Accelerating the Impact of CGIAR Climate Research for Africa

Climate Information Services Training Manual for Training of Trainers

Promoting Adoption of Pigeonpea, Sorghum and Pearl Millet

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About AICCRA

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) project is a research and development project funded by the International Development Association (IDA) and jointly implemented by International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and International Livestock Research Institute (ILRI) in Kenya.

The project works to strengthen the capacity of targeted Climate Change, Agriculture and Food Security (CCAFS) partners and stakeholders, and to enhance access to climate information services and validated climate-smart agriculture technologies in Kenya.

CCAFS brings together some of the world's best researchers in agricultural, climate and earth science to deliver innovative research-based solutions that catalyse positive change towards low-carbon and climate resilient food systems.

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Abbreviations

AICCRA	-	Accelerating Impacts of CGIAR Climate Research for Africa
ASALs	-	Arid and Semi-Arid Lands
CCAFs	-	Climate Change, Agriculture and Food Security
CGIAR	-	Consultative Group on International Agricultural Research
CIS	-	Climate Information Services
CSA	-	Climate Smart Agriculture
FPOs	-	Farmer Producer Organizations
GHGs	-	Greenhouse Gases
ICRISAT	-	International Crops Research Institute for the Semi-Arid Tropics
ICT	-	Information and communications technologies
ILRI	-	International Livestock Research Institute
IPCC	-	Intergovernmental Panel for Climate Change
KALRO	-	Kenya Agricultural and Livestock Research Organization
KMD	-	Kenya Meteorological Department
PSP	-	Participatory Scenario Planning
SMEs	-	Small and Medium Enterprises
SMS	-	Short Message Service
SSA	-	Sub-Saharan Africa

Introduction

Climate change has become one of the most complex environmental and societal challenges undermining progress towards sustainable development especially in developing countries. Sub-Saharan Africa (SSA) has been categorized as one of the regions experiencing most of the vulnerabilities posed by climate change impacts. The impacts of climate change are manifested through extreme weather events resulting in seasonal weather variations and unpredictable rainfalls, increased temperatures, droughts and flooding. This is particularly true where millions of African populations are dependent on rain-fed production systems.

In Kenya, 98% of the agricultural sector is rain-fed and depends entirely on bimodal rainfall patterns. While only 16% of Kenya's land receives adequate rainfall for crop production, the remaining 84% has been classified as ASALs with an annual rainfall of 400mm. The agricultural systems particularly in the arid and semi-arid lands (ASALs) are experiencing increased vulnerability due to their fragile systems and the fact that most smallholder farmers have limited adaptive capacities (IPCC,2014). Rapid and uncertain changes in rainfall temperature threaten food security and livelihoods' income.

Given the importance of agriculture in the drylands of Kenya where poverty is prevalent, strengthening and improving performance of the agricultural systems is therefore a prerequisite and a necessary action for achieving food security and climate resilience. This training manual has been developed to guide in providing training on strengthening capacities of agricultural extension officers, lead farmers, Small and Medium Enterprises (SMEs) and Farmer Producer Organizations (FPOs) to scale Climate Information Services (CIS) and Climate Smart Agriculture (CSA) innovations to achieve food and water security as well as building climate resilience.

Training context

The main development objective of AICCRA is to increase access to knowledge, technologies, and decision-making tools relevant to enhancing the resilience of agriculture and food systems in the face of climate change. In Kenya, the project is implemented in Kitui, Makueni and Taita Taveta Counties with a focus on the three target crops (i) Pigeonpea (ii) Pearl millet and (iii) Sorghum.

During implementation of project activities, there will be a collaboration with Kenya Agricultural and Livestock Research Organization (KALRO), Kenya Meteorological Department (KMD), seed companies, processors, SMEs and FPOs. This collaboration will ensure effective delivery of the training based on climate information services and agro-weather advisories which will be instrumental in reducing vulnerability of smallholder men and women farmers against climate change and variability.

Overview of the manual

MODULE 1: Role of climate information services in making informed decisions along agricultural commodity value chains

This module is an introductory process to the basic vocabulary and concepts used in climate discussions. The design of the module takes the participant through a process of awareness building as to why climate change exists, and how different sectors are vulnerable to climate change. This module covers the basics concepts of climate change, the impacts on agricultural value, and use of weather products for informed decision making. The contribution of indigenous knowledge in weather prediction is also highlighted in supporting efforts to interpret weather forecasts into a form that is locally relevant and useful. Considerable time is spent in explaining the gender- differentiated impacts of climate risks as well as the gender differentiation in access and use of climate information.

