



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



Workshop report:
Participatory Integrated Climate Services
for Agriculture (PICSA) Intermediary
Training, Zomba District, Malawi



July 2016

John Gathenya



Participatory Integrated Climate Services for Agriculture (PICSA) Intermediary Training

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Workshop Report

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

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Abstract

A Participatory Integrated Climate Services for Agriculture (PICSA) intermediary training workshop was held in Zomba District, Malawi in July 2016. The workshop aimed to train intermediaries to understand the PICSA approach so they can train other intermediaries. The intermediaries are expected to integrate the PICSA approach in their normal work routines so that PICSA can be scaled out, with minimal resources. Once trained, farmers would be able to use participatory planning tools to make informed decisions based on accurate, location-specific, climate and weather information and locally relevant crop, livestock and livelihood options.

Keywords

Climate information service; Training; Global Framework for Climate Services; Participatory Integrated Climate Services for Agriculture; Climate variability; Adaptation.

About the author

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Acronyms

CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CGIAR	Consultative Group for International Agricultural Research
CICERO	Centre for International Climate and Environmental Research – Oslo
CMI	Chr. Michelsen Institute
DAES	Ministry of Agriculture, Dept of Research, Dept of Agric. Extension
DAICO	District Agriculture, Irrigation and Cooperatives Officer
DCCMS	Malawi Department of Climate Change & Meteorological Services
DoDMA	Malawi Department of Disaster Management Affairs
EPA	Extension planning areas
GFCS-APA	Global Framework for Climate Services Adaptation Programme for Africa
IFRC	International Federation of Red Cross and Red Crescent Societies
LUANAR	Lilongwe University of Agriculture and Natural Resources
MoAIWD	Ministry of Agriculture, Irrigation and Water Development
MRCS	Malawi Red Cross Society
PICSA	Participatory Integrated Climate Services for Agriculture
RAM	Resource Allocation Model
TMA	Tanzania Meteorological Agency
VAEO	Village Agricultural Extension Officer
UoR	University of Reading, United Kingdom
WAEO	Ward Agricultural Extension Officer

WFP	World Food Programme
WHO	World Health Organization
WMO	World Meteorology Organization
WVI	World Vision International

Introduction

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), is a strategic ten-year partnership emerging from new collaboration between CGIAR and Future Earth aimed at overcoming the additional threats posed by a changing climate to achieving food security, enhancing livelihoods and improving environmental management in the developing world. CCAFS brings together strategic research in agricultural science, development research, climate science, and Earth System science, to identify and address the most important interactions, synergies and trade-offs between climate change, agriculture and food security. CCAFS is structured around four closely inter-linked global research themes: Adaptation to Progressive Climate Change; Adaptation through Managing Climate Risk; Pro-poor Climate Change Mitigation; and Integration for Decision Making.

Under the auspices of the Norway-funded Global Framework for Climate Services (GFCS) Adaptation Programme in Africa, CCAFS, in collaboration with WFP Malawi and Malawi Government's Department for Climate Change and Meteorological Services (DCCMS) held a Training of Trainers workshop for intermediaries involved in delivering climate services to smallholder farmers in Zomba District. The training in Participatory Integrated Climate Services for Agriculture (PICSA) was offered by the Walker Institute of the University of Reading, UK.

The training in Zomba, Malawi was offered in two blocks of one week each from July 18th to 29th 2016.

Aims of the workshop

The aim of the workshop was to train the intermediaries to understand the PICSA approach and to develop their skills so they can train other intermediaries. The trained intermediaries would then train farmers that they work with. The intermediaries are expected to integrate the PICSA approach in their normal work routines so that PICSA can be implemented with minimal additional resources and hence be scaled out effectively. Once trained, the farmers would be able to use participatory planning

tools to make informed decisions based on accurate, location-specific, climate and weather information and locally relevant crop, livestock and livelihood options. More specifically, the training aimed to introduce core components of PICSA, adapt PICSA for the climate and agriculture conditions in the Zomba District, develop skills of the field staff in training others in PICSA, and help the field staff make plans to implement PICSA starting from the 2016-2017 cropping season.

