forecasts within the prevailing and accumulative conditions rather than in abstract.
4. The GHACOF is - or could be - a loud, expert and privileged voice to call for action on climate change and link to policy processes. ICPAC has not used this enough, and needs to find ways to use this forum and voice to advocate for - and inform - action in climate change mitigation and adaptation.
5. Documentation of successful practices at GHACOFs and for example the National and sub-national climate outlook forums in Kenya, Ethiopia and Somalia would serve as examples to build capacity for and design national and sub-national COFs that use co-production approaches to downscale the forecast at the national level and develop impact-based forecasts and advisories for action, both for climate resilient socio-economic development and for early warning and disaster risk reduction measures.
6. In response to the COVID-19 pandemic in 2020, ICPAC moved the GHACOFs to a virtual format, which is likely to continue into the future. Digital GHACOFs allow participants to register and attend virtually to different parts of the GHACOF and means many more people are able to join. It also means the sessions required a re-design to match the time and attention people can manage online, for example, the sector group work is done on one day and the main GHACOF with plenary presentations of outcomes the next day. ICPAC has begun the process of virtual re-design alongside the continued evolution of the sessions and better integration of climate change, co-production, gender and others.

National to sub-national Climate Outlook Forums (NCOFs)

The GHACOFs are not stand alone and are directly aimed at supporting action at all levels through the products developed and the participants who attend. ICPAC advocates, and where possible provides technical support, for NMHSs to downscale GHACOF products at NCOFs and sub-national COFs to meet their national and local needs. The Intra-ACP project implemented by ICPAC provides for extension of the COFs concept to the national level by establishing operational periodic NCOFs in other countries in Eastern Africa. Ethiopia, Kenya and Uganda are at the forefront in organising national meetings to downscale and communicate climate forecasts at national and sub-national scales. The Kenya Meteorological Department have instituted County Climate Outlook Forums to enable stakeholders from communities including local forecasters, county government sectors and private sector to collectively share and interpret the coming season forecast and develop advisories for decision making (See Box 6). The County Climate Outlook Forum has been recognised as a key component within the development of County Climate Information Service plans for each county.

Box 11: Blended forecasts for cross-boundary ecosystems: the Karamoja cluster

Through a new initiative within the IGAD "Cluster I" region - located in the cross-border area shared between north-western Kenya, south-eastern South Sudan, north-eastern Uganda and south-western Ethiopia and commonly referred to as the Karamoja cluster, ICPAC together with IDDRSI, ICPALD, CEWARN, sector representatives from Ethiopia, Kenya, Uganda, South Sudan and NGOs are working together to develop and utilise downscaled cluster-level climate information and products for humanitarian clusters. The IGAD clusters' formation considers the high mobility across international borders and associated dynamics forming a cross-border area and is considered as one ecological zone. The cluster is occupied by at least 13 pastoralist and agro-pastoralist communities (including Bokora, Dessenech, Didinga, Dodoth, Jie, Matheniko, Nyangatom, Thur, Pian, Pokot, Tepeth, Topotha, and Turkana). (IGAD, 2021)

A first of its kind, the IGAD sub-regional Climate Outlook and Stakeholder Engagement Forum was held following a successful GHACOF as an effort to further downscale and ensure the effectiveness of the March-April-May 2020 seasonal forecast. The forum utilised cluster-level downscaled climate information and products and engaged users in livestock, food security and agriculture, water sectors, and planners and socio-economic experts to co-develop sectoral advisories. The forum provided opportunities for interaction among climate information providers and users with the aim of communicating better the content and uncertainties inherent within seasonal predictions. The forum also assessed the impact of the expected seasonal climate on migration and conflict in the Karamoja cluster and developed relevant advisories to support decision-making by key stakeholder groups. This initiative is a starting point for developing ICPAC partnerships with other IGAD institutions to support their use of climate services.

4.4

Integrating co-produced climate services in Sectoral platforms

Two examples are given from ICPAC's engagement with different sectors in the region. They demonstrate good practices and areas for improvement.

Box 12. Co-production in the Food Security and Nutrition Working Group (FSNWG)

The FSNWG for Eastern and Central Africa is a multi-stakeholder regional forum, co-chaired by IGAD and FAO, which analyses and provides information on the food security and nutrition situation to planners and decision makers of the region. This information is generated to ensure interventions are well coordinated in saving lives, safeguarding livelihoods and building resilience of at-risk populations in participating member countries.

The Actors: The FSNWG membership, composed of several sub-working groups (Food Security, Climate, Nutrition, Displacement, Crop Monitor, Livestock, Conflict, and Humanitarian Affairs), ranges from national Governments and UN agencies, to regional and International NGOs, Research and academia or humanitarian and emergency response organisations, who have an interest in food and nutrition security. The current member countries include all IGAD and East African Community countries plus DRC and Central African Republic. The FSNWG is an open group attracting new members regularly, who therefore have varying levels of understanding of climate concepts and terminology.

Product development: As a member, ICPAC provides climate forecasts and related information to the FSNWG on a monthly basis, in particular, seasonal and monthly rainfall forecasts, seasonal and monthly rainfall distribution, onset and cessation dates, and probabilities of dry/wet spells happening, their timing and duration and the Standardized Precipitation Index. These products are shared during the monthly FSNWG plenary sessions, and the members are able to raise questions to clarify the forecast given. Note that the climate products are not co-produced, however they do form one input into co-development of the early warning messages and advisories.

Collective Interpretation: The FSNWG analyses sectoral thematic data/information including the drivers, and outcomes of food and nutrition security. The network monitors all drivers and the outcomes of food and nutrition insecurity (through its sub-working groups), using all the available sources and compiles monthly updates. The information collected is then blended with climate products for scenario development and food security forecasting, monitoring of evolving shocks and early warning-early action programming in respective organisations. This information is communicated to the members on a monthly basis during the FSNWG forum. During the forum the sub-working groups are given an opportunity to present on the current status and give a brief on the possible implications of the current forecast. The FSNWG members can request for additional information from ICPAC for the next forecast to support the discussion process.

Communication: Monthly updates from the blended information are shared with the full FSNWG mailing list in the form of PowerPoint Slides, Monthly Statements, Alerts, and Special Reports. In the event of major issues of concern arising in the region, the FSNWG prepares and releases alerts, press releases or organises press conferences. as early warning tools to elicit early action.

Use: ICPAC and the intermediary and user organisations within the FSNWG do work efficiently together to optimise decision-making for regional early warning and emergency response based on the climate and food security information. The FSNWG, through its partners (such as IPC, FAO, FEWS NET, WFP) also make use of Climate information from ICPAC and other sources to come up with medium term food security projections.

Potential for integration of co-production:

- **Co-exploration:** The forecasts and related information are always presented by climate scientists, using technical terminology. Although there are efforts to explain and interpret the information, given the turn-over of members, it is likely that some members may not understand the entire forecast. More time could be spent discussing the meaning and implications of the forecast and sharing feedback on what is needed and how it could add value to FSNWG decision making.
- **Co-development:** The climate products delivered to the FSNWG are usually final products for the period. Feedback from FSNWG members during the sessions is incorporated into products provided for subsequent forums.

The food security information from FEWSNET and IPC are also fully developed without consideration of the forecast. There is an opportunity to do more to blend the two such that the FEWSNET information is informed by past and future climate information.

- **Feedback:** The ICPAC climate scientists could interact more regularly with the other FSNWG members in advance of the release of the next seasonal forecast so that the agriculture and food security sector can use the GHACOF to co-develop products and advisories that respond to known needs. This was done successfully within the Strengthening Information Partnerships (SCIPEA) project. During interactive foras, users specified the kind of services or products they are interested in at a given time of the year. They also proposed new products, and the format of products. The producers then worked to fulfil these interests. This process significantly improved relevance and ownership of the process and products, and therefore their uptake and usability. The Integrated Food Security Classification Technical Working Groups (IPC TWGs) at country level have similar composition as the FSNWG in many instances, and they would benefit in a similar way.

Box 13: Co-production approaches for Sector based Climate Services

The W2SIP project conducted national level actor mapping in Kenya, Ethiopia, Uganda and Rwanda to understand what climate services are ongoing to support climate information demands and uses in specific sectors. Based on actor roles and interests identified through the mapping process a series of workshops were conducted in Kenya with sector specific users from government and private sector in water resources management, agriculture and livestock, disaster risk management, energy and malaria epidemic control together with intermediaries (e.g. Universities, FAO, media, INGOs) and the Kenya Meteorological Department. This was done to pilot and showcase in practice how co-produced sector-based climate services can be developed at national level.

Each workshop facilitated a multi-stakeholder development of one or two of the co-production building blocks:

i) Sector co-exploration of climate information needs and uses.

ii) Co-developing solutions for climate services.

iii) Co-delivering and evaluation for climate services.

In each of these participatory workshops the climate service value chain for the sector concerned was analysed and actors where information and services are needed were identified. For example, in crop agriculture, three actor types emerged: farmers and value chain players, extension service providers and policy decision makers. The workshops were also used to impart knowledge and skills on co-production of climate services. ICPAC worked with CARE International to design the workshops, the facilitation process for enabling collective design and decisions, to facilitate and share and in this way, to learn (by doing) what works well and what may not, when facilitating a full co-production process for climate services.

REFERENCES

Climate Change Agriculture and Food Security. (n.d.). ***Participatory Intergrated Climate Services for Agriculture***. Retrieved from https://ccafs.cgiar.org/resources/tools/participatory-integrated-climate-services-agriculture-picsa#.X36xLWgzbIU

IGAD. (2021). ***IGAD Cluster 1 (Karamoja Cluster)***. Retrieved from https://resilience.igad.int/clusters/igad-cluster-1-karamoja-cluster/

IGAD Climate Prediction and Application Centre. (2021). ***The Agriculture Climate Enhancement Resilience Initiative.*** Retrieved from https://www.icpac.net/our-projects/acrei/

Jones, L., Carabine, E., Roux, J.-P., & Tanner, T. (2015). ***Promoting the use of climate information to achieve long-term development objectives in Sub-Saharan Africa: Results from the future climate for Africa scoping phase; Future climate for Africa: Climate and Development Knowledge Network (CDKN).*** Oxford, UK.

Jones, L., Champalle, C., Chesterman, S., Cramer, L., & Crane, T. (2016). ***Constraining and enabling factors to using long term climate information in decision-making, Climate Policy.*** doi:10.1080/14693062.2016.1191008

(2017). ***Practical guide to Participatory Scenario Planning (PSP)***. Retrieved from https://careclimatechange.org/wp-content/uploads/2019/06/Practical-guide-to-PSP-web-1.pdf

Science Direct. (14-23). Fit for purpose_Transforming National Meteorological and Hydrological into National climate services centres. ***Science Direct,*** 2019.

Singh, C., Daron, J., Ziervogel, G., Spear, G., Krishnaswamy, J., Zaroug, M., & Kituyi, E. (n.d.). ***The Utility of weather and Climate information for adaptation decision-making: Current uses and future prospects in Africa and India, Climate and Development, 10.5.*** doi:10.1080/17565529.2017.1318744

Visman, E., Shaka, A., & Elhadi, Y. (2013-2021). ***Climate Information Services toolkit.*** Retrieved from ADA Consortium: https://www.adaconsortium.org/index.php/component/k2/item/377-climate-information-services-toolkit?highlight=WyJjb3VudHkiLCJjb3VudHkncyIsIidjb3VudHkiLCJjbGltYXRlIiwiJ2NsaW1hdGUiLCJpbmZvcm1hdGlvbiIsInNlcnZpY2UiLCJwbGFucyIsImNvdW50eSBjbGltYXRlIiwiY291bnR5IG

Weather and Climate Information Services for Africa and Future Climate for Africa. (2019). ***Co production in African Weather and Climate Services.*** Retrieved from https://futureclimateafrica.org/coproduction-manual/downloads/WISER-FCFA-coproduction-manual.pdf

WISER Reports. (n.d.). Retrieved from Met Office: https://www.metoffice.gov.uk/about-us/what/working-with-other-organisations/international/projects/wiser/reports

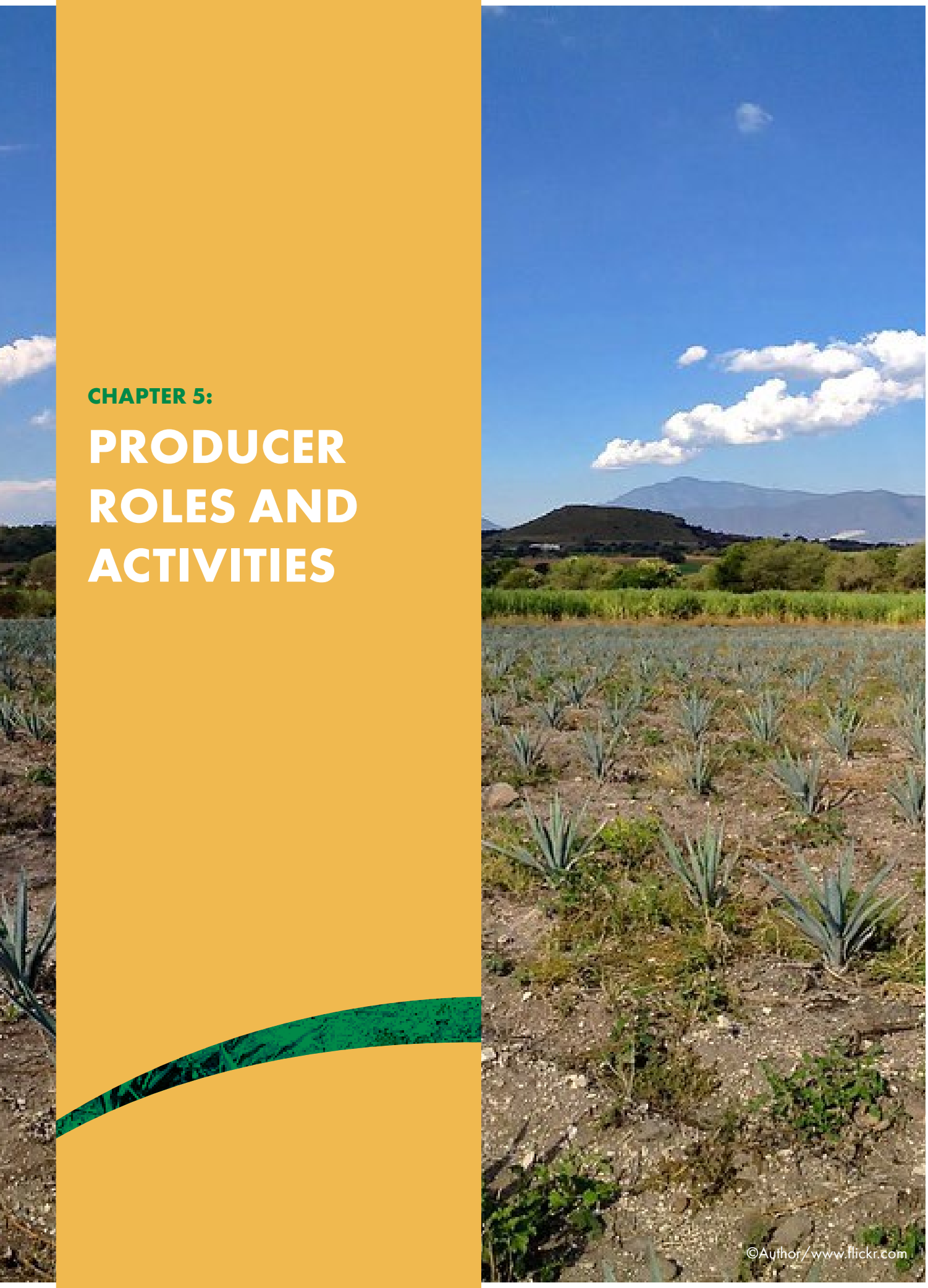
World Meteorological Organization. (2010). ***Position Paper on Global Framework for Climate services.*** Retrieved from https://gfcs.wmo.int/sites/default/files/Revised%20Final_Draft_Position_Paper_3.1.pdf

