

# Info Note

## Climate-smart solutions for Mali

### *Findings from implementing the Climate-Smart Agriculture Prioritization Framework*

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#### Key messages

- A major challenge for policymakers to operationalize CSA to promote climate resilient agricultural systems is the identification, prioritization, valuation (cost-benefit and trade-off analysis) of climate-smart options and portfolios.
- The 12 months Climate-Smart Agriculture Prioritization Framework (CSAPF) implemented in Mali, enabled sound engagement with the key national and international stakeholders and led to the co-development of 2 prioritized CSA portfolios and related actions plans for the Sudanese region.
- Critical attention must be given to the selection of the implementing partner to ensure sound knowledge of the existing technical and institutional landscape involved in CSA related planning, engagement skills and ability to take full ownership of the process.
- The definition of portfolios assessed in terms of CSA performances can favor synergies between sectorial projects while the assessment of the economic performances of portfolios can permit to analyze their potential for adoption by farmers
- First outcomes of the process are the inclusion of prioritized practices in ongoing development projects and influence on the drafting of future calls for agricultural development proposals by regional donors.

#### What challenges does climate change pose to Malian agriculture?

Mali is experiencing erratic rainfall, resulting in more frequent dry years, which threaten agricultural productivity and growth. The national economy is vulnerable to climate change due to 50% of GDP coming from the agricultural sector and 75% of the population living in rural areas. To attain food security objectives within this context of increased climatic variability, sustainable improvements in agricultural productivity must be

integrated into development and climate change policies and strategies.

The Climate-Smart Agriculture (CSA) concept arises from a need to provide innovative solutions towards the complex and integrated goals of increasing yields, improving resilience, and promoting a low emissions agricultural sector. Through an integrated approach to development, CSA emphasizes synergies between productivity, adaptation, and mitigation, and environmental, social, and economic co-benefits derived from adopting various agricultural practices, programs, and policies across levels.

A major challenges related to operationalizing CSA is the identification of priority climate-smart actions that decision-makers can utilize to promote agricultural systems that take climate variability and change into account in the short- and long-term. Given this, a process for prioritizing actions is needed to identify the tradeoffs between CSA practices, especially their costs and benefits from a social, economic and environmental point of view.

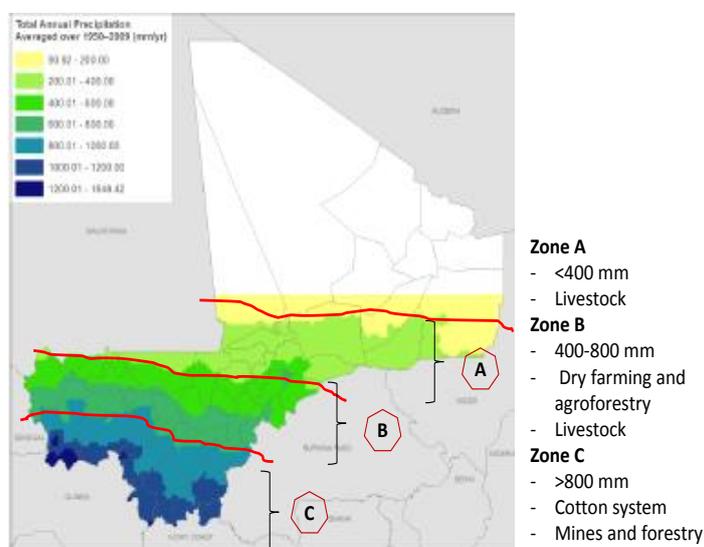
#### How to prioritize climate-smart investments?

A CSA Prioritization Framework (CSA-PF) was developed by the International Center Tropical Agriculture (CIAT) and the CGIAR Research Program on Climate Change, Agriculture, and Food Security (CCAFS) to filter practices based on their impact and applicability to local contexts. The Malian Association of Awareness to Sustainable Development (AMEDD), a local NGO acting on behalf of national science-Policy dialogue platforms on climate change, agriculture and food security, in collaboration with the Agency of Environment and Sustainable Development (AEDD), and with the support of CIAT and CCAFS, has lead the participatory use and development of the CSA-PF with stakeholders in Mali to find climate-smart solutions (practices, services, and programs).

This CSA-PF is based on four phases.

### First phase - Preliminary evaluation of CSA options

potential next-users for the CSA-PF such as donors, NGOs, and local government pre-identified 23 relevant CSA practices with the support of a group of four national experts (from the NARS and the universities), with knowledge of the Malian agricultural systems and the challenges posed by climate change. They qualitatively assessed their performance against CSA pillars: productivity, adaptation, mitigation, using 10 indicators they selected. The Sahel, the Sudano-Sahelian, and the Sudanese regions were chosen for selection of practices related to their vulnerability and production systems of interest for food security.



