



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security



CCAFS IN WEST AFRICA



CCAFS IN WEST AFRICA: FOR A MORE RESILIENT FOOD SYSTEM AND A BETTER SECURE FOOD FUTURE

Climate change has emerged as a major threat to agriculture, food security and livelihood of millions of smallholder farmers in West Africa. Several scientific productions indicate that agricultural production will be significantly impacted due to increase in temperature, unpredictable rainfall patterns and variations in frequency and intensity of climatic events such as floods and droughts.

The CCAFS regional program in West Africa works relates to identifying partnerships, opportunities for and impediments to action, measures and communication channels needed to sustain and broaden successful outcomes, knowledge and capacity gaps, and potential policy responses to support adaptation and mitigation to climate change.

OBJECTIVES

The over-arching objectives of CCAFS are:

(1) To identify and test pro-poor adaptation and mitigation practices, technologies and policies for food systems, adaptive capacity and rural livelihoods;

(2) To provide diagnosis and analysis that will ensure cost effective investments, the inclusion of agriculture in climate change policies, and the inclusion of climate issues in agricultural policies, from the sub-national to the global level in a way that brings benefits to the rural poor.

KEY ACHIEVEMENTS

- ✓ Climate-Smart Villages
- ✓ Climate Information Services
- ✓ Enabling policy environments for CSA

RESEARCH FLAGSHIPS

CCAFS research is organized around four Research Flagships:

1. Climate-smart agricultural practices
2. Climate information services and climate-informed safety nets
3. Low-emissions agricultural development
4. Policies and institutions for climate-resilient food systems
5. Gender and Social Inclusion

CCAFS WEST AFRICA

VISION BY 2021

- ✓ A regional food system resilient to climate variability and change.
- ✓ Smallholder farmers widely adopt and implement Climate smart agriculture technologies and practices in order to become less vulnerable
- ✓ National and regional stakeholder implement appropriate strategies and policies

CLIMATE-SMART AGRICULTURE IN WEST AFRICA

Climate-smart agriculture (CSA) is defined as “agriculture that sustainably increases productivity, enhances resilience, reduces/removes greenhouse gas emissions where possible, and enhances achievement of national food security and development goals”. In this definition, provided by the Food and Agriculture Organisation of the United Nations (FAO), the principal goal of CSA is food security and development; productivity, adaptation, and mitigation are the three interlinked pillars necessary for achieving this goal.

CSA aims to transform and re-orient agricultural systems to support food security under the new realities of climate change. CCAFS contributes to the distinct pillars of CSA and creates synergies among these pillars.

CCAFS focuses on creating a scientific base that allows for analyses of CSA options and their implications for smallholder farmers and identifying where and how CSA options can be implemented and at what cost. Analyses of CSA includes expected benefits for women and youth.

In West Africa, the CCAFS program has been operating in five countries, namely Burkina Faso, Ghana, Mali, Niger and Senegal, since 2011. In each of these countries, CCAFS works with local partners in Climate-Smart Villages (CSVa) and through Participatory Action Research (PAR).



What is the **CLIMATE-SMART VILLAGE APPROACH?**

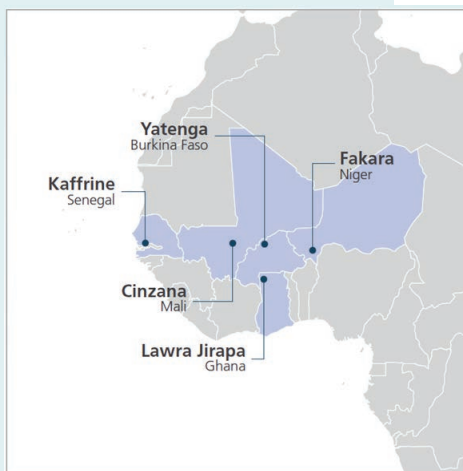
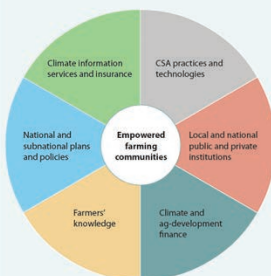
CCAFS developed the Climate-Smart Village (CSV) approach as a means to conduct agricultural research for development (AR4D) in the context of climate change. The approach fills knowledge gaps and stimulates scaling of climate-smart agriculture.

