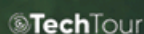
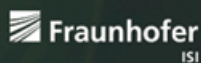


D4.2 Policy Implementation Report

Submitted version

Report awaits European
Commission approval



Funded by
the European Union



Project details

Acronym	ShapingBio
Title	Shaping the future bioeconomy across sectoral, governmental and geographical levels
Grant Agreement Number	101060252
Call	HORIZON-CL6-2021-GOVERNANCE-01
Project Coordinator	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.

Deliverable details

Deliverable type	Report
Deliverable status	Final
Dissemination level	Public
Due date	31/08/2025
Submission date	28/08/2025
Work package	WP4
Deliverable leader	BBEPP
Deliverable author(s)	Tanja Meyer, Yang Zou, Stef Denayer (BBEPP); Bärbel Hüsing, Gabriel Däßler, Sven Wydra (FhG ISI); Silvia Tosatto (Submariner); Milena Gartley (TechTour); Kersti Haugan (FBCD); George Sakellaris (ART)

Revision History

Version	Date	Reviewer	Modifications
0.1	02/2025	BBEPP	Table of Content
0.2	02 - 05	BBEPP	Integration of content
0.3	05/2025	Submariner	Review of content
0.4	06 -07/2025	FhG ISI	Review of content
0.5	08/2005	BBEPP	Integration of content, review of content
0.6	08/2025	FhG ISI	Review of content
0.7	08/2025	TechTour	Review of content
0.8	27/08/2025	BBEPP	Revision
0.9	28/08/2025	FhG ISI	Final review and submission

Peer Reviews

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Milena Gartley	TechTour

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List of Abbreviations

Abbreviation	Full name
APRE	Agency for the Promotion of the European Research
ART	Agriculture Research Troubsko, Ltd
BBEPP	Bio Base Europe Pilot Plant
CEE countries	Central and Eastern European countries
CBE JU	Circular Bio-based Europe Joint Undertaking
CSA	Coordination and Support Action
DG	Directorate-General
EIB	European Investment Bank
ERDF	European Regional Development Fund
FBCD	Food & Bio Cluster Denmark
FhG ISI	Fraunhofer Institute for Systems and Innovation Research ISI
IPCEI	Important Project of Common European Interest
JRC	Joint Research Centre
KPI	Key Performance Indicator
MAG	Multi-Actor Group
MOOC	Massive Online Open Courses
OECD	Organisation for Economic Co-operation and Development
PDI	Pilot and Demo Infrastructure
PSI	Policy Support Facility
PPP	Public Private Partnership
SME	Small-Medium sized enterprise
SUBNET	SUBMARINER Network
TRL	Technology Readiness Level
TTE	Tech Tour Europe
TTG	Tech Tour Global
TTO	Technology transfer office

1. Executive Summary

The objective of this deliverable D4.2 Policy Implementation Report is to translate selected policy recommendations from previous ShapingBio deliverables into actionable strategies. As part of this translation process, stakeholders were engaged in four thematic workshops, each addressing key challenges and opportunities in the bioeconomy:

1. **Financing in Bioeconomy:** Emphasized improving access to funding for SMEs, integrating mentorship and skills development, and fostering public-private investment collaboration.
2. **Derisking Scale-Up of Bio-Based Innovations:** Focused on enhancing access to Pilot & Demonstration Infrastructures (PDIs), introducing flexible voucher schemes, and supporting infrastructure upgrades to reduce technical and financial risks.
3. **Integrating Blue in Green Bioeconomy:** Aimed at strengthening cross-sectoral collaboration between agriculture and blue bioeconomy, especially in the Baltic region, through shared infrastructure, harmonized policy frameworks, and regional innovation hubs.
4. **Improving Bioeconomy Policy:** Addressed the need for coherent and coordinated bioeconomy strategies across EU, national, and regional levels, with emphasis on implementation, stakeholder alignment, and demand-side instruments.

