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Capacity Statement for Lever 3: Climate Action

Overview

Introduction

The human, environmental and economic consequences of climate change are jarring, but not irreversible. By prioritizing science, we can design a more sustainable and resilient way forward. Through our Strategy 2020-2025, the Alliance defined how to drive and accelerate impact on climate action, unlocking robust and inclusive solutions. In collaboration with key actors, our work to address climate change convenes, develops and applies sound science on climate adaptation and mitigation, under land and food systems approaches. Further, by leading high-impact, inclusive and science-based solutions, we are ensuring better access to public and private finance, enabling policies, and driving institutional changes that produce timely investments to successfully address the climate change emergency. The work we deliver to fight climate change is inter-disciplinary, flexible, and resilient. Our leadership in the sector, and our capacity to tackle global challenges through science, allow us to deliver timely high-quality demand-driven research and decision-making tools that inform policies and guide implementation. We do this through strategic partnerships with a variety of stakeholders co-designing, and co-delivering integrated solutions at the landscape, country, and regional levels.

CCAFS (2011-2021)

The Alliance of Bioversity International and CIAT was the lead center of one of the CGIAR's core research programs (CRP), namely Climate Change, Agriculture and Food Security (CCAFS), which brought together some of the world's best researchers in agricultural science, climate science, environmental and social sciences to identify and address the most important interactions, synergies and trade-offs between climate change and agriculture. Read about how CCAFS legacy lives on.

Two CGIAR ventures, led by the Alliance, are particularly inspired by CCAFS' legacy, and build on the foundations of its science, policy and partnership successes of the last decade, namely AICCRA and ClimBeR:

AICCRA (Accelerating Investment in CGIAR Climate Research in Africa)

AICCRA is a three-year project (2021-2023) funded by the World Bank. AICCRA is a multi-CGIAR Center project organized across levels: (1) country activities in 6 focus countries with lead institutions in parentheses Ethiopia (ILRI), Ghana (IITA), Kenya (ILRI), Mali (Africa Rice), Senegal (ICRISAT), and Zambia (IWMI); (2) regionally in west Africa (Alliance) and in east/southern Africa (ILRI); and (3) continentally organized across three flagship areas aligned with CCAFS (ILRI, Alliance and Colombia University IRI). The Alliance is directly involved in activities across 5 out of 6 AICCRA countries (namely Ethiopia, Kenya, Ghana, Mali and Senegal) and also in the following continental level "flagship" activities : (1) Support prioritization of best-bet Climate Smart Agriculture (CSA) options for uptake at scale; (2) Developing financing models for the rollout of prototype CSA and Climate Information Services (CIS) solutions for farmers with private sector engagement; (3) Enhance collaboration among Africa-wide and regional institutions; (4) Identification of existing scalable initiatives around climate modeling, early warning systems, and CSA; (5) Develop and promote climate-smart agricultural investment plans in West Africa and East Africa; and (6) Development of decision support tools (DSTs) to tailor adaptation interventions and innovations.

ClimBeR (2022-2025)

CCAFS is largely succeeded by the body of work contained within the new One CGIAR initiative, Building Systemic Resilience Against Climate Variability and Extremes (ClimBeR) .ClimBeR builds on years of CGIAR climate research and proposes clear pathways to improving the lives of 30 million smallholder farmers in six countries by 2030. Under our conservative estimates, by the end of the decade, ClimBeR will reach 5 million women, improve 20 million hectares of productive land, and permanently raise the farm-derived income of a vast majority of beneficiaries.

At least two main aspects of ClimBeR make it different. First, it focuses on *adaptive transformation* – which is tackling the root causes of vulnerability – instead of the immediate causes of vulnerability. For example, in Senegal, ClimBeR plans to bundle climate information services and climate-resilient practices within a framework of supportive, socially-inclusive policies and institutions. This integrated approach diverges from piecemeal or technology-focused innovations that are often deployed without realistic pathways toward lasting impact. But ClimBeR will go beyond just technology and "solutions". It will allow researchers and food system stakeholders to integrate three domains that are key to long-term success: social equity, environmental quality and protection, and technical aspects.

One key to ClimBeR is that the appetite for large-scale interventions to improve the lives of farmers has never been better. All six selected countries are taking food security under climate change seriously through policies and investments. The project includes commitments from more than 20 key stakeholders, including the World Food Programme. The six countries have strong commitments to smallholder farmers, a proven record of CGIAR collaboration, and all formally expressed interest in supporting ClimBeR. Many of these partnerships were forged under the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), a 10-year initiative that concluded at the end of 2021. ClimBeR builds on many of CCAFS' climate-smart agriculture (CSA) innovations, including those related to implemented policies for climate adaptation.

Thematic Areas

Our agile and responsive global team provides end-to-end solutions to improve the wellbeing of people and the planet, with a focus on:

Developing evidence-based climate services to strengthen the resilience and adaptability of farmers, businesses, and other food system actors.

Producing agricultural and climate risk profiles to unlock climate change measures and mainstream low emissions investments and appropriate climate change measures into policies, strategies, and planning.

Fostering innovative partnerships across a range of geographies to unlock private and public finance towards sustainable investments that can contribute to climate change adaptation and mitigation.

Improving evidence-based education, awareness-raising, and human and institutional capacity on climate change mitigation and adaptation with social inclusion lenses, also developing business models for scaling climate-smart-agriculture.

Defining and shaping the future of food systems towards low-emissions food systems and sustainable, inclusive, and healthy consumption patterns.

Grants Management Portfolio

The Alliance has managed 64 grants worth >US$12 million (past and ongoing) under the programme. Currently, the Alliance is managing >80 active (open) projects under Climate Action, worth over US$45.53 million.

{Map to be added}

Headlining Projects

Transforming Food Systems Under a Changing Climate

Location: Global

Funder: CGIAR, via CCAFS

Experts have argued that the global food systems are broken, and the UN Secretary General has said, ""Our food systems are failing". It wasin this context that the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) set out to develop the Transforming Food Systems Under a Changing Climate initiative which brought together over 100 partners to develop a vision and action agenda for transformation of food systems by mobilizing knowledge and catalyzing action. A key output of the initiative was the flagship report, 'Actions to Transform Food Systems Under Climate Change', which suggests four action areas and 11 transformative actions to achieve systemic transformation in food systems. Transforming Food Systems Under a Changing Climate brought together leaders in science, business, farming, policy and grassroots organizations to identify pathways for transformation.

Results included guiding the climate change agenda of relevant institutions around the world. The four action areas were: 1. Reroute farming and rural livelihoods to new trajectories that both reduce emissions and are climate-resilient; 2. de-Risk livelihoods, farms and value chains to deal with the increasing vagaries of weather and extreme events; 3. Reduce emissions from diets and value chains, targeting health and climate outcomes; and 4. Realign policies, finance, support to social movements, and innovation to facilitate action in the above action areas.

Local Technical Agroclimatic Committees (LTACs), under CCAFS

Location: Honduras, Colombia, Guatemala, Nicaragua, El Salvador, Panama, Paraguay, Mexico, Ecuador, and Chile

Funder: CGIAR-CCAFS

Value: US$4.5 million

Agriculture is a risky endeavor. Volatile markets, unpredictable harvests, far-reaching political, social or economic calamities - think the COVID-19 pandemic - as well as climate change are just a few things a farmer must consider before investing in a production cycle. Farmers often have limited access to weather and climate information. When they do, they are often unable to understand it and use it to make better on-farm decisions. To address this access-to-usable-information gap, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), led by the Alliance, developed Local Technical Agroclimatic Committees (LTACs). The core of the LTACs innovation is merging state-of-the-art climate prediction with local knowledge. Farmer involvement allows LTACs to produce recommendations tailored to local climates and contexts, linking climate information supply with farmer demand. Today 60+ LTACs in 11 countries deliver agroclimatic information to some 500,000 farmers. See 2020 and 2021 OICRs below for statistics on the reach and impact of LTACs in LATAM. For further information, see report.

Though spearheaded by the Alliance and CCAFS, some 300 partners, including governments, support the ongoing operation and growth of these committees. In Colombia - where rice farmers avoided estimated losses of USD3.6m one season thanks to LTACs - the committees are part of the country's commitment to emissions reductions under the Paris Agreement and policies are in place to establish 15 LTACs by 2030. In Honduras, LTACs are part of a national law on climate risk management. Other nations are following suit. While cutting-edge science is key to LTACs, the reason for their success is tied to local producer involvement, on-the-ground practitioners, universities, private sectors and governments who have committed to maintaining LTACs. This innovative approach to collaboration to reduce climate risk has improved the food and economic security of hundreds of thousands of people. Thanks to this innovation, farming in times of uncertainty is demonstrably less risky than it was before.

In-situ Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application

Location: Inter-regional

Funder: UNEP-GEF, United Nations Environment Programme/Global Environment Facility

Value: US$5.827 million

2004-2011. The “In situ Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application” (CWR project) was supported by the Global Environmental Facility (GEF), implemented by the United Nations Environmental Programme (UNEP) and coordinated by

Bioversity International in collaboration with the governments of Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan, several international organizations including Botanic Gardens Conservation International (BGCI), Food and Agriculture Organization of the United Nations (FAO), International Union for Conservation of Nature (IUCN) and the World Conservation Monitoring Centre (WCMC), and the German Federal Office for Agriculture and Food (BLE). The outcomes of this project include the safe and effective conservation of crop wild relatives (CWR) and their increased availability for crop improvement in the project partner countries, and national and international information systems that can support conservation and utilization of CWR throughout the world. The CWR project developed comprehensive working lists of descriptors to support project partner countries in the digitization and compilation of relevant information about CWR considered necessary for their management and conservation at a national level. The comprehensive lists provided a framework to describe in detail a CWR population, accession, and herbarium specimen; the taxon to which this unit belongs; the site in which it is monitored or was collected; the respective institute or individual monitoring or conserving the unit; additional information sources of relevance. These lists were used to develop national CWR information systems.

Sustainable Land Use Systems Project (SLUS), aka "Implementing sustainable land use systems to contribute to forest conservation, climate protection (REDD+) and the peace-building process in Colombia"

Location: Colombia

Funder: Germany's International Climate Initiative, or IKI

Value: $5.7 million

The project "Implementing Sustainable Agricultural and Livestock Systems for Simultaneous Targeting of Forest Conservation for Climate Change Mitigation (REDD+) and Peacebuilding in Colombia" contributes to reducing CO2, preserving forests, restoring degraded landscapes and improving the quality of life. In this way, it advances the implementation of the national REDD+ strategy and the Nationally Determined Contributions (NDCs), while at the same time strengthening peacekeeping activities. The systems are tailored to local conditions. It is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag. The SLUS project is implemented by CIAT, on behalf of the Alliance, together with the Centre for Research on Sustainable Agriculture (CIPAV), Leibniz Centre for Agricultural Landscape Research, and Thünen-Institut. The project focuses on the departments of Caquetá and Cesar as the two regional nodes for piloting Sustainable Land Use Systems (SLUS).

