COST-BENEFIT ANALYSIS FOR CLIMATE INFORMATION SERVICES

Training for County Directors of Meteorological Services (CDMS)

Workshop Report

Paul Murage, Mélody Braun, Paulina Smith Ruiz, Zacharia Mwai, Margaret Kimani, Isaac Kangila, Edward Muriuki, Pascaline Chemaiyo, Berber Kramer

March 2025

To cite this report

Murage, P., Braun, M., Smith Ruiz, P., Mwai, Z., Kimani, M., Kangila, I, Muriuki E., Chemaiyo, P., Kramer, B. 2025. Cost-Benefit Analysis for Climate Information Services: Training for County Directors of Meteorological Services (CDMS). Workshop Report. Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA).

Acknowledgements
Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a project that helps deliver a climate-smart African future driven by science and innovation in agriculture. It is led by the Alliance of Bioversity International and CIAT and supported by a grant from the International Development Association (IDA) of the World Bank. The authors would like to thank Director, Kenya Meteorological Department for the supporting the process

About AICCRA Reports

Titles in this series aim to disseminate interim research on the scaling of climate services and climate-smart agriculture in Africa, in order to stimulate feedback from the scientific community.

Photos

Cover photo: © CIAT/Neil Palmer
Other photos: Paul Murage, Melody Braun, Paulina Smith Ruiz

Disclaimer

This working paper has not been peer reviewed. Any opinions stated herein are those of the author(s) and do not necessarily reflect the policies or opinions of AICCRA, donors, or partners.

Partners

KENYA METEOROLOGICAL DEPARTMENT

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

Alliance Bioversity & CIAT

CGIAR

ABSTRACT

This report summarizes the findings of a 3-day training program for eighteen (18) Kenyan Meteorological Department County Directors of Meteorological Services (CDMS), on Cost Benefit Analysis for Climate Information Services (CBA for CIS), in Nakuru, Kenya on March 12-14th 2025. The program was jointly organized by the "Accelerating Impacts of CGIAR Climate Research for Africa" (AICCRA) program and the Institute for Meteorological Training and Research (IMTR) at the Kenya Meteorological Department (KMD). The training aimed at building the capacity of CDMS to think critically through ways to quantify and evaluate the monetary and non-monetary costs and benefits of the climate information services developed in their counties, with a strong focus on Gender Equity and Social Inclusion (GESI). Training materials built on an online training conducted by IFPRI, AICCRA and the CGIAR Gender Platform in November and December 2024, and were tailored to the CDMS context during a validation workshop held on March 10th and 11th, 2025.

Keywords

Gender; Cost-Benefit Analysis; Climate Information Services; Social Inclusion; Evaluation; Non-Monetary Benefits

CGIAR | AICCRA
Accelerating Impacts of CGIAR Climate Research for Africa

ABOUT THE AUTHORS

Mélody Braun is a climate adaptation and risk management expert with a particular focus on the design, implementation, management and advisory of transdisciplinary projects at the intersection of science, policy, and practice.

Paulina Smith Ruiz is an Environmental Engineer with a Master in Environmental Sciences, working on Climate Information Services for adaptation.

Paul Murage is the Assistant Director Education & Training, Insitute for Meteorological Training and Research, World Meteorological Organization, Regional Training Centre, Nairobi.

Zacharia Mwai is the Assistant Director in charge of Hydromet Section, Kenya Meteorological Department.

Dr. Margaret Kimani is the Assistant Director, Curriculum Development, Insitute for Meteorological Training and Research, World Meteorological Organization, Regional Training Centre, Nairobi.

Edward Muriuki is the Director Insitute for Meteorological Training and Research, World Meteorological Organization, Regional Training Centre, Nairobi

Isaac Kangila is the Head of Finance, Kenya Meteorological Department.

Pascaline Chemaiyo is a Climate Scientist working at the Business Consultacy branch, Kenya Meteorological Department

CONTENTS

CGIAR | AICCRA
Accelerating Impacts of CGIAR Climate Research for Africa

INTRODUCTION

Background information

The "Accelerating Impacts of CGIAR Climate Research for Africa" (AICCRA) program, funded by the World Bank, builds on past CGIAR investments in climate information services (CIS) and climate smart agriculture (CSA) to scale these innovations for smallholder farmers in the Africa region.

The aim was to integrate gender considerations more profoundly in a curriculum that provides participants with the capacity to think critically through the ways in which one can quantify the costs and benefits, as well as the empirical impacts and cost effectiveness of innovations to improve smallholder farmers' resilience to climate change. This training started from an online course that was delivered in November and December 2024 which now was tailored to the Kenyan context.

The Institute for Meteorological Training and Research (IMTR-Nairobi), a branch of the Kenya Meteorological Department, is a World Meteorological Organization Regional Training Centre (WMO - RTC) for English-speaking countries in Africa. It is responsible for training personnel in meteorology, and related geosciences. IMTR conducts regular syllabus reviews for all its courses to ensure that they remain relevant and also embrace emerging technological changes and advancements. IMTR expresses strong needs to document the costs and benefits of weather shocks and stresses, in terms of their impacts on socioeconomic out-comes; and of investments that are being made in CIS. IMTR and AICCRA therefore saw a promising opportunity for collaboration. Efforts focused on ensuring the course is adequate for stakeholders in Kenya, after which it can potentially be rolled out.

Objectives

When evaluating whether to invest in innovations, programs, or policies aimed at enhancing smallholder farmers' resilience and capacity to adapt to climate change, governments and donors typically rely on cost-benefit analyses (CBA) to weigh the associated costs and benefits. However, traditional CBA frameworks primarily focus on the net present value of future cash flows generated by an investment, often neglecting critical gender-related outcomes associated with these initiatives. Such outcomes may include, among others, enhanced women's empowerment, reduced workloads and physical drudgery, and improved well-being through better consumption smoothing.

The primary objective of this course was to equip participants with the tools and methodologies needed to incorporate these gender-specific outcomes into cost-benefit analyses. By doing so, resource allocation decisions can be strengthened for programs that deliver significant gender benefits, ensuring a more comprehensive evaluation of their societal impacts.

1. Enhance Capacity in CBA: Equip CDMS with tools and methodologies to conduct CBA that demonstrate the economic, social, and environmental benefits of CIS.
2. Integrate GESI: Employ frameworks that incorporate gender and social equity dimensions into CBA, ensuring that the benefits of CIS are equitably distributed.
3. Strengthen Advocacy: Illustrate to participants the use of CBA results to advocate for increased investment in CIS, emphasizing their value to diverse stakeholder groups.