In this report, action points for the following recommendations are presented:

1. **Financing in Bioeconomy:**
 - Scaling Potential and Challenges for Bioeconomy SMEs.
 - Integrated Support for SMEs: Role of clusters, accelerators, and good practices in addressing needs and challenges.
 - Improving the Bioeconomy Funding Landscape: Exploring solutions to EU programme implementation and funding complexity.
2. **Derisking Scale-Up of Bio-Based Innovations:**
 - De-risking scale-up via Technology Infrastructures; Keep the existing PDI state-of-the-art & support investing in new equipment rather than in further duplication within Europe.
 - Providing co-funding support and removing constraints to efficiently use open access pilot and demo facilities
3. **Integrating Blue in Green Bioeconomy:**
 - Improve access to Piloting and Demonstration Infrastructures: Enhancing connections between innovators especially in CEE countries, and existing bioeconomy infrastructures outside the CEE region.
 - Support the development of a coherent, measurable bioeconomy policy framework across sectors, especially for blue bioeconomy by harmonising indicators, classifications, and terminology.
 - Strengthen intermediaries and regional innovation hubs to foster collaboration across borders, and support bioeconomy development through networking, resource sharing, and targeted investment, especially in low-innovation countries.
4. **Improving Bioeconomy Policy:**
 - Develop and implement a coherent and comprehensive bioeconomy framework
 - Coordinate and align policies between EU – national – regional levels
 - Implement policies for commercialization activities and demand-side instruments



The action points are categorized by action type (e.g., Coordination Mechanism, Incentive Scheme, Networking & Outreach), with clear objectives, tools, and responsible stakeholders needed for the implementation. The action points in this report highlight the importance of mutual learning, stakeholder co-creation, and evidence-based policymaking to foster a competitive and inclusive bioeconomy in Europe.

2. Introduction

ShapingBio aims to create a better understanding and information basis of the bioeconomy innovation ecosystem by providing a comprehensive mapping and analysis of initiatives, structures, policy instruments and action points. To ensure that the policy recommendations from Report “Policy and stakeholder recommendations” (D4.1)¹ are well understood, thoughtfully considered, and effectively integrated into stakeholders’ activities and action plans, a series of workshops has been conducted with relevant stakeholder groups. Each workshop has focussed on enabling participants to digest the policy recommendations most relevant to their priorities and collaboratively develop practical approaches for implementation. Consequently, 4 different thematic workshops were performed, each highlighting 2-3 selected policy recommendations to discuss in detail about. The topics of the individual workshops were: “Financing in Bioeconomy”, “Derisking scale-up of bio-based innovations”, “Integrating Blue in Green Bioeconomy” and “Improving bioeconomy policy”.

The objectives of the workshops were to

- Facilitate stakeholder reflection on ShapingBio recommendations.
- Concrete testimonials and recommendations addressing the challenges and needs accordingly to the overall workshop topic.
- List and roadmap of plans for actions to be taken to implement the recommendations per identified stakeholder group
- Co-create draft action plans tailored to stakeholder needs.
- Mutual learning from peers how they take (took) actions to implement the recommendations to achieve the intended outcome and impact.
- Foster cooperation and exchange of good practices across the bio-based sector and governance levels.

The purpose of this report is to present the outcomes of the stakeholder workshops, with a particular focus on actionable plans that integrate policy recommendations into stakeholder practices. The implementation points outlined below are drawn from multiple sources, such as direct input and discussions during the workshops, feedback from stakeholders and broader project insights and thematic analysis. To enhance clarity and accessibility, the action points are presented in a structured table format, organized as follows:

- **Action Type:** Category or nature of the activities being proposed (with 6 categories: Coordination Mechanism, Incentive Scheme, Networking & Outreach, Knowledge Exchange, Skills Development, Twinning/Mentorship)
- **Proposed activities:** Specific tasks or initiatives planned under the action type
- **Objective:** Describes the intended outcome or purpose of the proposed activity
- **Tools / Implementation:** Outlines the specific methods, instruments, or resources used to implement the proposed activities and achieve the objective
- **Stakeholder Responsible:** Refers to the individuals, organizations, or groups who are accountable for implementing the proposed activity