The IKI project engages with national and international public and private sector actors, stimulating them to include sustainable land use systems in their investment plans and business models. Thus far, the project has : (a) informed the government-led Cocoa, Forest and Peace Initiative; (b) engaged 467 individuals (40% women) in the development of multi-stakeholder platforms, capacity building, outreach and knowledge dissemination; (c) acted as the secretariat for the voluntary agreement between Colombian public and private organizations on a zero-deforestation dairy value chain. (d) developed and validated one method for simultaneous targeting of land-based climate change mitigation and peace-building, and one method for targeting cost-effective areas for land restoration; (e) defined co-benefits and improved scenarios, prioritization of regions, funding mechanisms, and detailed greenhouse gas (GHG) information in Cesar and Caquetá; and (f) published a study on the barriers and determinants of adoption of silvopastoral systems.

CGIAR Research Program 23: Policies, Institutions, and Markets

Location: Colombia, Honduras, Nicaragua, Peru, Ethiopia, Senegal

Funder: CGIAR, through IFPRI-International Food Policy Research Institute

Value: US$2.023 million

2017-2021. CIAT implemented a portion of the CGIAR Research Program on Policies, Institutions, and Markets (PIM), which was established to lead action-oriented research into policies that help poor farmers, both men and women, improve their lives, produce nutritious and affordable foods, and protect the soil, water, and biodiversity in rural landscapes. PIM was one of the CGIAR's Global Integrating Programs. PIM was led by the International Food Policy Research Institute (IFPRI) with contributions from all 15 CGIAR Research Centers and 4 external managing partners: KIT Royal Tropical Institute, Michigan State University, University of Oxford, and Wageningen University and Research Centre.

A common journey- Capacity Development on Climate Smart Agriculture in Central America to Strengthen Policies and Decision- making for Climate Change Adaptation and Mitigation actions

Location: Nicaragua, Guatemala, Honduras, El Salvador

Funder: IFAD-International Fund for Agricultural Development

Value: US$1 million

2017-2020. This project aimed to build capacities among institutions and experts in Central America and Colombia so as to facilitate innovation and help bring about key investment opportunities, resulting in stronger policies, strategies and programs addressing climate change, centered on climate-smart agriculture (CSA) practices for small producers in the region. Officials and experts in agriculture and environment strengthened their capacities to implement CSA through knowledge and experiences exchanges among four Central American countries (Guatemala, Honduras, Nicaragua, El Salvador). Experts from the four countries increased their capacity to generate and use agro-climatic forecast information to guide actions in the agriculture sector, reducing climate variability effects among subsistence livelihoods of small farmers. Socio-economic scenarios contributing to frameworks and policy strategies were developed at national level, using research results such as innovative climate services and CSA options prioritized for small farmers. Government institutions and IFAD identified key investments in CSA practices and technologies through a portfolio for small farmers in the four target countries.

The AgMetGaps Project

Location: Colombia

Funder: USAID-United States Agency for International Development

Value: US$2.17 million

2017-2022. The AgMetGaps project, funded by the USAID Global Climate Change Office and Bureau for Food Security and led by CIAT, has developed a context-specific, demand-driven, systematic and innovative approach to climate services. AgMetGaps uses science-driven and participatory processes to ensure that investments in climate services are sustainable and economically efficient. Working directly with local stakeholders in the design, production and implementation of climate services from the onset greatly improves stakeholder buy-in and the relevance of AgMetGaps outputs. AgMetGaps uses geographic analysis to identify locations that would benefit from climate services through a process called "hotspot analysis." "Hotspots" meet several conditions such as strong forecast modelling capabilities and exposure to crop yield variability resulting from variation in temperature and/or precipitation.

A hotspot analysis of rice production, for example, identified Colombia as having variable rice yields due to fluctuating temperatures and/or rainfall, along with the capacity to produce high quality seasonal forecasts. This combination of identified climate risk and an enabling factor such as institutional capacity allowed for a positive impact on rice yields when climate services were introduced. Once a hotspot has been located, a mapping process is used to understand who is involved in climate-related decisions, the type of information that flows within its specific context, the sources of information, and how it is used. By pinpointing how different individuals and institutions receive information, AgMetGaps is able to identify both gaps in the flow of information to end users and opportunities to close those gaps. Based on these findings, AgMetGaps is able to develop a context-specific approach to the integration and implementation of climate services that is rigorous, efficient and relevant to the types of decisions agricultural stakeholders need to make.

Applying seasonal climate forecasting and innovative insurance solutions to climate risk management in the agriculture sector in South-East Asia (DeRISK SE Asia)

Location: Cambodia, Lao People's Dem Rep, Myanmar, Vietnam

Funder: WMO-World Meteorological Organization

Value: US$3.12 million

2018-2022. This project develops climate risk management systems, best practices and insurance products that will shield smallholder farmers and businesses engaged in producing coffee, sugar, rice, cassava, rubber, dairy, and grazing across the agricultural value chain in key SE Asia countries from physical and financial disaster associated with climate change. The project is jointly implemented by the World Meteorological Organisation (WMO) Geneva, Switzerland; The University of Southern Queensland, (USQ) Toowoomba, Australia; and the International Centre for Tropical Agriculture (CIAT) Hanoi, Vietnam.

The Adaptation and Valorization of Entrepreneurship in Irrigated Agriculture - AVENIR

Location: Senegal

Funder: MEDA-Mennonite Economic Development Associates of Canada

Value: US$3.95 million

2019-2024. The Adaptation and Valorization of Entrepreneurship in Irrigated Agriculture (AVENIR) is a project funded by Global Affairs Canada and implemented by the Mennonite Economic Development Associates (MEDA) in collaboration with CIAT on behalf of the Alliance as key technical partner . With the support of local partners in Senegal, AVENIR is improving the socio-economic wellbeing and resilience of farming households in the regions of Sedhiou and Tambacounda, via climate-adapted irrigation and agricultural practices, with an emphasis on women and young people. This is being accomplished by increasing profitability of agri-businesses in climate-adapted value chains (agroforestry, horticulture, rice). The project also focuses on improving access to inputs and climate-smart technologies, efficient and affordable irrigation techniques; and fostering multistakeholder platforms for sustainable and equitable management of water resources. The five-year project will directly benefit up to 10,000 women and youth (70% women) from farming households, and indirectly benefit an estimated 35,000 individuals.

Coordinación e Implementación de la Declaración Conjunta de Intención (DCI) para la reducción de emisiones causadas por la deforestación y la degradación de los bosques (REDD+)

Location: Colombia

Funder: IDB-Inter-American Development Bank (Banco Interamericano de Desarrollo)

Value: US$1.137 million

2019-2022. CIAT provided support to the Joint Declaration of Intent (JDI), a voluntary cooperation agreement signed by the Governments of Peru, Norway and Germany to achieve the reduction of greenhouse gas emissions produced by deforestation and forest degradation in Peru. The JDI had been signed in September 2014 with a validity until 2020 and considered actions for the conservation of forests in the Peruvian Amazon. The JDI was based on a scheme of financial incentives on the progress and/or fulfillment of deliverables or goals which are directly related to the strategic actions of the National Strategy on Forests and Climate Change (ENBCC) and different planning instruments for development in Peru such as: a) the Bicentennial Plan Peru towards 2021, b) The National Plan of Environmental Action (PLANAA), c) the Concerted Regional Development Plans of the Amazon regions in Peru, d) the National Strategy on Climate Change, e) the National Strategy on Biological Diversity and its Action Plan, f) the Policy National Forestry and Wildlife, among other instruments.

PEPSI-Climate-Resilient Agriculture/Thailand

Location: Thailand, Vietnam

Funder: PEPSICO, Ltd

Value: US$1.09 million

2020-2023. PepsiCo recognizes that Climate Change will impact its agricultural value chain over the near term. Such impacts will extend well beyond the farm gate into factory operations & logistics. The company therefore seeks to develop a replicable, scalable methodology & toolkit in order to be able to identify and manage these arising risks & opportunities. It will be co-designed and developed along with Thailand and Vietnam PepsiCo businesses, sector and global teams and be based on transparent evidence-based methods that can be used for other crops/sectors and supply chains.

Integrated sustainable landscape management through deforestation-free jurisdiction project in Lam Dong and Dak Nong, Vietnam

Location: Vietnam

Funder: European Commission, via UNDP (Implementing Agency)

Value: US$467,131

2021-2025. CIAT is providing specialist services (consultancy) to the UNDP Integrated Sustainable Landscape Management Through Deforestation-Free Jurisdiction Project, which aims at improving the environmental sustainability, social inclusion and resilience of food production models and supply chains in the Central Highlands of Viet Nam in the provinces of Lam Dong and Dak Nong, by enhancing ecosystems, improving livelihoods, and improving quality and sustaining food production .

Clim-ARM: Integrating Weather & Climate Analytics into Ag Risk Management

Location: Ethiopia, Rwanda

Funder: BMGF – The Bill and Melinda Gates Foundation

Value: US$1.858 million

2021-2023. The Alliance of Biodiversity International and CIAT is joining forces with IFAD's Platform for Agricultural Risk Management (PARM) under Clim-ARM to identify robust and evidence-based analytical methods and pathways that draw on the best expertise in agricultural risk management and weather and climate risk and forecast assessment to develop investment blueprints for weather and climate services necessary for high impact investments in agricultural risk management. It will support an evolution from the Alliance's various agromet forecast analyses and PARM's holistic country-level agriculture sector risk assessments, toward more granular, comprehensive, and investment-oriented analytics.

Developed together with key public and private sector stakeholders, the Primary Outcome is: A set of improved agricultural risk management (ARM) tools (including weather and climate services) and investment blueprints for meso- and macro-scale agriculture sector in ARM are identified, informing and shaping the ARM policies, programs, and investments of the Governments of Ethiopia and Rwanda (and the private sector where possible) designed to improve the ability of poor small-scale producers (SSPs) to manage agricultural risk. This will be achieved through direct stakeholder engagement, analytics, technical assistance to local ARM and climate partners, and knowledge products. The

outcome will identify approaches and investment blueprints for tailoring forecast-based ARM strategies to support specific users including national governments, producer associations, input suppliers, value chain businesses, financial service providers (including lending and insurance), NGOs, and other regional and international organizations. The work will be carried out using a systematic analytical approach in two countries with differing levels of available information on ARM: Ethiopia and Rwanda.

