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AICCRA Scaling Vision: Mali

Elliott Ronald Dossou-Yovo | Samuel Guindo | Salif Doumbia | Mahamadou Sidibe | Afoussatou Diarra | Koichi Futakuchi

Rice-based systems play a critical role in Mali, providing the most important source of calories for the population (Haggblade et al., 2017). Demand for rice is growing at more than 6% per year – faster than for any other staple food in the country, because of population growth, urbanization, and changes in consumer preferences (FAOSTAT, 2022).

Rice cultivation is the major source of income for more than 1.1 million rice farmers (NRDS, 2009). With 0.8 million ha, Mali is the second largest rice producer in West Africa supplying 12% of the regional rice production, but it requires enhanced rice production to meet the 31% demand-supply gap, which is filled through rice importation at the cost of over \$24 million annually (FAOSTAT, 2022). Lower rice production compared to the local demand is explained by the low rice yield (2.8 t/ha compared to the world average of 4.8 t/ha), because of sub-optimal crop management practices, soil constraints (nitrogen, and phosphorus deficiency), biotic stresses (weeds, birds, rodents, insects, and diseases), landscape biodiversity and ecosystem services degradation, and climate change (NRDS, 2009).

Highly variable rainfall patterns, drought spells, shortening of the rainy season, and increased incidences of pests and diseases because of climate change, as well as violent conflicts, which Mali has suffered from since 2012 threaten the sustainability of agricultural production (Diallo et al., 2020). Impacts of climate change on farming

communities can be different based on the gender of the community members. Women are usually more vulnerable than men due to their limited literacy and mobility constraining access to climate information and agricultural practices, increased workloads following male outmigration in search of off-farm sources of income, insecure land tenure and social norms, and limited resources including assets and decision making (Diarra et al., 2021).

Among the whole population, the effects of climate change first and foremost affect farmers and herders, who make up about roughly 80% of livelihoods in Mali (Relief Web, 2021). Diversification with low-water requirements and nutrient-dense crops like vegetables, legumes, tubers, and fish is practiced in rice landscapes, but it faces similar constraints as rice, requiring farmers access to and adoption of climate-smart, nature-positive (integrated landscape management), and gender- and youth-friendly technologies.

Conceptual framework that informs the scaling vision

AICCRA-Mali scaling vision is to ensure that by 2030, 1,000,000 farmers, including 35% women use the CSA and CIS interventions developed, validated, or scaled by the project to enhance the security of income, employment and food including nutrition in the face of climate change. The short-term objective is to enhance the yield,

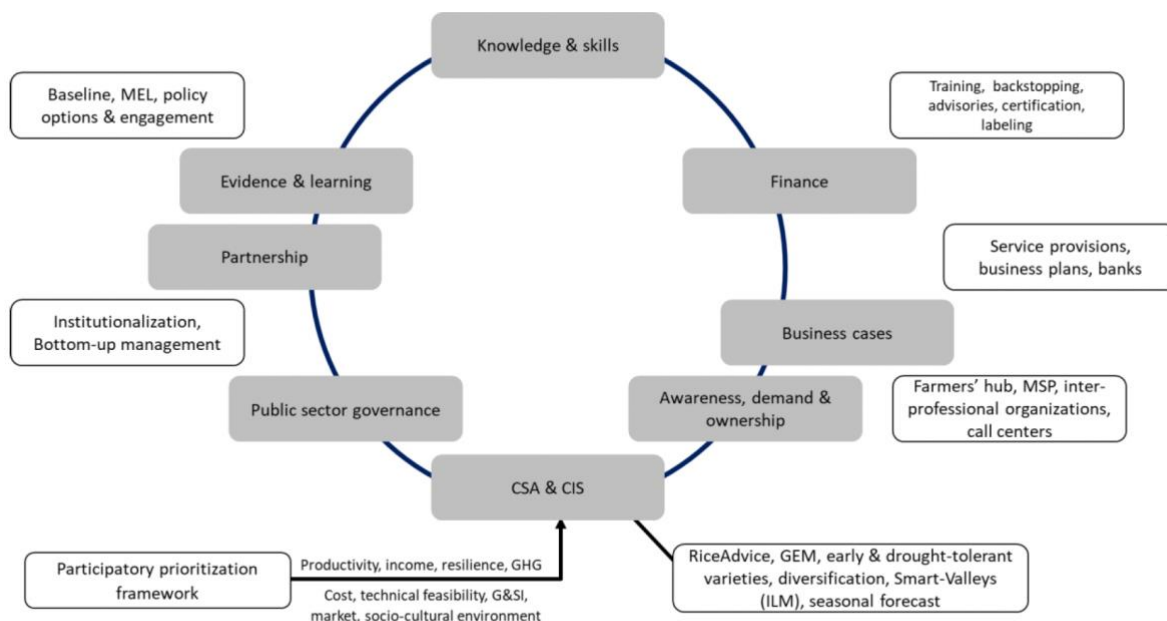


Fig. 1. Conceptual framework for scaling

income, food, and nutrition security of 250,000 farmers including 35% women in the face of climate variability and climate change by December 2023 by adopting innovative partnerships and inclusive business models to ensure sustainability.

