



RESEARCH PROGRAM ON
**Climate Change,
Agriculture and
Food Security**



Workshop report: Planning and Review Days on Participatory Integrated Climate Services for Agriculture (PICSA) Implementation, Dodoma and Arusha, Tanzania

February 2016

**Sixbert Mwanga
Juvenal Kisanga
Dannie Dinh**



Planning and Review Days on Participatory Integrated Climate Services for Agriculture (PICSA) Implementation

Dodoma and Arusha, Tanzania, November 2015

Workshop Report

CGIAR Research Program on Climate Change,
Agriculture and Food Security (CCAFS)

Sixbert Mwanga
Juvenal Kisanga
Dannie Dinh

Correct citation:

Mwanga S, Kisanga J, and Dinh D. 2016. Planning and Review Days on Participatory Integrated Climate Services for Agriculture (PICSA) Implementation in Dodoma and Arusha, Tanzania. CCAFS Workshop Report. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark. Available online at: www.ccafs.cgiar.org

CCAFS Workshop Reports aim to disseminate interim climate change, agriculture and food security research and practices and stimulate feedback from the scientific community.

Published by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

CCAFS is a strategic partnership of the CGIAR and the Earth System Science Partnership (ESSP). CGIAR is a global research partnership for a food secure future. The program is supported by the Canadian International Development Agency (CIDA), the Danish International Development Agency (DANIDA), the European Union (EU), and the CGIAR Fund, with technical support from the International Fund for Agricultural Development (IFAD).

Contact:

CCAFS Coordinating Unit - Faculty of Science, Department of Plant and Environmental Sciences, University of Copenhagen, Rolighedsvej 21, DK-1958 Frederiksberg C, Denmark. Tel: +45 35331046; Email: ccaafs@cgiar.org

Creative Commons License



This Workshop Report is licensed under a Creative Commons Attribution – NonCommercial–NoDerivs 3.0 Unported License.

Articles appearing in this publication may be freely quoted and reproduced provided the source is acknowledged. No use of this publication may be made for resale or other commercial purposes.

© 2016 CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Front cover photo by Sixbert Mwanga**DISCLAIMER:**

This Workshop Report has been prepared as an output for Flagship 2: Climate Information Services and Climate-Informed Safety Nets under the CCAFS program and 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 CCAFS, donor agencies, or partners.

All images remain the sole property of their source and may not be used for any purpose without written permission of the source.

Abstract

Since 2014, World Food Programme (WFP), CGIAR Research Program Climate Change Agriculture and Food Security (CCAFS), Tanzania Meteorological Agency (TMA) and University of Reading (UoR) have been hosting trainings of intermediaries and sharing climate information services. In Tanzania the trainings and climate related services have been offered to the three Global Framework for Climate Services (GFCS) pilot districts Kiteto, Longido and Kondoia, targeting the districts extension workers. These trainings and workshops aimed to equip stakeholders, particularly the intermediaries or extension workers, with the capacity to provide farmers with locally relevant climate, crop and livelihood information. As a part of follow up and monitoring, WFP, CCAFS and other partners on GFCS organized a three-day Planning and Review meetings in Dodoma (for Kiteto and Kondoia) and Arusha (for Longido) in November 2015. The purpose of this meeting was to assess the implementation plans since the first training of intermediaries that took place in 2014-2015.

Plenary feedback from group works in Longido, Kondoia and Kiteto districts showed that trainings on Resource Allocation Maps (RAM), seasonal calendar, crop/livestock/livelihood options, participatory budget, and historical climate information, calculating probabilities and risks and seasonal forecast topics were successful, with farmers and pastoralists finding the topics relevant and useful. However, some logistical, cultural, linguistic challenges remain in training pastoralists and farmers, who need time to familiarize and understand the Participatory Integrated Climate Services for Agriculture (PICSA) approach that is very new to their community.

Working groups concluded that although there were some challenges in implementing PICSA, about 935 farmers have been trained in Kondoia district, 1572 in Kiteto district, and 1453 in Longido district. Farmers have begun to make changes to their farming practices and share the information in village meetings and Ward Development Community meetings after receiving PICSA trainings.