MODULE 1: Role of climate information services in making informed decisions along agricultural commodity value chains

1.1 Introduction

CIS includes provision of immediate, short-term and long-term weather forecasts as well as advisories and information to be taken along agricultural value chains. As part of agricultural extension service delivery, CIS is especially useful in helping men and women farmers to manage risks in the sector including climate change and variability. The role of CIS is to inform men and women farmers on decisions about what to grow, when to plant and harvest, selection of appropriate seed crop varieties and animal breeds, appropriate CSA and technologies during different agricultural seasons. Much of this information is specifically adapted or used in the local conditions and being highly relevant to the needs of farmers operating in the local contexts.

This training will therefore be an important step towards creating awareness on the role of climate information services for informed decision making along agricultural value chain and enhance users' ability to interpret weather forecasts for planning purposes.

Main objective

Broadly, this training manual aims to enhance knowledge and skills of government extension officers and lead farmers in the use of climate information services for informed decision making along agricultural value chains. The knowledge and skills acquired will enable agricultural extension officers and lead farmers to impart knowledge to both men and women farmers on the use of CIS for improved on-fam decision making against climate change and variability.

Specific objectives

It is expected that at the end of the training, participants will be able to:

i. Create awareness about climate change and variability and its impacts on agricultural commodity value chains
ii. Improve understanding and utilization of climate information along agricultural commodity value chain
iii. Acquaint with the different weather forecast products provided by the Kenya Meteorological Department (KMD) and the channels of dissemination
iv. Describe the gender differentiated impacts of climate change and importance of socially inclusive access to and use of climate information for informed decision making along the agricultural commodity value chain.

Target audience

This training targets men and women smallholder farmers, agricultural extension officers, seed companies, processors, Farmer FPOs, SMEs.

Duration

This training can be done within a 2- day training plan.

1.2 Training module summary

Role of Climate Information Services in making Informed Decisions along agricultural commodity value chains			
Sessions	**Training methods**	**Training materials**	**Time duration**
Introductions to the module *(Ask participants about their expectations for the training)* **1. Understanding concepts of climate change and variability in agricultural commodity value chains** -Climate change impacts and gender inequalities	-Self introduction -Sharing Presentations Use of infographics/ pictures/ videos	-Training Programme - Objectives - Marker/ felt pens - Sticky leaf pads -Power Point presentation	I hour 30mins
2. Use and interpretation of weather forecast products for decision making -Gender differentiation in access and use of climate information	-Plenary discussions -Presentations	-Power point presentation -Flip charts	I hour 30 mins
3. Communication of weather forecast products and channels of distribution -Gendered approach to CIS	-Plenary discussions -Presentations	-Power point presentation -Flip charts -Marker /felt pens	I hour

Session I: Concept of Climate Change and Variability

What is climate change?

Climate change refers to long term shifts in temperatures and weather patterns. It is characterized by changes in average conditions and in the frequency and severity of extreme conditions that have occurred over a long period of time, generally over a period of 30 to 35 years. Variations in climatic

conditions may result in untimely onset and cessation of rainfall seasons, increased temperatures with prolonged dry spells, droughts and floods. These occurrences are challenging for sustainable agricultural production systems, community wellbeing, and food and nutrition security.

What is climate variability?

Climate variability is the natural fluctuation within the climate above and below the set mean parameters. It reflects the different weather conditions over a day, month, season or year. Every year in a specific time scale, the climate of a location is different. Some years have below average rainfall, some have average or above average rainfall. Climate variability affects all weather conditions.

