POLICY BRIEF

Biotechnology for Europe's agri-food sector and bioeconomy: research and innovation as competitiveness drivers of the **European bioindustry**

May 2026

This **policy brief reflects conclusions of an event** held on **4th February 2026 in Brussels** that gathered **researchers, policymakers, and industry representatives**. It underlines that biotechnology is crucial to secure industrial sovereignty and reinforce resilience in the agri-food sector while contributing to sustainability goals and economic growth.

Executive summary

Biotechnology plays a key role in addressing societal and environmental challenges such as carbon neutrality, reducing overexploitation of natural resources and strengthening food and energy security. The sector is expected to grow significantly, with market analyses suggesting that the **bio-based market could double in size by 2032** compared to 2024 levels, while also supporting job creation. Bio-based solutions could save **up to 2.5 Gt CO_2e per year by 2030**. Broad deployment of biotechnology in the agri-food, chemical and materials industries will strengthen Europe's industrial sovereignty and create greater resilience.

The first installment of the **European Biotech Act** marks a positive step, but its rather narrow focus on the health sector is **insufficient to reach the full economic potential of biotechnology and biomanufacturing** and **ensure Europe's competitiveness**. A broader sectoral policy framework is necessary to better align research excellence with Europe's long-term industrial needs across the entire knowledge and innovation continuum.

Europe is a scientific powerhouse that boasts world-class **research infrastructures (RIs)** and **leadership in areas such as open science.** However, fragmented policy and inadequate coordination reduce its capacity to translate knowledge into strategic advantage. The convergence of biotechnology and advanced digital technologies provides a major opportunity to accelerate the deployment of biomanufacturing. Nevertheless, to reap the benefits, research infrastructures, governance and investment must be better aligned.

To **remain globally competitive**, it is vital to strengthen the research–innovation continuum, to ensure that scientific excellence more efficiently translates into sustainable solutions and economic growth.

Key challenges

1. Research excellence as a catalyst for innovation

Research underpins innovation in biotechnology. Scaling biotechnology is not only hampered by insufficient access to technology infrastructures. Sustained research efforts are necessary to fill numerous key knowledge gaps. Feedstock variability, process intensification, energy and water efficiency figure among the outstanding challenges that must be resolved before biomanufacturing can reach its full potential.

2. Industrial innovation

Europe struggles to translate research into market-ready bioproducts. The translation of laboratory scale research into innovation (the 'first valley of death') is hindered by inadequate linkage of research and technology, insufficient access to infrastructure including demonstration scale, and a general scarcity of venture capital.

3. Supply chains and competitiveness

Progress requires the means to predict biomass dynamics from local to continental scales, improved characterisation of various biomasses and deeper socio-economic understanding. Moreover, considering the dominant position of fossil-based products and the persistence of significant subsidies for this sector, bio-based products must benefit from specific policy support measures.

4. Fragmentation of Europe's R&D sector

European subsidiarity in research and education provides world-class establishments with strong infrastructure capacity. However, it limits consistent programming in strategic areas. In biotechnology, this results in **fragmented research and innovation hotspots**, weak cross-border initiatives, and limited long-term funding.

5. Data and artificial intelligence (AI) integration

Data and AI are core enablers of biotechnology innovation. However, **multiscale dynamic bioprocesses generate data sparsity**. Combined with a lack of metastandards, this leads to low-quality, poorly interoperable datasets. These weaknesses and growing data nationalism undermine Europe's FAIR data leadership and its ability to train AI algorithms.

6. Societal acceptance and governance

Public buy-in remains a barrier to large-scale commercialisation of biotechnology-derived products. Consumer reticence stems from safety concerns, limited understanding of biotechnology, and perceived unfairness. Enhancing acceptance requires trust, public education, and regulatory and fiscal frameworks rewarding sustainability.

