

Assessment of Climate Services work by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

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1. Introduction

This assessment of CCAFS work on climate services for farmers (which is part of CCAFS Theme 2, “Adaptation through Managing Climate Risk”), which started in 2011 and is scheduled to end (its first phase) in 2015.

The assessment was conducted between September and November 2014 to help CCAFS understand the scope of its initiatives, the partnership strategy, and the effectiveness of its implementation¹.

During the first phase of this assessment an inception report was prepared and discussed with CCAFS Theme 2 Management Team.

In addition to reading documents produced by CCAFS Theme 2, and other relevant literature, judgments by CCAFS staff and external partners on Theme 2’s work and results were sought through a questionnaire (one version for CCAFS staff and internal partners and another version for external partners) and telephone and skype interviews (see Annex 2). The assessment did not include field visits or face to face interviews.

A brief preliminary report with findings was prepared, identifying achievements, weaknesses and challenges for CCAFS. That brief report was used in the process of validating the findings and it has been used as an input for this final report.

The next section presents an assessment of CCAFS initiatives related to climate services for small farmers. Given the crucial role of partnerships, this is the topic of the third section, whereas documentation and communication of the work done by CCAFS on climate services is discussed in the fourth section. The report ends with a set of suggestions to improve the implementation of CCAFS work on climate services for small farmers.

2. Assessment of CCAFS initiatives related to climate services for small farmers

CCAFS Theme 2 develops and promotes the diffusion of innovations for managing climate-related agricultural risk at local and regional levels, addresses gaps and supports improvements to climate-related information products and services that enable a range of agricultural risk management interventions. The work is done with partners, including research activities across CGIAR, capacity enhancement, contribution to research, reporting, communication, and resource mobilization. A description of current and future CCAFS climate services projects is presented in Annex 1.

Implementation effectiveness: Given the available data, which corresponds to all of Theme 2, the assessment of the effectiveness in the implementation of planned activities can be conducted in terms of the degree of completion of those activities (taking into account their

¹ For the new phase of CCAFS, which starts in 2015, a goal was set of 30M farmers, at least 12M women, reached by a combination of climate services, and climate-informed insurance and food security safety net interventions. This was not an explicit goal during the period of this assessment

deliverables). The data for the two years for which there are technical reports, i.e., 2012 and 2013, is summarized in the following table, which shows that whereas in 2013 the activities and deliverables corresponding to objectives 2.2 and 2.3 (and it should be noted that climate services for farmers is part of objective 2.3) were all completed, this was not the case for those related to objective 2.1². It is likely that in the latter case the timeframe to complete the activities and their deliverables was underestimated.

Table 1 Completion of activities by objectives

OBJECTIVE	2012	2013
2.1	CA: 3 PA: 2	CA: 0 PA: 5
2.2	CA: 3 PA: 0	CA: 3 PA: 0
2.3	CA: 5 PA: 3	CA: 2 PA: 0

Objective 2.1: Identify and test innovations that enable rural communities to better manage climate-related risk and build more resilient livelihoods

Objective 2.2 Identify and test tools and strategies to use advance information to better manage climate risk through food delivery, trade and crisis response

Objective 2.3 Support risk management through enhanced prediction of climate impacts on agriculture, and enhanced climate information services (climate services for farmers are part of this objective)

CA: number of completed activities; PA: number of partially completed activities

Source: Theme Leader 2, 2013 & 2012 technical reports ³

Those three objectives have been translated in terms of outcomes and outputs, following a results based management approach. The following box shows the structure of outcomes and outputs corresponding to the three objectives (as mentioned in the previous page, climate services for farmers are part of the third one; the other outcomes and objectives show the broader framework of Theme 2)

²Pilot activities at CCAFS sites (now CSV sites) were reported under 2.1.

³ Attached to this report to render accessible the detailed information without cluttering the text of this assessment report. An additional table with detailed activities by countries is also attached as Annex 1.

Outcome 2.1: Systematic technical and policy support by development agencies for farm- to community-level agricultural risk management strategies and actions that buffer against climate shocks and enhance livelihood resilience in at least 20 countries

Output 2.1.1 Synthesized knowledge and evidence on innovative risk management strategies that foster resilient rural livelihoods and sustain a food secure environment

Output 2.1.2 Analytical framework and tools to target and evaluate risk management innovations for resilient rural livelihoods and improved food security

Outcome 2.2: Better climate-informed management by key international, regional and national agencies of food crisis response, post-crisis recovery, and food trade and delivery in at least 12 countries

Output 2.2.1 Enhanced knowledge, tools and evidence to support improved management of the food system (e.g., food delivery, trade, crisis response, post-crisis recovery) in the face of climate fluctuations

Outcome 2.3 Enhanced uptake and use of improved climate information products and services, and of information about agricultural production and biological threats, by resource-poor farmers, particularly vulnerable groups and women, in at least 12 countries

Output 2.3.1 Improved, value-added climate information products, knowledge, tools, methods; and platforms for monitoring and predicting impacts of climate fluctuations on agricultural production and biological threats; to support management of agricultural and food security risk

A May 2014 CCAFS outcome case study reports scaling up seasonal forecasts to over 2 million users in Senegal⁴. It is one of the few CCAFS publication related to climate services which makes reference to the number of people reached. The claim is made that “with CCAFS support, vital seasonal rainfall forecasts are reaching around two million people across Senegal, helping smallholder farmers make better-informed decisions about agricultural management in a changing climate”, Therefore, it is a particularly important case, to which several references are made in CCAFS’s publications (and by interviewees for this assessment). So it is worthwhile to present a description of the case followed by some comments.