AICCRA-Mali uses a conceptual framework consistent with the theory of change of the whole AICCRA project (Fig. 1). In a nutshell, the CSA and CIS scaled are identified through a participatory prioritization framework. Farmers hub, multi-stakeholder platform, inter-professional organizations, and call centers are employed to increase awareness, demand, and ownership. Business models are developed and implemented with banks, micro-finance institutions, service providers, and farmers' organizations based on business plans that respond to farmers' demand.

Training, backstopping, and advisories are provided to support technologies adoption, and also in certification, and labeling. Baseline, monitoring, evaluation and learning are used to provide evidence, understand the enabling environment, translate into policy options, and subsequent engagement with government agencies, donors, and private organizations for institutionalization. Bottom-up management through multi-stakeholders dialogues at local, sub-national, and national levels is promoted for

enhanced public sector governance. Central to this process is the partnership at all levels.

Impact pathways to achieve that vision, and how outcomes are scaled

Fig. 2 describes the major mechanisms used to scale the outcomes. Syngenta Foundation, a scaling partner of AICCRA-Mali, uses the Center for Mechanized Agriculture (CEMA), "Saving for Change" financing mechanism, and the "Farmers' hub" models for scaling drought-tolerant and early maturing rice varieties, RiceAdvice, mechanization services, solar-powered irrigation systems, and diversification options in rice-based systems.

A CEMA is a profit-oriented farmers' organization providing mechanization services and agricultural advice. Syngenta Foundation supports the CEMAs in accessing loans from the local banks by providing 60% of the guaranty funds, while the remaining 40% is paid by the CEMAs themselves. Using the loans, the CEMAs acquire agricultural machinery, quality seeds of early maturing and drought tolerant rice varieties, fertilizers, and recruit young service providers based on their business plan. The young service providers provide mechanization services, use RiceAdvice to generate

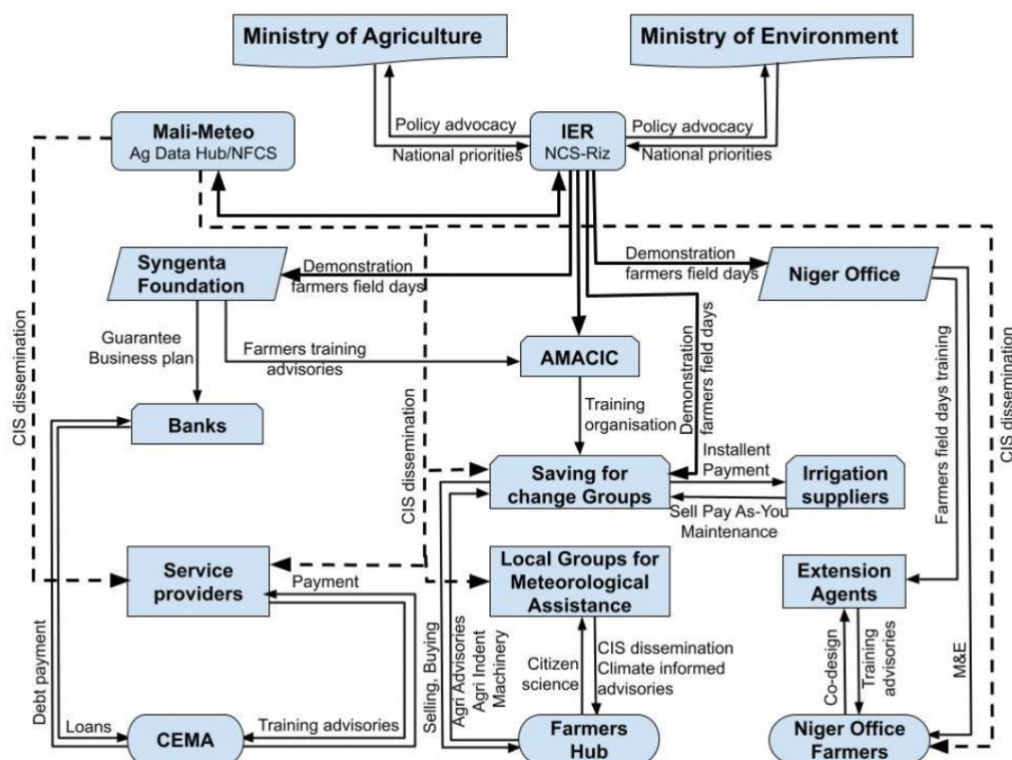


Fig. 2. Mechanisms for outcome scaling

recommendations on cropping calendar to avoid climatic stresses, appropriate variety, fertilizer application, and provide backstopping to farmers in the application of the recommendations. The young service providers are paid by the farmers themselves based on the services provided. AICCRA-Mali strengthens the capacity of the young service providers.

