

Developing Public-Private Partnerships for effective access and use of climate information services by farmers and pastoralists in the Great Green Wall intervention zone of Mali

Working Paper No. 413

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

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Abstract

This report describes a methodological approach for the co-development of Public-Private Partnerships (PPP) for effective access and use of climate information service by farmers and pastoralists in the Great Green Wall intervention zone of Mali. The implementation started with the characterisation of the strengths and weaknesses of potential public-private partners institutions including the National Agency of the Great Green Wall (ANGMVM), the National Meteorological Agency (MALI-METEO), the Mobile phone company (Orange Mali) and the Institute of Rural Economy (IER). Then, a participatory and inclusive discussion was engaged for establishing partnership. The research activity pursues three specific objectives: *i)* Evaluate existing partnerships and mechanisms for mainstreaming CIS and agro-advisories into the activities conducted by the Great Green Wall National Agency of Mali; *ii)* Develop Public-Private Partnerships for the sustainable management of climate risks in the zone of the Great Green Wall; *iii)* Define activities, roles and responsibilities and possible contractual issues for the sharing of costs and benefits between the actors involved in Climate Information Service activities in Mali. We found that in the GGW zone, the main partners evolve individually according to their interest, and there is lack of coordination, indicating a need to setting partnerships for climate information services access and use. The development of PPP business models through this activity allowed participants to get to know better each other but also to engage in a win-win partnership under which each partner will play a key role based on their areas of expertise. Three comprehensive business models were elaborated: Business-to-Business-to-Clients (BBC) model without revenue sharing, Business-to-client (B2C) model and Business-to-business-to-client (BBC) with the revenue sharing for PPP in the GGW zone in Mali. The validated and consensual model for next steps was the BBC with revenue sharing part as it involved all the partners and provides sufficient room for sustainability. The Business to client model is more flexible and can be run nationwide in Mali.

Keywords

Climate change, Community Resilience, Business model, Public-Public Partnership, Sahel

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The PPP business models developed through this activity is a collaborative product of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the National Agency of Great Green Wall of Mali (ANGMVM), the Malian National Meteorological Agency (MALI-METEO), the Orange Mobile phone company in Mali) and the Institute of Rural Economy (IER).

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Acronyms

ANGMVM	Agence National de la Grande Muraille Verte du Mali
AGGW	The Agency of the Great Green Wall in Mali
ANMM	Agence Nationale de la Météorologie du Mali
BBC	Business to Business to Client
B2C	Business to Client
CIS	Climate Information Service
GGW	Great Green Wall
IER	Institut d'Economie Rurale
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
MM	Mali Meteo
MoU	Memorandum of Understanding
NGO	Non-Government Organization
OM	Orange Mali
OP	Organisation Paysanne
PSTE	Public Scientific and Technological Institution
P-RM	Présidence de la République du Mali
PPP	Public-Private Partnership
UGMV	Unité de la Grande Muraille Verte

1. Background

Most environmental issues in Mali include desertification, deforestation, soil erosion and drought affecting ecosystem balance in about 51% of the country and resulting in a loss of arable land and drop in productivity. The Great Green Wall initiative (GGW) is a symbol of hope to face desertification, one of the biggest challenges. Launched in 2007 by the African Union, this game-changing African-led initiative, aims to restore Africa's degraded landscapes and transform millions of lives in one of the world's poorest regions, the Sahel. One of the main objectives of GGW is to develop sustainable management of land and water in targeted landscapes and climate-vulnerable zones. In Mali, the GGW has undertaken actions to strengthen the resilience of populations in arid and semi-arid zones through tackling climate change, desertification, and biological diversity degradation, and to promote partnership and synergy of actions between the players for the sustainable implementation of the initiative.

Through the present research activity, CCAFS/ICRISAT aims to analyze current collaborations in order to establish the public-private partnerships (PPP) required to promote the sustainable use of climate information services (CIS) and agro-advisories for improving management of climatic risks by farmers and pastoralists from the GGW area in Mali. The purpose of this initiative is therefore to analyze the already existing collaborations for promoting access and use of CIS in order to recommend "win-win" "public-private" partnership models to current and future CIS providers. The targeted intervention zone is the one of the GGW in Mali.

This research activity pursues three specific objectives: 1) Evaluate existing partnerships and mechanisms for mainstreaming CIS and agro-advisories into the activities conducted by the Great Green Wall National Agency of Mali; 2) Develop Public-Private Partnerships for the sustainable management of climate risks in the zone of the Great Green Wall; 3) Define activities, roles and responsibilities and possible contractual issues for the sharing of costs and benefits between the actors involved in Climate Information Service activities in Mali.

The main expected results of the research include: 1) Weakness and opportunities for partnership are characterized; 2) Follow up strategies are elaborated and validated; 3) GGW recommended practices and technologies for resilience building are identified; 4) New partners required for an effective CIS business model are identified, mobilized and engaged; 5) Collective business models are elaborated; 6) Actors' specific roles are determined; 7) Contracting matters for revenue sharing are clarified.

2. Research approach for the development of PPP Business models for CIS

The methodological approach of this research was participatory and inclusive for all the stakeholders and consisted in a co-development and establishment of "win-win" business models. We first identified key partners based on experts' knowledge and on our working experience on GGW zone which was considered as entry point and used at first for validation of partners list. A meeting was organized with the leaders and staffs of the respective partners department for sharing objectives in order to obtain their commitment to

the initiative. For the evaluation of existing partnerships and CIS mainstreaming into the GGW area and work planning, we organized interviews and focus groups with each of the four main partners (Great Green Wall, Mali Meteo, Orange Mali and Institute of Rural Economy) in order to determine their strengths, weaknesses and new opportunities for CIS designing and dissemination with farmers and pastoralists. This initial meeting engaged six key staff of the GGW Agency including the Director, the Deputy Director, the chief of the three main Units and a specialist of the Agency; Four key staff of Orange Mali Department of rural development (Senekala) including the chief of the Department and three key members of the department; four key staff of MALI-METEO including the Director, the chief of Agro-meteorological information Unit, the database Chief and the IT specialist and four key staff of IER including the scientific research Director, the chief of seed system program, an agro-economist and a scientific officer for water and land management. As far as the development of business models for Public-Private Partnerships for the sustainable management of CIS in the zone of the Great Green Wall is concerned, we first organized a 2 days' workshop with 31 actors while also inviting local representatives of municipality, 'local prefet', farmers community-based organizations, radios' representatives from Nara (a local of the GGW), and agricultural and livestock extension workers. Participants were grouped according to areas of interest to identify areas of partnership and each participant should indicate to others what does it can offer and vice versa. Subsequently the activities were identified, and roles of partners were determined along with future work plan. Then, a second two days' workshop was organized with selected 16 actors only in order to better deepen the ideas and validate the current situation of partnerships and respective business models followed by the development of the action plan for 2022. This last workshop consisted of presenting the analysis of the first workshop (potential business models) results to the actors. We finally described the roles and responsibilities for each actor for the implementation of the validated business models.



Picture 1: Group discussion to identify areas of partnership

The implementation of the research methodology followed four main steps:

Step 1: Identification of partners and profiles assessment: Based on past experience and a preliminary mapping of business needs (producers, responsible of dissemination, users...) in Mali, the research team met GGW agency Leaders to discuss about their presence and partnership in the field. This first entry point lessons learned permitted to meet the other three stakeholders (MALI-METEO, IER and Orange Mali) for a preliminary identification as business model stakeholders. This step allowed to get a first point of view on the roles of each stakeholder.

Step 2: Partnership and Business models development: Following the potential public-private partners profile assessment with the four organizations, a networking and business development workshop was organized on November 19 and 20, 2021 at ICRISAT Campus, Mali.

The main goal of this workshop was to get all the potential public-private partners to confirm the results of the profile assessment, network then develop business models and partnership opportunities for climate information provision to farmers and pastoralists in the Great Green Wall zone in Mali.

Thirty-one (31) participants from the main stakeholders from public and private sectors (Great Green Wall in Mali, Mali Meteo, Orange Mali, ICRISAT, IER, the Municipality, the government representatives, the

farmers community-based organization, the local radios representative from Nara (a locality of the GGW), the National Direction of Agriculture representative and other resource persons) attended the workshop (cf. appendix 7c).