Keywords

Planning and Review Workshop; Climate Services; PICSA; Seasonal Forecast; Tanzania

About the authors

Juvenal Kisanga is a National Programme Officer, Vulnerability Analysis and Mapping (VAM) at World Food Programme (WFP) in Dar es Salaam, Tanzania. Contact:

juvenal.kisanga@wfp.org

Sixbert Mwangi was the National Coordinator for GFCS Adaptation Programme for Africa, under CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), based at International Institute of Tropical Agriculture (IITA) in Dar es Salaam, Tanzania. Contact:

s.mwangi@cgiar.org

Dannie Dinh is the Communications Consultant for CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) Flagship on Climate Risk Management, based at the International Research Institute for Climate and Society (IRI) in Palisades, New York, USA. Contact: dannie@iri.columbia.edu

Acknowledgements

These Planning and Review workshops for intermediaries were co-organized and co-facilitated by CCAFS and WFP under financial support of GFCS Adaptation Programme in Africa. The GFCS Adaptation Programme in Africa is funded by a grant from the Government of Norway, and is implemented with technical support from WMO. The program aims to increase the resilience of people most vulnerable to the impacts of weather and climate-related events through the development, implementation and evaluation of a joint program for the target countries: Tanzania and Malawi. It seeks to build integrated frameworks within countries and will support existing initiatives to improve the provision and use of climate services for food security, nutrition and health, and disaster risk reduction. The authors would like to thank the Norwegian Government for funding GFCS, and WFP and WMO for coordinating and providing technical inputs in the implementation of the program.

The authors would like also to thank Professor Peter Dorward (UoR), Methew Ndaki (TMA), and Neema Urassa (WFP-Tanzania), for their time and support to make this workshop a success. Without your support, strong participation and involvement in the training process, this training workshop would not have been possible. Many thanks to extension workers from Longido, Kiteto and Kondoa districts for their time and sharing their helpful information with the facilitators. This was a true reflection of the spirit of participation, cooperation and partnership encouraged by PICSA approach.

Contents

Introduction.....	8
Review of PICSA Implementation	9
Feedback on PICSA intermediary training.....	10
Changes adopted by farmers	12
Challenges experienced.....	12
Update on the Seasonal Forecast	14
Sustainability of PICSA.....	15
Conclusions.....	16
Appendix 1: Workshop Agenda - Kondo.....	18
Appendix 2: Participants List.....	19
References.....	22

Acronyms

CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
GFCS	Global Framework for Climate Services
PICSA	Participatory Integrated Climate Services for Agriculture
TMA	Tanzania Meteorological Service
WFP	World Food Programme
WMO	World Meteorological Organisation

Introduction

The Climate Services Adaptation Programme in Africa is a three-year project funded by the Government of Norway and coordinated by World Meteorological Organisation (WMO) as part of the Global Framework for Climate Services (GFCS), a multi-agency initiative implemented in Tanzania and Malawi. The program aims to strengthen capacity to develop and use climate services, as well as combine cutting-edge science with traditional knowledge. Since 2014, World Food Programme (WFP), CGIAR Research Program on Climate Change Agriculture and Food Security (CCAFS), Tanzania Meteorological Agency (TMA) and University of Reading (UoR) have been undertaking trainings of intermediaries and sharing climate information services. In Tanzania, the trainings and climate related services have been offered to the three GFCS pilot districts—Kiteto, Longido and Kondoa—targeting the districts extension workers or intermediaries. These trainings and workshops aimed to equip stakeholders, especially intermediaries, with capacity to provide farmers with locally relevant climate, crop and livelihood information.

As a part of follow-up and monitoring, WFP, CCAFS and other GFCS partners organized a three-day Planning and Review meeting in Dodoma (for Kiteto and Kondoa) and Arusha (for Longido) in November 2015. The purpose of this meeting was to assess the implementation plans since the first training of intermediaries in 2014. The partners held discussions with trained intermediaries to capture success stories and challenges, and plan ahead for the coming crop seasons. The meeting was an opportunity for the trained stakeholders to discuss the seasonal forecast as presented by TMA, review the Participatory Integrated Climate Services Approach (PICSA) to date (Appendix 1), review the uptake of climate information and plan for the support to provide to farmers and pastoralists during the season. During the discussion, the organizers were most interested in learning the current level of engagement with farmers and pastoralists and how to best plan for this engagement, identifying the parts of PICSA training manual that need to be revised, and assessing the overall sustainability of PICSA.

