Climate Smart Agriculture (CSA)

Key messages

1. CSA must be a continuing process to achieve climate inclusive agricultural planning and implementation. It requires a strong commitment from policy makers in government and in the private sector, including farmers and scientists;
2. CSA confronts many uncertainties and much needed knowledge is still lacking, particularly how to evaluate agricultural performance across different spatial scales and over a longer time.

What is it about?

Climate change fundamentally shifts the agricultural development agenda. Changing temperature and precipitation, sea level rise, and the rising frequency of extreme climate events will significantly reduce global food production in this century unless action is taken. Major investments, private and public, will be needed.

Adapting agriculture to climate change is necessary to achieve food security, and agricultural mitigation can also reduce atmospheric greenhouse gas concentrations and slow climate change itself.

There are many drivers of change affecting agricultural sectors around the world, including population growth, changes in consumer demand and market integration. Climate Smart Agriculture is an integrated approach to achieve food security in the face of climate change, while also mitigating climate change and contribute to other development goals. Achieving

3. Continuous interaction between science, policy makers in government and the private sector, including farmers, is needed to align research and decision makers;
4. The components and processes to frame or shape CSA are context specific;
5. Examples and concrete suggestions for activities are available and provide a basis for learning and further steps;
6. It is relevant to create a platform to exchange and organize best practices and lessons learned between countries or regions.

these goals will require cooperation at many levels, including working with farmers' organizations and other stakeholders in the private sector, scientists, and policy makers at the national and sub national level.

CSA is a way to achieve short and long term agricultural development priorities in the face of climate change and serve as an integrator to other development priorities. CSA seeks to support countries and other actors in securing the necessary policy, technical and financial conditions to enable them to:

A. sustainably increase agricultural productivity and incomes;

B. build resilience and the capacity of agricultural and food systems to adapt to climate change, and;

C. seek opportunities to reduce and remove greenhouse gases (GHGs) while meeting their national food security and development goals.

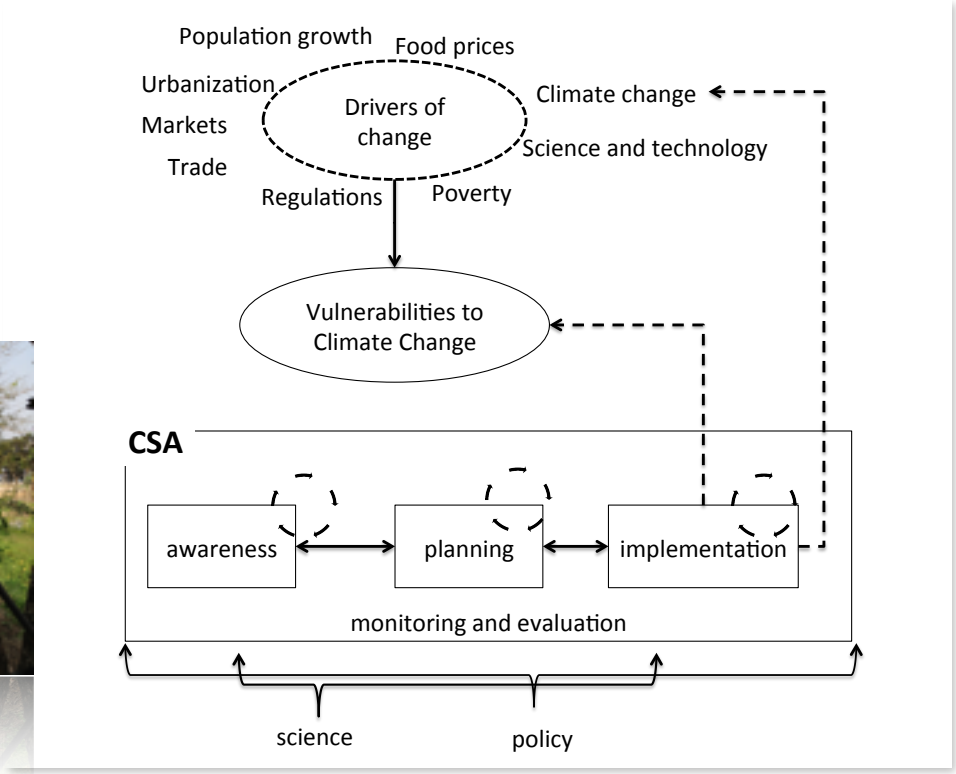

Figure 1. The role of climate Smart Agriculture in changes in agricultural systems. Climate change and variability is one of the drivers of change that affect the vulnerability of systems, which requires adaptation to ensure adequate food production. Parallel to this mitigation can be achieved. Science facilitates the process by analyzing agricultural systems, their changes and drivers and providing scenarios for planning.

CSA is still being elaborated, in concept as well as in application, but three elements stand out.

