

Communique from the 30th ICABR Conference

July 7-10, 2026

The Importance of Innovation for Improved Bioeconomy Development

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. Innovation is foundational for economical and societal advancements. Many of the presentations and discussions at the conference focused on aspects crucial to innovation.

As agriculture, biodiversity, bioeconomies, and environments grapple with changing climates, innovation is more important than ever. Evidence exists regarding direct and indirect innovation benefits such as improved biofuel efficiency, crop breeding technology advances, and increased trade. Policies supporting continuation of these benefits are important for increased GDP, as well as regional food security. Specific aspects important to the success of agri-food innovations were discussed at the conference, including: 1) barriers and limitations to successful innovations; 2) incentivizing innovation; and 3) the future of investment partnerships.

Innovation Barriers and Limitations

Innovation offers the ability to increase yields or outputs using the same amount of inputs, or ideally, fewer inputs. While innovations commonly face regulatory barriers that slow both rates of investment and commercialization, one of the most significant challenges for successful innovation is the rate of adoption. Research indicates that innovations within the agricultural sector take extremely long periods of time to reach peak adoption, often extending beyond 20 years. A substantial part of increasing adoption rates of more sustainable technologies is to better inform all supply chain stakeholders regarding the benefits and ensure potential adopters of market acceptance. Innovation generally and agriculture more specifically have witnessed incidents where innovative products have been adopted only for adopters to discover a lack of market development, resulting in sunk costs that are not recoverable.

A substantial challenge for agricultural and bioeconomy innovation adoption is the reliance on face-to-face interactions in production supply chains. Robotics and artificial intelligence are expected to rapidly alter markets of the future, creating an identified role, and need, for downstream policies and support designed to contribute to greater clarity and confidence for adopters, especially when it comes to the adoption of new ways of conducting business. The example of tomato supply chains in Kenya indicate the importance of downstream supports as over 90% of farmers receive price information from personal communications, not electronically.

Intellectual property rights are important for incentivizing innovation, yet the lack of freedom to operate creates a barrier to innovation, as does the existence of patent thickets on specific innovative technologies. The lack of clarity regarding freedom to operate within the use of gene editing technologies creates a moderate to high degree of global complexity that contributes to reduced technology adoption, especially for smaller firms.

Incentivizing Innovations

One important component for increased innovation rates is the standardization of risk assessments frameworks, commercialization regulations, and rules governing international trade.

Gene editing and other innovative technologies offer the potential of substantial benefits regarding the use of biologicals in crop production, the use of microbes in food processing and biofuels, and improved human health through the release of edited insects and other pests as alternatives to chemical controls. Harmonizing regulations and standards will positively incentivize increased rates of innovation across these domains.

Policies that contribute to the removal of existing barriers are shown to provide greater economic benefits and incentives for investment than those that support the subsidization of existing systems. Research indicates that firms having higher rates of knowledge sourcing are more innovative. Policies that offer the greatest contribution to innovation are those that are strategically oriented and cooperative. This is especially the case with complex innovations, which are common to bioeconomies. Knowledge mobilization will be a fundamental component of successful bioeconomy innovation and development.

The Future of Investment Partnerships

Artificial intelligence (AI) and digitization have significantly impacted virtually all other economic sectors, with agriculture and bioeconomies being one of the final sectors to be affected. These emerging and future technologies will result in changes to the future of investment partnerships, as they will create collaborative opportunities with firms that have no previous experience of collaborating within the agricultural and bioeconomy sectors. AI-assisted crop breeding and robotics are but two examples of where innovation is set to make advancements in the coming decade.

Change is a key result of innovation and applying innovation to the future funding of research and development is also anticipated. Broad, overarching international research programs may become more commodity and geographically focused. The integration of genome sequence databases coupled with AI technologies offers an opportunity to revolutionize plant breeding, as well as significantly shortening variety development timelines. Research indicates that universities are well-suited to play a lead role in the future of innovation partnerships, especially when it comes to supporting the development of improved partnerships between researchers and farmers, regional scalability, and public acceptance. Bridging existing institutional gaps in innovation pipelines needs to begin with universities, not other stakeholders.

Key Takeaway

Innovation is of fundamental importance for bioeconomy development. Evidence supports this importance. Yet, institutional barriers that restrict adoption currently exist, prohibiting the success of bioeconomy development. Successful bioeconomy frameworks will require the elimination of these barriers, allowing for the full potential of future innovation adoptions.

For innovative products to be successfully adopted and full benefits to be realized, innovation pipelines and supply chains need to do more than simply commercialize; they need to adapt to provide improved downstream support, market development, and greater certainty. Improved innovation adoption rates require the development of downstream markets for the innovative products, as well as farmer or producer confidence of market acceptance of the innovative products. Without improved certainty and confidence, innovations will continue to achieve less than their full potential.