



Submission from the CGIAR System Organization, International Centre for Tropical Agriculture (CIAT) and the World Bank

These are views on

Socioeconomic and food security dimensions of climate change in the agricultural sector

Key Messages:

- Strong and well-coordinated institutions which enable action across landscapes are a pre-requisite for improved socio-economic and food security outcomes from climate action in the agricultural sector.
- Research and innovation systems must be inclusive and demand-driven to meet farmers' economic and social needs. Innovations must be understood, accepted, implemented, promoted, and improved by farmers.
- There are no silver bullets for climate action in agriculture, and climate smartness is context specific. Prioritization processes such as the Climate Smart Agriculture Investment Plan series (CSAIPs) can help identify context specific priorities for investment and policy.

Priority Actions for the Koronivia Joint Work on Agriculture:

Koronivia Joint Work on Agriculture (KJWA) can support countries to enhance socioeconomic and food security outcomes from investing in climate action in the agricultural sector, specifically by:

- Instructing the Convention's finance mechanism to extend support to institutional strengthening alongside technological solutions, to enable these solutions to reach scale.
- Actively engaging institutions to catalyse positive transitions to landscape approaches, which go beyond traditional disciplinary silos.
- Facilitating a discussion amongst countries on current subsidy regimes to identify possibilities for repurposing for positive climate, food security and livelihood outcomes.
- Identifying best practices to incentivise private sector investment and to improve livelihood outcomes.
- Facilitating the development of best practices for incentivizing CSA implementation at scale. These can be used to establish criteria for measuring country effectiveness.
- Instructing the finance mechanism of the Convention to adopt an investment prioritisation processes similar to what has proved successful in the CSAIPs, together with efforts to catalyse greater private sector investment.
- Highlighting opportunities for developing agricultural innovation systems, which can enable countries to meet agriculture related goals set out in their Nationally Determined Contributions, and facilitate regional collaboration and systems development.
- Instructing the Convention's technology mechanism to prioritise facilitating the transfer of technologies that support sustainable food production and distribution such as precision agriculture and green value chain infrastructure.
- Encouraging countries to promote efforts to improve transparency and traceability in food supply chains, which can empower both consumers and producers.

Background

As part of the Koronivia Joint Work on Agriculture (KJWA) of the UNFCCC, submissions have been sought on, *'Socioeconomic and food security dimensions of climate change in the agricultural sector'*. At the same time, recent reports including the Intergovernmental Panel on Climate Change's special report on Climate Change and Land, the Food and Land Use Coalition's report, *'Growing Better: Ten Critical Transitions to Transform Food and Land Use'*, and the World Resources report, *'Creating a Sustainable Food Future: A Menu of Solutions to Feed Nearly 10 Billion People by 2050'*, call for actions to transform food systems in the face of climate change. Effectively catalysing and implementing the transformation requires the right **institutions, incentives, investments, innovations and information**.

Lessons from the [Climate Smart Agriculture Investment Plans](#) (CSAIPs) series¹, now completed by eleven countries, are used here to highlight some of the roles of these five priorities in effective implementation and thus delivering improved socioeconomic and food security outcomes through climate-smart agriculture (CSA).

Priority #1: Institutions

Strong institutions are a pre-requisite to deliver improved socioeconomic and food security outcomes and can enable adoption of CSA innovations at scale. This includes the presence of strong research institutions, farmer organizations, agribusinesses, and financial institutions, together with multi-stakeholder platforms which enable effective coordination among institutions. Institutional development and strengthening was a priority identified in several CSAIPs, for example during the preparation of the CSAIP in Bangladesh, it was found that a crucial priority was to establish a National Dairy Board to promote coordination and knowledge-exchange among value chain actors. Another example of where institutional strengthening has played an important role is Senegal's Agricultural Services and Producer Organizations Project (1999-2011), which established a network of producer organizations to strengthen research capacity and support the provision of demand-driven agricultural services provided by the private sector. The project improved the quality and price of groundnuts as well as the level and quality of community seed stocks, it raised agricultural income by 12 percent as well as non-farm household income.

While strengthening of institutions is important, this needs to occur taking cognizance of the inter-sectoral nature of CSA solutions, which mean that traditional institutional boundaries may not be suitable for actions which need to be implemented across landscapes and/or value chains. Greater institutional alignment across landscapes can help scale CSA effectively and realise positive socioeconomic and food security outcomes. For instance, the West African Agriculture Productivity Programme (WAAPP) has harmonized regional seed regulations to facilitate the movement of newly developed climate-resilient varieties across borders to allow for fully utilizing economies of scale of agricultural research and to successfully boost widespread adoption. Another example of institutional alignment comes from Denmark, where the Ministry of Environment and Food is structured to address inter-related issues of food production, consumption and the environment. Such organization of efforts can support transformative actions, e.g. the Danish food and agriculture industry's vision to be carbon neutral by 2050.