APPROACHES AND METHODS

Climate information services are pivotal for informed decision-making in agriculture, disaster risk reduction, and resource management. However, the utilization of CIS remains limited due to challenges in demonstrating their economic value and ensuring they meet the diverse needs of all societal groups, including women, youth, and marginalized communities.

The County Directors of Meteorological Services (CDMS) oversee and manage meteorological activities within the county, ensuring that weather-related services are delivered effectively and efficiently.

Training the CDMS in cost-benefit analysis provides a structured approach to evaluate the return on investment of CIS while embedding GESI principles to ensure inclusivity in service delivery and policy design.

Multipurpose and multifaceted implementation strategies were employed and comprised of the following processes:

Process documentation

Series of meetings were held to plan and implement the workshop processes. During the planning meetings, the workshop location and venue were identified and selected. An estimated budget was also prepared and reviewed. Additionally, the chair, facilitators, key presenters and participants for the workshop were identified and invitations sent out.

Participants and workshop procedures

The validation of the training materials took place from Monday 10 to Tuesday 11 of March, 2025 in Nakuru, Kenya. First, the program was reviewed and adjusted to ensure all basic topics from CGIAR's online course were covered in a logical flow, supported by case studies and enriched by group work and discussions. Further, small groups were formed to co-produce presentations depending on their interests and expertise. Finally, presentations were reviewed by the whole team to provide feedback to improve slides and content.

Training took place from Wednesday, March 13th to Friday March 15th in Nakuru, Kenya with the County Directors of Meteorological Services and members of Kenya Meteorological Department. There were 28 participants: 2 AICCRA trainers, 4 IMTR trainers

and 22 trainees. There were more men than women, being 3 women and 19 men in total. All the participants were in the age range of 36 years old and older. No youth was trained.

KEY RESULTS AND FINDINGS

Opening session

The workshop started with an opening prayer from Mr. Isaac Kangila, KMD Head of Finance and also a resource person followed by self-introduction of participants. Participants' database was created through registration of all participants. In total 28 participants attended the workshop of which 10% were women. Mr. Julius Kilemba, CDMS Nakuru County, welcomed all the participants to the county, thanking the KMD director for sparing his time to grace the occasion in opening the training.

Remarks from Mr. Edward Muriuki, Director/ Principal Institute of Meteorology Training and Research (IMTR)

Mr. Muriuki, the Principal of the IMTR underscored the institution's mandate as a World Meteorological Organization (WMO) - designated Regional Training Center since 1965. He highlighted IMTR's mission to advance Climate Information Services (CIS) through quality training, research, and partnerships, noting its role in equipping thousands of professionals across National Meteorological and Hydrological Services. He was delighted in the launch of the pioneering Cost-Benefit Analysis (CBA) training program, developed in partnership with AICCRA, to evaluate the economic and social value of CIS. He acknowledged that the training, led by experts Melody Braun and Paulina Smith, underwent rigorous validation and will soon be rolled out to both internal and external stakeholders before expanding regionally. Stressing the importance of evidence-based policymaking, he urged CDMS to apply CBA skills in their counties to demonstrate the viability of CIS investments and support KMD initiatives. He concluded by expressing optimism about IMTR's future collaborations and the transformative potential of integrating CBA into climate resilience strategies, ensuring alignment with Kenya's and the broader region's sustainable development goals.

Remarks by Berber Kramer, Senior Research Fellow in the Markets, Trade, and Institutions Unit at the International Food Policy Research Institute (IFPRI)

The Senior Research Fellow welcomed all to the training and thanked IMTR for organizing the training which was to take place for the next three days. She felt honored to join from International Food Policy Research Institute (IFPRI), and together with AICCRA in supporting the training. Berber noted that IFPRI was established in 1975, to provide research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition in developing countries. Together with partners, they generate needed evidence for country and region-led policies that contribute to poverty reduction and help ensure that all people have access to safe, sufficient, nutritious, and sustainably produced

food. Through multi-sectoral research and engagement with stakeholders, IFPRI informs effective policies, programs, and investments that contribute to productive livelihoods and sustainable, resilient, and equitable agriculture and food systems. Berber informed the participants that the training course came as a result of an online course undertaken by the trainers in November and December 2024, where the trainers were introduced to 4 modules on CBA. She reiterated that it was not all about increasing profits but also reducing risks for overall benefits thus the cost benefits. She also recognized gender equity by improving access to CIS especially by women, PWD and the marginalized groups who seem to be left behind.

She pointed out the fact that the CDMS were critical in ensuring that CIS benefits smallholder farmers and enable quantification of the results achieved. With this fact, thus the need to equip the CDMS with necessary tools and knowledge to move this concept further to the community such that it impacts them positively and is sustainable. She finally encouraged the participation by all for the success of the training.

Key note address and official opening by the Dr. David Gikungu, Director Kenya Meteorological Department and Permanent Representative of Kenya with World Meteorological Organization

Dr. Gikungu emphasized the critical role of National Meteorological and Hydrological Services (NMHS) in providing accurate climate data to support economic decision-making and disaster preparedness. He acknowledged the challenges in quantifying the economic value of Climate Information Services (CIS) and the need for a structured Cost-Benefit Analysis (CBA) framework. He highlighted the importance of integrating a Gender Equality and Social Inclusion (GESI) lens to ensure that CIS benefits diverse societal groups, including marginalized communities.

Dr. Gikungu further elaborated on the training initiative, supported by the AICCRA project and funded by the International Development Association (IDA) of the World Bank. He outlined IMTR's role in refining training materials and piloting the CBA program to equip CDMS with skills to assess and communicate CIS benefits effectively. He expressed confidence that this training would enable informed policy advocacy and resilience-building while fostering inclusive access to climate services. He concluded by appreciating the IMTR team's efforts in securing funding and refining the curriculum, expressing optimism about the program's long-term impact in Kenya and beyond.

Expectations by CDMS

The CDMS were led through a session on their expectations which they wrote on sticky notes and summarized as follows:

1. Learn how to conduct CBA of Climate Information Services (CIS);
2. Understand how to apply CBA in real situations;
3. Gain insights into different methodologies;
4. Improve decision-making in my county's policies;
5. Enhance the benefits of CIS;
6. How to mainstream gender in CIS;
7. Improve knowledge on service delivery;
8. Understand the impact of CBA on the community;
9. Learn more about risk communication;
10. Understand how local communities can make informed decisions;
11. Build analytical capacity for CBA and
12. Ensure social issues in CBA are considered.