**Figure 1: The three regions considered for the initial prioritization of practices**

### Second phase - Identification of main CSA options

A workshop was held (18-19 November, 2014) with 30 representatives of ministries, local governments, research institutions, NGOs, and donors interested in scaling out CSA in Mali.

Specific criteria of prioritization were identified by participants related to social acceptance of practices or their agronomic potential in the identified regions.



**Figure 2: Group discussion of the CSA practices**

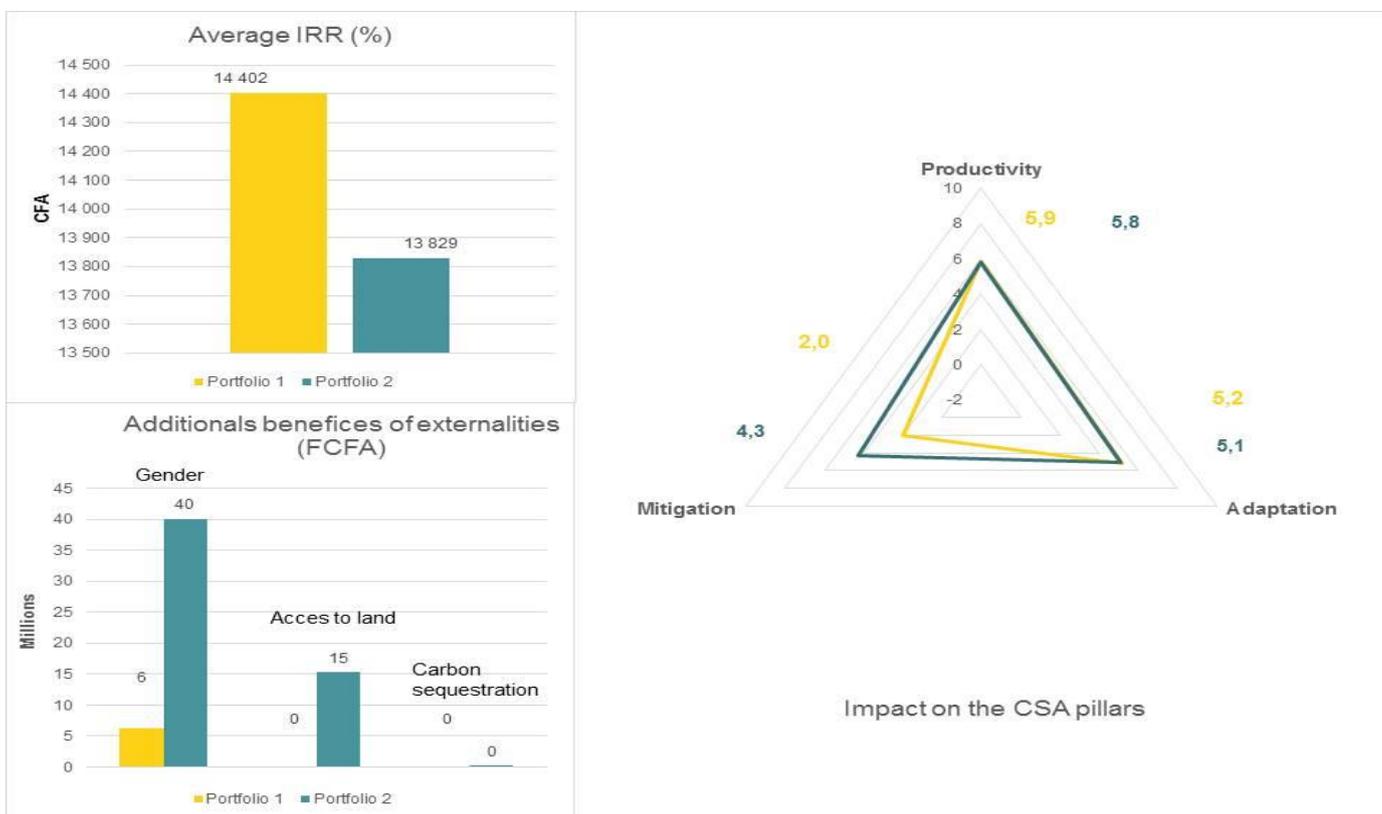
Stakeholders then evaluated the long list of practices relevant to the areas of interest and prioritized 10 best-bet CSA practices based on the criteria and analyses. This process led to the selection of specific practices for different regions such as the fixation of dunes in the Sahelian region, sorghum-cowpea association for the Sudano-sahelian region, and contour fields for the southern region. Barriers to adoption of practices (such as lack of access to improved seeds of sorghum and cowpea, lack of market for cowpea sub-products) and potential solutions were explored in ongoing projects or policies. For each identified practice participants indicated the type of program, service, or policy to be developed or strengthened in order to facilitate the implementation of the practice.