¹ <https://www.shapingbio.eu/media/d3gp2et3/d4-1-recommendations.pdf>

3. Topic “Financing in Bioeconomy”

3.1 Purpose and Scope

The bioeconomy is gaining momentum across Europe, offering innovative and sustainable solutions to some of the most pressing environmental and economic challenges of our time. Yet, small and medium-sized enterprises (SMEs), which play a crucial role in driving this transformation, often face significant challenges when it comes to accessing financing and scaling their solutions. Recognizing this, the ShapingBio project has placed a strong emphasis on supporting SMEs through targeted policy recommendations and practical strategies aimed at improving investment readiness. As part of this effort, ShapingBio is working to disseminate key findings related to bioeconomy financing, with a particular focus on empowering SMEs and strengthening their role in driving sustainable growth. The goal is to provide actionable insights not only for SMEs themselves, but also for investors, clusters, and other stakeholders who play a critical role in shaping the bioeconomy landscape. A central component of this initiative involves validating the initial results and recommendations from Shaping Bio’s analysis directly with SMEs. Their feedback is essential for refining the proposed action points and ensuring that the final recommendations are both relevant and implementable. By integrating the specific demands and perspectives of SMEs, the project aims to produce concrete policy proposals that reflect real-world needs and foster a more supportive financing environment. This collaborative approach ensures that the voices of entrepreneurs are heard, and they actively contribute to shaping the future of bioeconomy financing. Through meaningful engagement and evidence-based recommendations, ShapingBio is paving the way for a more inclusive and competitive bioeconomy across Europe.

For the discussion on ‘Financing in Bioeconomy’; the envisaged policy recommendations were taken from insights of the Document “Bioeconomy Financing in Europe Analysis Report” (D2.4)² and the Report on “Policy and Stakeholder recommendations” (D4.1)³. The key leverage points were identified as particularly impactful for enhancing bioeconomy policy for the financial line a much broader base than some of the other topics discussed later in the document.

These points were further explored in close consultation with the target stakeholder group—including SMEs and entrepreneurs, investors, intermediaries, and members of the ShapingBio Multi-Actor Group (MAG) which were already involved in the process to analyse Bioeconomy Financing in Europe (D2.4)². The aim was to assess their relevance, identify optimal strategies for implementation, and define concrete action steps to ensure effective execution.

The three policy recommendations discussed were as follows:

- 1) Scaling Potential and Challenges for Bioeconomy SMEs.
- 2) Integrated Support for SMEs: Role of clusters, accelerators, and good practices in addressing needs and challenges.
- 3) Improving the Bioeconomy Funding Landscape: Exploring solutions to EU programme implementation and funding complexity.

² https://www.shapingbio.eu/media/b5gia04g/shapingbio_d2_4_financing_await-approval.pdf

³ <https://www.shapingbio.eu/media/d3gp2et3/d4-1-recommendations.pdf>

3.2 Outline of Action Points - Financing in Bioeconomy

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
Coordination Mechanism	<ul style="list-style-type: none"> • Launch commercialisation of research, pre-seed and seed funding programs and pair funding with mentorship and business development support. • Integrate financing with skills development programs. 	<p>Foster commercialisation of research:</p> <ul style="list-style-type: none"> • Facilitate the transformation of research ideas into viable bioeconomy start-ups. • Equip SMEs with entrepreneurial capacity for sustainable growth and scaling-up. 	<ul style="list-style-type: none"> • Grant schemes, convertible loans, equity funding • Incubators and mentorship networks <ul style="list-style-type: none"> ○ Business development workshops and coaching ○ Vocational training and upskilling programs • Integrated support packages (finance + training) • Co-creation with peer start-ups (example precision fermentation) • Exchange with other peers (CEO, COO level) on funding options (example fermentation) 	<p>Venture capital firms and angel investors</p> <p>TTOs, incubators, accelerators and clusters</p> <p>Regional development agencies</p> <p>Bioeconomy innovation programs</p>
Networking & Outreach	<ul style="list-style-type: none"> • Establish structured collaboration schemes between public and private actors to co- 	<ul style="list-style-type: none"> • Facilitate stronger business networks and commercial partnerships in the bioeconomy 	<ul style="list-style-type: none"> • Business capacity building, accelerator and incubator programmes, including export readiness 	<p>Public funding bodies and innovation agencies (e.g., national innovation funds, EU programs)</p>