Review of PICSA Implementation

Plenary feedback from group works in Longido, Kondoia and Kiteto districts showed that the most successful training topics were: resource allocation maps, seasonal calendar, crop/livestock/livelihood options, participatory budget, historical climate information, calculating probabilities and risks and seasonal forecast. However, despite the success of the training, some challenges remain. For one, the use of symbols is not common among farmers. In addition, not all intermediaries were able to understand the materials adequately to train farmers and pastoralist in all topics. The plenary feedback also showed a consensus that intermediaries should give opportunity to farmers to decide which symbols to use during the trainings. The teamwork teaching and learning approach—whereby 2-3 extension workers form a group to assist each other in training farmers/pastoralists and solve the problem of incompetence in some topics—was successfully implemented in Kondoia and recommended for all districts.

Extension workers reported that farmers and pastoralists from all districts found the training on constructing a seasonal calendar considerably helpful for planning seasonal activities. Farmers and pastoralists also found the resource allocation maps training useful as it showed them how to utilize surrounding resources to increase their livelihood options (Fig 1). A village extension officer from Longido district commented that seasonal calendar and resource allocation maps helped pastoralists—who frequently shift from one area to another—understand the available livelihood options and resources, as well as how they can be affected or influenced by weather and climate at different time within a year. A ward extension officer also from Longido district shared, “It was interesting to my group to learn seasonal calendar and participatory budget as they give room to farmers to plan ahead and prepare, by identifying what activities, money and resources are needed and when.”

Training on historical climate information was found useful as it showed farmers and pastoralists how rainfall and temperature change over time and what precautions can be taken according to the trends. Trainings on seasonal forecast, participatory budget and crop, livestock and livelihood options enabled farmers to select the best options and cost effective depending on seasonal forecast. According to a Kiteto ward extension worker, if timely received, seasonal and 10-day forecasts from TMA help farmers understand their local

seasonal forecast and its implications for their farming plans. Farmers in Kiteto reported that the use of short term varieties and the right seeds according to the seasonal calendar helped them reduce risks.



Figure 1. Livestock calendar. Photo by Sixbert Mwangi.

Feedback on PICSA intermediary training

Intermediaries were given an opportunity to identify and share main challenges they had experienced during the PICSA implementation and indicate whether there was any topics that needed clarifications from facilitators. A total of about 107 intermediaries (37 females and 70 males) have been trained in three districts. Almost three quarters of all trained intermediaries from Kondoa and Kiteto districts ranked the topic on calculating probabilities and risks as the most challenging for farmers and pastoralists. In both Kondoa and Kiteto districts, training on constructing a participatory budget and on historical climate information were ranked as the second and third, respectively, most challenging for farmers and pastoralists. Seasonal forecast, communicating and interpreting the forecasts, and resource allocation maps were considered challenging topics to some degree in Kiteto group, while in Kondoa farmers and pastoralist reportedly understood these topics without difficulty.

Although few intermediaries from Kiteto and Kondoa mentioned seasonal calendar, historical climate information, developing resource allocation maps and selecting livelihood options as challenging topics for farmers and pastoralists, these topics were ranked as the most challenging and needed additional time for recap by half of trained intermediaries from

Longido. Unlike in Kiteto and Kondoia where the majority are farmers who have many livelihoods options, the majority of households (85%) in Longido are pastoralists who practice transhumance (Coulibaly et al. 2015).

Discussion with trained intermediaries revealed that there are several factors contributing to the farmers' ability follow the training, including the level of education among farmers and pastoralists (those who had primary education understood more quickly than those who had no primary education), age (those aged between 30-40 and 41-50 years understood more quickly than those who are above 70s years old), and gender (men understood more quickly than women). As influenced by culture, women are generally less able to act on the advice and trainings they received because of their lower ability to control production resources. This finding concurs with the baseline study assertion that in Kiteto and Longido most women have no or only primary school education. Scientific probabilistic forecast and the uncertainty concept may not be adequately comprehended by women, and as a result women do not rely on this information in their decision-making (Coulibaly et al. 2015).

Despite the challenges intermediaries faced in implementing PICSA topics, both farmers and pastoralists were able to understand and intermediaries did not need further clarifications on any topic from the facilitators. After discussion with individual intermediaries, working groups were formed to discuss what went well, what farmers and pastoralists found as most useful and why, as well as any examples of changes farmers have made because of PICSA (Fig 2).



