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Executive Summary

The [European Green Deal](#) (EGD) is a concept presented by the European Commission (EC) with the goal of making Europe the first climate neutral continent by 2050. The goal to achieve the climate objectives outlined in the EGD can only be reached thanks to **new and innovative governance models** featuring a public administration that moves beyond traditional working methods to a more **cross-cutting, integrated, and stakeholders driven way of working**.

From July 2022 to June 2025, a consortium of 12 European organisations collaborated on the implementation of the European Union's (EU) Horizon 2020 research and innovation program funded project: [“Supporting the establishment of the innovative governance models to achieve better-informed decision-making processes, social engagement and innovation in the bio-based economy”](#) (BIOMODEL4REGIONS).

The project promotes innovative governance at local and regional levels **to enhance decision-making, public participation, and bio-based economy innovation**, contributing to the United Nations (UN) Sustainable Development Goals (SDGs) and the EGD.

During the BIOMODEL4REGIONS timeline, the project team – supported by valuable input from the ground in six European regions, **created a collection of insightful knowledge and experience assets**. This report is one of those intellectual resources.

The title of this report is “Policy Recommendations for Policy Makers”. It consists of two sections: an overview of the six key questions involved in developing advice for policy makers (Section 1), and the structured policy recommendations (Section 2). The primary goal of the report is **to provide structured and actionable guidance to the policymakers** to foster innovation in the governance of the bioeconomy.

Beyond serving as a deliverable for BIOMODEL4REGIONS, this **report also contributes to the European Commission's Call for Evidence** for the initiative [“Towards a Circular, Regenerative and Competitive Bioeconomy”](#) (31 March 2025 – 23 June 2025), thereby supporting the evidence-based development of the new EU Bioeconomy Strategy.



1. BIOMODEL4REGIONS – Open Your Mind

1.1. What do these recommendations focus on?

The EC Joint Research Centre's *Science for Policy* report (2024), based on a series of workshops utilizing the Scenario Exploration System foresight tool ([“Exploring Foresight Scenarios for the EU Bioeconomy”](#)), emphasizes that **collaboration among stakeholders – through clusters, partnerships, and networking** – is seen as essential for the success of the bio-based economy. This underscores the importance of incorporating diverse perspectives and establishing clearly defined, shared responsibilities among actors.

The report acknowledges that **clusters play a key role in fostering bio-based innovation capacity**. With their critical mass of expertise, resources, and actors, clusters can drive innovation across value chains and influence strategic directions at both regional and national levels. As such, the BIOMODEL4REGIONS project serves as an organized, transnational networking initiative, **bringing together EU clusters actively engaged in the bio-based economy across various regions and EU Member States**.

Given the complex, dynamic, and multi-stakeholder nature of the bio-based economy, these clusters require innovative governance models capable of managing interdisciplinary collaboration, adapting to rapid technological change, and ensuring informed, evidence-based, and inclusive decision-making.

To address these needs, the BIOMODEL4REGIONS project offers policy recommendations focused on supporting the development of innovative governance structures at the regional and local levels. These structures aim **to enable better-informed policy decisions, enhance social engagement, and stimulate innovation** within the evolving landscape of the bio-based economy in Europe.

1.2. Who are these recommendations designed to support?

The implementation of the BIOMODEL4REGIONS project highlights that effective and innovative governance and development of bio-based economy clusters at regional and local levels **require strong, long-term coordination among actors from the “quadruple helix”**: public authorities, private sector stakeholders, academia, and civil society.

Within this intellectual framework of the BIOMODEL4REGIONS project, the participating bio-based economy clusters play a fundamental role in facilitating the following key interactions:

✂ **Engagement of stakeholders across the entire bio-based economy value chain.**
This includes:

- EU institutions and bodies.
- National, regional, and local governments.
- Industry, including primary producers and small and medium-sized enterprises.
- Academic and researchers, including knowledge providers.
- Civil society organisations, including non-governmental organisations.



- Citizens and consumers.
- ✂ **Support the establishment of innovative governance models.** These models aim to:
- Enable better-informed decision-making.
 - Strengthen social engagement.
 - Foster innovation at local and regional levels.

As a result, the policy recommendations developed through the BIOMODEL4REGIONS project are highly relevant and valuable for policymakers at the EU, national, regional, and local levels. These insights can help guide the design, implementation, and refinement of innovative governance policies and plans that support the advancement of the bio-based economy in Europe.

