Enabling advisory services for climate-smart agriculture

Key elements to foster farmers' adoption of CSA practices

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Policy brief

Implementing Climate-Smart Agriculture (CSA) practices requires changes in the behavior and strategy of millions of farmers. Rural Advisory Services (RAS) can play a crucial role in transitioning to CSA and help build resilient agrifood systems if a conducive environment for their effective functioning is created.

GACSA
GLOBAL ALLIANCE FOR CLIMATE-SMART AGRICULTURE

Food and Agriculture Organization of the United Nations

KEY MESSAGES

1. Rural Advisory Services (RAS) can effectively support farmers in adopting Climate-Smart Agriculture (CSA) practices.
2. Mechanisms fostering the coordination of public, private and civil society actors should be facilitated by governments.
3. Research and training of RAS personnel should be strengthened to identify relevant field practices and promote capacity development, respectively.
4. Increased financial investments should be made available for RAS to promote CSA.
5. Contribution of RAS to the design and implementation of national climate adaptation and mitigation plans should be acknowledged.

Overview: why climate-smart agriculture?

Climate change already affects agriculture and food security, and if no urgent actions are taken, will put millions of people at risk of hunger and poverty. The expected effects of climate change – higher temperatures, more frequent extreme weather events, water shortages, rising sea levels, ocean acidification, land degradation, ecosystems disruption and biodiversity loss – could seriously compromise agriculture's ability to feed the most vulnerable, thus impeding progress towards the eradication of hunger, malnutrition and poverty (FAO, 2016).

Productivity decline leading to food supply shortfalls and increase in food prices would directly affect millions of low-income smallholder farmers, especially those who depend on agriculture for their livelihood and income in developing countries. Moreover, considering its major contributions to climate change, agriculture could be managed to leverage mitigation — reducing greenhouse gas (GHG) emissions and increasing carbon storage on farmland.

Climate-Smart Agriculture (CSA) is an approach that integrates climate change into planning and development of sustainable agricultural systems. The Food and Agricultural Organization of the United Nations (FAO) defines CSA as "agriculture that sustainably increases productivity, enhances resilience (adaptation), reduces/removes GHGs (mitigation) where possible, and enhances achievement of national food security and development goals" (FAO, 2013).

CSA is not a one-size-fits-all set of practices to be adopted by every farmer. In each location, its form needs to be defined by the context (i.e. extent of vulnerability to climate change, varying community risk profiles, availability of resources and livelihood options). It can be applied on a single farm or over entire landscapes, and it often needs involvement of diverse agricultural stakeholders and coordination across different agricultural sectors, as well as other related sectors, such as energy and water. Enhancing the capacity of farmers to manage risk and adopt effective climate change adaptation and mitigation strategies therefore needs special attention. The implementation of CSA innovations calls for the design of appropriate solutions adapted to the technical, institutional and policy related needs of the stakeholders involved.

Rural Advisory Services (RAS) and CSA

The implementation of CSA would involve changes in the behaviour, strategies and agricultural practices of millions of farmers worldwide. Farmers need support to understand the impacts of climate change and to adopt CSA practices. Rural Advisory Services (RAS) have a crucial role to play in linking farmers with sources of new information and tools so that they can transition to CSA practices (Simpson and Burpee, 2014).

There is no category of intermediaries other than RAS that have an explicit focus on supporting such change among rural communities (Box 1).

Box 1: Rural Advisory Services (RAS)

The Global Forum for Rural Advisory Services (GFRAS) defines Rural Advisory Services (RAS) as consisting of "all the different activities that provide the information and services needed and demanded by farmers and other actors in rural settings to assist them in developing their own technical, organizational, and management skills and practices so as to improve their livelihoods and well-being" (Christoplos, 2010). RAS collectively comprise several types of providers, known by different names - namely extension agents, community knowledge workers, agronomists, facilitators, advisors, promoters, knowledge intermediaries, programme managers, etc. – and provide a range of services and support to rural communities including technical, organisational, entrepreneurial and managerial support.

RAS personnel, especially those working at the field level, have a detailed understanding of the local vulnerability context, as well as of the existence of local support and service networks. Farmers are often more receptive to their advice, as they have long been supporting farmers with information on new and improved technologies and practices.