ADAPTATION ATLAS: REFINEMENT AND TRANSITION

Location: Kenya

Funder: BMGF – The Bill and Melinda Gates Foundation

Value: US$3.55 million

2021-2024. The CIAT contribution to the global-scale Adaptation Atlas, with a specific focus on refining and transitioning the tool for relevance to the Kenyan context. The Adaptation Atlas is a dynamic mapping tool, developed by Resources for the Future, in collaboration with a diverse network of partners. To address the unique challenges of collecting, managing and evaluating the information needed for successful adaptation, we created the Global Adaptation Atlas. The Atlas brings together diverse sets of data on the human impacts of climate change and adaptation activities across the themes of food, water, land, health and livelihood to help researchers, policymakers, planners and citizens to establish priorities for action on adaptation.

USAID - RESILIENT YOUTH BUSINESS ACCELERATION AND INVESTMENT FACILITY - YBAIF

Location: Malawi

Funder: USAID-United States Agency for International Development

Value: US$2.602 million

BAIF is a five-year (2021- 2026) innovative program supported by USAID and led by the Alliance of Bioversity International and CIAT. Framed around resilience-led sustainable strategy, the Youth Business Acceleration and Investment Facility (YBAIF) aims to leverage the power of the private sector to reduce the need for long-term humanitarian assistance. Its objective is to accelerate and invest in youth owned or youth-led enterprises or those entities that employ a significant number of youth to generate greater access to financing, diversified incomes, job creation, gender equality and women's empowerment, a more inclusive private sector ecosystem, and improved resilience of communities in targeted vulnerable districts. YBAIF will develop an investable pipeline of businesses, de-risk and mobilize capital, and build confidence in and leverage the private sector to foster economic and social impact that fosters Malawi's self-reliance, laying the much-needed foundation for a long-term approach of establishing an inclusive and diversified private sector ecosystem.

KOLFACI-RESEARCH ON THE OPTIMAL CULTIVATION METHOD TO REDUCE GREENHOUSE GAS EMISSIONS IN LATIN-AMERICA

Location: Colombia, Honduras, Nicaragua, El Salvador, Guatemala

Funder: Korea-RDA-Rural Development Administration

Value: US$0.9 million

2021-2025. The Project aims to contribute to the achievement of carbon-neutral strategies for each country by developing a cultivation system that can minimize greenhouse gas emission for major crops and forage in Latin-America.

CLIMATE SERVICES FOR RESILIENT DEVELOPMENT (CSRD)

Location: Colombia

Funder: USAID-United States Agency for International Development

Value: US$2.058 million

2015-2020. The Climate Services for Resilient Development (CSRD) Partnership (aka Climate data and information for resilient development project) was a private-public collaboration led by USAID, aimed at increasing resilience to climate change in developing countries through the development and dissemination of climate services. The partnership began with initial projects in three countries: Colombia, Ethiopia, and Bangladesh. The International Center for Tropical Agriculture (CIAT) was the lead organization for the Colombian CSRD efforts – which then expanded to encompass work in the whole Latin American region. Project results included: (a) 500,000 farmers in Colombia gained access to climate services via the project, (b) more than 200 people were trained in crop-climate prediction methodologies, and (c) 60+ local technical agroclimatic committees across LATAM received support and training.

CLIMATE SMART DEVELOPMENT IN CENTRAL ASIA (PHASES I AND II)

Location: Kazakhstan

Funder: USAID-United States Agency for International Development

Value: US$2.256 million

2016-2020. CIAT provided support and a global climate hub advisory service to Kazakhstan, one of five countries of Central Asia (C5) preparing each their own National Adaptation Plan as a means of identifying medium- and long-term adaptation needs and developing and implementing strategies and programs to address those needs. NAP planning uses a continuous, progressive and iterative process which follows a country-driven, gender-sensitive, participatory and fully transparent approach. This initiative was designed to support that process.

Alliance for Resilient Coffee (ARC)

Location: Honduras, El Salvador, Guatemala, Uganda, Tanzania, Rwanda

Funder: HRNS-Hanns R. Neumann Stiftung

Value: US$732,547

2017-2020. ARC, a Feed the Future project funded by The United States Agency for International Development (USAID), is a consortium of seven leading non-governmental organizations and research institutions working at the intersection of climate change and coffee production. Alliance for Resilient Coffee Partners are: Hanns R. Neumann Stiftung, Sustainable Food Lab, Conservation International, World Coffee Research, International Center for Tropical Agriculture (CIAT) and International Institute of Tropical Agriculture (IITA). With climate change affecting coffee production and threatening the living of coffee farming families worldwide, the ARC consolidates the best climate expertise and presents solutions on how to successfully take action. ARC provides tailored services, on-farm intervention, co-investment opportunities and different partnerships that make it possible for actors in the industry to make their coffee value chain resilient by investing in Climate-Smart Agriculture (SCA). Investment packages are available for download, delivering concrete actions and possibilities for the private sector to react.

ResCA Honduras - Building national capacity for provision of agricultural climate services in Honduras

Location: Honduras, Colombia

Funder: TNC-The Nature Conservancy, via the U.S. Department of State

Value: US$590,216

2018-2021. The International Center for Tropical Agriculture (CIAT) led implementation of ResCA in Honduras with participation from 340 producers from Copán, Choluteca and Intibucá, the Secretariat of Agriculture and Livestock (SAG), and the Permanent Commission of Contingencies (COPECO). Financed by the United States Department of State and administered by TNC, ResCA Honduras is promoting Participatory Climate Services for Agriculture (PISCA). Through an innovative methodology for creating collective models and climate forecasts, that utilize big data analysis and artificial intelligence, recommendations are being created that allow for producers to make better decisions about when to plant and how to manage the production of coffee, corn, and beans more efficiently so that they will be ready for the challenges posed by climate change. ResCA Honduras has achieved an increase in productivity between 17% and 23% for both coffee and bean production in the 10 communities of Copán and Choluteca after the implantation of the climate adaptation strategies. As a result, the methodology promoted by CIAT in the ResCA Honduras framework received the 2017 "Momentum for Change" prize in the Technology Solutions of Information and Communications (TIC) category, awarded by the United Nations Framework Convention on Climate Change (UNFCCC).

LEARNING ALLIANCE FOR ADAPTATION IN SMALLHOLDER AGRICULTURE

Location: Colombia, Rwanda, Mali, Mozambique, Bangladesh, Niger, Ghana, Denmark, Vietnam, Nicaragua

Funder: IFAD-International Fund for Agricultural Development

Value: US$800,000

2015-2018. The project goal was to maximize the International Fund for Agricultural Development's (IFAD) impact on rural poverty in a changing climate. The main objective of the project was to enable agricultural development policymakers and practitioners to make science-based decisions in the context of climate change, leading to greater positive impacts on target populations. The project had three components, namely: **Component 1:** Research and knowledge products. Scientific knowledge products, on topics and in formats selected by IFAD, are widely accessible, **Component 2:** Policy engagement. Knowledge products and results are actively cited in key policy forums globally and nationally, and **Component 3:** Capacity enhancement. National research institutions, researchers, and policymakers have raised capacity and profiles on climate change research for development.

LEADERSHIP OF THE ADAPTA CLIMATE SMART MODULE

Location: Kenya

Funder: The Bill and Melinda Gates Foundation, through Tiserin Capital

Value: US$302,570

2022-2023. ADAPTA is Africa's first climate adaptation facility that combines climate-smart agriculture and blended finance to fund small and medium producers and Agri-SMEs in East Africa. The climate-smart due diligence module is unique globally and can represent a driver of change to unlock commercial bank lending across the region, now at less than 5% of total loans. Tiserin Capital has partnered with the Bill & Melinda Gates Foundation and the Alliance of Bioversity International and CIAT, part of the CGIAR, the largest global network on agriculture research, to develop the climate-smart module and portfolio management module. The module will leverage technologies such as Normalized Difference Vegetation Index (NDVI) and Normalized Difference Water Index (NDWI) tools, now more effective and less expensive, and micro weather stations to assess climate impact on small and medium producers and Agri-SMEs.

ANGOLA MINAGRP: CONSULTING SERVICES FOR DEVELOPING RISK FINANCING TOOLS FOR AGRICULTURE

Location: Angola

Funder: Government of Angola, via a large World Bank loan

Value: US$298,962

2020-2022. The Alliance is building a Risk Financing Tool for Angola. The tool, which is based on a rigorous and integrated analysis of agricultural risks, will produce a decision-making framework with which to, identify, assess, and prioritize agricultural risk and risk management gap and financing needs.

Institutionalizing Sustainable Finance in One CGIAR

Location: Global

Funder: GIZ-Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

Value: US$6,353,480

2022-2024. The One CGIAR and GIZ/BMZ will work together to create and operationalize a platform that facilitates engagement and co-creation with sustainable finance actors. Sustainable finance is key to transforming food, land, water systems in a climate crisis. The One CGIAR will work with GIZ/BMZ to establish the 'ground floor' of a future One CGIAR sustainable finance function, hereafter referred to as the OneSF Platform. The purpose is to support the OneSF Platform to develop the internal capacity and infrastructure required to leverage One CGIAR research and expertise towards unlocking and steering sustainable finance to food, land and water system transformation. This effort will deliver the long-term impact of: *Capital flows are reoriented and leveraged towards sustainable investments that trigger and sustain transformation in food, land, and water systems in a climate crisis*.

Innovation for Africa Climate Risk Insurance

Location: Kenya

Funder: Germany - University of Kassel and BMBF-Bundesministerium für Bildung und Forschung

Value: US$0.25 million

2021-2023. The overarching objective of the Innovation for Africa Climate Risk Insurance (InACRI) project is to address the current poor performance and uptake of index-based crop insurance products in Kenya. Although index insurances are held in high regard as important risk mitigation measures in low-income agriculture, implementation and adoption of insurance schemes continues to face technical and operational challenges. To overcome these challenges, the project will develop and implement innovative solutions for improving the crop insurance index, improve product design, improve insurance communication strategies, support effective training and uptake of crop insurance. The project will contribute to making the Kenyan agricultural sector more resilient against the challenges of weather extremes and climate change. The Alliance of Bioversity International and CIAT, Kassel University, Sprout, Mediae, and the Africa Climate Risk Enterprise (ACRE Africa) are undertaking the research and product development.

