BIO2REG

Policy brief: Enabling governance structures at regional scale

Denise Gider, Christian Klar, Ulrich Schurr (Forschungszentrum Jülich, BioökonomieREVIER), Marco Rupp (Bio-based Industries Consortium), Andreas Nikolaus Kleinschmit von Lengefeld (Homo Silvestris Europae), George Sakellaris (BIOEAST HUB CR Czech Republic)

Funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor REA can be held responsible for them.

Table of contents

1 Executive summary and main recommendations 3
2 Introduction 4
3 Why strong governance is crucial for regional bioeconomy transition? 5
4 Bioeconomy governance landscape in Europe 5
5 Governance challenges in regional bioeconomy transition 6
6 The need for regional governance in bioeconomy transitions 7
7 Governance models and coordination mechanisms 8
8 Recommended actions to establish effective governance structures 11
9 Conclusions and next steps in BIO2REG 13

1 Executive summary and main recommendations

The successful implementation of regional bioeconomy transitions depends on strong, adaptive governance structures that integrate multi-level coordination, stakeholder engagement, and mid- to long-term strategic planning. Building trust and fostering cooperation among stakeholders is crucial to ensuring effective collaboration, aligning regional interests, and creating stable, long-term governance models that drive systemic change. This policy brief serves as a guidance tool for regional stakeholders, including policymakers, regional authorities, and development agencies implementing policies, as well as other key actors who facilitate bioeconomy transitions. These may include existing regional bioeconomy clusters, research centres with specific bioeconomy expertise, and other relevant institutions actively engaged in implementation. It provides tailor-made recommendations on designing governance models that enable regions to translate bioeconomy strategies into tangible actions, ensuring alignment with EU and national frameworks while remaining adaptable to regional needs.

A key challenge in regional bioeconomy governance is the diversity of and within all sectors, policy levels, and stakeholders involved. Effective governance must bridge top-down policies with bottom-up adaptability, fostering cross-sectoral collaboration and ensuring broad participation, including businesses, academia and science, agriculture, civil society, and policymakers. Additionally, integrating education, vocational training, and workforce development into bioeconomy strategies is essential for long-term capacity building. At the same time, social aspects such as equitable participation and community engagement must be considered which will enhance the acceptance and sustainability of regional bioeconomy transition.

This policy brief outlines key recommendations for strengthening regional bioeconomy governance:

1. **Adopt a systemic and adaptive governance approach** – Ensure flexibility, integrate a broad range of bioeconomy sectors, enable cross-sectoral collaboration, and the entire regional bioeconomy system.
2. **Enhance policy coherence and multi-level governance** – Align (cross-)regional bioeconomy strategies with EU and national policies while maintaining regional adaptability.
3. **Build capacity and strengthen stakeholder engagement** – Establish bioeconomy competence hubs, expand training programs on all levels, and ensure inclusive stakeholder involvement.
4. **Facilitate interregional cooperation and knowledge sharing** – Strengthen regional bioeconomy networks, promote peer-learning, and foster collaboration between regions in bioeconomy transition.
5. **Embed governance into regional bioeconomy transition offices** – Support existing bioeconomy structures such as cluster and mandate transition offices or transformation managers within governance structures.
6. **Foster Public-Private Partnerships and sustainable public and private funding models** – Encourage corporate investment in bio-based innovation, develop blended funding models, and increase private sector participation.
7. **Establish multi-stakeholder governance models** – Create multi-stakeholder Advisory Committees and ensure transparent decision-making.
8. **Ensure monitoring, evaluation, and continuous** adaptation – Define joint objectives, sector-relevant KPIs, and performance metrics to enable continuous assessment and adjustment.

By strengthening governance, fostering collaboration, and aligning policies, regional bioeconomy transitions can be accelerated, maximising economic, environmental, and social benefits. The BIO2REG project provides practical tools, best practice mappings, a network and interregional exchange formats to support regions in successfully implementing systemic and circular bioeconomy transitions.

2 Introduction

The successful implementation of bioeconomy strategies requires strong and adaptive governance structures that translate strategic frameworks into practical actions at the regional level. Governance encompasses structures, processes, and rules that enable decision-making, accountability, and coordination among all stakeholders involved in the regional bioeconomy transition. This includes how decisions are made at the regional level, how activities are implemented, and how the transition is monitored to ensure long-term impact and adaptability[1]. It involves stakeholder interactions, market dynamics, and negotiation processes, ensuring that policies align with both regional and broader sustainability objectives. At the regional level, governance structures provide strategic direction, foster stakeholder collaboration, and align policies to effectively implement bioeconomy strategies in a way that is tailored to the region's needs, conditions, and strengths.

