Photo: WFP/Déborah Nguyen

Climate Services Needs Assessment Mozambique

An understanding of existing services and dissemination channels and needs for the design of climate services for agriculture for an Integrated Climate Risk Management package.

Alfredo Novela
Pedro Chilambe
Dylan Kukard

WFP
World Food Programme

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Method Overview

To design an appropriate climate service package, it is important to consult farmers as the principle and final users of the information, understanding their current and preferred use of information is necessary part of this assessment.

This aims to understand the available climate information reaching farmers, the type of information they deem important, information lead time, the preferred format and channel of delivery as well as the scale and usage of information. These factors are disaggregated in this assessment based on the assignment of Control and Target Groups as well as Sex of the head of household.

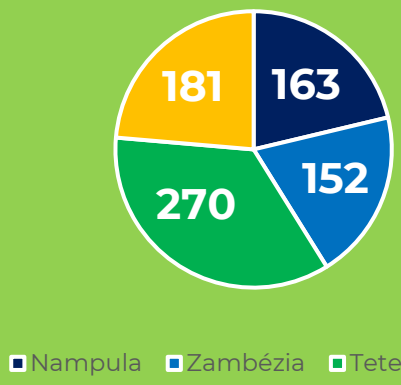
To successfully role out this needs assessment a clear methodology is presented which touches base on the logical framework from which the project will deliver the expected change in the communities which will receive these services, and lays ground for the operational plan which will guide the execution of this exercise.

Following the model used to survey farmer households in the climate needs assessment done in Tanzania and Malawi (Coulibaly, Kundhlande, Tall, Kaur, & Hansen, 2015), this needs assessment which will be done for Mozambique will adapt this model to fit the Mozambican context.

Demographics

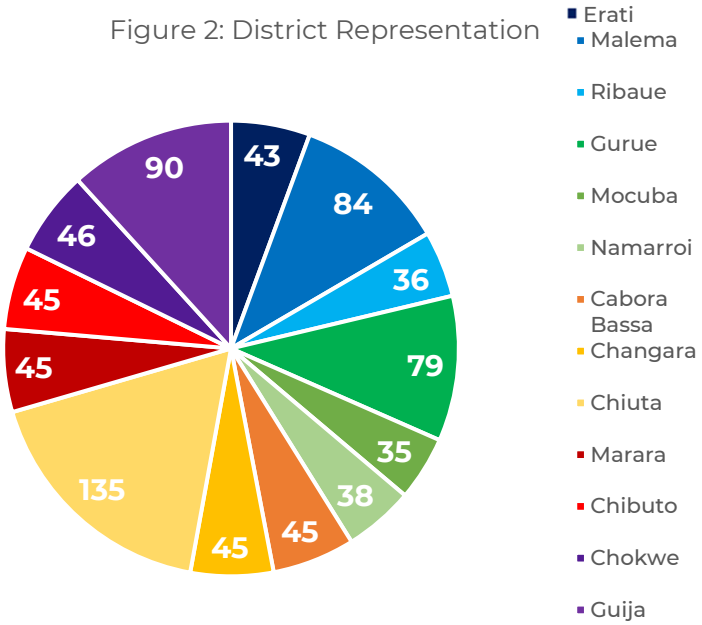
The Climate Needs Assessment Survey was conducted in March 2020, with 766 participants throughout four provinces in Mozambique. As shown in the figure below Participation was evenly divided throughout these provinces, with slightly more participants appearing from Tete (270) than Gaza (181), Nampula (163) and Zambézia (152). The study was made to capture a 95% Statistical significance of global results for the population of 5,179,842 living under the livelihood and agroecological zones considered for this study.

Figure 1: Provincial Representation

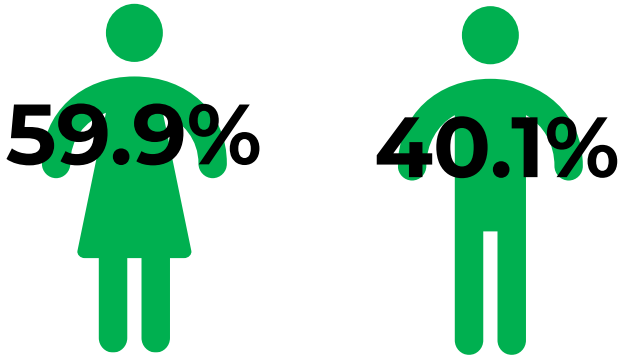


When further sub-classified by district, as seen in the figure below, participants were mostly from the Chiuta district (17.6%), followed by Guija (11.7%) and Malema (10.9%).

Figure 2: District Representation



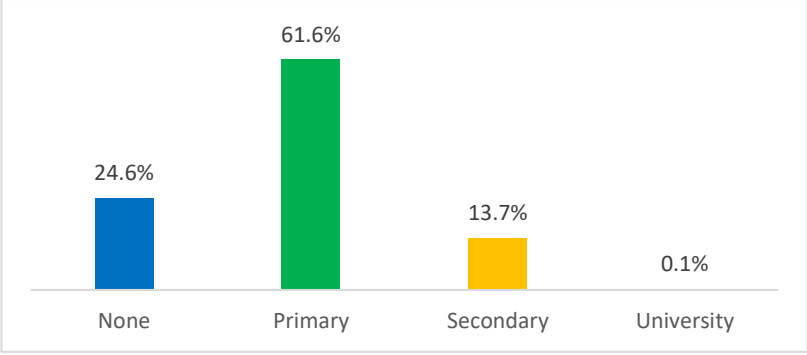
More female headed households appeared in the sample than male headed households as with the graphic below.