World Meteorological Organization. (2012). ***Guidelines on Frameworks for Climate services at the National Level.*** Geneva. Retrieved from https://gfcs.wmo.int/sites/default/files/events/Regional%20Workshop%20on%20Climate%20Services%20at%20the%20National%20Level%20for%20the%20LDCs%20in%20Asia/GuidetoClimateServicesattheNationalLevelFinalOctober2012.pdf

World Meteorological Organization. (2018). ***Step-by-step Guidelines for establishing a National Framework for Climate services.*** Geneva, Switzerland. Retrieved from https://library.wmo.int/doc_num.php?explnum_id=4335

CHAPTER 5:

PRODUCER ROLES AND ACTIVITIES



CHAPTER 5

PRODUCER ROLES AND ACTIVITIES

This chapter gives an in-depth description of the actors and processes involved in generating climate information and creating climate products in the context of co-produced climate services. It focuses on the activities that producers including ICPAC engage in when working on the production value chain step. Producers also engage in the other steps in the value chain, and their roles and activities as intermediaries are described in Chapter 4.

5.1

Producers of climate information in Eastern Africa

The producer's primary role in the co-production process is to work collaboratively with all the other actors to understand information needs and to use this knowledge to develop user-relevant climate information products. Producers include actors who hold or produce the raw scientific data (e.g. meteorological station observations, remote sensing observations, model data and forecasts) and actors with the responsibility for converting scientific data into a meaningful format appropriate to meet the information needs. The manner in which the producer approaches, integrates into, and is responsive to, the co-production process is often central to the success or failure of the process. This is because a climate service requires quality, reliable, useful and usable climate information that responds to the purpose it was created for. Producers at the sub-national, national, regional and international levels, work together in generating climate data and information. Key institutions producing climate information and products at different levels from global to local levels are discussed below.

Global producing centers (GPCs)

As the leading organisation mandated to facilitate worldwide cooperation in the design and delivery of meteorological services, the World Meteorological Organization (WMO) has designated 13 centres as Global Producing Centres of Long-range Forecasts (GPCs-LRF). WMO has fostered coordination between centres running General Circulation Models (GCMs) to generate seasonal and sub-seasonal forecasts. This has led to new global infrastructure that supports seasonal forecasting activities at regional centres such as ICPAC as well as at NMHSs. The infrastructure forms part of the Climate Services Information System (CSIS) of the Global Framework for Climate Services (GFCS). These centers make climate products available for users across the world including producers such as ICPAC.

In addition to the 13 GPCs, the infrastructure includes a WMO-designated lead centre, the Lead Centre for Long Range Forecast Multi-Model Ensemble (WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble) The LC-LRFMME collects long-range forecast data from all GPCs each month; maintains a central portal from which forecast users can access the GPC output in standard digital and graphical formats; and provides a facility for users to average the forecast output from selected GCMs (multi-model forecasts). For further information on WMO infrastructure see the Global Data Processing and Forecasting System manual (World Meterological Organization, 2019).

GPCs also support the development of new science and new products, ensemble models, medium- and long-term forecasts. These centres monitor the prevailing and expected ocean circulation systems (as well as the evolving large scale and regional scale) that have significant implications on the climate. Key among these processes that are monitored are current and evolving Sea Surface Temperature (SST) anomalies over global oceans, specifically the status and expected evolution of ENSO (El Niño, La Niña, and the Southern Oscillation) and the Indian Ocean Dipole (IOD).

Regional Climate Centres - ICPAC

ICPAC is a Regional Climate Centre providing relevant, timely, and actionable climate information in support of the 11 NMHSs of the region as well as regionally-acting stakeholders including the IGAD specialised institutions. ICPAC provides climate products such as seasonal forecasts (IGAD Climate Prediction and Applications Centre, 2021) on a rolling basis which are regularly updated and disseminated to users for consumption and planning purposes. ICPAC climate products include weekly, monthly and seasonal forecasts and advisories and climate change monitoring and prediction products.

ICPAC's role in co-production of climate products has been achieved through partnership with GPCs, consultative meetings and workshops between users and producers such as the GHACOF pre-COFs (see chapter 4.4) as well as implementation of projects supporting production of user-tailored products such as SCIPEA (Box 8).

In addition to the forecasts, ENACTS Maprooms are a collection of maps and graphs, developed in collaboration with the ***International Research Institute*** for Climate and Society (IRI) at Columbia University. They are a technical platform for presenting blended gridded historical data in a range of formats. The Maprooms allow users to seek information most relevant to their location, problem, and decision. ICPAC Maprooms can be accessed through (IGAD Climate Predictions and Applications centre) ICPAC also supports NMHS to maintain their national maprooms.

Most recently, ICPAC has developed East Africa Hazards Watch to serve information needs of users with limited knowledge of climate. In the Platform, risk information is presented in an interactive app, where users can activate or analysis multiple layers of information. (East Africa Hazards Watch). The platform was developed by ICPAC on Open Source code and layers of information and functionalities are being added weekly based on user feedback.

ICPAC provides climate change information through climate monitoring and prediction for socio-economic sectors, including agriculture and food security, water resources, disaster risk reduction and management, energy, and health. These products are intended for use regionally and to be downscaled to national and sub-national scales by the NMHSs to address national and local needs. ICPAC strives to build the capacities of the 11 NMHSs in statistical and dynamical seasonal and sub-seasonal forecasting to enable them deliver improved climate services.

Product development has evolved over time, with ICPAC's role in climate services production increasing with its enhanced technical and High Computing Capacity. The recent transition to objective forecasting is one of the latest improvements. (ICPAC, 2019) with more nuanced, detailed and precise information. ICPAC also supports the formulation of development policy which is informed by climate knowledge and information.

National Meteorological and Hydrological Services (NMHSs)

The key producer roles and activities for National Meteorological and Hydrological Services (NMHS) include:

- Meteorological Data Observations/collection.
- Data quality assurance.
- Archiving of data.
- Data transmission and exchange.
- Data analysis and production of climate information.
- Development and delivery of weather/climate products and services to users.

NMHSs are key providers of climate monitoring and observations and are mandated to establish and operate a national observation network that forms part of the WMO's Global Observation System (GOS), delivering on one of the pillars of the GFCS.

NMHSs are the main interface with users and intermediaries at national and sub national level so their role as producers and intermediaries is highly interconnected and evolving as climate services grow in popularity. Development of appropriate sectoral advisories, capacity building of NMHSs forecasters and scientists as producers and mapping and engagement of stakeholders, communication and intermediary skills as intermediaries are all important and require coordination. ICPAC has a core role in supporting NMHSs capacity to evolve its skills and roles towards mainstreaming co-production of climate services. The NFCS, NCOFs and sub-national COFs all contribute to enhancing NMHS co-production activities (See Chapter 4.3).

Local or indigenous knowledge forecasters

Local knowledge holders have traditionally provided rural communities with weather and climate forecasts up to seasonal timescales based on local observations and knowledge, for example, monitoring animal behaviour, forage conditions, and astronomical features among other aspects. The knowledge of these forecasters is highly localised and context specific which is of value for interpreting forecasts and co-producing advisories at sub-national and community level. Local knowledge is scientific in its own way, but is communicated very differently to formal science. Time and attention are needed to fully understand the meaning of a local forecast and how that meaning compares to the scientific forecast in order that they can be combined to create common and locally understood relevant information.

5.2

Linkages between producers

The linkages between national, regional and global producers are key in maintaining the Climate Services Information System (CSIS). These linkages are usually maintained through data and capacity sharing. ICPAC facilitates linkages to and between Global Climate Producing Centres (GPCs) and the National Meteorological and Hydrological Services (NMHS).

ICPAC utilises graphical outputs from the LC-LRFMME website as part of initial monitoring of the climate prospects over Eastern Africa, including the status of the El Nino Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD). In addition, ICPAC acquires the digital output from a range of GCMs, including most of the GPCs and additional GCMs from the North American Multi-Model Ensemble (NMME) and Copernicus Climate Change Services (C3S) for its specific forecast generation. Implications of the outlook for SST, ENSO and IOD climate modes on regional rainfall are integrated during the ICPAC pre-COF workshop. Global forecasts from the GPCs are inputs to the objective regional monthly and 3-month running seasonal climate forecast including for GHACOF. Prospects for season onset timing and dry spells are characterised by analysing ensemble integrations of the Weather Research and Forecasting (WRF) model configured for Eastern Africa and run at ICPAC with boundary forcing from the GPC Washington global seasonal system.

ICPAC, often together with GPCs, strengthens the capacities of ICPAC itself and its participating Member States in research, modelling and prediction, improved access, uptake and use of climate information, and improved delivery of climate services. ICPAC works with the NMHSs of its participating Member States and other partners in the provision of climate services regionally and supports the NMHSs to meet their national needs in weather and climate information products.

These vertical linkages have helped improve access, uptake and use of climate information, and improved delivery of climate services. Producers come together during capacity building, forecast development (Pre-COF workshop) and the COF events to produce a consolidated Regional Climate Outlook. In operational forecasting, the GPCs make available the latest seasonal predictions from their modelling systems. A selection of these (usually 7 or 9 dispensing on availability) are post-processed by ICPAC to generate the probability forecast for seasonal totals and average temperature for Eastern Africa. Some GPCs also provide ICPAC with boundary and initial conditions to aid in generation of regionally downscaled forecasts at a higher resolution. Further, ICPAC is providing High Performance Computing platform (HPC) resources to the NMHSs where they can acquire and process the forecasts for the country or sub-national region and use the HPC to generate their own country forecasts through statistical or dynamical techniques. In addition, under the WMO objective seasonal forecasting guidelines, ICPAC developed methodologies to meet the WMO guidelines and these are being adopted by the NMHSs in seasonal forecasting. This has been achieved through valuable collaborations between ICPAC and one GPC, the UK Met Office, and IRI.

REFERENCES

East Africa Hazards Watch. (n.d.). Retrieved from https://eahazardswatch.icpac.net/map/ea/?map=eyJkYXRhc2V0cyI6W3siZGF0YXNldCI6ImFmMTkyYjIxLWEyMDAtNDQzYS04ZDQwLWNjOWQzMDNjODUzYiIsImxheWVycyI6WyI1MWM5Yjg1Yy0xZTdhLTRiNzktODA0MS1kOTA2MjUxYzBkNjgiXSwib3BhY2l0eSI6MSwidmlzaWJpbGl0eSI6dHJ1ZX0seyJkYXRhc2V0IjoiOT

ICPAC. (2019, November 28). ***Improved seasonal forecast for Eastern Africa.*** Retrieved from https://icpac.medium.com/improved-seasonal-forecast-for-eastern-africa-57872645f449

IGAD Climate Prediction and Applications Centre. (2021). ***Climate Forecasting***. Retrieved from https://www.icpac.net/climate-forecasting/

IGAD Climate Predictions and Applications centre. (n.d.). ICPAC ***Maproom.*** Retrieved from http://digilib.icpac.net/maproom/

WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble. (n.d.). ***WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble.*** Retrieved from https://www.wmolc.org/

World Meterological Organization. (2019). ***Manual on the Global Data-processing and Forecasting System.*** Retrieved from https://library.wmo.int/doc_num.php?explnum_id=10164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CHAPTER 6:

CO-PRODUCTION BENEFITS, CHALLENGES AND OPPORTUNITIES IN EASTERN AFRICA

CHAPTER 6:

CO-PRODUCTION BENEFITS, CHALLENGES AND OPPORTUNITIES IN EASTERN AFRICA

This chapter outlines important learning on some of the benefits of co-producing climate services and the many challenges involved at different levels of the value chain (as described in chapters 3 and 4). Examples of benefits and opportunities for overcoming challenges are given to support practical guidance for ICPAC and other stakeholders in the do's and don'ts of co-production, recognising that it is a new and rapidly evolving field.

