



**Self Help
Africa**

CLIMATE-SMART AGRICULTURE (CSA)



Baba Wedrago, Sika Village, Burkina Faso

THE CHALLENGE

Climate Change and Smallholder Farmers

Long-term changes in the world's climate are a reality and must be factored into the design of SHA's work, particularly long-term investments in the tropics and sub tropics.

The food and agricultural sectors are particularly vulnerable to both short and long term changes in the climate and atmospheric CO₂ concentrations. As these sectors are central to human development, support for agriculture, and in particular for smallholder farmers, is pivotal to achieving the eradication of poverty and hunger under a changing climate, and needs to be at the centre of the global response to climate change.

Slow onset environmental change processes, increasing climate variability and more frequent and severe weather events affect agricultural productivity and add pressure to already fragile food and ecological systems. Smallholder producers and the rural poor in the tropics and sub tropics are particularly vulnerable to the effects of climate change and climate

variability. Many poor farmers are already farming small plots on marginal land and have limited resources to adapt their farming systems to the anticipated changes.

SHA's agriculture interventions are designed to achieve ecological intensification of production systems while increasing the climate resilience of farmers, farming communities, agro-entrepreneurs, and food systems at large.

What are we committed to?

IN SELF HELP AFRICA

In **Embracing Change - SHA's Strategic Plan 2017–2021** SHA is committed to supporting sustainable livelihoods for smallholder farmers, through:

1. Improved food, nutrition and income security for smallholder farming families.
2. Support to the establishment and growth of inclusive, profitable and sustainable agri-business.
3. Support to the improvement of the policy environment for small-scale producers and their families.

As all these aspects will be affected by climate change, SHA must factor climate change into project design, tackling challenges at both grassroot and institutional level.

IN IRELAND

A Better World – Ireland's Policy for International Development, recognises that “the effects of climate change threaten to undermine gains to date in tackling poverty, and the achievement of all development goals. Throughout this century, the impact of climate change is projected to slow down economic growth, exacerbate gender inequality, intensify fragility, further erode food security, and prolong existing and create new poverty traps”. The Policy indicates that climate action will be integrated in all interventions relating to food and agriculture to ‘future proof’ development cooperation and ensure that the poorest and most vulnerable – and those furthest behind – have agency in global climate action.

INTERNATIONALLY

SHA's support for CSA will contribute to at least two Sustainable Development Goals

GOAL 2 – ZERO HUNGER

- By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.
- By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.
- By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.



GOAL 13 – CLIMATE ACTION

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.
- Integrate climate change measures into national policies, strategies and planning.
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
- Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.



What does Climate-Smart Agriculture mean to us?

FAO defines Climate-Smart Agriculture¹ as agricultural² practices that:

1. Sustainably increase agricultural productivity and incomes (Assets).
2. Adapt and build resilience to climate change (Vulnerability, Adaptation and Resilience).
3. Reduce and/or remove greenhouse gas emissions, where possible (Mitigation).

In addition to these criteria SHA is committed to ensuring that agricultural practices:

- a. Increase gender equality within households and communities.
- b. Provide nutrition and health benefits despite anticipated changes in the climate in a defined region. (Nutrition-Sensitive Agriculture).
- c. Build, or prevent the decline of, soil fertility.
- d. Do not negatively affect the local environment, biodiversity, ecosystems and hydrology.
- e. Do not negatively affect pastoralist communities and indigenous communities who share common resources.
- f. Do not create a monopoly for the owners of the technology.
- g. Do not displace or exclude other technologies that would score higher on the CSA scale (Alternatives Analysis).
- h. Show a higher ratio of benefits to risks than that of existing technologies (Risk Benefit Analysis).
- i. Adequately mitigate any negative consequences of the technology.

1 Details in the FAO CSA Sourcebook <http://www.fao.org/docrep/018/i3325e/i3325e00.htm>.

2 Including crop and livestock production, fisheries, forestry and post-harvest storage, transport and processing.

OUR FOCUS

CSA is central to the delivery of SHA's agriculture proposition defined as: **Commercially viable diversified agriculture that is resilient to climate shocks and stresses, that can deliver adequate nutrition and income to all members of rural households and environmental services to the wider communities.**

SHA believes that through the principles of agroecology and ecological intensification¹ CSA can sustainably increase agricultural production and incomes, build the resilience of agricultural systems to climate change and enhance carbon-sequestration.