Figure 2. Intermediaries from Longido working in groups. Photo by Sixbert Mwanga.

Changes adopted by farmers

Working groups from Kiteto and Longido districts reported that after receiving PICSA trainings farmers have adopted the habits of timely preparation of land, application of manure and using seasonal calendar. In Kiteto there has been an increase of agricultural production. In Longido district, pastoralists began to keep cattle for business rather than for prestige as they have done historically. As a result, pastoralists are now able to purchase cattle feeds during the dry season. On the other hand, Masai pastoralists who have traditionally favored keeping cattle over other options have been opting to reduce the number of cattle by selling them to do other activities.

Unlike previous years, farmers are now able to access and rely on seasonal forecast information to grow crops accordingly. The baseline study conducted in 2014 found out that farmers and pastoralists were relying mostly on their indigenous knowledge and personal experience to inform their crop and livestock decision-making. The scientific climate information received by farmers and pastoralists—typically forecasts on rainfall onset and for extreme events—was often perceived as unreliable, especially if the weather events do not unfold as predicted, and thus is not among common sources of information factored into the farmers and pastoralists' agricultural decision making (Coulibaly et al 2015). One of the important achievements of this project is changing the minds of farmers and pastoralists to trust scientific forecasting given by TMA.

Challenges experienced

In regard to challenges experienced by intermediaries during the implementation of PICSA, presentations from working groups reported that the challenging topics like calculating probabilities and risks, use of picture and symbols, and seasonal forecast information came late and were not accessed by the majority of farmers. In addition, not all intermediaries were able to understand well and train farmers and pastoralist in all topics. Some farmers and pastoralists reportedly challenged the PICSA approach and the focus on historical climate information as they were more interested in future rainfall trends and how it will affect their activities. However, it was reported that PICSA topics overall were useful and relevant to farmers and pastoralists.

It was discussed and agreed in the plenary session that different approaches should be used on some topics presented to simplify understanding among farmers. On calculating probabilities and risks, in addition to teaching farmers to calculate these probabilities and risks, intermediaries should focus on advising farmers how to use these calculations in decision-making. On the participatory budget topic, it was agreed that intermediaries should use commonly used symbols, and farmers should be able to suggest symbols more accessible to them. Overall, intermediaries suggested that the program encourage participatory learning approaches, such as teamwork teaching and learning.

There were a number of logistical challenges experienced by intermediaries. One issue was the lack of stipend budget for food and water for the farmers who had travelled long distances to the training stations, especially women who had come with young children. Since other international organizations that have worked with these communities typically give farmers a stipend, some extension workers had to spend time convincing farmers on the importance of the PICSA trainings. Poor timing can also greatly impact training attendance and continuity of trainings. In Kondoa, the training was implemented during the month of general election, resulting in farmers not being able to attend the training due to conflicts with events related to election campaigns. In Longido, many farmers could not attend the trainings as they were engaged in farming activities, while pastoralists often had to shift location to look for pasture and water away from their home villages.

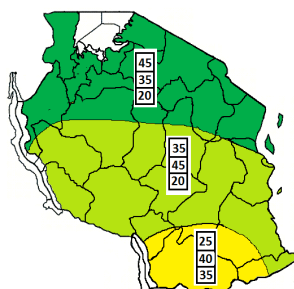
Cultural norms and language barriers also presented some constraints to training effort. The Masai culture, which favors keeping cattle over other options, also presented a great challenge during the identification and ranking livelihood options training. Extension workers in Longido reported that, according to the Masai culture, women cannot speak or make any contribution in the presence of men, making it difficult to assess whether they have understood the materials or need any clarifications. Furthermore, although intermediaries reported understanding on all terminologies used in PICSA manual, terminologies used in forecast by meteorologists are still not accessible. It was discussed and agreed upon that PICSA manual should be translated into Kiswahili, a language well understood by the majority of farmers. A translated summary of participatory budget, crop probabilities and seasonal forecast should also be shared with farmers after each training.

In Kiteto, some challenges include farmers' inability to buy quality seeds or unknowingly buy uncertified seeds that resembled certified ones, causing them losses. Another challenge is associated with pastoralists' resistance to reducing the large quantity of their cattle herd that often causes unplanned movement.

