

Communique from the 30th ICABR Conference

July 7-10, 2026

Food System Resilience and Changing Climates

The International Consortium on Applied Bioeconomy Research held its 30th annual conference from July 7-10, 2026, in Ravello, Italy. The theme of the conference was: The Bioeconomy Transformation in Transition: Past Successes, Current Challenges, and Future Prospects. One common topic of research presentations and panel discussions was the relationship between food systems and their impact from climate changes.

As global populations continue to rise and become increasingly urbanized, the challenges of providing sufficient nutritious food continues to be a key priority. The development of climate change assessment metrics is progressing rapidly, such that improvements are more readily identified and quantified. Innovation has never been more rapid, with some products reaching markets in shorter periods of time, yet societal misinformation increases, resulting in reduced rates of innovation adoption. Innovative thinking needs to apply to the entire length of supply chains to ensure that society reaps the maximum level of benefits. Research presentations and panel discussions ultimately identified three key factors of importance: 1) resilience of current food systems; 2) impacts of climate changes; and 3) solutions focused on the Global South.

Food System Resilience

The ability of food supply chains to consistently provide safe, economical, and nutritious food relies on innovation and the adoption of these innovations. Even though the global adoption of genetically modified (GM) crops has been limited, their adoption has increased yields by 10% for corn, 14% for cotton, and 8% for soybeans. Were barriers to the production of GM crops removed, the yield increases would greatly expand the benefits for farmers and consumers. This is particularly relevant for increasing the adoption of GM corn, as a challenge resulting from changing climates is the safety of food that is produced. During droughts, corn is more susceptible to being affected by carcinogen mycotoxins and aflatoxins. The ability of GM corn to have increased resistance to insect damage contributes to lower toxin levels in the consumable products, which is important for both humans and livestock.

A key component of enabling food systems to remain as resilient as possible is to ensure that policies put in place serve to provide the fullest degree of benefits possible. Policies that remove barriers related to the production of value-added processing, allowing for facilities to be more rapidly constructed and operational, provide more societal value than do construction subsidies, confirming that time matters more than cost. Policies that contribute to shortening supply chains are important, as shorter supply chains demonstrate very low rates (<5%) of food waste. Additionally, policies that support the expansion of cold storage capabilities contribute to reducing food waste, especially in developing countries.

Impacts of Changing Climates

Over the past decade, international agreements have established climate change targets, resulting in government policies designed to reach these target goals. A challenge has been how to accurately measure changes in aspects relating to climate change and how to best incentivize changes in supply chain and consumer behaviour. Parallel to this is the concern of a global

decline in agricultural production between 2010 and 2020, as policies designed to mitigate the effects of changing climates need to ensure they do not have negative production impacts and result in further food insecurity. This highlights the crucial triple challenge that exists, first ensuring that sufficient amounts of nutritious food are produced, second, responding to environmental challenges, and third, sustaining livelihood opportunities for farmers. Integrated bioeconomy strategies are proving to be economically successful, as in the example of Brazil, where bioeconomy-related economic activity accounted for one-quarter of Brazil's GDP in 2023.

The development of climate change quantification metrics allows for policies that incentivize climate change mitigation. One option that is potentially available is to price food that is less sustainable higher than foods that demonstrate improved sustainability. Policies of this nature carry significant risk, especially given the global rise in food prices due to geo-political conflicts, resulting in low income households facing difficult choices regarding the provision of nutritious, but economically-priced food.

The integration of agricultural and environmental policies regarding increased food production and climate change mitigation can lead to conflicting policy directives. Evidence is emerging about the negative trade-offs that can develop when policies are at cross purposes.

Global South Focused Solutions

Resilience in African economies is more important than ever, as only 50% of 2020 capital requirement estimates are currently being allocated. Africa has historically faced innovation and adoption barriers which continue to restrict the growth and development of new products and technologies. In Africa, agriculture accounts for ~25-30% of domestic GDP, of which two-thirds is generated by informal businesses. Enhanced capital market access has the potential to transition these informal business towards formal businesses.

Parallel to improved capital access is the need to establish better communication channels and mechanisms, especially when it comes to providing specific benefits to both farmers and consumers. As public sector research and development funding into new agricultural and bioeconomy products and technologies decreases, innovative solutions regarding production and climate change are more important than ever. Concentrated and proactive thinking regarding policy options to best deliver success need to be actively encouraged. International institutions and universities offer significant advantages in leading these efforts.

Key Takeaway

Food systems have a history of resiliency, however current climate changes may be more challenging to overcome than past ones. Evidence indicates that informal supply chains in many economies can become more resilient the more formal they are. Future efforts directed towards transition informal supply chains to formal can improve food system resilience.

Dating back to the start of the Green Revolution in the early 1960s, innovation has successfully ensured that production of food increases at rates above those of population increases. Presently, focus is shifting away from simple production increases to that of sustainable production increases. A significant challenge exists in that proven technological solutions are facing societal backlash, indicating that all supply chain stakeholders need to increase communications regarding the safety, importance, and benefits of bioeconomy innovations. Innovative solution thinking needs to ensure it extends the full length of food systems, beyond innovative ways to increase production, to improved communications of the benefits from fuller adoption rates of proven products and technologies.