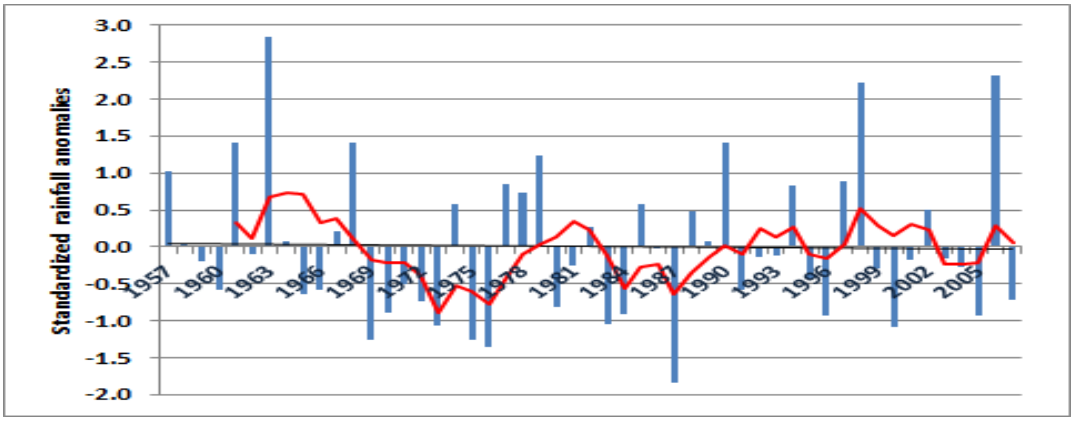

Figure 1: Climate variability – Kambi Ya Mawe climate data, Makueni County

Why is the climate changing?

Climate change is caused by an excessive amount of greenhouse gases (GHGs) in the atmosphere, which traps more than necessary heat that causes global warming inducing climatic variations. Although climate change is attributed to both natural and human induced factors, much of the change is attributed to human activities such as deforestation, industrialisation, destruction of ecosystems, energy production, land use changes, transport, agriculture and livestock production.

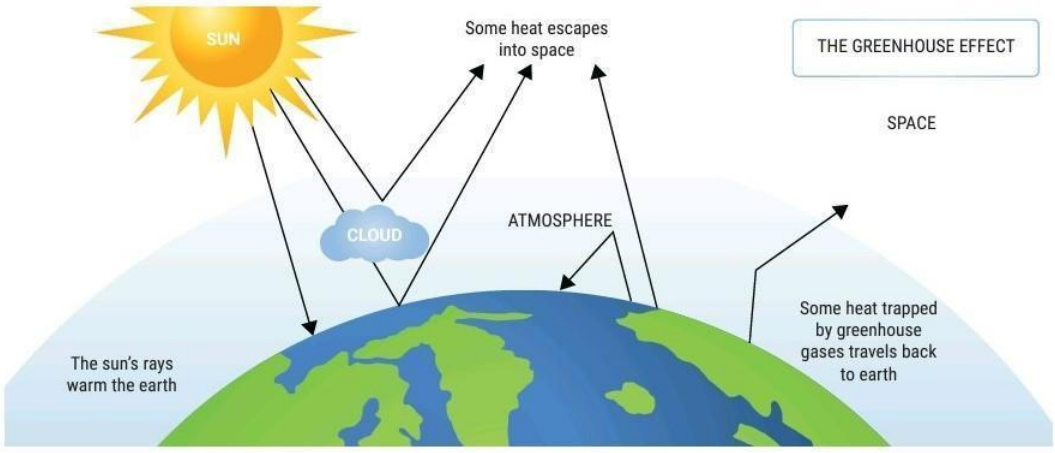

Figure 2: Climate change process Source: (Bhusal et al. 2020)

Direct effects of climate change on agriculture

i. Complete crop failure from delayed rains or limited rains or rainfall failure
ii. Reduction of crop and livestock yields
iii. Unpredictable water availability for crop production and livestock uses, drying of water sources.
iv. Increasing frequency of droughts leading to crop failures, loss of pastures, loss of livestock and livestock feed supplies
v. Occurrence of frost and abrupt cold temperatures affects crop in various counties
vi. Loss of property and sources of livelihood from extreme weather events such as flash flood, windstorm, hailstorms and landslides
vii. Insurgences of new pest and diseases affecting crops and livestock
viii. Land degradation and loss of soil fertility due to erosion of topsoil and runoff sparked by incessant rainfall
ix. Damages to key infrastructures like bridges disconnect people from far flung remote areas making them highly vulnerable to food insecurity
x. Loss of agro-biodiversity and disruption of traditional seed systems

Indirect effects of Climate change on agriculture

i. Increased crop failures and livestock deaths will lead to decreased domestic food production resulting in the increased imports of food
ii. Increase in prices of essential commodities will drive poor farmers to further poverty
iii. Increased incidence of pest and diseases on humans and animals affect their health
iv. Increased drudgery and workload on rural women due to declining access and degradation of natural resources
v. Disruption of the local seed system puts pressure on women who take the lead role in seed saving seed selection and conservation of crop and varieties
vi. Increased rural- urban migration and fallowing of agricultural land
vii. Crop failures causes increased workload on women who are the caregivers and responsible for feeding the family
viii. Reduced agricultural productivity implies lost economic opportunities at the household level and nationally

Gender- differentiated impacts of climate change

Climate change has more impact on sections of populations that are more dependent on natural resources for their livelihoods and/ or who have limited capacity to respond to the natural hazards such as droughts and floods. Evidence indicates that women farmers are more exposed to climate risks compared to men especially in situations of poverty. As many smallholder farmers are women dependent on rain-fed agri**c**ulture, climate risks impacts are higher and with greater burdens on women who are less mobile to opt for other alternative incomes. Furthermore, women are often excluded from decision-making on access to and the use of land and resources critical to their livelihood (FAO & CCAFS 2013).