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
	<ul style="list-style-type: none"> invest in bioeconomy ventures • Design risk-sharing mechanisms to encourage private sector involvement • Align governmental funds with private capital, addressing current funding limitations • Facilitate dedicated B2B matchmaking platforms and cross-sector networking events to connect SMEs with investors and industry leaders • Leverage existing European initiatives (e.g., clusters, partnerships, accelerators) to create synergies and expand collaboration opportunities 	<ul style="list-style-type: none"> • Provide pathways for research commercialisation and foster accountability • Strengthening infrastructure alongside broad sectoral funding schemes • Support SMEs in scaling operations and entering new markets with sufficient sector/market information 	<ul style="list-style-type: none"> • Investment readiness workshops, coaching, and mentoring • Market access support through sectorial information hubs, certifications, trade missions, and sector-specific initiatives (e.g., BlueInvest, bioeconomy clusters, SBEP) • B2B matchmaking platforms, networking events, and strategic partnerships • Awareness campaigns for investors on ROI, social costs, and benefits 	<p>Private investors and venture builders</p> <p>Business development service providers</p>
Incentive Scheme	<ul style="list-style-type: none"> • Design multi-stage funding programmes with milestone-based disbursements and follow-on support from 	<ul style="list-style-type: none"> • Align funding with performance to reduce risk and ensure sustained support across the innovation lifecycle 	<ul style="list-style-type: none"> • Milestone- and performance-based funding with multi-phase grants and investments 	<p>Public funding bodies and innovation agencies (e.g., national innovation funds, EU programs)</p> <p>Private investors and venture builders</p>

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
	ideation to commercialisation <ul style="list-style-type: none"> • Develop targeted scaling and entrepreneurship support programmes • Facilitate strategic business connections and investment readiness training for SMEs using private investors competencies 	<ul style="list-style-type: none"> • Improve SME preparedness for market entry and investment attraction 	<ul style="list-style-type: none"> • Project monitoring, evaluation, and feedback loops to guide follow-on commercialization support • Improved accessibility to EIC Acceleration Programmes by reducing administrative burden • Blended finance models (e.g., guarantees, co-investment funds, PPPs, joint ventures) B2B matchmaking platforms, networking events, and strategic partnerships 	Business development service providers

4. Topic “Derisking scale-up of bio-based innovations”

4.1 Purpose and Scope

This chapter presents two key policy recommendations developed within the ShapingBio initiative, specifically tailored to support bio-based innovators by addressing critical technical scale-up challenges. These recommendations are particularly relevant to stakeholders such as Pilot & Demonstration Infrastructures (PDIs) and regional or national policymakers. The overarching goal is to validate priority actions that help de-risk the technical scaling process, with a focus on enhancing access to shared PDIs and introducing flexible regional voucher schemes. While ShapingBio has developed a broad suite of policy recommendations, this session concentrates on the two most impactful measures for enabling technical scale-up, with the first one focussing on improving access to shared PDIs: Facilitating the use of existing infrastructure to support innovation and reduce duplication and the 2nd one on introducing flexible voucher schemes: Providing adaptable financial support mechanisms to lower the risk for emerging bio-based ventures.

The discussion on the PDIs and subsidy support for start-ups/ SMEs is only the technological part of scale-up de-risking. De-risking also involves financial de-risking – for example using PPPs, blended finance; executive team and HR-capacity building, product management, commercialisation, IP management so the scaling process does not rely indefinitely on subsidies. These factors are partly discussed in the other topics in this document and are therefore not mentioned in this chapter.

The stakeholder group involved in this process included representatives from PDIs as well as policymakers operating at regional, national, and European levels. This diverse group collaborated to review and refine the recommendations, ensuring they are both actionable and grounded in real-world conditions. Their input was instrumental in shaping proposals that can effectively guide future support measures across governance levels. To support this effort, participants engaged in a structured exchange of peer experiences and shared best-practice examples from their respective regions. The two policy recommendations discussed were as follows:

- 1) De-risking scale-up via Technology Infrastructures; Keep the existing PDI state-of-the-art & support investing in new equipment rather than in further duplication within Europe.
- 2) Providing co-funding support and removing constraints to efficiently use open access pilot and demo facilities

4.2 Outline of Action Points - Derisking scale-up of bio-based innovations

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
Networking & Outreach	<ul style="list-style-type: none"> • Raise awareness about the existing European scale-up infrastructure assets. Pilots4U is the operational tool for biotech companies to identify support for scale-up. • Pilots4U can provide thematic coordination for the bioeconomy scale-up, organising active interaction between the technology infrastructures and the stakeholders involved: bioeconomy innovators, public and private investors. • Involve the Pilots4U network far more in EU/Member State/Regional activities. 	<ul style="list-style-type: none"> • Improving access for bio innovators (spin-offs, start-ups, scale-ups, SMEs) to pilot and demo infrastructures for the bioeconomy. 	<ul style="list-style-type: none"> • Biotech Hub4, but could have a much more pronounced bioeconomy scale-up role, organising: <ul style="list-style-type: none"> ○ cross-border pilot plant visits ○ EU wide cross-border matchmaking events ○ service desk for scale-up challenges • For instance, CBE JU's recent initiative to highlight European pilot and demo facilities through the organisation of a PDI Fair⁵ is a good example and appreciated initiative. Host location can fluctuate 	European Commission and EU Member States
Knowledge Exchange	<ul style="list-style-type: none"> • Raise awareness among regional/national authorities about the existence of a strong 	<ul style="list-style-type: none"> • Improving access for bio innovators to pilot and demo infrastructures for the bioeconomy. 	<ul style="list-style-type: none"> • Involve all 120+ members of Pilots4U in regional /national activities (events/seminars/conferences/webinars) that 	EU Member States

