



Consortium



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security



Submission from the Consortium of International Agricultural Research Centers, to UNFCCC SBSTA 44 on issues related to agriculture in response to SBSTA decision FCC/SBSTA/2014/L.14.

These are views on

Identification of adaptation measures, taking into account the diversity of the agricultural systems, indigenous knowledge systems and the differences in scale as well as possible co-benefits and sharing experiences in research and development and on the ground activities, including socioeconomic, environmental and gender aspects. FCC/SBSTA/2014/L.14 paragraph 3 (c).

Key messages

- **International governance arrangements and national policy frameworks** already provide a robust foundation for adaptation in agricultural systems.
- **National planning** using prioritization tools can result in efficient, effective and equitable allocation of limited resources to benefit the most vulnerable farmers and systems.
- **Local planning** involves devolution of decision-making and participatory approaches to match local contexts, capacities and preferences.
- Access to **adaptation finance** remains critical to achieving local and global goals for adaptation. Both **economic incentives** and **value chain initiatives** can ensure that financial investments achieve adaptation at scale.
- **Effective research and knowledge systems** connect farmers, policy-makers, businesses and researchers to accelerate sharing of emerging knowledge, and help adapt to dynamic current climates and to **future scenarios** for climate and development.
- Modernizing **extension services, capacity building and technology transfer** approaches are important to capture the attention and participation of a wider group of rural people, including youth.
- **Indigenous knowledge** strengthens adaptation measures by working closely with knowledge-holders at both local and national levels.
- **Gender equality and social inclusion** can be strengthened if adaptation measures are well designed.
- Adaptation measures in agricultural systems also offer opportunity to achieve multiple co-benefits, for **environmental health and mitigation**.

Identification of adaptation measures

Adaptation measures refer to the wide range of actions and institutions that raise the adaptive capacity of agricultural systems. Here we consider the set of public sector and private sector measures that have particular potential to raise adaptive capacity among smallholder farmers in low-income and middle-income countries. These measures provide an enabling environment for implementation of the practices and technologies described in our submission in response to FCC/SBSTA/2014/L.14 paragraph 3 (d). In agricultural systems, successful measures for adaptation have been demonstrated in governance, policy frameworks and readiness; national planning; local planning; finance, economic incentives and value chains; research and knowledge systems; extension, capacity building and technology transfer.

Governance, policy frameworks and readiness

Positive momentum among multiple governmental and non-governmental stakeholders is supporting the transformation of agricultural systems to address climate change. Examples of **international governance arrangements** include NEPAD's Vision 25x25, which aims to help 25 million African farmers become more resilient by 2025, and the Global Alliance for Climate Smart Agriculture, which brings interested stakeholders together for learning and exchange at the global level.

Among countries that included adaptation in their INDCs, 90% prioritized agriculture as a sector for action. This international commitment is further demonstrated in national **policy frameworks**. For example, the Kenyan National Climate Change Action Plan prioritizes interventions in the agricultural sector to increase

resilience and improve resource use efficiency. Cross-sectoral policy coordination is also important, particularly with other forestry, water and energy sectors, as well as alignment with national visions for development. In India, the new National Agroforestry Policy provides for smallholder farmers to enhance productivity and income while strengthening climate resilience. In Nigeria, the National Agricultural Resilience Framework seeks to minimize climate risks associated with the country's ambitions to promote rural development through export-led agriculture.

As countries seek international support for implementation of their policy frameworks and action plans for adaptation, international investors must assess

and manage investment risk. Tools to demonstrate **country readiness** will be a growing priority and asset to developing countries seeking international assistance.



Kenya's National Climate Change Action Plan is an example of a national policy framework that prioritizes action in the agriculture sector. Photo: G. Kinyanjui.

National planning

Once policy frameworks are in place, national policy-makers may be faced with hard choices about where to channel tightly constrained resources. Tools are emerging to assist with reaching decisions that lead to efficient, effective and equitable outcomes.

In Mali, decision-makers have successfully used a **prioritization framework** to identify vulnerable regions and short-list potential interventions. A similar toolkit for prioritising adaptation options is being piloted in Bangladesh, Nepal and at the sub-national level in India. Another tool is **climate-smart agriculture country profiles**, which provide a rapid diagnosis of capacities and options by local experts, and have been developed so far for Argentina, Colombia, Costa Rica, El Salvador, Nicaragua, Grenada, Mexico and Peru.

Evaluation suggests that **careful planning gives long-term pay-offs**. In Uruguay, for example, appropriately planned adaptation measures have quadrupled agricultural production within a decade, while increasing system-level resilience to climate change, and significantly reducing greenhouse gas emission associated with food production.

Local planning

Adaptation planning at the local level is important to address the granularity of climate change impacts, which may vary within national boundaries, and to enable farmers and communities to be in charge of their own choices and futures under climate change.