1.3. What inspired the development of these recommendations?

The governance of the bio-based economy has gained increasing strategic importance in the EU over the past two decades, **particularly in relation to sustainability, climate objectives, and the transition toward a circular economy.**

As the EU prepares to launch a new Bioeconomy Strategy by the end of 2025, this year marks a key milestone in the Union’s thirteen-year effort **to develop a strategic and systematic policy framework for bio-based economy governance.** This journey began with the adoption of the first EU Bioeconomy Strategy, [“Innovating for Sustainable Growth: A Bioeconomy for Europe,”](#) on 13 February 2012 (see Figure 1.1), outlining a comprehensive governance approach to addressing the ecological, environmental, energy, food security, and natural resource challenges facing Europe – and the world.

	2012 – First EU Bioeconomy Strategy “Innovating for Sustainable Growth: A Bioeconomy for Europe” [More information]
	2017 – Launch of the Bioeconomy Knowledge Centre to better support policy makers with science-based evidence in the bio-based economy field [More information]
	2018 – Updated EU Bioeconomy Strategy “A sustainable bioeconomy for Europe: strengthening the connection between economy, society and the environment” [More information]
	2019 – EU Growth Strategy “European Green Deal” [More information]

Fig. 1.1 Milestones in the Development of the EU’s Bio-Based Economy Governance Policy



	2022 – EU Bioeconomy Strategy Progress Report “European Bioeconomy policy: stocktaking and future developments” [More information]
	2023 – Council of the EU Conclusions on the opportunities of the bioeconomy in the light of current challenges with special emphasis on rural areas [More information]
	2024 – EC's Communication on Biotechnology and Biomanufacturing “Building the future with nature: Boosting Biotechnology and Biomanufacturing in the EU” [More information]
	2025 – EC's Call for Evidence for the initiative “Towards a Circular, Regenerative and Competitive Bioeconomy” [More information]
	End 2025 – New EU Bioeconomy Strategy

Fig. 1.1 Milestones in the Development of the EU's Bio-Based Economy Governance Policy (continued)

According to the EC's ambitions, the new Bioeconomy Strategy aims **to advance innovation and maintain the EU's leadership in the bioeconomy**. It will propose actions to unlock the potential of bioeconomy innovations, so that they can reach the market, generating green jobs and growth.

By formulating these policy recommendations, the BIOMODEL4REGIONS project team aims **to contribute to the collective effort to build a thriving, sustainable, and circular bio-based economy in Europe** – drawing on both the intellectual insights and practical outcomes generated throughout the project.

1.4. How does the BIOMODEL4REGIONS project support innovative bioeconomy governance?

BIOMODEL4REGIONS is a project grounded in **the collective knowledge and experience of its consortium members, pilot regions, and engaged stakeholders**. It focuses on empowering local actors to explore the potential of biological resources for renewable products and services across Europe (see Figure 1.2).

The project builds **on a strong network and draws from insights gained through past and ongoing initiatives**. By collaborating with the Rural Bioeconomy Alliance, the European Bioeconomy Network (EuBioNet), and sister projects, BIOMODEL4REGIONS leverages these partnerships to drive significant progress in the EU's bio-based economy sector.



The BIOMODEL4REGIONS project helps define effective governance structures, improves coordination among bio-based economy actors, and promotes sustainable business models.

Regional and Local Capacity Building		The BIOMODEL4REGIONS helps regional and local authorities – including bioeconomy clusters – build capacity, access tailored guidance, and lead the bioeconomy transition
Knowledge Sharing Tools		The BIOMODEL4REGIONS website facilitates communication, resource access, and knowledge exchange among stakeholders, supporting transparent and ongoing governance collaboration
Systematic Stakeholder Engagement		The BIOMODEL4REGIONS actively engages local and regional governments, SMEs, primary producers, NGOs to ensure diverse voices contribute to regional governance processes
Policy and Governance Benchmarking		In-depth analysis of regional policies and capacities to identify bottlenecks, develop a monitoring system, and create indicators for evaluating and replicating governance models across Europe
Geographically Tailored Strategies		By working in six pilot regions with different feedstocks and socio-economic contexts the project develops region-specific governance insights that support broader EU-level adaptability
Business Model Innovation		Development and update of the sustainable, inclusive business models that empower consumers, SMEs, and local authorities to adopt responsible behaviours and contribute to a bio-based economy
Regional Bio-Based Economy Strategy Blueprints		Co-creation workshops to produce six tailored regional strategy blueprints, integrating local assets, innovation ecosystems, and bioeconomy opportunities into a broader sustainability transition
Best Practice Guidelines and Case Studies		A best practice guideline compiles insights from six pilot regions, with case studies enabling practical knowledge transfer and EU-wide replication

Fig. 1.2 Core elements of BIOMODEL4REGIONS' Bioeconomy Governance Support

The project also develops best practices, fosters climate-friendly innovations, and ensures wide replication and impact through robust communication and alignment with EU initiatives like the [Circular Cities and Regions Initiative \(CCRI\)](#).

