InfoNote

Leveraging the Climate-Smart Village (CSV) approach to implement the Integrated Land Management (ILM) concept in FSRP countries

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Key messages

- The climate-smart village (CSV) approach can help manage natural resources in sustainable manner and build sustainable and resilient landscapes.
- CORAF, an umbrella organization of national agricultural research systems (NARS) in 23 countries in West and Central Africa sees the CSV approach as an opportunity for synergy between FRSP and AICCRA for scaling CSA technologies and climate information services in West and Central Africa.
- CORAF, AGRHYMET CCR-AOS and the Alliance Bioversity International and CIAT engage experts from national agricultural, meteorological and hydrological services to support FSRP countries in implementing CSV approach in the FSRP's intervention areas.
- The training provided by AICCRA West Africa cluster team has capacitated 42 experts from 8 countries including Chad, Burkina Faso, Ghana, Mali, Niger, Senegal, Sierra Leone and Togo on the process of implementing CSV. All the participants found the training very useful with 44 and 56% being very satisfied and satisfied respectively about the content and materials provided.
- To ensure the implementation and scaling up of CSV, each FSRP country plans to develop CSV's implementation plan for 2025 and to disseminate tools and methods for implementing and managing CSVs through capacity building of a large agricultural development actors.
- As results of the training, five FSRP countries (Burkina Faso, Ghana, Mali, Niger and Sierra Leone) have developed a national plan for implementation of CSV in their respective country with implementation budget ranging from 14,477 to 1,571,086 US $.

Background

Agriculture remains central to West Africa economy, accounting for 30-50% of Gross Domestic Product (GDP) in most countries and representing the largest source of income and livelihood for 70-80% of the population, as well as food supply and export earnings from cash crops (Gueye, 2008). Dominated by smallholder farmers, agriculture in the region is essentially rainfed, and thus highly exposed to the climate change effects.

The impacts of climate change in West and Central Africa threaten the productivity of agriculture and food systems, affecting food and nutrition security and ultimately jeopardizing the sector's contribution to economic development (Carr et al., 2022; Iheonu, et al., 2022; Trisos et al., 2022).

Adaptation and mitigation to climate change are imperative to support sustainable productivity increase needed to feed the growing population.

Addressing the impacts and risks of climate change on West Africa's agriculture and food systems is essential to fulfilling the ECOWAP, CAP ambition and the Sustainable Development Goals (SDGs).

In view of the above multiple challenges, Climate-Smart Agriculture (CSA) appears to be a sound solution to concomitantly overcome these challenges. It is an approach to developing the measures needed to transform and reorient agricultural systems to effectively support development and ensure food security under climate change (Lipper et al., 2014). It consists of three interrelated objectives: (i) improving agricultural productivity to support higher incomes and food security ; (ii) adapting to and strengthening resilience to climate change at all levels and (iii) reducing greenhouse gas emissions and enhancing carbon sinks (Lipper et al., 2014). CSA aims to (i) exploit the synergies between productivity, adaptation and climate change mitigation and (ii) integrate the specificities of these components into sustainable agricultural development policies, programmes and investments at all levels (Lipper et al., 2014). However, according to Aggarwal et al., (2018) and Muriithi et al., (2023), its implementation requires sound methods and tools to effectively operationalise and scale up the appropriate CSA options in a diversity of geographic contexts. Indeed, one factor that contributes to low uptake of new technologies is that development practitioners lack evidence of how the innovations can be practically incorporated into agricultural systems. They need to know how farmers can achieve synergies and minimize trade-offs in implementing multiple interventions on real farms. Effective implementation therefore requires an integrated approach in which science, technology, and decision making interact with local socioeconomic conditions and cultures (Steenwerth et al. 2014).

The Climate-Smart Village (CSV) approach is a key part of the agriculture research-for-development (AR4D) agenda to address climate change challenges for food security (Campbell et al. 2016). Developed by the CGIAR program on Climate Change, Agriculture and Food Security (CCAFS), the CSV approach aims to generate evidence at local scales of what CSA options work best, where, why and how, and to use this evidence to draw out lessons for policy makers, agricultural development practitioners and investors, from local to global levels (Aggarwal et al. 2018).

