



Pan-Africa Component

***Climate Research for Development (CR4D)
Report of the Regional Climate Research Partnership
(RCRP) Workshop for East Africa (EA)***

30-31 March 2016

Nairobi, Kenya



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This work is facilitated by the United Nations Economic Commission for Africa, African Climate Policy Centre. ACPC is the coordinator of the pan-Africa component of WISER, which is supported by the Department for International Development (DfID) of the United Kingdom. However, the views expressed and information contained in this toolkit does not necessarily represent the views of these partner institutions.

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RCRP-EA Workshop Report

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AMCOMET
African Ministerial Conference on Meteorology



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Summary

A workshop is successfully held in Nairobi from 30-31 March 2016 with the primary objective of scoping and assessing of user-driven climate re-search priorities for Eastern and Horn of Africa to facilitate the formation of multi-disciplinary participatory climate research and outreach teams jointly focused on identifying, co-designing and undertaking priority user-inspired climate research that can improve quality and access to climate information and services for policy making and development planning. Over 50 participants drawn from the EAC, including directors of African Academy of Sciences, ICPAC, and representatives from EAC meteorological services, USAID PREPARED project, AGRA, CARE International and ICRAF, among others attended. The interim CR4D regional research coordination team drawn from eight diverse institutions and areas of expertise was formed and outlined potential pilot project proposals on the impacts of climate on the Food-Energy-Water nexus in East Africa was developed by the workshop participants. Participants also agreed that the CR4D East Africa team should engage more closely with the marine and oceanographic experts to develop integrated user-driven research that incorporates the effects of changes in the sea surface temperatures and ocean heat content and how they affect sub-seasonal, seasonal and longer term forecasting-e.g. the influence of El Nino. They stated that CR4D Secretariat should take the lead in supporting the mobilization of seed funding for the EA-RCRP to initiate a proof-of concept pilot to ensure operationalization of the RCRP. Furthermore, they recommended that the CR4D Secretariat identify key challenges, information/knowledge gaps and user-driven research priorities for the region while conducting comprehensive research on climate change that takes advantage of ongoing initiatives (e.g., the impact of 2 degree global warming on Africa) is necessary. They finally stressed a need for establishing a strong "feedback systems" to track progress.

Rationale of the Workshop

The greater horn of Africa sub-region, and the east Africa in particular, is known for its exceptional vulnerability to climate variability and change including extremes (IPCC, 2007). The region's vulnerability to climate change is further amplified by over-dependence on smallholder agriculture and livestock farming. Irregular and unpredictable seasonal rainfall patterns, accompanied by frequent extremes –droughts and floods – leading to disruptions in agricultural productions systems. Moreover, changes in the frequency, intensity, and predictability of precipitation resulted in scarce water re-sources, food shortages and food insecurity. Climate change will, therefore, likely continue to affect the development, food production and food security of the sub-region.

Since its inception in 2015, the Climate Research for Development (CR4D) Secretariat strives to undertake initiatives that strengthen linkages between climate science research and climate information needs and thus enhance integration of climate change into policy and development planning in Africa. Organizing the CR4D Regional Climate Research Partnership (RCRP) workshop for East Africa is one of such initiatives and is primarily focusing on kick-starting a consultative process of assessing and consolidating the unique regional challenges and opportunities for multi-institution and multi-stakeholder, user-driven and integrated climate research that enhances climate information and services for policy and development planning.

This workshop built on the ongoing collaboration and achievements of the Greater Horn of Africa Regional Climate Outlook Forums (GHACOFs) to enable CR4D to take advantage of the climate information 'users-producers' interactions and forums. Moreover, the CR4D-RCRP includes the Regional Climate Centers (RCCs) to National Meteorological and Hydrological Services (NMHSs), National Climate Change focal points, Universities (especially Early Career scientists), Research and Training Institutes (Water, Agriculture, Agro-Forestry, Energy, Health, DRR, etc), NGOs, National Academies of Sciences (AAS), Development Partners, among others. The work-shop also targeted different players and stakeholders in climate science, services and policy in the region to collectively discuss a collaborative and inclusive strategy for identifying and co-designing priority user-driven climate re-search. NGOs and CSOs are also included in order to increase the voice of regional cli-mate communities in prioritizing sector-responsive research with the aim of enhancing and improving climate information and services for decision making in the agriculture/food security, water, health, climate-related disaster risk reduction (DRR), and energy sectors.

Objectives, Expected Outputs and Outcomes

Major Objective

The major objective of the workshop is to expand the land-scape of collaboration among key stakeholders and institutions and ensure balanced representation from academic institutions, policy makers, NGOs, and other grassroots players/practitioners within the sub-region (Uganda, Kenya, Tanzania, Rwanda, Burundi, and Ethiopia). This will ensure that inputs from all critical stakeholders are fully integrated into the identification of user-driven climate research priorities, in the co-design and co-production of new climate knowledge and information, as well as in the translation of new science into applications.

Specific objectives

- Scoping and assessment of user-driven climate research priorities for Eastern Africa and initiating multi-stakeholder collaborative partnership for effective integration of new research into applications
- Facilitate the formation of multi-disciplinary participatory climate research and outreach teams jointly focused on identifying, co-designing and undertaking priority user-inspired climate research that can improve quality and access to climate information and services for policy making and development planning

Expected Outputs and Outcomes

CR4D inception workshop will in many ways try to draw from country and sub-regional RCC experience and existing climate research infrastructure and interaction channels between climate information producers and users.