### Third phase - Cost-benefit analyses (CBA)

This analysis was conducted by AMEDD and CIAT for the 10 best-bet CSA practices in the Sudanese region, which is the agricultural breadbasket of the country. Estimates were made for a 5 year life cycle of practices and for the main crops found in the diversified farming systems (maize, millet, sorghum). Positive or negative externalities of the practices selected by the next-users of the process, such as those associated with carbon sequestration, gender, and social conflicts related to land access particularly important in West Africa, were considered. Existing literature and estimations by experts were used for the valuation of the parameters of the CBA.

### Fourth phase - Portfolio definition

The results of the CBA analyses were presented during a second workshop held on October 21st attended by the same actors as the first workshop. Stakeholders validated the results of the CBA and had the crucial task of linking the results of all phases of the CSAPF and make a final prioritization of portfolios of 3 to 5 CSA practices for the Sudanese region by taking into account both the impact of practices on the pillars of CSA and the economic indicators of the CBA. Portfolios were developed in sub-groups of experts and next-users. Participants also used their own expertise to determine the objective, scale, and content of their desired portfolios. Did they want to put together practices with the best synergies at the field, farm, or landscape level? Did they want the practices to have a major impact on a specific CSA pillar or that were financially profitable? Participants used visualization mechanisms to compare the tradeoffs between practices and between different portfolios of practices to aid them in selecting final portfolios. Each group developed a number of portfolios, and the workshop as a whole selected two priority portfolios for further investigation and investment considering short- and long-term challenges and the diversity of farmer types.



**Figure 3: Performances of the selected portfolios of practices related to the CSA pillars and the economic indicators**

- Portfolio 1 focusing on technologies integration at field level and that can be implemented by a wide diversity of farmers: contour bunds, production and use of compost, improved varieties, sorghum and cowpea intercropping
- Portfolio 2 focusing on technologies integration (synergies) at landscape level and positive externalities on gender and access to land : contour bunds, improved varieties, diversification of income with fish ponds, development of rice cultivation valleys

Action plans were also developed to provide stakeholders with pathways for mainstreaming portfolios of practices.

### What are the action plans needed to promote the prioritized portfolios of CSA practices?

The prioritized practices are individually known but their integration is innovative, the identified action plans tried to address barriers of adoption focusing on four main activities:

- Capacity building of farmers on the challenges posed by climate change and on the potential impact of the practices
- Research programs

- ✓ On the difficulties currently encountered by farmers to adopt the prioritized practices (some of them are already known)
- ✓ On ways of improving practices for specific agroecosystems
- Strengthening of the institutional environment
  - ✓ Regional platforms to link actors of the value chains
- Implementation of practices prioritized for investment
  - ✓ Development of on-farm and off-farm infrastructure needed for practice adoption

There were many expressions of interest by the participants in implementing the portfolios in their projects, programs, and beyond.

High level decision-makers from the Malian government, NGOs, and donors gathered in a separate briefing to learn the results of the workshop. These stakeholders confirmed their support for the large scale implementation of CSA portfolios in Mali, applauded the assessment of multiple CSA related impacts and costs and benefit studies that included externalities, calling for further assessments of this kind. Results were highlighted as useful for design of future call for proposals, as responses to ongoing calls, methodologies for use in assessing existing projects, and presentation of results at regional and global meetings.

## What are the lessons learned of this process?

1. All the phases of this CSA-PF have to be led by a local stakeholder already involved in a CSA planning dynamic to ensure the production of coherent results linked with the reality/needs/ challenges of the Country.
2. The definition of portfolios assessed in terms of CSA performances can favor synergies between sectorial projects while the assessment of the economic performances of portfolios can permit to analyze their potential for adoption by farmers.
3. The leader of the CSA-PF must have a good knowledge of ongoing and future agricultural projects in order to identify opportunities for the implementation of the defined portfolios.

## Are there first outcomes?

Three first level outcomes can be identified:

- 2016 implementation by NGOs of CSA options in the Mopti, Segou and Sikasso regions for an overall budget of 5177250 USD.
- Request for support to mainstream CSA by the ministry of agriculture (2014-2020 program)
- Solemn request from the Rural Development Committee (Parliament) to AMEDD.

Next steps for the CSAPF implementing team, led by AMEDD, include close follow up of the implementation projects.

## Further Reading

- CCAFS Blog: Climate-smart solutions for Mali. Available from: <https://ccafs.cgiar.org/blog/climate-smart-solutions-malian-sahe/>

*This info note summarizes findings of a pilot project aiming to develop a participatory framework to prioritize CSA practices and interventions to guide CSA investments in Mali.*

*It was undertaken by researchers from the Malian Association of Awareness to Sustainable Development (AMEDD) and the International Center Tropical Agriculture (CIAT) as part of the CGIAR Research Program on Climate Change, Agriculture, and Food Security (CCAFS).*

*Implementation was led by the Agency of Environment and Sustainable Development (AEDD) on behalf of the National Science-Policy dialogue platforms on Climate Change, Agriculture and Food Security (CCASA).*

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## CCAFS and Info Notes

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together 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.

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