A significant majority (92.2%) of the participants were engaged in Farming as their primary livelihood activity. Out of the remaining group: 5.4% are engaged in Informal Work, 1.2% are engaged in Home & Family Care, 1.0% are engaged in Formal Work and 0.3% (or just two participants) are engaged in Livestock Management.

As with Figure 3 below, the majority of the participants highest academic level is primary school (61.6%), followed by None (24.6%), Secondary School (13.7%), University (0.1%) and none attended Technical School.

Figure 3 Highest Academic level



Target Districts

As with the study design, districts were assigned to either Target or Control groups with those assigned to the Target group receiving direct climate services information whilst the Control group will not. This analysis aims to provide insight into the Climate Services Needs of the groups prior to the intervention. The table below outline how districts were assigned. At the time of this assessment It Is Important to state that Changara, Chokwe and Chibuto were already receiving climate services through the R4 programme with Participatory Integrated Climate Services for Agriculture and the dissemination of meteorological and agro-meteorological bulletins., through private and public extension support, so some bias could be attributed to the delivery of this service.

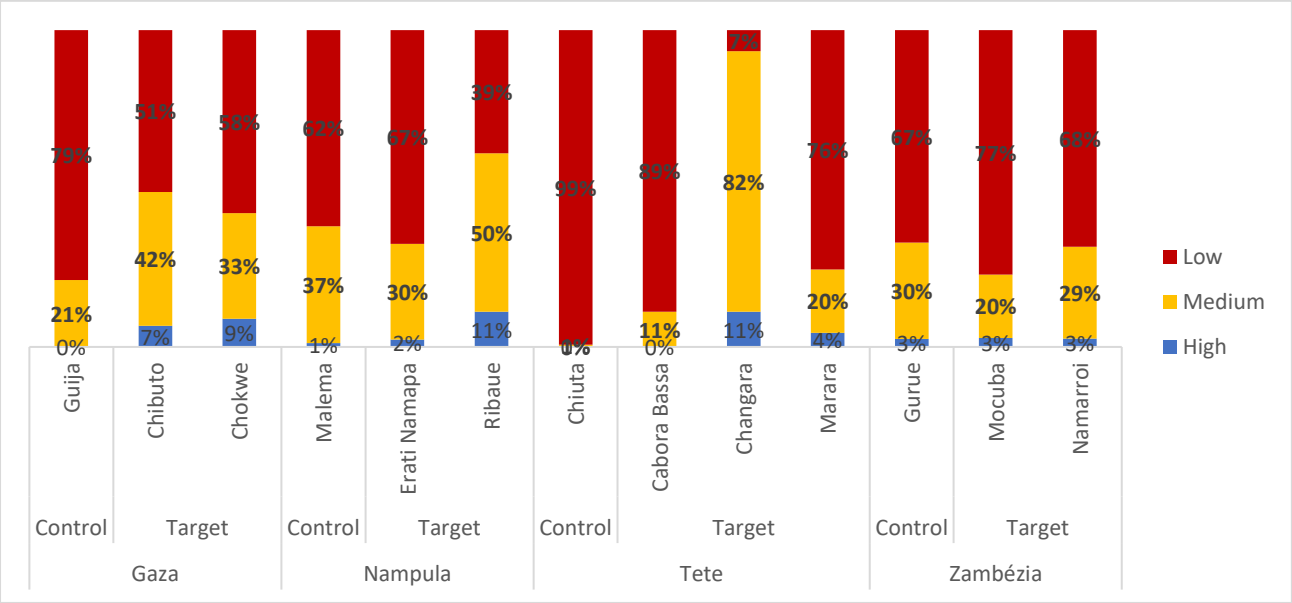
Province	District	Category
Nampula	Erati	Target
	Ribaue	Target
	Malema	Control
Zambezia	Namarroi	Target
	Mocuba	Target
	Gurue	Control
Tete	Cahora bassa	Target
	Marara	Target
	Changara	Target
	Chiuta	Control
Gaza	Chokwe	Target
	Chibuto	Target
	Guija	Control

