

CGIAR Concept Note
Addressing SDG15 in the Sahel by
Building Pathways for Transforming Food and Land Systems in a Climate Crisis

The Challenge:

Our current food systems are failing to achieve production and nutritional targets, achieve inclusivity and optimize their environmental footprint to contribute to healthy ecosystems. To address the challenges, many initiatives and targets have been proposed, yet progress on is patchy, and we are not on track to achieve a system change. For example, in relation to sustainable and climate resilient food and land systems, we are falling short on taking the actions needed to limit global warming and we may be on track to a 3.1-3.7 °C warmer world, which would be disastrous for food and land systems and hence livelihoods of millions of people. Many food system actors are highly vulnerable: there will be at least 700 million small-scale agricultural producers in 2030, for example, and we are not on the right pathway to build their resilience to extreme events within a short period of time.

The Sahel region faces many of the challenges that climate change is imposing on the millions of people who live mainly from agriculture and livestock. In this region, temperatures are rising 1.5 times faster than in the rest of the world; simultaneously climate change is causing heavy rains accompanied by destructive river floods and numerous flooding episodes. Overall, persistent droughts, lack of food, conflicts over dwindling natural resources, and mass migration to Europe are some of the main challenges that this region will need to face in the following decades.

Given these challenges, we urgently need to develop and implement solutions from research and innovation that support systems transformation in order to contribute to restore land; enhance nutrition, health and food security; improve climate resilience and create green jobs. The focus should be on immediate climate risks, adapt to a much warmer world, limit GHG emissions from food systems, and put in place land-use systems that remove carbon from the atmosphere through improved livestock practices, trees, forests and soil organic matter. The scale of these challenges is difficult to overstate, but fortunately the CGIAR can offer solutions and innovations developed over several decades of research. It is not difficult to argue that a systems' transformation approach will be the most appropriate framework to offer real solutions to many of the problems we face. The challenge lies in mobilising the partnerships, finance, knowledge, tools, and policies to catalyze comprehensive change, across diverse contexts, at massively accelerated speed.

Objective:

The main objective of this project is to drive institutional changes that produce innovation, investment, and action to address the climate crisis across the Sahel. This objective will be accomplished through generating knowledge to support extension systems through better climate risk management; to foster climate and peace sensitive policies; to reorient and leverage the public and private capital flows needed to sustainably finance the transformation to low-carbon and climate-resilient food and land systems; and to backstop the Great Green Wall (GGW) with CGIAR climate research. The project will initially focus on four countries (**Senegal, Mali, Ethiopia, and Sudan**) as test sites to tackle issues on the ground, scaling the successful innovations across the region over time. Innovations will include enhanced digital services to manage and reduce the impact of variable weather and extreme events; a climate security observatory to inform policies, programming and investment decisions; financial innovations to de-risk sustainable and climate resilient practices for food and land systems; and integrated assessment frameworks for policy pathways that can enable and prime the environment for climate resilient futures. The work in these countries will focus on gathering and integrating knowledge regarding climate information, finance,

and policy and institutional innovations that can support scaling processes. The interventions will include building and implementing a set of pathways in relation to: (i) climate risk management, (ii) climate security, (iii) sustainable finance, and (iv) policies and institutions for strengthening GGW activities. By connecting the four areas we will create the enabling environment for food and land systems transformation across the Sahel. As a result, this project will enhance and connect on-going research activities from CCAFS/CGIAR with relevant stakeholders to leverage CGIAR's capabilities, knowledge, assets, people, and regional presence for a new era of interconnected and partnered research to address the impacts of climate change in the Sahel and contribute to achieving the SDGs.