Lever 3 Success Stories (Outcome Impact Case Reports, or OICRs)

KENYA CLIMATE SMART AGRICULTURE IMPLEMENTATION FRAMEWORK 2018-2027 (KCSAIF): 10-YEAR ENGAGEMENT WITH KENYAN AGRICULTURE AND ENVIRONMENT MINISTRIES LEADS TO UPTAKE OF CLIMATE SMART AGRICULTURE PRACTICES BY OVER 1 MILLION FARMERS

Location: Kenya

Kenya has embraced the concept of climate smart agriculture (CSA) within its national climate change policies and strategies, and the adoption of CSA practices by farmers across the country is resulting in increased incomes and yields for farming households. The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) has been working with the Kenyan government for the past 10 years to help decision makers in government and international funders prioritize actions related to CSA. As a result, CSA practices and technologies are now being taken up by farmers to help deal with changing weather patterns and to increase productivity. In 2018, the Kenya Ministry of Agriculture, Livestock, Fisheries & Irrigation (MoALF&I) launched the "Kenya Climate Smart Agriculture Implementation Framework: 2018-2027 (KCSAIF)" in Nairobi. This followed the launch of the Climate-Smart Agriculture Strategy for 2017-2026 in 2017, thus the Kenyan government has made great strides in creating an enabling framework for CSA. The implementation framework sets guidelines for implementing CSA approaches, strategies, practices and technologies in Kenya. The purpose is to promote climate-resilient and low-carbon growth sustainable agriculture that ensures food security and contributes to national development goals. CCAFS and other CGIAR scientists provided technical input to the development of the strategy and framework, participating in several review and validation workshops.

The strategy and framework were integrated into Kenya's Intended Nationally Determined Contribution (INDC) submitted to UNFCCC in 2015 and its updated Nationally Determined Contribution (NDC) submitted in December 2020. The Kenya CSA Implementation Framework now stands as the guiding policy document for CSA implementation in the country at national and county levels. An impact study showed that adoption of CSA practices can have a significant effect on household income and welfare - for example, increasing the value of agricultural yield per household by up to USD 1068. More than 35% of the households surveyed had adopted CSA to a significant extent. CCAFS and other CGIAR scientists have participated in several policy meetings to support development of the Kenya Climate Change Policy and Bill, the National Climate Change Action Plan (NCCAP) and NDC for agriculture. In addition, CCAFS-EA supported the review of the Climate Change Policy in 2014 and actively engaged in development of the NCCAP. The World Bank-funded Kenya Climate Smart Agriculture Program (KCSAP) is investing US$250M in CSA implementation across several counties in Kenya.

RESEARCH AND TECHNOLOGIES TO IMPROVE AGRICULTURAL PRODUCTIVITY WHILE GUARANTEEING ENVIRONMENTAL SUSTAINABILITY IN FIVE CROPS UPTAKEN BY GREEN GROWTH POLICY IN COLOMBIA IMPLEMENTED WITH US$74.5 MILLION

Location: Colombia

In 2018, CCAFS and partners provided technical and policy recommendations on Land Productivity and Agricultural Performance for the Colombian Green Growth Policy. CCAFS, led by the Alliance, conducted diagnoses and analyses to improve agricultural productivity while guaranteeing its environmental sustainability in five prioritized crops (coffee, cocoa, Hass avocado, livestock, and potato). Promising technologies that could be key to increase land productivity and agricultural performance under green

growth in Colombian were assessed in prioritized crops. Promising technologies included coffee renovation with adequate variety based on climate and soil, medium and high-intensity silvopastoral systems, climate-smart practices in cocoa, conservation agriculture in potato crop and integrated management of pest and diseases in Hass avocado. According to our analysis, the implementation of such practices has a positive effect on OECD green growth indicators. The National Government used these results during the Green Growth Policy formulation process. The government allocated US $74.5 million to implement actions that help to improve the agricultural sector's performance aiming for increasing by 3%, the agricultural production under green-growth criteria. The current National Development Plan focuses on sustainable agricultural activities that include climate-smart innovation options in line with green growth standards.

DIGITALIZATION OF EXTENSION DATA COLLECTION FOR CLIMATE RISK MANAGEMENT BY THE MINISTRY OF AGRICULTURE OF COSTA RICA

Location: Costa Rica

Back in 2016 in Costa Rica, during the national emergency caused by Hurricane Otto, Bioversity International provided support to the Ministry of Agriculture in the collection and processing of information on the socio-economic impacts of the phenomenon. The process was performed for the first time using digital tools and it proved to the Ministry that digitalization of extension was crucial for minimizing the time between data collection, analysis, and response to farmers while also saving resources. In 2019, the Alliance Bioversity-CIAT received funding from The Food and Agriculture Organization of the United Nations (FAO) to provide the Ministry with a platform to manage climatic risks under the project "Information management and training services for the Department of Agricultural Extension of the Ministry of Agriculture of Costa Rica, in the use of mobile technologies for climate risk management, in the regions Huetar Norte, Pacífico Central y Chorotega." In 2019 the Alliance Bioversity-CIAT combined two Open-Source software (FormShare and Open Data Kit) to create a digital solution for the Ministry of Agriculture of Costa Rica to manage the impacts of drought. The solution allowed the Ministry to collect vulnerability indicators using mobile phones. It was the first attempt of the Ministry to move to digital data collection. Since 2020 the Ministry runs all their agricultural census using ODK and FormShare effectively digitizing all their data collection.

TWO REGIONAL ORGANIZATIONS AND TWO NATIONAL GOVERNMENTS ADOPT CROSS-SCALE CLIMATE RISK MANAGEMENT APPROACHES

Location: Guatemala, Honduras

Major regional and national coordination efforts are required to address climate variability in Central America (CA). CCAFS scientists worked together with two regional organizations (CAC, CRRH) and two governments (Guatemala, Honduras) within the SICA (Central American Integration System) to boost pro-active climate risk management (CRM). To achieve this, CCAFS scientists: (1)co-developed and scaled decision-support tools so that regional organizations and national governments better understand the expected climatic variability and its implications on farming systems; and (2)enabled the cross-scale information management, involving the integration of decision-makers at national/local levels with regional-scale processes.

Evidence for Resilient Agriculture informs more than USD 1 billion in investment plans and guides evidence-based policy, programming and capacity building in Africa

Location: Mali, Cote d'Ivoire, Ghana, Burkina Faso, Kenya, Tanzania

Evidence for Resilient Agriculture (ERA) is a meta-dataset and analytical engine developed by ICRAF and CCAFS scientists that uses 50 years of agricultural research in Sub-Saharan Africa to identify the effects of shifting from one farm practice to another on productivity, climate resilience and mitigation outcomes. Between 2019-2020, ERA was used to improve evidence-based policy development and implementation capacity, programming, research. and value for money of public and private investments. ERA's contributions to evidence-based policy-design and capacity building are evident in two noteworthy situations.

First, the FAO, CIAT and ICRAF supported the Government of Kenya (GoK) to deliver trainings on developing County-level adaptation plans, which downscale the Kenya Climate-Smart Agriculture (CSA) Policy and provide the basis for mobilizing GoK and World Bank CSA Project (> 250 M USD) funds for county implementation. The trainings focused on evidence-based policy development and used ERA analyses (3) to identify viable subnational adaptation options. Due to the trainings' success, the GoK expanded the work to additional counties with funding from the United States Department of Agriculture-Foreign Agriculture Service (USDA-FAS) and potentially FAO.

Second, as part of an initiative of GIZ with support from CCAFS, AGNES and NEPAD, ERA analyses were featured in training materials and a webinar targeted to improving NDC implementation capacity across Africa. In addition, ERA data were the center-piece of the cost-benefit analyses for the Climate-Smart Agriculture Investment Plans (CSAIPs) in Mali, Cote d'Ivoire (released 2019) and Burkina Faso and Ghana (released 2021). Investments were selected and validated through multi-stakeholder processes led by the Ministries of Agriculture and the World Bank. Each national investment is valued at approximately 250 million USD and contains 8-10 projects that range from climate information to on-farm practices. ERA has also been used in programming initiatives. It informed the African Adaptation Atlas (released 2021), an interactive web portal that identifies adaptation options across Africa, contributing to the Global Commission on Adaptation Year of Action and the adaptation portfolio of the Bill & Melinda Gates Foundation (BMGF).

Moreover, IUCN and the Government of Tanzania used ERA-based analyses to inform a Green Climate Fund proposal which has been accepted for the concept development stage (anticipated ~100 M USD). New collaborations are being developed to expand ERA's use cases to service delivery to farmers (exploratory discussions with GreenFi, One Acre Fund) and refine semantic standards for research (AgrO/CGIAR's Big Data Platform initiative).

Vietnam's rice-producing regions (1.3 M ha) cope with water shortage, drought, and salinity intrusion by applying the CCAFS' Climate-Smart Maps and Adaptation Plans

Location: Vietnam

The Climate-Smart Maps and Adaptation Plans (CS-MAP) was implemented by the Department of Crop Production (DCP) under the Ministry of Agriculture and Rural Development (MARD) during the 2018-2019 winter-spring season, saving about 600,000 hectares of rice in the Mekong River Delta (MRD)

from salinity intrusion. The DCP will re-implement the CS-MAP for the 2019-2020 winter-spring season to cover more than 800,000 hectares and in the same season for 2020-2021 to include over 500,000 hectares. The Vietnamese government were able to understand risk maps and cropping calendars better through the CS-MAP, which as a result helped them craft context-specific programs at sub-national levels. The CS-MAP, developed by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), has also been implemented in other rice-producing areas in the Red River Delta (RRD) and Northern Midlands and South-Central Coast (SCC).

Since 2017, the countries of the Central American Integration System experienced 250+ transformations in their political, institutional and financial frameworks toward scaling Climate Smart Agriculture.

Location: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panamá, Belize and the Dominican Republic

Changes in average temperature and precipitation patterns make Central America one of the regions most vulnerable to climate change. The effects of these events are already being felt in food security, agricultural productivity, water, ecosystems, among others. Of particular importance for Central America is the implementation of the Climate-Smart Agricultural Strategy for the Central American Integration System region (EASAC). The EASAC, launched in 2017 and whose formulation was fed by scientific research generated by CCAFS, has been the main reference for guiding policies and interventions in the region in relation to agriculture and climate change. Approved by eight ministries of agriculture of the Central American System of integration (SICA), and with the support of the Central American Agricultural Council (CAC), a total of 259 transformations have been effectuated, aligned with the EASAC objectives, at both national level (Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panamá, Belize y Dominican Republic) and regional levels, attesting to the momentum building behind CSA scaling in the region. These transformations cover policy, institutional, and financial frameworks of the countries and region, with the aim of promoting a more competitive, inclusive, sustainable, and climate-smart agriculture. While most of the transformations are policy-related, changes have also been found in the creation and promotion of initiatives, alliances, and CSA dialogue spaces at regional and national levels, and at the strengthening of CSA capacities of governments, research actors, and extension systems at the national level. To achieve these transformations, technical and financial support from international cooperation agencies has been vital.