Numerous European initiatives, such as ROBIN, ShapingBio, BIOTRANSFORM, SUSTRACK and regional forest-based programmes[2], have focused on developing regional bioeconomy strategies. One key finding from these projects is that the broader the strategy's geographic scope, the less effective its implementation tends to be. (Micro) regional strategies are generally more successful than national or EU-level frameworks, because they better integrate regional parameters—including resource availability, industry strengths, technology and innovation capacities, stakeholder dynamics, and policy frameworks. One major challenge in strategy implementation is the lack of actionable knowledge among regional stakeholders, such as policymakers, regional authorities, development agencies implementing policies, which often hinders their ability to translate strategies into effective, regionally adapted actions and integrating the whole regional innovation ecosystem.

This highlights the need for strong governance mechanisms that link policy with practical implementation in concrete actions. These insights validate BIO2REG's core objective: to focus on the implementation of bioeconomy strategies at the micro-regional level, ensuring that governance structures effectively support regional bioeconomy transitions by integrating the potential of local resources, stakeholder networks, and economic conditions. This approach considers systemic implementation alongside the formulation of bioeconomy strategies. Further insights into the concept of a regionalised bioeconomy and its systemic implementation approach can be found in BIO2REG's *Deliverable 1.1 BIO2REG regionalization concept for circular and systemic bioeconomy model regions*, published in December 2024.

This policy brief outlines how to design governance structures that:

- Translate strategies into action by implementing region-specific transition pathways.
- Engage and mobilise stakeholders through co-creation processes, shared visioning, and collaborative decision-making.
- Support vibrant innovation ecosystems that align regional actors towards commonly agreed on bioeconomy goals.
- Ensure governance structures adapt to regional conditions by integrating regional development perspectives and the whole regional bioeconomy system.

This policy brief serves as a guidance tool for regional stakeholders such as policymakers, regional authorities, development agencies implementing policies or other regional stakeholders who can play a key role in implementing and facilitating bioeconomy transition (e.g. existing regional bioeconomy clusters, bioeconomy research centres and experts).

[1] See: https://www.mdpi.com/2071-1050/16/12/5140#B3-sustainability-16-05140
[2] See: https://www.interregeurope.eu/good-practices/regional-forest-program-0 and https://bioone.org/journals/international-forestry-review/volume-24/issue-4/146554822836282518/Forest-Bioeconomy-in-Three-European-Countries--Finland-the-Czech/10.1505/146554822836282518.short

It emphasises the importance of multi-level governance to ensure that regional actions are consistent with EU and national bio-economic frameworks, while maintaining the flexibility to adapt to regional realities.

3 Why strong governance is crucial for regional bioeconomy transition?

A well-structured and functioning governance is essential for ensuring that regional bioeconomy transitions are effectively implemented at the regional level by coordinating stakeholders, aligning policies on regional, national and EU-level, and supporting public and private investment in sustainable innovative solutions. Without clear governance structures, fragmented decision-making, lack of accountability, and limited stakeholder engagement and collaboration, can challenge a successful regional bioeconomy transition. A strong governance model enables multi-level coordination, balances and connects top-down policies with bottom-up initiatives and fosters cross-sectoral as well as cross-regional collaboration to create resilient and adaptive bioeconomy innovation ecosystems.

4 Bioeconomy governance landscape in Europe

The bioeconomy governance landscape in Europe is shaped by multiple EU strategies, macro-regional initiatives, and national and regional policies. At the EU level, key strategies include the EU Bioeconomy Strategy, Circular Economy Act, Farm to Fork Strategy, Vision for Agriculture and Food, EU Biodiversity Strategy, EU Forest Strategy, EU Soil Strategy, the Sustainable Blue Economy Strategy, European Oceans Pact, European Biotech Act, and the Clean Industrial Deal. Additionally, Smart Specialisation Strategies (RIS3), the European Regional Development Fund (ERDF), and Cohesion Policy (2021-2027) support regional bioeconomy transitions by providing funding and policy coherence[3]. At the macro-regional scale, initiatives such as BIOEAST, Nordic Bioeconomy, and WestMED foster regional cooperation, while European Territorial Cooperation Programmes (e.g., BIOECO-UP) and transnational private sector-led initiatives (e.g., the Vanguard Initiative) drive bioeconomy innovation across national borders[3]. The European Circular Economy Action Plan plays a key role in contributing to the above-mentioned strategies by addressing important cross-cutting issues to support a circular bioeconomy that will be relevant for all bio-based materials and resources.