Programme and Content

Each group was trained for five days. The programme was as follows:

- Day 1 – Introduction to PICSA, historical climate information and probabilities
- Day 2 – What are the farmers’ options? What is the seasonal climate forecast and how can it be used?
- Day 3 – Short-term forecasts and warnings, tips for facilitation and preparation for field day
- Day 4 – Field day to put into practice the tools learnt
- Day 5 – Reflection and planning for the implementation of PICSA in the areas of operation

The detailed programme is given in Appendix 1. The training covered each of the PICSA steps that field staff undertake with farmers. Sessions included explanation and background followed by hands-on practice of each step, feedback and reflection. Day four was spent at one of the Extension Planning Areas (EPA) where participants worked with groups of farmers to try out and gain experience in use of the methods they had been trained in. On the final day, participants identified and developed plans for key follow-up activities and to prepare for implementation.

Participants and facilitators

A total of 80 people attended the training (29% female and 71% male). The participants were from organizations working in climate/weather, agricultural research and extension and rural development and disaster management. The following organizations were represented either as participants or facilitators:

- Ministry of Agriculture, Irrigation and Water Development (MoAIWD)
- Ministry of Agriculture, Dept of Research, Dept of Agric. Extension Services (DAES)
- World Vision International (WVI)
- Malawi Red Cross Society (MRCS)
- Malawi Department of Disaster Management Affairs (DoDMA)
- Lilongwe University of Agriculture and Natural Resources (LUANAR)
- Malawi Department of Climate Change & Meteorological Services (DCCMS)
- Climate Change, Agriculture and Food Security Programme of CGIAR (CCAFS)
- World Food Programme (WFP)
- University of Reading, UK (UoR)

Mr. Jolamu Nkhokwe, Director of DCCMS - Blantyre, officially opened week one, while Dr. Jerome Chim'gonda-Nkhoma, Chief Agriculture Communication Officer, Lilongwe, opened week two. Dr Chim'gonda-Nkhoma participated in the entire workshop. On the fourth day of the training, the trainees worked with 305 farmers (72% female and 28% male). A summary of the participants is shown in Table 1 and 2, and a full list for the first and second week is provided in Appendix 2.

#	Organisation / Govt Department	# of participants		Role
		Male	Female	
1	MoAIWD	24	7	Extension workers
2	WVI	1	0	Field staff
3	Malawi Red Cross	1	3	Volunteers
4	Agriculture Research	1	0	Researcher
5	DAES	0	1	District Extension staff
6	Department of Planning in MoAIWD	1	0	Extension workers
	Total	28	11	
7	DCCMS	3	1	Co-facilitators
8	CCAFS	2	0	Co-facilitators
9	UoR	1	0	Main facilitator
10	WFP	1	0	Co-facilitator
	Total	7	1	

Table 1: Summary of the participants of the first training, July 18-22, 2016

#	Organization / Govt Department	# of participants		Role
		Male	Female	
1	MoAIWD	21	10	Extension workers
2	WVI	1	0	Field staff
3	Malawi Red Cross	4	1	Volunteers
4	Agriculture Research	1	0	Researcher
5	DAES	1	0	District Extension staff
6	DoDMA	1	0	Disaster Management staff
7	LUANAR	0	1	University lecturer
	Total	29	12	
8	DCCMS	3	1	Co-facilitators
9	CCAFS	2	0	Co-facilitators
10	UoR	1	0	Main facilitator
11	WFP	2	0	Co-facilitator
	Total	8	1	

Table 2: Summary of participants of the second training, July 25-29, 2016

	Male	Female	Total
First PICSA ToT Workshop	47	73	120
Second PICSA ToT Workshop	37	148	185
Total	84	221	305

Table 3: Farmers trained in Thondwe and Chingale EPA during the two PICSA workshops

Adapting PICSA to the climate and agricultural conditions of Zomba District

PICSA relies on an analysis of historical climate data for the locations where it is to be applied. The crops and varieties grown and the days they take to mature is also required. The staff from DCCMS had analyzed the data and prepared the required graphs for the training. They provided graphs for the Zomba Agriculture station, Chanco, Makoka Research Station and Chingale Met station. The crops table like the one shown in Appendix 4 (crops, varieties, days to maturity and crop water requirements) was prepared during the training. Then probability tables for each station were prepared (Appendix 3). These gave:

- The probability of rainfall above various thresholds over the season (e.g. 600, 700, 800mm over the November to April season).
- The probability of the start of season coming on or before a specified date.