Table 1: Target Districts

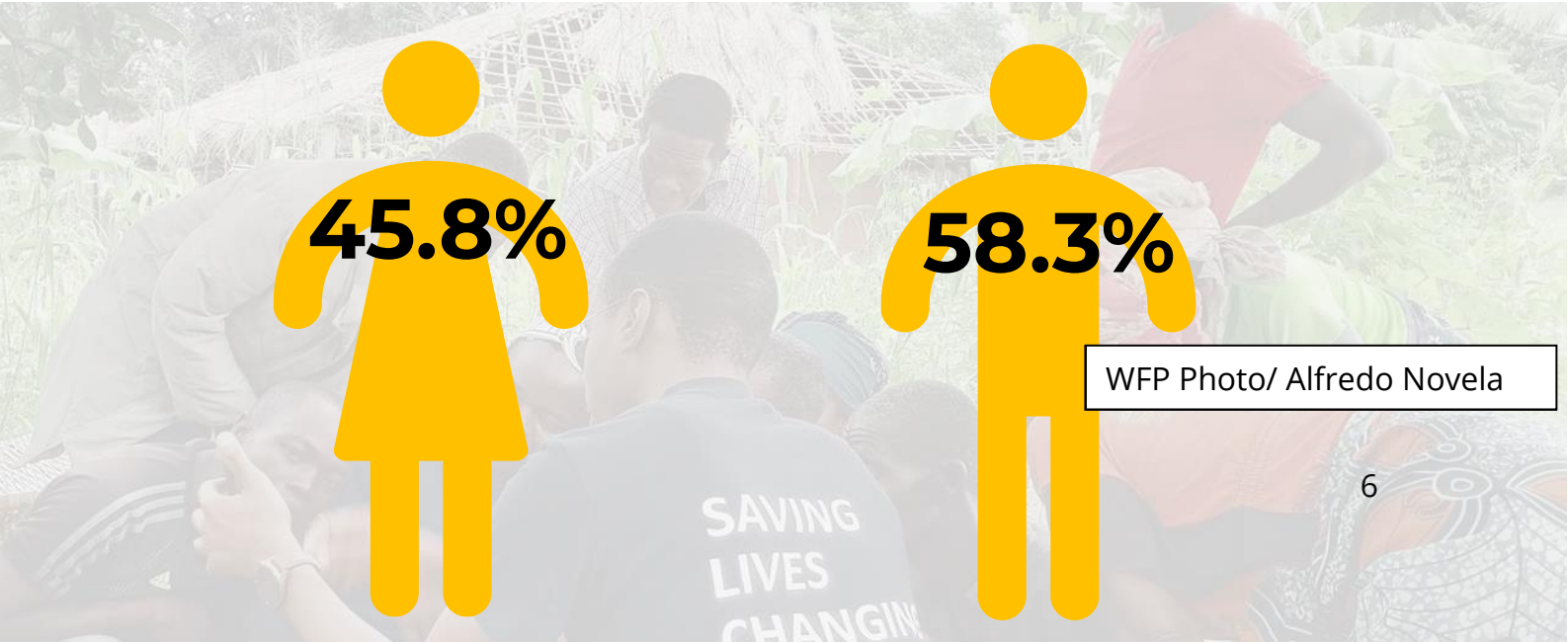
Awareness of Available Climate Information

Awareness of Climate Information for Agriculture differed across the Target and Control groups. As seen in Figure 4, more participants in the Control group were self-described as having Low awareness.

Figure 41Awareness of Available Climate Services



More participants in the Target groups were self-described as having a Medium or High awareness when compared to the Control. Importantly, this trend still shows that 69.5% of the total sample describe their Climate Information Awareness as Low. The Target and Control groups were asymmetrical for Receiving Climate Information. 65.6% of the Target Group received Climate Information whereas only 36.3% of the Control Group currently receive Climate Information. When disaggregated by sex, more Male headed households receive Climate Information than Female headed households seen in the graphic below.