Limited access to finance is a major constraint to the adoption of CSA and CIS innovations in Mali. To address that issue, AICCRA-Mali established collaborations with AMACIC NGO, and Syngenta Foundation for Sustainable Agriculture for establishing the “Saving for change” financing mechanism. The “Saving for change” is a community savings group that builds upon traditional rotating savings and credit associations, but introduces the concept of loan repayment with interest, orienting the groups toward income generation and growth. Using this local financing mechanism, AMACIC NGO encourages farmers to engage in the Farmers’ hub business model for cultivating legumes and vegetables during the dry season for cash.

“Farmers’ hub” is a one-stop commercial service platform creating smallholders’ access to quality inputs, agri machines, markets, finance, and knowledge for vegetable and legume cultivation. As well as selling produce, smallholders go to the “Farmers’ hubs” to access quality seedlings, farm machinery, post-harvest handling equipment, marketing information, and agronomic advice for producing vegetables and legumes during the dry season with an overall effect of the rise in farm yield and income.

In response to water scarcity limiting crop cultivation during the dry season and the high cost of diesel and electricity associated with the use of traditional irrigation systems, AICCRA-Mali organizes demand-supply workshops events to link farmers and solar-powered irrigation suppliers and informs on the “Pay-As-You-Go” business model. This enables farmers to pay off the solar irrigation system in installments, with each payment contributing to the total purchase price of the system.

Niger Office, a partner of AICCRA-Mali, uses the Niger Office platform composed of 442,881

Table 1. Contribution of the activities to the scaling vision

Security of income, employment, and food including nutrition to 1,000,000 farmers (35% women) by 2030 in the face of climate change			
By 2030	Outcome 1: 1 million farmers use CSA and CIS to improve their resilience and food and nutrition security scores	Outcome 2: 5,000 youth and 2,000 women are engaged in business models	Outcome 3: The Malian government used CSA and CIS scaled by AICCRA for climate-related decision making
	Activities: (a) Community engagement in equitable access to agri-business opportunities, (b) Gender focused social and behavioral change communication. Stakeholders: Public and private agricultural extension services, radios, TV, service providers. Number of beneficiaries: 350,000	Activities: (a) Strengthening multi-stakeholders coordination at community, sub-regional and national levels. Stakeholders: Multi-stakeholders platforms, Researchers, extension staff. Number of beneficiaries: 20,000	Activities: (a) Institutionalization of best bet interventions in NFCS, RCoEs//CNS-Riz, national strategies Stakeholders: Governmental agencies, farmers, researchers, extension staff. Number of beneficiaries: 500
	Activities: (a) Effective financial business models using CEMA, Farmers' hub & linking with banks (>600,000), (b) Niger Office platform (542,881 farmers), (c) CIS dissemination using Senekela platform, and local group for meteorological assistance. Stakeholders: Extension services, service providers, Producers and traders, associations, financial institutions, development investors, NGOs. Number of beneficiaries: 250,000	Activities: (a) Mapping & engagement with other projects (FSRP) and initiatives, (b) Capacity building of actors at all levels. Stakeholders: Producers' and traders' associations, Researchers, extension staff, ministries, department, and agencies. Number of beneficiaries: 20,000	Activities: (a) Mapping and monitoring scaling domains; impact assessment and MELA, (b) Policy options & engagement, (c) Institutionalization in the agenda and strategies of national partners. Stakeholders: development organizations, extension services, producers' and traders' associations, NGOs. Number of beneficiaries: 10,000
Short-term by 2023	Activities: (a) Participatory prioritization of CSA and CIS packages, (b) Field demonstrations, & farmers' fields days, (c) Barriers and incentive mechanisms for large-scale adoption, (d) Identification of business models. Stakeholders: Producers' and traders' associations, financial institutions, development investors, NGOs, researchers, extension staff Number of beneficiaries: 5000	Activities: (a) Training materials co-development in CSA, CIS, ILM, (b) Training of trainers, (c) Training of young researchers, (d) Strengthening NFCS, RCoEs/CNS-Riz. Stakeholders: Producers' and traders' associations, Researchers, extension staff. Number of beneficiaries: 1000	Activities: (a) Ag-data hubs, (c) Gender-transformative agribusiness hubs, (c) multi-stakeholder platforms. Stakeholders: Public and private agricultural extension services, Producers' and traders' cooperatives/associations, NGOs. Number of beneficiaries: 250