It should be noted, however, that the promotion of CSA technologies is highly context specific. Technologies that reduce greenhouse gas emissions on some soils may increase these emissions, relative to conventional agriculture, in other contexts. All proposed technologies therefore have to be assessed using agro-ecological analysis, involving the study of agro-ecosystems, including human and environmental elements (farming systems) to enhance the resilience and ecological, socio-economic and cultural sustainability of farming systems.

Agriculture is a major source of greenhouse gas emissions, particularly methane and nitrous oxides. SHA, however, does not focus directly on reducing greenhouse gas emissions as poor smallholder farmers are not significant contributors to these and should not be obliged to reduce their carbon emissions. Nonetheless, through the promotion of CSA practices, SHA will contribute to carbon sequestration.

3 Based on the definitions and ecological intensification approaches developed by the French agencies INERA, Cirad and AFD. See the list of resources at the end of this paper.

How to Start

In order to ensure that all long-term agriculture, livestock, natural resource management (NRM) and agri enterprise development interventions are climate-smart, all SHA's country programmes regularly review the available information on historic climate trends and variability, the predictions from Global Circulation Models and the experiences of farmers, using participatory rural assessment (PRA) tools, and explicitly use this information for project design and implementation . During the implementation of agricultural development projects, field staff are encouraged to collect periodic weather information and make the data available to both SHA and Government decision makers. This ensures that when designing agricultural projects, technical staff will, with the assistance of Government and private sector extension staff and researchers, assess the potential impact of climate change and climate shocks on the farming systems and natural resources, to determine levels of:

Exposure: generally linked to location. What are the climatic changes and shocks to which SHA's target beneficiaries will be exposed? Changes in rainfall and rainfall patterns and changes in temperature extremes, especially high night-time temperatures, will be critical factors for crops and livestock.

Sensitivity: how will the crops, livestock and natural resources that constitute the farming systems respond to the predicted climate shocks and stresses?

By assessing **exposure** and **sensitivity** with the community, SHA and partners can prioritise the critical risks for agriculture and help farmers develop adaptation strategies. These need to take into account the existing **adaptive capacity**: Do the farming households and communities understand the changes required to reduce the sensitivity of the crops and livestock to climate change? Are there innovative farmers in the community already adapting to climate change? Do our target beneficiaries have the capital, labour and time to make the changes? Adapting to new crops and agronomic methods will require access to research, extension services, inputs, capital and exposure to farmers who already practice CSA techniques.

For most of SHA's beneficiaries, who are generally labour and land constrained, the emphasis is on increasing



crop yields per unit area and diversifying farming systems to diversify diets and spread risks. This requires optimal management of nature's **ecological** functions and biodiversity to improve **agricultural** system performance, efficiency and farmers' livelihoods. (**Ecological Intensification**⁴) In some circumstances, however, specialisation in particular farm enterprises, or extensive farming and herding, may be a more effective livelihood strategy.

⁴ Based on the definitions and ecological intensification approaches developed by the French agencies INERA, Cirad and AFD.



What can research contribute?

SHA works with research institutions and other agencies to undertake adaptive research to:

1. understand, document and overcome the constraints to CSA adoption for smallholder farmers, including women's workloads and access to technology and extension services;
2. understand the nutritional implications of climate change and how these can be addressed through CSA;
3. identify the necessary policy incentives to promote and adopt CSA and
4. evaluate the socio-economic benefits arising out of the adoption of different CSA practices.



How do we advocate for CSA?

SHA engages in advocacy initiatives to improve the integration of CSA in our target countries through donor support and market-based CSA initiatives. We work through our national and international networks, including the Irish Forum for International Agricultural Development (IFIAD), Dóchas Working Group on Livelihoods, Food and Nutrition Security, the UK All Party Parliamentary Group and the FAO Civil Society Mechanism.

In-country SHA advocates for reforms in legal, policy and institutional frameworks and, in particular, for the increased adoption of CSA through the reform of agro-input subsidy schemes; the reform of government agriculture and livestock extension services; the provision of social protection payments and grants linked to climate change adaptation; private sector initiatives; the improvement of smallholder access to CSA technologies, and the protection of smallholder farmers' and pastoralists' land and intellectual property rights. We promote private sector investment in the provision of CSA technologies, appropriate insurance services and Information and Communications Technology (ICT), and advocate for the government to create an enabling environment for the provision of these services.