At the national level, as of September 2024, eleven EU Member States (e.g., Germany, Italy, Ireland, Austria, Portugal) have dedicated bioeconomy strategies, seven have one under development, while five Member States have policy initiatives, and four have broader strategies related to the bioeconomy[3]. This multi-level governance framework ensures that bioeconomy transitions align with regional, national, and EU-wide and the UN sustainability goals. At the regional level, as of May 2022, a total of 194 regions in EU-27 countries were already implementing or drafting strategic bioeconomy frameworks, while 359 EU regions had bioeconomy-related strategies published or under development[4]. While the recognition of the bioeconomy is rapidly increasing, empowering regional stakeholders with the essential knowledge to implement it effectively remains a crucial next step. The European Commission's Regional Innovation Valleys initiative also supports regional innovation-driven transformations. These valleys serve as a mechanism to bridge innovation gaps, ensuring that bioeconomy transitions are embedded in broader European innovation ecosystems[5].

[3] See: https://publications.jrc.ec.europa.eu/repository/handle/JRC140285
[4] See: https://op.europa.eu/o/opportal-service/download-handler?identifier=b86b5850-d4be-11ec-a95f-01aa75ed71a1&format=pdf&language=en&productionSystem=cellar&part=
[5] See: https://projects.research-and-innovation.ec.europa.eu/en/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/new-european-innovation-agenda-roadmap/selected-regional-innovation-valleys

The bioeconomy governance structure between regions is very diverse, e.g. the ROBIN project made an overview on existing cases in different European regions[6] as well as the Bioregions Facility published an overview of bioeconomy strategies from Bioregions members[7]. This urgently requires that there is no one-size-fits-all solution, but that the governance structure must be set up specifically for the region, even though the process and the underlying dynamics can be aligned from the process.

5 Governance challenges in regional bioeconomy transition

Enhancing the implementation of the bioeconomy requires increasing awareness and knowledge among public administrations and regional stakeholders. By deepening the understanding within governance bodies and regional stakeholders involved of how bioeconomy principles can drive regional transformation, tailored to regional conditions, challenges, and strengths, we can bridge the actionable knowledge gap. This will empower the design and implementation of impactful governance structures that address regional needs effectively.

To address this, governance structures must:

- Enhance capacity-building for policymakers and stakeholders to improve bioeconomy knowledge.
- Raise awareness among public administrations and businesses regarding their roles in the regional bioeconomy transition.
- Establish clear governance mandates to facilitate cross-sectoral coordination between public and private actors.

Implementing the circular bioeconomy at the regional level presents governance challenges due to the diversity of sectors involved, their interconnections, and the need for actionable knowledge among stakeholders. Effective governance needs to bridge top-down policy integration with bottom-up regional adaptability, depending on the actors driving the regional bioeconomy transition, and ensure that administration, development agencies, business, academia and science, agriculture, education and civil society are working together effectively.

A key governance challenge is ensuring that bioeconomy strategies account for the full breadth of the relevant sector(s), including both established and emerging bio-based sectors and industries. Additionally, systemic perspectives such as social aspects and education and vocational training are often overlooked, despite being essential for building long-term capacity and ensuring a skilled workforce to support the bioeconomy transition. Without integrating these elements, regional strategies risk being too narrow, limiting their effectiveness and long-term sustainability.

Even aligning regional strategies within the same country is not always straightforward. Conflicting priorities between regions can impede the coherence and effectiveness of national bioeconomy strategies. This challenge, as seen in countries like Germany, highlights the need for stronger coordination mechanisms to ensure that regional approaches complement rather than contradict national objectives, ultimately supporting a more cohesive bioeconomy transition. At the same time, higher-level strategies such as national bioeconomy and EU-level strategies must integrate a regional perspective to enable an alignment, ensuring that policies are adaptable to diverse regional conditions while maintaining overall strategic coherence.

To avoid conflicts and inefficiencies between regions, stronger coordination of governance between regions is needed. Implementing such a mechanism would foster structured dialogue, policy alignment, and knowledge exchange among regional authorities. This approach ensures that

[6] See https://robin-project.eu/wp-content/uploads/2023/05/D.1.1-Typology-of-Bioeconomy-Governance-Models-1.pdf
[7] See: https://bioregions.efi.int/bioeconomy-strategies/

bioeconomy strategies are harmonized across various regions while maintaining the flexibility needed for regional adaptability.

A well-structured governance model is essential to different levels such as EU, national, and macro-regional bioeconomy frameworks with region-specific needs. Governance plays a critical role in translating high-level policies into practical regional action by e.g. integrating funding mechanisms, regulatory requirements, and implementation strategies into a coherent bioeconomy innovation ecosystem. The nested governance approach supports this process by ensuring alignment across different levels while maintaining flexibility for regional adaptation (see BIO2REG's Deliverable 1.1 *BIO2REG regionalization concept for circular and systemic bioeconomy model regions*).