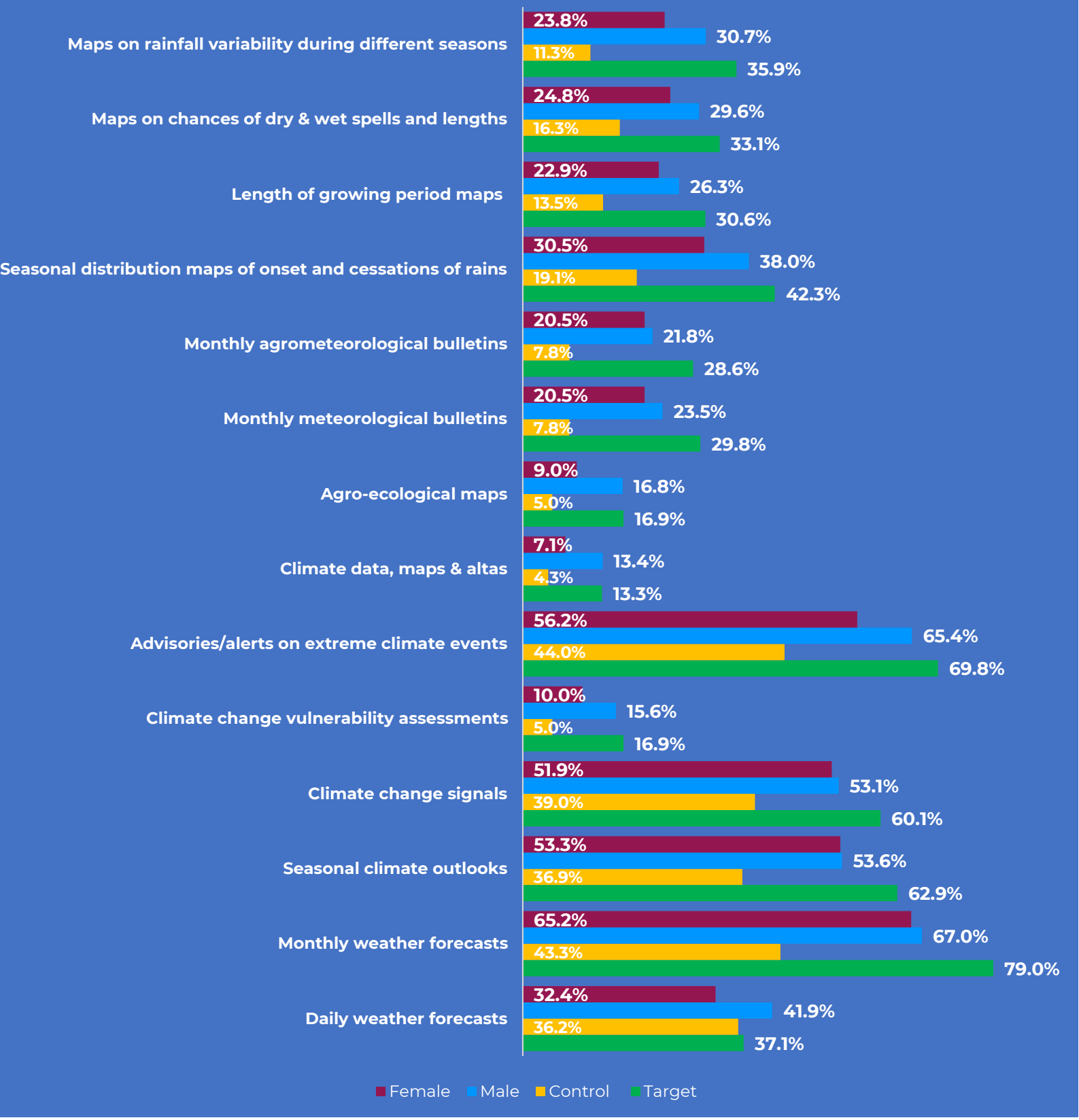


WFP Photo/ Alfredo Novela

Climate Information

Across all groups of the sample who did receive Climate Information, these groups mostly made use of Monthly Weather Forecasts, Advisories/Alerts on Extreme Weather events, Seasonal Climate Outlooks and Climate Change Signals. As with Figure 6 below, Female headed households show a lower proportional uptake of Information compared to Male headed households.

Figure 6: Current Information Received



Climate Sources

The main sources of Climate Information by group appear on the next page as figure 7 and 8. The main sources for the Target group, NGOs, Radio and Extension Agent Visits. By comparison, the Control group are reliant on the flow of information as Word of Mouth, Radio, TV and – in the unique case of Daily Weather Forecasts – the use of Apps.

Figure 7: Control Group Sources

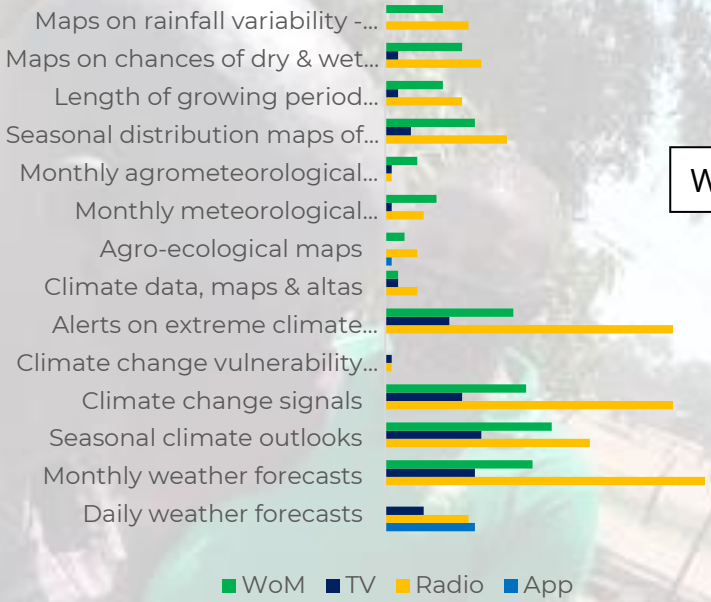


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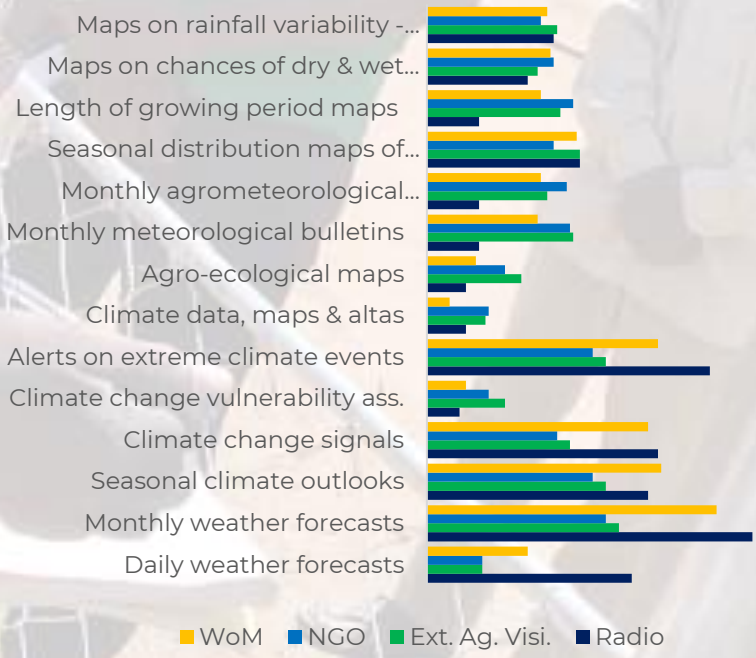
Figure 8: Target Group Sources



Current Information Leadtime

Leadtime varied by Treatment and Control group as well as the Type of Climate Information. These sub-samples have smaller sizes as they comprise only those who currently make use of Climate Information and any descriptive claims about the Leadtime Used by the Sample need to be measured. Table 2 below shows the most frequent Leadtime for each type of Climate Information by group.