⁴ [Biotech and biomanufacturing - Your Europe](#)

⁵ [The European Pilot and Demonstration Infrastructure Fair | Circular Bio-based Europe Joint Undertaking \(CBE JU\)](#)

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
	European pilot and demo infrastructure network open to all European bioeconomy innovators for a service fee and able to support and accelerate the deployment of regional bioeconomy innovations.	<ul style="list-style-type: none"> • Broaden the scale-up horizon of regional/ national public actors. 	focus on helping innovators in the bioeconomy to scale-up. Hereby not limiting the scope to only local/regional facilities. Bioeconomy covers 50+ different technologies.	
Coordination Mechanism	<ul style="list-style-type: none"> • Support the 120+ existing PDIs in keeping them state-of-the-art, investing in new equipment rather than in further duplication everywhere in Europe and being left behind with many sub-optimal technology infrastructures with high CAPEX and OPEX demands, that are not sustainable in the long run. 	<ul style="list-style-type: none"> • Develop an effective investment prioritisation mechanism for European Pilot and Demo Infrastructures. 	<ul style="list-style-type: none"> • Use Pilots4U data to analyse the European scale-up capacity and to detect specific infrastructure gaps. • Support demand-driven investments. Data can be used to further improve the monitoring activities by EU Knowledge Centre for Bioeconomy & Bioeconomy Monitoring System. 	European Commission and EU Member States
Incentive Scheme	<ul style="list-style-type: none"> • Establish funding programs dedicated to the use of PDIs at European level. • Amplify derisking the scale-up phase of innovators, by providing co-funding support and removing constraints to efficiently use open access pilot and demo facilities. 	<ul style="list-style-type: none"> • De-risk investments for private investors by co-funding the scale-up phase of bioeconomy innovators. • Leveraging private investments in scaling-up bioeconomy innovations leading to more industrial scale implementation. 	<ul style="list-style-type: none"> • Create an easily accessible and “fast application” voucher system for scale-up of biobased processes. Pilots4U can play a coordinating role at EU level. • Increase budgets for higher TRL or later stage innovation support, adapted to the higher capital requirements. 	European Commission (DGs), Member States on European/ regional level, Regional and National Authorities

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
	<ul style="list-style-type: none"> Establish an EU coordinating platform to map/specialise PDIs and manage cross-border voucher interoperability. 		<ul style="list-style-type: none"> CBE JU successor call for medium-TRL infrastructure upgrades (TRL 5–8) Provide mobility of regional/national scale-up co-funding for structured financial programmes. Regional/national funding should allow spending in other regions with state-of-the-art pilot or demo facilities to stimulate cross-border collaboration and a better use of available scale-up capacity within Europe. 	
Incentive Scheme	<ul style="list-style-type: none"> Taylor the boundaries and restrictions of scale-up voucher schemes to the needs of their users 	<ul style="list-style-type: none"> Create a larger uptake of co-funding opportunities by bio innovators 	<ul style="list-style-type: none"> Adapt the framework conditions of scale-up co-funding schemes to the needs of bio innovators. Points of attention are: <ul style="list-style-type: none"> Time-limited availability Amounts adapted to the scale of the exercise needed Requirement of certifications Ex-post reimbursement Cross-border usability 	European Commission and EU Member States

5. Topic “Integrating Blue in Green Bioeconomy”

5.1 Purpose and Scope

This section outlines key implementation insights derived from policy recommendations developed in D4.1⁶ and during the analysis in WP2 reports⁷, particularly focused on to developed to strengthen cross-sectoral collaboration between the blue and green bioeconomy. The project’s scope also included forestry, food and agriculture but these were not in the focus of the discussion regarding this mentioned topic. “Integrating blue in green economy” is only covering part of cross-sectorial collaboration in agriculture, food, forestry and blue economy, and action points can be taken from deliverable D2.3⁸, Chapter 5 (Way forward towards enhanced cross-sectoral collaboration in the EU Bioeconomy) onwards.