- The probability of the length of the season being at least equal to a specified length e.g. 60 days, 90 days and 120 days.

These probability tables were used to conduct an exercise where participants selected crops that best fitted the historical climate of the location. The seasonal rainfall graphs and probabilities of receiving sufficient rainfall for the major crops such as maize showed that shortage of rainfall may not be a major problem. This was in contrast to other drier sites where PICSA was being implemented. In order to clarify if rainfall was a constraint, we included a short session where the participants listed the problems faced in crop production. The three problems that were identified are floods (including flash floods), dry spells and pests and diseases.

We attempted to present new tables that combined three probabilities (season start by a certain date, rainfall higher than a certain amount and season length higher than x days). These tables had been prepared earlier by Francis Torgbor of African Institute for Mathematical Sciences (AIMS) in Ghana. However we felt that we needed to discuss the new tables with a smaller core group before we presented them to the participants. Therefore we maintained the former look of the tables where the three probabilities above are presented separately.

Summary of planned activities following on from the training

The workshop aimed to develop skills and capacity of staff who can train other front line staff and who can help support delivery of the implementation. Each participant prepared a schedule of training activities that they would undertake before and during the coming season. The WFP and CCAFS representatives would be available to support and monitor the roll out. The DCCMS would communicate the seasonal forecast to the trained extension staff during the planning and review meeting scheduled for late September 2016. The intermediaries would also receive detailed training on interpretation of the forecast during the Planning and Review meeting.

MPOKWA II - CROP RELATED PRACTICES MATRIX

Practice	Who does it	Benefits & who benefits	Performance ✓/ok/x Low Med High	Investment MK	Time to start benefits (months)	Risks/Disadvantages
[Hand-drawn icons: squares, rectangles]	[Stick figure]	[Corn cobs]	✓ ✓ x	H MK	6	[Cloud icon]
[Hand-drawn icons: horizontal lines]	[Stick figures]	[Corn cobs]	✓ ✓ x	H MK	6	⊙
[Hand-drawn icons: plant, person]	[Stick figures]	[Corn cobs]	✓ ✓ ✓	H MK	6	⊙
[Hand-drawn icons: person, plant]	[Stick figures]	[Corn cobs]	✓ ✓ ✓	L MK	4	MK
[Hand-drawn icons: person, plant]	[Stick figures]	[Corn cobs]	✓ ✓ x	L MK	4	MK
[Hand-drawn icons: person, plant]	[Stick figures]	[Corn cobs]	✓ ✓ ✓	L MK	12	⊙
[Hand-drawn icons: person, plant]	[Stick figures]	[Corn cobs]	✓ ✓ ✓	L MK	4	⊙

Figure 1. Crop options matrix prepared by the training workshop participants.

Feedback from participants

The participants completed an evaluation of the training, and the results would be analyzed and reported by Mr. Alic Kafasalire.

Observations and reflections on training

The PICSA manual was issued to each participant, which made the training much easier as participants could refer to the manual when they had questions. The participants were livelier in the second week compared to the first week, perhaps due to the presence of Dr Chim'gonda-Nkhoma. The second week of training was mainly conducted by Malawi WFP and local CCAFS staff assisted by DCCMS. They were quite comfortable and could be tasked with future training perhaps with minimum supervision.



Figure 2. Training workshop participants give feedback after an exercise.

Climate variability and climate change was not easily understood; even after looking at the historical climate graphs, the participants had a tendency to revert to their experiences as evidence of climate change. We agreed to include more graphs showing climate change so as to enhance understanding. Some of the complications were due to challenges in translating technical terms into Kichewa. In the future, the exercises for this session should be improved e.g. by making a practical exercise that allows the participants to better understand climate change and variability.

Some of the technical terms used in PICSA would be translated into the local language. A list of these terms would be prepared and issued to the extension staff during the Planning and Review meeting. Some consultation will be made between Ministry of Agriculture and DCCMS so as to come up with standard translations.