KJWA can instruct the Convention's finance mechanism to extend support to institutional strengthening alongside technological solutions to enable these solutions to reach scale.

KJWA can actively engage institutions to catalyse positive transitions to landscape approaches, which go beyond traditional disciplinary silos.

¹ The CSAIPs have been developed in partnership with the World Bank, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), the International Center for Tropical Agriculture (CIAT), the World Agroforestry Centre (ICRAF) and other partners

Priority #2: Incentives

Limited availability of credit, limited implementation of novel financing mechanisms and safety nets, as well as inefficient supply chains and inaccessible markets are among the key barriers to implement CSA at scale. Provision of incentives to address these barriers can enable farmers to scale CSA. Various options are available in terms of incentives, and a key opportunity is around redirecting of agricultural subsidies. In 2018, over US\$700 billion² was provided in public support to producers. These resources often continue to be coupled to production decisions and thereby introduce important market distortions and negative environmental externalities. Effectively redirecting these resources to incentivize climate action in agriculture and the broader food system (supply and demand sides) and in related sectors (transport, energy, manufacturing) is a major opportunity, and could greatly accelerate climate smart investments, including in the enabling environment, infrastructure, scientific knowledge, and advisory services, as well as further leverage private investments in agriculture. The realigned incentives would differ across different actors, e.g. investment in skills development and provision of credit could serve as incentives for farmers, and investments in promoting outgrower schemes can incentivise development of SMEs, and investment into rural infrastructure and improved land tenure can serve as an incentive for larger private investors.

However, care must be taken that efforts to provide incentives are determined through inclusive processes as opposed to top down approaches, and do not adversely affect farmers' bottom line. Examples of redirecting subsidies include the World Bank's Punjab Agriculture and Rural Transformation Program in Pakistan. Subsidies dominated public spending on agriculture in Punjab with over USD 1.2 billion in subsidies in 2017, and these generated negative environmental externalities. The program focuses on diverting subsidies to investment in high value agriculture and livestock, e.g. through targeted as opposed to universal subsidies.

KJWA can facilitate a discussion amongst countries on current subsidy regimes to identify possibilities for repurposing for positive climate, food security and livelihood outcomes.

KJWA can identify best practices to incentivise private sector investment and to improve livelihood outcomes.

KJWA can facilitate the development of best practices for incentivizing CSA implementation at scale. These can be used to establish criteria for measuring country effectiveness.

Priority #3: Investments

Scaling CSA requires more and better investment in agriculture. Climate Smart Agriculture Investment Plans (CSAIPs) aim to address this need, by identifying concrete opportunities for investment, policy design and implementation for Governments. The CSAIPs make use of cutting-edge climate and impact modelling, economic analysis and broad-based in-country stakeholder engagements to unpack these opportunities. They offer an example of how stakeholder driven priorities can be used to design investments which enhance productivity, farmer incomes, and resilience, while also enabling countries to take a low emissions development pathway. Such efforts can be scaled up increasing the impact of investment through public, private, and donor (bilateral and multi-lateral) sources. For the public sector, this would involve re-prioritising funds to CSA e.g. using "smart" subsidies to realise environmental goals, and also getting finance ministries engaged in CSA and NDC implementation work. The private sector can support R&D, and tap into business opportunities around climate change adaptation. Donor agencies can, through enhanced coordination of their actions maximize the impact of their funds, which can be demonstrated through better monitoring.

The CSAIP approach has been used to identify promising CSA investments of over USD 2 billion in 11 countries (Bangladesh, Burkina Faso, Cameroon, Côte d'Ivoire, Ghana, Lesotho, Mali, Morocco, Republic of the Congo, Zambia and Zimbabwe), which, if implemented, would benefit close to 80 million people. The CSAIPs demonstrate how countries have varying priorities, indicating that there are no

² [OECD \(2018\) Agricultural Policy Monitoring & Evaluation 2019. OECD Publishing, Paris.](#)

silver bullet CSA investments and that solutions need to be tailored to context specific needs. Where commonalities exist, these are largely in technology and innovation (efficient irrigation systems, agriculture innovation systems, and ICT-based agro-climatic information services), showing the importance of investments in technology and innovation for achieving positive food security and socio-economic outcomes.