6 The need for regional governance in bioeconomy transitions

Effective regional governance is essential for translating bioeconomy policies into action. While EU and national strategies provide overarching frameworks, implementation happens at the regional level, requiring structures that align policies, stakeholders, specific bioeconomy conditions of the region, funding etc. To name just one of several projects and initiatives, the ROBIN project has demonstrated that various governance practices already support regional bioeconomy transitions, such as business model development, financing, technical assistance, collaboration networks, and policy incentives[8].

At the implementation level, a more systemic and regionally adapted approach is needed—one that considers the complexity of the bioeconomy innovation ecosystems at the regional, available resources, the role of regional innovation networks, and the necessity of both top-down policy frameworks and bottom-up initiatives. Governance structures must be flexible, ensuring that regions can align with EU policies as for example the Smart Specialisation Strategies (RIS3) while maintaining the autonomy to develop tailored bioeconomy roadmaps. The European Committee of the Regions (CoR) provides e.g. a key platform for supporting multi-level governance, enabling interregional cooperation and knowledge exchange.

Circular bioeconomy is a cross-cutting issue, it cannot be confined to a single administrative department. Instead, systemic governance models must integrate e.g. economic development, environmental policy, science, innovation, agriculture and food, and regional planning. To effectively govern the regional bioeconomy, a broad sectoral approach is necessary—one that includes both currently bio-based sectors and those with future bio-based potential. These include the food industry, agriculture, forestry, forest-based industry, textile industry, pharmaceuticals & biotechnology, mechanical engineering, waste management, research, energy, chemicals & plastics, and construction and wood processing, among others. A value chain approach alone is not sufficient; governance must also consider social aspects, education, and vocational training, which are often underrepresented in bioeconomy strategies. Ensuring that governance structures account for locally potentially available resources and sectoral strengths is key to developing sustainable, regionally tailored bioeconomy models (see BIO2REG's Chapter 5.2 in Deliverable 1.1 *BIO2REG regionalization concept for circular and systemic bioeconomy model regions*). Clear mandates for regional authorities or development agencies are crucial to ensure long-term coordination and accountability. Public-Private Partnerships can further strengthen governance by aligning investments, fostering business-driven innovation, and ensuring financial sustainability for bio-based transitions.

Bioeconomy model regions offer a solution to these governance challenges by providing a structured, implementation-oriented approach to regional bioeconomy transitions considering the whole regional bioeconomy system and being adaptable to diverse conditions on the regional

[8] See: https://robin-project.eu/wp-content/uploads/2023/05/D.1.2-Good-Governance-Practices_compressed.pdf

level. These geographically and politically defined areas drive innovation, sustainable growth, and community well-being by linking regional resources, technologies, and stakeholders. They translate bioeconomy strategies into tangible actions that create jobs, foster innovation, and promote environmental sustainability (see BIO2REG's Deliverable 1.1 *BIO2REG regionalization concept for circular and systemic bioeconomy model regions*). Bioeconomy model regions provide an effective governance framework by integrating regional potentially available resources, stakeholders, and policies into a cohesive system that promotes innovation, sustainability, and resilience. A well-structured governance model can bridge policy gaps, empower regional initiatives, and support long-term bioeconomy transformation. Effective governance also requires multi-stakeholder collaboration, integrating policymakers, industry, research and academia, and civil society to form regional bioeconomy clusters and transition hubs, such as Paper Province[9], Bioeconomy for Change[10] or BioökonomieREVIER at Forschungszentrum Jülich[11], that drive their regions' systemic transition.

Decentralised governance strengthens regional decision-making and enables regions to tailor bioeconomy strategies to their specific needs. However, managing bioeconomy as a cross-cutting issue requires well-integrated structures that ensure coordination across sectors and governance levels with an easy access to reach out and exchange with other regions to share experiences and best practices. Regional transformation managers or agencies need a clear mandate to drive bioeconomy transitions, facilitate stakeholder collaboration, and align regional strategies with national and EU policies.

7 Governance models and coordination mechanisms

Effective governance is essential for guiding regional bioeconomy transitions, ensuring policy alignment, fostering collaboration, and enabling long-term strategic planning. Bioeconomy model regions require governance models that integrate multiple sectors and stakeholders, facilitate cooperation across different levels of governance, and provide clear mandates for action.

In order to manage the whole bioeconomy system, **governance structures have to include regional actors and institutions**. A crucial first step before setting up governance structures is to assess and map the regional bioeconomy system, identifying regional strengths, context, key stakeholders, and existing governance and funding structures. Early stakeholder engagement, based on a needs- and interest-driven approach, is crucial to build trust, ensure broad acceptance, and foster long-term commitment. Actively involving regional bioeconomy experts and key implementation actors from the beginning ensures that governance structures are rooted in real-world challenges and knowledge, stakeholder needs are integrated early, and strategies are designed for long-term feasibility and regional impact. Participatory processes, such as citizen assemblies, can further strengthen bioeconomy governance by ensuring societal perspectives and community needs are considered. Transparent and inclusive engagement increases public trust, enhances policy acceptance, and supports collaborative decision-making. Successful governance structures must also ensure cross-sectoral cooperation, bringing together agriculture, forestry, fisheries, industry, academia and research, and public institutions to develop a cohesive strategy.