This workshop has been an opportunity to present the profiling data to the whole stakeholders for validation. The outcomes of the profiles assessment were approved by the stakeholders during this workshop. The main findings from the networking and business development workshop were from the group work which consisted of putting potential business parts together to create potential partnership models to achieve the objective of having public-private partnerships and business models for the provision of climate information services to farmers and pastoralists.

At the end of the workshop and from data of the profile assessment, the research team has analyzed their inputs and designed potential business models right after the workshop.

Step 3: Business models validation: This step consisted of presenting the optional business models during a two days' workshop on December 10 and 11 in order to take into account the inputs of the four main partners then validate the business models. In addition to the models, the roles and responsibilities were clarified in the models during this workshop. Thus, this step has been an opportunity to discuss revenue sharing strategies within the validated business model and plan for next step.

Step 4: Business model implementation: This last step represents the output of the three first steps. It consisted of implementing and following of the action plan developed during step 3. The figure 1 represents the summary of the four steps of the research activities.

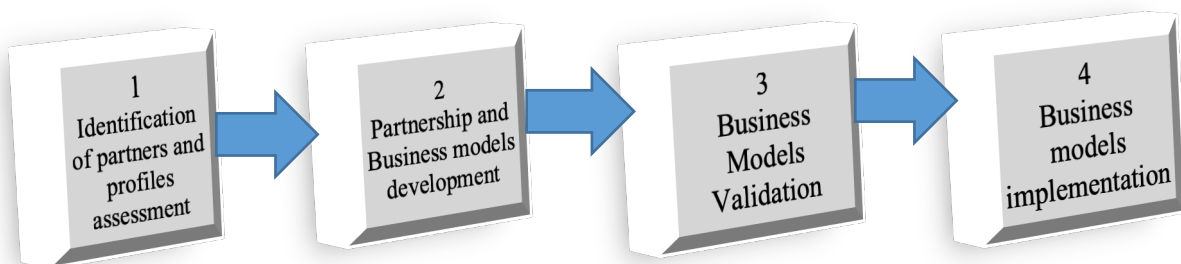


Figure 1: Steps of the research for business models development and validation

3. Stakeholders' characterization and engagement

3.1. Agency of Great Green Wall in Mali

The zone of the Great Green Wall in Africa concerns a strip 9,000 km long and 15 km wide on average. In Mali, the Great Green Wall extends over a length of 2,066 km and a width of 215 km crossing 8 administrative regions, 24 districts, 204 municipalities and more than 2,622 villages (Figure 2) with a population of about 4 million people.

In application of article 5 of the Convention of the Pan-African Agency of the Great Green Wall regarding the establishment of national bodies in the member states, Mali government created firstly the Management

Unit of the Great Green Wall (UGMV) in March 2016. This Unit was erected into the National Agency of the Great Green Wall (ANGMV-Mali) by the government in 2019. The Great Green Wall Agency in Mali was considered as main partner in the present activity because all the PPP activities would be implemented in its intervention zone.

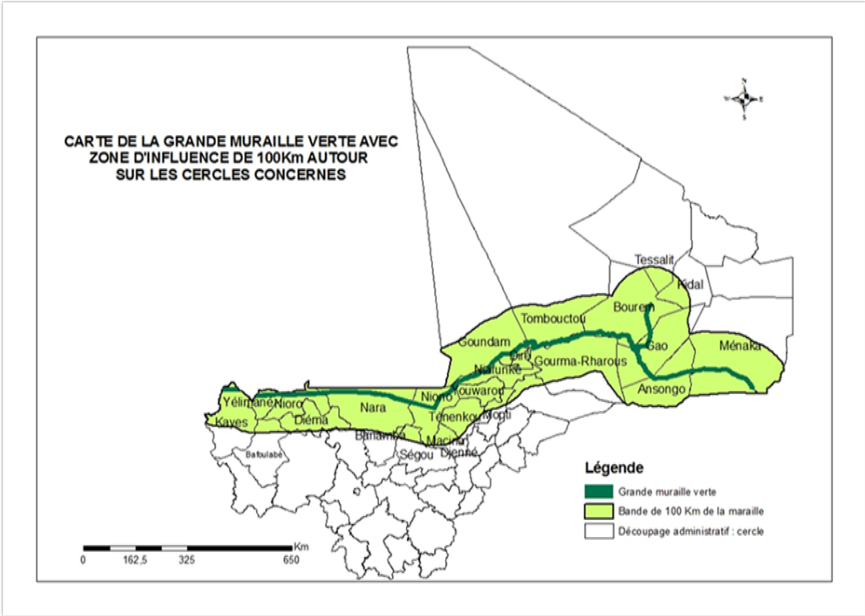


Figure 2: Great Green Wall zone in Mali

The profile assessment indicated that the GGW Agency is newly created and what the research team expected from them (to lead the PPP process with other) will be difficult because the agency does not have staff in the field and it relies on the service providers and the field staff of the Ministry of Agriculture when it has activities. Also, the agency is running on projects and program funding because the government allocated only the running fees to the agency on the national budget. Less activities are funded by the government budget allocation which makes the Agency to depend on external funding. This finding may change the plan that the research had for the agency.

In terms of strengths, weaknesses, opportunities and availability to have public-private partnership focused on climate information services for farmers and pastoralists in its zone, the research showed that the agency has currently many funding partners but not a PPP. However, they are willing to go with PPP in order to achieve its goal.

In terms of strength for public private partnership: The Agency of the Great Green Wall has the space available for both public and private partners where activities could be implemented and where many needed clients are living. This PPP would then be an opportunity for the GGW in Mali to achieve its objective in the area. Also, the agency has the political power to support the PPP in case the model may need political support in Mali or in Africa because the initiative is from the African Union but implemented by the country (Mali). In addition to the two above, the agency has also a great capacity of service

providers' mobilization for activities implementation in the zone of the GGW in Mali. Finally, the Agency has the technical capacity to manage PPP in terms of staffing profile and leaders.

In terms of Weaknesses for public private partnership: As a new agency with the minimum support from the government of Mali for funding activities, the GGW in Mali faces challenges as far as Human, financial and material resources are concerned. The resources are limited because the government is funding only for the administrative running of the agency but not for activities' implementation in the field. Indeed, the Agency relies on external funding in terms of activities implementation in the field. As new agency, the GGW in Mali is also limited for the capacity to raise fund to achieve its mandate. Finally, the slow functionality of the GGW alliance in Mali is also a challenge for the agency. With hundred percent of the functionality of the alliance in Mali, the GGW could overcome some challenges.

In terms of opportunities and availability for PPP: The GGW considers the availability of the Global Climate Fund as an opportunity of PPP in Mali. Since it would be difficult for the agency to go alone for this fund, the agency would like the public and private sectors to make a consortium for this fund. The Agency also considers the research agencies (ICRISAT, IER...) as an opportunity of PPP. Thus, the Agency of the GGW of Mali showed its availability and willingness to go for PPP. However, the agency would like to set up an MoU or a contract prior to any research or activity with ICRISAT or any other research center.

3.2. National Meteorology Agency of Mali (MALI-METEO)

The National Meteorological service was established as agency in 2012 called MALI-METEO with the mission for observation and study of the weather, climate and atmospheric to ensure the safety of population and contribute to the economic and social development of Mali through the provision of information and services to the users. It participates to the development of the national meteorological policy and coordinates its implementation and monitoring for the country.

MALI-METEO is the only public service that has the mandate to provide weather forecast either for private or public sectors in Mali. The agency has then the mandate to provide seasonal weather forecasts which is freely accessible through national TV and radio or through partnership. Currently MALI-METEO relies on ground stations which provide large scale forecasts resulting on large uncertainty. For instance, through national TV or radio, MALI-METEO provides rainfall forecast for the all-region of Koulikoro which represents 90,120 km² and comprise 106 communes while it may rain only in few communes and may not reach other places where farmers are expected. Such large-scale rainfall forecasting is limited for farmer decision-making.