CSV approach has shown promise following pilot tests and evidence of success of the approach for the development of climate-smart technologies and their scaling up in several countries in West Africa (Burkina Faso, Ghana, Mali, Niger, Senegal) and beyond (https://ccafs.cgiar.org/climate-smart-villages). Indeed, the CSV approach promotes participatory development of technological, institutional, socio-economic and climate-smart policy innovations that are specific to the context. These include proven land management practices that also consider agro-hydro-climate risks and environmental aspects (sustainable resource management, ecosystem resilience) and socio-economic aspects (institutional organization, empowerment, food security).

The West Africa Food and Resilience System (FSRP) Program adopts the integrated land management (ILM) approach to manage natural resources in sustainable manner to build sustainable and resilient landscapes. However, the understanding and implementation of the ILM approach have not only been difficult but have varied between stakeholders in FSRP countries. Building resilient and sustainable landscapes requires technologies and practices that ensure agricultural productivity, adaptation to challenging climate effects and mitigation of greenhouse gas emissions at the landscape scale.

The ILM approach aims to provide a basic framework for balancing competing land and water use policies and demands within a given area, over time. The approach is highly participatory, as the different land and water users and institutions collaborate to develop and implement a shared vision and plan. This participation is fundamental for success.

The specific goal of an ILM approach is to support food production, ecosystem protection and rural livelihoods across the landscape. An integrated landscape approach provides a strategy to achieve the goals of climate-smart agriculture at scale and across the full spectrum (Scherr and McNeely, 2008; Scherr et al., 2012). Indeed, to enhance resilience to climate change, interventions applying a landscape approach should bring together agro-environmental and socio-economic governance issues that are of interest to multiple stakeholders (FAO, 2010). Climate-smart agricultural landscapes can achieve important synergies between agricultural production, climate change adaptation and mitigation, and other livelihood and environmental goals through coordinated actions at the farm and landscape levels. Climate-smart agricultural landscapes are based on the principles of integrated landscape management. They consist of a variety of fields and agricultural practices across different land and use types that support adaptation and mitigation goals (FAO, 2010; Scherr and Sthapit, 2009). Integrated landscape planning and management is instrumental for achieving climate-smart agriculture.

The West and Central African Council for Agricultural Research and Development (CORAF), an umbrella organization of national agricultural research systems (NARS) in 23 countries in West and Central Africa, sees the CSV approach as (i) an opportunity for synergy between FRSP (Components 1 and 2 coordinated by AGRHYMET CCR-AOS and CORAF respectively) and the

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) for the provision and dissemination of CSA technology packages and climate information services to countries in the West and Central Africa sub-region. Consequently, CSA in general and the CSV approach in particular sounds like a relevant approach to help achieve ILM's goal. Empowering agricultural development actors such researchers, agricultural extensionists, meteorologists and hydrologists in the establishment of CSV will increase the implementation and scaling of CSA and CSV approaches in FSRP and non FSRP countries.

Thus, CORAF and its partners AGRHYMET CCR-AOS and the Alliance Bioversity International and CIAT, pool their resources and experiences to engage national teams of experts who will support FSRP countries in implementing this CSV approach in the program's intervention areas. This infonote highlights the achievements, perceptions of the participants, lessons learned and outcomes of the regional training workshop on methods and tools for implementing and managing climate-smart villages.

Methodological approach

To facilitate the scaling of CSA technologies through the CSV approach, CORAF in collaboration with AGHYMET and Alliance Bioversity International and CIAT through FSRP and AICCRA programs organised a regional workshop on methods and tools for implementing and managing climate-smart villages. The workshop aims at strengthening the capacities of researchers from the National Agricultural Research Systems (NARS), experts from the National Meteorological and Hydrological Services (NMHS) and representatives of NGOs involved in the ILM on the concept of CSVs and their implementation in the FSRP intervention areas in the beneficiary countries. Through PowerPoint presentations during the training and survey done at the end of the training, information and data were collected from trainers and participants. Survey data are expressed in percentage or pooled to calculate average (example of number of CSV to be established). The participants visited the technology park of Sotuba.