Costa Rica´s enhanced 2020 Nationally Determined Contribution (NDC) developed using CCAFS future scenario approach

Location: Costa Rica

During 2020, the Ministry of Agriculture and Environment (MINAE) of Costa Rica used the CCAFS future scenarios methodology to enhance the country's NDC. MINAE teamed up with two national universities, the University for International Cooperation (UCI) and the University of Costa Rica (UCR), to take up the task. What resulted was a highly participatory process where qualitative and quantitative methods complemented each other, which in turn lead to an NDC with increased ambition, rooted in fundamental values of climate justice. UCI designed and facilitated an online participatory consultation in which more than 350 stakeholders participated to develop multiple sets of future scenarios based

on contextual uncertainties that could positively or negatively influence Costa Rica´s ability to reach climate goals. These scenarios were used in all NDC sectors to critically discuss and robust the countries´ intended measures to reduce emissions and increase resilience to climate change.

"Let it rain" game led to 25,312 successful players and new sign up's to iShamba: Farmer information service in Kenya

Location: Kenya

The game developed in collaboration between CIAT, the Mediae development communications firm, iShamba (the digital advisory service linked to the popular "Shamba Shape Up" television program) and the game developer Usiku saw 25,312 people play the Let it rain game and subsequently sign up to the iShamba farmer mobile service to receive weekly information on selected crops and livestock, weather and market prices. "Let it rain", encouraged viewers of the makeover TV programme Shamba Shape Up (7 million weekly viewers in Kenya) to guess the onset of the long rains in their area in Kenya. Farmers from 10 counties spread across the main farming zones in Kenya were eligible to play the game with a prize money of 100,000 Ksh (US$1,000) allocated per county. Winners (those who guessed the correct onset of the rains), would share this prize money with other winners in their county. In placing their guess, the game encouraged farmers to seek out weather services and sources of information that would support them when planting and help them adapt to changing weather patterns. By playing the game, participants were signed up to the iShamba mobile farmer service (free of charge) and thereafter received timely, seasonal and regular agri-tips, for crops and livestock they are farming as well as market prices and notably weather updates for their area.

Forty percent of Colombian rice producers cultivating 275,608 hectares adopt improved rice varieties developed by CCAFS/Alliance and Rice Growers' Federation with Ministry of Agriculture support

Location: Colombia

Since 2013, CCAFS/Alliance Bioversity-CIAT collaborated with the Colombian Ministry of Agriculture and Rice Growers Federation through the AclimateColombia program to increase farmers' resilience to climate change and climate variability while improving productivity. An ex-post assessment demonstrated that improved rice varieties developed during program implementation were adopted by 40% (6,424) of in total 16,060 rice farmers. 57% (9,154 farmers) used agroclimatic forecasts to manage their crops. Program technical assistance led to an average rice yield increase of 0.6 tons per hectare.

150 local organizations and 10,000 farmers receive recommendations to manage joint COVID19 and climate risks in LAM

Location: Guatemala, Honduras, Colombia, Mexico, Nicaragua, El Salvador

The year 2020 was marked by the most active hurricane season in history, which together with other climate variability events (e.g., recurrent droughts and occasional floods), and with widespread

restrictions from the COVID19 pandemic, had devastating impacts on agricultural livelihoods throughout LAM. During 2020, CCAFS CRM approaches were retooled to help 150 institutions and 10,000 farmers mitigate these multi-dimensional risks. Currently, more than 350 institutions in 10 LAM countries are engaged in CRM using CCAFS digital and participatory approaches, helping an estimated 500,000 farmers respond to climatic variability. These approaches allow a coordinated connection between actors at different levels in LAM. During the COVID19 pandemic, six countries (Guatemala, Honduras, Colombia, Mexico, Nicaragua, El Salvador) retooled participatory CRM approaches (LTACs, PICSA) to address both climate and COVID19 risks. One important highlight is that, for Guatemala, 100 MAGA extension agents have adopted CCAFS CRM approaches. Likewise, in Mexico, recommendations are disseminated through the MasAgro extension and innovation network. The COVID19 -climate risk approach implemented during 2020 was a multi-layered approach allowing for the continuous monitoring of the situation locally as well as for the provision of recommendations to respond to the crisis. The monitoring identified relevant problems such as income reductions, food shortages, reductions in input access, and asset loss for rural families. The LTACs, on the other hand, analyzed the conditions of each context and produced and disseminated recommendations to mitigate ongoing and expected risks. Community seed banks, organic inputs, conservation agriculture, and water harvesting are some of the practices that have been implemented during the crisis to ensure sustainable food production while reducing COVID19 impact.

CCAFS-COMMISSIONED REPORT IS SETTING THE GLOBAL AGENDA FOR TRANSFORMING FOOD SYSTEMS UNDER CLIMATE CHANGE

Location: Global

Experts have argued that the global food systems are broken, and the UN Secretary General has said, ""Our food systems are failing". It is in this context that CCAFS set out to develop the Transforming Food Systems Under a Changing Climate initiative which brought together over 100 partners to develop a vision and action agenda for transformation of food systems. A key output of the initiative was the flagship report, 'Actions to Transform Food Systems Under Climate Change', which suggests four action areas and 11 transformative actions to achieve systemic transformation in food systems. For each action it identifies a goal (the "what"), mechanisms to achieve this goal (the "how") and target geographic areas (the "where"). As for the "who," while everyone has a part to play, the report outlines roles for different stakeholder groups.

The Transformation Report is also informing the actions of key partners. For example, the World Food Programme (WFP) is working with CCAFS to implement the key actions recommended in the report. A workshop identified evidence needs that support food system transformation for the four action areas. Based on this analysis, WFP incorporate these action areas in their future strategies and brought them to the 2021 Food Systems Summit. The report also informed the UK government's campaign 'Transforming Agricultural Innovation for People, Nature and Climate', part of its Nature campaign for COP26 as well as other internal policies. The report forms the basis of the Green Climate Fund's agricultural strategy, currently under consultation, which will direct the flow of billions of dollars in the future. Finally, also related to the Climate Smart Food Systems Fund, CGIAR has partnered with responsAbility Investments AG (responsAbility) to meet the key challenges posed by the global food system, through a USD 200 million impact investment fund to provide capital to SMEs developing countries. The idea to develop this fund came from the key messages included in the Transformation Report and from the interactions between CCAFS and the investment community as a result of one of the papers elaborated as part of the Transformation Initiative.

Alliance and CCAFS research advise on projected $130M-205M in investments of African Improved Foods in Ethiopia and Kenya

Location: Ethiopia, Kenya

Researchers at the Alliance of Bioversity International and CIAT and the CGIAR Research program for Climate Change Agriculture and Food Security (CCAFS) are advising African Improved Foods in large investments in Kenya and Ethiopia. AIF is a public-private partnership involving DSM, Government of Rwanda, International Finance Corporation (IFC), CDC Group and FMO , founded and based in Rwanda, but now entering into the Ethiopian and Kenyan markets. Studies produced by these researchers are advising AIF on how they enter these new counties by identify specific investments for projected $130M-205M in investment in prioritized value chains in Ethiopia and Kenya. Specific value chain activities include production, aggregation, milling, and blending, sourcing from an estimated 270k farmers to meet demand. The researchers advised AIF to focus on four key high-interest crop value chains, prioritized by evaluating the various crop value chains against a range of indicators such as nutrition improvement potential, value addition ability, market potential, price volatility, and production potential in both Kenya and Ethiopia. Based on these indicators, AIF selected maize, bean, sorghum, and lentil in Kenya, and teff, wheat, bean, and lentil in Ethiopia. For each of these prioritized value chains, additional analysis was conducted with a climate lens. Each value chain study assessed production and climate risks, identifying adaptation measures to manage those risks. Using this information and a value chain nutrition and consumer analysis, opportunities for investment were identified for AIF as they enter into the Ethiopian and Kenyan markets. AIF is using this information as they make decisions on the planned investments in these two countries.

Alliance and CCAFS research guides the Green Climate Fund Agriculture and Food Security sector investment strategy

Location: Global

Researchers at the Alliance of Bioversity International and CIAT and the CGIAR Research program for Climate Change Agriculture and Food Security (CCAFS) led the development of the Agriculture and Food Security Sector Guidance Document that directly influenced the investment strategy of the Green Climate Fund (GCF). Drawing on CCAFS, Alliance, and partner research, as well as consultations with GCF and their partners, this guidance document laid out three paradigm shifting investment pathways to guide the GCF investment strategy and project development in the sector: 1) Promoting resilient agriculture; 2) Facilitating climate informed advisory and risk management services; and 3) Reconfiguring food systems. The guide seeks to provide an overview of country needs and evidence-based programming experiences in the agriculture and food security (agriculture) sector and guide proposal development in the sector for the GCF in line with its investment criteria during its first replenishment period 2020-2023. The Secretariat will continue its collaboration with sector experts to develop various annexes to complement this sector guide in 2021-2022.

Using research evidence to improve gender based planning, budgeting and implementation

Location: Uganda, Tanzania

Establishing and supporting national and sub-national Learning Alliances (LAs) in Uganda and Tanzania were central to efforts by the CCAFS-sponsored Policy Action for Climate Change Adaptation (PACCA) to engage with policymakers, jointly identify scientifically-grounded, gender-sensitive policy initiatives capable of fostering "triple-wins" in the agricultural sector and support policymakers and other stakeholders in the successful implementation of those jointly established policy priorities. Learning Alliances have a demonstrated potential to serve as a vehicle for collaborative learning about climate change related risks to food and nutrition security, for the assessment of the synergies and trade-offs of specific CSA practices in order to identify and prioritize nationally- and locally-appropriate practices, and the co-creation and implementation of harmonized, gender-sensitive policy interventions to address locally relevant drivers and constraints to their adoption. The mutually supportive efforts and information sharing between national and sub-national learning alliances further increased their efficacy, and, anecdotally, there is evidence that the LA's collectively contributed to concrete policy changes.