Session II: Use and Interpretation of Weather Forecast Products for Informed Decision Making

Often farmers make decisions for preparation on agricultural seasons before the actual start of the season. In most cases, such decisions include a wide range of aspects, including when to plant, what to plant and how to plant in relation to the local climatological condition.

Decisions on seasonal preparations should always be based on seasonal weather outlook and advisories provided by the KMD and complemented by advice from agricultural extension officers. This will allow farmers to build self-confidence in the choice of crops, seed varieties, and good agricultural practices, and to plan better for key activities during the season, which results in better output at the end of the season.

Examples of weather and climate products from KMD include;

1) Daily forecasts: A 24-hour forecast that contains detailed information on expected weather conditions for the next 24 hours (Sunny, Cloudy, rainy, windy etc.). Such weather forecasts inform decision making on preparation of agricultural activities, such as relevant times for weeding, application of fertilizer, mulching, harvesting of rainwater, use of drip irrigation, and preparations for disaster impact reduction measures.

2) Seasonal forecasts: Three- month rainfall outlook usually developed on a regular basis by KMD. Such weather forecasts are useful in advising farmers on land preparation measures such as planting, selection of appropriate seeds and crop varieties, relevant agronomical practices etc.

3) Weekly forecasts - Depicts a 7-day weather forecast that informs farmers on the appropriate farm operations for that week.

4) Monthly forecasts: Depicts the amount and distribution of rainfall patterns within the month. The probabilistic forecasts are used to classify the expected rain in the season into normal, below normal or above normal. Provides climate outlook for the coming month.

   i. Below Normal rains

   A below-normal forecast probability means that forecasted rain for the season is expected to be less than the long-term average rainfall received by a given geographical area in the season historically. This type of forecast is associated with characteristics such as inadequate soil moisture, prolonged dry spell periods, scarcity of water for livestock and prevalence of pests and diseases. Under such forecast, farmers are advised to consider agronomic practices that conserve soil moisture and choose seed or crop varieties with high water-use efficiency and livestock breeds which are resistant to drought conditions

   ii. Normal Rains

   A normal rainfall probability forecast means that the forecasted seasonal rain is expected to be within the range of the long-term seasonal average of rains historically received in a geographical area during the season. In such a case, a normal rainfall amount is to be expected for the agricultural activities in that area within the season. Within this forecast, that there will be normal soil moisture for optimal crop production and water availability for livestock. In this

regard, normal times for land preparation and planting and harvesting should be expected in the agriculture sector for the season.

iii. Above - Normal Rains

An above-normal rainfall probability forecast means that the forecasted rain in a season is expected to exceed the long-term average recorded for a geographical area during the season historically. In this type of forecast, impacts such as excessive rains may result in floods, excess soil moisture, waterlogging, and soil erosion may be some of the associated characteristics of the season. Under such a forecast, farmers are advised to consider agronomic practices which are adapted for excessive water conditions or intense rains. Such practices include contour farming, avoiding farming in low land areas without use of good practices to allow aeration, preparation for the control of pests and diseases in livestock production, and the covering of soil to prevent soil erosion.

The Table summarizes the best seed varieties for cultivation of sorghum, pigeonpea and pearl millet under below normal, normal and above normal weather forecasts.

Table 1: Choice of crop seed varieties under below, normal and above normal rain seasons

TECHNOLOGY	Below Normal Seasons	Normal Seasons	Above Normal Season
Pigeonpea Varieties	KAT 60/8, Mbaazi 1	KAT 60/8, Mbaazi 1, Mbaazi 2, Local Kionza	KAT 60/8, Mbaazi 1, Mbaazi 2, Local Kionza
Sorghum Varieties	KARI MTAMA 1	Serena, Seredo, Gadam, KARI MTAMA 1	Serena, Seredo, KARI MTAMA 1, Gadam
Pearl Millet Varieties	KPM 3 (Katumani Pearl millet 3), ICMV 88809, ICMV 221	KPM 2 and KPM 1 (Katumani Pearl millet 1), ICMV 88809, ICMV 221	KPM 2 and KPM 1, ICMV 88809, ICMV 221

Session III: Indigenous Knowledge in Weather prediction

Local communities rely on their Indigenous Knowledge (IK) and practice to make forecasts and adapt to a changing climate. Farmers in Kitui, Makueni and Taita Taveta Counties could be using many indigenous knowledge indicators as responsive measures to minimize climate risks in the bad seasons and maximize opportunities in the good seasons. Some of the IK indicators include wind directions, types of clouds, movement of stars, animal and insect behaviours, observations of changes in vegetation etc. Such indicators would provide hints of approaching rains and whether it will be sufficient or not.