First, CSA is conceived as a process. We know that we must begin to do something different from what we have done in the past, and while we have some insights, and examples exist, new scientific approaches and insights are needed to provide guidance to policy makers and farmers. Thus, CSA involves bringing farmers, scientists, policy makers and others together in a sustained process to identify and refine fruitful actions, with confidence that these integrated efforts will be productive over time. We need to take action now, in an uncertain context and without fully knowing the future, and we need to sustain this effort over many years.

Second, CSA is highly context specific. Research has produced certain expected generalities to climate change, i.e., changing temperatures, changing precipitation and a higher risk of extreme events. However, effects are expected to vary substantially across even relatively small regions. Thus, the design of appropriate changes in crop varieties and crop mix, infrastructure investments and policies must be context specific. Moreover, they will often require landscape solutions that consider multiple objectives for agricultural activities, environmental quality, and social well-being across a mosaic of ecosystems that are spatially contiguous. These solutions will

Example: The landscape approach, Farmer-Managed Natural Regeneration in Niger

Since the mid-1980s, development partners have supported Niger's farmers in their long-established practices of woodland management that promotes re-growth from living tree rootstock. The major innovation was to encourage expansion of the practice into cropping areas, as well as protecting trees germinating naturally, creating a whole-landscape management approach. An assessment in 2008 found an estimated 200 million trees on five million hectares, attributable to farming practices rather than to decadal climatic trends. Quantitative evidence shows that farmer-managed natural regeneration contributes to food security by improving the fodder available to animals, reducing loss of fertile topsoil and raising incomes. Adaptation to climatic variability is enabled by the diversification of local livelihoods. The aggregated value of farmer-managed natural regeneration, resulting in improved soil fertility, fodder, food and firewood, is estimated to be at least US$56 ha-1 year-1, giving a net annual value of US$280 million. These benefits reach up to 2.5 million people. Greenhouse gas mitigation benefits have not been measured, but are likely to be substantial. Success factors include the simplicity of the practices, which farmers can learn, share and adapt easily, and a pivotal decision by the government of Niger to transfer tenure rights over trees from government to landholders.

Reference: CCAFS Working Paper no. 50

involve considerable complexity worked out by multiple partners and institutional arrangements.

Third, CSA involves more than food security and increasing agricultural production; it involves concern for multiple goals, each of which has important effects on human welfare and all of which must be considered jointly. These goals materialize the agriculture multi-functionality and include concern for livelihoods, impact on the poor, and preservation of biodiversity, forests and environmental services. These goals must be pursued in an integrated manner, for all are important. Science-policy interactions will develop appropriate tools for analyzing how to achieve these goals, which might differ from one place to the next and from one place to globally, or how to identify conflicts among the goals and choose among them, when necessary.

How to make CSA work

CSA is a continuous and iterative process that aims to combine food security, agricultural development and climate change objectives. This concept implies that the cycle of planning, implementation, monitoring and evaluation is one of continuous learning, knowledge sharing, and advancement towards solutions. As agricultural production is part of a complex food chain, many types of stakeholders must be involved in this process. Such a continuous and multi stakeholder process requires commitment from the relevant stakeholders. The process requires transparent communication to organize and maintain commitment of all relevant stakeholders.

To address CSA we need to understand the factors that shape agricultural production as well as the impact agriculture has on its environment. Scientific knowledge will be needed to support CSA, but for many areas more knowledge is needed, including the way to look at performances and impact especially over larger time and spatial scales.

Continuous interaction between science, policy makers in the public and the private sector, including farmers, is needed to align research and decision makers. A good starting point in this interaction is to mainstream CSA into current development plans and activities. Due to local conditions, the

measures to be taken in CSA are context specific and require customized solutions.

Learning from examples of processes and innovations that resulted in success or failure is powerful. Exchanging best practices and lessons learned provides a basis for concrete recommendations and for identifying further steps. For this exchange to take place, institutional mechanisms must be created to identify best practices and facilitate their exchange between sectors, countries, and regions.

In brief, the CSA process involves flexible yet clear guiding principles that will allow us to effectively use science to inform policy, bring stakeholders together and improve the efficiency of investments to successfully confront climate change.

Example: Transition to Climate-Smart Agriculture

The Food and Agriculture Organization of the UN (FAO), with support from the European Commission, is implementing a three-year project to support Malawi, Vietnam and Zambia in their transition to Climate-Smart Agriculture (CSA). The project builds a model for the kinds of practices, policies, capacities and investments that are needed to promote food security and strengthen adaptation and mitigation in the face of climate change.

The project follows a three step approach involving research, policy development and financing for climate change. First, it builds an evidence base for identifying, developing and implementing appropriate practices, policies and investments for CSA. By using sound economic and policy analysis, it looks at the synergies and tradeoffs between adaptation, mitigation and food security, identifies the barriers to adoption of CSA practices and the risks associated with these practices. Second, the project assesses whether existing policies and institutions are supportive of CSA and how they can be linked to international policy processes such as UNFCCC.

Finally, it uses analysis and research to develop investment proposals that would allow countries to improve their efforts to mitigate and adapt to climate change.

Source: www.fao.org/climatechange/epic

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