Table 2: Climate Information Leadtime & Frequency

	Target	Control	Target	Control
Do you receive daily weather forecasts?	Days	Days	Daily	Daily
Do you receive monthly weather forecasts?	Months	Months	Weekly	Monthly
Do you receive seasonal climate outlooks?	Weeks	Months	Weekly	Irregularly
Do you observe climate change signals?	Weeks	Days	Weekly	Daily
Do you receive climate change vulnerability assessments?	Weeks	Weeks	Weekly	Weekly
Do you receive advisories/alerts on extreme climate events?	Weeks	Months	Weekly	Irregularly
Do you receive climate data, maps & altas?	Weeks	Weeks	Weekly	Weeks
Do you receive agro-ecological maps?	Weeks	Months	Weekly	Once every 3 to 6 months
Do you receive monthly meteorological bulletins?	Weeks	Months	Weekly	Once every 3 to 6 months
Do you receive montly agrometeorological bulletins?	Weeks	Months	Weekly	Once every 3 to 6 months
Do you receive seasonal distribution maps of onset and cessations of rains?	Weeks	Months	Weekly	Once every 3 to 6 months
Do you receive length of growing period maps?	Weeks	Months	Weekly	Once every 3 to 6 months
Do you receive maps on chances of dry & wet spells and lengths?	Weeks	Months	Weekly	Once every 3 to 6 months
Maps on rainfall variability during different seasons?	Weeks	Months	Weekly	Once every 3 to 6 months

Frequency of Current Information

When asked about how often they receive Climate Information, the Target Group almost unanimously receives them weekly whilst the Control Group mainly receives them once every 3 to 6 months as seen in the graphic below.

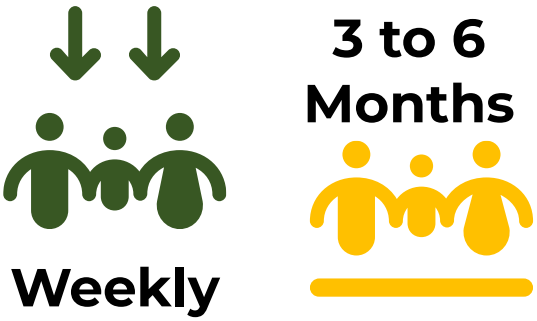
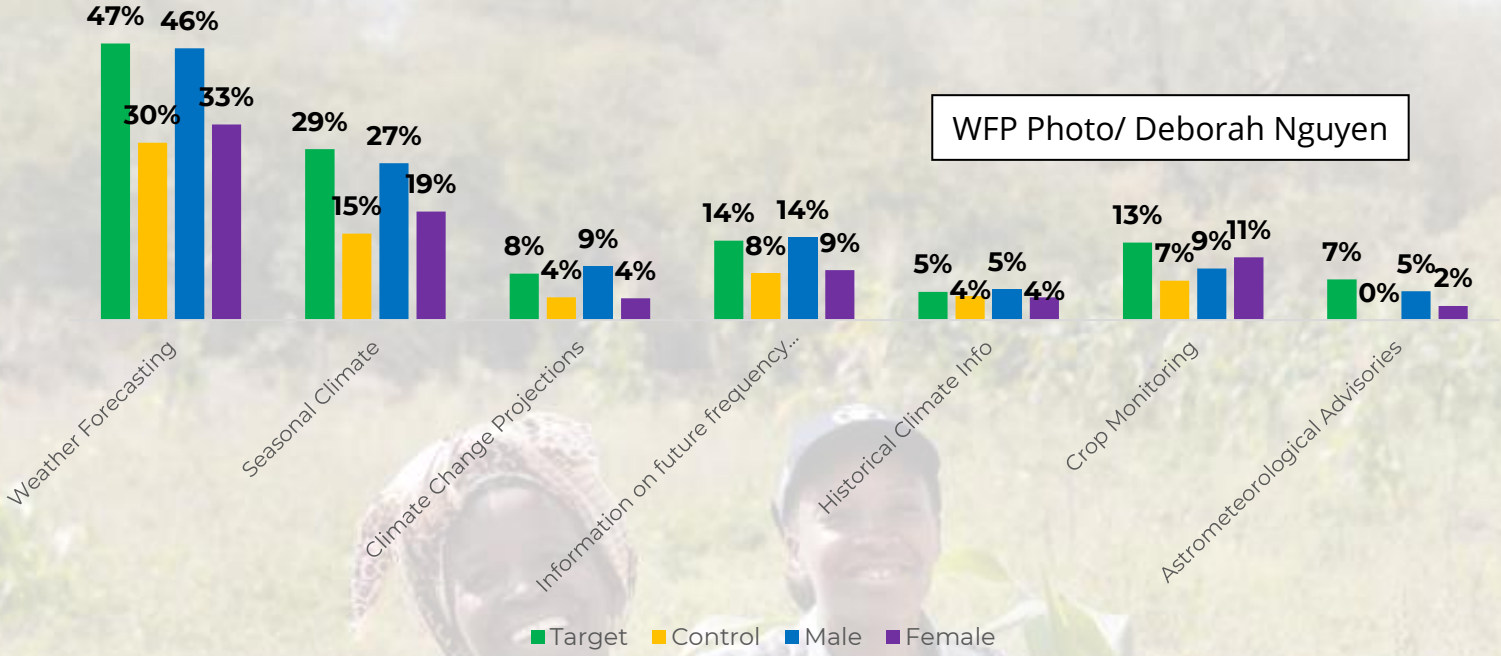