1.5. Which pioneering European regions put the BIOMODEL4REGIONS approach into action?

Six European regions – **Delta Region (Netherlands)**, **Nitra Region (Slovakia)**, **Normandy Region (France)**, **Northern Sweden**, **Tuscany (Italy)**, and **Western Macedonia (Greece)** – play a key role in testing and evaluating the tools and methodologies developed by BIOMODEL4REGIONS team in real-time and real-world settings in close collaboration with the local and regional stakeholders.



The uniqueness of the BIOMODEL4REGIONS pioneering approach lies in its **integration of feedback and lessons learned from diverse model regions across the EU** (Northern, Southern, Eastern, and Central-Western). It draws on their unique conditions, assets, experiences, and achievements in developing governance within the bio-based economy sector (see Figure 1.3).

Delta Region, Netherlands	Agri-food; Organic Fraction of Municipal Solid Waste		
Nitra Region, Slovakia	Agri-food		
Normandy Region, France	Shellfish		
Northern Sweden	Forestry		
Tuscany, Italy	Organic Fraction of Municipal Solid Waste		
Western Macedonia, Greece	Agri-food		

Fig. 1.3 Primary Sectors of the BIOMODEL4REGIONS' Pilot Regions

The practical application of the approaches developed by the BIOMODEL4REGIONS project – including the **Governance Self-Assessment Tool (G-SAT)**, **Strategy Blueprint Development Methodology**, **Business Model Framework**, and **Commercialisation Evaluation Tool** – has been adapted to the contextual characteristics of each pilot region, ensuring that all implemented activities are oriented toward local needs and expectations.

To support the continued implementation of BIOMODEL4REGIONS' innovative governance solutions among bioeconomy clusters beyond the project timeline, the pilot regions developed **six Regional Bio-Based Economy Strategy Blueprints**. These frameworks will facilitate the scaling up and geographical expansion of BIOMODEL4REGIONS' intellectual and practical outcomes in the future.



2. BIOMODEL4REGIONS – Have Your Say

The recommendations defined by the BIOMODEL4REGIONS project are organized into eight thematic domains, as outlined below.

2.1. Aligning Bio-Based Economy Regulatory Frameworks

Challenges	✕ Regulatory misalignment across local, national, and EU levels. ✕ Overly complex and bureaucratic certification and permitting processes. ✕ National policies that lack long-term stability and coherence.
Improvement Areas	✕ Align EU, national, and regional legislation to minimize administrative complexity and regulatory fragmentation, especially for SMEs and start-ups. ✕ Review and adjust EU definitions (e.g., bio-based waste, end-of-life products, bioplastics) to support innovation and market access. ✕ Ensure consistency in policy objectives across climate, circular economy, agriculture, and energy policies to avoid conflicting signals.

2.2. Enhancing Collaborative Governance Across Levels and Sectors

Challenges	✕ Fragmentation across governance levels (local, regional, national, EU). ✕ Poor coordination between public agencies and with other sectors. ✕ Lack of mechanisms for vertical and horizontal policy coherence.
Improvement Areas	✕ Promote vertical integration among EU, national, and regional authorities through co-designed bio-based economy strategies and funding frameworks. ✕ Facilitate horizontal cooperation across EU Directorates-General and among Member States to enable joint action and knowledge exchange. ✕ Encourage stakeholder participation by supporting quadruple helix models (government, academia, industry, civil society) in governance structures.



2.3. Facilitating Access to Finance and Funding Instruments

Challenges	✕ Bio-based economy innovation remains focused on primary production with limited funding support. ✕ SMEs face difficulty accessing funding and navigating complex financial mechanisms. ✕ Subsidies and tariffs can create unfair competition (e.g. energy vs. material uses). ✕ Bio-based SMEs often lack investment readiness and risk tolerance.
Improvement Areas	✕ Tailor EU funding tools (e.g., Horizon Europe, LIFE, CAP, Just Transition Fund) to the specific needs of regional bio-based economies and SMEs. ✕ Simplify access procedures for EU funds and increase technical assistance to enhance absorption capacity, particularly in low-capacity regions. ✕ Promote innovative financing mechanisms, such as green bonds, blended finance, and mission-oriented public-private partnerships.