“CCAFS scientists worked with the national meteorological agency, Agence Nationale de l’Aviation Civile et de la Météorologie (ANACIM) to develop more accurate and specific seasonal rainfall forecasts, and to raise capacity of partners to do longer-term analysis and provide more targeted information for

⁴ <http://ccafs.cgiar.org/publications/scaling-seasonal-forecasts-over-2-million-users-senegal#.VHdEQMk-ewA>

farmers. The forecast information provided includes the total rainfall, the onset and end of the rainy season, plus a 10 day forecast across the rainy season. The information is conveyed to farmers as agro-meteorological advisories that are tailored to meet their local needs. These advisories enable farmers to take crucial agricultural management decisions in the context of climate variability. While this approach has been piloted in the Kaffrine region since 2011, the geographical scope has now been widened through a partnership with the Union des Radios Associatives et Communautaires du Sénégal (URAC), an association of 73 community-based radio stations promoting economic development through communication and local information exchange. The union's reach extends across all of Senegal's 14 administrative regions and it operates in all local languages, giving it significant potential to transform lives through reliable information. Downscaled seasonal forecasts and 10 day forecasts across the rainy season are now transmitted as a special radio program in the four administrative regions of Kaffrine, Thies, Diourbel and Louga. The interactive nature of the radio program allows listeners to revert with their feedback including additional information, views, and requests of clarification".

This description clarifies the way in which climate information is used and disseminated through interactive radio programs. However, it should be noted that neither the outcome case, nor the sources quoted in it, provide evidence on the amount of people reached⁵. Furthermore, the total population of the four administrative regions of Kaffrine, Thies, Diourbel and Louga is 4,728 million ⁶, so "over 2 million people" would be approximately 50% of the total population in the area. On the other hand, whereas URAC does not provide figures about its audience, it indicates that the program continues its operations, strengthening capacities of its staff and disseminating climatic information⁷. Finally, although the outcome case does not mention the use of mobile -cellulars, their subscriptions rate in Senegal is 87.5 per 100 inhabitants⁸, showing the potential of this means⁹

The following paragraphs provide information on aspects related to the effectiveness of CCAFS work on climate services:

- i) The pilot work done at several locations, as one component of a broader suite of work called "Climate-Smart Villages," is relevant and yielded valuable results. CCAFS Theme 2 has also undertaken methodology and knowledge synthesis work. Also, there have been some initiatives that aim to develop or foster climate services at scale. And

⁵ The evaluation of Mali Agrometeorology Advisory Program does provide figures on the population reached during the scaling-up phase, which took 15 years: "over 2,000 farmers", as reported in Carr (2014), p.16.

⁶ <http://www.statoids.com/usn.html>

⁷ http://www.sudonline.sn/spip.php/plugins/forms_et_tables_1_9_1/img_pack/local/cache-vignettes/L224xH96/images/flash/les-animateurs-de-radios-communautaires-outillees-pour-orienter-le-monde-rural_a_20408.html

⁸ <https://data.un.org/CountryProfile.aspx?crName=SENEGAL>

⁹ See below v) in this section

yet there are still significant challenges for scaling-up at wider regional and national levels. Given the importance of scaling-up in CCAFS agenda, this issue will be elaborated in the last section

- ii) In East Africa there are several governmental and non-governmental organizations, and international institutions, working in the region trying to provide climate services to smallholder farmers. CCAFS contribution would have been more significant and visible if efforts were made to bring these organizations onto a common platform and enhanced their understanding and capacity in providing climate services. The same happens in South Asia.
- iii) CCAFS considers small farmers both as both a source of demand of climate information and as a source of knowledge (traditional knowledge) about climate. Blending indigenous with scientific knowledge taps into the reservoir of local knowledge and also facilitated the uptake of the forecasts.
- iv) Pilot trials demonstrated the real potential of climate information services. In Senegal, communities were surprised by outcomes. Seeing is believing, and communities were more likely to make fundamental shifts to demand climate information after seeing their use in pilot fields. The pilot trial in Kaffrine during its first year showed strong demand for climate information, and evidence that farmers rely on climate information for decisions about planting dates, crop choices, and investment in inputs¹⁰.
- v) New technologies, such as mobile phones, are being used in the provision of climate information services¹¹. However, farmers often face an unexpected problem in the use of ICTs: farmers have cell phones but sometimes they do not have access to power or batteries¹². Furthermore, work done by CCAFS shows that more attention should be paid to the important communication role played by formal and informal connections among farmers. Thus, Twyman et al (2014) point out that “men in Kaffrine receive most of their information on weather and climate through the radio, television, networks of friends and relatives, NGOs, and development projects”.
- vi) In East Africa a number of organizations are actively involved in providing climate services. However, the approaches used by these organizations are very different and in many cases their focus is more on providing climate information than on promoting its utilization. Without a good understanding of the probabilistic nature of climate information and outcome of decisions based on such information, there is a possibility for farmers to loose trust in the information. Compared to these initiatives CCAFS work is more holistic and paid greater attention to the quality of the information provided and to constraints in its utilization.