Current levels of investment in agricultural value chains are insufficient to achieve food security outcomes. Crowding in private investment to help achieve these goals and optimizing the use of scarce public resources will be needed. The World Bank uses the Maximizing Finance for Development (MFD) approach to increase and promote appropriate private sector engagement and investment along agricultural value chains. MFD within the agriculture and food sector requires established linkages to other sectors such as water, energy, infrastructure and ICT.

KJWA could instruct the finance mechanism of the Convention to adopt an investment prioritisation processes similar to what has proved successful in the CSAIPs, together with efforts to catalyse greater private sector investment.

Priority #4: Innovation

If agricultural innovation systems are not efficient, they delay the cycle of research, development, piloting, scaling, and adoption of technological improvements and can deter efforts to scale CSA. Innovation occurs through dynamic interactions among actors in the value chain. To improve CSA uptake by farmers, research and innovation systems can become more inclusive and demand-driven to meet farmers' economic and social needs. Innovations must be understood, implemented, promoted, and improved by farmers. There is a need of strong cooperatives or associations that communicate farmer demand upstream (researchers, extensionists, and seed producers) and gauge market dynamics of downstream actors (processors and wholesale buyers). For example, through the Instituto Nacional de Investigación Agropecuaria (INIA), producers in Uruguay set the research agenda of the country's main agricultural research institute by identifying, prioritizing, and planning research as active members of the board of directors, regional advisory councils, and working groups. Specific mechanisms allow producers to articulate demands and to transfer technology, such as experimental units for validation and demonstration. Regional advisory councils capture local demands and host working groups to strengthen farmers' role in guiding research. INIA also facilitates technology transfer, which provide feedback to reorient research. The CSAIP for Zambia also noted the importance of plural participatory extension approaches, which support a variety of both public and private advisory services to disseminate innovative CSA technologies in a way that reflects the diversity of farmers as well as farming systems and their specific needs.

While agricultural innovation systems at the national level is important, climate change impacts span national borders and therefore it is also important to develop systems for regional collaboration and coordination. For example, the West Africa Agricultural Productivity Program has led to the creation of Regional Centers of Excellence focusing on priority commodities in West Africa which allows for improved collaboration, better mobilization of resources and more coordinated dissemination of technological innovations at the regional level.

These actions to strengthening agricultural innovation systems at the national and regional levels require additional investment, but current trends indicate that countries are under investing in agricultural innovation although the returns are attractive³. Increasing investment in agricultural innovation systems, and improving modalities of investment (e.g. through mechanisms to pool investment) need to be considered to maximize the potential of agriculture. Greater investment should also bring a more holistic focus, to consider issues beyond productivity, including maximizing climate co-benefits (reduction of

³ [Fuglie, Keith, Madhur Gautam, Aparajita Goyal, and William F. Maloney. 2019. "Harvesting Prosperity: Technology and Productivity Growth in Agriculture." Overview booklet. World Bank, Washington, DC.](#)

carbon footprint in production, and enhancing resilience), and improving efficiencies through a food systems approach.

KJWA should highlight opportunities for developing agricultural innovation systems, which can enable countries to meet agriculture related goals set out in their Nationally Determined Contributions, and facilitate regional collaboration and systems development.

Priority #5: Information

Provision of information can empower farmers to make more robust decisions in the context of climate change. Provision of information can be improved by considering four key aspects:

1. Provision of **tools** to enhance productivity and to manage risks more effectively. This includes tools for precision agriculture, which enables farmers to improve yields while also reducing inputs needed, and advisories to enable farmers to better manage changes in weather and provides early warning of potential extreme weather events. For example, the WBG Ag Observatory enables the World Bank and partners to access and use big data and digital information for decision making.
2. **Transparency** in price discovery can enable farmers to get better prices for their produce. This requires incentives for the private sector to share price and production information, and a high level of collaboration among farmers.
3. **Technology** transfer, to bring new techniques of production and storage to farming communities. This needs to be complemented by efforts to strengthen extension services as unfavourable extension staff to-farmer ratios for the dissemination of new technologies and practices is a major challenge, which will need to be addressed through new extension models (including application of digital pathways).
4. Enhancing **Traceability** of food to reduce the distance between producers and consumers and to enable consumers to exercise the power of choice to promote sustainable practices.

KJWA should instruct the Convention's technology mechanism to prioritise facilitating the transfer of technologies that support sustainable food production and distribution such as precision agriculture and green value chain infrastructure.

KJWA should encourage countries to promote efforts to improve transparency and traceability in food supply chains, which can empower both consumers and producers.