IK in weather forecasting plays a major role in local livelihoods and is crucial to supporting local efforts to interpret forecasts and make sense of seasonal climate situations at local scales. However, this kind of weather forecasting faces a number of challenges such as insufficient documentation of the knowledge as well as lack of a coordinated research to investigate its accuracy and reliability. For instance, the appearance of insects and chirping of birds as an indicator of rain onset cannot be subjected to scientific empirical analysis (Mahoo et al. 2015).

However, there is currently an increased appreciation of the knowledge held by indigenous communities within scientific circles. The IK knowledge system has been developed over time and passed on across generations with better local applicability and acceptance. From this perspective, climate change and resilience experts are calling for integration of the practical aspects of IK with scientifically generated weather forecasts to increase acceptability and reliance on climate forecasting information (Irumwa et al. 2021).

In Kenya, KMD organises a Participatory Scenario Planning (PSP) workshop meeting various stakeholders including indigenous knowledge experts, farmers, pastoralists, local leaders, farmer organisations, county decision makers and planners to collectively share and interpret climate forecasts. The participants in the PSP meetings discuss and appreciate the value of indigenous knowledge and scientific weather forecasting. From that point of view, both teams collectively find ways to interpret climate information into a form that is locally relevant and useful.

Therefore, various agricultural stakeholders in Kitui, Makueni and Taita Taveta Counties are urged to participate in PSP workshop meetings held before onset of MAM and OND seasons to strengthen their collective interpretation and understanding of seasonal climate forecast and associated uncertainty into locally relevant information that is useful for agricultural decision making.

Session IV: Communicating and Dissemination of Weather Forecasts

Weather and climate information is important in all aspects of the agricultural value chain including the government sector, agro-dealers, food processors and farmers. The diversity and nature of these agricultural stakeholders make a difference in the information provided and required by each along their section of the value chain. Hence, there is a need for different channels of communication, timeliness, access to, and trust in the information provided. The language of communication should also be easily understandable for easy integration of the weather advisories into productive agricultural activities.

Effective communication and dissemination of information has been achieved through diversified communication channels including use of local radio stations, television, posters and pamphlets, mobile phones, social media and websites.

It is important to understand the social setting and communication structure of communities at the local level, to ensure that information can reach different gender groups, ages, and social classes within the target community.

Information and communication technologies such as mobile phones (Short Message Services) should be fully utilized for timely and wider outreach to community members. More so, use of communication structures such as WhatsApp groups can be integrated to ensure timely dissemination of weather forecasts.

Session V: A gendered approach to climate information

The gender gap in agriculture is a pattern, documented worldwide, in which women in agriculture have less access to productive resources, financial capital and to advisory services compared to men (FAO, 2011). In the context of CIS, this gap means that men and women are not starting off on a level playing

field. While gender shapes both men's and women's lives, the tendency is for women to have a more disadvantaged position in comparison to men. This has had significant implications for the adoption and sustainability of practices in climate resilience. Further, there is a risk that, if this gap is not taken into consideration, the development of CIS options could reinforce existing inequalities.

Thus, integrating gender into climate change adaptation and mitigation policies, programs, and projects is essential to strengthen the resilience of smallholder women farmers through developing useful tools to ensure gender inclusivity in climate change programs.

A gender approach means that the particular needs, priorities, and realities of men and women need to be recognized and adequately addressed in the design and application of CIS, so that both men and women can equally benefit (World Bank, FAO and IFAD, 2015). It also means that, as changes in agriculture are pursued in response to a changing climate, there needs to be a consideration of ongoing socio-economic changes.

How to adopt a gender responsive approach to CIS

What is gender analysis?

This is a systematic methodology for examining the differences in roles and norms for women and men; the different levels of power they hold; their differing needs, constraints, and opportunities; and the impact of these differences in their lives. Perceptions of gender are deeply rooted, vary widely both within and between cultures, and change over time. But in all cultures, gender determines power and resources for females and males (FAO, 2009).