RWANDA CLIMATE SERVICES FOR AGRICULTURE PROJECT DEMONSTRATES SIGNIFICANT PRODUCTIVITY, INCOME, FOOD SECURITY AND WOMEN'S EMPOWERMENT BENEFITS FOR MORE THAN 110,000 PARTICIPATING FARMERS

Location: Rwanda

In addition to disseminating climate information via radio and mobile phones, the RCSA project, implemented from 2016 to 2020, employed the Participatory Integrated Climate Services for Agriculture (PICSA) process to train and facilitate 111,835 farmers across all 30 of Rwanda's districts to understand and incorporate climate information into their management decisions. A quantitative and qualitative evaluation, completed in 2020, shows that the participatory PICSA and RLC processes were effective in strengthening farmers' capacity to act on climate information. Participation in PICSA and Radio Listeners Clubs (LCs) is associated with a substantial increase in the proportion of farmers that report changing crop, livestock and livelihood management practices. The evaluation also demonstrated livelihood and social benefits associated with climate service interventions. PICSA participation increased the value of crop production by an average of 24%, and income from crops by 30%, relative to non-participating communities. The combination of PICSA and LCs was associated with a 47% average increase in the value of crop production, and a 56% increase in income from crops. Participants in both PICSA and LCs had a Household Dietary Diversity Score of 4.8, compared to a score of 4.1 for non-participating communities. Evaluation shows that the 111,835 farmers, across all 30 districts, who participated in Rwanda Climate. Project interventions also increased women's empowerment, especially in terms of increased participation in household decision-making and social standing in their communities.

THE WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT DEVELOPS NEW METRICS FOR CLIMATE-SMART AGRICULTURE TO GUIDE GLOBAL CORPORATE PRODUCTIVITY, RESILIENCE AND MITIGATION COMMITMENTS FOR 2030

Location: Global

Engagement with private sector actors is one of the cornerstones of CCAFS' impact pathway. Corporate value-chains represent a unique lever towards transforming agri-food systems through scaling sustainable, resilient and climate friendly practices and services. Companies operating in the food and agriculture sector, however, often lack guidance to operationalize and track their progress on climate change adaptation and mitigation interventions along the value chain. A consistent and transparent guide can provide information for companies to set and disclose CSA targets and implement CSA along the value chain as a key solution for tackling climate change. Building on CCAFS contributions, the World Business Council for Sustainable Development launched new metrics for climate smart agriculture providing guidance to the corporate value chains to operationalize and track progress of their climate action commitments. Use of this guidance contributes to the 2030 targets of reducing greenhouse gas emissions from agriculture and land use change by 50%, making 50% more nutritious food available and strengthening the climate resilience of agricultural landscapes and farming communities through agro ecological approaches globally. This product is the result of a six-year journey that highlights CCAFS efforts in making CSA science useful and actionable for the corporate world.

Alliance and CCAFS support to transform the use of data for decision making to accelerate growth in the livestock sector in Ethiopia

Location: Ethiopia

Researchers at the Alliance of Bioversity International and CIAT and Livestock Improvement Cooperation (LIC) worked with the Ethiopian Ministry of Agriculture to develop a roadmap that guides the system design of the country's livestock information system. The system architecture needs to be capable of receiving data from a wide range of technologies e.g., producers, financial institutions, animal health services, disease control, animal movement and traceability, cattle and meat exporters, research centres, etc. The system architecture takes into account the national infrastructure capability in terms of networking, cloud storage or access to information servers. The blueprint included a costed roadmap for the architectural design, including data flow optimization, systems and practices for metadata management, data quality control, data warehousing, data access and exchange as well as visualization and reporting for data systems to support sectoral interventions including the existing databases such as LITS, and new databases.

An Alliance study informed the action plan to implement a zero-deforestation and a peacebuilding initiative in Colombia

Location: Colombia

In 2018, Colombia became the first Latin American country to join the Cocoa & Forests Initiative, as part of a public-private partnership to eliminate deforestation in the cacao supply chain and to promote an alternative to coca cultivation in a country that had recently emerged from 50 years of internal armed conflict. This initiative was seen as an important step toward stemming deforestation, which increased rapidly following Colombia's peace agreement in 2016: forested areas that were once controlled by armed dissidents were rapidly being transformed into agricultural landscapes. But was cacao farming a driver of deforestation? Alliance research published in 2020 determined that cacao production did coincide with deforested areas, but analysis showed that the cacao plantations were on land that had been previously cleared to produce coca, a traditional indigenous crop that is also used

to produce cocaine. “What we found is that cacao production is, in several cases, associated with areas affected by conflict and with areas with presence of illegal crops; these are also areas with high deforestation rates,” said Dr. Augusto Castro-Nuñez, who led research. “It doesn’t mean that cacao is causing deforestation; the reason for the spatial overlap is that cacao is promoted as an alternative to coca.” While the findings suggest that Colombian cacao may be potentially certifiable deforestation-free, Dr. Castro-Nuñez warned that demand for quality cacao from Colombia could drive deforestation in the future. The research has been used by the Colombian Cacao, Forest and Peace Initiative and was funded by Germany's International Climate Initiative, or IKI, as part of its Sustainable Land Use Systems (SLUS) project led by the Alliance. As Colombia continues its efforts to consolidate the peace process, cacao continues to show potential to support peacebuilding goals and Colombia’s climate-change mitigation strategies. Ensuring profitability is the best way for cacao production to become an effective alternative to coca leaf farming, prevent future conflict, and stop deforestation.

WLE/Alliance leadership of a multi-stakeholder platform secretariat prompted dairy giants to join the zero-deforestation movement in Colombia

Location: Colombia

The Alliance was asked to lead the multi-stakeholder platform technical Secretariat for Colombia’s zero-deforestation dairy value chain agreement. Alliance staff and partners went on an outreach blitz to encourage the sector’s big players to sign the agreement. With active engagement and support provided by the Secretariat, Alpina, a large corporation, and Asoleche, the national association of milk processors, signed the agreement within a year.

CCAFS’ influence and reach in motivating actors globally to tackle climate change reaching 60 million people

Location: Global

Since its inception, CCAFS has engaged with hundreds of partner institutions, from research centers to government bodies, in order to foster policy and institutional change that enable large-scale Climate Smart Agriculture (CSA) adoption. As the program comes to an end, an evaluation study sought to understand CCAFS’ influence in motivating actors to tackle climate change. In CCAFS’ theory of change, a cross-cutting aim was to work with strategic partners to “foster policy and institutional change” that would enable large-scale CSA adoption. A conceptual framework was developed, and an innovative approach based on the Digital Methods epistemology was employed to explore the dynamics of knowledge dissemination and changes in attitude towards CSA among stakeholders at various levels. It considered online networks and narratives as evidence of “offline” program influence. Results show that CCAFS has inspired positive change in government policy; built a global community for climate adaption; and sparked public interest in Climate Smart Agriculture. Specific findings include:

1. CCAFS has shown itself to be pivotal influence by demonstrably shaping the way governments have adopted climate adaption policies, with nearly 100 policy wins in just the two years up to 2019, around 70 of which were national policy or strategies. CCAFS has shifted the debate on climate adaptation among strategic partners. By some estimates, the program’s ideas – adopted and transmitted through the social media channels of project partners - have reached nearly 60 million people.

2. CCAFS has built a global community for climate adaption and is a key player within a network of more than 60 thousand entities. The key to CCAFS success, is its focus on strengthening local capacity by providing technical training and support for the establishment of local agricultural adaptation strategies, and its steadfast commitment to fostering cooperation between countries and communities helping them to draw practical lessons from the experience of their peers
3. CCAFS has sparked public interest in CSA, with Google searches for "Climate Smart Agriculture" consistently increasing every month since the program was inaugurated in 2011. Content from CCAFS projects is disseminated across 35 thousand URLs from 10 thousand unique domains from more than 150 countries.

CCAFS research (in partnership with governments) has contributed to increases in public investment in CSA reaching several billions of dollars. Strategies for accelerating private sector financing are now being pursued, with new corporate and impact investors being steered towards CSA-related blended financing for more sustainable food systems.

SEASONAL CLIMATE FORECASTS AND WEEKLY AGRO-ADVISORIES DISSEMINATED VIA LAOS CLIMATE SERVICES FOR AGRICULTURE (LACSA) CHANGED FIELD-LEVEL CROP MANAGEMENT PRACTICES OF OVER 21,000 FARMERS

Location: Laos

The Alliance provided technical support to the Strengthening Agro-climatic Monitoring and Information System (SAMIS) in Laos to develop tailored and validated agro-climatic advisories. These advisories were integrated into the Laos Climate Services for Agriculture (LaCSA) system which disseminates information to farmers through multiple channels. It is currently at the operational stage. About 21,140 farmers have already used the agro-climatic information to change such farming practices as crop variety, planting dates, and water and fertilizer applications.

LOCAL GOVERNMENTS IN VIETNAM USE SEASONAL CLIMATE AND TEN-DAY WEATHER FORECASTS TO CO-DEVELOP TAILORED AGRICULTURAL ADVISORIES TO STRENGTHEN FARM DECISION-MAKING FOR ~70,000 FARMERS IN THE MEKONG DELTA

Location: Vietnam

DeRISK Southeast Asia — a regional project by the Alliance and its partners — introduced a participatory process to provincial and district stakeholders for developing tailored seasonal and ten-day agroclimatic advisories for rice production. The seasonal agroclimatic bulletin (SAB) presents information on the probability of a warmer or cooler season based on expected temperature, or a drier or wetter season based on predicted rainfall. The bulletin also includes the potential impact of climate and weather forecast on crops according to their growth stages. Seasonal agroclimatic bulletins (SABs) are disseminated pre and mid-season to the pilot districts to support longer-term planning, while short-term weather forecasts and recommendations are provided every ten days throughout the season for crop management practices. During the 2021-2022 Winter-Spring rice season, SABs were shared among 130 communes in Tieng Giang Province through communication channels such as Zalo messaging app groups, printed bulletins, posters, and loudspeaker broadcasts. Local stakeholders also support monitoring of SAB use by providing feedback from end-users. It is estimated that ~70,000 farmers in the Mekong River Delta used the agroclimatic information for agricultural decision-making

(crop selection, planting date, soil preparation, water/nutrient management, pest/disease control, harvesting). The approach is now being scaled to six more provinces in the Mekong Delta.