Figure 1: Framework for transforming food and land systems in the Sahel in a climate crisis



Areas of work:

We propose to conduct analysis for agenda setting, development of impact pathways and capacity building in the following four interlinked critical areas:

1. **Climate risk management:** Developing evidence-based and demand driven climate services that help farmers, businesses, and other food and land system actors to strengthen their resilience and adaptive capacity to climate-related hazards and natural disasters, while contributing to livelihoods, job creation, reduce migration, conservation of agrobiodiversity, and food and nutrition security. The analysis for this area will focus on comparing successful cases in terms of reaching a variety of stakeholders with climate information and priorities for designing and exploring innovative mechanisms that support existing extension systems.
2. **Climate security:** Contributing to build production-system resilience by systematically addressing the inter-linked relations between climate, security, and peace. We will generate impact pathways and policy coherence analyses, coupled with decision support tools, consultations and capacity building activities in order to inform programing, policies and finance along the Humanitarian Development

and Peace (HDP) nexus. This area will build on [CGIAR FOCUS Climate Security](#) agenda in order to leverage CGIAR's land, water, and food systems science.

3. **Finance:** Scaling finance modalities including leveraging sustainable finance for climate action. Under this area, we will investigate the potential for innovative partnerships and will put in place solid foundations to sustain them. Through these partnerships we will understand and implement priorities for unlocking private and public finance necessary to build enabling environments for sustainable investments, which strengthen resilience and adaptive capacity and promote sustainable land use systems that contribute towards climate change adaptation and mitigation. This area will include analyses in relation to the investments needed to promote GGW activities.
4. **Policies and institutions for strengthening GGW activities:** Developing instruments to create appropriate policy frameworks and inform policies and promote institutional change to enable small-scale agricultural producers, women, youth, and marginalised groups to adapt to climate change and build resilient livelihoods. We will work together with the GGW Accelerator in order to address bottlenecks that have prevented the full implementation of the GGW Initiative, such as the lack of adequate decision support tools for tailoring adaptation interventions and innovations and the insufficient coordination, exchange, and flow of information at the regional and national levels in the Sahel.

Activities:

Activities under each one of these areas:

- 1.1 Assessment of types, scope, and organization of agro-climatic services provided by national agricultural and meteorological agencies in each one of the pilot countries
 - 1.2 Prioritization of best-bet climate services and agro-advisories for uptake at scale in the GGW context so as to strengthen its activities and contribute to achieve its goals
 - 1.3 Tailoring of the prioritized best-bet climate services considering local contexts in two of the pilot countries
 - 1.4 Explore and design innovative and digital-led mechanisms for site-specific climate advisory services to support existing extension systems and cooperatives in two of the pilot countries. Two particular digital tools are of interest in the Sahelian zone: (1) rural radios FM stations that have spread rapidly, showing a quite good geographic coverage; (2) mobile phones whose penetration in Africa has moved from 23% in 2005 to around 80% nowadays, showing that this digital tool can be a powerful real-time channel to reach people that are "marginalized" in very remote areas¹. The proposed digital-led mechanisms developed through this activity will include business models that consider gender and social differentiation along the knowledge generation and transfer processes to avoid leaving behind those vulnerable groups.
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- 2.1 Impact pathways analysis to characterize the climate security nexus and climate-migration nexus at country level for each one of the pilot countries. These analyses will identify the main channels

¹ A study by [CTA \(2021\)](#) reports that country-level data from a handful of countries in Africa suggest that individual smallholder farmer phone ownership is closer to 60% or more. Phone ownership at the household level is likely even higher – closer to 70% or more. Although women in Sub-Saharan Africa are 15% less likely to own a mobile phone, there is a good trend of this gap filling, especially with the growing development of digital money services. Also, the fact that some digital start-ups are putting in place as part of the subscription package, a call center where agents understanding different local languages can take calls from subscribers in order to explain or clarify any question from the users, will help illiterate people, which are part of the vulnerable and marginalized groups.

whereby climate exacerbates socio-economic inequalities and how these in turn affect peace, stability, and migration in the country.

