

Mitigate+: Low-Emission Food Systems



The **Mitigate+: Low-Emission Food Systems Initiative** aims to contribute to low-emission food systems development and reduce net annual greenhouse gas emissions (GHGE) from food systems. It forms part of CGIAR's new Research Portfolio, delivering science and innovation to transform food, land, and water systems in a climate crisis.

Objective

The Mitigate+: Low-Emission Food Systems Initiative focuses on reducing GHGE from food systems in target countries by 1.1 gigatons per year (6.5 percent) by 2030, thus mitigating the predicted impact of climate change on sustainable development and social equity. The approach is consistent with the Paris Agreement, which aims to foster low-emission development without negatively impacting food production. An estimated 8 million people will benefit from these reduced emissions and associated benefits over the Initiative's 10-year lifespan.

The Challenge

The urgent need for accelerated climate mitigation and low-emission development has never been clearer. While food systems provide critical food and nutrition security, support livelihoods, and deliver socioeconomic benefits, they also have very significant environmental and social impacts. The global food system produces between 21 and 37 percent of greenhouse gas emissions, and is responsible for 33 percent of agricultural soil degradation, 20 percent of aquifer overexploitation and 60 percent of biodiversity loss.

Yet the governance response remains insufficient. Despite increasing recognition that governance is of fundamental importance to understanding and achieving transformative change in food systems, the conditions, processes, and mechanisms of successful and inclusive governance for sustainable food systems remain under-developed, hindering the ability to address complex dynamics operating simultaneously at local, regional, and global levels.¹

AT A GLANCE

Primary CGIAR impact area: Climate Adaptation & Mitigation

CGIAR science group: Systems Transformation

Focus countries: China, Colombia, Kenya, Vietnam (first phase); Bangladesh, Ethiopia, Peru (second phase)

Works towards sustainable development goals: Zero Hunger; Gender Equality; Decent Work and Economic Growth; Responsible Production and Consumption; Life on Land; Peace, Justice, and Strong Institutions; and Partnerships for the Goals and the UNFCCC Paris Agreement



¹ <https://tmg-thinktank.com/blog/food-systems-transformation-towards-a-common-understanding>



“ focuses on reducing greenhouse gas emissions from food systems in target countries by 1.1 gigatons (6.5 percent) per year by 2030

A lack of research and data on, and understanding of, systems interactions similarly hinders the development of integrated strategies for effective transformation toward low-emission food systems. National food systems are not well characterized, with poor data on GHGE and insufficient links to other desired outcomes such as improved nutrition, gender equality, and environmental sustainability.

National and subnational policies tend not to account for the costs of GHGE or provide regulatory frameworks for their reduction, and miss opportunities to address trade-offs, sometimes incentivizing short-term economic benefits at the expense of long-term sustainability. The poor and marginalized often bear the greatest burden of negative, unintended consequences of such policies.

Scaling solutions capable of reducing food systems' GHGE and creating carbon sinks is inhibited by the lack of an enabling environment (e.g., institutional arrangements, market-based mechanisms, financing, etc.).

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Activities

The work of the Low-Emission Food Systems Initiative builds on more than 20 years of CGIAR climate research and will be conducted through five work packages:

“ foster low-emission development without negatively impacting food production



Planning for low-emission food systems transformation

Supporting national stakeholders in defining the priorities, scope, and goals for low-emission, climate-resilient food systems development through the co-development and testing of the Food Systems Climate Intervention Planning Framework (FOODCLIP). This user-friendly, integrated modeling and planning framework will help stakeholders to analyze the trade-offs and synergies between mitigation and other aspects of food systems (e.g. healthy diets, or economic sustainability) to design effective emissions-reduction and carbon-capture initiatives at subnational and national scales.

Data, evidence, and tools for low-emission food systems transformation

Providing policymakers and program implementers with the data, analysis, tools, and networks required to reduce GHGE from food systems, thereby strengthening national capacity to achieve efficient and cost-effective reductions of food systems GHGE. These tools include: (i) reliable measurements and data on food production and consumption; (ii) information on the synergies and trade-offs between GHG mitigation and food security; (iii) data on GHGE from high-carbon landscapes; and (iv) support for implementing robust inventory methodologies and measurements, reporting and verification systems.

Living Labs for People

This strand of work involves using place-based participatory action research – i.e., a “Living Labs for People” approach – to engage food systems stakeholders in co-designing and testing low- and negative-emission innovations in situ. The Living Labs will prioritize mitigation approaches that demonstrate potential to deliver co-benefits identified

by stakeholders, such as climate adaptation, improved agricultural productivity, and better social outcomes, including for the most vulnerable.