Technical session with presentations

This session captures synopsis of technical presentations of validated training materials from the IMTR resource persons with support from the visiting trainers' platform.

Role of Decentralized Meteorological Services by Vincent Sakwa, CDMS Kakamega County

Mr. Sakwa on behalf of CDMS underscored the critical role of decentralized meteorological services in Kenya, emphasizing their importance in delivering localized weather and climate information to enhance resilience and development. He explained that decentralization enables tailored weather forecasts, early warnings, and seasonal projections both at county and community levels. Key functions include supporting agriculture through localized climate advisories for farmers, disaster risk reduction via collaboration with county governments, and improving transport safety through region-specific weather updates. He highlighted the integration of indigenous knowledge with scientific data to boost forecasting accuracy and community engagement, while also noting contributions to health protection, environmental monitoring, and climate research through decentralized data collection. Concluding his remarks, Sakwa reiterated that empowering county-level meteorological offices will strengthen Kenya's climate resilience, disaster preparedness, and socio-economic growth, urging stakeholders to prioritize decentralization as a cornerstone of sustainable development strategies.

General overview of Cost Benefit Analysis by Isaac Kangila

Isaac Kangila presented an introduction to CBA focusing on its application with a Gender Equality and Social Inclusion (GESI) lens. He explained that CBA is a method used to compare the projected costs and benefits of a decision to determine its feasibility. Businesses and organizations can assess whether an initiative is worthwhile by calculating the total expected rewards and subtracting the associated costs. If the benefits exceed the costs, the project is considered viable.

During the presentation, Mr. Kangila outlined the various types of decisions that CBA can support, including whether to sell or retain a loss-making business, invest in new machinery versus hiring one, discontinue or introduce a production line, enter a market, or retain or retrench staff. He emphasized that CBA is a critical financial modeling tool for evaluating business investments and guiding strategic decision-making. He also discussed the different types of costs considered in CBA, distinguishing between variable costs, such as direct materials and labor, and fixed costs, such as rent and salaries. He further introduced the concept of opportunity cost, explaining that it represents the potential benefits forgone when choosing one alternative over another. This aspect of CBA helps decision-makers understand trade-offs and make informed choices.

Additionally, Kangila introduced the time value of money principle, which states that the value of money today is greater than its value in the future due to its potential for investment and growth. He explained how discounted cash flow calculations are used in financial modeling to account for this concept. In conclusion, he emphasized that CBA is an essential analytical tool for making strategic decisions by weighing costs against benefits, considering opportunity costs, and applying financial principles such as the time value of money. The training aimed to equip Directors with the necessary knowledge to conduct CBAs effectively and advocate for investments in Climate Information Services (CIS).

Fundamentals of Cost-Benefit Analysis by Dr. Margaret Kimani

Dr. Margaret Kimani emphasized the significance of meteorology in socio-economic development, referencing the WMO 382 framework. She explained that meteorological information plays a crucial role in maximizing benefits and minimizing damages to goods and properties. In her submission, integrating meteorological data into decision-making enhances economic gains while mitigating losses, aligning with the Kenya Meteorological Department's mandate to provide timely early warnings. She further elaborated on the core concepts of CBA, defining it as a decision-making tool used to evaluate total costs and benefits. She explained that the process involves assessing the value of a decision by comparing expected costs against expected benefits. She categorized costs as financial and non-financial, including expenditures such as farming inputs and compliance with weather advisories. Benefits, she stated, could be tangible, like increased revenue, or intangible, such as improved quality of life and environmental conservation. She concluded by discussing the final decision-making process in CBA.

Risk aversion by Paulina Smith Ruiz

Paulina highlighted the limitations in traditional CBA approaches, which focus on financial metrics like Net Present Value (NPV) but overlook non-monetary benefits such as welfare, intra-household dynamics, and risk aversion. Using the “Coin Toss Problem” as an example, they demonstrated how risk aversion influences decision-making. She emphasized on gender-differentiated risk behaviors, noting that women often exhibit higher risk aversion due to societal norms, economic roles, and preferences for stability. This divergence impacts financial decisions, such as conservative investment choices among women compared to riskier ventures favored by men. Paulina argued that expected utility models must account for gendered valuations of outcomes—such as

women prioritizing security and emotional factors versus men focusing on financial gains—to ensure inclusive product design and policy interventions. She concluded that integrating risk aversion and gender considerations into CBA frameworks enhances their relevance, particularly when analyzing interventions through a Gender Equality and Social Inclusion (GESI) lens.

Application of CBA to Climate Information Services (CIS): agriculture productivity, disaster preparedness and climate adaptation by Zacharia Mwai

In his presentation, Zacharia emphasized CBA application in CIS to enhance agricultural productivity. He explained that CBA is a crucial tool for evaluating the economic feasibility of investments in CIS by comparing anticipated benefits with associated costs. He outlined that CIS encompasses weather forecasting, drought and flood monitoring, pest and disease forecasting, early warning systems, and agro-weather advisory services. These services help farmers make informed decisions regarding planting, irrigation, and harvesting while reducing crop losses caused by extreme weather events. In addition, he highlighted that CIS improves resource allocation, enhances resilience to climate variability, and ultimately boosts agricultural productivity. He also stressed the need for governments and stakeholders to recognize the role of CIS in increasing food security and economic stability. He concluded by recommending subsidies and incentives for CIS adoption and emphasized the importance of continuous monitoring and evaluation to ensure sustainable agricultural improvements.

Application of CBA in CIS for Disaster Preparedness by Mwai Zacharia

In this presentation, he focused on the ways that CBA serves as a critical tool for assessing the economic efficiency of preparedness measures, such as early warning systems and resilient infrastructure. Key steps outlined included defining objectives, quantifying direct and indirect costs (e.g., technology investments, training) and benefits (e.g., reduced loss of life, economic stability), assigning monetary values using historical data and willingness-to-pay surveys, and calculating metrics like Net Present Value (NPV) and Benefit-Cost Ratio (BCR). The session underscored the need for a proactive, evidence-based approach to Disaster Risk Reduction (DRR), aligned with a Gender Equality and Social Inclusion (GESI) lens to ensure equitable outcomes.