CLIMATE-SMART AGRICULTURE PROFILES IMPLEMENTED ACROSS PAKISTAN ARE BEING USED BY PROVINCIAL GOVERNMENTS AND THEIR PARTNERS TO DESIGN NEW PROGRAMMING AND CAPACITY DEVELOPMENT INITIATIVES AT DISTRICT AND LOCAL LEVELS

Location: Pakistan

The Alliance of Bioversity International and CIAT, supported by the Food and Agriculture Office (FAO) of the United Nations, has implemented a program of Climate-Smart Agriculture (CSA) profiling across Pakistan. The CSA profiling methodology is designed to set out the logical steps and key considerations that should be taken on board when identifying and prioritizing context specific CSA interventions. National stakeholders are engaged throughout the development process, sharing insights on the agricultural context and climate vulnerability, before co-developing and documenting the most effective response strategies that are sensitive to the local context. To date over 1,000 government officials, research staff, agriculture sector experts, value chain actors, international partners, and farmers have been consulted and trained through the initiative, creating a comprehensive assessment of the agriculture sector and the most promising CSA interventions. The findings of the extensive consultation shave been used to develop a series of National and (three) Provincial Climate-Smart Agriculture (CSA) Profiles, 13 District Climate Risk Profiles (DCRPs), and 44 Climate Smart Village (CSV) plans across three provinces in Pakistan. The results of the district and village level consultations were also uploaded onto an online dashboard, allowing users to sort and aggregate data by different localities to generate provincial and national level insights, supporting evidence-based policy making and programming at all levels.

SEASONAL CLIMATE FORECASTS AND WEEKLY AGRO-ADVISORIES DISSEMINATED VIA LAOS CLIMATE SERVICES FOR AGRICULTURE (LACSA) CHANGED FIELD-LEVEL CROP MANAGEMENT PRACTICES OF OVER 21,000 FARMERS

Location: Laos

The Alliance provided technical support to the Strengthening Agro-climatic Monitoring and Information System (SAMIS) in Laos to develop tailored and validated agro-climatic advisories. These advisories were integrated into the Laos Climate Services for Agriculture (LaCSA) system which disseminates information to farmers through multiple channels.

In Laos, farmers face immediate threats from climate change: increasingly unpredictable floods and dry spells have grave implications for crop production and livelihoods. To adapt to these conditions. farmers need every piece of information they can get. For this reason, the GEF-funded and FAO-implemented project "Strengthening Agro-climatic Monitoring and Information System (SAMIS) has used multiple channels to provide climate information that improves agricultural planning and decision-making. Collaborating with Lao PDR's Ministry of Agriculture and Fisheries (MAF) and Ministry of Natural Resources and Environment (MoNRE) and continuing the efforts of another Alliance-coordinated project, DeRISK, the SAMIS project has impacted the national, provincial, district and village levels, bringing significant technical advances and useful content for the Laos Climate Services for Agriculture (LaCSA) system.

The tools and approaches introduced by DeRISK have been taken up by SAMIS and are currently being applied and integrated into the LaCSA system. Over 85% (an estimated 21,140 farmers, of which 10,746 are female) of the target population has changed practices as a result of access to agro-advisories from loudspeakers. Strategic planning related to selection of crop varieties, planting dates and water management were the main responses from farmers because of access to advisories. Most farmers (>80%) claimed to have adjusted farming practices based on SAMIS bulletins received from community speakers, whether or not they have received additional intervention by attending FFS (Field Farmers Schools)

The ClimateShot Global Action Agenda for Innovation in Agriculture sets the stage for transforming agricultural innovation systems for people, nature and climate at COP26

Location: Global

The Global Action Agenda for Innovation in Agriculture (also called ClimateShot) is the outcome of the campaign on 'Transforming Agricultural Innovation for People, Nature and Climate' which was launched by Lord Goldsmith at the Climate Adaptation Summit in January 2021. This campaign – co-chaired by CCAFS and the UK Foreign, Commonwealth & Development Office – aims to transform innovation in agriculture so that it delivers positive outcomes for people, nature and climate. It is notably based on evidence that out of the USD 50-70 billion spent on agricultural innovation every year in low- and middle-income countries, less than 7% seeks to improve the environment or limit climate change and its impact. Since 2020, CCAFS has co-chaired (with the UK Foreign, Commonwealth & Development Office) and served as secretariat for the COP26 campaign on 'Transforming Agricultural Innovation for People, Nature and Climate'. Launched at COP26, the ClimateShot Global Action Agenda for Innovation in Agriculture has mobilized around 200 allies behind four key objectives, with a view to close the 'innovation gap' in agriculture and food systems and meet the Paris Agreement goals. Progress against these objectives will be monitored and reported back. But it has already secured around 200 allies that include international development institutions, national banks, large agriculture and food businesses, SMEs, NGOs, youth leaders, and impact investment funds that together are committed to mobilizing some US$ 5bn for sustainable businesses.

Qualitative impact assessment of the Climate-Smart Agriculture Regional Strategy for the SICA region (EASAC)

Location: Central America

In June 2017, the Ministers of Agriculture of the Central American Integration System (SICA in Spanish) launched the Climate Smart Agriculture Regional Strategy for the SICA region 2018 - 2030 (EASAC, in Spanish). The strategy formulation was in charge of the Central American Agricultural Council (CAC) and supported by CCAFS, CIAT, IICA, FAO, ECLAC, and CATIE. A set of CGIAR innovations have contributed to the implementation and scaling of the Climate-Smart Agriculture Regional Strategy for the SICA region (EASAC), which is the Central American Integration System. The Central American Agricultural Council (CAC) oversees EASAC's implementation, this regional body gathers Ministries of Agriculture of eight countries in the region. Since 2017, the EASAC has enabled the scaling of climate-smart agriculture (CSA) across the region evidenced through at least 250 transformations on the policy, institutional, and financial dimensions.

Radio Listeners Clubs (RLCs) in Rwanda Help Close Gender Gaps in Farmers' Use of Climate Information and Contribute Toward Improved Food Security of Stallholder Households

Location: Rwanda

Through the Rwanda Climate Services for Agriculture (RCSA) project, a consortium of national and international partners worked from 2016 to 2020 to strengthen the contribution of climate services to Rwanda's farmers and agriculture sector. The project used a combination of communication channels to support farmers' use of climate services. Radio Listeners Clubs (RLCs) were piloted that combine the reach of broadcast media with the power of participatory processes. Building on existing PICSA groups, 225 Farmer Promoters were trained to lead their village groups in weekly meetings to listen and discuss climate service radio programs, participate in live call-in shows, share and record their plans to act on what they learned, and share the information with others. Participation in RLCs was associated with greater use of weather and climate information to improve agricultural decisions – particularly for women. RLC participation was also associated with improved productivity and food security of smallholders. Analysis of the relationship between RLCs participation and bean yield found that members attained a significantly higher yield than non-members by an average of 118 kilograms of beans per hectare. Similarly, more women in RLCs reported greater changes in economic and social standing than those in control (29% versus 24%). Findings from FGDs showed that farmers, especially women, gained social standing because they used climate information and achieved higher yields and gained more income.

Ethiopia launches agro-advisory service platform

Location: Ethiopia

Ethiopian farmers face serious challenge of production uncertainties associated with climate variability. The Ethiopian Institute of Agricultural Research, supported by CIAT, CIMMYT and CCAFS and in collaboration with the Ethiopian Meteorological Agency and the Ministry of Agriculture, developed a digital agro-climate advisory platform to improve farmers' management of climate-induced risks, facilitate technology adoption and thereby improve their livelihoods. The advisory platform is composed of four complementary elements: an agro-climate database hub, climate modelling, crop modelling and a dissemination platform. EDACaP combines 1) geographical data, including geospatial information on site characteristics and agroecological zones; 2) climate data, both historical and projections from scenario analysis; 3) weather data, using seasonal and sub-seasonal data; 4) soil data, including physical, biological and chemical characteristics; 5) crop data and varieties, currently focused primarily on cereals but soon expanding to legumes, stimulants and vegetables; and 6) agronomic information, mainly concentrated on management data.

These datasets are interpreted into yield forecasts, agro-climate advisories and climate scenarios that are targeted to specific geographies and agricultural value chains, and disseminated to farmers through extension training, mobile technologies, early warning systems and multimedia. These translations improve decision making on diverse elements including the selection of crop fields and varieties, timing for planting and harvesting, ideal irrigation approaches, as well as measures to prevent pests and diseases. As a country whose agricultural systems are highly dependent on rainfall, these digital interventions will serve as key decision support tools to manage climate risk and bolster the adaptive

capacity of Ethiopia's smallholder farmers. The platform will contribute to the vision of making Ethiopian agriculture climate-smart by closing the gap between climate information and effective action.

CLIMATE SERVICES IMPACT ASSESSMENT GENERATES EVIDENCE OF MORE THAN 500,000 FARMERS REACHED BY A COMPREHENSIVE CRM STRATEGY OF ELEVEN LATIN AMERICAN COUNTRIES

Location: Colombia, Guatemala, Honduras, Mexico, El Salvador, Panama, Nicaragua, Paraguay, Chile, Ecuador, and Peru

Local stakeholders and farmers in Latin America (LAM) generally have limited access to agro-climatic information and/or the mechanisms to relate it to the impact that climate can generate at the local level. This precludes the translation of information into actionable knowledge. Co-developed, tested, and scaled out by CCAFS scientists, climate services approaches are now helping assess, produce, translate and transfer climate information to enable agricultural decision making to 420+ institutions in eleven countries in LAM. Thus far, these services have reached 501,000 farmers in a comprehensive national CRM from the local level to the national and regional levels, enabling the generation of a powerful governance structure for rural development and community-level resilience. The Alliance used its Local Technical Agroclimatic Committees (LTAC) approach to assess, co-produce, translate and transfer this climate information. Through LTAC, users access information about climate variations at multiple timescales, understand how these can affect crops, and design measures to reduce crop loss.

Detailed breakdown of results thus far:

* **Colombia:** 15 LTACs deliver tailored agroclimatic information to 224,000 farmers in a climate service network of 140+ institutions.
* **Guatemala**: 19 LTAC covers the entire country territory and 90+ institutions deliver advisory to 37,000 farmers.
* **Honduras:** 12 LTAC reaches 77,000 farmers with 90+ institutions involved.
* **Other countries**: in Mexico, El Salvador, Panama, Nicaragua, Paraguay, Chile, Ecuador, and Peru, 163,000 farmers receive information from 190+ organizations

PARTICIPATORY INTEGRATED AGRO-CLIMATIC SERVICES BENEFITS 33,000 FARMERS IN 5 COUNTRIES OF LATIN AMERICA

Location:

CCAFS scientists has co-developed and implemented "last-mile" mechanisms to reach directly the farmers providing climate information adapted for its use and allowing it to make a timely decision to mitigate its risk (i.e., PICSA). In the Climate-Smart Villages (CSV) of Guatemala and Honduras, more than 60% of the farmers have perceived positive effects in yields/production with climate-informed decisions based on PICSA, such as changes in planting dates, implementation of rainwater harvesting systems, terracing, home gardens, conservation tillage, windbreaks, the introduction of water stress-resistant seeds, fish farming systems, among others. The effectiveness of the participatory climate services has promoted their scaling out in zones of the Central America dry corridor potentially reaching 30k farmers in post-CCAFS collaborations with WFP both in Guatemala and Honduras, 1.8k in

Guatemala with CRS, and hundreds of small-scale farmers in Colombia, Ecuador, and Peru, in a low-carbon and agroecology agriculture contexts.