Update on the Seasonal Forecast

The TMA gave presentations on downscaled seasonal rainfall outlook for the period of October – December, 2015 as it was forecasted in September, 2015 (Fig 3). However, short-term weather systems thereafter negatively affected the vuli (rain shadow) seasonal rainfall performance during October, 2015. For example, in Dodoma region, seasonal rainfall was expected to start in the week 2-4 November 2015, but instead started two weeks earlier. In Kondo district, seasonal rainfall started early in the first and second week of November 2015 and but did not last throughout the 4 weeks of November 2015 as forecasted in September 2015. The seasonal rainfall outlook was followed by review for November 1-10, 2015 and outlook for November 11-20, 2015. During November 11-20, 2015, farmers in the bimodal area were advised to continue with routine farm activities whereas farmers in the unimodal areas (that include Kiteto, Kondo and Longido districts) were advised to continue with land preparation and plant where soil moisture is adequate to support seed germination. It was observed that, pasture conditions and water availability for livestock and wildlife were expected to be good in most areas of the districts of Longido, Kiteto and Kondo. In addition, breeders were advised to follow the instructions of extension specialists in their area, particularly the use of water and feed and response to epidemiological risks.

The whole country



Kiteto District

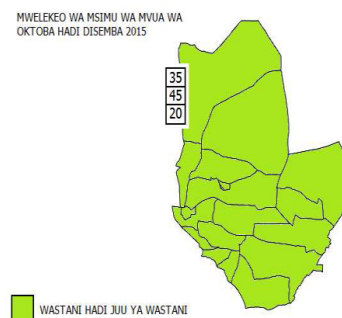


Figure 3. Seasonal forecast for October- December 2015 as issued in September, 2015

After the TMA presentation on seasonal forecast, intermediaries posed a number of issues and questions, many of them concerning the 10-day forecasts not reaching farmers in time or at all, even though farmers' names and phone numbers have already been collected, and concerning unresolved weather station problems in many areas. According to the baseline study report, the farmer and pastoralist respondents, regardless of gender, want the seasonal information to arrive at the beginning of the season or several weeks before the event in order to incorporate it in their crop and herd management (Hampson et al. 2015). Intermediaries suggested that the TMA should determine which local radios are used in each district and work with them to disseminate seasonal forecast information to farmers in a timely manner.

Seasonal forecasts are still general, especially for geographically large districts like Kiteto and Kondoa. Downscaling climate information to be location specific will make the service more relevant and credible for farmers. In Longido district, farmers and pastoralists depend heavily on seasonal forecast from the neighboring country, Kenya, as the Kenya Broadcasting Cooperation's signal is stronger than the Tanzania there. However, the Kenyan seasonal forecasts tend to contradict those disseminated by the TMA, causing confusions.

Intermediaries suggested that the TMA should determine which local radios are used in each district and work with them to disseminate seasonal forecast information to farmers in a timely manner. Intermediaries also recommended that the TMA should work with the Kenyan Meteorological Agency to avoid conflicting forecasts in the Longido region. They also suggested that the TMA produce and distribute brochures to farmers to help familiarize them with terminologies used in TMA forecasts.

Sustainability of PICSA

Intermediaries and district extension officers had an opportunity to discuss how PICSA can be sustained in their localities, and agreed that the TMA should continue sharing seasonal and short term forecast, including downscaled seasonal and ten-day forecast, while all district should commit to use forecast information from TMA in all planning related to agriculture and livestock.

Intermediaries suggested that, for long term program sustainability, there should be an integration of PICSA activities into extension workers' day to day activities, and district

officers should commit to assess them like other normal activities, including setting indicators for Open Performance Review and Appraisal System (OPRAS). Both extension workers and district authority agreed to encourage farmers to use seasonal calendar and promote the use of participatory budget at all levels, from village to district.

Discussions throughout the meeting days pointed to the importance of institutionalizing PICSA into the local planning process. This can be achieved by informing district councils on PICSA as well as by forming ward and village committee to discuss and integrate PICSA into their activity and budget planning, as well as into normal district projects and plans such as District Agricultural Development Plans (DADPs), Participatory Agricultural Development Project (PADEP), Agricultural Sector Development Programme (ASDP), Tanzania Social Action Fund (TASAF) and other new projects initiated. Moreover, intermediaries suggested that PICSA program promote partnership between PICSA intermediaries and other non-governmental and civil society organizations across sectors and projects, as well as promote involvement of local stakeholders in PICSA planning and implementation.