Limited access to CIS by women, youth and marginalized groups by Paul Murage and Mélody Braun

In their session, Paul with Melody focused on the limited access to CIS by women, youth, and marginalized groups. Paul explained that gender is a socially and culturally

constructed concept that assigns roles and responsibilities to men and women, often normalizing inequality. He highlighted that gender roles evolve over time due to changes in social, economic, political, and cultural contexts. Additionally, he emphasized that climate change affects men and women differently due to gender-based divisions of labor, unequal access to resources, and varying levels of participation in decision-making. Women, despite playing key roles in managing the natural environment, are underrepresented in policymaking at all levels, which further exacerbates their vulnerability to climate change. He pointed out that the exclusion of women from decision-making processes prevents their knowledge and experiences from being utilized effectively in climate adaptation strategies.

Melody elaborated on the socio-cultural barriers limiting women's access to land and water, as well as their dependence on natural resources and unpaid labor, making them more susceptible to climate risks. He referenced studies highlighting the gender disparity in climate policies, noting that women's absence in decision-making results in inadequate consideration of their needs. However, she stressed that women should not be seen solely as victims but as active agents of change. She cited data showing that women produce a significant portion of food in developing countries and that their participation in agricultural programs enhances yields. Despite these contributions, gender disparities persist in representation and leadership, affecting their ability to respond effectively to climate challenges. They both concluded that integrating gender perspectives into CIS and policy frameworks is essential for equitable and sustainable climate resilience.

Introduction to theory of change and its role in identifying the costs and benefits of resilience programs by Mélody Braun and Paulina Smith Ruiz

Melody started by explaining that the Theory of Change (ToC) serves as a structured framework for understanding how specific interventions and investments lead to measurable outputs, short-to-long-term outcomes, and broader societal impacts. She emphasized that ToC should be designed at the beginning of a project and incorporate a monitoring and evaluation process. Additionally, she highlighted the importance of identifying key assumptions, preconditions, and external factors that could influence success, such as political shifts, market fluctuations, and infrastructure constraints. The discussion also underscored the significance of integrating gender equality and social inclusion (GESI) into climate information services (CIS), ensuring that interventions address the differing needs and roles of men and women. By doing so, programs can become more equitable, effective, and sustainable, avoiding unintended consequences that might reinforce existing inequalities.

On her part, Paulina discussed the role of ToC in linking gender-responsive CIS to climate resilience, illustrating how improved access to climate services could enhance farm decision-making, increase productivity, and reduce gender-based barriers. She pointed out that traditional Cost-Benefit Analysis (CBA) often fails to capture the full range of social and gender-related outcomes, prompting the need for a more inclusive evaluation approach.

Non-monetary benefits of Climate Information Services (CIS), Paul Murage, Mélody Braun and Paulina Smith Ruiz

The session emphasized the importance of considering empowerment and social inclusion, particularly from a gender perspective. The trio highlighted that CIS aims to increase access to climate information, enabling recipients to make informed decisions. They explained that traditional CBAs often fail to account for the non-monetary value of empowerment, especially for women, who tend to have limited access to information and decision-making power. Research cited in the presentation demonstrated that agricultural productivity improves when both men and women receive advisory services. It was also noted that traditional CBAs, which rely on net present value (NPV) calculations, do not adequately capture women's informal labor and caregiving contributions, making it difficult to assess their true economic impact. Further, the presenters discussed methods for valuing changes in empowerment and intra-household bargaining dynamics. A case study conducted in Zambia showed that climate information influenced agricultural investment decisions by aligning them more closely with both men's and women's preferences. The session concluded that empowerment could be measured through various indices, such as the Women's Empowerment in Agriculture Index (WEAI) and the Gender Empowerment Index for Climate-Smart Villages (GEI-CSV).

Data collection to conduct CBA for CIS, Paul Murage and Mélody Braun

The duo introduced the Cost Benefit Toolkit as a framework designed to estimate the costs and benefits of adopting CIS among smallholder farmers. Developed by Anne G. Timu and Berber Kramer, the toolkit is part of the Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) initiative.

The key features of the Toolkit includes helping assess the financial implications of adopting CIS, including modules on household demographics, perceptions of climate change, yield expectations, income sources, and risk preferences. It aims at supporting decision-making on agricultural investments by quantifying the impact of CIS on farming

activities. The toolkit is intended to support policymakers, researchers, and farmers in understanding the economic benefits of integrating climate data into farming practices. It provides structured survey questions to collect data on the effectiveness of CIS in improving resilience to climate variability.

Case study: Measuring the impact of CIS on crop yield by Zacharia Mwai and Paul Murage

In the case study, the duo informed of the fact that agriculture remains the backbone of Kenya's economy, with nearly 70% of the population engaged in the sector. However, climate change has posed significant challenges, including unpredictable weather patterns, prolonged droughts, and erratic rainfall. To address these issues CIS has been introduced to help farmers make informed decisions on planting, irrigation, and harvesting. The study revealed that CIS, provided by institutions like the KMD and private organizations, has led to a 15-30% increase in crop yields, reduced costs, and improved income for farmers. For instance, maize farmers in Kitui County adjusted their planting dates based on CIS forecasts, preventing crop failures caused by unexpected dry spells.

They highlighted key challenges limiting CIS adoption, such as limited access to technology, language barriers, and high initial costs. Many rural farmers lack smartphones or internet access, making it difficult for them to receive timely weather updates. Additionally, some struggle to interpret climate data, while subscription fees for certain CIS tools further hinder widespread adoption. Despite these obstacles, the cost-benefit analysis demonstrated that CIS is an economically viable solution for enhancing food security and climate resilience.

Evaluating CIS and CSA interventions: approaches, challenges, planning credible evaluations from a gender perspective and research ethics, by Paul Murage and Edward Muriuki

Evaluation of these interventions was categorized into process, outcome, and impact evaluations. Process evaluation assessed whether the implementation followed the intended design and best practices. Outcome evaluation focused on the influence of interventions on knowledge and behavior leading to the intended impacts. Impact evaluation measured changes in human well-being, emphasizing the magnitude and causal relationships of those changes.

Paul elaborated on the need for proper selection of control groups to measure the impact of CIS accurately. He stressed that comparing CIS users with non-users or conducting before-after comparisons might lead to inaccurate attributions. He recommended

randomized assignment of treatment, such as selecting wards randomly to receive climate services while others served as controls. He also suggested that researchers might conduct Randomized Control Trials (RCTs) in collaboration with CDMS. He emphasized the challenges associated with attribution in impact evaluation. He pointed out that without a counterfactual, it would be difficult to distinguish whether observed changes resulted from the intervention or other external factors. Since it was impossible to observe treated and untreated outcomes simultaneously for the same individuals, he explained that evaluation methodologies had been developed to estimate counterfactuals, addressing potential biases that could distort findings.