¹⁰ As reported in case 11, CCAFS Climate Services Kaffrine Pilot, Senegal, in Tall et.al. (2014).

¹¹ <http://ccafs.cgiar.org/climate-services-farmers>

¹² Mentioned by O. Ndiaye, telephone interview.

vi) An important contribution of the program is in creating awareness about the potential usefulness of this information. There is an increased demand for climate information from the smallholder farmers. They are seeking this information from national meteorological and agricultural extension services. The literature reports encouraging findings, such as those in a South African study showing that “there are large numbers of the farmers who are ready to use external climate forecasting”¹³. In addition, extension programs have started promoting climate information as a part of the extension work.

vii) Gender focus: Smallholder farmers (particularly women) benefitted from improved climate services (e.g. Kaffrine /Senegal work). In some sites, women are targeted specifically with different approaches and methods that work for them. A study conducted in four sites in West and East Africa ascertained that the perceptions that men and women have of climate variability are influenced by the sexual division of labor¹⁴. Furthermore, in the assessment of India’s Integrated Agro-meteorological Advisory Service program conducted by CCAFS, the recommendations that were made for the improvement of climate services included aspects of gender equity¹⁵. The work done by CCAFS in Senegal provided a good example of how to work with women farmers when delivering climate services¹⁶.

viii) In East Africa, the program has made significant contributions in terms of identifying the scope and value of climate information in the planning and management of smallholder agricultural systems especially in the risk prone semi-arid areas and in the regions where the seasonal forecasting skill is high. It is also successful in attracting substantial funding. Furthermore, CCAFS created awareness amongst the NGOs such as CARE and WVI who by realizing the potential value of climate information are actively promoting its use amongst smallholder farmers in the region.

ix) Capacity building

In its answer to the questionnaire for this assessment, WMO indicated that “at the national level the work that CCAFS has done to build the capacity of the national meteorological agencies will enable these to provide services to farmers in the future”. It also stated that “the value added of CCAFS” has been guidance and advice on setting up of frameworks for climate services at the national level, and on the importance of creating sufficient forums for dialogue between users and producers of climate information”. Furthermore, CCAFS work on climate services contributed to the development of institutional capacities e.g.: AGRHYMET and ANACIM in Senegal, Mali Meteo in Mali, National met Office in Burkina Faso, and Ghana’s met agency. However, it should be noted that in addition to this work in West Africa, CCAFS has contributed more substantively to national meteorological services in East Africa. It is also worthwhile to note that CCAFS contributed to the development of an innovative open e-learning course on statistical analysis of climate data (eSIAC). One of its topics features a presentation on seasonal forecasts by CCAFS staff

¹³ Mpandeli & Maponya (2013)

¹⁴ Twyman et.al. (2014)

¹⁵ As reported in Venkatasubramanian et.al.(2014)

¹⁶ Tall et.al. (2014)

working on theme 2, whereas another topic is on sharing climate information with farmers (developed with support from Theme 4 but with applicability to Theme 2's work). This shows synergy between CCAFS' themes.

- x) CCAFS work accelerated the process of improving and making climate services accessible to smallholders. At the same time, it highlighted the need for greater understanding and appreciation of the probabilistic nature of the climate information for rational and sustainable use of climate services.
- xi) It showed the importance of, and contributed to, packaging the information in a format that can easily be understood by the farmers and extension agents and the development of location specific advisories,
- xii) The pilot studies in EA were able to identify the decisions that farmers are making based on climate information. They have also identified the need for building confidence in the information. More importantly, a change in the attitude of the farmers is noticed. According to one of the interviewee "at this stage the main contribution of the program is in creating awareness about the potential usefulness of this information¹⁷. There is an increased demand for climate information from the smallholder farmers". The change in attitude from climate as "God given and nothing can be done about it" to an understanding of the opportunities available to manage climate variability is an important step forward in making use of climate information and in enhancing the value of climate services. This is what happened in the pilot study involving 600 farmers in Kenya, where at the end of the project the surveyed farmers were willing to pay for the continued AGROMET service¹⁸.
- xiii) CCAFS made significant contributions in establishing core teams of research and extension workers with required competencies to provide climate services in several of the participating countries in EA. For example, all the extension officers in Wote, Kenya, were trained on the use of probabilistic information and provided with necessary extension material that can enhance the effectiveness of service delivery. Researchers were trained in the use of crop simulation models and their application to construct risk and return profiles of various technologies. These skills are used by the researchers in other projects such as AgMIP. In Wote, Kenya through agricultural extension workers and through radio programs, a large number¹⁹ of farmers had access to climate services.
- xiv) CCAFS engagement with climate information services in Tanzania is strengthening its Meteorological Agency's understanding of user needs, providing a range of approaches to support implementation. CCAFS supported technical capacity development at TMA through ENACTS and through CPT training. Furthermore, PISCA is strengthening the

¹⁷ To appreciate the importance of this awareness, it is worthwhile to quote Stefanski (2012), head of Agrometeorology at WMO: "the challenge is that there is a lack of awareness in the farming community in developing countries of the available and potential weather and climate services"

¹⁸ Tall et.al. (2014)

¹⁹ This is an illustrative example based on answers to the questionnaire.

capacities of extension services in the areas where the pilot is being undertaken, and trying to develop a framework which can be scaled-up across other areas of the country.