Intermediaries also suggested that the TMA should utilize the available farmer and pastoralist groups and their leaders at village level as a resource. In the Masai community in Longido, for example, trainings should include traditional leaders—especially the Laigwanan (community elders)—in the trainings and use these influential figures to spread information through village assembly. This method was also recommended by the baseline study report as an effective means to deliver information to a large proportion of farmers and livestock keepers in rural communities and do not require ownership or access to communication assets like radio, cell phone, and TV (Coulibaly et al. 2015).

Conclusions

Planning and review meetings have guided both PICSA program managers and intermediaries to focus more on long-term GFCS project sustainability. The findings from these meetings show that PICSA fits well into planning and activities undertaken by extension workers from village to district levels. Efforts and strategies to enhance and integrate PICSA village, ward and district budgets require support from all GFCS project stakeholders.

All intermediaries had an opportunity to plan the next steps based on seasonal and 10-day forecasts, especially on how they are going to engage and work with farmers. For most of the Longido, PICSA implementation will start in January 2016. In Kiteto district, where the seasonal forecast starts in December, the second training was scheduled to start immediately in November. For Kondoa district, intermediaries will continue working with farmers and guide them on PICSA approaches before seasonal rains onset.

Working groups concluded that while there were some challenges in implementing PICSA, about 935 farmers in Kondoa district, 1572 in Kiteto district, and 1453 in Longido district have been trained. It has been reported that all PICSA topics were understood, relevant and useful to farmers and pastoralists. Farmers and pastoralists have begun to adopt the trainings into their practices and have started sharing this information in village meetings and Ward Development Community meetings. Addressing some of the logistical, cultural and language challenges based on feedback from intermediaries will allow PICSA trainings to be more accessible to farmers and pastoralists, and the PICSA approach to be better adopted into local agricultural practices.

Appendix 1: Workshop Agenda - Kondo

Time	Presenter	Topic	Outline
8:00 - 8:30	Juvenal Kisanga	Welcome and logistics	Welcome, registration any logistics
8:30 - 8:40		Program and purpose of P & R	Aims and program for the day
8:40 - 9:00		Recap on PICSA	
9:00 - 9:15	Peter Dorward, Sixbert Mwanga, Juvenal Kisanga	Session 1: Feedback on the trainings of intermediaries rollout.	Receive feedback on the trainings from the intermediaries Each participant identifies their main challenges from the roll out and their expectations for the P and R
9:15 - 10:00		Session 1: Feedback on the trainings of intermediaries rollout	Working in groups - discuss: What went well; What have been the challenges; Examples of good experiences with farmers; Examples of bad experiences with farmers; What did the farmers find most useful and why?
10:00 - 10:30	<i>Coffee/Tea Break</i>		
10:30 - 11:30	Peter Dorward, Sixbert Mwanga, Juvenal Kisanga	Session 1 cont'd: Feedback on the training of intermediaries roll out	Plenary feedback from exercise above (and suggestions on solutions)
11:30 - 12:30		Clarifying PICSA terminology in local language	Working in groups identify key terms and translations in to local language Facilitators rotate round groups to clarify issues / give refreshers on items identified in feedback sessions above
12:30 - 13:30	<i>Lunch</i>		
13:30 - 14:00	Peter Dorward, Sixbert Mwanga, Juvenal Kisanga	Feedback on PICSA on terminology in local language.	Plenary and agree how will use terms
14:00 - 14:45		What is required for this approach to be sustainable?	Group discussion (which organisations in your area could help, what activities could help sustain PICSA, etc.) Facilitators go round groups supporting specific topics / issues
14:45 - 15:00		What is required for this approach to be sustainable	Plenary
15:00 - 15:30	Methew Ndaki	Update on seasonal forecast	Any update on the seasonal forecast from TMA (Including probability distribution graph)
15:30 - 16:00	<i>Coffee/Tea Break</i>		
16:00 - 16:30		Interpretation of updated seasonal forecast	Work in groups to discuss interpretation and communication of forecast to farmers
16:30 - 17:30	Peter Dorward, Sixbert Mwanga, Juvenal Kisanga	Planning next steps	Present next steps. If time plan individually

