

Alliance for Climate Change and Food Systems Research | Concept Note

Background

Food systems and climate change are inextricably linked. Agriculture is the economic sector likely to face the most severe impacts of climate change. These impacts are reducing the resiliency of existing agricultural systems and negatively impacting yields at a time when more food is needed to feed a rapidly growing population. At the same time, the production, storage, and transport of food is one of the principal contributors to climate change.

Researchers from around the world have prioritized better understanding the challenges on food systems posed by climate change and exploring innovative ways to develop and scale solutions. At a workshop hosted by the Abdul Latif Jameel Water and Food Systems Lab (J-WAFS) at the Massachusetts Institute of Technology (MIT) in May 2018, participants agreed on an increased need for *convergence research*, which is framed around complex problems and built upon deep integration across disciplines. Convergence research is well-suited for targeting critical knowledge gaps and information needs for stakeholders such as policy and decision makers, practitioners, farmers and agricultural enterprises, and funders and global aid agencies.

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

The Alliance

The goal of the Alliance for Climate Change and Food Systems Research is to engage stakeholders to better understand the knowledge gaps and research and innovation needs in climate and food systems that a group of world-class research institutions can help fill. Led by MIT and founding institutions –Colorado State University, Columbia University, Tufts University, University of Aberdeen, University of California - Davis, University of Washington, and Wageningen University and Research – the Alliance will create a forum where expert scholars can engage with and be responsive to the research needs of stakeholders to more effectively catalyze research that drives on-the-ground solutions.

The opportunity for close collaboration between researchers and stakeholders will help close the gap between academia, policy, and practice, thus ensuring that stakeholders are applying research that is relevant, cutting-edge, and focused on the best on-the-ground outcomes.

The Opportunity

The Alliance will bring together researchers from agriculture, nutrition, climate science, engineering, social science, policy, and innovation systems to apply their expertise, while developing collaborative partnerships that will support strong convergence research. By directly engaging with stakeholders, the Alliance will facilitate the formulation and transfer of promising new research directions and innovative solutions. The partnering institutions' collective transdisciplinary expertise will be a unique strength. In close consultation with practitioners, the goal is to drive research that will have immediate, practical applications that inform policy, and that influence stakeholder activities in order to speed the implementation of effective adaptation and mitigation strategies across the global food system. We aim to ensure that research is directly useful for stakeholders and fulfills a need in the global climate change and food systems community.

For stakeholders, the Alliance offers an opportunity to identify and articulate clear research needs and knowledge gaps with the engagement of internationally recognized experts. By facilitating direct connections to a set of diverse, transdisciplinary, collaborative researchers, the Alliance aims to develop research that is actionable and highly relevant to real-world problem solving.

Next Steps

Currently, the Alliance is in its scoping phase, conducting outreach to institutions and key global food, agriculture, and climate initiatives to determine interest, areas of research expertise from collaborating institutions, and relevant stakeholders to engage. By early 2020, the Alliance aims to establish partnerships with a targeted set of stakeholders to help refine an initial set of research priority focus areas, which will direct the first stages of our work. We will continue to invite research institutions and individual researchers to join the Alliance on an ongoing basis.

In spring 2020, MIT J-WAFS will host a collaborative workshop to bring together these founding institutions and key stakeholders to explore research needs in more detail. The goals for the workshop are: to identify stakeholder needs that Alliance research institutions can fill; define an actionable research agenda; seed initial pilot projects and research collaborations; and discuss opportunities to further develop and position the Alliance as driver of solutions-oriented research at the nexus of climate change and food systems.

Founding Institutions

Massachusetts Institute of Technology
Colorado State University
Columbia University
Tufts University
University of Aberdeen
University of California-Davis
University of Washington
Wageningen University and Research

Potential Priority Research Areas

The 2018 workshop and subsequent collaboration between J-WAFS and our founding institutions led to an initial shortlist of potential priority research areas for the Alliance, which will be discussed and refined based on stakeholder input*.

1. Building resilience for agricultural water management and ensuring sustainability in hydrological systems
2. Addressing climate change impacts on crop productivity and management strategies and crop breeding to build resilience
3. Identifying knowledge gaps in crop and climate impact models, and research needs to improve their utility for policy making and for building more resilient food systems
4. 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
5. Assessing climate change impacts to food system supply chains and strategies for building supply chain resilience
6. Identifying the most effective ways to spur innovation and behavior change in food production and consumption
7. Identifying the most effective approaches to deploying cutting-edge agricultural technology and practices and/or modified traditional practices (retro-innovation) at scale in developing countries to accelerate climate resilience
8. Identifying the best methodologies for decision making (e.g. production, policy, consumption, etc.) under deep uncertainty and strategies for how they can be implemented
9. Developing optimal policy and education methodologies for inducing behavior change to drive consumer choices towards climate smart and healthy diets
10. 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

** This broad list of focus areas will be honed based on stakeholder input throughout early 2020 to a smaller set of prioritized topics. Also note that not all aspects of food systems are covered in these focus areas. In the future, topics such as livestock could be added to respond to stakeholder or partner priorities.*