- xv) CCAFS focus on communications, gender and CIS intermediaries is strategic and meets important needs within current efforts to strengthen the development of user-driven climate information services. As framed in one interview for this assessment by World Vision International: CCAFS “helped us to identify within our own organization both the need and the ability to put climate information services in place”
- xvi) CCAFS research contributed to close two major knowledge gaps: the effective ways in which climate information can be communicated so that end users can understand and utilize it, and how to strengthen the capacity of farmers and their support agents in understanding and utilizing the information made available. The training programs implemented and the location specific forecast based advisories made available were found to be the effective in dealing with these gaps. Other gaps were also identified and CCAFS is working on addressing them²⁰.
- xvii) CCAFS is contributing to direct the national meteorological system and the hydrological services towards the climate information needs of smallholder farmers²¹
- xviii) In West Africa, CCAFS developed some products such as seasonal climate forecasts that can be used by smallholders, and supported (for example, in Senegal) the development of their capacity to use seasonal climate forecasts, contributing to capacity building at the local, district level. Also, it led to more awareness and engagement with small farmers by the National Met Services in Senegal
- xix) CCAFS combined or blended local knowledge on climate with information from the national meteorological system (first level of integration)²². CCAFS accumulated experience in addressing the local knowledge of smallholder farmers of climate information. In some cases, as indicated by Ousmane Ndiaye²³, local knowledge has been used as an entry point to disseminate climate information produced by meteorological services. In other cases, as concluded the study in Tanzania, local knowledge has been complementary to scientific climate forecasts²⁴.
- xx) CCAFS contributed to the empowerment of national institutions that provide climate services; and promoted coordination among different institutions to address climate services

²⁰ See Sivakumar et.al. (2014)

²¹ Tall et.al.(2014) provides examples from Africa and South Asia

²² A second level of integration is the combination of climate and weather information with other types of information needed by smallholder farmers.

²³ Telephone interview

²⁴ Tall et.al. (2014)

xxi) CCAFS contributed to the improvement of climate data and the development of tailored climate information (e.g.: merging satellite information with other type of data; start and end of rainy season) and an index for climate insurance. It also helped in expanding the quantity of data for weather forecasting, including reconstruction of missing data and use of historical data.

xxii) It also led to an improvement in the quality of climate services provided to smallholder farmers in West Africa: the seasonal forecast now includes the start of the rainy season. The communication approach also allowed inclusion of indigenous knowledge, which is an added value to the quality of climate services (and the interest of farmers in these forecasts). CCAFS uses Climate Predictability Tool (CPT) forecasts²⁵ in several contexts to produce downscaled seasonal forecast information for small farmers. Except in the case of Senegal, it has not yet brought national meteorological services to the point where they are doing it themselves.

To conclude this section it is worthwhile to quote answers to the *counterfactual question* included in the questionnaire that was sent to the key informants,

What would have occurred in the absence of CCAFS work on climate services for small farmers?

The answers provided were the following:

“Much less research and much less focus on this important area. Products and services would not have been developed to anything like the extent that they have”

“We would not have learned many of the lessons that have emerged from CCAFS led assessment activities. And these lessons could not have been shared with international partners as they have”.

“A number of NGOs and government programs are now taking up the banner of CIS. CCAFS was at the forefront of efforts, which leads one to assume that small farmers are somewhat, if not significantly, better off than if CCAFS had not worked in climate services. CCAFS impact on the Met service has been perhaps most important, as it appears they did not realize that farmers didn't understand the information they were giving them”.

3. Approach to partnerships

During its first phase, CCAFS work on climate services had an opportunistic approach to partnerships, seizing opportunities with partners that were interested in participating in the work related to the development and delivery of climate services for small farmers. Towards the end of its first phase a more systematic approach is being developed, identifying types of partners and their roles.

Most of the answers obtained during this assessment pointed out that CCAFS played a valuable, complementary, role to that of other organizations involved in climate services for small farmer holders. But it was also pointed out that there is a risk that efforts may be duplicated, which

²⁵ The next section of this report refers again to CPT

would require to strengthen coordination of CCAFS with some agencies, like WMO. Progress has been achieved in this direction through informal contacts in the framework of the GFCS but there is scope for more formal means to exchange information (see section 5 of this report).