Appendix 2: Participants List

Name	Region	Office/Title
Kisaka, Joseph H.	Kiteto	Kibaya veterinary officer
Akaro, Selina J.	Kiteto	Bwagamoyo agricultural officer
Pundugu, Balalbala	Kiteto	Kibaya agricultural officer
Tigweza, Lioba G.	Kiteto	Kibaya district livestock and fisheries development officer
Msuya, William E.	Kiteto	Kibaya district livestock and fisheries development officer
Mfundo, Amina Z.	Kiteto	Chapakazi Pan-African Farmers Organisations agricultural officer
Evarist, Alex M.	Kiteto	Engusero agricultural officer
Misana, Amina R.	Kiteto	Songambele administration and finance officer II
Mdillah, Amina R.	Kiteto	Kibaya technician
Bayyo, Hipoliti I.	Kiteto	Makame ward agriculture extension officer, local government veterinary staff I
Fisoo, Stephen E.	Kiteto	Ndaleta village agriculture extension officer, administration and finance officer III
Kingu, Godfrey G.	Kiteto	Njoro ward agriculture extension officer, administration and finance officer II
Msangi, Ramadhani	Kiteto	Sunya ward agriculture extension officer, senior administration and finance officer I
Tajael, Godfrey G.	Kiteto	Kiteto district agriculture and irrigation officer
Mahoo, Fraterine J.	Kiteto	Kiperesa village agriculture extension officer, Pan-African Farmers Organisations
Mmari, Goodluck M.	Kiteto	Engusero ward agriculture extension officer, Pan-African Farmers Organisations
Nyimba, Blandina A.	Kiteto	Kilimo administration and finance officer I
Mayani, Mayani U.	Kiteto	Kilimo senior administration and finance officer
Mwesera, Pascal L.	Kiteto	Kilimo administration and finance officer II
Mafita, Ally S.	Kiteto	Kilimo administration and finance officer II
Bayo, Nicomed S.	Kiteto	Mifugo administration and finance officer II
Godfred, Redcase	Kiteto	Kilimo
Kachumuke, Jakson	Kiteto	Mifugo Pan-African Farmers Organisations
Tarimo, Patrick C.	Kiteto	Kilimo Pan-African Farmers Organisations
Urasa, Neema	Kiteto	Pembejeo
Raphael, Angela	Kiteto	Tanzania Agricultural Partnership coordinator
Mwiga, Christian J.	Kondoa	district livestock and fisheries development officer
Ndosi, Eliabu P.	Kondoa	statistician
Kiseto, Hassan R.	Kondoa	district extension officer
Nkotagu, Neema H.	Kondoa	nutritionist
Ntahega, Mwita C.	Kondoa	extension officer

Mbogela, Lawrence R.	Kondoa	large ruminants specialist
Idama, Yusuph J.	Kondoa	crop officer
Fivawo, Maria B.	Kondoa	district agriculture extension officer
Mtalo, Theresia R.	Kondoa	district agriculture extension officer
Kisuzi, Yusufu C.	Kondoa	district agriculture extension officer
Kamihanda, Cathbert C.	Kondoa	ward agriculture extension officer
Mlongwa, Edward J.	Kondoa	ward agriculture extension officer
Chonjo, Eliawony P.	Kondoa	ward agriculture extension officer
Thabiti, Pili A.	Kondoa	ward agriculture extension officer
Ghambi, Sili K.	Kondoa	ward agriculture extension officer
Wilson, Dwisha S.	Kondoa	ward agriculture extension officer
Lyimo, Goodluck S.	Kondoa	ward agriculture extension officer
Ramadhan, Hamida H.	Kondoa	ward agriculture extension officer
Kilewo, Magreth F.	Kondoa	ward agriculture extension officer
Chisaluni, Pamela S.	Kondoa	ward agriculture extension officer
Masumbuko, Plasidi E.	Kondoa	ward agriculture extension officer
Challema, Raphael E.	Kondoa	ward agriculture extension officer
Bura, Victoria R.	Kondoa	ward agriculture extension officer
Pendaroho, Safari G.	Kondoa	ward agriculture extension officer
Juma, Asia S.	Kondoa	ward agriculture extension officer
Isaka, Athuman I.	Kondoa	ward agriculture extension officer
Mayemba, Emmanuel J.	Kondoa	ward agriculture extension officer
Ngowi, Godwin M.	Kondoa	ward agriculture extension officer
Baraguyu, Matei M.	Kondoa	village agriculture extension officer
Mumwi, Ramadhani S.	Kondoa	village agriculture extension officer
Bitta, Stella J.	Kondoa	village agriculture extension officer
Msafiri, Bunana D.	Kondoa	village agriculture extension officer
Nyigo, Melckzedeck A.	Kondoa	village agriculture extension officer
Mashashi, Godfrey A.	Kondoa	village agriculture extension officer
Kimario, Novaty H.	Kondoa	village agriculture extension officer
Safari, Paul	Kondoa	agricultural machinery officer
Kaangwa, Shadidu A.	Kondoa	village agriculture extension officer
Mtupa, Sharifa H.	Kondoa	village agriculture extension officer
Sule, Peter X.	Kondoa	ward agriculture extension officer
Hassan, Amina	Kondoa	rainfall data recorder
Mringo, Estomih	Kondoa	agro-dealer
Yahaya, Haji	Kondoa	Maendeleo BRAC
Kasiga, Edward	Longido	district agriculture extension officer
Tarmo, Paulo	Longido	agricultural officer
Ringo, Clemence	Longido	economist
Ngemela, Justine	Longido	non-governmental organization representative
Msangi, Ally	Longido	economist and climate change focal point