Participants showed a very high interest in the presentations by DCCMS and had many questions. This perhaps indicates the interest in climate information that most people have.

Although Red Cross Volunteers were trained, they would have to work with Agricultural Extension Officers in their regions during PICSA implementation as they do not have a direct mandate to work with farmers.

Some of the historical climate graphs indicated some weak trends, e.g. Zomba seasonal totals number of rain days and length of season. Participants wanted DCCMS to explain which years should be used to calculate climate means in a case where there is a trend.

There is need to find a better way of connecting climate probabilities to crop information. The combined probabilities tables by Francis Torgbor (AIMS) would be an answer but all key stakeholders need to understand them well. We agreed to wait and perhaps introduce them during the Planning and Review Meeting.

Field Day

The turn-out of farmers was higher than expected, which caused the breakout groups to be bigger than planned for, especially in the second week. The number of women was much higher than that of men, and men were less active than the women. The participants did a good job of facilitation, and the farmers were all engaged and very interested in the information that was being presented.



Figure 3. Workshop participants train farmers in Chingale EPA.



Figure 4. Farmers learn from the workshop participants how to interpret the historical climate graphs.

The farmers and the participants felt that the field exercise was too long. It took about four hours. It was explained that it was necessary during the learning phase, but it should be broken down into short sections during implementation. There was a concern that some of the extension officers may want to take short cuts during implementation, which prompts the workshop organizers to consider a way to monitor and discourage this approach.

Conclusion and recommendations

The aim of GFCS-APA is to improve access to timely, credible and relevant climate information for decision making by farmers and livestock keepers, and in so doing improve agricultural production and climate resilience. Training of extension workers, other intermediaries, and farmers is a key aspect of the GFCS-APA as it enables them to understand and make use of climate information in decision making and to

participate effectively in production of climate information thus ensuring continuous improvement of climate service products. The climate information is also supposed to be downscaled so that it is relevant to the scale of operation of extension staff.

Several recommendations can be drawn from this training workshop to improve future activities to better achieve the goals of the GFCS-APA. It is important to provide trainers with training materials and list of technical terms in the local language, such as Kichewa in the case of Malawi. PICSA graphs and crop information tables for the GFCS districts, especially in Kichewa language, should be prepared and made readily accessible to the trainers. People are generally very interested in learning about climate information and how to apply it to planning their activities, but are still not clear on climate change and variability. In the future, the exercises for this session should include a practical exercise that helps the participants better understand. There is need to find a better way of connecting climate probabilities to crop information. Continual support should also be provided to extension workers following the intermediary training to reinforce the PICSA approach and provide assistance during the implementation period.

Appendix 1: Intermediary training workshop programme

DAY1	Duration (min)	Topic	Facilitator	Step
8:30	50	Registration	DN	
9:20	10	Introduction and Welcome	DN	
9:30	10	Opening Remarks by DCCMS / Min Agric Representative		
9:40	10	Logistics	DN	
9:50	25	Ice Breaker and selection of representatives	PD	
10:15	15	Course Aims and Outline	PD	
		BREAK AND GROUP PHOTO		
11:00	10	Overview of PICSA		
11:10	50	Climate, Climate Change, Climate Variability	DCCMS	
12:00	60	RAMS (current crops, livestock and livelihoods in Zomba District) - Group Exercise	UoR	A
		LUNCH BREAK		
2:00	30	Presentations and feedback of RAMS		
	45	Agricultural calendars - Exercise		
	30	Presentation and feedback of agricultural calendars		
3:45	45	Historical climate information (source and production)		B
4:30		Review of the day		
		TEA BREAK		
DAY 2				
8:30	20	Recap from Day 1 + Timetable for day 2		
	40	Problems affecting smallholder farming - Exercise		
	30	Feedback on problems affecting smallholder farming		
10:00	45	Historical climate information (explaining graphs)		
		TEA BREAK		
11:15	45	Historical climate information (what has happened to the climate at your place? - Exercise and Feedback		B
12:00	60	Probabilities from historical climate - Exercise on seasonal totals, start of season and length of season		C
		LUNCH		
2:00	40	Selecting suitable crops/varieties based on crop information and climate probabilities - Exercise		D
	20	Crop, livestock and livelihood options - Explanation		D
	50	Crop/Livestock/Livelihood Options Matrix - Exercise		D
		TEA BREAK		
4:20	30	Crop/Livestock/Livelihood Options Matrix - Feedback		D