farmers including 51% of women supported by 107 local extension agents (31% women) to scale drought tolerant and early maturing rice varieties, alternate wetting and drying, and GEM parboiling technique in the Niger office zone, the largest irrigated scheme in Mali. By strengthening the capacity of the local extension agents, and engaging with the management of the Niger Office, AICCRA-Mali ensures the technical sustainability of the interventions, but also the institutional sustainability. Indeed, decisions are taken by Niger office management to include the scaling of the above-mentioned interventions in their strategy and continue the scaling using their funds.

To ensure climate information services are sustainably used by farmers, the National Meteorological Agency of Mali (Mali-Meteo), a partner of AICCRA-Mali, which hosts the Ag-data hub and NFCS, collaborates with the other scaling partners (Syngenta Foundation, Niger Office, AMACIC NGO), Orange, and local radios and provides CIS to the staff used in their business models. These staff now provided the CIS to farmers and supported them in making and implementing climate-informed decisions. Besides, Mali-Meteo uses the local group for meteorological assistance to support in climate-informed decisions, and promotes citizen science.

IER, a research partner, hosting the National Center of Specialization in rice, uses on-farm demonstrations, field schools, and multi-stakeholder platforms to inform about the benefits of CSA while also facilitating access to inputs, information, and markets and reducing conflicts caused by resource use by diverse stakeholders at the community level. IER, in collaboration with other research partners, ensures the evaluation of the project effects, their documentation in policy briefs, and engagement with government actors in order to incorporate the project's validated CSA and CIS into national strategies. IER also informs other partners on the national priorities that are integrated into AICCRA implementation.

Linkages with World Bank and other large initiatives

AICCRA-Mali works to develop the fundamental knowledge, services, and institutions required for the successful implementation of Mali FSRP, and government initiatives in Mali. AICCRA-Mali is developing an Ag-data hub, strengthening the NFCS, and capacitating Mali-Meteo in ENACTS, citizen science, as well as supporting Mali HYDROMET Project in agro-advisory services, and these are critical for upgrading food crisis prevention and monitoring systems planned under Mali FSRP.

AICCRA-Mali strengthens the capacity of the National Center for Rice specialization in climate-smart, nutrition-sensitive, gender- and youth-friendly technologies, and innovation platform establishment and functioning, and closely involved them in training, meetings, scientific exchange visits, which are required to strengthen Mali's national agricultural innovation system as planned under FSRP. AICCRA-Mali strengthens the capacity of the Ministries of Agriculture, Environment, National Center for Specialization in Rice, GTP, and development organizations such as the SASSAKAWA Africa Association in integrated landscape management focusing on sustainable intensification and diversification with nutrient-dense foods, while preserving biodiversity and ecosystem services in lowlands landscape using the low-and participatory approach Smart-Valleys, critical to strengthening national food security through integrated landscape management as planned under Mali FSRP. AICCRA-Mali strengthens multi-stakeholders coordination at local, sub-national, and national levels to facilitate both horizontal and vertical knowledge exchange, and bottom-up management, organizes farmers and engages with public and commercial banks to provide loans with convincing business plans, which is critical for developing target value chains as planned under Mali FSRP.

Project activities are planned and implemented in close collaboration with key players of Mali FSRP. Besides, government and private initiatives with the aim of strengthening resilience to climate change are mapped and involved in AICCRA-Mali activities. These initiatives include the Feed for Future, Association Vision 21, SENEKENA NIEWATON, Djikitoukou, URADD, etc.

For Further Reading

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About the Authors

Elliott Ronald Dossou-Yovo is the country leader of the AICCRA project in Mali and is an agriculture and climate change specialist at the Africa Rice Center.

Samuel Guindo is the head of AgriServices at Syngenta Foundation for Sustainable Agriculture, and the focal point of AICCRA Mali at Syngenta Foundation for Sustainable Agriculture.

Salif Doumbia is the head of Rainfed lowland rice program at the Institute for Rural Economics (IER), an AICCRA-Mali partner.

Mahamadou Sidibe is an environmental and safeguard assessment specialist at Niger Office and is the focal point of AICCRA-Mali at Niger Office.

Afoussatou Diarra is the manager of climate database at Mali-Meteo and is the focal point of AICCRA-Mali at Mali-Meteo.

Koichi Futakuchi is the lead of the Sustainable Productivity Enhancement Program at Africa Rice Center