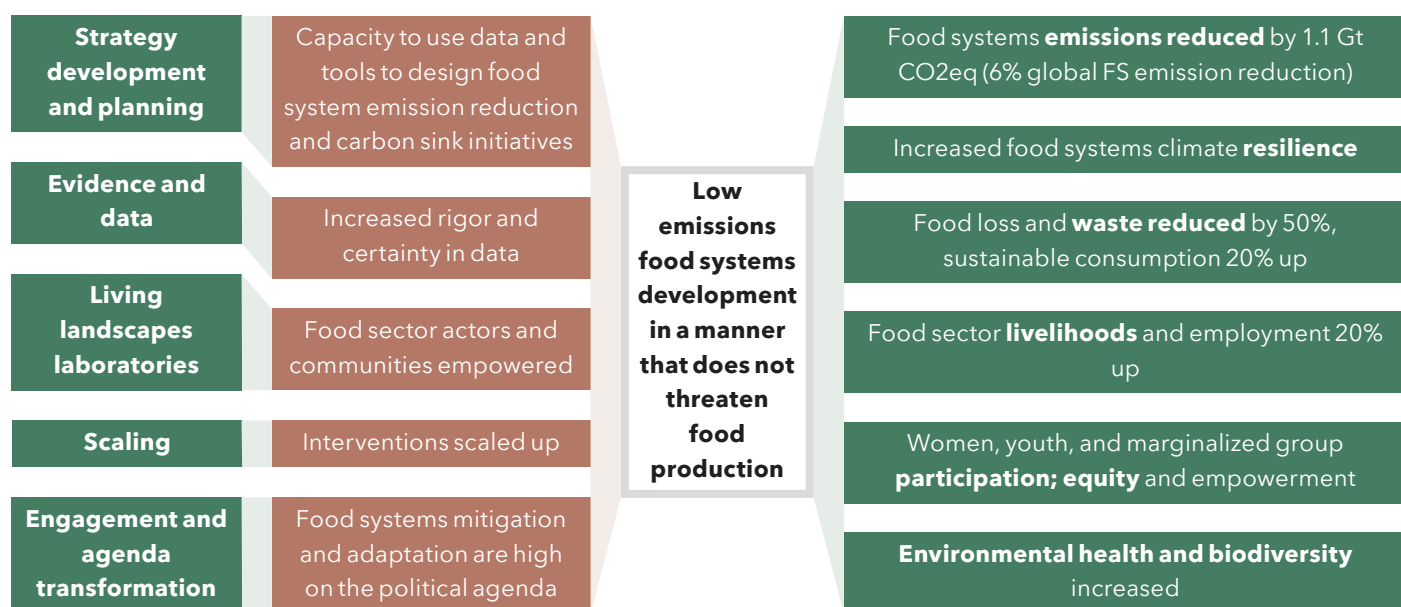
Scaling low-emission food systems

CGIAR has developed an impressive range of agricultural technologies aimed at improving farm productivity, increasing access to nutritious and affordable food, and strengthening the sustainability of natural resources and ecosystems. This area of Mitigate+ is about developing an enabling environment for scaling at least five of these (in areas including crop and livestock management, value chains, markets, and institutions), with the potential to transform food systems, reduce emissions, and deliver sustainable development benefits, including conflict resolution and poverty reduction.

Engagement and agenda transformation

The complexity of the challenge and the lack of robust evidence for how mitigation works create barriers to effective food system transformation. This area of work tackles those barriers by ensuring policymakers and practitioners have the information, analysis, and tools they need to achieve efficient, cost-effective reduction of emissions while generating equitable impacts and co-benefits. It focuses on fostering South-South knowledge sharing, cooperation, and capacity-building, as well as contributing to high-profile global events such as the UN Framework Convention on Climate Change to inform and shape the climate mitigation policy agenda.

Our theory of change



China, Colombia, Kenya, Vietnam
Bangladesh, Peru, Ethiopia | + global

Outcomes

Mitigate+: Low-Emission Food Systems will spur informed decision-making for low-emission food systems development based on solid science, good governance, and principles of gender equality and social inclusion. Outcomes expected by 2024 include:

- Increased capacity among governments, civil society, and private sector planners in target countries to use co-developed tools, data, and frameworks to design at least five strategies for reducing food systems emissions and/or sequestering carbon.
- Improved rigor and certainty in data, knowledge, tools, and capacity for monitoring and reporting food systems emissions in at least five countries.
- Diverse stakeholder participation in Living Labs to co-develop and implement low- and negative-emissions solutions for food systems.
- Scaling up of five CGIAR innovations with demonstrated climate mitigation effectiveness.
- Food systems approaches to low-emission and climate-resilient development raised to the forefront of the global agenda.

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CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land, and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector. www.cgiar.org

We would like to thank all funders who support this research through their contributions to the CGIAR Trust

Fund: www.cgiar.org/funders

To learn more about this Initiative, please visit [this webpage](https://on.cgiar.org/MitigatePlus). To learn more about this and other

Initiatives in the CGIAR Research Portfolio, please visit <https://on.cgiar.org/MitigatePlus>

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