Beneficiaries of the capacity building workshop

The training on methods and tools for implementing and managing climate-smart villages was held from 2 to 5 September in Bamako, Mali and brought together forty-two (42) participants including 10 females (23,8%) from 8 countries (Chad, Burkina Faso, Ghana, Mali, Niger, Senegal, Sierra Leone). Figure 1 shows countries and participants attending the workshop and Table 1 shows the countries and institutions represented at the training.

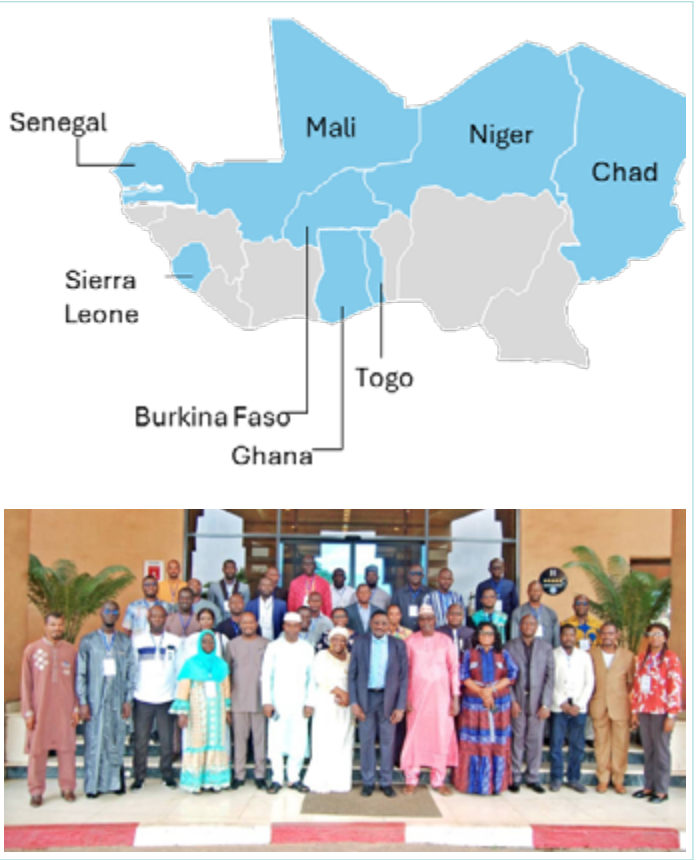

Figure 1: Countries and participants to the workshop in Bamako, Mali

Table 1: *Countries and institutions present at the training*

Country	INSTITUTION	NUMBER OF PARTICIPANTS
Burkina Faso	FSRP Burkina Faso Coordination	1
	National Meteorological Service	2
	National Hydrology Service	1
Ghana	National Meteorological Service	2
	National Hydrology Service	1
	National Agricultural Research Systems	1

Country	INSTITUTION	NUMBER OF PARTICIPANTS
Mali	National Agricultural Research Systems	4
	National Meteorological Service	2
	National Hydrology Service	2
Niger	National Agricultural Research Systems	1
	National Meteorological Service	1
	NGO	2
Senegal	National Agricultural Research Systems	3
	National Meteorological Service	2
	National Hydrology Service	1
Sierra Leone	National Meteorological Service	1
	National Hydrology Service	1
	NGO	1
Chad	National Agricultural Research Systems	4
	National Meteorological Service	2
	National Hydrology Service	1
Togo	National Agricultural Research Systems	4
	National Meteorological Service	1
	NGO	1
TOTAL		**42**

Technical content of the training

The training covered six themes (Figure 2), including climate smart agriculture and the concept of climate smart villages, the setting up of CSVs, the central role of agro-climatic information and services, the prioritization of CSA technologies and innovations, the gender and social inclusion in CSA, the institutional innovations to integrate CSA in West Africa. The training ended with a field visit (Figure 3).