Table 3. Benefits of co-produced climate services in Eastern Africa

Benefit	How it works in practice	Examples
Opens new opportunities for active collaborations and synergies	As organisations seek to ensure climate services are co-produced it necessitates partners to actively collaborate with other partners and create synergies to continuously improve the service. Additionally, as organisations get a better understanding of co-production they are better able to contribute to improving the service.	As part of the W2SIP project, CARE and ICPAC facilitated the development of sector-based co-production processes through a series of workshops between users, intermediaries and producers of climate information in Kenya. BioVision, one of the participating organisations, supports knowledge dissemination to farmers through different media channels. Through their participation in the workshops, they were able to identify a way to support communication of KMD's climate services and are working together to formalise their collaboration.
Creates opportunities for peer and cross- disciplinary learning.	Co-production forums provide a platform for participants to share information and learn from each other with regards to climate services, learning from co-production experiences and broader issues of climate change and resilience. This in turn has the potential to advocate and upscale good practices to their own and other organisations and communities of practice.	The GHACOF meetings have created space for participant sharing and learning through approaches such as the 'market-place' and plenary sharing of success stories and challenges by different stakeholders. Through these platforms, participants are exposed to new information and can create new partnerships where synergies can be made.
Connects climate services to broader development and risk reduction goals.	Producers are better able to see the significance and impact of climate information on socio- economic development, livelihood, security and ecosystems management, and in turn how they can improve their services. By working collaboratively, all actors gain from seeing the bigger picture in which their role, sector or service plays a part.	The PSP approach brings together sub-national sector services, planners, community representatives and NMHS to discuss the seasonal forecast as an input to adaptation planning. In the process they exchange information on their sectors and priorities and this has led to broader discussions and plans to better integrate sector plans for a more holistic approach to development, informed by climate services.

Benefit	How it works in practice	Examples
Provides value for money.	Co-production processes generate and communicate information together with a range of actors who ensure it is relevant and enable it to reach a wide range of users.	Sector representatives from each country participate in the GHACOF. Climate information generated during the Forums offers a holistic view especially when considering issues that are cross-border including, migration- people and animals, flash flooding and trade among others. They in turn relay this information to their various sectors upon returning to their countries as input to the national level discussions. This together with the protocols around GHACOFs which mandate all NMHSs PRs to formally use the regional forecast, and the statement and policy briefs produced rapidly by ICPAC in the public domain, achieves impact at scale across all 11 countries in the region.
Ensures climate information is fit for purpose and adapted to a specific audience and context.	It also promotes iterative improvement of user-driven climate services.	Co-production involves identifying a purpose and use for information as the starting point for product and service development.
Opens opportunities for building trust and confidence between users and producers of climate information.	Increased interaction between users and producers of climate information offers opportunities for relationship development and time to fully understand each other's visions, interests, knowledge, challenges and terminologies.	Using the PSP approach for seasonal climate forecasts at sub-national level has led to increased trust and confidence between the NMHS, local government sector departments and local communities, and trust in the co-developed forecast together with understanding its limitations.
Creates opportunity for user feedback to inform continuous improvement of climate products and climate services.	Ensuring regular and continuous feedback is an often neglected but vitally important building block. It enables the iterative cycle of the value chain and ensures that: - Changes in use, decisions and information needs are known and motivate a corresponding change in the service; - Improvements in the ability to further refine data and climate products are captured in the service delivery; - Changes in or new communication channels reach to more, new or different users, and knowledge on their needs	Through co-production, WISER Strengthening Climate Information Partnerships-East Africa (SCIPEA) project, determined that the timing of seasonal forecasts was too late to be useful to farmers and the language used in communicating the forecasts was too technical. Rolling forecasts were co-produced and communication was done in simplified plain language.
Promotes efficient and effective communication.	Co-production ensures that communication channels used are decided by all actors based on what is preferred, accessed by and is relevant to users, and to the other actors involved.	Participants' engagement and later interaction with their networks widens the modes and channels of communication if well organised e.g. NECJOGHA has connected media organisations to climate information and GHACOFs. PSP participants decide on a range of simultaneous communication channels to convey the same forecast information to different audiences.

Table 4: Challenges for co-producing climate services and opportunities to address them

Multiple challenges are faced at the policy and operational level, including institutional barriers to change. Co-production has the potential to unlock some of the barriers even while they pose a challenge to co-production.

Challenge	Opportunities and Examples
Climate products are created at a large scale in isolation from their intended use.	ICPAC and NMHSs traditionally produce forecasts and early warning advisories for the region, trans-boundary, country and various socio-economic sectors using modelling and forecasting techniques but without sufficiently accessing and relating these to context or sector-specific knowledge (e.g. agriculture, water, health, disaster, energy etc.). The nature of climate science is that it is large/macro spatial scale and rather general. Co-production provides the opportunity to mainstream new ways of product generation where the knowledge of producers, intermediaries and users is strategically blended in order for climate information to be integrated into development, investment, risk reduction and sector plans and decision-making processes. To sustain a functional linkage between ICPAC's producer and intermediary roles, it could create a "Climate Services" Department that leads climate services related activities, including the RFCS and NFCS processes.
Capacity and motivation to change and develop new ways of working	While dialogue is necessary for co-production, dialogue will not result in climate services that align with user needs if either; a) users lack the capacity to express their demand for products that would benefit them, but that they have had little or no exposure to; or (b) producers (NMHSs, RCOFs) lack the capacity or flexibility to significantly change their services to align to users' needs. As a relevant example, there is a widely recognised and well-documented gap between the needs of local decision-makers (most studied for farmers) and the tercile seasonal forecast convention that most of the RCOFs globally have endorsed and perpetuated. However, despite this recognition, and the availability (implemented by ICPAC, Rwanda and Ethiopia on at least an experimental basis) of well-developed methods to generate, communicate and use downscaled forecasts that correct the main criticisms of the tercile convention, at least 15 years of dialog on these issues has had little influence on the way that NMHSs produce and present seasonal forecasts. NMHSs need support to change the way they generate and communicate forecasts, and their users need to know that they do not have to settle for the way their NMHSs have always presented the forecasts. ICPAC and GHACOF already do more than other RCOFs to make seasonal forecasts more relevant, but it can still be speeded up and influence change among NMHS. NMHSs also face multiple challenges which reduce their ability to respond to a growing demand for different climate products and services. These relate to resource access, mandates, formal hierarchy and bureaucracy, insufficient computational resources and infrastructure, limited research focus, limited communication facilities, quality of training and staff capacity, capacity to develop and tailor new products and access to capacity strengthening on skills needed for co-production such as communication, coordination and all the intermediary roles. ICPAC can use their support to NFCS development to support addressing some of these.
Commitment to mainstream climate services into policy, planning, and decision making.	Climate services are often perceived as being the sole domain of climate science institutions which result in a limited awareness or commitment to the value of mainstreaming climate services into policy, planning, and decision making at national, sub-national or sector levels. This in turn results in lower resources and attention among decision makers. Co-production has the potential to reverse this trend as it engages all actors, puts a focus on decisions and demonstrates how climate information can make a valuable contribution.
Ensuring ample lead time.	The decisions that climate information supports relate to a wide range of timescales, from emergency action to daily livelihood and economic activities to seasonal and long-term investment choices. Each has a corresponding need for different amounts of preparation time. Hence the lead time in which climate information is available before a decision has to be made is important. There is a tension between the ideal lead time that will ensure climate services are used and the realistic capacity and skill of climate product development to meet the level of reliability and accuracy needed in this timeframe. Through the co-production process, the different lead times for the different users can be identified, understanding of current skill levels and uncertainties in different climate products can be built and solutions to incorporate the different lead times needed can be co-developed during the process.

Challenge	Opportunities and Examples
Lack of trust in the forecasts	The erratic nature of the region's weather, the changing climate, limitations of climate science or simply inaccurate or incomplete communication can result in dramatic differences between the forecast, how it was understood and the observed conditions. Trust in forecasts by different types of users, from government departments to local development agents to households is easily lost. When trust is lost, climate information is not used and the opportunity for it to be of value and contribute to climate resilience is also lost. While forecasting skills have significantly improved and continue to do so, trust in them will only be built when users have been involved in their production or at least receive, understand and know how to apply the information wisely. Increased interaction between users and producers of climate information through co-production creates a good rapport between them. Through these interactions, users may strengthen their understanding of the reasoning for the forecasting process, the probabilistic nature and the meaning and implication of the information. The linkage enables the producer to communicate the uncertainty in the forecasts which enables users to not only plan for the most likely scenario but to have contingency and risk spreading plans relating to all likelihoods. With increased contact, changes in the forecast and subsequent shorter-term forecasts can be more easily communicated and accessed through regular updates.
Complexity of forecasts and meteorological jargon vs. Understanding user needs	Co-producing climate services ensures producers and users of climate information come together to develop relevant climate information and advisories. During the conversations, users and producers are able to make clarifications to better understand the terms used by producers and users to communicate the forecast and its limitations. Producers are also able to better understand user needs and decision criteria and can inquire from them on additional information they can produce to make the forecast more useful. During PSPs it was found that the range in the terciles used by NMHS for above normal, normal and below normal had been perceived very differently by users, to whom 'normal' rains spans a much wider range of rainfall than the tercile, and the two others imply outlier extremes. Clarifying for example that the range of 'above normal' covers from good rains with examples of suitable crops for productivity all the way to intense rainfall and floods is important to ensure planning for both investment to benefit from the potential good rains and preparedness for extreme events. PSPs also allow for taking time to communicate and explain probabilistic information and what the terciles mean in practice in ways the participating users can relate to.
Cost and limited financial resources.	Multi-stakeholder engagement is a pre-condition for co-production but has to be planned for and comes at a cost. To overcome some of the cost aspects, it is advised to work through existing structures and systems where possible instead of creating new ones. The Co-production process brings together different stakeholders who have different strengths and networks that can be utilised for synergy creation. As outlined in a climate services impact assessment study in Ethiopia, communication of climate information has been embedded into pre-existing systems facilitating information flow to community level. This has been achieved through utilising the Disaster Prevention and Preparedness Office (DPPO) whose reach is up-to the kebele level through the community- level Early Warning Committees (EWCs). The DPPO are part of the stakeholders involved in the seasonal Participatory Scenario Planning (PSP) process, which then makes use of their existing systems for information dissemination without additional cost, and allows interpreting of seasonal climate forecasts for planning and decision making to go ahead.

REFERENCES

Hansen, J., Furlow, J., Goddard, L., Nissan, H., Vaughan, C., Rose, A., . . . Ndiaye, O. (2019). ***Scaling Climate Services to enable effective adaptation action.*** Global commission on adaptation. Rotterdam and Washington DC.

Hansen, J., Vaughan, C., Dinku, T., Kagabo, M. D., Carr, E., Korner, J., & Zougmore, R. (2019). ***Climate services can support African farmers' context-specific adaptation needs at scale. Frontiers in Sustainable Food systems.***

CHAPTER 7

PRIORITISING GENDER IN CLIMATE SERVICES

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CHAPTER 7

PRIORITISING GENDER IN CLIMATE SERVICES

This chapter clarifies how climate change and climate services are gendered, and the importance of prioritising gender in co-production processes. It recommends actions for ICPAC to promote gender equality at all levels of its work.

7.1

Overview of linkages between gender inequality, climate change and climate information

Impacts of climate variability and change are distributed unevenly based on age, socio economic status or gender, among other factors. Gender is defined as the socially constructed perceptions regarding roles, privileges, expectation, responsibilities, rights, etc., assigned based on multiple identities (Pryzgoda & Chrisler, 2000) due to these perceptions of gender, women, men, girls and boys are often seen to have different roles in society, and this sometimes translates to unequal access to social and economic resources. Women in Sub-Saharan Africa are highly dependent on natural resources for their livelihoods as they are often less able than men to take on wage-earning employment or migrate to find work. In the IGAD region overall, although agriculture is the primary source of employment for men and women, women provide a significant proportion of the labour force (Raney, et al., 2011) Typically, women also have the responsibility of securing water, food and fuel for cooking for the household, dependent on resources greatly affected by climate change. However, UN Women reports that women in Sub-Saharan Africa generally do not have secure access to the land they plough and lack access to financial resources, improved farm inputs and markets to guarantee optimal production and economic empowerment (UN Women Watch, 2009).

Both perceptions of and the actual risks and vulnerabilities to climate change are shaped by these roles and responsibilities and manifest differently because of the different opportunities and barriers women and men face. The challenge of dealing with climate change is further exacerbated by unequal access to resources and decision-making processes, which means that women often have less influence over the resources they depend on and less ability to ensure their needs are addressed. These socio-economic barriers worsen women's coping capacities to the changing climate. In this context, women are often more vulnerable to the effects of climate change than men.

These socio-cultural norms that define women's and men's labour roles and influence the resources and decisions under women's and men's control result in differing climate information needs and demand between women and men. The production of climate information, however, is often 'gender-blind' in that it does not explicitly consider the specific information needs and requirements of women. Also, the selection of communication channels or language used for communication often results in women less able to access climate information, even though it is as valuable for their decision-making and activities. Where women have less access to information and communication technology (ICT) assets and information-sharing processes (e.g. involvement in formal community meetings), this also significantly limits women's access to information.

Ensuring co-production of climate services in the region is gender-responsive will make room for representation of women and men across different sectors; thus, creating an environment for climate services to help these sectors address the needs of those who are most affected. Design of such initiatives should adhere to the IGAD Gender Strategy and Implementation Plan (2016-2020), developed by the IGAD Secretariat to facilitate the mainstreaming of gender perspectives into IGAD's policies, strategies, programmes, projects and activities to make them gender responsive.

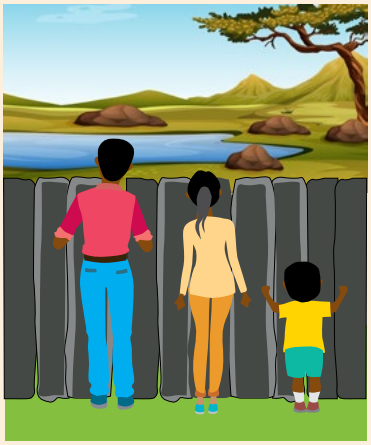
The IGAD gender strategy makes the case for gender mainstreaming and its importance in determining economic growth, poverty reduction, and development effectiveness in the IGAD region. IGAD further highlights the need to recognise gender differences in climate information needs and communication preferences in its Regional Strategy for Mainstreaming Gender in Disaster Risk Management (DRM) and Climate Change Adaptation (CCA). Studies by ICPAC 2014 provided evidence that increasing women's access to weather and climate information through area specific agricultural advisories in local dialects, improves overall

resilience to climate variability and change, and boosts agricultural output, incomes, food security and nutrition. Access to climate information and services is gendered and this needs to be addressed in designing climate initiatives in the Greater Horn of Africa to ensure gender-responsive development.