Saidi, Jamali	Longido	agriculture officer
Dagharo, Nestory	Longido	district livestock and fishing officer
Kagoma, Safan	Longido	district veterinarian officer
Mlaponi, Christopher	Longido	Tingatinga ward agriculture extension officer
Lyimo, Adam M.	Longido	Kamwanga ward agriculture extension officer
Kareto, Mathew J.	Longido	Irikaswa village agriculture extension officer
Mtae, Antony Y.	Longido	Lerangwa Village agriculture extension officer
Abdallah, Michael	Longido	Kitendeni village agriculture extension officer
Happygod, Simon	Longido	Olmolog livestock officer
Yasini, Fulla	Longido	agricultural officer
Lazier, Edward W.	Longido	Namanga livestock officer
Tarimo, Aniseta J.	Longido	Kamwanga livestock officer
Amatay, Boniface	Longido	Longido livestock officer
Laizer, Edda Z.	Longido	Kimokouwa livestock officer
Gashomba, Sofia	Longido	Longido agricultural officer
Kishe, Mary	Longido	Eworendeke agricultural officer
Lukumay, Alfred	Longido	Oltepesi livestock officer
Nyangasi, Saidi J.	Longido	Engarenaibor livestock officer
Msangi, Thomas	Longido	Gelai Lumbwa livestock officer
Mollet, Samson M.	Longido	Gelai Meirugoi livestock officer
Kavishe, Wilson B.	Longido	Orbomba livestock officer
Laizer, Loth L.	Longido	Mundarara livestock officer
Arra, Kastuli	Longido	Ketumbeine livestock officer
Lazier, William	Longido	Matale livestock officer
Sumaye, Laurent B.	Longido	Elangatadapash agricultural officer
Mlaponi, Mbaraka M.	Longido	Ilorienito agricultural officer
Kojo, Michael	Longido	Mundarara agricultural officer
Kisamo, Linda	Longido	Mundarara agricultural officer
Stamagunda, Neema	Longido	Mairowa agricultural officer
Massawe, Flora S.	Longido	Ngoswak agricultural officer
Kimaro, Mary	Longido	Elerai agricultural field officer

References

Coulibaly YJ, Kundhlande G, Amosi N, Tall A, Kaur H, Hansen J. 2015. What climate services do farmers and pastoralists need in Tanzania? Baseline study for the GFCS Adaptation Program in Africa. CCAFS Working Paper no. 110. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Available online at: www.ccafs.cgiar.org

Hampson KJ, Chapota R, Emmanuel J, Tall A, Huggins-Rao S, Leclair M, Perkins K, Kaur H, Hansen J. 2015. Delivering climate services for farmers and pastoralists through interactive radio: scoping report for the GFCS Adaptation Programme in Africa. CCAFS Working Paper no. 111. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Available online at: www.ccafs.cgiar.org