In many countries, RAS personnel have also been supporting the mobilisation of farmers' groups to collectively deal with natural resource management and marketing challenges. While RAS have been contributing significantly to enhancing food security through their advice on improved technologies, they have so far not been very successful in promoting CSA, which demands a strategy that captures the synergies and manages trade-offs among food security, adaptation and mitigation.

Though several pilot projects have shown the relevant roles that RAS could play in promoting CSA, RAS's technical and functional capacities to understand and promote CSA are limited. In this regard, beyond some key weaknesses in capacities at the individual and organizational level (e.g. capacities to anticipate and respond quickly to changes, promoting planned adaptation and mitigation measures, and to continuously reflect and learn from these), there are several institutional and policy bottlenecks in the wider enabling environment that are also constraining RAS in playing a significant role in promoting CSA.

Enabling environment for CSA promotion by RAS

The enabling environment refers to the framework conditions that facilitate and support any organization in playing its role effectively. An enabling environment may provide the laws, regulations and incentives which clearly spells out the organizations' mandate, roles and ways of functioning. In the context of RAS, it includes policies, institutional arrangements, stakeholder involvement, infrastructure and access to knowledge and support from a wide range of other organizations that are critical for their effective functioning, especially in promoting CSA. These are discussed in detail below.

Coherent policies and coordination among sectors

Promoting adaptation and mitigation measures over entire landscapes, or upscaling CSA at the community and landscape levels, requires coordination across different agricultural sectors, as well as other related sectors, such as forestry, energy, water, finance and insurance (ACT, 2016).

Effective coordinated governance, improved access to agro-meteorological information, and enhanced climate-related human and technical skill development are critical factors in enabling climate change action by RAS and other subjects (Verner, 2013). Coordination is particularly important across national agricultural

policies, strategies, investment plans and climate change instruments, including National Adaptation Programmes (NAPs), National Appropriate Mitigation Actions (NAMAs) and climate change investment plans.

There is much that governments can do to bring alignment across policy domains, facilitated by dialogue across relevant ministries, including organizations delivering RAS, to address trade-offs and overlaps (Schubert, 2015).

implementation of appropriate CSA actions at a large scale would essentially depend on coordination among different actors within the public and private sectors (Box 2).

Governments could also enable public—private partnerships to promote CSA. The regulatory and policy environment needs to recognize, promote and reward such partnerships, creating an environment where doing business with smallholder farmers becomes attractive for the private sector (Mutamba, 2016).

Box 2: Coordination in promoting CSA in Costa Rica

The principal means of operationalizing Costa Rica's climate change policy instruments are the National Appropriate Mitigation Actions (NAMAs), which are being rolled out for the different agricultural subsectors. NAMAs provide an institutional framework for the integration of production, mitigation and adaptation objectives. They bring together the MINAE's (Ministry of Environment and Energy) Climate Change Directorate (DCC), the Ministry of Agriculture and Livestock (MAG), sectoral producers associations, and other key actors from the public and private sectors as members of the coordinating and steering committees (for example, the Cattle Round Table) responsible for their implementation. For small and medium-scale producers, MAG is the lead agency promoting CSA in accordance with the National Strategy for Family Farms. It provides assistance to about 13,500 micro, small and medium-scale producers in several agricultural subsectors, particularly in promoting the adoption of CSA practices through its Sustainable Production Program (PFPAS), run by its agricultural extension services. The program supports production and incorporates adaptation practices to reduce soil erosion, inter alia. Further support is provided by the Innovation and Agricultural Technology Transfer Institute (INTA), in collaboration with partner NGOs.

Source: World Bank, CIAT, CATIE. 2014

An example of this is the ASEAN Climate Resilience Network (ASEAN-CRN), which is a platform for regional exchange, particularly for sharing information, experiences, and expertise on CSA among participating member states, namely Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand, and Vietnam. Singapore, has an inter-ministerial committee on climate change. Similarly, Germany has an inter-ministerial working group to coordinate climate adaptation policy. Moreover, success of RAS in the identification, promotion and

For instance, working with the private sector to establish crop insurance schemes can help to provide security for farmers, so that they become more willing to take risks by adopting new agricultural techniques. Similarly, partnerships with the private sector, associated with the development and the strengthening of capacities of service provider networks, may lead to a wider adoption of more efficient technical solutions, as evidenced by the case of irrigation and agricultural mechanization technologies and practices among smallholders in Bangladesh (CSISA, 2017).