A strong bioeconomy governance framework must actively **engage regional cluster initiatives or hubs** that connect research, industry, and policy when already existing in the region. Regional bioeconomy clusters serve as platforms for innovation, knowledge exchange, and market development, ensuring that strategies are implemented efficiently and effectively. Examples of successful regional (wood) bioeconomy cluster initiatives include, e.g.:

[9] See: https://paperprovince.com/
[10] See: https://www.bioeconomyforchange.eu/en/
[11] See: https://www.biooekonomierevier.de/home

- Cluster Initiative Forestry and Wood in Bavaria[12] (Germany) – Supporting sustainable forest-based industries through innovation, value chain integration, and policy collaboration.
- Holzcluster Steiermark[13] (Austria) – Promoting regional bio-based value chains and industrial partnerships in the forestry.
- Wood Cluster Luxinnovation[14] and the Grand Region (Luxembourg, Belgium, France, Germany -) – Facilitating transnational collaboration in wood-based bioeconomy sectors to drive innovation and sustainable business models.
- The Xunta de Galicia[15] and the Galician Wood and Design Cluster (CMD) have collaborated to create a new platform aimed at enhancing the forestry sector's innovation and sustainability. This initiative will facilitate the integration of regional resources and stakeholders, promoting cooperative projects and strategic initiative.
- Des Hommes et Des Arbres[16] is a collaborative initiative in the Grand Est region, dedicated to promoting the role of trees in our society. The collective brings together diverse stakeholders to support innovative projects that enhance the value and sustainability of forest ecosystems.

They demonstrate the importance of regional clusters in governance models, as they act as knowledge hubs and facilitators for multi-stakeholder collaboration, business development, and regional economic transformation.

Governance models must establish **clear decision-making procedures**, **accountability mechanisms** and **regulatory frameworks**, to coordinate actions within the region but also between regional, national, and EU levels. Ensuring transparency and consistency is essential to facilitate collaboration and prevent regulatory conflicts.

Strong leadership is critical, which is why many regions benefit from agencies, transition offices or transformation managers who serve as **central coordinators in bioeconomy governance**. These entities act as key facilitators, ensuring that strategies are implemented effectively, stakeholders are engaged, and policies remain aligned across governance levels.

Effective governance also requires **structured coordination mechanisms**, such as **transition offices or agencies, advisory councils** with expertise spanning both practice and research, and **multi-stakeholder platforms**. These structures help bridge sectoral policies, foster collaboration, and create synergies between different levels of governance. Ideally, an independent institution should be established to oversee governance and implementation. If this is not feasible for the regional context, it becomes even more critical to set up a transparent decision-making process and establish oversight mechanisms, such as a monitoring committee within the implementing institution, to **ensure accountability and trust.** To **build reliability** and trust in complex, multi-stakeholder processes, these structures must be staffed with experienced professionals skilled in partnership-based, integrative approaches that engage the entire region and the diversity of its actors. Additionally, long-term funding mechanisms—from EU and national sources (e.g., European Regional Development Fund, Horizon Europe, CAP), Public-Private Partnerships, and regional investment programs—can be supportive to sustain these structures and support their role as facilitators of systemic regional change. In addition, long-term planning must be institutionalised to move beyond short-term project cycles and integrate bioeconomy into regional development strategies.

Monitoring and evaluation are crucial to track progress in bioeconomy transitions through impact assessments, policy review cycles, and evaluation frameworks. These mechanisms help ensure that strategies deliver expected outcomes while remaining flexible enough to adapt to evolving regional needs and conditions. A shared vision, joint objectives, and key performance

[12] See: https://www.cluster-forstholzbayern.de/de/
[13] See: https://www.holzcluster-steiermark.at/en/
[14] See: https://clustermembers.luxinnovation.lu/wood
[15] See: https://xera.xunta.gal/es/la-agencia/noticias/la-xunta-y-el-cluster-de-la-madera-y-el-diseno-de-galicia-crean-una-plataforma
[16] See: https://www.deshommesetdesarbres.org/

indicators (KPIs) must be collaboratively defined for the regional context, involving core actors and key drivers of regional transition to ensure broad commitment and alignment. These KPIs should be regularly monitored, **acknowledging that systemic changes are not linear** and require **continuous adaptation**. If KPIs are not met, it is particularly crucial to analyse underlying causes and address core challenges, rather than applying rigid corrective measures, ensuring that governance structures remain responsive and effective.