Case study: Aviation Industry by Miriam Mwende, Aeronautical Forecaster JKIA, Nairobi

She emphasized that weather remains the ultimate authority in aviation, reminding airmen that even advanced technology cannot override nature's unpredictability. Additionally, reliable weather data minimizes flight delays and cancellations, enhances fuel efficiency, and optimizes airline operations. Mwende further presented case studies of aviation disruptions caused by severe weather events. The financial burden of weather-related diversions was also analyzed, with Kenya Airways incurring costs exceeding $10,000 for a single diverted flight due to thunderstorms in April 2024. She concluded by stressing the importance of investing in high-quality weather forecasting services to mitigate these risks and reduce aviation losses.

Case study: Cost of missing out on PSP in Kilifi County by Getrude Leshamta)

In her presentation, Getrude pointed a case of OND 2024 where Participatory Scenario Planning (PSP) was not conducted in Kilifi County which affected farmer decisions as most of them failed to plant. The lack of climate information dissemination led to poor crop performance and missed opportunities for early intervention in livestock and disaster management. In contrast, the MAM 2025 PSP session was met with enthusiasm, as experts provided crucial advisories on drought preparedness, climate hazards, and resource-based conflicts. The session underscored the importance of PSP in guiding county planning for sectors such as health, fisheries, and trade. The advisories produced in PSP were essential for mitigating the impact of climate-induced conflicts and natural disasters, ensuring that communities had access to actionable climate information.

She also pointed to success of AICCRA-KMD APP where each farmer was given a manual rain gauge (Seventeen rain gauges: 5 manned by women and 12 by men) for observation and also provided with a smartphone and airtime. https://play.google.com/store/apps/details?id=org.rainfall.mpro&pcampaignid=web_share

She pointed to the challenge of sustainability as funding is an issue and thus there is need to device ways.

Communication and Policy Advocacy on CIS by Isaac Kangila

Kangila's presentation focused on the significance of strategic communication in influencing policy decisions, particularly in CIS. He emphasized the necessity of raising public awareness about existing policies, such as the National Framework for Climate Services (NFCS) and the UN/WMO's Early Warning for All initiative. He highlighted the role of policy advocacy in shaping laws and regulations, stressing the importance of building relationships with policymakers, providing evidence-based recommendations, and engaging in lobbying efforts. He also pointed out the communication gap in CIS dissemination and called for a comprehensive strategy to ensure relevant stakeholders, including farmers and disaster management agencies, receive accurate and actionable climate information.

Ultimately, he underscored the importance of ensuring that climate information is accessible and impactful for communities most vulnerable to climate change.

Discussions on the technical presentations

The content of Table 1 below gives the summary of issues that were generated from the discussion of the technical presentations and group work conducted during the training. Since discussions were framed in the Kenyan context, it gives a useful overview of how the content of the training is related to the CDMS activities and other stakeholders that may be involved for future work.

Image 1: Group Work discussion on the Toolkit for Estimating Costs and Benefit analysis of adopting Climate Information Services (CIS) among Smallholder Farmers

Table 1: Summary of discussions from the trainings technical presentations and group work grouped by topic.

TOPIC	MAIN DISCUSSIONS
Costs involved in CIS and agriculture.	County Meteorological Services in Kenya aims for disaster response and preparedness to minimize loss and damages. Each county has at least one meteorological officer who is tasked with communication of weather-related hazards. However, there are challenges on infrastructure and observation networks within the counties. Resource allocation is mainly geared towards disaster response rather than anticipatory action which is needed as making agricultural decisions often have costs implied, e.g., moving crops upland. The discussion came up with relevant points proving the need for CBA as a way to demonstrate why investment in CIS is needed.
Gender and social inclusion.	Gender and social inclusion (GESI) topics were new topics to most of the participants. At the start of the training, participants were not fully aware of the importance of GESI approach in improving accessibility of CIS by marginalized groups. However, during the

	discussion, relevant points that were worth discussing further came up. These includes: *Women have great part of the workload e.g. building houses in the Maasai Mara community, carrying water and farming activities. However, in some communities women are not included or even allowed in decision-making meetings and processes, do not have access to dissemination channels such as radios and are not allowed to study which gives them disadvantage in accessing the information.* Some solutions include: ▪ *First raise awareness of men on the gender topic as it would help to open the conversation within the communities, use existing mechanisms where women meet and address their needs (e.g., childcare)* ▪ *The inclusion of people with disabilities was also mentioned as an important aspect. This aspect would need designing and disseminating CIS in ways that are accessible to people e.g., with hearing impairments and limited vision.*
Risk aversion and its relation to agriculture.	From the discussion, it was clear that farmers at times fail to take action because they are not willing to take risks.
Non-monetary benefits of CIS.	Expected utility was understood by participants as satisfaction. Although the participants were not able to point out some non-monetary benefits of CIS, they were able to relate it with their work after further elaboration and examples. Participants identified the following social benefits in their counties: ▪ Reduced trekking time; water harvesting as a result of utilization of CIS will enable women save time and the distance they cover in search of water for agriculture and domestic use. ▪ Food security within the household. ▪ Reduction in conflict and community's cohesion. Furthermore, integrating bargaining weights may need to be adjusted depending on the context as in Kenya a man may have several wives or children have a say in decision-making.
Data collection for conducting CBA for CIS.	KMD through the CDMS already have an M&E tool that is used to track the effectiveness of climate services. However, not all the data collected can be used for CBA, adjustments and further data is needed. CMDS felt that collection of some of the data should be done by other entities such as the agricultural office. For instance: ▪ Data from cooperative societies. ▪ Market enumeration report on prices and quantity of produce. ▪ Reports from food aggregation centers. ▪ Ministry of Agriculture, since farmers are not used to record keeping.