Box 3: Promoting CSA: Role of Private Sector in Ghana

Olam is a global integrated supply chain manager of agricultural products and food ingredients. In Ghana it sources 80,000 Mt cocoa per year. In 2011, a supply chain risk review identified cocoa-driven deforestation and climate change impacts on cocoa production as significant. The company recognized that the regular producer-support program was unable to mitigate climate change and other resource risks.

In 2011, Olam partnered with the Rainforest Alliance (a network working for biodiversity conservation and sustainable livelihood promotion) to establish a project, which aimed to break the link between cocoa production and deforestation by building cocoa agroforestry production areas to make the system more resilient to moisture and temperature changes resulting from climate change. Additionally, the project aims to allow Olam to be the first company to bring climate-friendly cocoa to market, diversify opportunities and increase income for farmers, build efficient value chains, and to serve as a learning model for future expansion of the project.

The partnership has worked with stakeholders at all levels through a variety of means in order to accomplish these goals. As concerning farmers, the partnership has been instrumental in training them to meet the certification standards of the Sustainable Agriculture Network (SAN), including the additional climate module, thus, ensuring that both sustainable and climate-smart methods of agriculture are practiced. Such certification not only allows farmers to increase their incomes by selling higher quality cocoa, but also promotes intercropping and maintaining carbon stocks as supplementary income sources. Additionally, the partnership has been working closely with the Forestry Commission, traditional authorities, and private concession holders on partially or wholly devolving land rights to local communities who can then support sustainable forest management practices and develop these resources into REDD (Reducing Emissions from Deforestation and Forest Degradation) projects.

Source: Brasser, 2013.

CSA is a challenge for many businesses, but the private sector needs to look at and understand the co-benefits of addressing it (Box 3), and in identifying unprecedented opportunities (Vidal, 2014). In this sense, some significant changes are occurring, such as private agribusiness firms increasingly building a climate change agenda into their own risk management strategies (Box 3).

Research on Climate-Smart Agriculture

RAS need advice from researchers on appropriate technologies and practices adapted to a new and more variable climate. Research is needed to produce technological innovations that can accelerate the scaling up of CSA. Research investments should target developing crop varieties, tree species, livestock and fish breeds, as well as entire sustainable and resilient farming, food, water, land and energy management practices and systems. While formulating their advice for farmers, RAS often look forward to results from more decentralised, participatory and adaptive research. This kind of support and knowledge, however, is often not available. RAS also need support on undertaking vulnerability analysis, with use of climate forecasts and agro-advisories to facilitate decision-making by farmers. In addition, research support is also needed in piloting alternative value chains and certification schemes that can incentivise farmers to adopt CSA practices.

Furthermore, additional research is paramount to measure production, resilience and emissions in a way that informs decision-makers about the policies, technologies and practices most effectively promoting actions to reach climate-smart objectives (World Bank, 2016b). Schubert (2015) noted that there is actually not enough climate-smart agriculture research to support effective decision-making at the moment. Moreover, the information that is available is largely inaccessible to decision-makers at the national and local levels. Even for the most researched agricultural systems and practices, knowledge on how food production, climate change adaptation and mitigation co-vary under different management regimes is still limited (Rosenstock et al., 2014).

Coordination among research efforts in the crop, livestock, soil, water and land management sectors is problematic in several countries.

Box 4: National Initiative on Climate Resilient Agriculture

ICAR launched the National Initiative on Climate Resilient Agriculture (NICRA) in 2011, which has been renamed the National Innovations in Climate Resilient Agriculture (NICRA). This program has strategic cross-disciplinary research components on adaptation and mitigation (covering crops, livestock, fisheries and natural resource management), provides demonstrations of technologies on farmers' fields, while also creating awareness among farmers and other stakeholders to minimize the impacts of climate change on agriculture. 18 sponsored projects and 33 competitive grant projects have also been funded as part of this initiative to complement trans-disciplinary research. The Technology Demonstration Component (TDC) of NICRA has been implemented in 151 vulnerable districts to address several issues related to climate vulnerabilities such as drought, floods, salinity, frost, cyclone, heat and cold waves. These demonstrations aim at enhancing the adaptive capacity of farmers to cope with climate variability in vulnerable districts, which is essential to achieve climate resilience in agriculture.