However, "if MALI-METEO is able to provide localized forecasts, we will have confidence in them and this will help us to better plan our field activities" "said a representative of farmers during the first workshop of PPP development" and this indicates farmers' needs for localized forecast.

In terms of the strengths, MALI-METEO can timely provide weather forecast all over Mali represents the only public service that has the mandate to provide weather forecast such as daily temperature, wind speed, seasonal and daily rainfall either for private or public sectors in the country. Specific climate data sharing with partners depends on partnership agreement however clients can also pay the CIS based on negotiated cost.

As far as weaknesses are concerned, MALI-METEO cannot provide localized (9 km²) weather forecast because they agency do not have the appropriate equipment and they are also in lack of qualified human resources. Although MALI-METEO uses national TV, radio and community radios as well as community-based groups to share CIS, they still need more updated and direct ways of information sharing with users. MALI-METEO then express the needs of more resources to implement its activities in order to achieve the goal. The agency depends on the national budget of the government and this budget allocated to the agency cannot cover all the activities planned per year.

In terms of opportunities and availability to go for PPP to provide CIS to farmers and pastoralist, MALI-METEO can generate weather information and share directly with the communities upon agreement. Agency has expressed the needs to go for PPP but would like this PPP a “win-win”. The agency would like to give information then received part of the revenue to cover some cost of the agency.

Having the Malian government as its main source of funding, MALI-METEO considers this public-private partnership as an opportunity to be taken for sharing weather forecasts with large communities but also with technical partners such as NGOs and local extension services. In return, to ensure the sustainability of the system, MALI-METEO requires a return on the investment through which users pay for the services in order to share widely with new and adapted technologies available in the rural areas.

3.3. “My-Agri¹” of Orange Mali (A cellphone Company in Mali)

Orange Mali is a mobile phone company operating throughout the country. Its department of Corporate Social Responsibility supports the rural communities to access to climate information and advices by SMS on phone after subscription through USSD #222# or by voice call using 37333. To access SMS services for daily rainfall, a minimum of one calling unit corresponding to 25 FCFA/SMS (\$ 0.04) or 750 FCFA/month (\$ 1.29) or a sufficient unit is required for ensuring communication. A platform called “Sènèkèla” which means “the farmer” in local language, was set up in 2013 under this department to inform, train and guide farmers and traders through agricultural advice and guidance on agricultural commodities’ prices. This platform is being technically supported by National Research Institute (IER) for providing agricultural advisories such as the use of crop varieties, fertilizer application, disease control, etc. Despite the strengths material, financial and human resources and the capacity of the company to provide personalized CIS, Orange Mali does not have a local partner to work with regarding localized weather forecasts in Mali. The

¹ Sènèkèla is the social development Unit of Orange that works for the rural development

Company is currently partnering with an external weather forecast private company which does not have a focal point residing in Mali with whom Orange Mali could interact directly. The company lacks local partner that can provide localized weather forecast information. The company is ready and willing to go for a PPP and has seen Mali-Meteo as an opportunity provided, they can generate localized weather forecasts for sharing with clients.

3.4. Institute of Rural Economy

The Institute of Rural Economy is a Public Scientific and Technological service with the missions to develop and implement agricultural research programs; to transfer technological innovations to the rural communities and to contribute to the training of agricultural research staff on new technologies on crops.

In terms of strengths, IER is specialized on agricultural research activities for rural development and the main research program focus on climate adapted seed varieties selection, soil and water management technologies, environmental changes studies etc. As public research institute, IER has the mandate from the government to do research and share the results with farmers for demonstration and dissemination.

In terms of weaknesses, IER has a department of communication for rural communities but this does not work well due to low operating budget. As consequence, many research results on new adapted varieties and technologies to climate change are not well known and weakly access by farmers.

IER needs more PPP in order to share and facilitate access to the research results with rural communities. As opportunities and the availability to go for PPP, IER can make available research results through other private or public services because their communication unit is not able to cover the wide communities. The Institute showed a willingness for PPP to support rural communities in the Great Green Wall zone in Mali with the technologies and research results.

4. Conceptual Business models for Public Private Partnership in the GGW zone of Mali

4.1 Current collaborations

In the current situation there is a formal partnership between IER and the My.Agri (Senekela) service of Orange Mali and also between IER and MALI-METEO which consisted of climate information and advice conception then provision to farmers and pastoralists through mobile phone platform or through local radios or community based organization in Mali. These partnerships (Orange-IER and MALI METEO-IER) is not focused on the GGW zone. Also the GGW agency, municipalities, extension workers and community radios are collaborating informally in some villages of the GGW zone.

As of current, it seems the partnership between the key stakeholders (Orange-Mali, MALI METEO, IER and GGW) for using CIS in the intervention zone of the GGW in Mali is very weak or even nonexistent. Below is the diagram presenting the current situation of PPP among the key stakeholders.

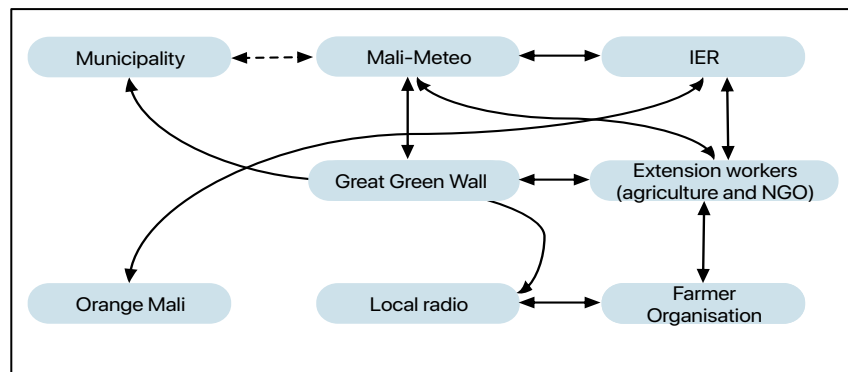


Figure 3: Current collaborations between stakeholders

4.2 Model for Business to Business to Client (BBC)

Based on their respective mandates and what each partner can bring or receive from the others, stakeholders developed and validated a “Business to business to client” model between CIS providers (MALI-METEO and IER), dissemination services (Orange Mali Extension workers) and the end users such municipalities, radios and farmers organization with a focused on the GGW intervention zone of Mali (Figure 4). The GGW zone and agency will be like a connector between service providers, dissemination and users. MALI-METEO, with its new acquisitions of equipment, would be able to provide localized daily rainfall and seasonal forecasts that the sènèkèla platform can share with farmers after voluntary subscription and payment of the service fees to Orange Mali. In this model, the GGW through its connection in field and link with agricultural or livestock extension services and radios will play the role of organization, mobilization, coordination of the CIS provision at the community level. Based on the daily and seasonal rainfall forecasts provided by MALI-METEO, IER will develop and provide a series of agricultural advisories such as adapted varieties according to different agroecological zones, appropriate planting dates and water harvesting technologies etc. to the sènèkèla platform of Orange which will disseminate to farmers, local radio and municipalities through mobile SMS, mobile voice and Call center while taking into account the geolocation of users. In this model, although Senekela transmits the information directly to the farmers, the local radio and the municipalities represent also mainly relays for dissemination to the whole community. End users are mainly farmers but municipalities can also be potential users. The connected dash curve lines represent the feedback of the information. For example, based on forecast farmers share with the senekela platform the quantity of observed rainfall and which will be reported to MALI-METEO and IER for the capitalization, database but also for the elaboration of short-term recommendations.

Expected results such as numbers population using CIS and CSA technologies with the support of PPP will be capitalized as contribution for building community’ resilience to climate change and variabilities in the zone of GGW in connection with the government’s national policy. Advantage of this model is that its operation depends on the involvement of each partner as well as its sustainability depends on the sharing of revenues generated by the system and collected through the sms and voice sms system of the senekela platform of Orange Mali.