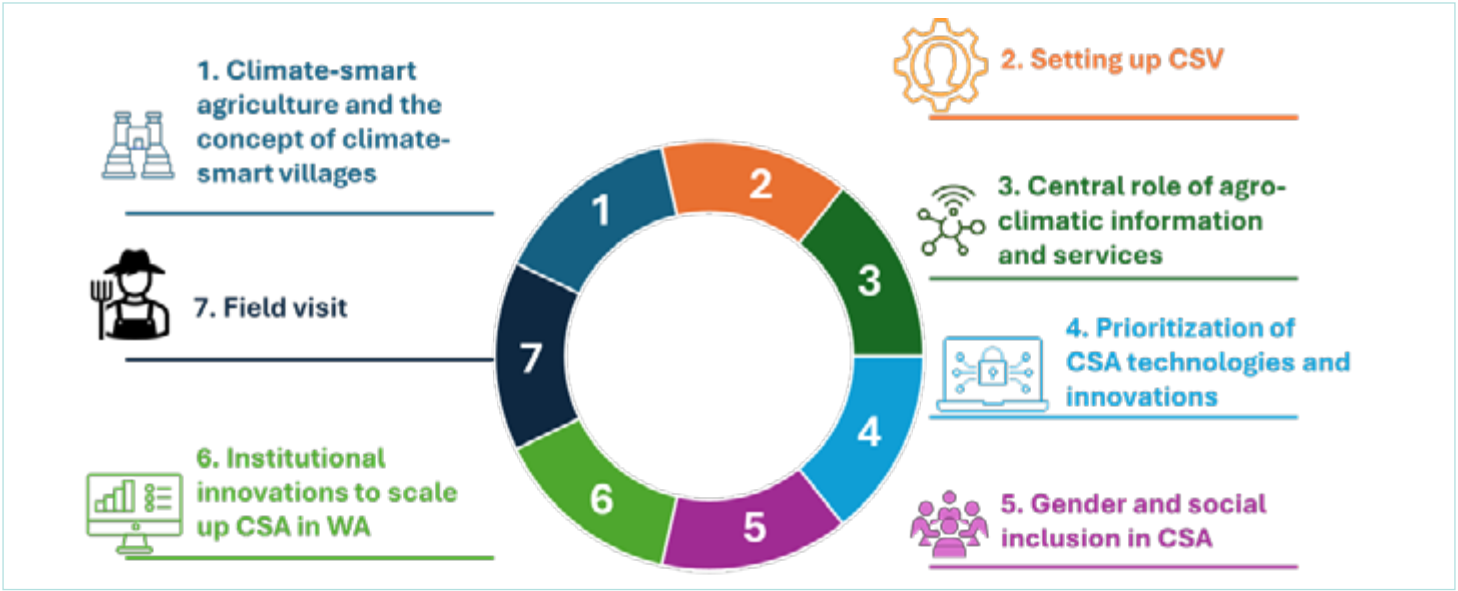

Figure 2: Different themes presented during the CSV training

The training provides participants insights on the concept of Climate Smart Agriculture and highlights the relevance of the Climate Smart Villages (CSV) approach to develop sustainable and resilient production systems in the face of climate hazards, while integrating the challenges of reducing greenhouse gas (GHG) emissions. Key steps in setting up Climate Smart Villages (CSVs) covering the entire process was also presented. These steps include the selection of a good site, working with communities, baseline assessment, participatory prioritization of interventions, strengthening capacity of stakeholders, monitoring and evaluation progress and dissemination of results.

Agro-climatic information in the process is essential. It provides essential data for planning and adapting agricultural practices according to current and future climatic conditions. This information not only helps to improve the resilience of production systems, but also to reduce risks related to climate hazards. Efforts are underway at regional and country levels to improve the level of accuracy of this information. These efforts include initiatives such as those led by AGRHYMET in partnership with World Meteorological Organization (WMO) and AICCRA, to improve the quality of seasonal forecasts.

The prioritization of CSA technologies and innovations is also key in the establishment of CSVs allowing among others to know the current institutional frameworks associated with the CSA, map the financial policies and mechanisms that promote the adoption of CSA and finally to have a base of information necessary for a good understanding of the impacts of CC.