The workshop will specifically build on existing partnerships that have been created over the past two decades through the Regional Climate Outlook Forums (RCOFs) to broaden that platform to include understanding evolving challenges, needs and gaps in user-driven climate research priorities that are necessary for enhancing coproduction of climate information and services for development planning.

SESSION I: Welcoming and Opening Remarks

Welcoming Remarks

Prof. Richard Anyah, the CR4D interim coordinator, welcomed the invited dignitaries and participants from Ethiopia, Kenya, Rwanda, Tanzania and Uganda for taking part in this workshop. He also thanked representatives of ICRAF, AGRA, USAID-PREPARED, RUFORUM, CARE International, Western Indian Ocean Marine Science Association (WIOMSA), African Academy of Sciences, IGAD Climate Prediction and Applications Center (ICPAC), Institute of Climate Change and Adaptation (ICCA) University of Nairobi for their interest and participation in the CR4D-RCRP workshop. He reiterated that CR4D is a joint initiative of ACPC, AMCOMET, WMO, and GFCS whose secretariat is hosted by the African Climate Policy Center (ACPC) based in Addis Ababa. CR4D is an outcome of the Arusha African Climate Conference (ACC 2013) to catalyze multi-institutional and multi-disciplinary integrated demand-driven climate research in the continent. Its leadership structure comprises of the secretariat, the oversight board and the scientific advisory committee comprised of representatives from Africa.



Opening Remarks

Opening remarks were delivered by the invited officials and some of their key remarks are given below. *Photo from left to right: Mr. Peter Ambeje, Representative of the Director of Kenya Meteorological Department (KMD), Dr. James Murombenzi, Representative of ACPC-UNECA, Prof. Berhanu Abegaz, Executive Director of African Academy of Science (AAS), Dr. Elijah Mukhala, WMO Representative for Eastern and South-ern Africa, Dr. Guleid Artan, Director General of IGAD Climate Prediction and Application Center (ICPAC), Mr. John Mungai, Representative from East African Community (EAC), and Prof. Richard Anyah, CR4D interim Coordinator.*

SESSION I: Welcoming and Opening Remarks

- ◆ Dr. Guleid Artan stated that this workshop is helpful to kick-start the consultative process of assessing and consolidating the unique regional climate challenges and opportunities for multi-institution and multi-stakeholder engagement in order to develop user-driven climate research and thereby contributes to enhancing climate information and services for policy and development planning. Hence, strengthening the collaborations between the Greater Horn of Africa Regional Climate Outlook Forums (GHACOFs) and CR4D will be a key achievement of the workshop. User feedback on the usefulness of GHACOFs is an explicit component of the forums resulting in, the improvement in the quality of user relevant skills for seasonal forecasts and better understanding of the regional climate systems. GHACOFs have also fostered interactions and exchange of information between the climate scientists and users thereby improving tailoring of climate information for sector specific applications. By conducting this workshop, CR4D recognized the importance of linkages with other institutions to improve the understanding of the climate system as well as to enhance capability in developing models to predict the climate impacts.
- ◆ Mr. John Mungai thanked ACPC for inviting EAC to the meeting. He informed the workshop participants about various EAC initiatives on climate change including climate change policy, strategy and master plans. Mr. Mungai noted the low level of climate research in the region and thanked ACPC and CR4D secretariat for taking a leading role to bring the climate research community, institutions and individuals together to focus on this important topic. He finally reiterated that EAC is supportive of CR4D initiatives as it tries to co-design climate research and co-produce user-oriented climate information and services.
- ◆ Mr. Peter Ambeje on behalf of the KMD director, Mr. James Kongoti, reiterated KMD support for the workshop as CR4D initiatives and platforms are timely to bring together climate scientists and users for stronger and better collaboration. He informed the meeting participants that climate change is real and needs a concerted effort to address it. In this regard, KMD has developed the National Climate Change Policy for Adaptation and Sustainable Development Platform, which is the key platform with which CR4D will collaborate. KMD is therefore committed to supporting initiatives like CR4D for the sustainable development of Africa.

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- ◆ Prof. Berhanu Abegaz began with a quote that “Climate Change is the biggest global health threat of the 21st century and tackling it is the greatest global opportunity of this century.” Climate issues and concerns transcend national boundaries and, are therefore best addressed by collaborative actions based on research. This could be done through a developed collaborative and inclusive strategy for co-identifying and co-designing priority user-driven climate research, and also co-strategizing how outcomes of new research could be transitioned into applications. The Executive Director highlighted that climate change is one of the six strategic areas of AAS engagement and has been actively involved in a program called CIRCLE during the last three years. He further stated that the key mandates of AAS are (i) recognizing excellence, (ii) think-tank service, and (iii) programmatic activities. AAS, just like CR4D, is African born and truly independent body with a Secretariat based in Nairobi and five regional offices across Africa. That the CR4D platform facilitates/identifies the real and major climate challenges and opportunities is key to successfully generate climate information and services for policy and development planning and thereby reducing the impacts of climate change in Africa. In this regard, he congratulated ACPC, African Ministerial Conference on Meteorology (AMCOMET), the World Meteorological Organization (WMO) and the Global Framework for Climate Services (GFCS) for helping set up the CR4D Secretariat. Finally, he thanked the Secretariat for successfully convening this work-shop that brought together a community of African climate researchers, scientists and end-users of climate information.
 - ◆ Dr. James Murombedzi informed workshop participants that ACPC is an integral part of the Climate Research for Development (CR4D) in Africa initiative and hosts the Secretariat. CR4D initiative seeks to enhance the link between climate science and climate users and to support development of African climate sciences and to mainstream climate science into development despite challenges in the continent. One of critical challenges for effective collaborative research is related to “*Science and Power*”. Science in Africa is mainly driven by politics and power where the integration of research data into national and regional policy is limited. Moreover, the climate research agenda in Africa largely not developed by its own scientists and often tilted towards the donor/foreign interests. He also pointed out that “*disciplinary exceptionalism*” is another challenge for effective collaborative research in Africa. The production of climate information is mostly Meteorology Department activity with little collaboration with other sectors.