CCAFS developed strategic partnerships with various international bodies such as USAID, AGRHYMET and WASCAL²⁶ as well as with national meteorological services. CCAFS engaged effectively with some of the most relevant partners at regional and national level in West Africa. Strengthening partnerships with universities could be instrumental in ensuring sustainability of training and local research.

CCAFS identified a wide range of appropriate partners and has been flexible and open to new opportunities and partnerships. As indicated in the questionnaire by the representative of the Climate Services Partnership (CSP), the CSP has benefited greatly from CCAFS membership. “We worked together on issues such as evaluation, ethics; we co-hosted workshops which have documented aspects of good practices; we have collaborated on activities at the International Conferences on Climate Services, bringing together global experience to discuss and debate issues of relevance to effective implementation of climate services for smallholder farmer communities”

The number of partners for CCAFS as a whole (700, as indicated in <http://ccafs.cgiar.org/partners>, and 900 in a more recent statement) may be too high (even if some key partners are not included, as mentioned below), and could be leading to high transaction costs. This may also be the case for CCAFS climate service work. The ongoing transition into the new phase of CCAFS is meant to correct this situation of working with a large set of small partnerships.

One of the answers to the questionnaire stated that “CCAFS needs to be sure to accord due recognition to partners’ inputs and not overstate CCAFS contribution to collaborative efforts”. It is also worthwhile to take into account one of the answers to the question on partnerships for climate information services: “CCAFS is yet to establish extensive partnerships with operational agencies in all of the countries where research work is being undertaken” to make more sustainable the link between practical action at the grass-root level with research capacity at the regional and global level.

Furthermore, one of the respondents added that in the GFCS Adaptation Program in Africa there has been a tendency of CCAFS to spread their effort a bit too thinly, with attempts to participate and influence most of the program activities. A more focused approach would perhaps provide more tangible evidence of the exact value added by CCAFS in the partnership. In addition, the lack of sufficient partnerships with local research institutes at the national level was also noted.

Finally, it should be mentioned that CCAFS involved also small farmers as partners, promoting the co-production of climate services, involving the intended users in producing the services through a participatory approach that incorporates indigenous knowledge into the design of forecasts that combine (blend) indigenous with scientific knowledge. In some cases, as exemplified by the Mali experience, farmers are involved in the process of collecting and

²⁶ <http://ccafs.cgiar.org/blog/climate-change-mobile-telephony-could-change-things>

interpreting climate information as well as in the selection of the climate products they need. In other cases, the involvement is accomplished through the integration of indigenous knowledge available within rural communities

4. Documentation and communication of results

This section assesses the documentation and communication of CCAFS work on climate services, showing if there are documentation or communication gaps &/or inconsistencies.

Some CCAFS Theme 2 publications are not known even among professionals working for Theme 2. This came out in practically all interviews. It may be that it has been assumed that posting publications in the website is sufficient. It is certainly important, particularly for the sake of transparency and to facilitate access. However, a more proactive dissemination, within and outside the CCAFS Theme 2 network, may be needed to make more visible the outputs of Theme 2 work on climate services (the next section includes a specific suggestion for this purpose).

In one of the interviews reference was made to work with the Ministry of Agriculture in Colombia which includes climate services that has not yet been documented, namely a case in which organizations of producers - the *gremios* - have increased their capacities to use and understand seasonal forecasting. This is an experience that may be of interest in Africa, where there is interest in working with cooperatives as intermediaries, nurturing their demand for climate information services. Although this project is led by Theme 1 good coordination with Theme 2 can maximize synergies, ensuring also that it is adequately communicated.

Most of the respondents indicated that they consider that scaling-up is an important challenge but that they do not have a clear idea on how CCAFS is trying to deal with it. This points out to a communication gap, but there may also be a deeper problem related to the scaling-up approach, which is addressed in the last section of this report.

CCAFS promoted South-South knowledge sharing (e.g. LAC staff visiting the Kaffrine work, a remarkable reversal of the more frequent knowledge sharing from LAC to Africa). This has been a way to communicate experiences and knowledge which complements the documentation and dissemination of publications

The following table shows the evolution of the documentation and communications concerning CCAFS work on climate services²⁷. In 2013 communication through blogs became an important channel, which continued in 2014. There was also an important increase in conference proceedings. Finally, although not shown in the table, during 2014 a publication was issued with a synthesis of case studies²⁸

²⁷ There is no comparable information for 2011 and 2014

²⁸ Tall et.al. (2014)

Table 2 Types of Publications and Other Means of Communication by CCAFS on climate services for farmers

Type of Publication or Other Means of Communication	2012	2013
Working Papers	1	2
Journal Papers	1	0
Conference Proceedings	0	3
Book Chapters	1	0
Case Studies	2	2
Blogs	0	13
Videos	0	2
Events	1	3

Sources: Theme 2 Leader Technical Report, 2012 & 2013

5. Suggestions for Improvement

Based on the findings presented in the preceding sections, in this one suggestions are made for the improvement of CCAFS work on climate services for small farmers. A first set of suggestions could be implemented in the short-term (“low hanging fruits”), complementing a second set that would require more time to implement.