Gender and social inclusions are a cross-cutting theme that occupies an important place in the process of setting up CSVs. Finaly, institutional innovations play a very important role in the fight against CC. To be more effective, they must integrate CSA technologies and innovations, in other words they must improve agricultural productivity and contribute to adaptation and mitigation efforts. In West Africa, several institutional innovation platforms such as the CCASA platform have been set up in Burkina Faso, Ghana, Niger, Mali and Senegal. This platform used a participatory approach to involve key stakeholders involved in the fight against CC, agricultural development and environmental protection.

The third day of the training (September 4th, 2024) was devoted to a field visit to the Agricultural Technology and Innovation Park in Sotuba close to Bamako.

Participants during the field visit

Cowpea and fonio crop varieties

Figure 3: Field visit at Sotuba's park of technologies

Countries testing the implementation of CSVs

After briefing participants on the various stages in the process of establishing CSVs, a group exercise (each country forming a group) was carried out. The aim of the group work was to design Climate-Smart Villages adapted to the realities of each participating country. This exercise enabled specific recommendations to be drawn up for each context, considering local challenges and available opportunities. The participants in each group put into practice the knowledge they had acquired about the steps and components presented during the training, taking care to integrate agro-climatic information and the other key elements discussed earlier. This practical exercise also enabled participants based on the knowledge they had acquired to adapt the CSV model to the specific characteristics of their respective countries. The results of this work were presented in plenary. These results will serve as a basis for drawing up plans to implement CSVs in each country. The group work was the subject of competition between the different countries.

Figure 4: Participants during group work

Workshop achievements and perceptions

Among participants, 82% have heard about climate smart village before attending the training and declare that there is at least one climate smart village in their respective countries. Country representatives want FSRP to implement new CSVs in their countries. In average, the willing number of CSV to be established in country ranges from 4 to 16 (Table 2). However, Ghana and Niger suggested establishing one CSV per village or district. For fifty-six (56) per cent of participants, it will more impactful when CSV is installed at village level while 41 and 3% propose that CSV be established at district and department level respectively. All the attendees (100%) thought that CSV is important to increase impacts of FSRP in their country. However, some constraints may impair the establishment of CSV. These constraints can be organizational (stakeholder mobilization, community commitment), financial (access to fund and sustainable financing), technical (lack of education and capacity building), social (land access and security, insecurity in some areas). Overall, all the attendees found the training very useful with 44 and 56% being very satisfied and satisfied respectively about the content and materials of the training.

Table 2: *Mean number of CSV to be established FSRP countries*

Country	MEAN NUMBER OF CSV TO BE ESTABLISHED
Chad	4
Burkina Faso	5
Ghana	5
Mali	16
Niger	4
Senegal	12
Sierra Leone	10
Togo	6
TOTAL	**62**

Lessons learned and next steps

Bringing together agricultural development actors such as researchers, meteorologists, hydrologists and agricultural extensionist allowed each of actors to appreciate the individual institutional effort made

to cope with climate change effects. Moreover, each entity expressed the type of information or data needed from other for impacts in the implementation of climate smart agriculture. Climate constraints call for a holistic approach to meeting the challenges of climate change. CORAF, AGRHYMET CCR-AOS and the Alliance Bioversity International and CIAT through FSRP and AICCRA synergy succeed to connect meteorologists, hydrologists and researchers at country level. Their complementary actions will help to overcome climate effects in the framework of establishing CSV. The field visit allowed participants especially those from meteorology and hydrology services to visualize and learn about climate-smart technologies that could be installed in CSVs. The practical exercise on the establishment of CSV in each country specific context exposed actors to real challenges that they may face on ground, and this fostered their ability to implement CSV. Finally, the workshop provided participants with skills to conduct the process of setting up CSVs.

To ensure the implementation and the scaling up the CSVs in FSRP countries, CORAF recommended each country team to develop CSV's implementation plan that will be communicated to CORAF by the end of October 2024. CORAF will lobby the World Bank to validate these plans in the country 2025 AWPBs for their implementation. To enhance the scaling up of CSV, country team plans to disseminate tools and methods for implementing and managing climate-smart villages through the capacity building of other colleagues.

