

Alliance for Climate Change and Food Systems Research | Concept Note

Background

Food systems and climate change are inextricably linked. The globally interconnected and interdependent food system is likely to face the most severe impacts of climate change. These impacts are reducing the resiliency of the production and supply chains needed to feed a rapidly growing world population. At the same time, the production, storage, and transport of food is a significant contributor to climate change.

To face the grand challenge of feeding a growing world in a changing climate, a full range of stakeholders – including policymakers, practitioners, producers, implementers, researchers, funders, and global aid agencies – must work collaboratively to transition food systems to be more sustainable. To achieve the social and economic tipping points necessary to drive systems-level transitions, the best available natural and social sciences must guide policy and innovation.

The global research community is focused on understanding the challenges at the nexus of climate change and food systems and exploring innovative ways to develop, implement, and scale solutions. However, this research often occurs in siloes, disconnected from systemic contexts and from those who need it most. There is an increased need for *convergence* research, which is framed around complex problems and built upon deep integration across disciplines, and a need to make this research accessible to and relevant for stakeholders. A new alliance is being formed by premier research institutions to work collaboratively with stakeholders and funders to identify key challenges and research pathways to fund and pursue convergence research. The Alliance's goal is to maximize collaboration and help break down historical impediments to true partnerships that synergize the capacity of all involved.

The Alliance for Climate Change and Food Systems Research will bring cutting-edge researchers together with global stakeholders to produce convergence research that catalyzes innovative solutions to mitigate climate impacts of food systems and significantly improve their resilience.

The Alliance

The goal of the Alliance for Climate Change and Food Systems Research is to engage stakeholders along food systems value chains to better understand the knowledge gaps and research and innovation needs in climate and food systems. Led by MIT and an Executive Committee from premiere research institutions, the Alliance will create a forum where experts can engage with and be responsive to the research needs of stakeholders to more effectively catalyze solutions-driven research.

The opportunity for close collaboration between researchers and other stakeholders will shorten the loop between academic research and the needs of stakeholders along food systems value chains. By engaging researchers and stakeholders together, the Alliance will formulate new transdisciplinary research approaches to deliver solutions that are realistic and implementable, and that will address the highest priority problems and challenges experienced by stakeholders across all food system sectors.

The Opportunity

The Alliance will bring together researchers from agriculture and food systems, nutrition, climate science, engineering, social science, policy, and innovation systems to apply their expertise and develop collaborative partnerships that will support strong convergence research. By assembling a transdisciplinary team of researchers committed to engaging in collaborative research, the Alliance gives stakeholders and funders a clear source of trusted and synergized science to inform decision-making.

For stakeholders and funders, the Alliance offers an opportunity to build strong connections with preeminent research institutions, collaboratively develop needs-driven research agendas, and produce actionable research that is highly relevant to real-world problem solving.

For researchers, The Alliance will provide an opportunity to collaborate closely with other researchers at the forefront of their fields, in close consultation with stakeholders, to ensure science and data-driven decision making and identify critical tipping points for sustainability transitions. It will also create potential opportunities for exploring new sources of funding for systems-oriented research.

Next Steps

The Alliance has built a strong base of committed member institutions dedicated to conducting stakeholder-driven, applied research. Over Summer 2020, MIT J-WAFS, with assistance from the Meridian Institute, will host a series of virtual “mini-dialogues.” These dialogues will bring together researchers and representatives from key stakeholder groups to explore critical challenges in the climate-food systems nexus and opportunities for research to support action in these challenge areas. The dialogue series will culminate with a collaborative workshop hosted by MIT J-WAFS on 27-28 October 2020, where the research agenda will be finalized.

In these early stages of its development, the Alliance is seeking seed funding to support key staff, grow the research network, and facilitate initial projects between research institutions. This seed funding will help set the course of an Alliance that can drive timely, relevant, and scalable solutions-oriented research at the nexus of climate change and food systems.

Alliance Members

Massachusetts Institute of Technology
Colorado State University
Columbia University
Cornell University
Ethiopian Institute of Agricultural Research
Tufts University
University of Aberdeen
University of California-Davis
University of Pretoria
University of Talca
University of Washington
Wageningen University and Research

Potential Priority Research Areas

The Alliance will focus on research areas with clear links between climate change and food systems and research institution expertise. Specific research projects will be determined based on input from stakeholders and funders and informed by critical knowledge gaps. The list below is preliminary and indicative and will be further modified based on additional feedback from stakeholders and others.

- **Agricultural and climate modeling.** Identifying knowledge gaps in agricultural and climate change models and research needs to improve their utility for decision making and for building more resilient food systems
- **Animal production systems and breeding.** Identifying objective measures of sustainable land-based animal production systems and incorporating them into equitable economic and dietary policymaking
- **Crop production systems and breeding.** Addressing climate change impacts on crop productivity and quality and management strategies as well as strategies for crop breeding to build resilience
- **Consumer behavior.** Developing geographic and socioeconomic relevant policy and education approaches to drive consumer choices towards climate smart and healthy diets
- **Decision support systems.** Advancing and deploying science and geospatial tools to meet their potential for guiding food system policy and decision making – from the farm level through the supply chain to consumers
- **Food safety.** Developing technological, policy, and education approaches to improve food safety standards and practices to reduce food-borne illness and improve animal sale and processing techniques
- **Food waste.** Developing innovative policy and education approaches for quantifying and reducing food loss and waste at each stage of the food supply chain, while ensuring food safety
- **Mitigating greenhouse gas emissions from food systems.** Identifying technologies and practices with the greatest potential for mitigating greenhouse gas emissions from food production, consumption, and supply chains, and for sequestering carbon in soil
- **Scaling-up agricultural technology and practices.** Identifying the most effective approaches to innovation and scaling up cutting-edge agricultural technology and practices and/or modified traditional practices (retro-innovation) to drive food system sustainability transitions
- **Soil health.** Identifying agricultural practices and technologies that optimize soil health and increase carbon sequestration potential in agricultural soils in a reliable, measurable way
- **Supply chains.** Assessing climate change impacts to food system supply chains and strategies for building supply chain resilience
- **Water-food nexus.** Building resilience for food system water management and ensuring sustainability in hydrological systems