Figure 10: Service Use

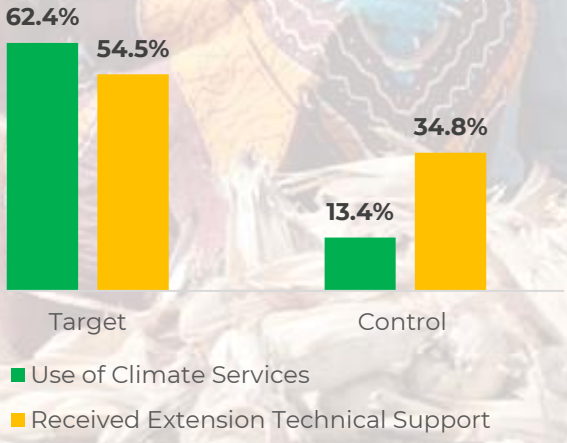


WFP Photo/ Deborah Nguyen

Climate Services

As seen in figure 8 across the use of Climate Services varied greatly across the groups. Where 62,4% of the Target Group made use of Climate Services, only 13,4% of the Control Group did. Similarly, 54,5% of the Target Group Received Extension Support and 34,8% of the Control Group did. Critically, 60,3% of Male headed households used Climate Services whereas only 24,4% of Female headed did.

Figure 8: Climate Services



As figure 9 shows, within all groups, the main reason for Not Using Climate Services was due to participants not knowing where to find these services. Within the sub-sample who do make use of Climate services, figure 10 below shows that the preferred use of Climate Services across the groups was to decide when to labour the fields and deciding when to sow, farmers also significantly reported to using this information to decide choice of crops and its varieties.

Figure 9: Reason Not Using Services

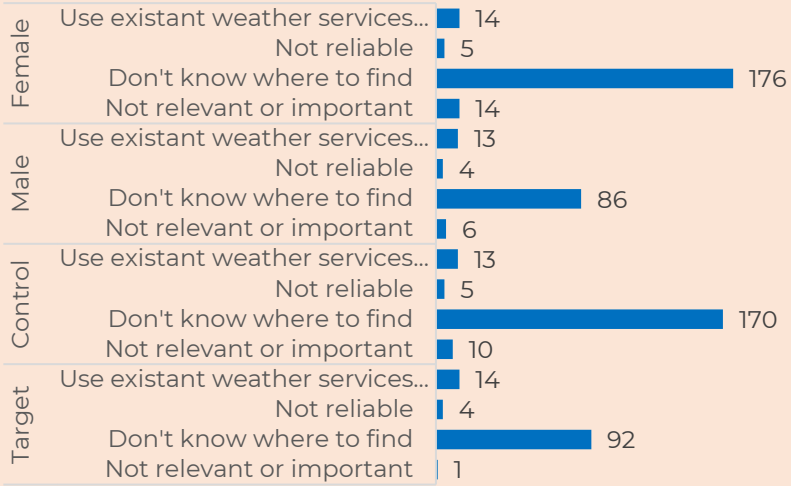
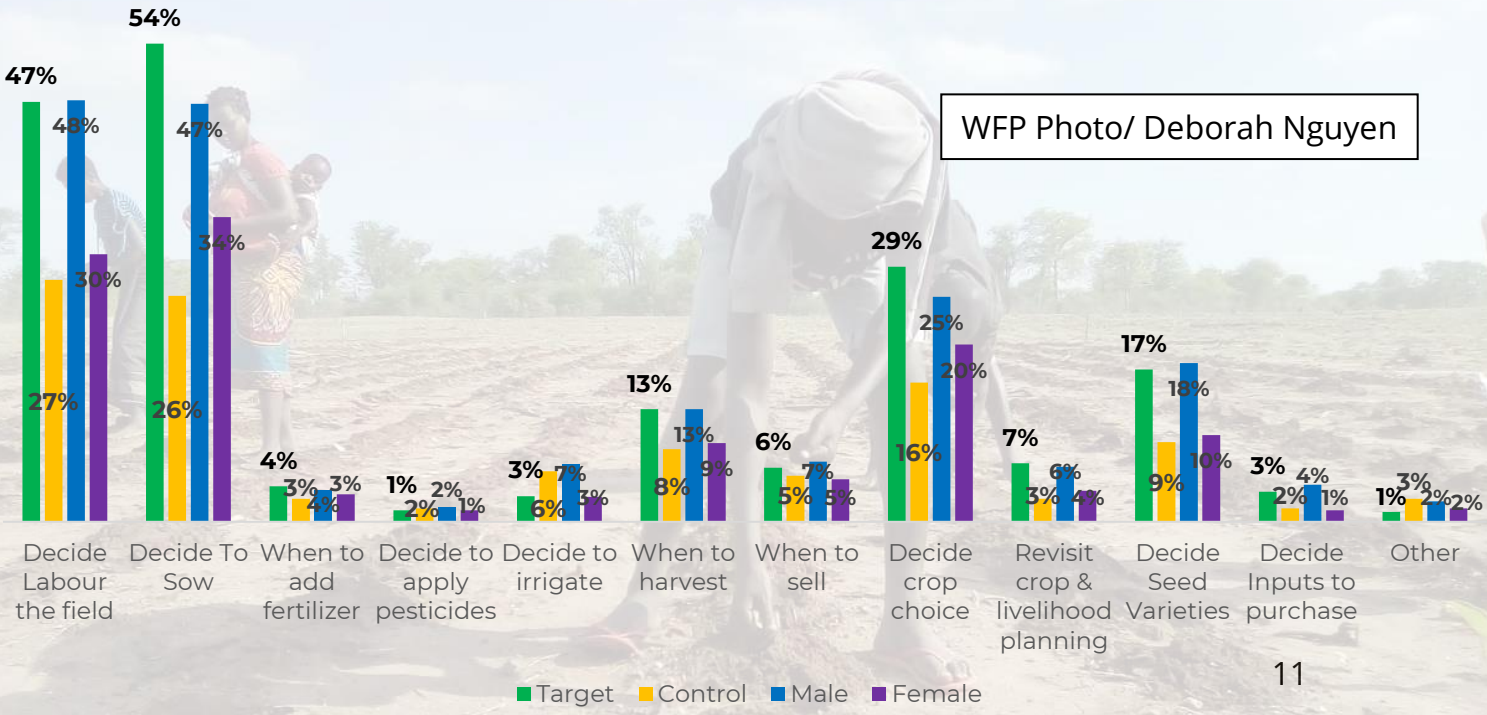