A USER-CENTERED, DIGITALLY INTEGRATED, AND SCALABLE SYSTEM SUPPORT INFORMATION GENERATION, USE, AND EXCHANGE WITHIN THE SICA SYSTEM ENCOMPASSING 200+ INSTITUTIONS IN CENTRAL AMERICA

Location: Central America

CCAFS scientists have developed a user-centered, digitally integrated, and scalable system to support information generation, use, and exchange within the SICA (Central American Integration System), co-developed with stakeholders from the regional level (CA Climate Outlook Forum-CACOF) through to the mesoscale and local level. 200+ institutions participate via 40 Local Technical Agroclimatic Committees (LTAC) in CA connected with the RADG using its inputs and providing feedback. They translate regional knowledge to a national and local context, generating recommendations and capacity in support of decision making for different organization types, extension agents (e.g.,300+ public sector agents in Guatemala), and ~180,000 farmers. The LTACs promote a dense network of institutions throughout CA that exchange high-quality agroclimatic information as well as recommendations, incorporating them in decision-making and ultimately influencing national policy.

KENYA CSA MULTI-STAKEHOLDER PLATFORM REACHES FARMERS WITH CSA OPTIONS THROUGH MEMBER ORGANIZATIONS

Location: Kenya

The Kenya Climate Smart Agriculture Multi-Stakeholder Platform (CSA MSP) has continued to flourish after its establishment. CCAFS has been supporting the establishment and continuation of the CSA multi-stakeholder platform since late 2018. Quarterly meetings help share information and networking, improving the CSA options offered to farmers. The number of member organizations has grown, a website has been set up (https://csa-msp.kilimo.go.ke), and a five-year strategic plan (2022-2026) launched in January 2022. Several member organizations have stepped forward to provide funding for the establishment of county-level MSPs for reaching more farmers on the ground. The Monitoring and Evaluation (M&E) Thematic Working Group has developed an M&E reporting tool that will help the Ministry of Agriculture, Livestock, Fisheries and Cooperatives gather information on the climate actions being implemented by various actors in the agriculture sector. The CSA MSP has also become the go-to platform for reaching stakeholders; projects implemented by CGIAR centers and NGOs use the platform to share knowledge and communicate with other organizations involved in climate smart agriculture.

CGIAR DELIVERING SCIENTIFIC FOUNDATIONS FOR PEACE AND SECURITY

Location: Global

CGIAR science, innovation, and technologies are critical in supporting global efforts to secure sustainable peace. The evidence about the conflicts we have seen around the world since the turn of

the century points to a simple conclusion: Conflicts between communities, armed groups, and even military forces are increasingly being affected by changing climates, environmental degradation, food security, and the struggle to control a finite pool of natural resources. Because of a changing climate, the way governments and communities manage land, water, and food systems is now more than ever a pivotal factor in whether societies can endure peace. In the words of the UN Secretary-General, 'The fallout of the assault on our planet is impeding our efforts to eliminate poverty and imperiling food security'. Without peace, there is no end to hunger. That has been true for so long. Without food security, peace cannot last. And without climate-sensitive actions for peace and security, none of these efforts will succeed. The global community rightly invests in much-needed peace and security operations worldwide. But the climate-food-peace paradigm shift that has happened in the real world has yet to be adequately reflected in the global policy agenda. CGIAR aims to address gaps in knowledge about climate change and food security for peace and security policies and operations through a unique multidisciplinary approach. Our main objective is to align evidence from the realms of climate, land, and food systems science with peacebuilding efforts already underway that address conflict through evidence-based environmental, political, and socio-economic solutions

ACToday Columbia World Project leveraged CCAFS collaboration and research to develop capacity, support national-level policy development, and deploy curriculum, bringing enhanced climate services and knowledge to governments, other stakeholders, and communities in multiple countries.

Location: Bangladesh, Colombia, Ethiopia, Guatemala, Senegal and Vietnam

The five-year ACToday initiative, funded by Columbia University at the level of $20 million and led by IRI, develops climate service solutions in Bangladesh, Colombia, Ethiopia, Guatemala, Senegal and Vietnam. ACToday's work adapted tools and approaches developed previously through collaboration between CCAFS and IRI and utilized synergies between IRI and CCAFS to deploy such approaches and tools more widely. ACToday draws upon the strong IRI collaboration with CCAFS since 2010. IRI developed the NextGen forecast system for the generation of a consistent and high-performance climate outlook through ACToday. Together, IRI and CCAFS have supported trainings in this approach at national and regional levels. In Latin America, training on NextGen was conducted in the Central America Council, the Regional Committee of Hydraulic Resources, national meteorological services and agricultural ministries at the SICA level (8 countries) in the Central America Climate Outlook Forum context. Training has been provided to Guatemala's meteorological service, which now uses seasonal forecasts based on NextGen and, jointly with the Ministry of Agriculture, interacts with stakeholders to produce and disseminate agro-climatic recommendations that are advancing in the National Framework for Climate Services (NFCS) formulation. In Ethiopia, 56 staff from the National Meteorological Agency at the central and regional level were trained. This collaboration has brought the Local Technical Agroclimatic Committee (LTAC) approach, developed by CCAFS, to a national level in Guatemala and Colombia. In Guatemala, ACToday and CCAFS supported the establishment of 19 LTACs, covering the entire country, with 90+ institutions delivering advisories to 37,000 farmers. ACToday has also developed curriculum on climate risk management, which was used in a training of trainers on climate risk management for 15 participants, supported by CCAFS. This has started with CCAFS organizing a consultation meeting with eight universities to explore deploying this curriculum more widely through the country. IRI and CCAFS also supported the development and launch of the NFCS in Ethiopia. The collaboration has enabled the scale up of tools for participatory design of agricultural index insurance, reaching approximately one million households in 2020-2021, including through integration into a national-level program in Zambia and collaboration with the WFP's R4 program in four countries. CCAFS provided initial support to IRI to develop these tools, which, with

ACToday support, were scaled up through multi-stakeholder workshops as well as interactive online tools to help stakeholders work through key index design decisions.

List of Lever 3 Innovations

1. Smarter metrics in climate change and agriculture: Business guidance for target-setting across productivity, resilience and mitigation.

This corporate guide was collaboratively developed as part of WBCSD 'Smarter Metrics' workstream. It acts as an essential repository for companies who are embarking on addressing Climate Smart Agriculture (CSA), providing both an overview of industry trends, and practical guidance to help businesses start the journey of setting and disclosing targets. (CCAFS innovation)

2. Climate-Smart Village AR4D (CSVs)

Nominated as one of the CGIAR's top 50 innovations, the Climate-Smart Village AR4D approach is an innovative and holistic model founded on the principles of participatory action research, with context-specific theory of change, implementation processes and scaling up mechanisms geared towards fostering wide adoption of technical and institutional options to address the effects of climate change in agriculture. Building on multi-stakeholder partnerships with research, extension, NGOs, public and private sectors, it has being implemented with farming communities across more than 20 countries. Integrated into CCAFS programmatic ToC and Regional Impact pathways since 2015 as a mechanism to roll out CSA and translate research into development outcomes, this innovation has been promoted by a large number of public and private sector organizations potentially benefiting millions of farmers in thousands of locations worldwide.

3. Let it Rain Game linked to iShamba service to provide weekly agri-tips.

The game itself is a simple USSD survey, that you can play on a regular feature phone, or using a smartphone. The game promotes farmers to share information about the farming activities, as well as experience with weather extremes, in order to qualify for another guess. Once the user finishes playing, he/she is signed up to iShamba, the farmer mobile service, and receives weekly agri-tips, for crops and livestock, market prices and weather information.

4. Quick appraisal monitoring and evaluation tool for the Local Technical Agroclimatic Committees (LTACs) in Latin America (LAM).

This is a Monitoring and Evaluation (M&E) instrument developed for the LTACs with the support of the M&E teams of CIAT-CCAFS, IRI, and WFP. The M&E tool helps us understand the agricultural and biophysical context of each territory of influence of the LTACs, the perception of the quality of the meteorological information that is shared (e.g., seasonal forecast), and an estimation of the scope of the agroclimatic bulletins and the dissemination media effectivity.

5. AgroclimR: an Agro-Climate Seasonal Forecast tool for Central America.

AgroClimR is a tool developed in R programming code for crop simulations with Aquacrop based on climate information. The tool helps agricultural stakeholders to translate the climate information (i.e., historical data and forecast) into predicted crop yields and turn these into agronomic recommendations. The tool is being adopted at the level of ministries of agriculture linked to the regional agricultural discussion group (RADG) of the CA-COF.

6. Climate Risk Profiles for presenting key challenges posed by climate change and the impacts it might have on the agricultural sector.

The Climate Risk Profiles provides a comprehensive overview of the farming systems, key value chains and the types of inputs used, presenting key challenges posed by climate change and the impacts it might have on the agricultural sector. These profiles then suggest specific interventions that could address those challenges and outline financing opportunities for climate-smart agriculture (CSA). To date, there are more than 70 climate risk profiles, with many more in the pipeline. These profiles have been developed for the Kenyan Government and are being used as part of the $250 million Kenya Climate Smart Agriculture Project. In addition, they are being used by Care International in Tanzania, NIRSAL in Nigeria and GIZ across 14 countries.

7. Improved climate-resilient rice varieties for Colombia - Fedearroz 67 for irrigated rice systems.

Fedearroz 67, a variety for irrigated rice systems, was evaluated under different climatic conditions between Fedearroz (Rice growers association) and CIAT. Results indicated its resilience to climatic stress and increase in productivity. Ex-post assessments already point to its adoption by 31.01% (4,980) of rice growers in Colombia.

8. Croppie

This Inspire Challenge proposal was selected as a 2020 pilot project winner. With the development of the Croppie app, farmers will be able to gamify real-time crop yield data collection, encouraging smallholders, particularly youth, to generate massive datasets for AI models (PhotoCropping). Simultaneously, Croppie aims to provide clear, actionable yield predictions for smallholders, where AI picture classification is proven to provide reliable yield data.