The “*historical and institutional differences*” between regions also presents a challenge to collaborative research in the continent. Hence, the current workshop is one crucial step forward to identify collaborative research in the sub-region and encourage participants to fully utilize the opportunities provided. He thanked DFID for providing funds to the CR4D initiatives through the Pan-Africa Component of WISER Project.

Official Opening

WMO representative for Eastern and Southern Africa, Dr. Elijah Mukhala, made an official opening speech on behalf of Dr Joseph Mukabana, the WMO Director for Africa and Least Developed Countries (AFLCD). He highlighted that AMCOMET was established in April 2010 in Nairobi as a high-level mechanism for the development of meteorology and its applications in Africa. Its vision is to have a framework for cooperation, security, socio-economic development and poverty eradication on a pan-African level through sound governance and the application of meteorology and its related sciences. He mentioned that the last AMCOMET Declaration (Praia, Cabo Verde, February 2015) called for a closer collaboration with the ClimDev-Africa Programme through joint oversight of the CR4D. The CR4D priority agenda is to strengthening the long-term research capability in Africa to deliver improved climate services for development and ensure that climate science outputs address end-user needs. He informed participants that the workshop would kick-start a process to consolidate challenges that affect climate users and foster development and sustainability across Africa. It is hoped that CR4D would spearhead user-based research in the region, jointly identify key challenges, knowledge gaps and user driven research priorities, facilitate a multi-disciplinary research team that can improve quality and research planning.

SESSION II. CR4D Vision, Goals and History

Prof. Richard Anyah took the participants through the history, vision and goals of CR4D. He also stressed the added value of CR4D expected in various sectors including the agricultural value chain by taking into account the end user needs by calibrating the climate information tools. He also highlighted the vision of the CR4D initiative, its goals and institutionalization history of CR4D as listed below.

Vision

- Catalyze multi-institutional and multi-disciplinary integrated, demand-driven, climate research and analysis that is responsive to needs of users and information for decision support in long term development planning.

Goals

- Facilitate multi-institutional and multi-stakeholder demand-driven applied climate research: Collaborative Platform for co-design, and co-production of climate information and services;
- Mobilize and promote cross-disciplinary capacity development and training through partnerships with sub-regional, regional, international and Pan-Africa institutions and stakeholders;
- Improve development and use of sector-specific, innovative, climate-related decision support and/or translation tools;
- Foster an enabling environment for pooling and sharing research facilities, resources, and infrastructure among sub-regional, regional and Pan-African institutions in order to enhance and advance quality and availability of climate knowledge and products relevant to specific user-sectors.

History

- Official Launch of CR4D Initiative (Feb. 2015)-Cabo Verde (ACPC+AMCOMET+WMO);
- Formation of CR4D Oversight Board, and first meeting on CR4D Governance structure in May 2015;
- Setting up of the CR4D Secretariat at ACPC in June 2015;
- The establishment of the first, 15-member, CR4D Scientific Advisory Committee in September 2015.

SESSION III. Panel Discussion

The panel discussion on “CR4D collaborative research platform for Co-designing, Co-Resourcing, and Co-producing User-driven Climate Information and Services: Going Beyond the Talk” commenced with a brief introduction of participants’ names, institutional affiliation, and “why” they are attending the CR4D Partnership workshop. The discussants were also asked to share their experiences on research collaborations in their respective institutions, challenges they faced, and relevant lessons to be shared with CR4D. The following is a summary of their presentations.

- ◆ Dr. Egeru Anthony said that his institution, the regional universities Forum for Capacity Building in Agriculture (RUFORUM), was established in 2004 as a consortium of 55 African universities operating within 22 African countries. RUFORUM is coordinated by a Secretariat hosted at Makerere University in Kampala, Uganda. It supports universities to address the important and largely unfulfilled role that universities can play in contributing to the well-being of small-scale farmers and economic development of countries throughout the Sub-Saharan Africa region. The consortium could bring several unique lessons to CR4D including (i) being an institution owned and managed by Africans; (ii) an agenda largely derived from the continent wide policy frameworks; (iii) allowing a joint action by member institutions, and (iv) providing a wide array of training opportunities for relevant stake-holders/sectors. The main flagship of RUFORUM’s intervention in the universities is the “RUFORUM Competitive Grants System (CGS)” that supports the training of agricultural post-graduate students. The proposed CR4D grant management mechanisms can take some lessons from RUFORUM CGS. He pointed out that conducting collaborative research on climate change and development that involves local communities and other stakeholders is one of the challenges within the RUFORUM consortium and called for CR4D platform to fill this gap.
- ◆ Dr. Michael Marshall from world agroforestry center gave participants a brief background on his Center (formerly called ICRAF) as a CGIAR Consortium Research Centers with its headquarters in Nairobi, Kenya. The World Agroforestry Centre is guided by the broad development challenges including poverty alleviation that entails enhanced food security and health, improved productivity with lower environmental and social costs, and resilience in the face of climate change and other external shocks. He stated that the center’s projects on mapping land use and land use change in East Africa and their impacts on water and soil and/or crop insurance companies to reduce the uncertainties of climate insurance, can feed directly into CR4D.