Box 14: What do we mean by Gender?

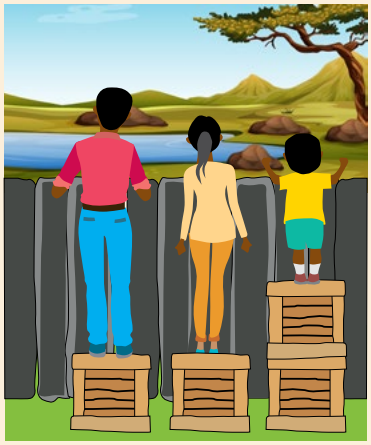
When considering gender in climate services, it is important to understand gender and its place in society.

Gender is linked to the roles and expectations placed on males and females within a community based on its culture and norms. Gender may or may not coincide with the biological characteristics of sex with which a person is born. In understanding gender, several terms need to be distinguished: gender inequality, gender equity, gender equality.



Gender inequality acknowledges the predominant reality that people of different genders are not equal. Differences arise from psychology, perceptions, attitudes and cultural norms and beliefs.

Gender equity is the process of being fair to different genders. To ensure fairness, strategies and measures must often be employed to compensate for disadvantages that prevent people of different genders from operating on a level playing field. Equity leads to equality.



Gender equality is the situation that arises when all genders experience equal conditions for realising their full human rights, and have the opportunity to contribute to and benefit from national, political, economic, social and cultural development.

Addressing gender inequality in climate services requires understanding the different needs and issues of women and men, ensuring equity in participation, decision-making and leadership and a deliberate ambition for access to climate information for all. Mainstreaming activities which seek to address gender inequality should be a key element at every stage of climate service delivery. This would involve ensuring that gender is taken into consideration during conceptualisation, planning, implementing, monitoring and evaluation of programs, initiatives and activities.

In the IGAD region there are programmes and initiatives that have successfully incorporated gender perspectives and women's empowerment, and ICPAC can recommend them to its member states. An example is provided below.

Box 15: ACREI project: Farmer Field Schools in Uganda

The Farmer Field School (FFS) is a globally adopted approach to extension services designed by FAO that aims to promote ecologically sustainable agriculture practices and support farmer innovation. It is a group-based and experiential peer learning process of 20-30 farmers who are trained by an extension facilitator in a local farm field setting. The FFS approach addresses the specific needs and priorities of women and men farmers, based on a thorough gender analysis which informs the training content and priorities based on the local gender specific needs. The FFS facilitators are trained to promote gender awareness, inclusion and women's empowerment. Deliberate effort is made to encourage women's participation and select women farmers as leaders within the FFS groups.

The Agricultural Climate Resilience Enhancement Initiative (ACREI) funded by the European Union and the Adaptation Fund, is a project delivered by WMO, FAO and ICPAC. The FFS groups established in Uganda by FAO under ACREI have helped achieve food security in Karamoja region, benefitting over 4000 households. Group farms have been established and have realised improved livelihoods for both women and men, and enhance their productivity through peer learning and information sharing.

In ACREI, ICPAC has supported climate services for farmers in Uganda by co-producing seasonal weather and climate advisories through Participatory Scenario Planning (PSP). PSP is a co-production approach that brings together stakeholders from government, communities, institutions and non-governmental actors over a multiple day workshop to integrate meteorological and local knowledge to produce a collaborative agricultural advisory for the upcoming season which is then disseminated widely to users. Through women's participation, contributions, leadership and decision making in the PSP workshop and follow-on actions; ensuring women's needs are specifically considered in identifying the information needs and important timescales throughout the season; and understanding communication channels and methods that can reach the most marginalised women; the PSP approach has been able to strengthen women's access and use of climate services.

Rwanda has implemented a similar approach, on a much larger scale (>110,000 farmers), that adapts and builds on the PICSA (Participatory Integrated Climate Services for Agriculture) approach. Although analyses of a gender-focused qualitative evaluation component are not yet complete, preliminary evidence has shown that women used and benefited from climate services as much as men (Dembele & Seble, 2019)

7.2

ICPAC's role in mainstreaming gender in climate services

ICPAC's work must uphold the IGAD gender strategy and its priority on gender mainstreaming in order to promote gender equality and women's empowerment. As ICPAC's main functions are at regional level, while also strengthening members states capacity to deliver climate services, ICPAC must work to ensure gender is addressed at all levels, to be able to provide the understanding and enabling environment for gender equality. Particular emphasis should be on ensuring equal access to climate information for women and men.

IGAD/ICPAC have produced the IGAD Regional Strategy and Action Plan for Mainstreaming Gender in Disaster Risk Management and Climate Change Adaptation, published in May 2020. This Strategy and Action Plan considers issues of gender equality, outlining the need for a gender sensitive approach in its strategic priorities. It emphasises the imperative to address gender, age and disability-driven vulnerability in policy, strategy, planning, implementation, monitoring and evaluation and contains provisions for building capacity to address gender, CCA and DRM issues at IGAD and member state levels. The Action Plan outlines deliberate policy and technical interventions to address the differential vulnerabilities of women, men, girls, and boys, before, during and after a disaster event in the IGAD region. It provides a comprehensive strategy and action plan for gender mainstreaming, and the agencies responsible for taking forward actions at the regional level.

Further, ICPAC has an opportunity to advocate for the prioritisation of gender equality at regional level and in member countries as they support the implementation of the GFCS at national levels. Where projects and support to NMHS and regional actors involve climate services which reach individual decision-makers at the community level, this requires a conscious awareness and response to gender issues and concerns of women and men. Integrating existing good practice in gender mainstreaming, including best approaches and tools, and promoting channels of communication which target women, men and youth according to their expressed preferences is key.

7.3

Actions to address gender inequality in ICPAC co-production processes

The principles of co-production have a precondition for all concerned actors to be known, respected, involved and heard. Thus, ensuring women's specific issues, needs and climate information priorities are reflected in climate services, as well as supporting women's participation and leadership in co-production processes, should be regarded as part of this precondition. In leading the adoption of co-production within the region ICPAC should be promoting gender as a fundamental aspect, both internally and among IGAD member states. ICPAC should develop and promote approaches to gender-responsive climate services in the establishment of regional and national frameworks for climate services under GFCS roll out.

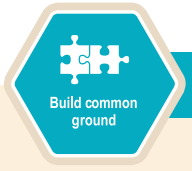
The recommendations below are actions that will help ICPAC to operationalise gender inclusion strategies within co-production of climate services and to support NMHSs in prioritising gender. They include actions drawn from the IGAD Regional Strategy and Action Plan for Mainstreaming Gender in Disaster Risk Management and Climate Change Adaptation and the WMO Gender Action Plan (updated June 2019).

Mainstreaming gender in the co-production process

The co-production building blocks and climate services value chain can be used to analyse gender issues and integrate gender responsiveness in the design of climate services. Suggested actions include:

Building Block 1: Identifying key actors and building partnerships

- Ensure all stakeholders understand the need for addressing gender and inclusion.
- Ensure mapping of stakeholders and actors includes women representation and specifically identify women's needs, issues and decision-processes.
- Consult with women and women's organisations in the development of climate services to ascertain their information needs and priorities.
- Recognise differing power relations and agency in building relations.



Building Block 2 and Block 3: Co-explore needs

- Ensure women, men and youth are involved in discussions on the climate service development and build relationships with representatives of all gender groups and intermediaries representing their interests.
- Separately assess climate information needs of women and men farmers, with further disaggregation by male and female-headed households, age, and socio-economic status where these may shape roles, constraints and hence information needs.
- Recognise differing power relations and agency in co-exploring user needs and provide spaces and opportunity where women, and other underrepresented groups, feel able to contribute, be heard and be part of decision-making.

Additional activities for ICPAC:

- Co-exploration of needs and existing climate information:
- Encourage the collection of information on women's, men's, girls' and boys' vulnerabilities and livelihoods on a regular basis. Maintain a regularly updated gender risk profile.

Building Block 4 and Block 5: Co-develop climate services: Communic

- Carry out gender analyses in ICPAC projects.
- Integrate gender within ICPAC databases of weather events

Building Block 6:- Co-evaluate climate services

- Identify different needs and preferences in communication and dissemination methods for women and marginalised people, taking into consideration formats and languages that are preferred by different women and men users.

- Ensure the diffusion of weather forecasts takes gender into account and reaches women and men equally.
- Develop and use gender-sensitive indicators to monitor access to and use of services by women.
- Assess any gender barriers in accessing communication channels available for climate services.

Strengthening gender equality within ICPAC and in support to IGAD member states

There are also broader actions that ICPAC can adopt to prioritise gender equality internally and in its support to NMHSs.

To demonstrate leadership and build awareness within ICPAC:

- Develop guidelines for proper gender and context analyses to inform standards for future programming, specifically for ICPAC dissemination of weather forecasts.
- Develop advocacy messages and strong political statements on addressing gender inequality in climate services in line with the IGAD Gender Strategy.
- Raise awareness and capacity among ICPAC staff on the importance of considering gender and how climate change affects different groups unequally. Ensure staff are familiar with the IGAD Gender Strategy and sector specific gender plans such as the DRM and CCA strategies.
- Develop a gender component in ICPAC's co-production capacity building training to ensure all decisions for design and product development systematically consider issues related to gender, and where feasible support inclusive research and product prioritisation.
- Conduct systematic collection, use and reporting of gender and age disaggregated data in all ICPAC activities and projects, and carry out gender analyses in order to improve understanding of gender-specific impacts of weather and climate and of the gender dimensions of climate services.

To strengthen women's leadership in climate service delivery and within ICPAC:

- Improve the gender balance among scientists and climate producers - where women are currently a minority - including supporting opportunities within ICPAC for women's capacity building, training and leadership opportunities in science, technology, research and development.
- Adopt gender equality strategies to support the recruitment, retention and promotion of women in ICPAC and in NMHSs, and work with educational institutions to support career pathways for women in the meteorological and hydrological sciences.
- Encourage leadership of women in senior level positions and participation in strategic decision-making and planning.

To support NMHSs in upholding gender as a priority:

- Support NMHSs to apply a gender lens in higher level policy engagement and their climate services contributions to national processes, for example in developing climate finance proposals, in Nationally Determined Contribution (NDC) submissions and National Adaptation Plans or national sectoral strategies.

- Support member states in the removal of structural barriers that limit access to and control over resources, including finance and decision-making processes in public spheres at all levels.
- Strengthen the capacity of women and men in climate-sensitive sectors as service providers, relevant authorities and end-users to contribute to the effective production, access and use of weather and climate services through technical and communications education, training and professional development, including gender sensitization training.
- Encourage investment in gender-based weather and climate services to reduce the gender gaps in IGAD member states.

REFERENCES

Adaptation Fund. (2017). ***Agricultural Climate Resilience Enhancement Initiative (ACREI) (Ethiopia, Kenya, Uganda). WMO/FAO/ICPAC***. Retrieved from https://www.adaptation-fund.org/project/agricultural-climate-resilience-enhancement-initiative-acrei-ethiopia-kenya-uganda/

CARE Academy. (n.d.). ***Gender Basics Course.*** Retrieved from https://careacademy.org/courses/

Dembele, D., & Seble, S. (2019). ***Africa Environment Day: CCAFs highlights efforts to bridge the agricultural gender gap in Ethiopia, Mali, Rwanda and Senegal.*** Retrieved from https://ccafs.cgiar.org/news/africa-environment-day-ccafs-highlights-efforts-bridge-agricultural-gender-gap-ethiopia-mali-rwanda#.XHg8nbjTVnA?platform=hootsuite

Dollar, D., & Roberta, G. (1999). ***Gender Inequality, Income and Growth: Are good times good for women?*** Washington DC: Mimeograph, World Bank.

IGAD Secretariat. (2015). ***IGAD Gender Strategy and Impementation Plan 2016-2020 : Volume 1-The Framework.*** Retrieved from https://resilience.igad.int/wp-content/uploads/2020/06/Gender-IGAD-Gender-Strategy-Vol-1-Framework-2016.pdf

IGAD Secretariat. (2020). ***Regional Strategy and Action Plan for mainstreaming gender in disaster risk management and climate change adapatation.*** Retrieved from https://www.gfdrr.org/sites/default/files/publication/Regional%20Strategy%20and%20Action%20Plan%20for%20Mainstreaming%20Gender%20in%20DRM%20and%20CCA-Final_EN.pdf

Klasen, S., & Claudia, W. (2003). ***Missing Women: Revisiting the debate. Feminist economics 9(2/3):***.

Knowles, S., Paula, L., & Dorian, O. (n.d.). ***Are Educational Gender gaps a brake on economic development? Some cross-country empirical evidence.*** Oxford Economic papers 54 (1):118-49.

Pryzgoda, J., & Chrisler, J. C. (2000). ***Definitions of gender and sex: The subtleties of meaning and Sex roles***.