By advocating cutting edge solutions aimed at building the resilience of agriculture and food systems we will contribute to delivering on the Paris Agreement, the Sendai Framework for Disaster Risk Reduction, Agenda 2030 and the Sustainable Development Goals.

In practice

The below table provides examples of CSA approaches and technologies that have been used by SHA over the years and how they meet FAO's three pillars of CSA. SHA support these interventions through the provision of inputs, training, and the commissioning of research.

		Where is this climate-smart?	Increasing productivity	Adaptation	Mitigation
CROP PRODUCTION	Conservation Agriculture (CA)	Semi-arid regions with uncertain rainfall	✓	✓	✓
	System for Rice Intensification (SRI)	Irrigated rice where water is limited	✓	✓	
	Improving the supply of Drought Tolerant/ resistant crops & varieties	Semi-arid regions with uncertain rainfall	✓	✓	
	Improving the supply of Quick Maturing Varieties	Semi-arid regions with uncertain rainfall	✓	✓	
	Water efficient household vegetable production: keyhole, sack and tower gardens	Semi-arid regions with uncertain rainfall	✓	✓	
	Integrated Soil Fertility Management	All regions	✓	✓	✓
	Crop diversification	All regions	✓	✓	
	Post-Harvest Storage	All regions	✓		
CROP PROTECTION	Crop protection	All regions	✓	✓	
	Soil fertility management	All regions	✓	✓	✓
WATER	High Efficiency Irrigation	Irrigated areas	✓	✓	
	Rainwater Harvesting (on & off farm)	All regions	✓	✓	
	Field drainage	All regions	✓	✓	✓
NATURAL RESOURCE MANAGEMENT	Functional Landscape Approach	All regions	✓	✓	
FORESTRY & AGRO-FORESTRY	Fruit trees, including wild fruits	All regions	✓	✓	
	Intercropping with fertiliser trees	All regions	✓	✓	✓
	Natural Forest Management	All regions	✓	✓	✓
	Woodlots/ plantations/ reforestation	All regions	✓	✓	✓
	Farmer Managed Natural Regeneration	Semi-arid regions with uncertain rainfall	✓	✓	✓
LIVESTOCK	Animal Health	All regions	✓		
	Water for Livestock	All regions	✓	✓	
	Fodder	All regions	✓	✓	
	Livestock breeding	Regions expected to become significantly wetter or dryer	✓	✓	
	Rangeland Management	All regions	✓	✓	✓
ENERGY	Fuel Efficient stoves	All regions			✓
	Insurance	Regions with uncertain rainfall		✓	

Some useful resources

SHA, Resilience Programming Framework, 2015

CRS's *Pocket Guide* provides a simple, practical approach to climate change planning: Extension Practice for Agricultural Adaptation (2016)

Some of the data required for understanding crop sensitivity to temperatures and rainfall can be found in USAID's Agricultural Adaptation to Climate Change in the Sahel: A Review of Fifteen Crops Cultivated in the Sahel (2014)

Concern Worldwide, Crop Weather and Climate Vulnerability Profiles (2017)

CARE's Gender-Sensitive Climate Vulnerability and Capacity Analysis (GCVCA), 2016, is a very comprehensive resource,

The online CSA Guide provides a gateway to online resources for implementing Climate-Smart Agriculture: <https://csa.guide>

Irish Aid in collaboration with IIED has established a Climate and Development Learning Platform that hosts an extensive collection of research reports, national adaptation plans and planning tools for some of SHA's target countries

For a brief overview of the approaches promoted by the French Agencies for agroecological intensification please see the short summary from CIRAD and AFD: Supporting the Agro-Ecological Transition in the Global South and the policy brief: Agro-Ecology Strategic Research at INRA and CIRAD, policy brief

For more detailed information please see Côte F.-X., Poirier-Magona E., Perret S., Rapidel B., Roudier P., Thirion M.-C. (eds), 2019, The Agroecological Transition of Agricultural Systems in the Global South, Agricultures et défis du monde collection, AFD, CIRAD, Éditions Quæ, Versailles

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