Blue and Green Bioeconomy are especially vital in the Baltic Sea region, where terrestrial and aquatic ecosystems are deeply interconnected. Yet, despite this ecological interdependence, governance frameworks and market structures have traditionally operated in isolation—hindering collaboration, innovation, and sustainable development. Governance issues, such as the misalignment between the EU Common Agricultural Policy and the HELCOM Baltic Sea Action Plan, or technology transfer challenges, like the limited cooperation between seaweed cultivation and forestry-based biorefineries, were some of the hurdles the bioeconomy faced in the region. The project focused on engaging a targeted stakeholder group comprising SMEs, national and regional policymakers in blue and green biotechnology, and start-ups.

Based on the policy recommendations outlined in Deliverable D4.1⁹, three were identified as particularly relevant for advancing cross-sectoral collaboration. These were further examined in consultation with the target stakeholder group to assess their relevance, explore optimal implementation strategies, and define concrete action points necessary for successful execution.

The three policy recommendations discussed were as follows:

- 1) Improve access to Piloting and Demonstration Infrastructures: Enhancing connections between innovators especially in CEE countries, and existing bioeconomy infrastructures outside the CEE region.
- 2) Support the development of a coherent, measurable bioeconomy policy framework across sectors, especially for blue bioeconomy by harmonising indicators, classifications, and terminology.
- 3) Strengthen intermediaries and regional innovation hubs to foster collaboration across borders, and support bioeconomy development through networking, resource sharing, and targeted investment, especially in low-innovation countries.

⁶ <https://www.shapingbio.eu/media/d3gp2et3/d4-1-recommendations.pdf>

⁷ <https://www.shapingbio.eu/resources/#1280>

⁸ https://www.shapingbio.eu/media/qmhdpfjz/shapingbio_deliverable_d2-3.pdf

⁹ <https://www.shapingbio.eu/media/d3gp2et3/d4-1-recommendations.pdf>

5.2 Outline of Action Points - Integrating Blue in Green Bioeconomy

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
Networking & Outreach	<ul style="list-style-type: none"> • Link certain permits or European Regional Development Fund (ERDF) access to such sharing commitments. 	<ul style="list-style-type: none"> • Unlock idle capacity in private pilot/demo assets • Foster a culture of cooperation. 	<ul style="list-style-type: none"> • Credit/ voucher system administered by regional agencies + regulatory conditionality. 	Large enterprises, SMEs, regulators.
Networking & Outreach	<ul style="list-style-type: none"> • Run citizen-engagement campaigns • showcase EU-funded demo sites • highlight success stories to foster a culture of cooperation and openness. 	<ul style="list-style-type: none"> • Build social licence and mutual confidence among innovators, facility operators, investors and the public. 	<ul style="list-style-type: none"> • Story-telling videos • open-door days • social-media toolkits. 	PDI, civil-society organisations, media outlets.
Knowledge Exchange	<ul style="list-style-type: none"> • Run structured knowledge-exchange programmes that pool good practices • build a shared knowledge base for pilot/demo operations. 	<ul style="list-style-type: none"> • Spread operational know-how across borders and reduce duplication of learning curves. 	<ul style="list-style-type: none"> • Staff-exchange vouchers • peer-review workshops • online repository. 	PDI managers, Academia (universities), regional hubs, cluster organisations
Knowledge Exchange	<ul style="list-style-type: none"> • Use AI tools to map and collate existing blue bioeconomy metrics • establish an EU expert group to agree common 	<ul style="list-style-type: none"> • Create a coherent, measurable policy framework that integrates blue and green bioeconomy sectors. 	<ul style="list-style-type: none"> • AI dashboard + formal expert working group hosted by EC 	EU and national policy-makers, statistical offices, academia.