Raney, T., Anriquez, G., Croppenstedt, A., Gerosa, S., Lowder, S., Matuscke, I., . . . Doss, C. (2011). ***The Role of Women in Agriculture;Food and Agriculture Organisation.***

Rodgers, Y. v. (2018). ***The Cost of the Gender Gap in Agricultural Productivity: Five African Countries.*** Retrieved from UN Women Regional Office for Eastern and Southern Africa (ESARO) and the United Nations Development Programme–United Nations Environment Programme Poverty Environment Initiative (UNDP–UN Environment PEI) Africa.: https://wedocs.unep.org/bitstream/handle/20.500.11822/28383/CostGenderGap.pdf?sequence=1&isAllowed=y

UN Women Watch. (2009). Retrieved from https://www.un.org/womenwatch/feature/climate_change/downloads/Women_and_Climate_Change_Factsheet.pdf

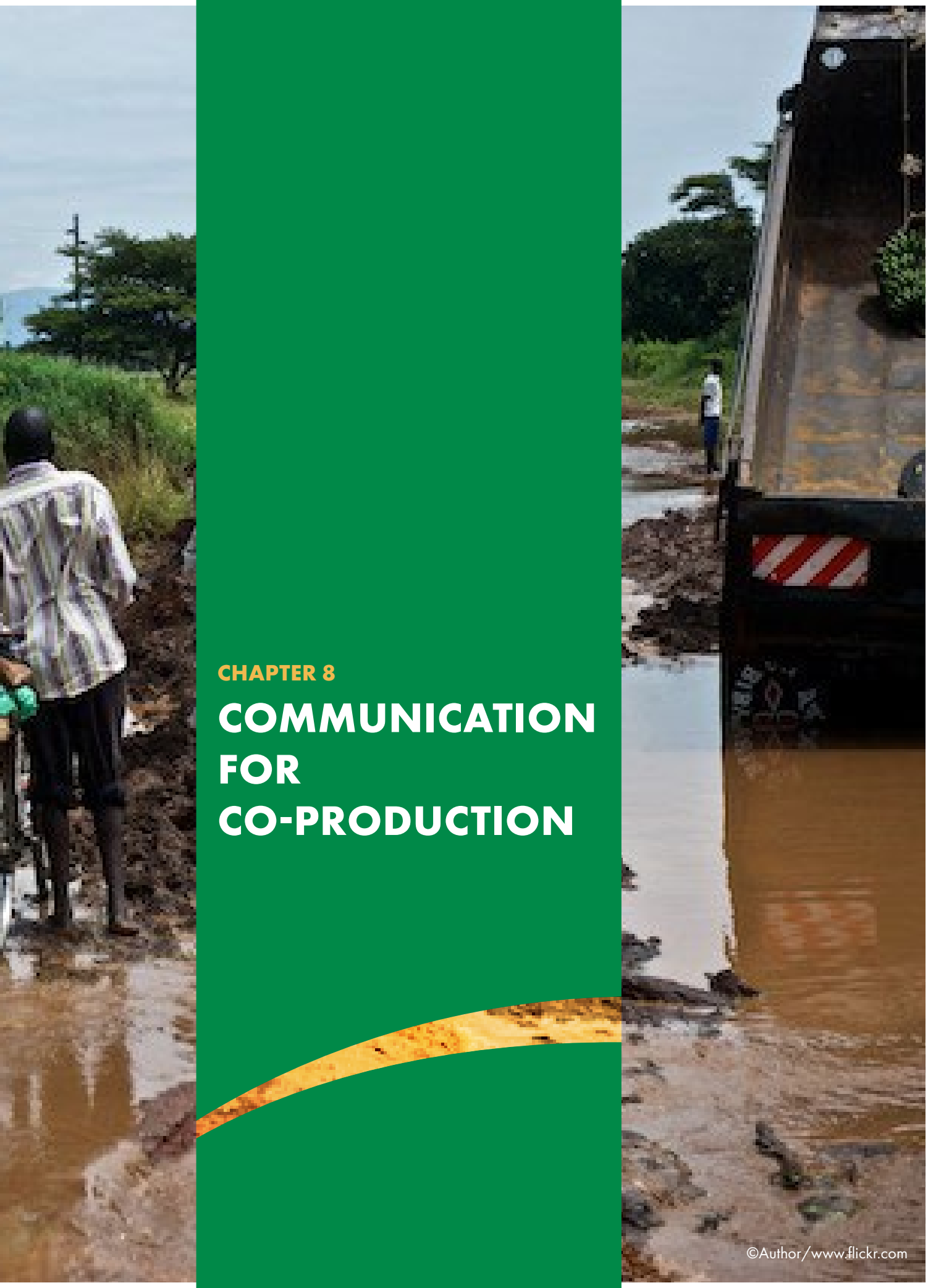
UNFCCC. (2018). ***"Considerations regarding vulnerable groups, communities and ecosystems in the context of the national adaptation plans: Least Developed Countries Expert Group. Bonn,*** Germany.

United Nations. (2002). ***Agreed solutions Report on the forty sixth session of commission on the status of women. Official records, supplement No.7(E/2002/27-E/CN.6/2002/13). Economic and social coincil.*** Retrieved from http://daccessdds.un.org/doc/UNDOC/GEN/N02/397/04/PDF/N0239704.pdf?OpenElement

United Nations. (2008). Gender perspectives on climate change: Issues paper for interactive expert panel on emerging issues, trends and new approaches to issues affecting the situation of women or equality between men and women. ***52nd Commission on the Status of Women.*** Retrieved from https://www.un.org/womenwatch/daw/csw/csw52/issuespapers/Gender%20and%20climate%20change%20paper%20final.pdf

World Bank. (2001). ***Engendering Development.*** Washington DC: World Bank and Oxford University Press. Retrieved from http://documents1.worldbank.org/curated/en/512911468327401785/pdf/multi-page.pdf

World Meteorological Organisation. (2019). ***Gender Action Plan for the eighteenth financial period 2020-2023.*** Retrieved from https://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/Gender-Action-Plan_2020-2023.pdf?88gPxymrcU1nHy2gIiu.ffCX.YggqPr9



CHAPTER 8

COMMUNICATION FOR CO-PRODUCTION

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CHAPTER 8

COMMUNICATION FOR CO-PRODUCTION

Communication is key to enable co-production of public services and advocacy to raise awareness and promote support for climate services by national, regional and global policy. ICPAC utilises a wide range of communication channels to reach a diverse range of users and to allow these to provide feedback. ICPAC's Communication Strategy guides all its Communication with stakeholders and has integrated best practices in public service co-production methodologies, including participatory action research and using digital technologies to collect user feedback. Refer to this strategy for ICPAC's overall approach to communication.

This chapter highlights best practices in using communication to ensure multi-stakeholder cooperation and coordination, to ensure inclusivity, accessibility and participatory co-production processes. It contains a set of channels that support co-production processes. It highlights flexible and innovative approaches, including using digital technologies for collecting customer feedback and tailoring products and services.

Co-producing Climate Services: We will work to institutionalize spaces for co-production of climate services to adapt our services to user needs. Listening to our user needs and integrating them to our products will improve the quality, relevance, use and impact of our climate services.

ICPAC Communication Strategy, May 2020

8.1

Good practices in using communication to enable co-production of climate services

Communication enables all actors along the climate services value chain to interact among themselves with the goal of optimising the customisation of public service. Different communication channels are appropriate for different stages of the value chain. All channels contained in this chapter encourage two-way communications. Digital platforms and channels are making it easier for producers to engage in two-way communication with target audiences and users. ICPAC is capitalising on this and is seeking more input and feedback from digital and mobile users, using channels like WhatsApp, Telegram, Facebook, Twitter, Video, Polls, Questions and Surveys. ICPAC is also in the process of improving its use of analytical tools to better understand different users, their behavior and their decisions to tailor climate information to their needs and preferred user journeys.

Different communication channels were identified and can be utilised depending on the target audience, technology penetration and local context. It is key for co-production processes to be deeply embedded in Communication and Production strategies of Climate Service providers to institutionalise participation of users in service design.

Box 15: ICPAC's Target audiences

- Decision / Policy makers.
- Media and opinion leaders.
- National Government Sectoral Offices.
- Humanitarian and Development Sector experts / NGOs / UN / Donor / Multilateral Organisations and Banks.
- Climate Scientists / Meteorologists.
- Academia and Think Tanks.
- Local communities (e.g. Farmers, Pastoralists, Fishermen, Urban dwellers).
- Private Secto.r
- General Public.

Using Social Media for co-production

Social media can be considered enablers of co-production. Social media has simplified and reduced the cost of participation in public service design. It allows direct interaction between the producers of a public service and its wide range of users. They facilitate feedback collection and reduce co-production costs.

Facebook pages: Official facebook pages of Climate Service providers allow for the collection of Users feedback through direct messages and through user comments on postings. Facebook pages are popular in Eastern Africa among non-professional and professional users.

Facebook Groups: Facebook groups offer free platforms for dynamic collaboration of users and producers. They support posting polls, questions, reflections and requests. ICPAC created a Facebook group called "Climate Communications Eastern Africa" in 2019 to stimulate discussions on climate communications.

Twitter: Twitter audiences and followership are usually more professional. More technical conversations and information exchange usually happens through comments, replies and direct messages. Twitter has proven to be an excellent tool for ICPAC to engage with journalists, professionals in climate services, specialised climate institutions (e.g. WMO, ECMWF, NASA, NHMS), and decision makers (e.g. MPs, Directors of institutions, Policy Makers) and National Authorities (e.g. Ministries of Environment, Disaster Risk Management, Office of Prime Minister).

LinkedIn: LinkedIn has helped ICPAC engage through comments and direct messages with active professionals in climate services in the region and beyond.

Instagram: ICPAC created an Instagram account in 2019 to engage younger audiences through comments, polls and direct messages.

YouTube: YouTube allows for different users to comment on videos and send private messages with specific requests.

Roundtables (In person and through Video conferencing services such as Zoom / Teams)

Roundtable discussions allow for live brainstorming and direct feedback to climate producers. Roundtables can be used to facilitate interaction between stakeholders that are not used to interacting such as the private sector, NMHSs and the media. It allows for instance, for the private sector (e.g. agribusiness, banking, insurance) to provide "face to face" feedback on the quality, timeliness and relevance of services provided by NMHSs or Climate Centers. Facilitation of Roundtable discussions is key to allow attendees to share their interests, needs, discuss climate information and ensure it is a two-way conversation.

Box 16: Roundtables in Sudan, Kenya and Uganda

The establishment of roundtables in Sudan, Kenya and Uganda has brought FM Radio Stations, the private sector and meteorological authorities together as allies in emphasising the importance of quality climate services, in supporting the need for meteorological infrastructure and climate communication and feedback systems. The FM Radio Stations provide an avenue which, when used appropriately, can be a good tool to increase the credibility of the meteorological authorities. The private sector can also benefit from the information generated by meteorological authorities and the platform provided by the FM stations and social media. There is an opportunity for the private sector to finance dissemination of climate information and feedback mechanisms through sponsorship. In this case study, the structure of the roundtables was comprised of the following:

- Meteorological Services
- Media, National, State FM & Community Radio Stations
- Private sector (Agro Processors, Telecommunication Providers, Electricity generation livestock, Banking, Insurance etc.)

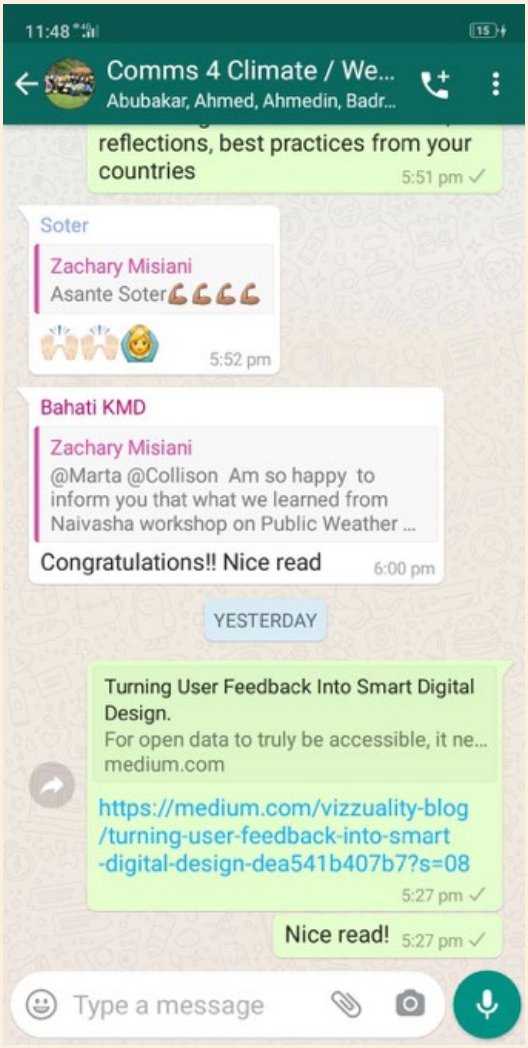
The roundtable approach can spawn a series of partnerships that ensure sustainability of climate communication. However, it is important to note that the vibrancy of the roundtable is dependent on the contribution of the partners, skillful facilitation and how their objectives are linked.

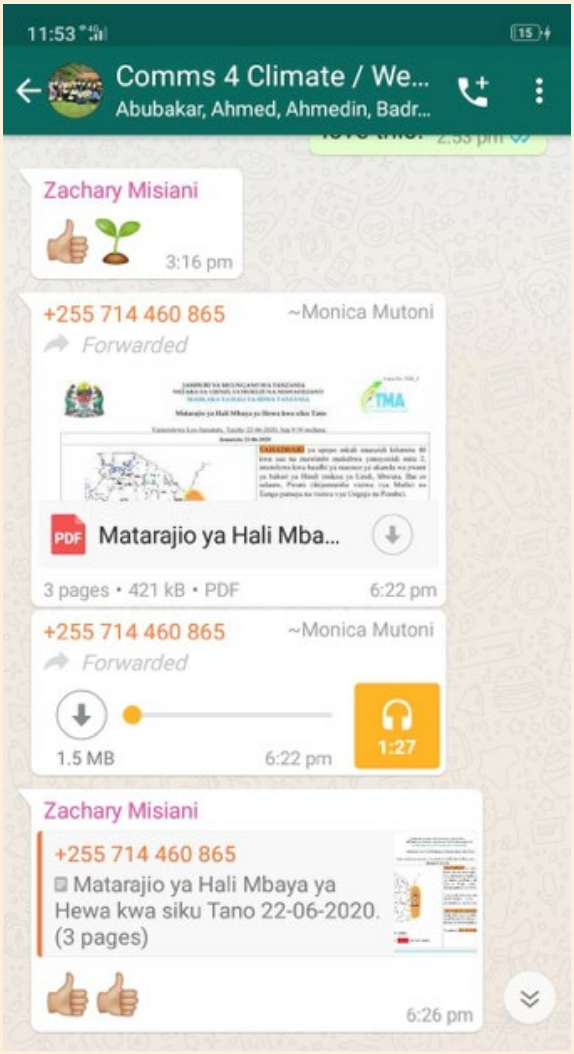
WhatsApp Broadcast lists, Groups and Telegram Channels and Groups:

Creating dissemination channels and Groups using WhatsApp and Telegram can support reaching wider audiences and provide inexpensive feedback platforms. WhatsApp "Broadcast Lists" and Telegram "Channels" allow for one-way dissemination of climate information and "Groups" allow Producers to receive direct feedback from a wide range of users. WhatsApp groups also support knowledge exchange among producers of climate information from different countries. The majority of producers and intermediary organisations have access to mobile phones and Internet.