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- ◆ Prof. Fredrick Semazzi (North Carolina State University) discussed about his current and former institutions experiences on research collaborations and outlined areas for possible collaborative synergies with the CR4D initiative. His past experiences in the Hydroclimate Project for Lake Victoria (HyVic) showed that "*sustainability*" is very important for the success of CR4D. Local scientists should be the drivers of the CR4D initiative but should take advantage of the knowledge and expertise of international scientists. Hence, "co-ownership" in the sense of specifying the roles of local, regional and international scientists is highly important. Capacity development to generate knowledge and skills that will be critical to sustain the CR4D initiative needs to be addressed. CR4D should, therefore, work at bridging the gap between climate information, communicators and users. Moreover, it should be engaged in the improvement of climate prediction models in the region.

 - ◆ Dr. Judy Omumbo (ICF international) talked extensively about the evolution of climate research in Africa and emphasized the need for integrating climate science into development policy and strategy in Africa. She later pointed out the following as entry point for CR4D to make a difference:
 - *Providing user-driven Climate Information Services* – Africa's climate information needs are unique and therefore the solutions to the problems need to be unique too. However, climate information is scarce and not easily accessible.
 - *Working to enhance capacity of climate service providers* - although there is no shortage of capacity of African climate change scientists in different sectors, the challenge is that the climate service providers do not provide the basic information needed by the end-users.
 - *Identifying source of climate information*: where can you get climate information that you need; where do you go to look for information?

 - ◆ Dr. Benjamin A. Praku (Africa Academy of Sciences (AAS)) AAS is a Pan-African organization headquartered in Nairobi, Kenya, that recognizes individuals who have reached the highest level of excellence in their field of expertise and have made contributions to the advancement of science including climate change in the continent.

The AAS believes that CR4D platform will set the collaborative research agenda for the future development of the continent although ensuring collaborative research under current circumstances is a difficult task as it requires co-designing, co-resourcing and co-producing. He further pointed out the following areas of collaboration would be benefit of CR4D:

- *Grant management* – CR4D can work with AAS in grant management area e.g., the CIRCE project, which has funded the first batch of early career scientists, facilitates collaborative research driven by the young scientists on condition that the research/project is linked to existing climate change projects locally, regionally and
 - internationally. *Institutional collaboration*– AAS has experience in creating an enabling environment to make institutional collaborations successful. CR4D can adopt some of such experiences
 - from AAS.
- Improved access to information*— it is critical and hence a need to develop a research uptake fund. CR4D will benefit if it further enhances these areas of collaboration with AAS.

Key Messages

The following major points were later captured from the general discussion. Participants see greater opportunities with CR4D platform/initiative to advance Africa's climate agenda forward. However, they called for:

- immediate and strong collaborative research initiative/project that embraces the involvement of multi-institutions and multi-stakeholders including local community to address climate issues in the continent and ease research uptake by end-users;
- immediate identification of key challenges, information/knowledge gaps and user-driven research priorities for the region;
- possible integration of capacity development initiatives (e.g., fellowships, project grant) into the CR4D program. This also requires identification of African center of excellence for climate science for African scientists to do climate research beyond the PhD level;
- comprehensive research on climate change taking advantage of ongoing initiatives (e.g., the impact of 2 degree global warming on Africa) by working together through networking at sectoral, institutional, national and regional levels;
- Organize regional workshops/forums on different sectors to train participants on climate while encouraging them to come with their data;
- positioning itself as a “**Think-Tank**” by issuing “**status reports on the different sectors**”;
- establishing links with institutions that provide data (WMO, IPCC) as well as organizations focusing on different sectors (WHO, FAO etc.);

SESSION IV—Breakout Session

The objectives of the breakout session-1 were to identify priorities issues/questions for climate scientist, climate information producers (RCC/NMHS) and users/user sectors in the sub-region for effective integration of new research into applications. Hence, three groups were formed according to their expertise or affiliations and came up with three top key issues relevant to their group.

GROUP I identified the following three top key issues relevant to climate scientists

- a. Improving the collection, archiving and performing data quality control for the surface, upper air and marine data;
- b. Role of processes (large, small, local and regional) in controlling climate; c. Improving studies which focus on the processes.

GROUP II listed the type of climate information needed by different sectors as temperature, relative humidity, rainfall, radiation and cloud cover and then identified the top three important needs as:

- a. Climate information in a form that can help make informed decisions-down-scaled climate information and packaging in a usable format.
- b. Reliable timely early warning information system.
- c. Tools adapted for different sectors and end users.

GROUP III identified the following users/user sector as priority:

- a. *Agriculture, livestock and food security*: It needs historical data (baseline information) to develop models; seasonal forecast on onset, cessation, amount and distribution of rainfall, daily forecast updates, future projections and scenarios;
- b. *Water and energy*: requires climatology (baseline information) for designing dams, seasonal forecast and future projections;
- c. *Disaster Risk Reduction*: requires daily forecast, severe weather and future projections.

They later identified the following research focus areas:

- i. *Seasonal to sub-seasonal predictability of climate for identified sectors; Onset, cessation, and distribution (magnitude) of wet and dry spells;*
- ii. *Weather extremes and projections; winds, precipitation, hail storms, lightning, bush fires, frost (for crop insurance);*
- iii. *Capacity building; translation of the information, improved forecasting tools (software and hardware);*
- iv. *Understanding, documenting and scaling up indigenous/local knowledge*

Breakout Session– II

In order to make scoping and assessment of user-driven climate research priorities for Eastern Africa and initiating multi-stakeholder collaborative partnership for effective integration of new research into applications, three groups were randomly formed and asked to choose a relevant sector to co-identify and document user-driven climate research priorities that can be undertaken on short, medium and long term and enhance climate information and services for decision making in the specific-sector. They later asked to draft an outline proposal on how to integrate user-driven climate research within the climate value chain for better mainstreaming in select climate-sensitive sector.