Figure 10: Climate Services Decision Making



WFP Photo/ Deborah Nguyen

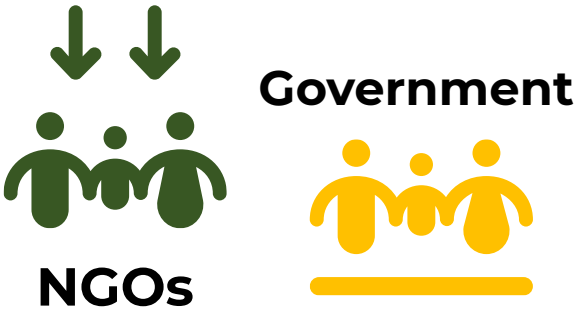
Climate Advice

As figure 10 above shows, the use of Climate Services in Decision Making varied across all groups. With farmers using the climate Information mostly to decide when to plant, when to work the fields, the types of crops they will plant and the seed varieties they will choose.

The type of agriculture techniques learnt through Climate Advice used by Participants is displayed below in Table 3. From this, it is observed in the sample that Zero Tillage, Crop Diversification, and Conservation Agriculture are the main Advice Types used.

Table 3: Climate Services Advice Type

Item	Zero Tillage	Terraces/ Contour Ridges	Semi-circular bunds	Permaculture	Sunken Beds	Mulching	Crop Diversification	Keyhole Gardens	Infiltration Pits	Conservation Agriculture	Composting	Use Adapted Seed Varieties	Irrigation	Other
Target	39,20%	4,00%	2,90%	1,30%	10,80%	14,30%	26,20%	0,30%	1,30%	28,60%	17,50%	19,00%	3,70%	1,90%
Control	24,70%	3,10%	2,30%	0,8%	7,70%	6,20%	18,3%	0,00%	0,80%	14,40%	3,10%	13,10%	2,30%	3,10%
Male	32,60%	4,60%	3,90%	1%	9,80%	10,10%	23,10%	0,00%	1,60%	27,00%	9,40%	14,70%	5,50%	3,30%
Female	31,40%	2,80%	1,70%	0,90%	8,90%	10,20%	21,60%	0,20%	0,70%	17,60%	10,70%	17,00%	1,30%	2,00%



Services Sources

Across those in the sample that did make use of Climate Services, the Sources of these were primarily: NGOs, Government and WFP as seen in figure 11 below. The Target Group mostly made use of NGOs, whilst the Control Group used the Government.

Climate service preferences

The entire sample were also asked about their preferred engagement styles with Climate Information and Services. The top 5 preferred sources of Climate Information on average across all groups were: 1. Government; 2. NGOs; 3. Radio; 4. WFP; 5 Traditional Leaders as seen in figure 11 bellow. These vary across the provinces, Zambezia and Nampula showed a higher preference for Radio and extension services, whilst Tete and Gaza preferred mostly extension services and then radio. The medium for this information was mostly shared through 3 main methods of transmission across all groups: Extension Agent Visit (31,45%), Word of Mouth (21,80%) and Radio Message (18,23%).