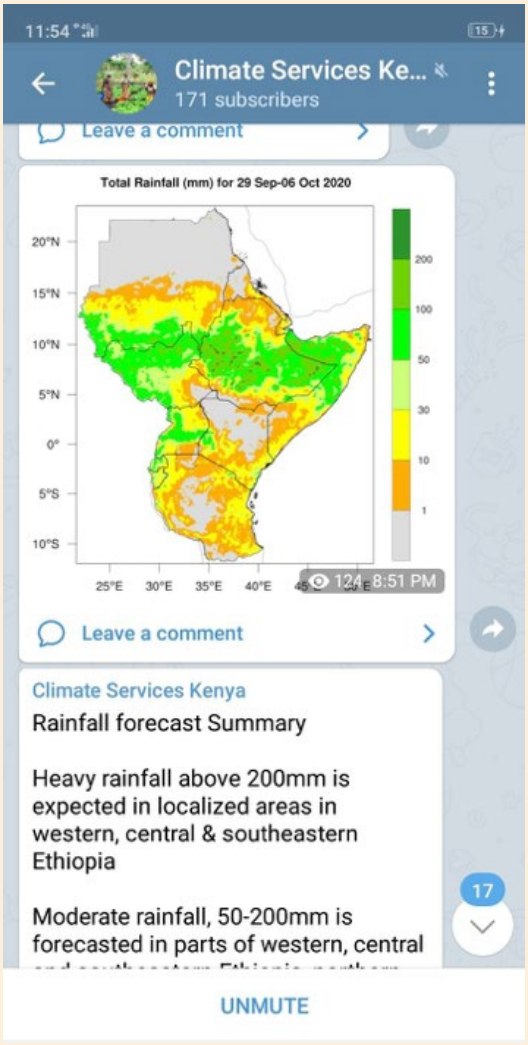
WhatsApp and Telegram Channels and Groups are cost-efficient and dynamic engagement tools that can also be created and managed at the sub-national level. They have proved to be very successful at the national and sub-national levels in Kenya, Sudan and Uganda to promote engagement between NHMS, the private sector and media.

Box 17: Example of WhatsApp Group of the region's Meteorological Communication Officers and ICPAC Communication Department (11 member states and ICPAC)





Example of Telegram Channel and Group set up for Kenya Meteorological Department to disseminate climate information and collect feedback.



Focus Group Discussions (FGD)

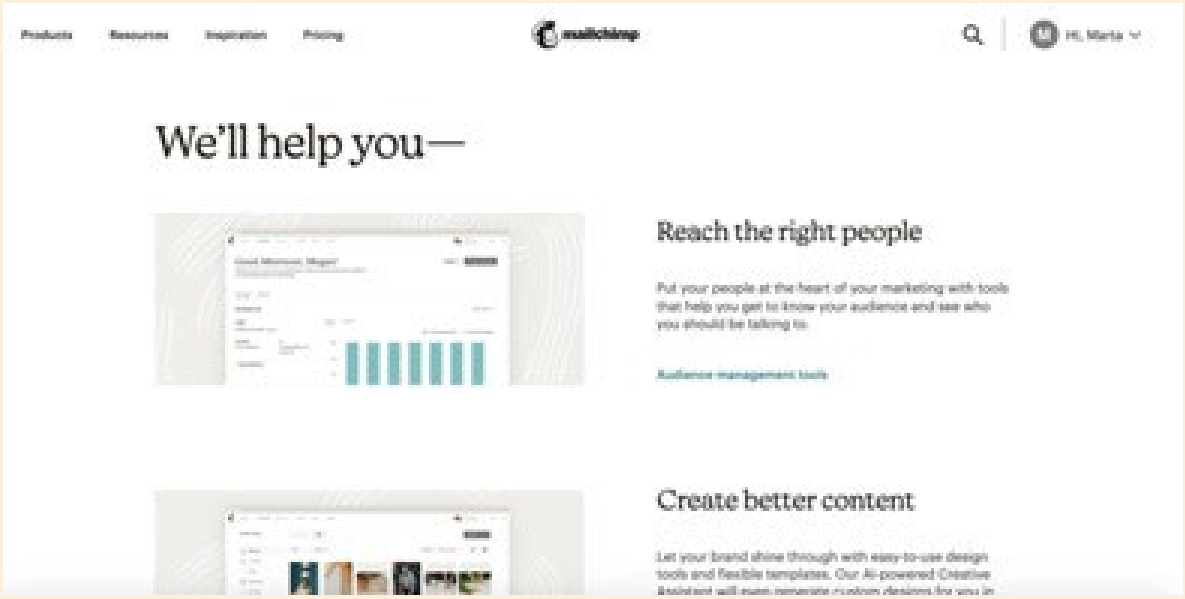
FGDs are one of the most commonly used tools to mobilise community participation to engage in design of a climate service and collect feedback from users of a public service on their needs, their use and benefits realised. ICPAC has used FGD through a number of initiatives and projects, including through End User Assessments funded by ACREI and NORCAP on access to Climate Information (2019, Kenya, Ethiopia, Uganda). Traditionally conducted "in person", new video conferencing tools such as Zoom or Skype allow conducting Focus Group Discussions remotely with some users - particularly institutional and intermediary users in locations with good bandwidth. 4 staff members of ICPAC's Communication Unit will be trained by NORCAP through CDAC in November 2020 in Community Engagement and Accountability in Climate Services.

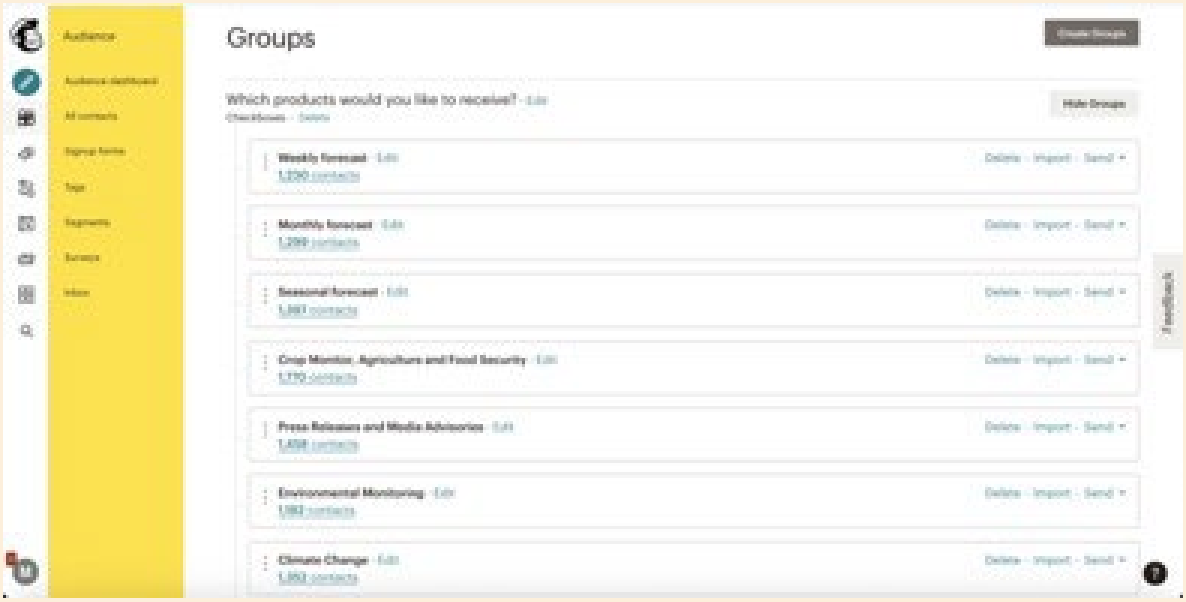
In-depth Interviews

Together with FGD, in-depth interviews are one of the most commonly used tools to collect feedback from users of a public service. Traditionally conducted "in person" video conferencing tools such as Zoom, Teams, Skype or normal telephone calls allow conducting in depth interviews remotely. In depth interviews are used by ICPAC to assess access of users to climate information (National and Regional), user friendliness of products, and decisions supported by climate services. These assessments are currently conducted with the support of projects and haven't been yet institutionalised in the climate services value chain.

Mailing list

ICPAC has been using an email marketing software since early 2019 to increase email engagement and increase the user base receiving climate information via email. Users are allowed to decide which services they would like to subscribe to and are encouraged in each email to provide feedback on climate services received. ICPAC currently has 5600 email subscribers. The Center is in the process of optimising user journeys and setting up automations in line with different user needs.





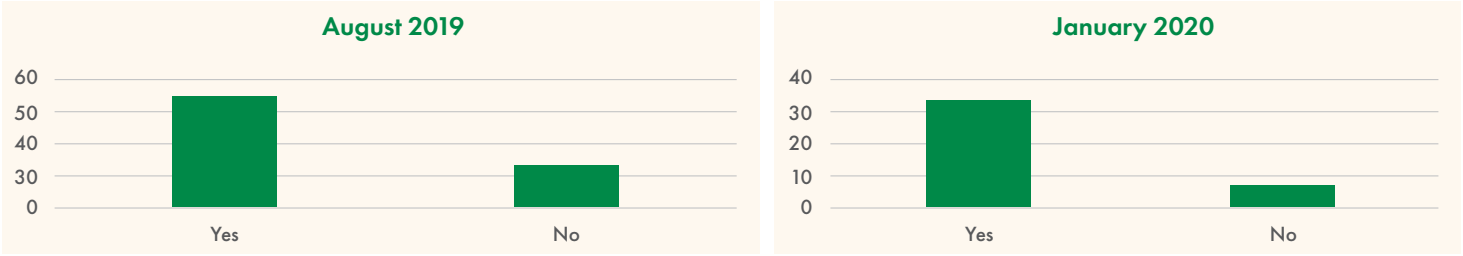
Multi-hazard early warning system, Open Source and Personalising User journeys

ICPAC is currently developing East Africa Hazards Watch, a multi-hazard visualisation platform that allows visualising risk information and signing up to receive email Alerts in a number of fields (e.g. Drought, floods, extreme rainfall, heatwave, crop failures etc.). The platform is built using Open Source code and allows for customising user journeys. Users can select their geographic area of interest (e.g. administrative boundary, point or drawn area) and choose to receive email alerts for different parameters (E.g. extreme rainfall, drought, desert locust). The platform will encourage users through a button to provide feedback on the information and user experience. ICPAC is committed to make available all the source codes and scripts through their Github Account, and aims at encouraging programmers and technical experts to contribute to improving the platform.

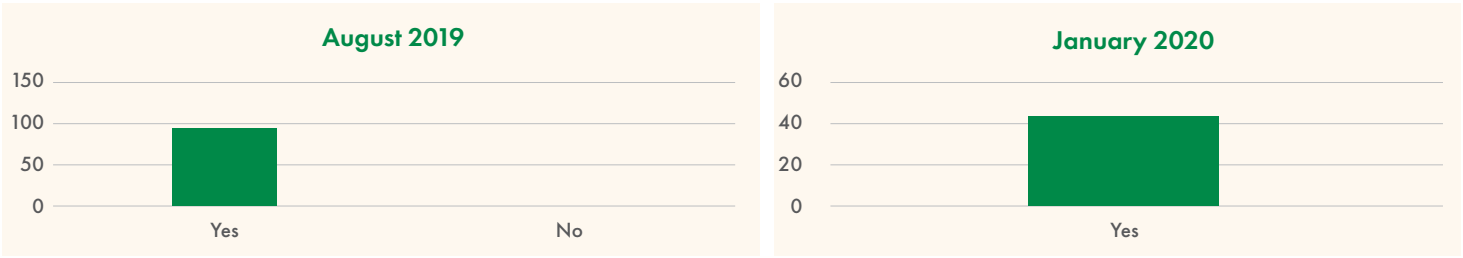
Digital surveys

ICPAC sends its users a bi-annual survey, via email, to assess user satisfaction with their climate services. Digital surveys (for example using Kobotoolbox) have been also used by some projects on the ground to gather information on user needs and preferences. Resources permitting, these "face to face" end user surveys, which can be developed and implemented in partnership with various stakeholders, provide useful information to inform the co-production process. It is key for surveys to be sent periodically in order to monitor changes in user satisfaction over time.

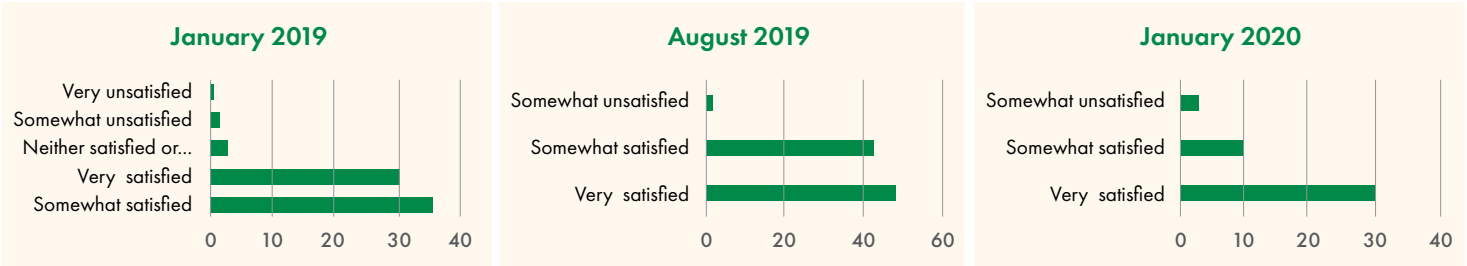
Have you noticed any improvement in ICPAC Services over the last year?