Policy recommandations

1. Strengthen research and the research-innovation continuum

- Maintain a strong focus on bioeconomy-related research in future EU funding programmes
- Recognise the value of hybrid infrastructures that provide a solid link between fundamental and applied research activities
- Enable sustained transnational access, shared catalogues and centralised access portals for RIs
- Shift from project-based to long-term funding for core infrastructure operations

2. Accelerate the commercialisation of bioproducts

- Create a level playing field rewarding sustainability and promote biobased procurement
- Invest in interface capacities and skills to connect research, industry, and investors
- Reinforce investment in research focusing on non-technical barriers
- Support market creation mechanisms for biobased products

3. Develop strategies for sustainable bioresources exploitation

- Proactively addressing public concerns by engaging in meaningful dialogue between scientists and policymakers
- Develop biomass supply systems that prioritise robustness, resilience, and adaptability
- Improve data quality and availability to better forecast biomass dynamics
- Prioritise European sourcing to enhance sovereignty and reduce carbon impact

4. Improve countries and regions capacity to uptake biobased solutions

- Move beyond networking toward structured European collaboration
- Encourage co-investment and long-term partnerships between Member States
- Support flagship collaborations between scientific and technical institutions
- Foster continuous dialogue between research, industry, and policymakers

5. Fully exploit the convergence of biotechnology, data and AI

- Recognise data infrastructures as strategic assets, equivalent to research infrastructures
- Develop a roadmap for a FAIR European Biotech & Biomanufacturing Data Space
- Support interdisciplinary initiatives building a business case for federated data approaches
- Support standardisation across research and industry

6. Enhance governance, trust and societal engagement

- Develop clear, harmonised regulatory frameworks and standards
- Support research on consumer acceptance of biotechnology and biobased products
- Adopt anticipatory and agile governance approaches, particularly for AI-enabled biotech
- Improve public understanding of biomanufacturing and its benefits

Conclusion

To remain a global leader in biotechnology, Europe must act with coherence and ambition across the full research and innovation continuum. This requires reinforcing scientific excellence as the foundation of innovation, while accelerating the translation of knowledge into impactful bio-based solutions. It also calls for more sustainable and diversified approaches to bioresources, as well as stronger capacity across regions to develop and adopt bio-based solutions.

Simultaneously, **Europe must fully leverage the convergence of biotechnology, data, and artificial intelligence**, ensuring that enabling infrastructures, skills, and governance frameworks evolve in a coordinated manner. Strengthening trust, improving societal engagement, and creating the right conditions for innovation uptake will be essential to unlock the full potential of biotechnology.

In doing so, **Europe can consolidate a resilient and competitive bioeconomy**, capable of delivering long-term value for society, the environment, and its global leadership position.

About us

***INRAE is the French National Research Institute for Agriculture, Food and the Environment**. As the leading research organisation dedicated to these three scientific fields, INRAE contributes to addressing major global challenges. Through research, innovation, and support for public policies, INRAE develops new approaches to foster the transition toward sustainable agricultural and food systems. Its ambition is to deliver solutions for life, people, and the planet. It also relies on three pre-industrial demonstrators, Ferments du Futur, Toulouse White Biotechnology, and MetaGenoPolis, to accelerate the development and scaling of innovative biotechnologies.*

inrae.fr europe@inrae.fr

*The **research programme "Bioproductions (B-BEST): biomass, biotechnologies and sustainable technologies for chemicals and fuels"** is part of the national acceleration strategy "Bio-based products and industrial biotechnologies – Sustainable fuels" under the France 2030 plan. Co-led by INRAE and IFPEN, the programme was launched in 2023 for a duration of seven years and is supported by a budget of €65 million. The programme supports early-stage research to drive innovation in bio-based products and sustainable fuels, strengthening France's competitive industrial base while funding large, interdisciplinary projects.*

pepr-bioproductions.fr/eng equipe@pepr-bioproductions.fr

***IBISBA is a pan-European research infrastructure dedicated to Industrial Biotechnology**. It provides a single access point to researchers from academia and industry across the globe to integrated services for end-to-end bioprocess development. By federating European expertise and state-of-the-art research and development facilities, IBISBA promotes standardisation and best data practices as core elements of service reproducibility and interoperability. In doing so, IBISBA accelerates the production and translation of cutting-edge knowledge into innovation for biomanufacturing. The European project BIOLEAD, starting on 1 June 2026, aims to establish a roadmap to strengthen Europe's bio-based competitiveness.*

ibisba.eu management@ibisba.eu

May 2026

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

INRAE

FRANCE 2030

PROGRAMME DE RECHERCHE
BIOPRODUCTIONS

IBISBA
Inspiring Biotech Solutions