	The toolkit presented contains topics considered as sensitive for the Kenyan context, those are: ▪ Research on women's empowerment particularly on domestic violence, although addressing the right organization to collect the data may be useful. Gender norms on how to conduct the data collection also have to be considered, e.g., in some communities only women can interview other women. ▪ Research about income is also a sensitive topic as it can be misunderstood. There was a suggestion on improving the user-friendliness of the toolkit, such as an app. However, it is worth mentioning that the toolkit is a guide that should be tailored to the context. CDMS made emphasis on the importance of understanding how to get the information rather than where to get it from. CDMS also noted the social desirability bias which is worth considering when collecting data.
Applicability of the training to CDMS.	During group work discussion, none of the groups captured how to take care of minority groups and women. The goal of KMD is to reach all the people through CIS but this gender component being explicit was still missing, yet it is important as women play a critical role in agriculture. The outcomes related to income or productivity was well mentioned and understood, but non-monetary benefits were still not brought out well.
Challenges in Evaluating CIS interventions.	Evaluation of CIS interventions was a challenging module both on its content and applicability to CDMS work. Participants were familiar with Monitoring and Evaluation but not from a Randomized Control Trial approach. The choice of a control group proved to be a challenge as different farmers have different conditions thus making comparison difficult. There is also indirect use of CIS because some farmers may follow decisions made by those who use CIS, which makes getting a control group difficult. This shows the importance of understanding evaluation methods and selecting the most suitable for the context in order to draw conclusions from a CIS intervention.

The way forward

The following were considered during the discussion on the way forward and are categorized in the section below.

Knowledge enhancement and capacity building

There is need for knowledge enhancement especially the sub-national platforms with regards to the resource mobilization. A number of funding opportunities exists. For example, the Green Climate Fund (GCF) but is it a question how the platforms can access these available funding.

Building capacity in the area of bankable proposal development, providing them with information about available funding opportunities and actually link the platforms to those existing opportunities. With this, they will try to access them and may not rely solely on the government for financial support.

Monitoring and evaluation (M&E) systems

There is need to have strong M&E systems to monitor and evaluate platform activities at different levels. There is need to document achievements and develop short narratives and synopsis of what has happened and those ongoing experiences. vi. Southern and northern sector sub-national platforms.

We have 10 platforms, 5 of them in the north are doing well but the 5 in the south are still questionable. To those 5 platforms in the south, it may be that they do not have others close to them within their respective region to compare, they are scattered in various regions (Greater Accra, Volta, Eastern, Central and Brong Ahafo). If we compare the south platforms with those in the north, the south ones are virtually non-existent. How do we get the southern platforms also active? This will help in their visibility and also in the upscaling.

Regarding the issue of how it seems that the platforms in the north are doing better than those down south, we need to document and learn the processes concerning the platforms on the two sides. It is an important role of the national platform to document the processes through which the platforms have put in place, have evolved, and have experienced different challenges and results achieved. This will provide the evidence of how we should scale up the process of the different platforms. These are the elements that will be used as convincing arguments towards the policy makers, the donors and any others who are interested to scale up the platform.

One key way of getting them active is to organize sessions for them to share experience. When they do this, they can identify where the gaps are. Another way is to compare the kind of membership as there may be the need to re-visit the selection criteria.
The seeming non-performance of the south platforms may be due to the relatively higher number of the NGOs north that are able to support them compared to the south where there are really limited number of NGOs.

We need to think that the vulnerability of the northern sector may be a factor. As such most of the programmes and projects addressing poverty, food security, and environmental degradation are taken to the north.
The planting/rearing for food and jobs is an opportunity for the platforms in the southern sector.

Other considerations

The aspect of the media in the case of Senegal: they selected a press representative on the agriculture sector to represent the media within the platform. This media outlet is interested to get innovative and exciting information so every week this media representative was reporting on what the platform is doing. It is important to identify some

missions from each component of the platform and use them as champion to link up with major and large initiatives, be it projects or programmes.
Senegal developed a few communication products that are relevant to the country's agriculture sector with regards to climate change and successfully promoted them with some donors. For instance, the WAAPP programme was happy with the process of district platforms formation and supported them with US$200,000.00. Currently, Senegal has 17 district level platforms. These are linked to the decentralization process as such some district platforms are now developing their own proposals for funding. Senegal has national level Green Climate Fund and so some of the platforms have developed and submitted a 10 million dollar proposal. Ghana needs to document the platform experiences in an in-depth manner and use to promote the platform and make it more visible.

The sub-national platforms present were very grateful for the issues and the way forward. They indicated that all the emerging issues were to their betterment and for us to be active to contribute their quota. We are very grateful especially for the knowledge and skill enhancement towards winning proposals development. The approach of blending the local and the national level platforms and effectively collaborating with MoFA and the MRLGD together will make things work and make platforms more visible everywhere. So we are very grateful and by this we know we will always succeed.

Closing remarks

Remarks by Paul Murage

He mentioned that plans were underway at IMTR for fine tuning the CBA for CIS training modules, pilot in other sectors and later upscale to English speaking countries in Africa. Other courses e.g. GIS for Meteorologists were in the pipeline.

Remarks by Melody Braun

She appreciated the team for keeping time during the training sessions and the facilitators for enduring the long hours during the online training in November and December 2024. She added that the training provided them with an opportunity to work with scientists more so meteorologists not only at the national level but also at the county level.

Remarks by Edward Muriuki;

The IMTR Director appreciated AICCRA for the support from pre-training to the in-person training; the external facilitators Melody and Paulina for their time and delivery of the content; the CDMS as well for their dedication and commitment to work despite the harsh conditions that they sometimes face in their work. The participants having been introduced to the fundamentals of CBA were requested to spearhead the implementation of the same in their respective counties and have the chair of the CDMS caucus apprise the management on the same. He pointed out that he was glad that the expectations of the CDMS for the training were met. He further pointed out that the training was as a result

of a simple conversation that led to further discussions and finally collaboration with AICCRA. He concluded by asserting that several organizations are ready and willing to support KMD on CIS and CDMS were advised to take advantage of this. He reiterated that IMTR was aware of the gap in writing winning proposals since most CDMS were not good in proposal writing. That plans were underway to have some CDMS trained on this, and a bid had been sent out.

CONCLUSION AND RECOMMENDATIONS

The session draws conclusion of the workshop proceedings and also makes some useful suggestions and recommendations based on the discussion and the issues that came up during the event.