Do you think our Maps have improved?



Overall, how satisfied or dissatisfied are you with ICPAC services?



Box 20: Sample of bi-annual survey results collected by ICPAC on User Satisfaction with Services

Workshops / Meetings / Forums

More traditional and costly methods to engage users are workshops, in-person meetings and forums. Climate Outlook Forums or Participatory Scenario Planning (see Case 5 in WISER/FCFA Manual on Co-production) are two examples of user engagement in workshops to co-develop localised and/or sector specific forecasts, seasonal advisories and communication channels for dissemination. In addition to forums specifically for climate information, there are important opportunities to link with and share climate information through existing fora and networks, such as Chief's ***barazas***, local early warning committees, savings groups, faith networks, school climate clubs amongst many others.

Website

ICPAC's website has a button to collect user feedback on the Footer. A pop-up has also been programmed to collect user feedback on specific occasions. In line with ICPAC Communication Strategy, all digital channels should allow users to provide feedback on products and services.

Radio (Local Radios / Call ins / Participatory radio)

Using interactive radio shows at the local level and national level, allows grassroots users of climate services to give necessary feedback and information to improve climate services. Through a number of projects, ICPAC has provided training in mainstreaming climate information in Radio Programming and Participatory radio. A MOOC is currently being produced in partnership with BBC Media action to train Radio journalists in Climate reporting and to encourage the use of participatory radio to change behaviours. A series of Climate Change Explainer podcasts targeting local Radio journalists is also being produced and will be translated to different regional languages. Many climate services surveys (Adaptation Fund, 2019) have found that community members prefer radio over other channels of communication. One option used in some locations is to broadcast climate information and interactive climate change programmes in community centres or by loudspeaker in markets.

Climate reporting

ICPAC was instrumental in the establishment of the Network of Climate Journalists of Greater Horn of Africa (NECJOGHA), including training support to its members on climate communication. National Environmental journalists' networks are also key players in the dissemination of Climate Information. ICPAC is working with BBC Media Action to create a MOOC on Climate Reporting to be translated to different regional languages. The MOOC will also include contents to encourage participatory programming (engaging audiences in content development). Working with strategic media partners is key for ICPAC to build capacity in climate reporting and generate the necessary public discussions for climate action (mitigation and adaptation) to take place.

Conclusion

Although digital technologies are reducing the costs of involving users in public service design, much work remains to be done to institutionalise co-production spaces and systematise integration of user feedback into service design. Institutionalising periodical co-production spaces (digital and in-person) and making efficient use of user data and behavioural analytics will be key to ensure tailoring of quality climate services in the years to come.

IGAD Climate Predictions and Applications Centre. (Updated September 2020). ***Roadmap to effective early warnings and dissemination of climate information: ICPAC Communication and Engagement Strategy and Action Plan 2020-2025***.

(2017). ***Practical guide to Participatory Scenario Planning (PSP)***. Retrieved from https://careclimatechange.org/wp-content/uploads/2019/06/Practical-guide-to-PSP-web-1.pdf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CHAPTER 9

MONITORING, EVALUATING AND LEARNING

CHAPTER 9

MONITORING, EVALUATING AND LEARNING

This chapter presents criteria and processes useful for monitoring and evaluating the development and implementation of co-production of climate services by ICPAC, NMHSs and other relevant stakeholders. It also provides some of the criteria for ensuring that learning from the application of the Guide in co-producing climate services supports ongoing co-production initiatives and can be shared more widely.

The purpose of monitoring and evaluation (M&E) in co-produced climate services is not only to ensure that the intended end goal or product of co-produced climate services is delivered, but also to track progress in achieving the various interests and preferences of the different actors involved in co-production. M&E information is also used to support the feedback systems in the co-production process which generate and share information which can be used to improve the approaches and products involved in the services. Monitoring and evaluation is key for efficient public service delivery and continuous product iteration, more so in a changing and uncertain climate. Despite this, evidence of information needs, use and impact of climate services has been an acknowledged weakness not only for ICPAC, but also globally in climate services (World Meteorological Organization, 2019)

When co-production of climate services is recognised as a process, it becomes easier to identify specific changes that can be attributed to the process. In addition, a process approach enables monitoring of changes created across the co-production building blocks and steps in the knowledge value chain, which can emerge even within short-term projects. Monitoring should identify changes in service development and delivery; how this is contributing to changes in decisions and actions by institutional users and intermediary organisations, and ultimately how this is reducing the risks and enhancing the opportunities of those people whose lives and livelihoods are most directly impacted by weather and climate. A systematic approach to these levels of monitoring enables the value of the different contributions of different actors in the process and along the climate services knowledge value chain to be assessed. Since ICPAC rarely engages directly with the final community-level users, this tracking is important for evaluating the change that can be attributed to better co-production in climate services. That is, ICPAC may need to link with intermediary partners who support the use and benefits of climate services to monitor and share their information on achieving the desired final outcome of climate vulnerable people becoming more resilient.

Monitoring, evaluation and learning of co-production processes in climate services is itself a building block of a climate service. See chapter 4.2: Building block 6 of this Guide for activities related to feedback and evaluation within a specific co-produced climate service and chapter 3.1 of the WISER/FCFA Manual for how to measure the value of co-production processes.

9.1

Monitoring, evaluation and learning (MEL) systems

The development and implementation of a monitoring framework for climate services which integrates co-production processes is key for ICPAC to assess the impacts of co-production on service delivery. This framework would also allow for continuous monitoring, evaluation and feedback of all services delivered by ICPAC, ensuring iterative learning and improvement.

Building an effective ICPAC monitoring system for co-production involves:

1. **Defining the scope and purpose:** Establishing a system which is aligned with ICPAC services and activities as well as the climate service actors, information, products and services to be monitored, including feedback mechanisms which should be co-developed with the climate services partners. Understanding the flow of information and institutionalising a systematic flow of data to a centralised M&E system while utilising all available channels would be a key component of the system. Given the resources required to develop and sustain an M&E framework, there may be important opportunities to integrate monitoring within existing systems. Climate services monitoring can benefit through linkage with existing systems that have extensive reach, such as Tanzania's Agricultural Routine Data System (ARDS) that monitors extension services to the village level or through systems such as the network of Crop Monitor focal points. Such

integration offers the co-benefits of supporting more integrated, sectoral-specific services.

2. **Defining Indicators:** This is a crucial step in developing the MEL framework for climate services. Identifying key indicators for tracking changes within usability of climate products and suitability of climate services. These would include both process and outcome indicators among others. These indicators can be co-developed with relevant stakeholders who could also support in the feedback, timelines and data collection. Indicators measured by ICPAC would relate to its role as producer and intermediary and the effects and impacts of these roles. ICPAC can also support its partners to define indicators they can be in charge of measuring at other steps of the value chain, to ensure a whole service MEL approach which covers the full cycle of service development
3. **Collecting data and analysis methodology and tools:** Different sets of data require different sets of tools and this also includes differences in target audiences and contexts of data collection. This includes defining types of information to be collected (see chapter 4.2: building block 6). Not-withstanding, a guideline for routine feedback collection for monitoring and evaluation should be put in place for iterative learning while sporadic needs for 'special' data and information should be customised. Co-production is by definition about multi-stakeholder collaboration and joint decision making. Hence it would be expected that the MEL system uses participatory methodologies and a mix of qualitative and quantitative data collection tools. For example, to capture the value and benefit of the co-production process, human interest stories and knowledge / attitude / behaviour change studies are effective ways to document the experience information users have across all parts of the value chain and building blocks and the changes they are making to their lives or institutions and sectoral services.
4. **Developing analysis, reporting and disseminating templates and plans:** This caters for the compilation and organisation of data collected, synthesis of the same to generate useful evidence and information for review, to generate learning and reports for dissemination and improvement.
5. **Identifying and assigning roles and responsibilities:** Setting up an M&E system that captures, stores, processes and disseminates achievements, challenges and lessons learnt from the climate co-production process will require strengthening organisational structures with M&E functions and clearly delineated responsibilities across institutions partnering in a co-production process; human resources; partnerships for planning, coordinating and managing the system; an M&E framework with clear indicators, a work plan and a budget; routine monitoring; a database, evaluation and research as well as data dissemination, use and feedback. Regardless of how effective the monitoring system is, maintaining the system as well as conducting ongoing monitoring requires specific skill sets. This calls for qualified and dedicated staff to manage and coordinate ICPAC's climate services M&E.

9.2

Learning in co-production

A core component of the M&E process is to gather information and evidence to facilitate ongoing learning and inform continuous and future improvements to the parts of the climate service that need it. Integration of learning into M&E activities supports regular review, course correction and greater understanding on why and to what extent results are achieved (both intended and unintended), what works well, what are the bottlenecks and what their impacts are on co-producers, intermediaries, different users and other actors. Over time, as implementation continues, learning will allow for this knowledge to inform further planning, design and implementation of climate services. Participatory monitoring approaches support multi-actor learning and at the same time information collection.

ICPAC can ensure that learning is integrated within each of the co-production initiatives that it supports. It can also promote more peer learning and capacity by establishing mechanisms and approaches to support interactive learning, feedback and knowledge sharing within ICPAC and among all climate services actors. For example, the GHACOFs provide a platform for multi-stakeholder co-production processes which enable sharing, discussion and learning about approaches, successes, new knowledge and evidence on all aspects of climate services. Such forums also allow for the learning to be captured and documented, serving a monitoring function in addition to learning.

To achieve these positive outcomes ICPAC will also need to invest in building skills in facilitation of learning and knowledge brokering so that peer, multi-stakeholder and cross disciplinary learning is effective at all needed scales. These skills are equally important for facilitation of the co-production process. Chapter 10 touches on this need. It is recommended that ICPAC plans and develops its ability to provide a skilled knowledge brokering and learning function in its support to NMHS and IGAD.

When fully integrated within the process, learning can inform continuous improvements to climate services. Sharing this learning with those engaged in complementary initiatives is vital to building shared understanding about where co-production of climate services may be most effective and how this is best enabled. Similarly, learning from experience highlights the importance of feedback processes to bring

out users' voices in improved climate services. Ensuring sustainability of the climate service delivery is largely dependent on building co-production systems which integrate and resource M&E and learning systems into existing structures so that they can be continued, expanded and replicated in the future.

Learning will be strengthened by linking to and drawing from existing knowledge, nationally, regionally and globally and vice versa. This will allow knowledge, lessons learned and gaps in services to feed into future developments of services and ultimately inform future policy and practice. The ICPAC M&E working Group is well placed to have strategic oversight and accountability of this process by bringing stakeholders together (either physically through meetings or virtually through discussion fora or questionnaires) to capture knowledge and evidence and ensure that users' feedback is appropriately incorporated.

9.3

Going forward

In the long-term, the overall success of ICPAC's engagement in co-production of climate services will be measured by its demonstration of the tangible socio-economic benefits resulting from increased relevance and use of climate services that effectively support decision-making for investment and protection against risk in key sectors and livelihood systems.

Quality and systematic monitoring and evaluation would also demonstrate:

a) ICPAC's ability to implement its core mandate and leverage necessary inputs through partnerships from various actors, stakeholders representing users, managers of observation and climate information systems, research and development organisations, including NGOs, and regional and national climate institutions.

b) Increase in knowledge and documentation of intermediaries and users of climate services, their roles and their information needs at different levels.

c) ICPAC success in increasing the overall use of climate services and subsequent economic and social impact of climate services.

d) Increases in climate data and information collected, analysed or processed, stored and exchanged nationally, regionally and globally which provides evidence of successful co-production of climate services in line with known user information needs.

e) The effectiveness of co-production processes in transforming climate products into sustained and targeted climate services as measured by the range of actors involved, increase in the range and quality of services available, including number and types of decision support tools, and increase in transparency and communication of levels of accuracy and uncertainties associated with key climate products.

f) The existence and sustainability of feedback loops within implemented climate services which link actions, impacts and benefits of climate services experienced by users with review and re-design of the climate service

g) ICPAC's ability to attract the resources necessary to sustain its ongoing, long-term activities.

REFERENCES

Carter, S., Steynor, A., & Waagsaether, K. (2019). ***Co-production of African weather and Climate services.*** Retrieved from Future Climate for Africa and Weather and Climate Services for Africa: https://futureclimateafrica.org/coproduction-manual/

Dinku, T., Madajewicz, M., Curtis, A., Connor, S., O'Sullivan, R., Phiri, C., . . . Alhassane, A. (2018). ***Development of Metrics to assess National Meteorological Services in Africa, USAID-supported assessing sustainability and effectiveness of climate information services in Africa Project.*** Washington DC. Retrieved from https://winrock.org/wp-content/uploads/2018/10/Sustainable-CIS-Development-of-Metrics-to-Assess-NMHS.pdf

Kniveton, D., Visman , E., Daro, n., Mead, N., Venton , R., & Leathes, B. (2016). ***A practical guide on how weather and climate information can support livelihood and local government decision making: An example from the Adaptation Consortium in Kenya. Working draft Exeter:Met Office.***

World Meteorological Organization. (2019). ***2019 State of Climate services WMO-No. 1242***. Geneva, Switzerland.