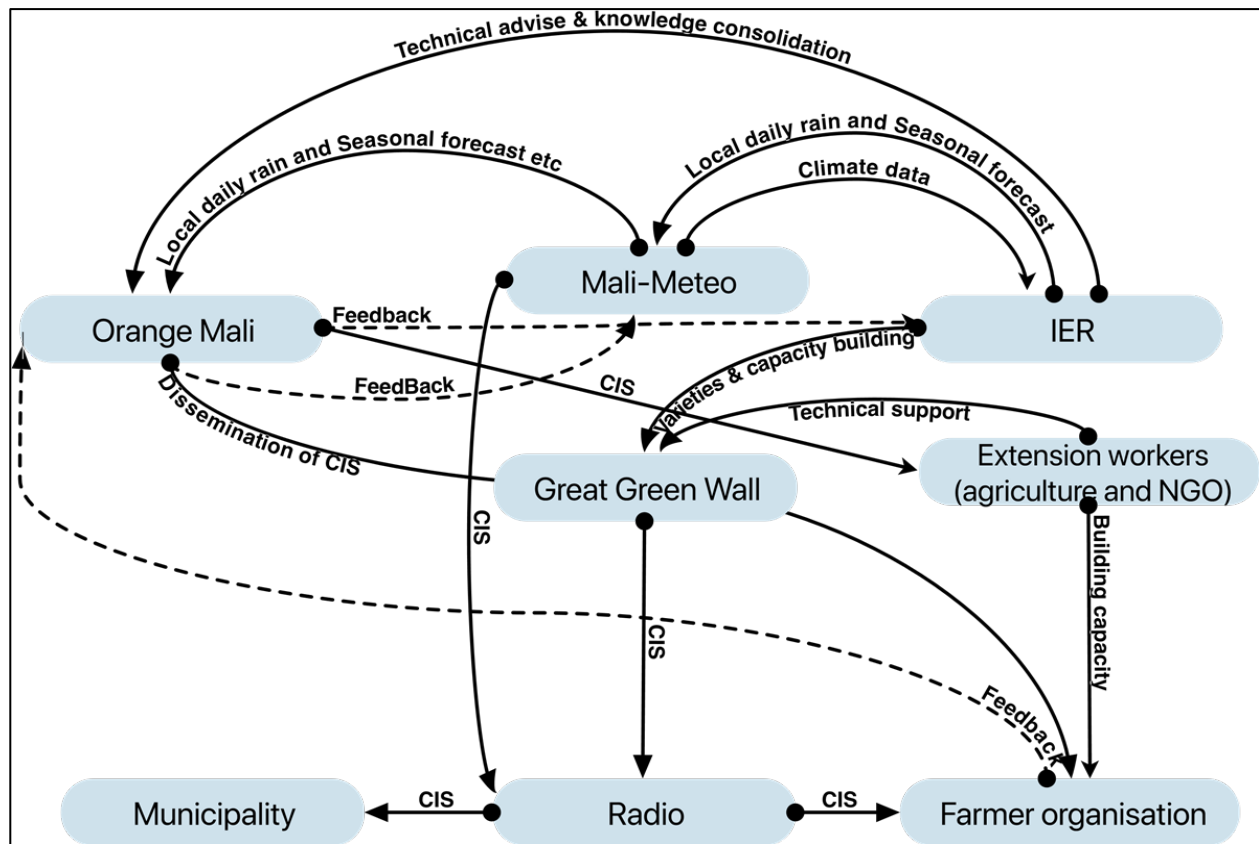


Figure 4: Business model between CIS actors (Orange Mali; MALI-METEO and IER), the Great Green Wall and Clients)

4.3 Model for Business to client (B2C)

The business-to-client model is primarily based on direct interactions between CIS providers and the users. The connected solid curve lines represent information flow from services providers to the dissemination or to end users while the connected dash curve lines represent feedback information among actors. In this model (Figure 5):

Mali-Meteo generates climate forecasts and make it available to IER. IER in turn elaborates technical advices and recommendations which will be shared back to MALI-METEO. Both Mali-Meteo and IER respectively provide weather forecasts and agricultural advice to the “Senekela” platform of Orange Mali. Orange Mali is responsible of the dissemination of climate information and advices provided by MALI-METEO and IER with farmers for making agricultural decisions.

Local radio can also receive directly CIS from MALI_METEO upon an agreement including fees for dissemination.

The connected dash curve lines represent feedback information. In return, the benefits collected by Orange Mali from users (subscription cost, SMS cost) will be a subject of contract negotiation to be shared with MALI-METEO and IER. Feedback on services will be collected from producers and users and through the “Senekela” platform using SMS and voice calls.

This model can be run across the entire Mali because the GGW is not essential for the running of this business model. In case GGW is not able to play its key role of community mobilization/marketing next to users, this model is free from the GGW agency and zone.

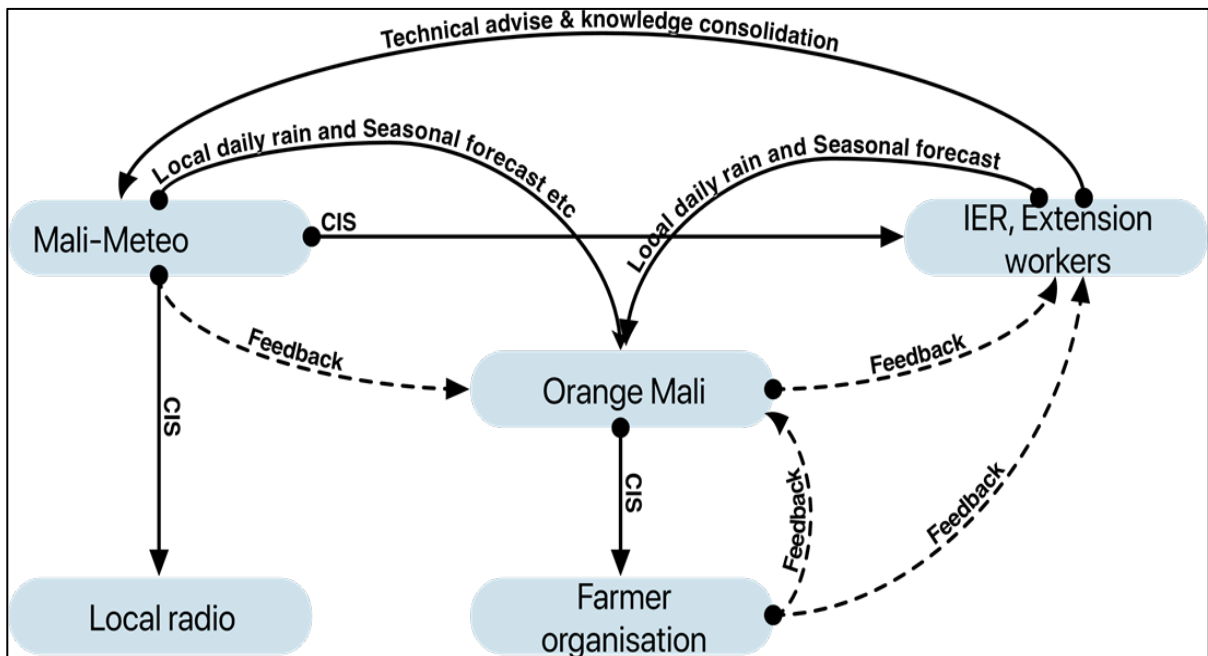


Figure 5: Business to Clients model (B2C).

4.4 Model for Business to Business to clients with revenue sharing concept

This BBC model with revenue sharing aspects has been validated by all the public and private stakeholders involved. In addition, the actors have step by step indicated plans for revenue sharing based on contribution of everyone including donors (Figure 6). In the model, the connected dash curve lines represent feedback information while the dash curve lines in pink color and blue color indicate respectively the revenue sharing flows and any technical and financial support from external donors such as projects, government and INGO. When farmer organizations and other users will subscribe to receive from Orange Mali the CIS and agro-advisories, they will pay Orange Mali prior to the generation by MALI-METEO and IER. This revenue will be shared by Orange Mali with MALI-METEO and IER. Also, if the GGW Agency is able to play the role of mobilization to permit Orange to have a targeted number of users, then Orange Mali is ready to have a non-monetary revenue sharing system (capacity building...) with the GGW.