Group 1

- **Sector in focus:** Agriculture
- **Specifically:** Crop Farming
- **Rationale for choosing:**
 - crop farming in the region accounted for the highest share in agricultural sector

SECTOR	NEEDS	RESEARCH AREAS
Agriculture	SHORT TERM <ul style="list-style-type: none"> • Rainfall onset, cessation and duration • Duration of dry and wet spells • Information on extreme weather events 	<ul style="list-style-type: none"> • Climate research on downscaling • Climate research on seasonal to sub-seasonal (S2S) • Climate policy research • Improved climate data • Community based participatory research
	MEDIUM TERM <ul style="list-style-type: none"> • Seasonal forecasts • 10 day and monthly updates 	
	LONGTERM <ul style="list-style-type: none"> • Climate projections 	

Group 2

- **Sector in focus:** Energy
- **Target users:** Energy sector, communities
- **Project timeframe:** 2 years
- **Rationale for choosing energy sector:**
 - Energy at the nexus of sustainable development – reaching communities not yet on the national grid, excess sold to the grid;
 - Access to reliable energy affects development in other key sectors: Agric., health, water, education;
 - Hybrid systems are important for reliable energy supply;
Reducing GHG emissions.

SECTOR	NEEDS	RESEARCH AREAS
Energy	WIND <ul style="list-style-type: none"> • Wind speed & direction at diurnal and seasonal timescale (4 seasons a year) 	1. Developing wind atlas <ul style="list-style-type: none"> • Already developed for Kenya based on station information - Need gridding for smaller areas • Re-examine existing information to identify potential areas • More instrumentation at different heights – pilot balloons in identified potential areas 2. Climate models <ul style="list-style-type: none"> • integrate observations with physics
	SOLAR Sunshine hours & intensity, radiation	1. Develop solar atlas for the region 2. Integrate solar with wind energy.
	HYDRO <ul style="list-style-type: none"> → Rainfall intensity & duration at different timescales → Evapotranspiration for the catchment area → Water budget → Stream flow/ tributary flow/ lake levels 	1. Define pilot areas 2. Monitor land use in the catchment area

Group 3

- **Sector in focus:** Agriculture
- **Rationale for choosing energy sector:**
 - Most country rely on agriculture
 - Food insecurity is a major stress for the country represented

SECTOR	CHALLENGES	RESEARCH AREAS
Agriculture	<ul style="list-style-type: none"> → For agriculture the distribution of rainfall in the season, onset and cessation → Currently analogue years given but it is not one on one thus doesn't work. → Is there a tool that can interpret the probabilistic forecast to information that can be used ? → The bridge between metrology and users need to be strengthened → Can the forecast be given at finer scales than national → Need to improve on seasonal amount forecast → For food security, meteorological information is just one of many inputs 	SHORT TERM <ul style="list-style-type: none"> • Identify the knowledge gaps • Identify crop indicator variables • Assess data availability • Data harmonization; different crops, agro-ecology • Application of simple analytical tools for historical data
		MEDIUM TERM <ul style="list-style-type: none"> • Develop integrative tools for data processing and information generation
		LONG TERM <ul style="list-style-type: none"> • Improve the integrative tools <ul style="list-style-type: none"> ○ Input more variables ○ To be crop specific • Develop future scenarios

Key Messages: From the general discussion, the following three points captured.

- Agriculture deserves top priority in the future CR4D pilot project. However, if we are to focus on agriculture as a theme, we need to look at the global framework that can bring about integrated research in each country. We need also to start thinking beyond rain fed agriculture to irrigation and water harvesting activities. In contrast, the pilot project on the energy sector should aim at addressing the domestic energy needs.
- A strong need for nexus approach for food, water and energy. This is because a piece meal approach to each sector may not address climate related problems of the sub-region.
- A need to integrate feedback systems" in everything that we do. Since we are living in a changing world, it would be important to constantly assess the changing needs to bring about changes.

SESSION V. Potential Pilot Project Proposal Outline

The objective of this session was to draft an outline of a co-designed pilot project proposal focusing on two of the key sectors. Each group was asked to list priority climate research activities, indicate the expected output, and define indicators that would help measure how research undertaken feeds into user-relevant application, define deliverables and put the respective timelines. They were also asked to define responsible bodies, draft an implementation plan, including estimated budget for one year proof-of-concept pilot research project.

GROUP 1:

Project title:

→ **Nexus Project (Agriculture-Water-Energy) in a changing climate**

Pilot Study Area: Lower Victoria Basin (LVB)

Issues to be covered

- Fishing Activities
- Crop farming
- Transport and Hydrology

Objectives:

- Understand the competing needs of the Nexus elements
- Understand the current and future climate information needs
- Determine trend of non-climatic factors i.e. urbanization, population, land use on nexus elements
- Analysis of policy issues and best practices in a changing climate

Expected Output

- Publication describing the needs and gaps and proposed solutions for the nexus elements
- An online integrated information systems (Atlas)
- An online database information needs for non-climate variables (feedback mechanism)
- Identify best practices replicable for new areas of research (Gaps identification)

Key Indicators (user satisfaction)

- Frequency of Information requests by customers
- No of Hits in the Information Systems
- Analysis of Positive Questionnaire Responses
- The quality of the products
- Number of publications