Figure 11Prefered Source to receive climate advisories

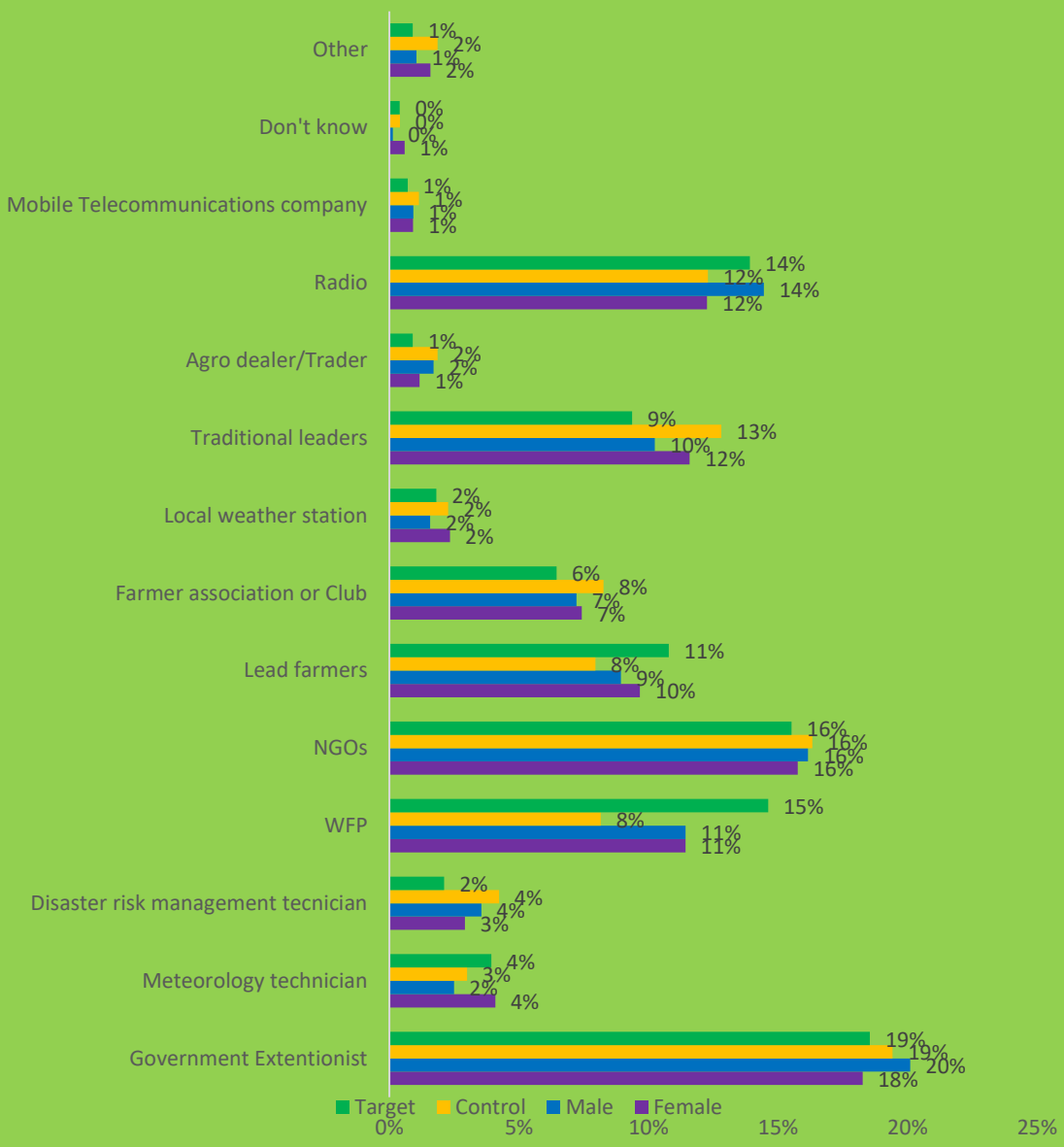


Table 4: Preferred Climate Information Type

Item	Daily Forecasts	Monthly Climate Outlooks	Seasonal Climate Outlooks	Observed Climate Change Signals	Climate Change VAM	Advisories on Extreme Events	Climate data, maps, atlas	Agro-ecological Maps	Agrometeorological Bulletins	Onset & Cessation of Rains	Length Growing Season	Maps on dry and wet spells	Maps of rainfall variability - different seasons
Target	72,00%	52,40%	47,90%	26,70%	10,60%	28,30%	5,00%	13,80%	7,40%	16,40%	9,30%	6,90%	10,10%
Control	68,60%	55,90%	48,70%	29,9%	8,80%	34,00%	3,1%	9,00%	7,00%	13,10%	13,10%	10,10%	9,80%
Male	77,20%	52,40%	45,90%	30%	8,50%	30,00%	2,00%	10,70%	7,20%	15,30%	10,40%	10,70%	9,80%
Female	65,60%	55,30%	49,90%	27,50%	10,50%	32,00%	5,40%	11,80%	7,20%	14,40%	11,80%	7,00%	10,00%

The scale of information was more evenly disturbed across all groups and on average the sample preferred: 10 to 30 Days (36%), Up to 10 Days (26,33%), Up to 12 Hours (22,9%) and Up to 72 Hours (20,25%).
Table 4 above illustrates the preferred Climate Information by Group with Daily Forecasts and Seasonal Climate Outlooks having the highest proportion across groups.

Conclusion and Recommendations

Awareness of the importance of climate service information in the country has shown to be low. Highlighting the importance to disseminate climate services and sensitize communities on the existence and importance of these services and guaranteeing the delivery to farmers.

Results from the study point out to the preference for the human element in information dissemination as farmers show greater preference for receiving climate information from Extension services and NGO's. Results also show that farmers are interested in receiving this information from local radio stations. Male participants in all of these cases did show higher proportion of interest, although the difference between Female and Male participant interest was not seen to be statistically significant.

WFP in coordination with the National Meteorological Institute of Mozambique (INAM), has been producing monthly climate bulletins which are being disseminated through Radio services, Non-governmental organizations, and the District Services of Economic Activities (SDAE) extension agents.

Climate information packages from the results of this assessment highlight the need for contextualizing the information guaranteeing information of greater

importance to participants, especially women. But also to provide better information in relation to crops which are predominant in each district.

This study proved as an important steppingstone to the design of climate services for agriculture in an integrated climate risk management package, to provide farmers with key decision making information, and advisory services for their livelihood activities. Further work will need to be done to better understand how to customize information and provide more real time information to farmers.

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Via Cesare Giulio Viola 68/70,
00148 Rome, Italy
T +39 06 65131 wfp.org