In this model, MALI-METEO and IER are CIS services producers and they will respectively exchange climate information and agro advisory information in the GGW intervention zone. Orange Mali, as CIS dissemination channel receives daily weather forecast from MALI-METEO and agro advisory from IER. Orange Mali in turn will use the services of the GGW agency which is considered as community mobilizer and facilitator among actors to reach the end users. The extension workers and local NGOs are considered

as the field workers in the GGW intervention zone to mobilize and trained farmers and pastoralists on using of CIS and technologies.

Donors such as government, projects and INGOs are considered as support providers to the other stakeholders for system establishment especially in the beginning. This support can be used to promote use of CIS in new areas and specially to subsidize the costs of text messages and voice calls and benefits as well to service providers (Orange, IER and MALI-METEO) with equipment and capacity building. Local radios need also support from donors broadcasting CIS. Finally, GGW agency may benefit from their funding to play their roles and responsibility in the model especially for community mobilizing and facilitation. As return, donors, (Government, project and INGOs) would have contributed to building community resilient to climate change. The revenue sharing will be a contracting negotiation between Orange Mali and MALI-METEO and between Orange Mali and IER.

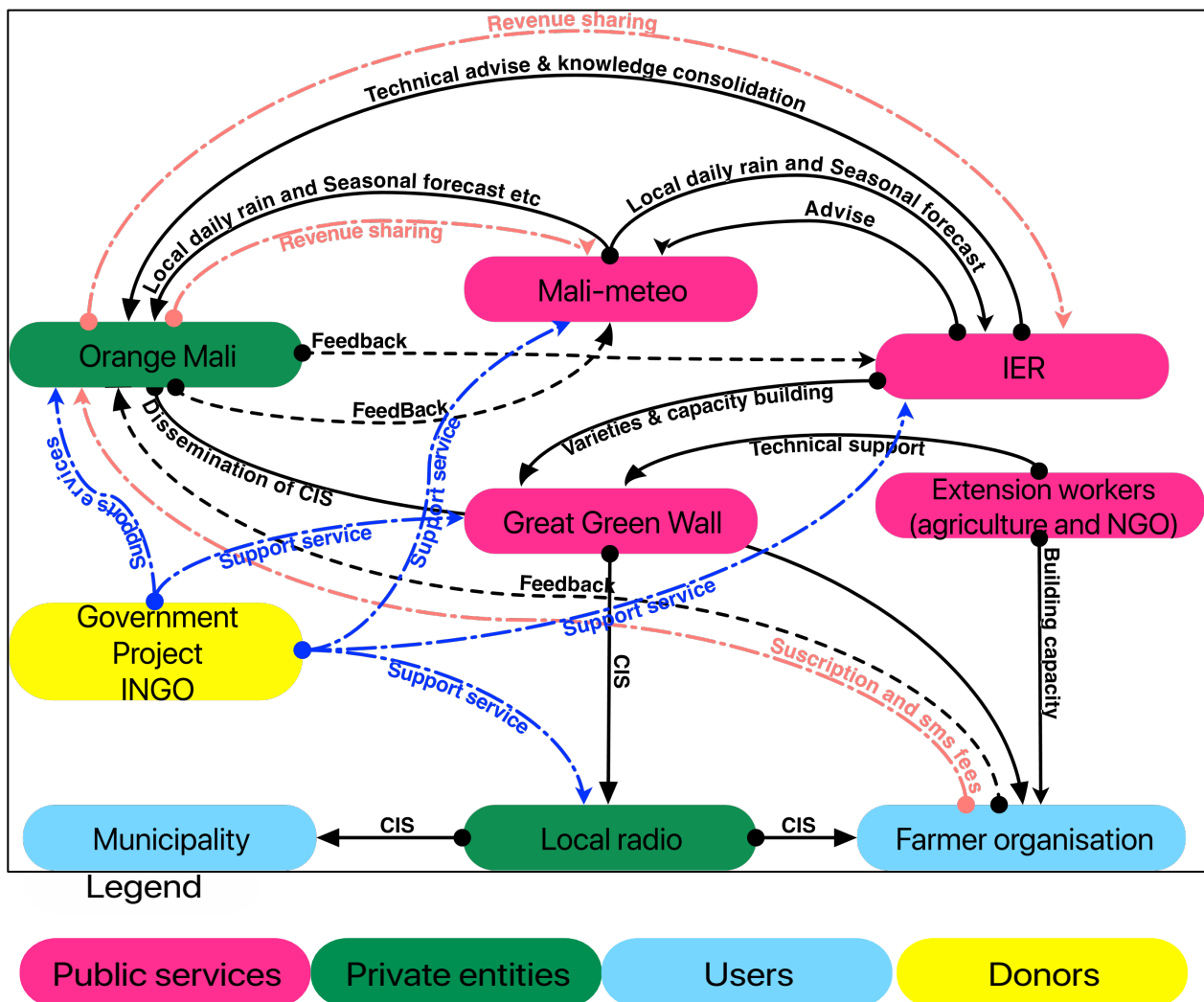


Figure 4: Business to Business to Client (BBC) with revenue sharing aspects.

5. Action planning for the next steps

Based on designed and validated business models (Figure 4, 5 and 6), stakeholders have elaborated comprehensive work plans (Table 1) for the next steps, focusing on contracting aspects and activities' implementation.

Between Orange Mali and MALI-METEO: They agreed to share feedback of PPP validation workshop in their respective Agencies and companies on January 2022 followed by a meeting between the technical teams of the two partners to discuss the partnership contract on February 2022 and develop the partnership contract on March 2022. Climate information service will be provided to farmers and municipalities from May to October 2022.

Between Orange Mali and IER: They have planned to provide feedback to their institutions on the PPP model on January 2022. In February, they will update the existing contract to input current technologies and services that may be added by both parties to enrich the services to be provided to farmers. Conclusion on revenue sharing negotiation for contract update and signing must be done by March 2022. This will pave way for IER to have time to provide the needed advisory services during the 2022 production season.

The sharing of CSA technologies and CIS to Orange by IER then to beneficiaries within the GGW is expected to begin in April 2022. By this time, farmers will be getting ready for the season and they will receive the needed advisories to make the best decision on the way to go this season.

Between MALI-METEO and IER: Both organizations will be debriefing their institutions on the outcomes of the workshop on the PPP in January 2022. MALI-METEO will indicate to IER the available ground stations data and the non-existing stations to IER. This will enable IER to plan on the existing stations with climate content from those stations. Provisions will be made to take care of zones without stations. This is planned to be done by March 2022.

Between MALI-METEO and GGW: They have expressed the needs to know the (sites, number of villages, Meteo station, etc.) which will be available by February 2022 and to develop the necessary memorandum of understanding between the two partners on March 2022 and finally start, dissemination of the rainfall information within the GGW zo. MALI-METEO will monitor in the GGW intervention zone the existing weather station and identify news needs. With the support of donors Project and other partners that have CIS in their agenda to achieve their objectives, CCAFS and ICRISAT will facilitate weather stations acquisition and installation in the GGW intervention zone.

Between MALI-METEO and Radios, OP and GGW agency: They agreed to formalize contracts between MALI-METEO, radio and farmers' organizations from January to May 2022 and make functioning Meteo Community Support Groups (GLAM) from January to May 2022. The seasonal forecasts will be shared from May to October 2022.

Between GGW Agency and IER: They agreed to do the restitution of the PPP validation workshop within their organizations on January 2022, express the needs (needs according to the sites) on February 2022 and to develop a memorandum of understanding in March 2022 to start implement resilience activities in the GGW zone in Mali.

CCAFS/ICRISAT: will coordinate, monitor and evaluate, the PPP implementation. In December 2021 CCAFS/ICRISAT will create PPP email group for sharing information and maintaining connection between partners and institution (Orange, MALI METEO, ANGMV, and IER). will indicate focal point. A meeting is planned in April 2022 for progress evaluation and elaboration of action plan for 2022 the rainy season activities.

Table 1: Work plan for PPP implementation in short term.