Source: ICAR-CRIDA (2016)

Governments should play a major role in bringing together these different research units in order to identify integrated research priorities and to make sure that interdisciplinary teams of scientists are engaged in collaborative research and experimentation with societal stakeholders to support the transition to CSA (Leeuwis and Hall, 2013). At the same time, governments should be responsible for creating incentive mechanisms and innovative funding schemes for joint/integrated research projects in order to facilitate collaboration among stakeholders in different sectors. A good example of this is the National Innovations on Climate Resilient Agriculture (NICRA), a network project of the Indian Council of Agricultural Research (ICAR), launched in 2011, that has been aiming to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration (Box 4).

Financing for RAS

Promoting CSA is challenging for RAS, as it involves provision of personalised support to farmers depending on their vulnerability to climate change at the household level, as well as according to their risk profile and the availability of other livelihood options. In most countries, RAS face resource constraints that prevent them from deploying an adequate number of qualified staff.

Enhanced investments in RAS would allow them to deploy more and better qualified staff, and to enhance capacities of RAS personnel in aligning their CSA-support interventions to NAPs and NAMAs. Though RAS could potentially access global climate finance funds to strengthen its interventions in CSA (Box 5), there has been very little progress on this front.

Box 5: Climate finance and advisory services

Climate finance could be used to help create an environment that promotes effective and affordable climate-smart advisory services by providing grants and concessional financing. The following are major functions these tools can be useful for:

Grants:

•Train the staff of service providers on delivering climate-smart advisory services;

•Increase awareness among farmers of the purpose and availability of climate-smart advisory services.

Concessional financing:

• Pilot Public Private Partnerships (PPPs) with meteorological, insurance, and financial service providers and mobile network operators;

• Set up and improve meteorological stations that collect climate change and weather data;

• Develop a cloud-based pool of climate-smart information on agricultural practices, technologies, etc. that can be accessed by farmers and Small Medium Enterprises (SMEs);

• Design and pilot new climate-smart advisory services using Information and Communication Technologies (ICTs);

• Support new entrants in the market in increasing competition and the supply of products and services.

Source: World Bank (2016a)

The agricultural sector itself has not been able to benefit significantly from climate funds:

> Despite agriculture's vulnerability to climate change, the total amount of climate finance allocated in 2014 to agriculture, forestry and other land-use was disproportionally small at US$ 6–8 billion, considering that the total amount of climate finance mobilized globally that year was US$ 391 billion. Among the factors responsible for the shortfall are: imbalanced risk-reward profiles for investments in the sector, limited capacity to identify financial needs for adaptation and mitigation purposes in agriculture, an evidence base that is insufficient for identifying the most suitable climate-smart practices and technologies, a lack of adequate metrics and tools to accurately measure the impact of climate-smart interventions and a fragmentation of climate finance resources (World Bank, 2016a).

RAS definitely need more funding from both public and private sectors. In this sense, their capacities to raise additional funds through development of viable proposals from different sources need strengthening.

Technical assistance to support the poorest and most climate vulnerable countries in effectively participating in complex global climate finance negotiations is currently available (e.g. Climate Finance Advisory Service), and this should be used by governments to improve their access to climate funds.

Capacity Development of RAS to promote CSA

CSA is a priority topic for capacity development among RAS everywhere. There is a need to enhance capacities related to technical and functional aspects of CSA among RAS providers, especially among those working at the field level. RAS personnel need to be well-informed about the nature of risks associated with climate change that farmers face in their area of jurisdiction, and should have the attitude and skills necessary to identify and promote appropriate CSA interventions among women and socially marginalized groups who are more vulnerable to climate change impacts (El Fattal, 2012).