GROUP 2

Pilot Project: Nexus Project **KEY**

ISSUES

- Harmonisation, coordination of climate governance and policy in different sectors i.e. moving focus from bureaucracy to what matters to the users
- Climate response needs - information and knowledge.
- Capacity – institutional mechanisms, human and technical capacity.
- Translation of policy into implementation and how to deploy climate information to reformulate the policies and implementation

RESEARCH AREA 1

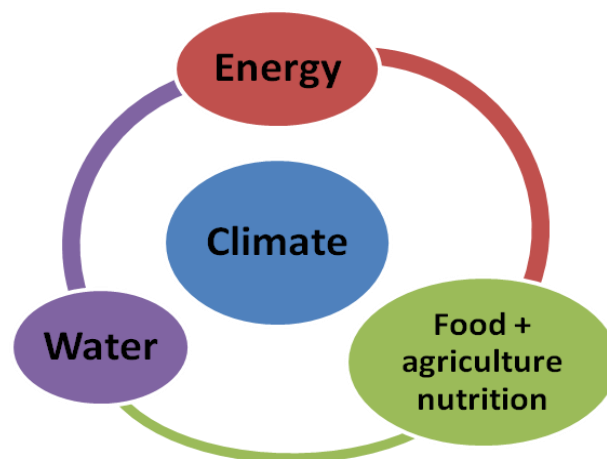
- Look at climate information requirements for Nationally Determined Contributions (NDCs) and how to develop a nexus approach within it – evaluate the NDC to check if proposals make sense based on scientific understanding
- Understand what climate information was used to design NDCs and what climate information is needed to refine what needs to be done – similarities, differences, gaps, knowledge requirements with thinking of all the key nexus sectors
- How to understand and collate the climate information needed by the different sectors and communicate it for use (integrating ICTs)

RESEARCH AREA 2

- How to upscale climate informed innovations in the different sectors – this involves looking at gaps in policy, capacity
- Understand information required so that there is better uptake more on how do we design a methodology to engage at different levels of up-take
- How best to integrating indigenous/ local knowledge with scientific information

RESEARCH AREA 3

- Design a network of relevant institutions that can help decisions on how to distribute the adaptation process, benefit from it and measure achievement in bringing about adaptation (in the nexus sectors and within NDCs)



GROUP 3

Pilot Project: Enhancing the water, energy and food security nexus with trees

OBJECTIVES

- Reforestation, afforestation, and forest conservation in six countries
 - **Increase food security** by planting tree species that improve nutrition, increase tolerance to climate shocks, and provide additional income non-destructively
 - **Increase energy security** by reducing biomass energy use (tree lots) with renewable alternatives
 - **Increase water security** by planting tree species that reduce runoff, improve infiltration, and increase soil water storages
 - Make nexus resilient to climate variability and change

ACTIVITIES

- Baseline (needs) assessment in 2-5 pilot communities (Ethiopia, Kenya, Uganda, Tanzania, Rwanda, South Sudan, and Burundi)
- Baseline and climate projections, biomass/water use modeling, and scenario building
- Participatory action plan

KEY OUTPUTS

- Increase in farmer income and nutrition, sustainable energy use, and sustainable water use/availability

INDICATORS

- # of households that have adopted tree species that improve nutrition and nutrition metrics
- # of households that have adopted cash crop tree species and household income improvement metrics
- # of households that have adopted renewable alternatives
- # of households that reduce biomass energy use

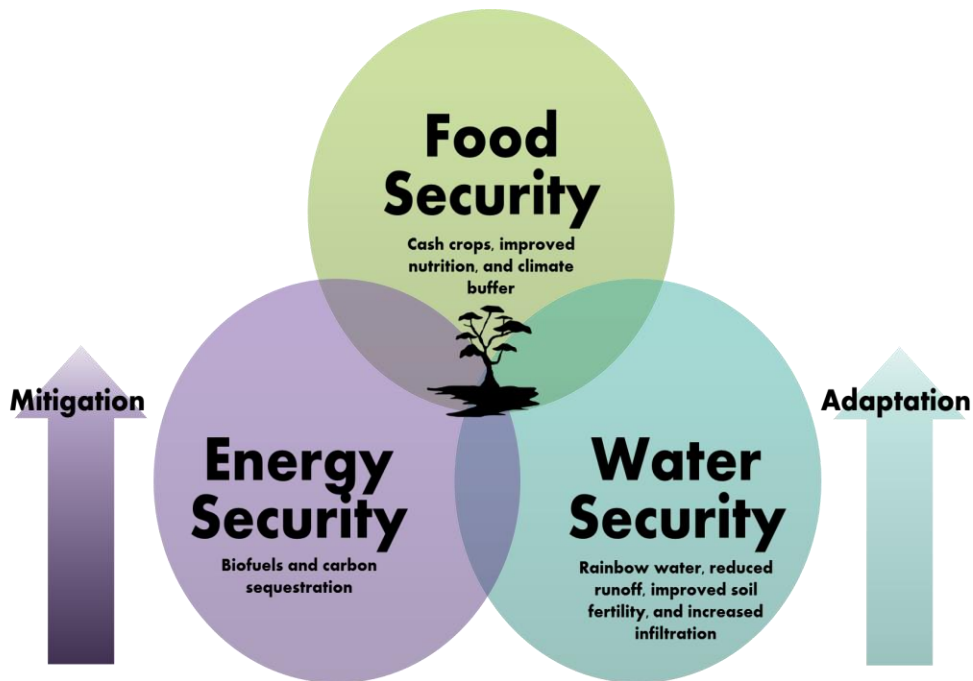
E) DELIVERABLES

- Increased data availability via crowd-sourcing
- Agriculture extension (training)
- Demonstration plots
- Publications and presentations

F) TIMELINE (2-3 YEARS)

- Year 1: site identification + needs assessment through household surveys and focus group discussions
- Year 2: Modeling, scenario-building, demonstrations, training, & evaluation

G) RESPONSIBLE BODIES: academic and research institutions, local communities, CCAFS, USAID PREPARED, etc



The following major points were later captured from the general discussion.