Conclusion

In the face of increasing budget limitations on the implementation of CIS, it appears critical to develop the capacity of CIS value chain actors and stakeholders to evaluate and communicate about the costs and benefits of CIS interventions. The training started with an introduction of the traditional application of CBA to measure monetary benefits on CIS, which triggered interesting discussions on how to assess the profitability of the different choices that are made in different sectors based on seasonal forecasts. Building on this foundation, the participants were then invited to think about the desired non-monetary benefits that can be brought by CIS, and how to account for them from the design to the evaluation of their CIS interventions. This led to in-depth discussions on county-specific gender norms, gender inequality, barriers for women, youth and other marginalized groups to access CIS. Non-monetary benefits discussed includes; reduced workloads, reduced domestic violence, improved gender empowerment, food security etc. A toolkit for data collection on CIS was presented and participants discussed how it could be customized to their counties due to diverse CIS needs and local factors.

Because participants were meteorologists, with limited experience or exposure to social science approaches, most of the concepts discussed were entirely new and were received with a lot of interest. Participants expressed interest in extracting and adapting modules from the data collection toolkit, shared their eagerness for opportunities for follow-up trainings, and some even requested access to the original online training materials. The training highlights the need for follow-up discussions and trainings to further improve data collection tools, and the capacity to conduct evaluations that capture both monetary and non-monetary benefits of CIS.

Recommendations

1. Keep strengthening the GESI aspect in CDMS work. Possibly develop a theory of change for their counties to ensure those aspects are being integrated.
2. Analyse the results of projects with a critical perspective even when it is not possible to fully conduct a randomized control trial. Keep in mind there are factors that may influence the results obtained which need to be considered.
3. Even if a full CBA is not possible to conduct by CDMS or other entities, the toolkit is a powerful tool to collect relevant data for their work. However, it should:
    a. Be tailored to the needs of each county.

   b. Determine the proper ways for collecting the information and possible collaborations to achieve that.

4. Develop a user-friendly methods to collect the data.
5. Collaborate with other institutions and stakeholders to collect the data needed for conducting a CBA.

Image 2: Discussions during the training sessions.

Image 3: Group photo of all participants and trainers.

APPENDICES

Appendix 1. Workshop agenda

Tuesday 11th March 2025: Arrival of Participants		
Day 1 Wednesday 12th March 2025: Commencement of Workshop Deliberations		
Official Opening and Workshop Objectives		
SESSION I: CHAIR: Zacharia Mwai RAPPORTEUR: Pascaline Chemaiyo		
8:30 -9:00 am	Registration	Susan, Paulina
9:00 -9:20 am	Introductions	Isaac Kangila
9:20 - 9:25 am	Welcoming Remarks	Nakuru CDMS Julius Kilemba
9:25 - 9:35 am	Expectations from CDMS	Paul Murage
9:35 – 9:45 am	Workshop Objectives	Paul Murage
9:45 – 9:50 am	Remarks	Edward Muriuki, Principal IMTR
9:50 – 10:00 am	Remarks	Berber Kramer, AICCRA
10:00- 10:15 am	Official Opening	Dr. David Gikungu, Director KMD
10:15- 11:00 am	**GROUP PHOTO/HEALTH BREAK**	All
SESSION II: CHAIR: Edward Muriuki RAPPORTEUR: Zacharia Mwai		
11:00 – 11:15 am	Role of Decentralized Meteorological Services	CDMS Representative
11:15 – 11:25 pm	General introduction	Isaac Kangila
11:25 – 12:25 pm	Fundamentals of Cost-Benefit Analysis	Dr. Margaret Kimani
12:25 – 1:00 pm	Plenary: Q&A	Edward Muriuki
1:00 – 2:00 pm	**LUNCH BREAK**	**ALL**

2:00 – 2:45 pm	Risk aversion	Paulina Smith Ruiz
2:45 – 3:45 pm	Application of CBA to Climate Information Services (CIS): agriculture productivity, disaster preparedness, and climate adaptation	Zacharia Mwai
3:45 – 4:00 pm	Limited access to CIS by women, youth and marginalized groups	Paul Murage, Mélody Braun
END OF DAY 1		
Day 2 Thursday 13th March 2025: Application of CBA to CIS		
SESSION I: CHAIR: Edward Muriuki RAPPORTEUR: Dr. Margaret Kimani		
8:30 – 8:45 am	Recap of previous day presentations	Rapporteurs
8:45 – 9:45 am	Introduction of theory of change and its role in identifying the costs and benefits of resilience programs.	Mélody Braun, Paulina Smith Ruiz
9:45 - 10:30 am	Non-monetary benefits of Climate Information Services (CIS)	Paul, Mélody, Paulina
10:30 - 11:00 AM	**HEALTH BREAK**	**ALL**
11:00 – 11:45 pm	Data collection to conduct CBA for CIS	Paul, Mélody
11:45 – 1:00 pm	**Plenary:** Discussion	Paul, Mélody
1:00 - 2:00 pm	**LUNCH BREAK**	**ALL**
2:00 – 2:30 pm	**Case study**: measuring the impact of CIS on crop yield	Zacharia, Paul
2:30 - 3:30 pm	**Evaluating CIS and CSA interventions**	Paul, Edward
3:30 - 4:00 pm	Discussion	Zacharia, Paul
Day 3 Friday 14th March 2025: Communication, policy advocacy and ways forward.		

SESSION I CHAIR: Dr. Margaret Kimani, RAPPORTEUR: Pascaline Chemaiyo		
8:00 - 8:15 am	Recap of previous day presentations	Rapporteurs
8.15 - 9:00 am	**Group work:** Agricultural Productivity, Disaster Preparedness and Climate Adaptation.	Edward Muriuki
9:00 - 9:45 am	Presentations of group work.	Group works leaders
9:45- 10:30 am	Communication and Policy Advocacy on CIS.	Isaac Kangila
10:30 - 11:00 am	**HEALTH BREAK**	**LL**
11:00 - 11:15 am	**Case study**: Aviation Industry	Miriam Mwende
11:15 - 11:55 am	Interactive session: expectations and implementation by CDMS.	Mélody, Paulina
11:55 - 12:15 pm	Post-training survey.	Mélody, Paulina
12:15 - 12:45 pm	Wrap up: remarks, Q&A	Paul Murage
12:45 – 1:00 pm	Closing session, ways forward.	Edward, Mélody
1:00 - 2:00 pm	**LUNCH BREAK**	**ALL**