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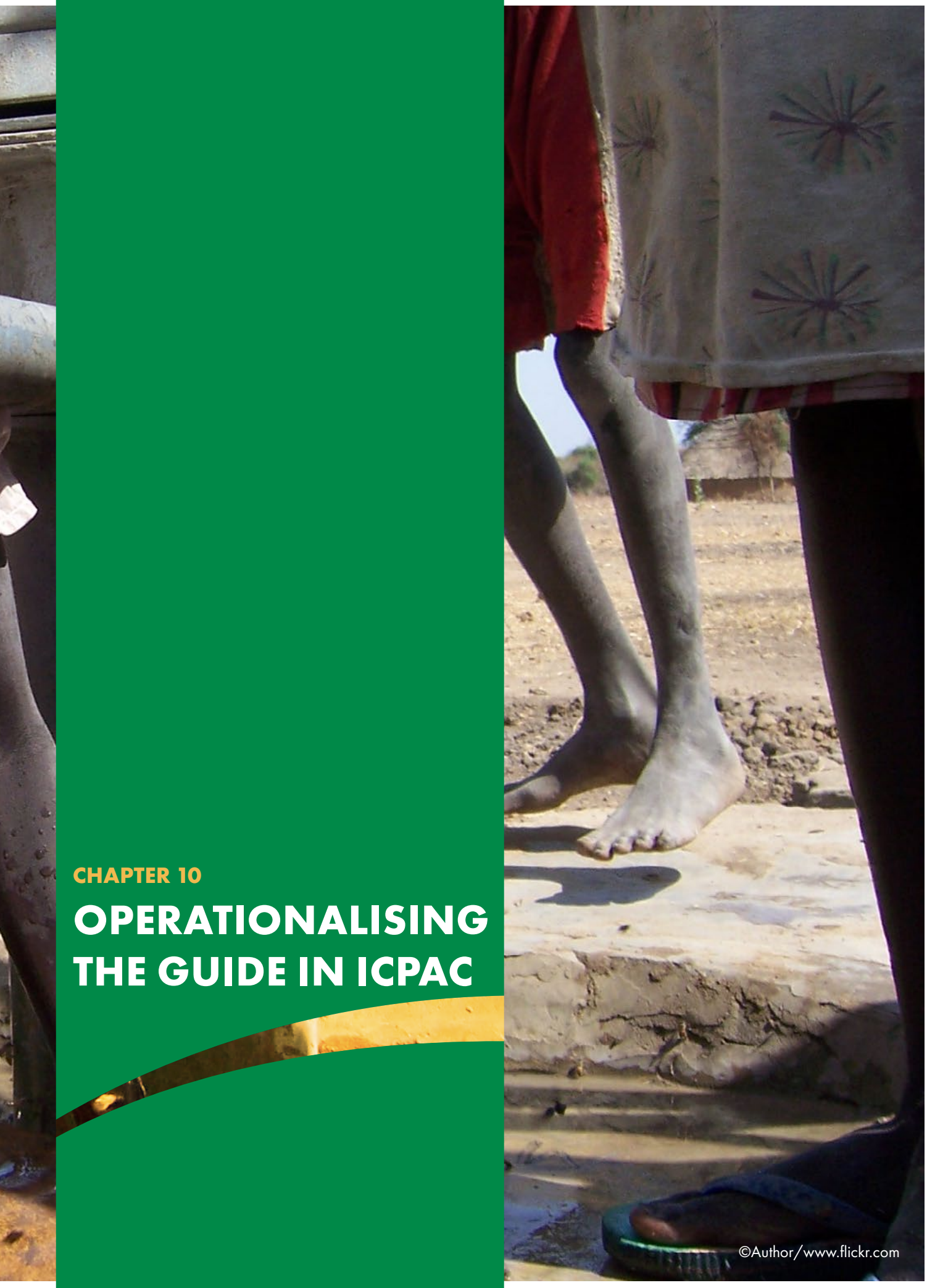
CHAPTER 10

OPERATIONALISING THE GUIDE IN ICPAC



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CHAPTER 10

OPERATIONALISING THE GUIDE IN ICPAC

This chapter presents a roadmap for ICPAC to use this guide to continue to strengthen and implement co-production of climate services as a core part of its operations. It provides insights into how ICPAC can operationalise this guide to consolidate co-production good practices and what is needed to scale up these gains by ICPAC and stakeholders in the region.

The success or failure of ICPAC's response to the co-production imperative is contingent on its ability to undergo institutional change. The institution needs to embrace a culture of owning and applying any effort invested in changing its ways of doing business to appeal to users and stakeholders, improve products and services, recognise and foster its diverse roles and remain relevant in the fast-changing world of new actors and technology. Many donor-funded projects have supported ICPAC to improve feedback instruments, revamp the GHACOF process, adapt seasonal forecasts according to user needs, and other initiatives to improve co-production. New staff joining the institution should be orientated along the same line so that co-production becomes a mainstream part of ICPAC operations.

10.1

Operationalising the guide in ICPAC

The following steps are proposed for ICPAC to follow in order to ensure smooth implementation of this Guide in its engagement and mainstreaming of co-production of climate services.

Step 1: Develop a policy brief and/or a set of 1-2-page practical briefs which present the essential information on co-production provided in this guide, and make it easier for people to become aware of the guide, access and navigate it and use it.

Step 2: Launch of the Guide (ICPAC): During the launch, ICPAC management fully endorses the Guide; committing to strengthen co-production, delivery and application for the benefit of climate services and the people of the region.

Step 3: ICPAC to organise webinars or meetings to orient current staff on the contents of the Guide and how to apply it in their work. The materials used for these meetings to be developed further, including the briefs in Step 1 and be incorporated into the set of materials used during orientation of new staff in ICPAC.

Step 4: ICPAC to refer to the Guide when designing climate services support with IGAD institutions. Reach out to the other IGAD specialised bodies to share and advocate for support in implementation of the Guide including identifying possible areas of partnership in implementation.

Step 5: ICPAC to commit in supporting the coordination and facilitate collaboration among its member NMHSs and other stakeholders to enhance co-production activities at regional, national and sub-national levels.

Step 6: ICPAC to influence development partners and climate services projects to support capacity building in ICPAC, IGAD and NMHS to increase skills in coproduction as provided in the Guide and to include capacity building and implementation of co-produced climate services in project design, planning, proposal development to enable adoption of high-quality co-production mainstreamed in ICPAC,

Step 7: ICPAC management commit to using the Guide in relation to all the pillars of the GFCS relating to improvement of climate services in the region.

Step 8: Publicise the guide and associated briefs and capacity building materials to enable institutions in the region working in climate related areas to utilise the Guide in their services for the benefit of the region

10.2

ICPAC Opportunities to implement the guide

IGAD regional strategies and climate services initiatives

ICPAC plays a very central role in Eastern Africa to provide climate information for planning and decision making for the different IGAD bodies. As such, ICPAC has the opportunity to engage directly in the design and delivery of climate services through the support it provides to the IGAD specialised institutions in their transboundary and regional initiatives. In this, ICPAC can promote co-production, increase user engagement and support delivery and use of climate information.

While supporting the IGAD regional bodies, ICPAC gains the opportunity to integrate some of the key principles and practices advocated for in this guide to the regional bodies and partners, and within key regional strategies for equitable and resilient socio-economic development of the region. Capitalising on these partnerships offers ICPAC an opportunity to identify and maximise on the different opportunities mentioned within this guide. Further, ICPAC as part of IGAD implementing bodies is mandated to support the implementation of IGAD strategies. In promoting user-engagement, co-production and gender mainstreaming in climate services, ICPAC will be contributing to the implementation of most of the IGAD strategies while linking to the different priority areas.

GHACOFs, NCOFs and NFCS support

ICPAC is continuously improving the GHACOFs to a) incorporate new developments - climate change, the framework provided by GFCS at all levels, the COVID 19 pandemic, increase in demand for and experience in co-produced climate services, the link between climate services and climate finance for early warning and action, adaptation and mitigation and so on and b) develop the GHACOFs as a multi-stakeholder learning platform allowing for collective exploration of current and new themes. Refer to Chapter 4.3 which outlines the way in which GHACOF and NCOFs follow the co-production building blocks and climate services value chain, recommends further changes that could be made and proposals to increase the impact and reach of GHACOFs. As countries develop their NFCS and in line with WMO recommendations, ICPAC has an opportunity to support the use of co-production principles and processes in their design and delivery by NMHS and capacity strengthening of NMHS and sector actors.

On-going and future projects

ICPAC has benefitted through support from partners in training its staff to be trainers of trainers (ToTs) in climate co-production services. For instance, through the FCDO supported WISER programme that trained ICPAC staff on co-production of climate services, the national meteorological services in the region have in turn been trained to improve their climate services delivery. The knowledge on co-production of climate services have widely been applied in ICPAC's on-going projects like ACREI, Intra-ACP GFCS Programme-support to IGAD region, Intra-ACP GCCA+ programme on climate change for the IGAD region among other projects. The projects provide a financial and implementation vehicle through which co-production processes can be designed, implemented and enable learning from practice. The gained knowledge from this project with support from this guide will be instrumental to support future ICPAC and ICPAC supported projects.

10.3

Strengthening Capacity for co-production of climate services

Beyond externally funded projects, ICPAC will need to incorporate capacity building and training for co-production of climate services within its capacity building programmes for ICPAC staff, NMHS and IGAD institutions. The different chapters can be used as useful resources during capacity building sessions related to the NFCS roll out and related to integrating climate change in ICPAC's work, given that climate services are generally required to support decision making for development investments and disaster risk reduction under a changing climate.

At the W2SIP Peer Learning workshop, the multi-disciplinary and regional participants (majority of whom were producers from ICPAC and NMHS) brainstormed the capacities and skills they considered most important for successful climate services, and identified the actors that need these and which of them most need capacity strengthening. Table 5 presents the outcome. Note that the list is representative only of the participant ideas on the day and so does not present a fully comprehensive list. However, it demonstrates the importance of a range of 'soft skills' such as leadership, coordination, planning, decision making, facilitation, among others, that are important and need to be strengthened, and shows how these types of skills are needed by all actors.

This reinforces the suggestion that ICPAC invests in knowledge brokering and social science expertise within ICPAC as part of its leadership and intermediary roles in enabling climate services to grow and achieve impact in the region. Such expertise can also assist in coordination across actors, developing collaboration and partnerships with other knowledge brokering intermediary organisations, user engagement, championing of co-production and the promotion and updating of this Guide.

Table 5: Priority skills required in co-produced climate services as proposed by regional participants in the W2SIP Peer Learning workshop July 2019.

Co-production skills	Who needs the skills √ = needed √√ = most needed				Skills for co-produced climate services	Capacity strengthening needs to ensure skills are available
	Producers	Inter-mediaries	Institutional users	Individual Users	1 = most important skill	1 = highest need for capacity building to improve the skill
Resource mobilisation	√	√	√	√	1	2
Research, development, analysis skills	√				2	5
Communication skills		√√	√	√√	3	1
Planning skills	√	√√	√√	√	4	3
Decision making skills	√	√	√√	√	5	
Survey skills, mapping, GIS	√				6	6
Interpersonal, interaction, relationship, facilitation skills	√	√√	√	√	7	7
Monitoring and evaluation	√√	√√	√		8	
Technical climate skills	√				8	
Knowledge management	√	√			10	
Leadership skills	√	√	√√	√	11	8
Coordination	√	√√	√	√	12	9
Innovation	√			√	13	
Interpretation of climate information	√	√	√	√√	14	4
Meteorology	√				15	

Supporting evolving roles for climate producers

As co-produced climate services continue to gain traction, it will be imperative for ICPAC and NHMSs roles and responsibilities to evolve. This will entail them continuing to strengthen their technical climate product development role and skills and also placing greater focus and attention on their roles and skills as intermediaries in climate services. These roles for ICPAC and NMHSs do not come naturally and require capacity building, and training. However, working with users and other intermediaries such as CARE International and Red Cross, ICPAC's intermediary and knowledge brokering skills have been improving over the years. Projects such as WISER and others have assisted by supporting and linking these user-oriented intermediaries with ICPAC and requiring transformational change in the way climate services are developed and disseminated.

ICPAC as an institution is also engaging social scientists and communication experts to take up positions for user engagement, co-production and communication within the organisation. ICPAC can encourage NMHSs to do the same and build the capacity of NMHSs in this and in their relation building with relevant partners.

However, the capacity of ICPAC needs to be enabled further in order to entrench co-production of climate services. In this regard regular capacity building activities in co-production, communications, knowledge management and brokering of knowledge between diverse actors, management of partnerships and facilitation of co-production processes is required. This role is currently undertaken by the Communications office which could be further strengthened through engagement of an external relations officer (social scientist) to coordinate with intermediaries.

REFERENCES

Carter, S., Steynor, A., & Waagsaether, K. (2019). ***Co-production of African weather and Climate services.*** Retrieved from Future Climate for Africa and Weather and Climate Services for Africa: https://futureclimateafrica.org/coproduction-manual/

Dinku, T., Madajewicz, M., Curtis, A., Connor, S., O'Sullivan, R., Phiri, C., . . . Alhassane, A. (2018). ***Development of Metrics to assess National Meteorological Services in Africa, USAID-supported assessing sustainability and effectiveness of climate information services in Africa Project.*** Washington DC. Retrieved from https://winrock.org/wp-content/uploads/2018/10/Sustainable-CIS-Development-of-Metrics-to-Assess-NMHS.pdf

Kniveton, D., Visman , E., Daro, n., Mead, N., Venton , R., & Leathes, B. (2016). ***A practical guide on how weather and climate information can support livelihood and local government decision making: An example from the Adaptation Consortium in Kenya. Working draft Exeter:Met Office.***

World Meteorological Organization. (2019). ***2019 State of Climate services WMO-No. 1242***. Geneva, Switzerland.

https://gfcs.wmo.int/Sustainable_CIS

About the programme

The Weather and Climate Information Services for Africa (WISER) Support to ICPAC Project (W2SIP), an initiative funded by UK government's Foreign, Commonwealth and Development Officer (FCDO), developed the capacity of ICPAC, relevant regional stakeholders and National Meteorological and Hydrological Services (NMHS) in the Eastern Africa region to enable them to deliver wide-reaching, actionable and improved weather and climate products and services anchored on the principles of co-production and user engagement.

The project strengthened ICPAC's capacity to promote co-production, access, uptake and use of climate products and services to strengthen resilience within the region. The ultimate goal was to contribute to enhanced resilience and prosperity of Eastern Africa countries through improved co-production processes integrated into ICPAC's operations and those of NMHS; developing a strategy to support design and production of user-relevant products and services and improving access and uptake of co-produced weather and climate products and services for decision making at regional and national levels. This Guide is a key W2SIP contribution, drawn from experiences and lessons learnt, to support mainstreaming of co-produced climate services within ICPAC and among ICPAC Clients and projects going forward.

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