5.1 Short-term suggestions

Proactive dissemination of CCAFS materials on climate services

CCAFS has produced a significant number of publications and made good use of the web to post them. However, although uploading documents in CCAFS website is useful (it would be worthwhile to install a website traffic estimator tool to be able to conduct a quantitative analysis of the website use), it should be complemented with dissemination directed towards targeted audiences (such as external actual and potential partners, national agrometeorological organizations, etc) through a brief newsletter to a dedicated mailing list, with hyperlinks to access publications. This would also increase the visibility of CCAFS work on climate services.

Improving the use of the Climate Predictability Tool (CPT)

There is significant scope for improvement in the way in which the Climate Predictability Tool (CPT) is used by Meteorological (MET) services (as indicated in the second section of this report, only in the case of Senegal the MET services are using CPT on their own). Furthermore, CPT itself could be further developed, for example complementing it with the R software²⁹.

5.2 Medium-term suggestions

Policy level

Involvement of government bodies both at policy and national level need additional focus. While NGOs can play a valuable role in pilots, it is the government extension services that have the reach and responsibility to provide services to small farmers. Efforts should be made to make climate services part of the regular extension activities. This requires policy level interventions, for which CCAFS need to engage appropriate partners such as ministries and directorates (below, when discussing scaling-up, some suggestions are provided that may be relevant for enhancing the effectiveness of the work at the policy level).

CCAFS experiences where there has been a good engagement of government agencies, fostering and/or advocating for national frameworks that would oversee and coordinate the role of the multiple agencies needed for climate services to work, could provide orientations for replication in the same region, and eventually also in other areas. Integration of climate services into policies (a third level of integration) remains an important gap which is important to mobilize resources for scaling-up. To the extent that national agricultural extension policies include climate services for small farmers as one of its priorities, it is more likely that more resources will become available (from the national budget and/or from international institutions) to support those services. Some kind of seminars targeted to high-level policy makers³⁰ in the agricultural sector could be instrumental in raising their awareness concerning the importance of climate services for small farmers.

²⁹ This statement is based on a conversation with Roger D. Stern.

³⁰ Whereas the “roving seminars” are directed to small farmers, and play an important role, those mentioned in this paragraph are targeted to those officials that have the power to allocate budget, so they may create an enabling policy environment for climate services.

Sustainability and Partnerships

At this rather early stage in the implementation of CCAFS work on climate services the benefits that may result from it would not be sustained if CCAFS does not continue its involvement, and if it does not strengthen its partnerships at the national level to ensure that there are both operational agencies and research institutes that can carry on the work beyond CCAFS involvement. It is indeed CCAFS Theme Two's intention to develop the partnerships, national climate services frameworks, and institutional capacity at the national level; and the success of CCAFS in transforming this intention in a reality is crucial for sustainability.

Strengthening coordination between national meteorological and agricultural services

In most countries in Eastern Africa (and this may be the case in some other regions) there is not enough coordination between the national meteorological services (NMS) and the national agricultural research and extension services. One of the reasons for this is the lack of priority that agriculture has in most countries for NMS. Furthermore, there are divisions within governments, such as early warning and drought risk management, which are working independently. CCAFS could cooperate in strengthening the links between these providers of services and to contribute to the development of a program with a responsibility to provide climate services. Such a program would make it possible that reliable and up-to-date information is made available to end users, and that it is actually used (the suggestion made below, concerning the involvement of international financial institutions, could also be useful to improve the coordination between NMS and agricultural services).

Integration of climate services with other types of relevant services for small-farmers

Although integration of climate services with other types of information and services is important both to stimulate demand for climate services as well as to facilitate the use of climate information services, the progress made so far in such integration has been very limited.

The experience of CCAFS in Bangladesh and Nepal show the importance of ensuring that there is adequate capacity to generate reliable weather forecasts. It also highlights the rather low priority that small farmers allocate to climate services vis-à-vis other inputs or services, particularly if they are not part of a package or integrated with other support services or inputs³¹. In this context, the “climate smart agriculture village” appears as a promising approach to bundle climate services with other services in which farmers are strongly interested, thus raising the demand for climate services (as a component of the package). Business models should be developed incorporating climate services as an important, but not exclusive, component.

³¹ Wright et al, 2012 and interview with P. Aggarwal

Cost-benefit estimates of climate information services

Cost-benefit analysis of climate services for small farmers could be useful to assess results and to persuade partners and national authorities of the effects of climate services thus helping to mobilize resources for scaling-up these services. Benefits could be estimated by taking into account the enhanced net income associated to better forecasts, including the reduction of losses due to the use of good climate information. The article by Wood et.al. (2014), based on CCAFS baseline surveys in 12 countries, provides useful evidence for some estimates and White (2009) indicates ways in which the methodology can be applied.³²It would be convenient to avoid a narrow estimation of economic costs and benefits, trying to identify and quantify externalities and social effects.