Multiple approaches to **participatory planning** have proven effective in matching adaptation investments to local preferences, needs and capacities. In Burkina Faso, participatory diagnosis with communities in Yatenga led to the identification of potential solutions for the region. A participatory approach that helps farmer cooperatives identify agro-ecological practices for investment is being tested with the cooperative Promoter of Cooperative Development in the Segovias in Nicaragua and with Barillense Farmers Association in Guatemala.



In Viet Nam, researchers are working with farmers in Climate-Smart Villages to test agricultural interventions and develop portfolios of activities. Photo: G. Smith (CIAT)

Local planning is useful in ensuring that adaptation actions are holistic, rather than focused on only one or two technologies or practices. For example, "climate-smart villages" that enhance climate literacy of farmers and local stakeholders and implement **portfolios of climate solutions** are being piloted in Nepal and Bangladesh and scaled up in around 1500 villages in India. In Viet Nam, local knowledge has been integrated with scientific knowledge to develop participatory land use plans in three climate-smart villages.

Subsidiarity, in other words **devolving power over planning and budgets** to the lowest appropriate level can ensure more agile and accountable governance of adaptation. In Kenya, implementation of the National Climate Change Action Plan is devolved to county governments, who mainstream adaptation priorities and actions into 5-year County Integrated Development Plans

Finance, economic incentives and value chain initiatives

Increasing availability of, and access to, **adaptation finance** is key to raising adaptive capacity locally and globally. The unmet need is vast. For example, the 20 climate funds active in sub-Saharan Africa are not yet able to deliver the estimated annual need across all sectors to meet the US\$18 billion needed each year for adaptation across all sectors. Introduction of **novel financial instruments**, such as climate bonds or use of mitigation finance to deliver co-benefits for adaptation, is a promising avenue for future support.

A wide range of **economic incentives**, such as tax exemptions, price and purchase guarantees and soft rural credit, can help climate finance reach its goals by transferring risk away from the smallholder farmers who need to invest in adaptation. One example is India's Sub Mission on Agricultural Mechanization, which allocates US\$ 2.11 billion to providing farmers with subsidies of 25-50 % on purchase of new machines for zero-tilling, seed-drilling and laser land levelling.

Working with already established **value chain initiatives** can enable benefits to reach scale much more quickly. For example, climate change adaptation measures are being built into existing voluntary certification networks in the coffee and cocoa sub-sectors, allowing rapid scaling up to 30% of global cocoa producers and 15% of global

coffee producers, with an initial focus on Ghana, Nicaragua and Peru.

Research and knowledge systems

As climates change, consistent long-term investment in **research** at national level – and collaboratively across countries – will pay off for adaptation at farm, agriculture sector and national food security levels. For example, CGIAR's research program on Climate change, agriculture and food security (CCAFS) is six years into an AR4D partnership of 700 organisations in five regions. Studies on the program's impact show how adaptation research can increase farmers' incomes by several percentage points in a few years, while also improving outcomes for environment and wider rural development.

The ideal **knowledge systems** under climate change are agricultural innovation systems that link public and private research, extension and advisory services to generate, manage, blend and share indigenous and scientific knowledge, while facilitating learning processes and network-based innovation. For example, the ClimMob platform helps farmers identify adaptation measures faster. By joining an ICT-based platform, farmers experiment on their own farms and share results by phone. About 30,000 farmers participated in 2015, a number that is quickly growing.

Development of **public-private R&D partnerships** can enable more rapid scaling of technical and institutional innovations. For example, the programs on Drought Tolerant Maize for Africa and Stress Tolerant Rice (in Africa and South Asia) are generating positive benefits for farmers. Similar successes are happening in public-private research on index insurance products in India and Africa.

Around the world: Measures for climate change



GLOBAL

Research and knowledge systems

With over 700 partners in five regions, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is an Agriculture Research for Development Partnership (AR4D) in action. The program shows how climate adaptation actions can increase farmers' incomes by several percentage points in a few years, while also improving outcomes for environment and wider rural development.

GHANA, NICARAGUA, PERU

Finance, economic incentives and value chain initiatives

Climate change adaptation measures are being built into existing voluntary certification networks in the coffee and cocoa sub-sectors, allowing rapid scaling up to 30% of global cocoa producers and 15% of global coffee producers.

MALI

National planning

Decision-makers have successfully used a prioritization framework to identify vulnerable regions and short-list potential interventions.

BURKINA FASO

Local planning

Farmers, researchers and government agencies identify priority adaptation actions based on participatory diagnosis and planning in Yatenga.

COLOMBIA

Extension services, capacity building and technology transfer

South-South cooperation with Senegal leads to a new climate information service that combines local and scientific knowledge. Pilot now reaching 1500 farmers.

NIGERIA

Governance, policy frameworks and readiness

The National Agricultural Resilience Framework seeks to minimize climate risks associated with the country's ambitions to promote rural development through export-led agriculture.