- In all presentations, there was a consensus around the food- energy – water nexus;
- Health issues were not captured in all presentations and need to be considered;
- Policy issues need to be considered if the discussions are to be taken further;
- Expected outcomes need to be realistic in terms of the community up-takes;
- Clear guidance on the way forward is needed after this workshop;
- There is a need to include people from Communication and Media to ease packaging and delivery of climate information;
- There will be an opportunity for the participants to engage further in the online discussions.

SESSION VI. Election of Coordination Team

Election of the interim East Africa-regional climate Research partnership (EA-RCRP) focal point team was done to form a multi-disciplinary participatory climate research and outreach team in the region, with defined objective, representatives, roles and responsibilities of representatives and others). The following volunteers were accepted by the participants to work with the secretariat.

Name	Institutor	Contact
Dr. Egeru Anthony	RUFORUM, Uganda	a.egeru@ruforum.org
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Dr Catherine Masao	University of Dar es salaam- Institute of Resource Assessment	ndeutz@yahoo.com
Dr Benard Muok	Jaramogi Oginga Odinga University of Science and Technology	bmuk@yahoo.com
Dr Jackson Efitre	Makerere university, Kam- pala Uganda	jefitre@gmail.com
Dr Benjamin Apraku	African Academy of Sci- ences	b.gyampoh@aascience.ac.ke
Dr Pascal Waniha	Tanzania Meteorological Agency	Pascal.waniha@meteo.go.tz
Maurine Ambani	CARE International	akasu- vu@careclimatechange.org

Workshop Recommendations

Key Recommendations from the workshop are :

- CR4D Research Partnership Framework is the most practical way to co-design, co-resource and co-produce climate information and services;
- The CR4D RCRP-EA should build on and integrate with ongoing or previous regional research activities/initiatives such as the Regional Climate Outlook Forums (RCOFS);
- Initiation of a pilot collaborative research project, as soon as practicable, to move the initiative 'beyond talking" in order to enhance climate information and services based on a nexus approach, especially the Food-Energy-Water (FEW) nexus;
- Establishment of a tentative regional partnership/team of 8 multidisciplinary experts drawn from different institutions and stakeholders to develop a suggested concept/proposal to undertake a proof-of-concept pilot by the end of April 2016, and share with all workshop participants for input;
- The CR4D East Africa team should engage more closely with the marine and oceanographic experts to develop integrated user driven research that incorporates effects of changes in the sea surface temperatures and ocean heat content and how they affect sub-seasonal, seasonal and longer term fore-casting-e.g. influence of El Nino;
- The regional climate centers, NMHSs, regional universities/research institutions/ regional community (e.g. RUFORUM, AAS, National Academy of Sciences, EAC, etc) to become the conveners of the CR4D East Africa Regional Climate Research Partnership activities;
- CR4D Secretariat should take lead in supporting the mobilization of seed funding for the EA-RCRP to initiate a proof-of-concept pilot to ensure operationalization of the RCRP;
- CR4D secretariat should have a strong integrated capacity development component for both climate-information users and young scientists in climate and related areas;
- CR4D RCRP research should have a strong user-research feedback mechanism;
- Incorporate a strong climate information dissemination process within the CR4D user-driven research, also taking advantage of ICT, to ensure feedback to both users and researchers;
- CR4D secretariat shall identify key challenges, information/knowledge gaps and user-driven research priorities for the region. Moreover, conducting a comprehensive research on climate change that take advantage of ongoing initiatives (e.g., the impact of 2 degree global warming on Africa) is necessary.

Final workshop recommendations were fully endorsed by the representatives from the following institutions:

- IGAD Climate Prediction and Applications Center (ICPAC)
- African Academy of Sciences (AAS)
- Regional Forum for Agricultural Research, Education, and Outreach
- National Meteorological and Hydrological Services (NMHSs)-Kenya, Tanzania, Uganda, and Rwanda
- East African Community
- USAID PREPARED
- A Green Revolution in Agriculture (AGRA)
- CARE International
- Western Indian Ocean Marine Science Association (WIOMSA)
- CGIAR CCAFS
- World Agroforestry Center (ICRAF)
- Centre for Research, Innovation and Technology, Jaramogi Oginga Odinga University of
- Science and Technology (JOOUST), Bondo-Kenya
- The Department of meteorology, University of Nairobi
- Institute of Climate Change and Adaptation, University of Nairobi
- Center for Advanced Studies in Environmental Law and Policy, University of Nairobi
- University of Dar es salaam, Tanzania
- Makerere University, Uganda
- Nelson Mandela University, Arusha-Tanzania
- World Meteorological Organization
- Kenya Meteorological Department
- Climate Consult, Dar es salaam, Tanzania

Closing Remarks:

Mr. Peter Ambeje, Deputy Director, Kenya meteorological department thanked Prof. Richard Anyah for organizing a participatory and very inter-active workshop with very few presentations. This workshop also brings both the young and the old experts to discuss user-driven climate research. He stressed the need for continued networking to move the CR4D agenda forward and appreciated all the institutions that supported the CR4D workshop.