2.4. Fostering Regional Bio-Based Economy Strategies

Challenges	✕ Absence of dedicated regional bio-based economy strategies in several regions. ✕ Weak stakeholders buy-in without formalized plans and visions. ✕ Inconsistent integration of bio-based economy into related strategies.
Improvement Areas	✕ Support Member States and regions in developing integrated and context-specific bio-based economy strategies aligned with EU goals. ✕ Encourage smart specialization and regional clusters that link bio-based industries with local biomass, research institutions, and societal actors. ✕ Utilize regions as a pilot environment for bio-based economy innovation, leveraging diverse geographies (e.g., agricultural, forested, coastal, post-coal regions).

2.5. Promoting Capacity-Building and Knowledge Exchange

Challenges	✕ Weak knowledge flow between academia, SMEs, and industry. ✕ Insufficient public and institutional understanding of bio-based economy concepts and benefits.
Improvement Areas	✕ Invest in education and vocational training tailored to bio-based economy value chains, with a focus on green skills and interdisciplinary learning.



	✕ Support knowledge-sharing platforms across regions, especially for emerging technologies, regulatory best practices, and market intelligence. ✕ Strengthen the role of universities and R&D institutes in regional innovation ecosystems and EU-wide research missions.
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2.6. Supporting Inclusive and Just Bio-Based Economy Transitions

Challenges	✕ Civil society often excluded from governance processes. ✕ Underrepresentation of diverse groups in decision-making bodies. ✕ Limited public engagement in bio-based economy development.
Improvement Areas	✕ Ensure equitable access to resources and opportunities, especially for rural communities, SMEs, women, and youth. ✕ Link bio-based economy goals with broader transition strategies, such as the EGD, Fit for 55, and Just Transition Mechanism. ✕ Embed participation and transparency in policy design and implementation, including through citizen engagement and social dialogue.

2.7. Enhancing Market Access and Demand for Bio-Based Products

Challenges	✕ Lack of consumer awareness or confusion about what “bio-based” or “circular” really means. ✕ Diverse industrial processes and product categories, making standardization complex. ✕ Lack of data transparency and traceability in bio-based supply chains
Improvement Areas	✕ Develop EU-wide standards and labels for sustainable and circular bio-based products to increase consumer trust and market uptake. ✕ Use public procurement and green incentives to stimulate demand and de-risk investments in novel bio-based solutions. ✕ Promote international cooperation and trade policies that support sustainable bio-based economy exports and imports aligned with EU values.

2.8. Tracking Progress and Promoting Policy Coherence

Challenges	✕ Fragmented or siloed data collection systems across Member States. ✕ Lack of agreed indicators that reflect environmental, economic, and social dimensions. ✕ Difficulty integrating qualitative stakeholder insights with quantitative metrics.
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	✕ Gaps in real-time monitoring and reporting on bio-based value chains.
Improvement Areas	✕ Establish and develop a coherent EU monitoring framework for the bio-based economy that tracks environmental, economic, and social impacts. ✕ Strengthen coordination mechanisms among EU agencies and bodies to ensure coherence across overlapping policy domains (e.g., agriculture, energy, waste). ✕ Support regular policy reviews and adaptive governance to respond to emerging challenges, technologies, and stakeholder needs.



Closing Remarks

The transition toward a sustainable, inclusive, and resilient bio-based economy in the EU presents a significant opportunity to address key societal, environmental, and economic challenges. However, realizing this potential requires bold and coordinated action across policy domains, governance levels, and sectors.

This report has outlined critical barriers – ranging from regulatory fragmentation and funding limitations to knowledge gaps and limited stakeholder inclusion – that continue to hinder progress. To overcome these challenges, the BIOMODEL4REGIONS project identified targeted improvement areas that reflect the diversity and complexity of Europe's bio-based landscape.

Achieving alignment across the EU's regulatory frameworks will be essential to reduce administrative burdens and support innovation, particularly for SMEs and start-ups. Enhanced collaborative governance mechanisms – both vertically among governance levels and horizontally across sectors – can drive more coherent and strategic implementation. Tailored financial instruments and simplified funding access will empower regional actors and stimulate innovation beyond primary production.

At the regional level, fostering integrated strategies and clusters can unlock the potential of local resources, knowledge, and ecosystems. Parallel efforts to build capacity, share knowledge, and promote inclusive participation will help ensure that the bio-based economy transition leaves no one behind. Increasing public awareness, strengthening standards, and creating demand-side incentives will further solidify markets for sustainable bio-based products.

Finally, robust monitoring, adaptive policy frameworks, and continuous learning will be vital to track progress and respond to emerging needs and technologies.

By advancing these recommendations through inclusive, transparent, and mission-driven approaches, the EU can lead the global shift toward a circular and bio-based future – rooted in regional strengths, guided by governance innovation, and grounded in sustainability.