Partnership	Activities	Timeline	Responsible
Orange Mali and MALI-METEO	Feedback of the PPP workshop results to home institution	January 2022	Representatives of structures
	Express the needs of the contract objectives/contents between Orange Mali and Mali Meteo	January 2022	Mali Weather
	Schedule a meeting between the technical teams to discuss the partnership contract	February 2022	Orange and Mali Weather
	Develop the partnership contract	Mars 2022	Orange and Mali Weather
	Share climate information with farmers and municipalities	May to October 2022	Orange and Mali Meteo
Orange Mali and IER	Feedback to the institution on the PPP model	January 2022	Orange Mali and IER
	Update the existing contract to input current technologies and services	February 2022	Orange Mali and IER
	Conclude revenue sharing negotiation for contract	Mars 2022	Orange Mali and IER
	Start to share CSA technologies and CIS to beneficiaries within the GGW	April 2022	Orange Mali and IER
MALI-METEO and IER	Feedback of the PPP workshop results to home institution	January 2022	Representatives of structures
	Expressing station needs	Mars 2022	Mali weather
	Acquire and Install weather stations in the ANGMV intervention area (under the support of ICRISAT)	May 2022	Mali weather and IER
	Data (crop and technology) exchange between MALI-METEO and IER	Whole 2022	IER and MALI-METEO

MALI-METEO and the GGW agency	Feedback of the PPP workshop results to home institution	January 2022	Representatives of the two partners
	Defining target (sites, number of villages, Meteo station, numbers of farmers etc.)	February 2022	ANGMV
	Contact elaboration and signing	February 2022	ANGMV
	Develop a memorandum of understanding	Mars 2022	MALI-METEO et ANGMV
	Identify / Inventory the rainfall stations	Whole 2022	MALI-METEO
Mali Meteo, Radios, OP and GGW agency	Formalize contracts between Mali-Météo, radio and farmers' organizations	January to may 2022	MALI-METEO
	Revitalize Meteo Community Support Groups (GLAM)	January to May 2022	MALI-METEO
	Building capacity and sharing seasonal forecasts	May to October 2022	MALI METEO
The GGW Agency and IER	Feedback of the PPP workshop results to home institution	January 2022	Representatives of structures
	Express the needs (needs according to the sites)	February 2022	ANGMV
	Develop a memorandum of understanding	Mars 2022	IER and ANGMV
	Implement the following resilience activities	From April 2022	IER and ANGMV
Coordination Monitoring and evaluation	Meetings with PPP team to assess the action plan	April 2022	CCAFS// ICRISAT
	Creation of the partnership network through an Email group for sharing information and maintaining connection between partners	December 2021	CCAFS/ICRISAT
	Appointment of a focal point and an alternate public private partnership for each structure (Orange, MALI METEO, ANGMV, IER)	December 2021	CCAFS/ICRISAT

6. Conclusion and recommendations

We found that in the GGW zone, the main partners evolve individually according to their interest, and there is lack of coordination, indicating a need to setting partnerships for climate information services use. The development of PPP business models through this activity allowed participants to get to know better each other but also to engage in a win-win partnership under which each partner will play a key role based on their zone of expertise.

The validated and consensual model was the BBC with revenue sharing part as it involved all the partners and provides sufficient room for sustainability. The B2C model is optional and could be run nationwide in Mali. From the findings from this research, we recommend:

1. To MALI-METEO to be able to provide localized daily and seasonal forecasts to Orange Mali and IER;
2. To MALI-METEO to start early capacity building of MALI-METEO staff on the management of localized data;
3. To all the PPP partners to implement the activities of the action plan in order to have agreements for CIS provision to farmers and pastoralists during 2022;
4. To Orange Mali to have an agreement on sharing the profit with partners (MALI-METEO and IER)
5. To Orange Mali to evaluate the profitability of business models for suppliers as well as for users
6. To CCAFS/ICRISAT to follow up, monitor and evaluate components for the process
7. To CCAFS/ICRISAT to have a coordination mechanism among all the stakeholders for the implementation of the PPP and to maintain a facilitation role over the next steps described above.

7. Appendixes:

- a. Detailed deliverables of the research by outputs and activities
- b. List of participants to the preliminary interviews and focus group for the identification of partners and resource persons
- c. List of participants to the model development workshop
- d. List of participants to the validation workshop
- e. Agenda of the PPP development workshop
- f. Agenda of the PPP validation workshop

a. Detailed deliverables of the research by outputs and activities

Activity 1: Evaluation of existing partnerships and mechanisms for mainstreaming climate services and agro-advisories within the GWW activities

Outputs:

Output 1.1: Weakness and opportunities for partnership are characterised.

❖ **Profile assessment findings of the Great Green Wall Agency in Mali:** The profile assessment consisted of two working sessions with the leaders and staff of the Agency. Following these working sessions, it appeared that the Agency is newly created and what the research team expected from them (to lead the PPP process with other) will be difficult because the agency does not have staff in the field and it relies on the service providers and the field staff of the Ministry of Agriculture when it has activities. Also, the agency is running on projects and program funding because the government allocated only the running fees to the agency on the national budget. Less activities are funded by the government budget allocation so that makes the Agency to depend on external funding. This finding may change the plan that the research had for the agency.

In terms of strengths, weaknesses, opportunities and availability to have public private partnership focused on climate information services for farmers and pastoralists in its zone, the research finds both strengths and weaknesses as well as opportunities and willing to go to PPP around CIS in its area. The current situation of the agency is that it has many funding partners but not a PPP. However, they are willing to go with PPP in order to achieve its goal.

- **In terms of strength for public private partnership:** The Agency of the Great Green Wall has the space available for both public and private partners where activities could be implemented and where many needed clients are living. This PPP would then be an opportunity for the GGW in Mali to achieve its objective in the zone. Also, the agency has the political power to support the PPP in case the model may need political support in Mali or in Africa because the initiative is from the African Union but implemented by the country (Mali). In addition to the two above, the agency has also a great capacity of service providers' mobilization for activities implementation in the zone of the GGW in Mali. Finally, the Agency has the technical capacity to manage PPP in terms of staffing profile and leaders.
- **In terms of Weaknesses for public private partnership:** As a new agency with the minimum support from the government of Mali for funding activities, the GGW in Mali face challenges as far as Human, financial and material resources are concerned. The sources of the resources are limited because the government is funding only for the administrative running of the agency but not for activities in the field. The Agency relies on external funding in terms of activities implementation in the field. As new agency, the GGW in Mali is also limited for the capacity to raise fund to achieve its mandate. Finally, the slow functionality of the GGW alliance in Mali is also a challenge for the agency. With hundred percent of the functionality of the alliance in Mali, the GGW could overcome some challenges.

- **In terms of opportunities and availability for PPP:** The GGW considers the availability of the Global Climate Fund as an opportunity of PPP in Mali. Since it would be difficult for the agency to go alone for this fund, the agency would like the public and private sectors to make a consortium for this fund. The Agency also considers the research agencies (ICRISAT, IER...) as an opportunity of PPP. Thus, the Agency of the GGW of Mali showed its availability and willingness to go for PPP. However, the agency would like and MOU or a contract prior to any research or activity with ICRISAT or any other research center.
- ❖ **Profile assessment findings from Mali Meteo**
 - **MALI-METEO strengths in terms of PPP for CIS:** One of the strengths for MALI-METEO is the availability of timely weather forecast in Mali. It is also the only public service that has the mandate to provide weather forecast either for private or public sectors in Mali. The Agency has then the mandate of seasonal forecasts production and sharing with Malian communities. Thus, MALI-METEO becomes unavoidable in terms of CIS in Mali because they are the only public service of meteorology in Mali. It is also free to share the information which produces public or private sectors in case of collaboration or partnership.
 - **As far as weaknesses are concerned,** MALI-METEO cannot provide localized and timely weather forecast. The agency does not have the appropriate equipment to provide localized weather forecast like in 1 to 3 Km radius. They have ground station which provide regional precision forecast. Also, MALI-METEO lack last version equipment that can provide the updated information needed for farmers and pastoralists. In addition to the updated equipment, MM lack skilled human resources to use the updated equipment in order to provide accurate weather forecast to farmers and pastoralists. Finally, MM lack information sharing capacity to the whole communities of the country. They have national TV, radio and community radios as well as community-based groups to share the information but it needs more updated and direct ways of information sharing. MALI-METEO then express the needs of more resources to implement its activities to achieve the goal. The agency depends on the national budget of the government and this budget allocated to the agency cannot cover all the activities planned per year.
 - **In terms of opportunities and availability to go for PPP to provide CIS to farmers and pastoralist,** MALI-METEO has weather information and is ready to share with the communities directly or through a third part. It also has the mandate to do so in the country. The Agency has expressed the needs to go for PPP but would like this PPP a “win-win” one. The agency would like to give information then received a counterpart.
- ❖ **Profile assessment findings from Orange Mali:** The research team did work sessions with the staff of the Corporate Social Responsibility Department for the profile assessment. The outcomes from these work sessions are below:

- **In terms of strengths for PPP to provide climate information to farmers and pastoralists:** Orange Mali as the leader of cellphone companies in Mali has lots of strengths which include the ability to share climate information to a wider community through short message system and to advice farmers and pastoralists through call centers. Also, the company is able to give information depending on the geo local coordination of the clients. In addition to its capacity to share its wider clients, Orange Mali has many clients including farmers and pastoralists in the rural and urban zone. The networks of the company covers many rural areas in Mali. Finally the company has the human, financial and material resources needed for communication and for climate information sharing with a wider communities in Mali.
- **Orange Mali weaknesses identified during the assessment:** Despite the strengths of the company, Orange Mali does not have a local partner in terms of CIS. The Company is partnering with an external weather forecast private company to get information weather forecast to share with farmers and pastoralists. This out of Country Company does not have a focal point in Mali with whom Orange Mali could interact directly in country. The company lack a local partner that can provide localized weather forecast information and advices to farmers and pastoralists to it then will widely share with its clients with new technologies. Orange Mali is partnering with IER but this partnership could not provide weather forecast.
- **Opportunities and the availability as well as willingness to go for PPP to provide climate information to farmers and pastoralists:** The profile assessment come out with a higher need of Orange Mali to have a climate information provision public or private services based in Mali for a local partnership. The company is ready and willing to go for a PPP to get localized climate information then share to clients. The company has also identified MALI-METEO as an opportunity if MM could provide localized weather forecast to it for sharing with clients. Finally the company has expressed its clients as an opportunity to go for a PPP for climate information and advice to farmers and pastoralists.
- ❖ **Profile assessment findings from IER:** As a research public services for agro-pastoralists in Mali, IER has many strengths for PPP partnerships building around advices to farmers and pastoralists. Despite the strengths, the institute has also some challenges as well as opportunities for PPP.
- **Strengths of IER:** IER is specialized in research of seed varieties and production for farmers in Mali. The institute has many competent specialists to support and to advice farmers on seeds production and farming. As a public research institute, IER has the mandate from the government to do research and share the results with farmers for experimentation. Finally the Institute has a department of communication for rural communities even if this department needs to do more for a wide impact on communities.

- **Weaknesses of IER:** In terms of communication and information, IER need to do more in order to permit the rural area to benefit the research results from the institute. Also, the institute needs more PPP in order to share the results of its research with rural communities.
- **As opportunities and the availability to go to PPP,** IER has research information and agro-pastoral specialists to advice farmers and pastoralists through other private or public services because the communication unit is not able to cover the wide communities in need of counseling and research outcomes testing. The Institute showed a willingness for PPP to support rural communities in the Great Green Wall zone in Mali.

Output 1.2: Follow up strategies are elaborated and validated

(See action planning for the next step section on pages 18, 19,20 and 21)

Output 1.3: GGW recommended practices and technologies for resilience building are assessed

- ❖ **Description:** The route of the Great Green Wall in Africa concerns a strip 9,000 km long and 15 km wide on average. In Mali, the Great Green Wall extends over a length of 2,066 km and a width of 215 km crossing 8 administrative regions, 24 districts, 204 municipalities and more than 2,622 villages. The zone has a population of 4 million people in Mali.

In application of article 5 of the Convention of the Pan-African Agency of the Great Green Wall relating to the establishment of national structures in the member states, Mali first created the Management Unit of the Great Green Wall (UGMV) with the government order in March 2016. This Unit was erected into the National Agency of the Great Green Wall (ANGMV-Mali) by the government order N ° 2019-016 / P-RM of September 20, 2019.²

The Agency of the Great Green Wall in Mali was the main stakeholder of the research because all the PPP activities would be implemented in its area.

In terms of recommendations, for climate information system in its zone, the GGW Agency highly recommends the below resilience activities:

- Reforestation
- DRS-CES development (stone barrier, contour line, Zaï, Half-moon, etc.)
- Crops rotation and dual purpose adapted varieties
- Vegetable crops
- RNA (Assisted Natural Regeneration)
- Integrated Community Agricultural Farm (FACI)
- AGR to allow communities to have an occupation and avoid the cutting of wood
- Early warning activities
- Promotion of adapted cultures

² Présentation de l'Agence de la Grande Muraille Verte au Mali, 7 mai 2021.

- Promotion of renewable energies (gas stoves etc.)
- Promotion of Non-Timber Forest Products (NTFPs)
- Intensification of animal husbandry
- Demonstration of new agro-pastoral technologies

Etc.

Activity 2: Building PPP for Sustainable climate risk management within the GGW

Output 2.1: New partners required for an effective CIS business model identified, mobilized and engaged
Following the potential public private partners profile assessment with the four organizations and ICRISAT, a networking and business development workshop took place on November 19 and 20, 2021, in the ICRISAT conference room.

The main goal of this workshop was to have all the potential public private partners to confirm the results of the profile assessment, network then develop business models and partnership opportunities for climate information provision to farmers and pastoralists in the Great Green Wall area in Mali.

Attended the meeting representatives of the four potential public private partners and other stakeholders including the agency of the Great Green Wall in Mali, Mali Meteo, Orange Mali, ICRISAT, IER, the Municipality, the government representatives, the farmers community-based organization, the local radios representative from Nara (a locality of the GGW), the National Direction of Agriculture representative and other resource persons.

The first activity consisted of collecting the expectations from participants. At the beginning of the workshop, participants would like to:

- Determine the role of each stakeholder for PPP establishment.
- Establish a public private partnership among the stakeholders involved in the intervention zone of the Great Green Wall;
- Identify the intervention zone of the Great Green Wall in Mali.
- Establish an information sharing platform around the Great Green Wall initiative in Mali;
- Clearly identify the climate information and services needs of different services operating in the Great Green Wall zone in Mali;
- Acquire a public and private partnership based on development strategy;
- Set up a climate risk management system in the zone of the Great Green Wall in Mali;
- Acquire a partnership that can help my service to better convey all the essential information in the fight against the effects of climate change;
- Establish a concrete partnership among stakeholders in the zone of the Great Green Wall and carry out resilience activities;
- Provide tools to deal with climate risk management in the intervention zone of the Great Green Wall;

These expectations were combined with the objectives of the workshop then guided the other sessions. Expectations were collected followed by the presentation of each stakeholder's organization/company. The workshop then has been an opportunity to present the profiling data to the whole stakeholders for validation. The outcomes of the profiles assessment were approved by the stakeholders.

The main findings from the networking and business development workshop were from the group work which consisted of putting potential business parts together to create business models to achieve the objective of having public private partnerships and business models for the provision of climate information to the farmers and pastoralists.