Vision of the CSV AR4D approach

In this AR4D approach, CSVs are:

1. multi-stakeholder learning platforms;
2. participatory test-beds for generating greater evidence of CSA effectiveness; and
3. cornerstones to draw out scaling lessons for policy makers from local to global levels.

CSA is seen in a broad sense, including practices, technologies, services and institutional options (Figure 1).



In West Africa Climate-Smart Villages, nearly 20 CSA technologies and practices have been identified and tested. All have shown that they may positively impact women. Four of these also have mitigation potential.

Climate-smart technologies include:

- ✓ integrated soil fertility management techniques (micro-dosing, use of organic manure and compost, crop association)
- ✓ improved varieties of crops
- ✓ soil and water conservation techniques (zai holes, half-moons, tie ridging)
- ✓ agroforestry (including farmer-managed natural regeneration, or FMNR)

Scientists and government partners also pilot agro-meteorological services with hundreds of farmers in Climate-Smart Villages. In Senegal, Burkina and Ghana, for instance, weather and climate information services are disseminated daily, weekly and seasonally to thousands of farmers through radio, mobile phones, and through national and private services.

In Climate-Smart Villages in Burkina Faso and Ghana, farmers are benefitting from market and financial services as well.

For more information on the CSV approach
<https://cgspace.cgiar.org/handle/10568/99413>

Some technologies and practices tested in West Africa Climate-Smart Villages 2016

- **Improved varieties** in Ghana, Burkina, Mali, Niger and Senegal
- **Farmer Managed Natural Regeneration** in Burkina Faso, Niger and Senegal
- **Intercropping** in Burkina, Ghana, Mali and Niger
- **Organic fertilizer** in Ghana, Burkina Faso and Niger
- **Tree planting** in Burkina Faso, Ghana, Mali, Niger and Senegal
- Etc.

Some technologies and practices tested in West Africa Climate-Smart Villages 2017

- **Inorganic Fertilizers** in Ghana and Senegal
- Microdosing in Mali
- **Crop rotation (Mixed Legume/Non Legume)** in Ghana
- **Income Diversification (poultry)** in Niger

Some crops tested in the CSVs:

Ziziphus mauritiana, Balanites aegyptiaca, Acacia nilotica, etc.

Maize, Cowpea, Soybean, Sesame, Millet, Sorghum, Millet, Fonio, Okra, etc.

Biofortified Sweetpotatoe, Biofortified millet, Biofortified maize, Jatropha, Moringa, Cashew. Etc.

Agro-Met service:

- Agroadvisories on fertilizer and pesticide application
- Agroadvisories on varieties applied under the forecasted information
 - Daily forecast - Seasonal forecast
- Weekly/10 day forecast In **Ghana, Burkina Faso, Mali, Niger Senegal**

Interested in learning more about Climate-smart agriculture?
 Visit the dedicated guide: <https://csa.guide/>

CLIMATE INFORMATION SERVICES IN WEST AFRICA



works, and defined the jargon used by specialists. Through such collaborations, farmers filled knowledge gaps and developed trust in science and technical forecasts. Four types of CIS were produced: Seasonal forecasts, 10-day forecasts, daily forecasts, and instant forecasts for extreme events. By the end of the project, almost 7.4 million persons, including those living in the most remote areas of Senegal, were receiving CIS. Among that number, 740,000 rural households used CIS to make better informed farm-related decisions.

In 2015, CCAFS began collaborating with the Senegalese National Meteorological Agency (ANACIM) to improve dissemination of climate information and agricultural advice to farmers in Senegal.

Through a collaboration with 82 community-based radio stations involved in the Senegal National Union of Rural Radio Broadcasters (URAC), climate information was shared in all regions of Senegal. Additionally, climate information was also disseminated through SMS, phone calls, farmer-to-farmer discussions, or extension agent-to-farmer relationships.