ARGENTINA, COLOMBIA, COSTA RICA, EL SALVADOR, GRENADA, MEXICO, NICARAGUA, PERU

National planning

Climate-smart agriculture country profiles provide a rapid diagnosis of capacities and options by local experts

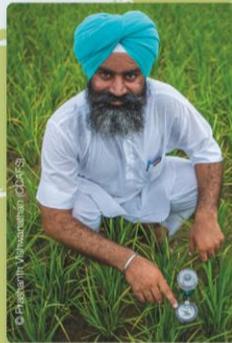
URUGUAY

National planning

Adaptation measures have quadrupled agricultural production within a decade, while increasing system-level resilience to climate change, and significantly reducing greenhouse gas emissions associated with food production.

- INDC refers to agriculture as an adaptation priority
- INDC refers to agricultural mitigation, but not adaptation
- INDC does not refer to agriculture
- No INDC submitted

adaptation in agriculture



INDIA

Governance, policy frameworks and readiness
National Agroforestry Policy provides for smallholder farmers to enhance productivity and income while strengthening climate resilience.

Local planning

"climate-smart villages" that enhance climate literacy of farmers and local stakeholders and implement portfolios of climate solutions are being scaled up in around 1500 villages in India.

Finance, economic incentives and value chain initiatives

Sub Mission on Agricultural Mechanization allocates US\$ 2.11 billion to providing farmers with subsidies of 25-50% on purchase of new machines for zero-tilling, seed-drilling and laser land levelling.

VIETNAM

Local planning

Participatory land use planning in climate-smart villages integrates community knowledge of limitations and potentials of natural resources, including climate-related risks, in developing land use plans.

KENYA, UGANDA, TANZANIA

Extension services, capacity building and technology transfer

Shamba Shape Up reality TV show reaches 9 million average viewers every month with messages on climate-resilient practices. Evaluation shows that 42% of viewers have adopted practices they've seen.



SUB-SAHARAN AFRICA

Finance, economic incentives and value chain initiatives

NEPAD's Vision 25x25 aims to help 25 million African farmers become more resilient by 2025.



CAMBODIA

Foresight, models and scenarios

The Ministry of Agriculture, Forestry and Fisheries used participatory future scenarios to develop the 2014-2018 Climate Change Priorities Action Plan.

Foresight, models and scenarios

When the future is uncertain – in economic and social terms, not just climatic – shared models of how the future might plausibly turn out provide a critical tool for public sector policies and private sector strategies. In Cambodia, the Ministry of Agriculture, Forestry and Fisheries used **participatory future scenarios** for priority setting to develop its 2014-2018 Climate Change Priorities Action Plan. Similar approaches have been used widely around the world, including in Kenya and Honduras. Participatory scenarios can be complemented with **quantitative models** to assess the potential performance of different adaptation measures under a variety of possible futures.



Participatory scenario building helps countries set climate change action priorities. Photo: J.L. Urrea (CCAFS)

Extension services, capacity building and technology transfer

Greater local participation coupled with modern communications technologies are increasingly offering a powerful, cost-effective way to revitalize **extension services**. Younger farmers are attracted by new approaches. For example, in Taraori, India, young farmers' groups show a keen interest in developing new-generation technologies in the local context.

More broadly, novel approaches to **capacity building** are proving valuable in promoting awareness and adaptation. In East Africa, the Shamba Shape Up **reality TV show** reaches an average of 9 million average viewers every month with messages on climate-resilient practices. Evaluation shows that 42% of viewers have adopted practices they've seen.

South-South cooperation for **technology transfer** is another powerful mechanism for change. For example, a series of learning visits between policy-makers and practitioners from Senegal and Colombia has overcome language barriers. The key result is the transfer to Colombia of an approach of combining local and scientific knowledge to transmit climate information to farmers. Such climate information is now being provided to 1500

farmers in Colombia, building towards Senegal's success in reaching several million farmers.

Indigenous knowledge

Indigenous knowledge strengthens adaptation measures in multiple ways: by providing a wealth of observations and insights beyond the power of external experts, embedding solutions in local cultures, and by broadening the values and viewpoints at stake. Stakeholder engagement taps into indigenous knowledge when designing and implementing adaptation measures. For example, in Tanzania, participatory planning has provided a platform to integrate indigenous and scientific climate knowledge to support smallholders' decision-making and planning, while in Senegal, indigenous knowledge has proven critical to improving the quality of climate forecasting services for farmers. Indigenous knowledge is also relevant at higher levels of governance, nationally and globally. For example, the governments of Cambodia and Honduras have incorporated under-represented groups and indigenous knowledge into future scenarios to guide action on climate change.



Indigenous knowledge can strengthen development of adaptation measures, and contribute to successful implementation. Photo: S. Kilungu (CCAFS)