- 2.2 Development of a Climate Security Observatory for the Sahel region: a decision support tool to inform policies, programming and investment decisions of national policy makers and humanitarian and development actors. More specifically, it will provide answers to the following questions: Which are the areas most vulnerable to climate induced insecurities (where)? Which vulnerable groups should be prioritized to ensure stability and peace (for whom)? What are the most effective interventions (policy, programs, investments) for ensuring peace and security in a climate crisis (what)? How can existing institutions and stakeholders strengthen peace and security in a climate crisis (how)? For the design and roll out of this Climate Security Observatory we will be coordinating and collaborating with different partners and stakeholders, such as WFP, UNDP and IOM from the UN. We will also coordinate with the main think tanks on peace and security such as SIPRI, NUPI and Adelphi. Currently, the CGIAR periodically briefs some of the countries on the UN Security Council, namely Norway, Ireland and Mexico
 - 2.3 Consultations and workshops with actors along the Humanitarian Development and Peace Nexus (HDP) to inform climate and peace sensitive and responsive programing, policy, and finance in the pilot countries. The dialogues will inform the emerging peace facility of the UN Food Systems Summit.
 - 2.4 Development of location specific capacity development initiatives focused on agriculture-based R4D actions, climate change crisis and disasters to overcome the climate security crisis in fragile countries. The capacity development initiatives will be done through plans and programs at various scales in the pilot countries taking into consideration the needs of local communities
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- 3.1 Characterization of the financial systems vis-a-vis climate change and food and land systems transformation. This characterization will include an assessment of the intermediation market, including aggregation and facilitation services and how information is being exchanged between potential investors and investees that encourages investment in the selected countries
 - 3.2 Inventory of innovative finance instruments available to de-risk investments that will reorient and leverage public and private capital to address climate challenges in food and land systems for each of the pilot countries. This assessment will include an analysis of what M&E as well as capacity strengthening services are needed in each pilot country to leverage public and private capital
 - 3.3 Assessment on the needs for technical assistance to help de-risk investments and strengthen capacity of investees to encourage investment for low-carbon and climate-resilient food and land systems for each pilot country
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- 4.1 Diagnosis of the main bottlenecks for the implementation of the GGW Initiative in the pilot countries
 - 4.2 Work together with the GGW Accelerator to build an agenda to respond to current bottlenecks by connecting relevant research activities and research outputs from the CGIAR to key stakeholders implementing the GGW initiative
 - 4.3 Develop Sahel-wide climate, agricultural, environmental, gender and social inclusion policy coherence analyses for promoting options that better respond to the climate crisis by highlighting gaps and missed opportunities in current policy processes
 - 4.4 Assess relevant policy processes in the pilot countries where CGIAR could inform and contribute to the implementation of adaptation and mitigation options