Furthermore, **interregional cooperation fosters peer learning and knowledge transfer**, enabling regions to exchange best practices, collaborate on joint initiatives, and scale successful approaches, processes and formats. These efforts play a crucial role in strengthening bioeconomy transitions, as seen in projects like BIO2REG (Horizon Europe), BioINSouth[17] (Circular Bio-based Europe Joint Undertaking) or Bioregions Facility[18], which actively support cross-regional collaboration, peer-learning, allowing regions to exchange best practices, collaborate on joint initiatives, and scale successful approaches, processes and formats. At the same time, these initiatives also strengthen regional bioeconomy transitions within the regions by providing hands-on support to existing and already engaged bioeconomy actors and structures, ensuring that regional ecosystems are effectively integrated. A regionally adapted transformation approach is essential to ensure that bioeconomy governance reflects the unique conditions of each region. The European Commission's 'Innovation for Place-Based Transformation' initiative highlights the importance of leveraging regional strengths, fostering cross-sectoral synergies, and embedding regional innovation into governance structures[19].

One example of a well-structured governance model is presented in Infobox 1, while additional examples can be found in the mappings conducted by e.g. the ROBIN project[20] and the Bioregions Facility[21].

Infobox 1: Governance model example Basque Country

Basque Country Circular Economy Strategy 2030 & Circular Economy and Bioeconomy Plan 2024

The Basque Country's governance model for bioeconomy transition is anchored in the Circular Economy and Bioeconomy Plan 2024, which emphasises public-private collaboration to foster a resource-efficient economy. The plan delineates four strategic areas with 11 action lines, focusing on: competitiveness and innovation, production, consumption and waste management and secondary raw materials.

Governance involves various actors, including technology centres, business clusters, and public agencies, each playing a role in competitiveness, production, consumption, and waste management. Monitoring is achieved through biennial follow-up reports and an Action Plan Evaluation Report, ensuring alignment with strategic objective[22].

To strengthen governance, many regions have set up dedicated coordination hubs that act as knowledge centres and strategic facilitators. For example, transition offices such as BioökonomieREVIER at Forschungszentrum Jülich provide a structured space for bringing together diverse stakeholders, facilitating collaboration, and aligning bioeconomy activities with broader sustainability goals. Baden-Württemberg, Germany, has been supporting metropolitan regions like Stuttgart and Karlsruhe in developing communal bioeconomy strategies through a state-funded program. These strategies aim to identify bioeconomy potentials, set clear objectives,

[17] See: https://www.bioinsouth.eu/
[18] See: https://bioregions.efi.int/
[19] See: https://place-based-innovation.ec.europa.eu/index_en
[20] See: https://robin-project.eu/wp-content/uploads/2023/05/D.1.1-Typology-of-Bioeconomy-Governance-Models-1.pdf
[21] See: https://bioregions.efi.int/bioeconomy-strategies/
[22] See: https://bioregions.efi.int/wp-content/uploads/2023/03/Basque-Country-Bioregions-Bioeconomy-Strategies.pdf

and at the same time establish action plans to integrate sustainable bioeconomic practices into municipal development. Integrated policy frameworks play a crucial role in governance by ensuring that bioeconomy objectives are effectively embedded in regional planning processes. This includes aligning bioeconomy strategies with Smart Specialisation Strategies (RIS3), Regional Innovation Strategies, and Economic Development Plans, enabling regions to leverage their strengths and prioritize sustainable growth.

An example of how governance models and coordination mechanisms can address sector-specific challenges is the response to the severe impact of climate change and secondary disasters in the forest sector across Europe. Countries such as the Czech Republic, Austria, Germany, Switzerland, and France are facing bark beetle infestations and forest loss, prompting the establishment of dedicated forestry funds in recent years. Regional forest-based bioeconomy strategies have become essential governance tools, ensuring climate adaptation, resilience-building, and the multifunctionality of forest ecosystems. These strategies demonstrate the crucial role of regional governance structures in coordinating targeted funding, aligning stakeholder efforts, and implementing sustainable resource management practices. By integrating regional adaptation measures within broader governance frameworks, these initiatives provide a model for sectoral resilience and multi-level coordination in bioeconomy governance.

Some bioeconomy solutions—e.g. those involving innovative processing of waste and secondary resources—pose greater regulatory and legal challenges, often facing uncertainties or restrictions within existing legal frameworks. The HOOP project has addressed these hurdles by identifying policy barriers and offering recommendations to support the uptake of circular solutions in urban contexts. Their findings highlight the need for adaptable, enabling governance models that can respond to legal complexities and facilitate the effective deployment of emerging technologies[23].