According to the training guidelines on gender and climate change (FAO and CCAFS, 2013), a criteria for evaluating whether a gender responsive approach is used in CIS to better respond to needs and views of men and women. The recommendations are as presented below;

1. **Gender analysis**: At the outset of developing climate information services, an analysis of who has what and why, who does what and why, who makes decisions and why, and who needs what and why is carried out to develop an understanding of the site-specific gender, cultural and socioeconomic context.
2. **Participation and engagement:** Both men and women should be involved in developing, adapting, testing and adjusting CIS to meet their specific needs, preferences and opportunities. Communities and experts work together to identify solutions of reducing existing gender inequalities and accessing climate information services.
3. **Constraints to uptake of CIS practices are addressed:** Efforts should be made to reduce the constraints in the uptake of CIS through collective learning. For example, unequal access to climate information services is a threat to women's ability to mitigate climate risks (Partey et al. 2020).
4. **Immediate benefits –** CIS should be designed to produce benefits for both men and women. These benefits include improvements in agricultural yields; reduction in the time, energy and labour spent by food producers, particularly women, on their agricultural activities; and increases in women's access to and control of agricultural inputs and income

5. **Long-term benefits –** CIS should contribute to longer-term changes in equality between men and women. These can be achieved through enhancing men's and women's resilience and agricultural productivity; increasing women's control of resources; and increasing participation of women and youth in decision-making at household and community levels.

Overcoming gender barriers in CIS

Pathways to improve the uptake and use of climate information in decision making by men and women include but not limited to:

I. **Identifying context specific communication channels for socially inclusive delivery**. Climate service stakeholders should identify a communication channel that suits the varied needs of local men and women farmers. For instance, one gender group may prefer climate information delivered through SMS messaging while the other gender group may opt for messages delivered through radio.
II. **Utilization of women's groups to boost information sharing**. The use of women's groups as a communication channel can address gender- based differences that limit women's access to technical information. Moreover, women groups can be used as 'knowledge providers' of climate information.
III. **Developing media and ICT-based channels tailored to women's needs**. When using Information and Communication Technologies (ICTs) to disseminate climate information, the methods for dissemination should be evaluated for women to consider such ICT-based climate services useful. More so, for women to embrace technology, the services offered should lead to empowerment of women farmers through disseminating climate relevant information that brings value to their agricultural activities including time-saving mechanisms.
IV. **Partnering with gender-sensitive local organizations**. Climate services providers can partner with local organizations to engage with existing sociocultural norms around gender roles and behaviours. Such local groups and organizations can facilitate access to extension services and training for gender groups excluded from climate information services.
V. **Building capacities of women farmers on climate information services.** Targeted action to increase women's participation in CIS trainings and trainings of trainers.

1.3 Trainer's guidelines and notes

1.6.1 Climate Training Expectations	**Session guide**	
(The Trainer should welcome all participants to the training on climate change and the role of climate information services in making informed agro-based decisions. Trainer should introduce himself/ herself by stating their name/job title/organizations and experience working with farmers. ➢ **Ask farmers about their expectations of the training** **Training Objectives** (Trainer presents the training objectives)	● Each participant should share their expectations ● Distribute handouts (if any)	

By the end of the module training the participants should be able to: i. Create awareness about climate change and variability and its impacts on agricultural commodity value chains ii. Improve understanding and utilization of climate information along agricultural commodity value chain iii. Acquaint with the different weather forecast products provided by KMD and the channels of dissemination iv. To describe the gender differentiated impacts of climate change and the importance of socially inclusive access to, and use of climate information for informed decision making along agricultural commodity value chain		
1.6.2 Understanding Concepts of Climate Change	**Session guide**	
The *facilitator will start by gauging the participants' own understanding of climate change before making a presentation on the common terms used in the climate change and variability* **Plenary discussions** **Step 1:** Ask the participants if there have been climatic changes in their region over the past years and in their own words, what they mean by climate change. **Step 2:** Let participants list the possible causes of climate change from their own understanding. **Step 3:** What shows there have been climatic changes over the past years? (Let them list the indicators of climate change). **Plenary presentation:** ● Introduce the scientific concept of climate change ● Definition of terms (Climate change, climate variability, weather) ● Causes of climate change and its impacts **Direct impacts –** these are impacts that affect the agricultural commodities of enterprises directly ● Crop failures ● Decline in livestock production ● Water stress ● Loss of pastures or livestock feed supplies ● Prevalence of new pests and diseases ● Land/soil degradation **Gender- differentiated impacts of climate change**	NB. It will be important to discuss some concepts (climate change, climate variability) in Swahili language, and try to find a **Swahili** word or phrase that everyone agrees on**.** **Plenary discussion** ● Write all the responses on flip charts ● Present evidence-based scenarios of impacts if any e.g decline in crop yields over the past years	