The scaling-up challenge

Although scaling-up is an overriding concern for CCAFS, and several references are made in documents as well as in interviews to the importance of scaling-up, at the same time it was generally acknowledged in the interviews that scaling-up of climate services for small farmer holders is much more a challenge than a reality. A frequent comment made by interviewees coincided with the answer provided by one of the respondents to the questionnaire's question on CCAFS approach to enable the scaling-up of climate services for farmers: "It is not entirely evident what the CCAFS approach to this issue is". It is to be noted that almost none of the respondents showed a clear idea concerning CCAFS strategy to scaling-up, although most of them are aware of the importance of scaling-up. As indicated in the previous section this is not merely a communication gap. The following paragraphs try to identify a crucial challenge for scaling-up and provide some suggestions on how to face it.

An important issue for scaling-up CCAFS work, which appears to be only partially appreciated, is due to the rather unacknowledged *trade-off between tailoring climate services to the specific characteristics of a diverse population (downscaling) and scaling-up those services*. Out of the five key challenges for scaling up effective climate services for farmers identified in several CCAFS documents³³, i.e., salience, access, legitimacy, equity and integration, the first four point towards downscaling, whereas the last one, "integration", which is crucial for scaling-up, is the one in which it is acknowledged that less progress was made.

The issue can be framed as follows:

The more heterogeneous the population, taking into account its social diversity (gender, ethnicity) and agro-ecological heterogeneity, the more challenging is scaling-up climate services tailored to the needs of the population

In one of the answers to the questionnaire that was circulated for this assessment it is stated that "a lot of the effective approaches, strategies, etc. that have been identified through CCAFS work

³² CCAFS Theme 2 has a strategy to use new USAID Africa Bureau funds to hire expertise on this issue, to be hosted by and co-led with ACPC

³³ Among others, Tall (2014)

underscore the context-specificity of climate information services, thus create difficulties in justification of scaling-up as a priority”. Although it is the case that CCAFS work highlights the context-specificity of climate information services, the implication is not that this puts into question the justification of scaling-up as a priority. The implication is that if scaling-up is a priority (and it should be in order for climate services to make a significant difference, a visible impact, in the situation of a great number of small farmer holders), several lines of action should be followed to face the difficult trade-off between downscaling and scaling-up.

Some possible courses of action that may be worthwhile to explore in order *to facilitate scaling up* climate services could be the following:

- i) Identifying and/or developing core climate services that can be relevant whichever the context, differentiating them from those that need to be contextualized. The former could be scaled up without much adaptation.³⁴
- ii) Involving partners that are international financial institutions, such as IFAD, the Regional Development Banks and the World Bank, not just as providers of technical support, but in scaling-up tailored climate services for the poor smallholder farmers, integrating these services with other agricultural support services³⁵, and making linkages with government, through national institutions, and with the private sector in the value chain. The final stage of scaling-up requires the involvement of governments; the international financial institutions could play a catalytic role in the process, with CCAFS providing the scientific inputs and tools to deliver suitable climate services for small farmer holders.
- iii) Reaching policy-makers, persuading them about the importance of climate services for smallholder farmers. Generating evidence on the benefits of these services, as indicated above, can nurture the policy-makers interest and demand for these services. Furthermore, it could also be helpful to establish partnerships with agencies like IDRC, which have developed expertise in linking research to policy, and that are active in climate change issues.
- iv) Trying to identify leapfrogging opportunities to reduce the time that it took the scaling-up process of climate services in relevant cases such as the Mali Agrometeorology Advisory Program, where the scaling/up stage was carried out during 15 years after two preliminary phases of experimentation and demonstration/extension, which required 8 additional years (and during these 23 years there was support from a bilateral development agency)³⁶.

³⁴ As indicated in a comment to a first version of the brief preliminary report of this assessment, there are some climate information products and some changes to existing products that could be broadly useful, based on research and experience with seasonal forecasts for farmers across many different contexts around the world. Tools and methods that the IRI has developed (branded as ENACTS) provide the ability for meteorological services to produce high-resolution historical, monitored and seasonal forecast information at a spatial scale that is relevant to farmers; and develop and disseminate (largely through trained agricultural extension and NGO intermediaries) these products through a web-based platform.

³⁵ There are some references in CCAFS’ documents to IFAD as a provider of technical support (e.g., in Kadi et.al). IFAD is strongly committed to a scaling-up agenda and during the last years it has started to pay attention to climate services and to incorporate them in its operations. See for example <http://www.ifad.org/climate/asap/climateservice.htm>

³⁶ As reported in Carr (2014), http://pdf.usaid.gov/pdf_docs/PA00JZ3M.pdf

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List of persons contacted

Persons interviewed by phone or skype

Aggarwal, Pramod - Regional Program Leader for South Asia

Carr, Ed - University of South Carolina, led an evaluation, with CCAFS collaboration, on Mali's agrometeorological advisory program.

Denton, Fatima - Co-ordinator for the African Climate Policy Centre, UNECA and Member of CCAFS Independent Science Panel

Hansen, James - Director of CCAFS Theme 2

Kinyangi, James - Regional Program Leader for East Africa

Loboguerrero, Ana María - Regional Program Leader for Latin America

Ndiaye, Ousmane - Climate scientist in Senegal meteorological service

Sebastian, Leocadio - Regional Program Leader for SE Asia

Shore, Christopher – World Vision

Stefanski, Robert – WMO Agrometeorological Services

Stern, Roger D. - University of Reading

Suwa, Makoto - World Bank GFDDR

Tall, Arame – CCAFS Champion Climate Services

Traore, Sibiry - ICRISAT researcher based in Mali. Leader of Flagship 2 project in West Africa.