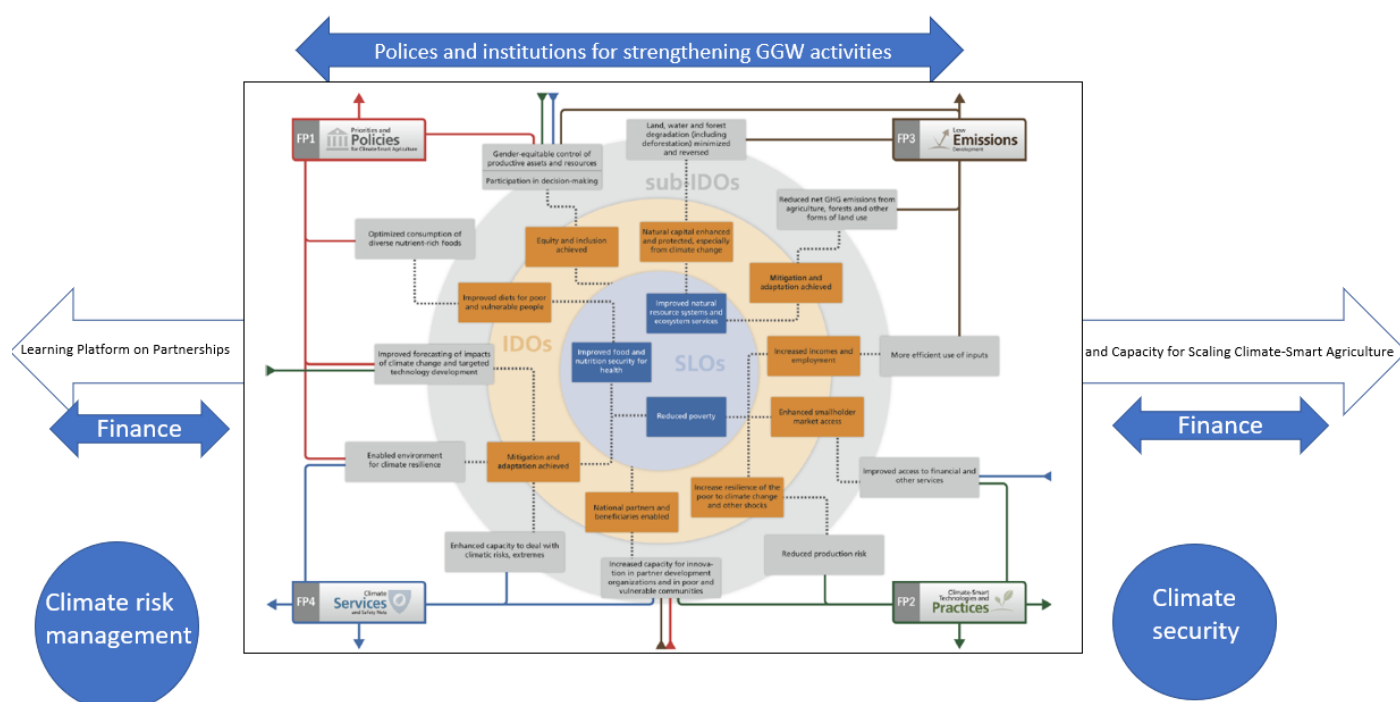
Timeline and budget:

Area of work	September-December 2021	January-August 2022
1. Climate risk management	EUR 160,000	EUR 340,000
2. Climate security	EUR 160,000	EUR 340,000
3. Finance	EUR 100,000	EUR 400,000
4. Policies and institutions for strengthening GGW activities	EUR 160,000	EUR 340,000
Total	EUR 580,000	EUR 1,420,000

Linkages between the project and CCAFS framework:

The overall goal of CCAFS is to catalyze positive change towards climate-smart agriculture, food systems and landscapes, and thereby contribute to the CGIAR System-Level Outcomes (SLOs) on poverty alleviation, food and nutritional security, and natural resources. As can be seen in Figure 2, the areas of work proposed in this project, are well aligned with each of the four Flagships (FP) proposed in CCAFS (FP1: Priorities and policies for climate-smart agriculture; FP2: Climate-smart technologies and practices; FP3: Low emissions development; FP4: Climate services and safety nets) and are also aligned to CCAFS cross-cutting Learning Platform on Partnerships and Capacity for Scaling Climate-Smart Agriculture. Therefore, it is expected that the activities implemented under each one of the areas of work of the project will contribute to reach CCAFS targets in relation to poverty, hunger and environmental health.

Figure 2: Areas of work proposed by the project and SLOs, IDOs and sub-IDOs targeted by CCAFS and how they relate to FPs



Relation between CCAFS and GGW and opportunities to work together:

The GGW provides an operational platform to respond to the development challenge of African drylands. Indeed, in the face of these pressing challenges, the GGW is part of the solution: it offers people the opportunity to improve their economic prospects and take actions to strengthen their resilience to climate change through reduce climate risks through adaptation to current and future climate variability and change; it gives unemployed youth a reason to stay, instead of migrating; and at the same time, it encourages the strengthening of political stability. The GGW Initiative goes beyond the simple establishment of a vegetation strip, to be a strategy for enhancing the potential of Sahelo-Saharan areas, with real involvement of grassroots actors and local communities. One of the main objectives is to develop sustainable management of land and water in targeted landscapes and climate-vulnerable areas.