	10	Farmers as decision makers - options by context: explanation		
DAY 3				
8:30		Logistics		
	10	Recap of Day 2		
	20	Participatory Budgets - Explanation		
	50	Participatory Budgets - Exercise		F
	30	Participatory Budgets - Feedback		F
		LUNCH		
2:00	50	Seasonal forecast processes		H
2:50	50	Short term forecasts, severe weather warnings and updates to SCF		H
3:40	10	Review of PICSA		
3:40	40	Planning for field day		
		TEA BREAK		
5:00	30	Interactive Weather and Climate Adaptation Radio Program (IWCARP)	Farm radio Trust - Moses Kaufa	
DAY 4		Field work at Thondwe EPA & Chingale EPA (week 1 &2)		
7:30		Depart hotel for the site		
9:30		Start of meeting - Introductions, Aims, Forming groups		
10:00		Resource Allocation Models (RAMs)		
11:00		Historical Climate Graphs, Probabilities, Crop Tables		
12:00		Options matrix (crops, livestock, livelihoods)		
1:00		Participatory Budgets		
2:00		Recap and closing remarks		
2:30		Transport back to hotel		
		LATE LUNCH		
4:00		Feedback on the Field Day		
DAY 5				
	60	Reflection, feedback, lessons learnt		
	20	Recap on PICSA and key components		
		TEA BREAK		
	75	Practical support for participants during implementation and to enable learning, reflection, sharing and reporting		
	40	Monitoring and Evaluation		
	30	Course evaluation		
	15	Certificates		
	5	Closing remarks		
	30	Issuing stationery		
		LUNCH and CLOSE		

Appendix 2: List of participants

Week 1: July 18-22, 2016

	Name	Station
1	Francis Mabedi	Agriculture Research Station
2	Snoden Masoatengenji	Likangala
3	William Shaibu	Likangala
4	Lemani Banda	Likangala
5	Emmanuel Fulaye	Likangala
6	Joyce Ndala	Malawi Red Cross
7	Nicolaus Kamwendo	Malawi Red Cross
8	Cathline Namalumbi	Malawi Red Cross
9	Enelesi Chigwere	Malawi Red Cross
10	Sarah Chimalizeni	Masaula
11	Ntopa Ntopa	Masaula
12	Alick B. Nkhata	Masaula
13	Patrick Mwachande	Masaula
14	Chisomo Jafolo	Ministry of Agriculture - HQ
15	Hannah Mawilla	Mpokwa
16	Catherine Nankhwele	Mpokwa
17	Mervis Katundu Gunde	Mpokwa
18	Susan Mkandawire	Mpokwa
19	Grace Mwavuli	Mpokwa
20	Masauko Kakhiwa	Mpokwa
21	Borawell Simbi	Mpokwa
22	Arnold Chikaonda	Mpokwa
23	Chipiliro Moses	Ngwelero
24	Abbeik Bamusi	Ngwelero
25	Prescott Makungwa	Ngwelero
26	Mtendere Tseka Phiri	Ngwelero
27	Sestino Tobias	Ngwelero
28	Elias Moses	Ngwelero
29	Steven Gomonda	Ngwelero
30	Chiletso Dzaoneni	Ngwelero
31	Geofrey Mahame	Ngwelero
32	Mafundo Kachulu	Ngwelero
33	Arthur Gulo	World Vision International
34	Olive Vokhiwa	Zomba District Agriculture Office
35	Mc Kenley Dupu	Zomba District Agriculture Office
36	Dominic Nyirongo	WFP
37	Peter Dorward	University of Reading

38	John Gathenya	CCAFS
39	Alic Kafasalire	CCAFS
40	Cynthia Mahata	DAES - Lilongwe
41	Clement Boyce	DCCMS
42	Charles Vanya	DCCMS
43	Keeness Mang'anda	DCCMS
	Adams Chavula	DCCMS