● Exposure- Women more exposed to climate risks more than men ● Vulnerability - Increasing women's work burden and labour constraints ● Adaptive capacity - Low adaptive capacity in women; limited access to resources and information, ICT tools etc. **Going forward: -** ● Investing in labour saving climate smart technologies to benefit vulnerable groups, ● Providing men and women with a wide range of choices to make in agricultural production to enhance household resilience.		
1.6.3 Indigenous Knowledge in Weather Prediction	**Session guide**	
Step 1- *The facilitator will start by asking the participants of their understanding and usage of Indigenous Knowledge in making decisions about their agricultural activities* **Step 2**- Let the participants list examples of indigenous knowledge used (e.g studying the intestines) perceptions, challenges experienced. **Plenary presentation** ● Definition of Indigenous Knowledge ● Overview of indigenous knowledge ● Integration of CIS and indigenous knowledge	● Look to see how many people rely on indigenous knowledge in making on-farm decisions.	
1.6.4 Use of climate information for decision making along commodity value chain	**Session guide**	
The trainer (s) will ask participants whether they have used climate information to make informed decisions in agriculture. *-What were the sources of these weather forecasts?* **Plenary presentation** ➢ Present on importance of climate information in making informed decisions in agriculture sector -useful in planning for various phases of agricultural activities (before season, just before the season, during season, shortly after the season)	● List the common channels of accessing climate information	

➢ **Weather and climate products** from KMD are as below: Daily forecasts: A 24-hour forecast that contains detailed information on expected weather conditions for the next 24 hours. Usefulness: Provides expected weather conditions for the next 24 hours (Sunny, cloudy, rainy, and wind speed) important for farmers in planning field operations within the next 24hours. Monthly/seasonal forecasts: Depicts the amount and distribution of rainfall patterns within the month/season. - *'Above Normal* '– Enhanced amounts of rainfalls - *'Normal'* – Average rainfall amounts - *'Below normal'* – Depressed rainfall amounts Usefulness – Provides climate outlook for the coming month/season County forecasts: Reducing weather/climate information known at large scale (regional/national) and present the same at county levels ➢ Ask participants their opinions/ perceptions about these climate products from KMD (*Reliability, Timely, Accuracy, Relevance)*	● Ask participants to identify the weather forecasts that they can relate with ● List the participants perceptions on weather forecasts and other climate products from KMD	
1.6.5 Communication and dissemination of climate information	**Session guide**	
Plenary presentation **Key facts:** ➢ Climate information as an important factor in decision making, ➢ Needs to be communicated efficiently and effectively timely manner **Channels of disseminating climate information include:** - Electronic Media (TV, Radio) - Print Media (Newspapers, bulletins) - ICT platforms – Mobile phones ➢ Mobile phones (bulk SMS) have taken prominence among society and communities in recent days. **Gendered Approach to CIS** ● Access to climate information through gender lens ● Making CIS gender sensitive ● Gendered access ● Overcoming gender barriers	● Highlight the challenges of disseminating climate information through radios, newspapers, posters, mobile phones etc.	

1.4 Evaluation of the training

Time should be allocated at the end of the training for evaluation of the training. All Participants are expected to give their honest feedback on the training outcome, session delivery, venue and logistics that can be considered to improve future training. Therefore, all participants should be provided with evaluation forms where each will provide his /her responses without discussing with other trainees (Annex 4).