While CGIAR is not a direct stakeholder of the implementation of the GGW Initiative, indirect mechanisms have permitted the mainstreaming of scientific outputs and contributions from its International Research Centers and Consortium Research Programs to the initiative design and activity implementation. In this line, CCAFS has been collaborating closely during the last ten-years with ACMAD, ICPAC, AGRHYMET, CILSS Secretariat, to de-risk agricultural production (crop, agroforestry, fish, livestock) through the development of climate-smart technologies and practices as well as weather and climate information services to guide their production management decision making. As direct stakeholders for the GGW, CILSS, for example, is tasked with the compilation and dissemination of regional knowledge, in close collaboration with CGIAR Centers (e.g. ICRAF) and Programs (e.g. CCAFS, FTE). Also, AGRHYMET is responsible for providing accurate weather forecasts to participating countries and works closely with ICPAC and ACMAD. This project offers a great opportunity to strengthen these ties and ground them to the implementation level.

CCAFS beyond 2021 in the OneCGIAR portfolio:

CGIAR, the largest global research partnership for a food-secure future, and whose mission is to deliver science and innovation that advances the transformation of food, land and water systems in a climate crisis, has a remarkable 50-year record of accomplishments collaborating with partners to translate ground-breaking research into tangible development outcomes on the ground. The Sahel is a perfect example that demonstrates the need for food, land, and water systems transformation — one in which CGIAR has the capabilities to play a central role. The integration of CGIAR's capabilities, knowledge, assets, people and global presence for a new era of interconnected and partnered research towards the SDGs provides the opportunity to shape a stronger, more relevant and well-funded science agenda to address the impacts of climate change.

The 2030 Research and Innovation Strategy frames CGIAR's priorities strongly within the climate crisis as the foremost challenge of this decade. The Strategy notes that the challenge of climate change is not single-issue or one-dimensional – and nor are the solutions. In response to this Strategy, many OneCGIAR initiatives are currently being developed and all of them include a vision on achieving outcomes in relation to climate action building on CCAFS legacy. These initiatives have the potential, with partners, to improve the adaptive capacity of 200 million rural people by 2030, with 120 million benefiting from greater resilience to climatic variability, and improvements in productivity of 25% compared to the baselines projected under climate change. Associated environmental benefit include a 2-million-hectare reduction in deforestation relative to reference scenario by 2030 – equivalent to averting a third of the loss of forest in the Brazilian Amazon over the last decade. These targets are well aligned to what this project intends to do.

One initiative in particular – *ClimBeR* - will consolidate CGIAR as a leading platform for research and innovation in systemic resilience against climate variability and extremes. This initiative builds on a decade

of CCAFS research and will co-develop solutions with strategic partners like farmers organizations, governments, national agricultural research systems and the private sector. *ClimBeR* will promote multi-scale governance so that empowered farmers can enhance their resilience in the face of climate uncertainty. Finally, as the overarching OneCGIAR initiative on climate-resilience, *ClimBeR* will work with other CGIAR initiatives and regional teams to link global public-goods with robust impact pathways and strategic partnerships for greater climate achievements on the ground. As can be observed, *ClimBeR*'s rationale is deeply aligned with this project and therefore constitutes a suitable place to continue the implementation of the activities of the project once CCAFS is finalized.

Opportunity:

This project will generate relevant knowledge to develop and implement solutions from research and innovation that support a transformation in food and land systems in the Sahel considering climate challenges. It targets a region that is on the frontline of climate change and where millions of locals are already facing its devastating impact. By conducting analysis for agenda setting, developing impact pathways and implementing capacity building activities, this project will contribute to create green jobs and improve food security while promoting sustainable and climate resilient land management practices.

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