Prof. Richard Anyah, coordinator of CR4D, gave special thanks to the WMO Representative, Office of East and Southern Africa (Dr. Elijah Mukhala), Directors of ICPAC (Dr. Guleid Artan), African Academy of Sciences (Prof. Berhanu Abegaz), Kenya Meteorological Department (Mr. James Kongoti/Peter Ambeje), Representatives of EAC (Mr. John Mungai), and all of the participants for contributing to the tremendous success of the two-day workshop. He also thanked Dr. Yosef Amha, Ms. Sosina Bezuayehu, Nairobi Safari club hotel, all ACPC staff, and members of workshop secretariat staff for ensuring smooth running of the workshop. Finally, he expressed special thanks to DFID for their support to a number of CR4D activities.

"The workshop report is compiled by CR4D secretariat"

Appendix 1. Workshop Program

DAY 1: Wednesday March 30, 2016		
<p align="center">“The CR4D Collaborative Research Platform for Co-designing, Co-Resourcing and Co-Producing user-driven climate information and services for policy and development planning”</p> <p align="center">General Rapporteurs: Dr. Yosef Amha</p>		
Time	Events	Responsible
08:00- 9:00	Registration	Organizers
09:00-09:20	Welcoming Remarks	<ul style="list-style-type: none"> • CR4D, Coordinator • Director, Special Initiatives Division, UNECA
09:20-10:05	Opening Remarks	<ul style="list-style-type: none"> • Director, African Academy of Sciences • Director, Kenya Meteorological Dept. • Director, IGAD Climate Prediction and Applications Center (ICPAC) • EAC representative
10:05-10:30	Official Opening	Director, WMO Offices of Africa and Least Developed Countries (AFLDC) and AMCOMET Secretariat)
	Chair: Prof. Fredrick Semazzi	Rapporteurs: Dr. Yosef Amha, George Otieno, Sarah Osima
10:30-11:00	COFFEE/TEA BREAL (Group Photo and poster viewing)	Organizers
10:00-10:15	The CR4D Initiative: history, vision, & mission Workshop Objectives	Dr. Richard Anyah, CR4D Coordinator
11:30-13:00	PANEL DISCUSSION The CR4D Collaborative Research Platform for Co-designing, Co-Resourcing, and Co-Producing user-driven climate information and services; Going Beyond the Talk!	

DAY 1: Wednesday March 30, 2016

“The CR4D Collaborative Research Platform for Co-designing, Co-Resourcing and Co-Producing user-driven climate information and services for policy and development planning”

General Rapporteurs: Dr. Yosef Amha

Time	Events	Responsible
08:00- 9:00	Registration	Organizers
09:00-09:20	Welcoming Remarks	<ul style="list-style-type: none"> • CR4D, Coordinator • Director, Special Initiatives Division, UNECA
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	Chair: Prof. Fredrick Semazzi	Rapporteurs: Dr. Yosef Amha, George Otieno, Sarah Osima
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10:00-10:15	The CR4D Initiative: history, vision, & mission Workshop Objectives	Dr. Richard Anyah, CR4D Coordinator
11:30-13:00	PANEL DISCUSSION	
	The CR4D Collaborative Research Platform for Co -designing, Co-Resourcing, and Co-Producing user-driven climate information and services; Going Beyond the Talk!	

15:00-15:30	COFFEE/TEA BREAK (POSTER VIEWING)	
15:30-15:50	Energizer	
	Breakout Session - II	
15:50-16:30	Objectives <ul style="list-style-type: none"> • Three mixed groups (random) –at least three sectors: Ag/fs; water,Health/DRR • Co-identify and document user-driven climate research priorities for the East and Horn of Africa that can be undertaken on short, medium and long term that enhance climate information and services for decision making in the specific-sector • draft an outline proposal on how to integrate user-driven climate research within the climate value chain for better mainstreaming in select climate-sensitive sector 	Facilitator: Prof. Nicholas Oguge
17:00-18:00	Free Time	
18:30-21:30	COCKTAIL	Organizers
DAY 2 Thursday March 31, 2016		
Time	Events	Responsible
08:45-9:00	Recap Day I	Dr. Yosef Amha
09:00-10:00	Presentations by Breakout session II groups Objective: <ul style="list-style-type: none"> • To elect interim EA-RCRP focal point, • To formulate a multi-disciplinary participatory climate research and outreach team (with defined objective(s), representatives, roles and responsibilities of representatives and others), Discussions and summary of key issues	Moderator: Edith Adera Rapporteurs: Dr. Yosef Amha, Maurine Ogallo & Caroline Aboda
10:30-11:00	COFFEE/TEA BREAK	Organizers

11:00-13:00	Breakout session - III Objective <ul style="list-style-type: none"> • To draft outline of co-designed, pilot project proposal focusing on two of the key sectors. • List of priority climate research activities • Clearly indicate the expected output • Define indicators that will help measure how research undertaken feeds into user-relevant application • Define deliverables • Timelines • Define responsible bodies • Draft implementation plan, including estimated budget for one year proof-of-concept pilot research project 	Facilitator: Prof. Laban Ogallo
13:00-14:00	LUNCH	
14:00-15:00	Presentations of the draft outline of CR4D EA-RCRP Proposal (2-pages) Plenary Discussions and Recommendations	Presented by: EA-RCRP Focal Point Chair: Emily Masawa
15:00-15:30	Closing Remarks	Mr. Peter Ambeje, KMD
15:30-15:45	Wrap up and Vote of Thanks	
15:45-	COFFEE/TEA BREAK	

Appendix 2: List of Participants

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