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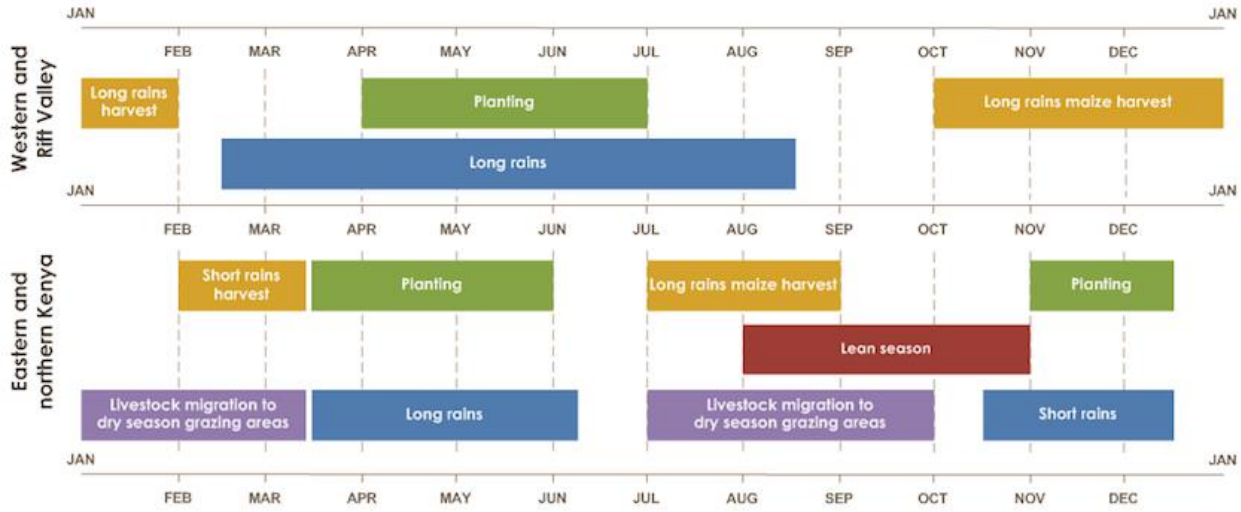
Annex 1: Agricultural Calendar in Eastern and Northern Kenya - 2022

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Long rainy season			Long rains							Short rains		
Land preparation for long rains		Land tillage										
Planting for long rains				Planting (Maize, millet, sorghum, beans)								
Long rain harvests							Long rains harvests (Millet, sorghum, beans)					
							Long rains harvests (Maize)					
Land preparation for short rains									Land tillage			
Lean season								Lean season				
Planting for short rains										Planting pigeonpea, millet, sorghum		
Short rain harvests		Short rains harvests (pigeonpea, millet, sorghum)										
Livestock migration	Livestock migration for to dry season grazing areas						Livestock migration to dry season grazing areas					



Source: Seasonal calendar for a typical year -Kenya Famine Early Warning Systems Network, 2020

Annex 2: Training Programme – Module 1

Day 1

Time	Activity	Facilitator
09.00 am – 9.30 am	**1.0 Introductions of participants and welcoming remarks** **Presentations:** ○ Introduction to the module ○ Objectives ○ Participants 'expectations listed	
9.30 am – 10.00 am	***Plenary discussions*** – Meaning/perceptions on CC, indicators, causes? **1.1 Understanding concepts of climate change** ○ Definition of terms ○ Causes of climate change ○ Impacts of climate change ○ Climate change and gender inequalities	
10.00 – 10.30 am	**Health Break**	
10.30 am – 11.15 am	**1.2 Use of Climate information for decision making along commodity value chain** ○ Definition of climate information and climate services ○ Types of CIS ○ Characteristics of CIS	
11.15 am – 1.00 pm	**1.3 Role of Indigenous Knowledge in weather prediction** ○ Introduction of Indigenous knowledge (IK) ○ Characteristics of IK **Plenary discussions – Building on IK** ○ Use of Indigenous knowledge ○ Practical examples in the area ○ Perceptions on IK ○ Challenges of IK	
1.00 pm - 2.00 pm	**Lunch Break**	

2.00 pm – 3.00 pm	**1.4 Use of weather and climate products for informed decision making in agricultural value chain** **Weather and climate products** – o Seasonal forecasts o Daily forecasts o Monthly forecasts **Common channels of disseminating climate information** o Radio o Email o Short Messaging Services (SMS)	
3.00 pm – 4.00 pm	**1.5 Gendered approach to CIS** o Access to climate information through gender lens o Making CIS gender sensitive o Gendered access o Overcoming gender barriers	

Annex 3: Individual Evaluation Form 1A

Title of event:

Date of event:

Location of event:

Dear Participant,

Having attended the training on the '**Role of climate information services in making informed decisions along agricultural commodity value chains',** please take a few minutes to complete this form.

	Instructions: Please tick your level of agreement with the statements listed below	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**	**Not relevant**
1.	The training was useful to me					
2.	The presentation materials were relevant					
3.	The venue was appropriate for the event					
4.	The facilitators were engaging					
5.	The training duration was adequate					

6. What did you most like about the training?

7.What did you least like about the training?

8. What improvements would you suggest for future training sessions?

9. General remarks or comments?