8 Recommended actions to establish effective governance structures

To enable successful bioeconomy transitions at the regional level, governance structures must be strategically designed, well-integrated, and adaptable. The following recommendations provide a framework for strengthening governance models, enhancing policy coherence, and ensuring stakeholder engagement in bioeconomy governance.

Adopting a systemic and adaptive governance approach

- Regional bioeconomy transitions are complex and non-linear, requiring flexible governance structures that adapt to regional needs and evolving conditions and challenges of diverse actors.
- Integrate a broad range of bioeconomy sectors into governance structures, adapting strategies to the regional sectoral landscape. Foster cross-sectoral collaboration, enabling unconventional partnerships between actors who typically do not work together.
- Implement flexible governance frameworks that allow for systemic adaptation and adjustments depending on outcomes (see also recommendations on monitoring, evaluation, and adaptation of governance structures below)
- Enhance bioeconomy education and vocational training on all levels, ensuring that governance strategies go beyond academia to include adult education and workforce development—an aspect that is sometimes underestimated but crucial for building a skilled workforce and ensuring broad societal participation in the regional bioeconomy transition.
- Align governance with macro-regional policies, considering common socio-economic parameters and cross-border objectives.

[23] See: https://hoopproject.eu/wp-content/uploads/2024/09/HOOP_D8.6_report_HOOP_cities_onference.pdf

Enhancing policy coherence and multi-level governance:

- Ensuring that regional bioeconomy strategies are aligned with EU and national policies while high-level policies allowing for regional adaptability and consideration of regional specificities.
- Using existing tools such as Smart Specialisation Strategies (RIS3) as a governance and funding alignment tool.
- Foster interregional coordination between regions to avoid conflicts and inefficiencies between regions, ensuring that bioeconomy strategies complement rather than contradict.
- Reducing red tape for creating an innovative framework to boost new ideas and concepts

Capacity-building and stakeholder engagement:

- Establish regional bioeconomy competence hubs to provide expertise, mentoring, and guidance for e.g. policymakers, businesses, and researchers.
- Enhance training programs for municipal employees, policymakers, and regional developers on governance structures and funding applications.
- Ensure stakeholder engagement, integrating also the sometimes-neglected topic education, vocational training, and workforce development to build a skilled bioeconomy workforce.
- Foster strong community involvement and knowledge transfer by using accessible communication formats such as adult education programs, regional dialogue events, and informal engagement at e.g. regional festivals. Bringing discussions on bioeconomy closer to the public to increase awareness, acceptance trust, and support for transition processes.

Facilitating inter- and cross-regional cooperation and knowledge sharing

- Strengthen regional bioeconomy networks such as the BIO2REG, BioINSouth and Bioregions Facility, fostering exchange formats, peer learning, and collaborative governance structures.
- Promote interregional mentoring and best-practice exchanges, ensuring regions learn from successful models like those in the Basque Country, Paper Province, and BioökonomieREVIER at Forschungszentrum just to name few.

Embedding governance into regional bioeconomy clusters and innovation hubs:

- Support regional bioeconomy hubs and clusters as governance drivers, ensuring that policy, industry, citizens and research institutions collaborate effectively.
- Ensure transition offices or transformation managers are mandated within governance structures to coordinate stakeholder engagement and facilitate implementation.
- If no dedicated governance institution can be established, ensure a transparent process with clear accountability, possibly by electing a monitoring, advising committee to oversee implementation.

Fostering Public-Private Partnerships & funding models:

- Encouraging corporate investment into bio-based innovation alongside public funding.
- Setting up funding models that balance industry-driven market development with sustainability objectives.
- Enhance private sector participation in funding initiatives by introducing incentives, and investment support programs.

Establishing multi-stakeholder governance models

- Establish regional multi-stakeholder sounding boards or Advisory Committees to ensure continuous dialogue between policymakers, businesses, research institutions, and civil society. The selection of formats and communication approaches, as well as using language that is accessible and tailored to stakeholders' needs, is crucial to ensuring that all relevant actors are effectively engaged, fostering transparency and trust.
- Mandate bottom-up initiatives within governance structures, particularly in regions where top-down governance dominates (e.g., BIOEAST macroregion), to empower regional actors and ensure inclusivity in decision-making.

Monitoring, evaluation, and adaptation of governance structures

- Define a joint vision with clear objectives and relevant KPIs for governance performance, ensuring they are co-developed with key stakeholders and regularly monitored.
- Ensure transparency in governance processes, allowing for public accountability and stakeholder participation not only in reviewing governance performance, but also in coordinating joint actions across all relevant actors to jointly drive bioeconomy transitions effectively.