Twomlow, Stephen – IFAD Climate and Environmental Specialist

Persons that answered a questionnaire

Dorwart, Peter – University of Reading

Loboguerrero, Ana M. - Regional Program Leader for Latin America

McKune, Sarah L. – University of Florida (gender issues)

Rao, Karaturi - ICRISAT researcher based in Ethiopia

Russo, Sandra - University of Florida (gender issues)

Sandström, Sofie - WMO

Visman, Emma - Humanitarian Futures Programme, King's College London

Zebiak, Stephen - Climate scientist at the IRI. Director of the Climate Services Partnership (CSP)

Zougmore, Robert B. - Regional Program Leader for East Africa

Annex 1 Table with List of Projects and Activities of CCAFS related to climate services for small farmers.

See separate document attached

Annex 2 Questionnaires

i) Questionnaire for CCAFS Staff and Internal Partners

Questions on CCAFS Theme 2 Climate Services for Small Farmers

Please focus your answers on CCAFS work on climate services for small farmers.

1. Which are the main strengths and weaknesses of CCAFS work on climate services for small farmers?

2. To what extent has the program contributed to the development of climate services for smallholder farmers?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

3. Has the program succeeded in improving the quality of climate services provided to smallholder farmers? If so, how?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

4. In which way(s), if any, and to what extent, have smallholder farmers (particularly women) benefitted from improved climate services?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

5. Has CCAFS invested strategically in climate services to get a good benefit from the available research funds? Are there any more efficient ways (with less cost) by which the same objectives could be achieved?

6. To what degree do you think that the benefits from research outputs and other CCAFS work on climate services for small farmers do not depend on CCAFS continued support or involvement.

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

7. Are there any results that the program has not appropriately captured or documented?

8. What is your view of CCAFS approach to enable the scaling-up of climate services for farmers?

9. What would have occurred in the absence of CCAFS work on climate services for small farmers?

10. What would not have happened had it not been for CCAFS work on climate services for small farmers?

11. How was the experience with the pilot trials? What was learned? To what extent, and in which ways (if any) were their results used?

12. To what extent has CCAFS work on climate services contributed to the development of institutional capacities? Any examples?

13. Has the research conducted by CCAFS on climate services addressed knowledge gaps? Are the research outputs relevant? How strategic has been CCAFS' research agenda on climate services? How well did CCAFS target the most crucial gaps in knowledge, methods, evidence and/or communications? Is CCAFS working in the area where it can best add value relative to what other organizations are doing? (please provide examples)

14. How strategic has been CCAFS in selecting its partners for climate services and how effectively has CCAFS engaged with those partners? Do you consider that CCAFS involvement with partners in the work related to climate services could be improved? If so, how?

15. Which are the main strengths and weaknesses in CCAFS' work with partners (particularly in the area of climate services)?

16. How effective was CCAFS in facilitating farmers' access to the outputs of its research program on climate services, either directly or through institutions working with farmers?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

17. Do you have any suggestion(s) to make this engagement more effective?

18. To what extent CCAFS communications concerning climate services were effective?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

Do you have any suggestion(s) to make these communications more effective?

ii) Questionnaire for External Partners

Questions on CCAFS Theme 2 Climate Services for Small Farmers

Please focus your answers on CCAFS work on climate services for small farmers.

1. Which are the main strengths and weaknesses of CCAFS work on climate services for small farmers?

2. To what extent has the program contributed to the development of climate services for smallholder farmers?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

3. Has the program succeeded in improving the quality of climate services provided to smallholder farmers? If so, how?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

4. In which way(s), if any, and to what extent, have smallholder farmers (particularly women) benefitted from improved climate services?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

5. Has CCAFS invested strategically in climate services to get a good benefit from the available research funds.? Are there any more efficient ways (with less cost) by which the same objectives could be achieved?

6. To what degree do you think that the benefits from research outputs and other CCAFS work on climate services for small farmers do not depend on CCAFS continued support or involvement.

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

7. Are there any results that the program has not appropriately captured or documented?

8. What is your view of CCAFS approach to enable the scaling-up of climate services for farmers?

9. What would have occurred in the absence of CCAFS work on climate services for small farmers?

10. What would not have happened had it not been for CCAFS work on climate services for small farmers?

11. Are there any changes due to the CCAFS partnership in your organization's attitudes, knowledge, and/or behaviors, or changes in policy, investments, services and practices? Please provide examples

12. Which was the value added of the partnership?

13. Were there additional costs due to the partnership?

14. Is your organization satisfied with its role as CCAFS partner on climate services?

If possible, in your answer to this question please include a rating in a scale 1 to 4, where 4 is the highest value. If you cannot rate, please write N

15. Are there any ways in which the CCAFS partnership could be improved? What worked well in the partnership with CCAFS? What did not work well in the partnership with CCAFS?