Scientists and farmers worked together to create linkages between indigenous knowledge and technical forecasts. Capacity enhancement activities raised awareness among farmers about how climate information can inform agricultural decisions, explained how weather forecasting

In 2016, CCAFS and its partners from ANACIM started the project “Climate Information Services for Increased Resilience and Productivity in Senegal (CINSERE)” with funding from USAID. CINSERE builds on the success of the CIS project in Senegal described above. It seeks to build the capacities of stakeholders in the USAID/Feed the Future program and the Senegal National Meteorological Agency to develop and disseminate accurate and tailored weather and climate information services to farmers, fishermen and pastoralists in all regions of Senegal, excluding Louga and Diourbel.

WEATHER AND CLIMATE INFORMATION SERVICES (FORECASTS) PRODUCED: FROM 2016 TO 2018

•WCIS produced

Farmers: 11
Fishermen: 4

•Training for farmers:

Direct: 4188 (19% women)
Indirect: 174 544 (50% women)
Technicians & journalists: 1087
Demonstration fields: 65
PICA: 28 farmers (43% women)

•Training for fishers' folks:

Direct: 1044 (9% women)
Local Council of artisanal fishermen: 44

•Access to and use of Weather and Climate Information Services

SMS & Voice Calls: 4364
Farmer to farmer: 193 099
Email: 308

More details on the USAID/CINSERE project:

<https://ccafs.cgiar.org/climate-information-services-increased-resilience-and-productivity-senegal>

BRINGING TOGETHER SCIENCE AND POLICY FOR A BETTER MAINSTREAMING OF CSA INTO NATIONAL POLICIES AND PLANS

The CCAFS West Africa supports farmers to be successful, as they increase resilience and adapt to and mitigate climate change.

CCAFS is engaged with partners and stakeholders in science-policy exchange at national and district-levels. CCAFS establishes platforms of scientists, policy makers, traditional authorities, media professionals and organizations to share climate knowledge, tools and lessons learned for a more food secure and resilient West African region. Stakeholders in Burkina Faso, Ghana, Mali, Niger and Senegal actively participate and ultimately identify ways to navigate stakeholder networks and institutional dynamics for climate-smart agricultural development. This engagement ensures research is demand-driven and co-designed with users and farmers in mind.

The science-policy platform presents potential solutions, including the use of climate-smart agriculture practices and technologies, and ways forward that are tailored to countries' particular needs.



Beginning in 2019, CCAFS will further its work with institutions and policies for sustainable climate change governance in agriculture. **It will:**

- ✓ Promote climate-smart agriculture and monitor agricultural contributions in National Determined Contributions and National Agricultural Investments Plans;
- ✓ Assist countries in the development of eligible bankable projects for climate finance initiatives such as the Green Climate Fund;
- ✓ Use climate science, food systems research and CCAFS scenarios methods to influence policy formulation that enables: scaling up of evidenced-based CSA options, integration of climate concerns into national policies, and enactment of plans and policies that increase investment in access to diverse and locally acceptable diets;
- ✓ Promote an enabling environment that is inclusive, gender-equitable and supportive of responsible agricultural investments.

SOME KEY OUTPUTS:

Burkina Faso: Formulation of a Robust National Rural Sector Program in Burkina Faso: What new themes have emerged from the socio-economic and climate scenarios process? (CCAFS Info Note)

Link: https://cgspace.cgiar.org/bitstream/handle/10568/81141/Info%20Note_PNSR%20II%20actionable%20recommendations.pdf?sequence=1&isAllowed=y

Ghana: Assessment of climate change policy and institutional context: The case of Ghana (CCAFS Working Paper)

Link: <https://cgspace.cgiar.org/bitstream/handle/10568/72643/WP%20164.pdf?sequence=1&isAllowed=y>

Mali: Climate-smart solutions for Mali: Findings from implementing the Climate-Smart Agriculture Prioritization Framework

Link: https://cgspace.cgiar.org/bitstream/handle/10568/72419/Info%20Note_CSA%20PF%20Mali_2015_March_Final.pdf?sequence=1&isAllowed=y

Senegal: Analyse du contexte institutionnel de gestion du changement climatique au Sénégal

Link: <https://cgspace.cgiar.org/bitstream/handle/10568/72644/WP%20165%20french.pdf?sequence=1&isAllowed=y>

Learn more on the project entitled "Enabling institutions and policies for sustainable climate change governance in agriculture"
Website: <https://ccafs.cgiar.org/enabling-institutions-and-policies-sustainable-climate-change-governance-agriculture>

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