Keeping in view the bridging and brokering role among organizations in different sectors that RAS staff should perform for promoting CSA, they need to reorient their core expertise as concerning co-learning, sensitivity to gender and diversity issues, managing power and conflict dynamics, intermediation and facilitation (Sala et al., 2016). Several programmes have developed training manuals on addressing climate change adaptation and mitigation that can be used as a reference for developing new pre-service education and in-service training programmes on CSA (Barquin et al., 2013; Campbell et al. 2013; Cracknell, 2014; Simpson, 2016; Solar, 2014).

Considering the ever-evolving impacts of climate change, RAS managers need to develop long-term visions on their approach regarding climate change adaptation in agriculture (Muller et al., 2015). Personnel need expertise to undertake participatory scenario development and future visioning exercises by evaluating alternative scenarios (Palazzo et al., 2016), prioritising investments, contributing to policy formulation, and learning from policy and programme implementation (Lambol et al., 2011). Developing these capacities among RAS through establishing an iterative system for capacity development, supported by appropriate policies and funding, should be a priority investment option for donors and national governments.

Enabling RAS for CSA: ways forward

Promoting CSA involves a number of shifts for RAS. Compared to its conventional role of promoting the dissemination of new information and knowledge among farmers, providing assistance in the framework of CSA is more knowledge intensive and RAS need to provide long-term tailored support to farmers to adopt CSA practices. Without an enabling framework that enhances collaboration among different stakeholders in the public, private and civil society

sectors, and that achieves policy coherence across different sectors, RAS will not be able to optimize their potential contributions to CSA.

The following measures are critical in this context:

Establish co-ordination mechanisms to support CSA at different levels (i.e. regional, national and international): As RAS need to network with a wide range of stakeholders to plan and coordinate CSA interventions, platforms enabling regular and effective multi-stakeholder interactions have to be constituted and strengthened. Mechanisms such as inter-ministerial/departmental working groups, policy working groups, coordination committees, and stakeholder platforms, need to be supported and facilitated in order to have meaningful dialogue, reflection and learning among all CSA stakeholders including RAS. This dialogue will also be necessary in developing policies, programmes and RAS interventions to support CSA.

S*trengthen research on CSA*: RAS need more research support to select locally relevant practices (both technological and institutional) adapted to a new and more variable climate, and also to provide policy relevant advice to decision-makers on investments, policy options and programme performance. Adequate resources and personnel need to be allocated to conduct decentralised adaptive research, as well as policy relevant socio-economic investigations to generate technologies and practices for promoting CSA. Creation of special research funding mechanisms (e.g. climate research funds supporting collaborative research on CSA) should also be considered. Regional and global dialogue, exchange and learning on research results and good practices on CSA would be beneficial to those countries that lack capacity to carry out their own research.

Capacity Development for CSA: In addition to knowledge about climate change and technologies to promote CSA, RAS have to deepen and broaden their knowledge and soft-skills related to communication, facilitation, co-learning and dealing with diverse groups, and also learn to lead much broader intermediation at different levels so as to facilitate change. The development and promotion of new training modules on CSA appropriate to different levels of RAS staff, and strengthening training of trainers on CSA, needs priority attention and could be supported by a number of actors including donors, governments, NGOs and research bodies within the framework of specific programmes.

Enhanced investments in RAS for supporting CSA: CSA needs to be driven by investments in the agricultural sector in general, and in supporting RAS in particular. RAS need additional financial resources to recruit more and better qualified/trained staff at the field level in order to support farmers in transitioning to CSA. Investments are also needed to build staff capacity on CSA at all levels. Moreover, RAS personnel, especially at the senior level, needs capacities to raise additional funds by developing viable proposals from different sources, including accessing different climate funds.

Institutional commitment to promote CSA and strengthen RAS: Lastly, a higher level of institutional commitment to promote CSA and strengthen pluralistic RAS will be needed to enhance the contribution of RAS to CSA. At the country level, a national platform or forum of RAS providers can play a major role in shaping the enabling environment for RAS, so that their voice is heard in the design and implementation of national climate adaptation and mitigation plans, as well as in access to climate funds.

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ENABLING ADVISORY SERVICES FOR CLIMATE-SMART AGRICULTURE

The Policy Briefs provide a summary of a particular issue related to climate-smart agriculture and articulate some key recommendations in terms of policy options to deal with it.

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