Outcomes of the training on CSV

Following the training, FSRP Burkina Faso organized from 30 September to 4 October 2024, a national sharing workshop in Manga, to strengthen the capacity of actors in establishing CSV and to draw up an action plan for the implementation of CSVs in the country. The workshop brought together researchers, meteorological experts, NGO representatives and stakeholders from the agro-sylvo-pastoral sector. As outcome, a national plan for implementation of CSV was developed.

Participants in conference room

Participants during field visit

Figure 5: Participants to the national workshop for sharing tools and methods for implementation of CSV and drawing up of an implementation plan in Burkina Faso

In addition, four other countries including Ghana, Mali, Niger and Sierra Leone have also developed an action plan for the implementation of CSV in their respective FSRP operational areas. Table 3 shows actions, number of CSVs and budgets planned by these 5 countries for the implementation in 2025. From these action plans, one can note that these countries have slightly scaled back their plans for the number of CSVs to be installed. The budget for the implementation ranges from 14,477 to 1,571,086 US $.

Table 3: *Actions and budgets for the implementation of CSVs in Burkina Faso, Ghana, Mali and Niger in 2025*

Country	ACTIONS	NUMBER OF CSV	BUDGET (US $)
Burkina Faso	■ Setting up 4 climate-smart villages ((i) one village for the Kou sub-basin and one village for the Sirba and (ii) two (02) villages for the Lower Mouhoun) ■ Operationalisation of climate-smart villages ■ Promotion of value chains ■ Setting up CSV platforms at village and provincial level ■ Organization of research and development training ■ Ensuring the dissemination of climate-smart technologies	4	1,086,052
Ghana	■ Establish three (3) CSVs in the northern, middle and southern Zones of Ghana ■ Benefit approximately 15,000 smallholder farmers from the CSV interventions in the three (3) Zones (5,000 from each zone) ■ Increase agricultural productivity for targeted commodity crops – maize, rice, soybean, tomato and poultry – by 15% ■ Capacitate over 30,000 farmers, NGOs, FBOs, Opinion Leaders, Input Dealers built on climate smart agricultural practices and resilience of the selected communities ■ Monitoring and evaluation of progress	3	794,200
Mali	■ Information and awareness-raising workshops and selection of localities ■ Basic assessment of each candidate village ■ Drawing up a community action and management plan ■ Capacity-building for stakeholders ■ Implementation of selected activities ■ Creation of mini climate-smart technology parks in the intervention regions ■ Monitoring and evaluation of progress and dissemination of results ■ Communication	15	1,571,086
Niger	■ Identification of 3 sites (village/commune) according to climatic risks ■ Conduct of basic village surveys at the 3 CSV implementation sites ■ Workshop to report the results of the baseline survey ■ Training workshop on CSA, the use of climate information, safety nets, gender and social inclusion in CSA. ■ Workshop to identify climate-smart technologies and practices (technical description, benefits of innovation, implementation constraints, feasibility) ■ Training workshop on the PICSA (Participatory Integrated Climate Services for Agriculture) approach	3	14,477

Country	ACTIONS	NUMBER OF CSV	BUDGET (US $)
	■ Dissemination of climate information to the CSV community ■ Workshop on community planning of activities ■ Training workshop on the 'farm of the future' approach to accelerate adaptation to climate change ■ Conducting demonstration tests (seed support, small-scale farming equipment) ■ Community evaluation workshop ■ Inter-community visits ■ Follow-up evaluation		
Sierra leone	■ Climate Risk Assessment in ILM communities ■ Validation of the assessment report ■ Verification and selection of suitable communities ■ Training on CSA, Use of Climate Information, Safety Nets, Gender and Social Inclusion in CSA ■ Identify climate-smart technologies and practices ■ Identify climate-smart technologies and practices ■ Conduct of demonstration tests (seed support, small agricultural equipment) ■ Dissemination of climate information and development of business plan to the CSV communities ■ Technical Supervision of the CSVs ■ Monitoring and Evaluation of the CSVs	2	122,306

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ABOUT AICCRA

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Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a project that helps deliver a climate-smart African future driven by science and innovation in agriculture. It is led by the Alliance of Bioversity International and CIAT and supported by a grant from the International Development Association (IDA) of the World Bank. Explore our work at aiccra.cgiar.org