Output 2.2: Collective business model is elaborated

The research team and stakeholders came out with the following validated business models

Model for Business to business to client (BBC) *(See figure 4 on page 14 of the report)*

Model for Business to client *(See figure 5 on page 15 of the report)*

Model for Business to business and to client with revenue share aspects: *(See Figure 6 on page 17 of the report)*

b. List of participants to the preliminary interviews and focus group discussions for the identification of stakeholders and resource persons

N°	Prénom	Nom	Structure
01	Bandiougou	Dembélé	IER/ECOFIL
02	Mamadou	Coulibaly	IER
03	Cheick Oumar	Dembélé	IER
04	Kalifa	Traoré	IER
05	Mme Sidibé Zeineb	Keita	ANGMV
06	Bounama	Sacko	ANGMV
07	Daouda	Konaré	ANGMV
08	Moussa	Sidibé	ANGMV
09	Diénébou	Diallo	ANGMV
10	Dramane	Traoré	Orange Mali
11	Alagni	Satao	Orange Mali
12	Abdoulaye	Sidibé	Orange Mali
13	Mme Daoulata	Maiga	Orange Mal
14	Zoumana	Goita	Gouvernorat NARA
15	Bouba	Traoré	ICRISAT
16	Mme Ba Afoussatou	Diarra	Mali Météo
17	Issa	Traoré	Mali Météo
18	Boucary	Dara	Mali Météo
19	Djibrilla A	Maiga	Mali Meteo

c. List of participants to the model development workshop

N°	Prénom	Nom	Structure	Function
01	Bandiougou	Dembélé	IER/ECOFIL	Agroéconomiste/IER
02	Mme Sidibé Zeineb	Keita	ANGMV	Gender Officer
03	Bounama	Sacko	ANGMV	Head of the Agro-Pastoral production strengthening section
04	Mamadou	Coulibaly	IER	Chief of Maize program
05	Abdoulaye	Coulibaly	ICRISAT	Admin Saff
06	Sayba	Konaté	ICRISAT	Logistic/IT support
07	Dramane	Traoré	Orange Mali	Agro-advisor

N°	Prénom	Nom	Structure	Function
08	Alagni	Satao	Orange Mali	Assistant of the social responsibility Officer
09	Oumar	Bouaré	Prise note Assistant	Notes taker for the Workshop
10	Rokia	Koné	Assistante Consultant	Assistant AFEXG/Consultant
11	Seydou	Diarra	Gouvernorat NARA	Register of Nara Governotate
12	Oumar	Dembélé	Exploitant Agricole	Farmers organization from Nara
13	Modibo	Keita	Radio	Director of Radio Nara
14	Bouba	Traoré	ICRISAT	Researcher/ICRISAT CSCA
15	Mme Ba Afoussatou	Diarra	Mali Météo	Data base Manager
16	Diénébou	Diallo	ANGMV	Chief of Département
17	Sékou Sala	Sissoko	DNA	Chief of Department
18	Cheick Oumar	Dembélé	IER	Researcher
19	Issa	Traoré	Mali Météo	Head of agri-meteo Unit
20	Boucary	Dara	Mali Météo	Agro-Meteo software Officer
21	Daouda	Konaré	ANGMV	
22	NIKO	Gordon	Esako Ghana	Consultant/Researcher
23	Boubacar Oucka	Boly	Président Conseil Cercle de NARA	President of conseil de cercle Nara
24	Yaya	Bouaré	Consultant	Consultant
25	Woroo	Nadine	ICRISAT	Staff ICRISAT
26	Moussa	Sdibé	ANGMV	Deputy Director of the GGW agency of Mali
27	Abdoulaye	Sidibé	Orange Mali	Rural Officer/ Social responsibility
28	Mme Daoulata	Maiga	Orange Mal	Marketing Officer
29	Zoumana	Goita	Gouvernorat NARA	Governor advisor of Nara
30	Kalifa	Traoré	IER	Chief of Research IER
31	Siriman	Keita	Gouvernorat	Governor staff Nara

d. List of participants to the model validation workshop

N°	Prénom	Nom	Structure	Function
01	Mamadou	Coulibaly	IER	Chief of Maize program
02	Sayon	Kamissoko	IER	Researcher/Laboratory of seed
03	Dramane	Traoré	Orange Mali	Agro-advisor
04	Abdoulaye	Sidibé	Orange Mali	Rural Officer/ Social responsibility
05	Alagni	Satao	Orange Mali	Assistant of the social responsibility Officer
06	Issa	Traoré	Mali Météo	Head of agri-meteo Unit
07	Boucary	Dara	Mali Météo	Agro-Meteo software Officer
08	Mme Ba Afoussatou	Diarra	Mali Météo	Data base Manager
09	Djènèbou	Diallo	ANGMV	Chief of Département
10	Abdoulaye	Coulibaly	ICRISAT/Support staff	Admin support Saff
11	Sayba	Konaté	ICRISAT/Support Staff	IT Support Staff
12	Bouba	Traoré	ICRISAT	Research Team Leader
13	NIKO	Gordon	Esako Ghana	Researcher
14	Yaya	Bouaré	Consultant	Consultant Research Manager
15	Oumar	Bouaré	Prise note Assistant	Notes taker/Assistant
16	Rokia	Koné	Assistante Consultant	AFEXG/Consultant Assistant

e. Agenda of the PPP development workshop

Date: November 19 and 20, 2021 **Place:** Millennium Hotel

Time	Session/Activity	Responsible
8:00-8:30	Arrival of participants and installation	Hotel/Yaya, Coulibaly
8:30-9:00	Introduction: Introduce in peers, each participant will present his/her neighbor)	Yaya and Haoua
9:00-9:10	Introduction of the Workshop: Agenda validation, the objectives and expectations of the participants.	Bouba
9:10- 10:10	Brief presentation of Agencies/departments/companies by representatives in 5 minutes: mandate, vision, objectives and the motivation for their presence at the workshop - La Great Green Wall, MALI-METEO, Orange Mali (Sanji/Sènèkèla), IER, OPV, Municipalities, Radio - ICRISAT/CCAFS, Gordon from Ghana	Yaya, Bouba, Oumar, Haoua et Gordon
10:10- 10:25	Presentation of data collected from public, private on Partnership opportunities, strength and weakness	Bouba, Gordon and Yaya
10:25- 10:40	Coffee Break	
10:40-11:40	Group Work by group of organization: Identify the partnership interests / opportunities that you have seen in a structure/Organization that you believe is beneficial for the communities in terms of climate information in the area of the Great Green Wall in Mali. - Orange, IER and Mali Météo - GGW, farmers and extension workers - Municipalities, gov. and Radio	Groups of organization, department and services
11:40- 12:40	Group work by peer organization wishing or having seen a partnership opportunity with the peer: Based on the opportunities identified, considering the key element of your partnership (existing, what is missing...). Make a plan for making this partnership a reality.	Groups
12:40- 14:00	Lunch and Mosque Break	
14:00- 14:30	Group work continuation	
14:30- 15:15	Presentation of productions and synthesis	Groups/Yaya
15:15- 16:00	Formal partnership strategy: Each organization identify the needs allowing it to enter into partnership with one or two services/organization. Develop a guide/steps for the implementation of these partnerships.	Groups of partners
16:00- 16:30	Presentation of the strategies/steps	Groups
16:30- 16:45	Summary of the day and end of the Workshop	Dr. Bouba, Yaya

f. Agenda of the PPP models validation workshop

Date: December 10 and 11, 2021

Place: ICRISAT CONFERENCE ROOM

Time	Session/Activity	Responsible
Day 1: December 10, 2021		
8:00-8:30	Arrival of participants and installation	Yaya and Rokia
8:30-9:00	Quick introduction of participants	Yaya and Haoua
9:00-9:10	Introduction of the Workshop: Agenda validation, the objectives and expectations from participants.	Bouba, Yaya and Gordon
9:10- 09:40	Presentation of the results: from profiling to the model. Where are we? Presentation of the current situation and the 2 Business models	Yaya, Bouba, Oumar, Rokia et Gordon
09:40- 10:25	Questions and answers. Where are we going? Validation - Orange, Mali Meteo, IER and GGW - Orange and Meteo - Orange and IER	Bouba, Gordon and Yaya
10:25- 10:40	Coffee Break	
10:40-12:40	Who will receive what? Designing the financial part of the model:	Yaya, Gordon and Bouba
12:40- 14:00	Lunch and Mosque Break	
14:00- 15:30	Action planning for next step based on the workshop 1 action plans and support needed	
15:30- 16:00	Summary and end of the day	Bouba, Yaya and Gordon
Day 2		
09:00- 11:00	Action planning for next step based on the workshop 1 action plans and support needed	Bouba, Yaya and Gordon, participants
11:00- 12:00	Action plan presentation and validation	Bouba, Yaya and Gordon, participants
12:00- 13:00	Summary of the workshop and end	Bouba, Yaya and Gordon



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



The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) brings together some of the world's best researchers in agricultural science, development research, climate science and Earth system science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. For more information, visit us at <https://ccafs.cgiar.org/>.

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