Week 2: July 25-29, 2016

	Name	Station
1	Lovemore Binali	Chingale
2	James Chingwalu	Chingale
3	Peter Chiumia	Chingale
4	McBilly Sekani Story	Chingale
5	Limbani Thangata	Chingale
6	Elita Kampani	Dzaone
7	Mabvuto Chinsamba	Dzaone
8	Devreen F. Hankey	Dzaone
9	Dr Tasokwa Kakota	LUANAR
10	Godfrey Msyani	Makoka Research Station
11	Alex Njangiya	Malosa
12	Calvin Fukiza	Malosa
13	Thomas Chodzaza	Malosa
14	Alina Mantchichi	Malosa
15	Ida Khatunkako	Malosa
16	Cain Sankhulani	Masaula
17	Joseph Mkwezalamba	Mpokwa
18	Weston Seleman	Mpokwa
19	Abel Sauzika	MRC S
20	Ellen C. Kalaundi	MRCS
21	Lameck Lhapalamula	MRCS
22	Daniel Matawa	Ngwelero
23	Lameck Panganye Mbewe	Nsondole
24	Paul D. Bilayi	Nsondole
25	Paul Nyongani	Nsondole
26	Reuben Mpokonyola	Nsondole
27	Alice N. Mbayari	Thondwe
28	Hannah Tchukambiri	Thondwe
29	Franklin Nyirenda	Thondwe
30	Jean Kantunda	Thondwe
31	Fortunate Mphendwa	Thondwe
32	James Livata	Thondwe

33	Elisha Mkoma	Thondwe
34	Anne Chagoma	Thondwe
35	Christina Najira	Thondwe
36	Stephen khuleya	Zomba
37	Mwandilanga Nicholas Kumasala	Zomba Agric Office
38	Gloria Mkamanga	Zomba Agric Office
39	Dominic Nyirongo	WFP
40	Peter Dorward	University of Reading
41	John Gathenya	CCAFS
42	Alic Kafasalire	CCAFS
43	Cynthia Mahata	DAES - Lilongwe
44	Clement Boyce	DCCMS
45	Charles Vanya	DCCMS
46	Keenness Mang'anda	DCCMS
47	Adams Chavula	DCCMS

Appendix 3: Example of a probability table based on historical rainfall at Zomba Met Station

Rainfall (mm)	Probability of receiving at least this amount of rainfall	Probability of receiving at least this amount of rainfall
600	66/66	10/10
700	64/66	10/10
800	62/66	9/10
900	56/66	8/10
1000	53/66	8/10
1100	47/66	7/10
1200	34/66	5/10

Date of start of season	Probability of season starting on or before this date	Probability of season starting on or before this date
25-Oct	4/65	1/10
05-Nov	6/65	1/10
15-Nov	16/65	2/10
25-Nov	32/65	5/10
05-Dec	50/65	8/10
15-Dec	60/65	9/10
25-Dec	64/65	10/10

Length of season (days)	Probability of season starting on or before this date	Probability of season starting on or before this date
90	65/65	10/10
100	62/65	10/10
110	57/65	9/10
120	53/65	8/10
130	41/65	6/10
140	33/65	5/10

Appendix 4: Example of a Crop Information Table for Zomba District

Crop	Variety	Days to maturity	Crop water requirement (mm)
Maize	Kanyani or OPV ZM 309	90-100	450-500
Maize	DKC 8073 or DKC 8053 or OPV ZM 623	130-140	650-700
Maize	Fumba or Mapasa or MH26 or MH30	120-130	600-650
Maize	OPV ZM 523	110-120	550-600
Maize	Panna 53	130	650
Groundnuts	CG7	130-140	650-700
Groundnuts	Msinjiro	120-130	600-650
Sorghum	Pilira 1	100-115	500-575
Sorghum	Pilira 2	110-120	550-600
Sorghum	Local	130-150	650-750
Soya	Ocepara or Santa Rosa	96	480
Soya	Kudu	100	500
Tobacco	Blanket A1	100	500
Sunflower	PAN7232 or SO323	90-100	450-500
Sunflower	Super 430	100-125	500-625
Sunflower	Super 530	112-130	560-650