Appendix 2. List of participants

No.	NAME OF PARTICIPANT	ROLE	EMAIL
1	Dr. David Gikungu	Director, KMD	dgikungu@gmail.com
2	Edward Muriuki	Director, IMTR	edmuriuki@gmail.com
3	Paul Murage	Trainer	muragepaul@gmail.com
4	Dr. Margaret Kimani	Trainer	wambu992003@yahoo.co.uk
5	Mwai Zacharia	Trainer	mwazack@gmail.com
6	Pascaline Chemaiyo	Trainer	pchemaiyo@gmail.com
7	James Gathura	Trainer	jggathura@gmail.com
8	Isaac Kangila	Trainer	imkangila@gmail.com
9	Julius Kilemba	CDMS	jkilemba@yahoo.com
10	Cornelius Okuku	CDMS	colnex2004@yahoo.co.uk
11	Benjamin Bahati	CDMS	benhati2005@gmail.com
12	Simon Cheptot	CDMS	scheptot@gmail.com
13	Samwel Odhiambo	CDMS	sodhiambo24@gmail.com
14	John Nguyo	CDMS	johnnguyo67@gmail.com
15	Vincent Sakwa	CDMS	sakwa.vincent@gmail.com
16	Getrude Leshamta	CDMS	gleshamta@gmail.com
17	Daniel Mbithi	CDMS	mbithid@gmail.com
18	David Njiru	CDMS	njimdv@gmail.com
19	Stanley Kinyua	CDMS	skinyua85@gmail.com
20	Peter Wambugu	CDMS	pewaann93@gmail.com
21	John Muiruri	CDMS	jtmuiruri@yahoo.com

23	Edward Amoni	CDMS	liboyi@yahoo.com
24	Daniel Murimi	CDMS	dmwanjuhi@gmail.com
25	Wilson Lonyang'ole	CDMS	cdmwestpokot@gmail.com
26	Paul Oloo	CDMS	paul_oloo@yahoo.com
27.	Miriam Mwende	Aviation Expert	mirriamsyk@gmail.com
28.	Susan Wambugu	IMTR Secretariat	suemuhota66@gmail.com

There was a total of 28 people trained, 3 of whom were women and none of whom were youth (35 years of age and younger).

Appendix 3. Keynote address

Director's Speech

12/03/2025

Cost-Benefit Analysis Training for County Directors of Meteorology: Use of Climate Information Services with a Gender Equality and Social Inclusion (GESI) Lens
12th to 14th March 2025
Milele Hotel, Nakuru County

Speech by Dr. David Gikungu,
Director, Kenya Meteorological Department

Berber Kramer; Senior Research Fellow, Markets, Trade, and Institutions Division, International Food Policy Research Institute (IFPRI)

Mr. Edward Muriuki, Principal IMTR

Melody Braun and Paulina Smith, External Trainers

IMTR Trainers

CDMS

Ladies and gentlemen,

It is a great honor to address you today at this pivotal training on Cost-Benefit Analysis of Climate Information Services—with a crucial Gender Equality and Social Inclusion lens. We gather here because the work of the Kenya Meteorological Department, in providing accurate meteorological data, forecasts, and climate-related products, plays an indispensable role in powering various sectors of our economy.

Yet, while our services empower economic stakeholders to make informed decisions, enhance disaster preparedness, and reduce risks, the true economic value of our work is often not immediately visible. Numerous studies have attempted to quantify this value, yet a definitive figure remains elusive. Although the benefits of our meteorological services far exceed the costs, significant data gaps persist regarding how these improvements impact both economic and social outcomes, particularly in Kenya where the precise economic value of Climate Information Services is largely unmeasured.

Recognizing this gap, the World Meteorological Organization and the World Bank have long emphasized the need to assess how weather, climate, and hydrological information contribute to decision-making, risk reduction, and overall socioeconomic development. As we look ahead, our collective goal is to enhance the utility and impact of these

services—ensuring they benefit society and the economy alike. Achieving this will require more effective use of our data, increased awareness, and deeper engagement among decision-makers, end-users, and our national meteorological services.

In Kenya, Climate Information Services are pivotal in sectors such as agriculture, disaster risk management, and resource planning. Yet, challenges remain. The uptake of these services is hindered by the difficulties in demonstrating their economic value and ensuring they serve the diverse needs of all societal groups—including women, youth, and marginalized communities. This reality makes it imperative that we integrate a Gender Equality and Social Inclusion lens into our discussions and strategies for improving CIS utilization.

Our ability to analyze the benefits of climate data is a powerful asset—it forms the foundation for detecting climate change trends and anticipating potential threats, thereby ensuring timely and effective responses. Recognizing this, the IMTR—the training branch of KMD and a WMO Regional Training Center—continually updates its syllabus to keep pace with emerging technological advancements and market demands.

This training is further bolstered by the support of the Accelerating Impact of CGIAR Climate Research for Africa project, funded by the International Development Association of the World Bank. IDA is one of the world's largest providers of development assistance to low-income countries, channeling grants and low-interest loans to drive economic growth, reduce poverty, and build resilience. Notably, between 2017 and 2020, IDA's annual commitments averaged $21 billion, with 61% of those resources allocated to African nations.

Together with our AICCRA partners, we see a unique opportunity to tailor this Cost-Benefit Analysis training for both internal and external stakeholders. While our initial focus is on Kenya, our long-term vision is to expand this program to other English-speaking countries in the region.

I would also like to acknowledge the tireless efforts of our IMTR and KMD resource persons, who actively participated in an online training series from November 11th to December 6th, 2024. Their commitment during these weekly sessions was instrumental in refining our training materials. Over the past two days, alongside our AICCRA partners our resource persons have validated these materials to ensure they meet our high institutional standards and are perfectly attuned to our current challenges.

Today's pilot training on Cost-Benefit Analysis marks a critical step in equipping our County Directors of Meteorology with the skills needed to assess and communicate the economic value of CIS. By embedding GESI principles into our approach, we ensure that our strategies address the needs of marginalized groups and promote equitable access to climate services. With these enhanced skills, our directors in charge of meteorology at

the sub-national level will be better positioned to advocate for inclusive policies that build resilience across all communities.

Looking ahead, this pilot program is expected to support the downscaling and domestication of our training module. After this training, our County Directors will collect additional data to refine the course further and apply this knowledge during the March–May 2025 rainfall season. With successful implementation, we plan to expand the course to other English-speaking nations in the region.

Let us seize this moment to deepen our understanding, enhance our practices, and work together towards a more inclusive, resilient, and sustainable future. Thank you for your dedication and commitment to this critical work.

Mos

Apptic & current cpt

CGIAR | AICCRA
Accelerating Impacts of CGIAR Climate Research for Africa

Appendix 4. Presentations

All presentations can be accessed by clicking here.