9 Conclusions and next steps in BIO2REG

Strengthening governance at the regional scale is essential for the successful implementation of regional bioeconomy transitions. While multiple EU and national strategies provide overarching policy frameworks, regional adaptation is necessary to reflect the diversity of regional framework conditions, stakeholders, and economic structures. A multi-level governance approach, integrating top-down policies with bottom-up initiatives, will enable regions to align funding, strategy development, and stakeholder engagement more effectively.

A crucial step for enabling systemic and impactful bioeconomy transitions is ensuring that all initiatives working on regional bioeconomy implementation—across different European Commission DGs—join forces and create synergies. A more coordinated approach between initiatives under DG AGRI, DG REGIO, DG RTD, DG CLIMA, and DG ENER, among others, will strengthen policy coherence, resource efficiency, and funding alignment. Additionally, the European Committee of the Regions (CoR) plays a key role in facilitating multi-level governance, ensuring that regional bioeconomy strategies align with EU-wide objectives while maintaining flexibility for regionally adapted bioeconomy implementation. National bioeconomy strategies must also better integrate regional perspectives to create cohesive policy frameworks that support both top-down policy coherence and bottom-up adaptability. Aligning these efforts will help maximize impact, avoid duplication, and provide regions with clearer, more structured governance models to accelerate circular and systemic bioeconomy transitions across Europe.

The BIO2REG project provides practical tools and guidance to support regional transition:

1. The Regionalisation Concept (Deliverable 1.1, December 2024) offers a blueprint for adapting bioeconomy governance structures, helping regions design tailored strategies and connect sectoral stakeholders.
2. The stakeholder guide for Multi-Criteria Assessment (Deliverable 1.3, June 2025) will assist regions in identifying their bioeconomy potential, ensuring that governance models understand their regional bioeconomy profiles based on data and are adaptable to their regional contexts.

Beyond strategy development, successful governance requires capacity-building and cross-regional collaboration

3. The BIO2REG best practice guide on actions for systemic and circular regional bioeconomy transition (Deliverable 1.4, June 2025) will provide hands-on implementation support, equipping regions with best practices for stakeholder mapping and interactive workshop formats to facilitate engagement and trust-building. It will showcase governance models and collaboration formats, funding strategies, and mechanisms.
4. The interregional exchange instrument (call launch in October 2025 and taking place in 2026) is a peer-learning exchange connecting two GHG-intensive regions interested in regional bioeconomy transition. In these regions, stakeholders such as policymakers, bioeconomy clusters, and hubs will be guided to apply BIO2REG tools. Furthermore, BIO2REG experts will help regions set concrete learning objectives and apply best practices, enabling each region to create a practical transition roadmap that can be implemented immediately.
5. The BIO2REG network (launch in Summer 2025) will also play a crucial role in helping regions translate governance models into actions tailored to their specific needs, ensuring that governance structures remain dynamic, inclusive, and effective in fostering long-term bioeconomy growth.

BIO2REG in a nutshell

A circular bioeconomy is essential for achieving the EU's sustainability goals. However, the implementation of a regional bioeconomy is fraught with challenges. Bioeconomy model regions offer a systemic approach to the transition to sustainable development, based on circular economy concepts. The EU-funded BIO2REG project aims to help greenhouse gas-intensive economies unlock their circular bioeconomy potential by becoming bioeconomy model regions.

The project will promote regional networking, interregional exchange and cooperation, and provide regional stakeholders with a conceptual framework for regionalisation in bioeconomy model regions. This includes mapping best practices in a circular and sustainable bioeconomy, assessing bioeconomy potential, providing mentoring and training, forming transition alliances and making policy recommendations. The project adopts a multi-stakeholder approach, developing tools and guidelines in collaboration with regional stakeholders and engaging with regions through guided exchanges on the ground.

Find out more:

Website: https://bio2reg.eu

LinkedIn: https://www.linkedin.com/company/bio2reg

X/Twitter: https://twitter.com/BIO2REGeu

BlueSky: https://bsky.app/profile/bio2reg.bsky.social

Contact Denise Gider (Project coordinator): d.gider@fz-juelich.de

© BIO2REG 2025

Authors: Denise Gider, Christian Klar, Ulrich Schurr (Forschungszentrum Jülich), Marco Rupp (Bio-based Industries Consortium), Andreas Nikolaus Kleinschmit von Lengefeld (Homo Silvestris Europae), George Sakellaris (BIOEAST HUB CR Czech Republic)

This document was published as D5.6 “Policy brief: Enabling governance structures at regional scale” as part of the project “Enabling transition towards circular and systemic BIOeconomy model regions by a Regions-to-Regions approach”.

Funded by the European Union under the grant agreement number 101135420. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor REA can be held responsible for them.

Reproduction is authorised provided the source is acknowledged.

Title page image attribution: liliyabatyrova - stock.adobe.com