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
	indicators, classifications and terminology.			
Skills Development	<ul style="list-style-type: none"> • Offer short-term training in aqua- and agro-ecology and systems-thinking courses for civil servants, business coaches and citizens. 	<ul style="list-style-type: none"> • Equip actors to realise the full ocean potential and manage food-system trade-offs. 	<ul style="list-style-type: none"> • Massive Online Open Courses (MOOCs),¹⁰ • Modular training curricula • micro-credential programmes 	Academia (Universities), public agencies, intermediaries, Cluster organisations.
Coordination Mechanism	<ul style="list-style-type: none"> • Expand Pilots4U (or similar) into a cross-border directory of blue- and green-bioeconomy PDIs. 	<ul style="list-style-type: none"> • Remove territorial barriers and steer innovators, especially from CEE, toward the facility that best fits their process. 	<ul style="list-style-type: none"> • Online directory 	SMEs, start-ups, PDIs
Coordination Mechanism	<ul style="list-style-type: none"> • Update Smart-Specialisation Strategies to embed blue-bioeconomy priorities and secure national political backing publicise these changes. 	<ul style="list-style-type: none"> • Anchor cross-sectoral collaboration and infrastructure sharing in regional and national roadmaps 	<ul style="list-style-type: none"> • RIS3 revisions • national communication campaigns 	Regional & national authorities, intermediary hubs, cluster organisations
Incentive Scheme	<ul style="list-style-type: none"> • Launch an access-voucher scheme that is valid EU-wide. 	<ul style="list-style-type: none"> • Remove territorial barriers and steer innovators, especially from CEE, toward the 	<ul style="list-style-type: none"> • Tiered voucher scheme (pilot to demo scale, 60 % paid up-front). 	Regional authorities, EU institutions.

¹⁰ An example of a MOOC that can introduce aquaculture: <https://www.futurelearn.com/courses/navigating-the-blue-bioeconomy-innovation-and-entrepreneurship-in-coastal-aquaculture>

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
		facility that best fits their process.		
Incentive Scheme	<ul style="list-style-type: none"> • Simplify procedures for SMEs to list private facilities “as a service” • Adapt existing methodologies for clearer, user-friendly communication. 	<ul style="list-style-type: none"> • Broaden the pool of available infrastructure and lower administrative hurdles. 	<ul style="list-style-type: none"> • One-stop portal, standardised service contracts • Communication guides. 	SMEs, PDIs, cluster managers.
Incentive Scheme	<ul style="list-style-type: none"> • Integrate venture-support services into regional innovation hubs and intermediary structures • Maintain EU-project participation funding for companies over the long term. 	<ul style="list-style-type: none"> • Strengthen start-up ecosystems in low-innovation countries and sustain cross-border engagement. 	<ul style="list-style-type: none"> • Hub-based accelerator programmes • Horizon Europe/FP10 company funding streams. 	Intermediary hubs, SMEs, EU funding bodies.
Incentive Scheme	<ul style="list-style-type: none"> • Introduce policies that curb talent outflow (e.g., return grants, dual appointments) • Create economic incentives for skilled workers to remain in CEE regions. 	<ul style="list-style-type: none"> • Build local capacity for bioeconomy innovation and ensure sustainability of hubs. 	<ul style="list-style-type: none"> • Talent-retention grants • Regional tax incentives. 	National ministries, regional agencies, universities

6. Topic “Improving bioeconomy policy”

6.1 Purpose and Scope

This section outlines key implementation insights derived from policy recommendations developed to improve bioeconomy policy development, implementation and coordination in the EU Member states and regions. A coherent policy approach to bioeconomy is especially relevant for the following reasons: The EU has unique strengths in bioeconomy as a whole - in the production of diverse bio-based feed-stocks, in its bioeconomy infrastructure and being strong in different biomass converting industries across the Member States and regions. However, Member States differ significantly in innovativeness, R&D activities and infrastructures, and whether they have developed and implemented a coherent strategic approach to bioeconomy policy on national¹¹ and/or regional levels. To strengthen its industrial capabilities and to maintain global competitiveness, the EU must tackle this heterogeneity and realize its full potential across all Member States and regions.

Based on the policy recommendations outlined in Deliverable D4.1¹², three leverage points were identified as particularly relevant for improving bioeconomy policy. These were further examined in consultation with the target stakeholder group, especially policy makers from EC, national and regional institutions, members of bioeconomy policy advisory bodies as well as academics focussing on bioeconomy policy to assess their relevance, explore optimal implementation strategies, and define concrete action points necessary for successful execution.

The three leverage points and corresponding policy recommendations discussed were as follows:

1. Development and implementation of a coherent and comprehensive bioeconomy framework
 - Shift focus from bioeconomy strategies to implementation of the policies (“from talking to doing”)
 - Intensify and improve coordination between bioeconomy policies and sectoral policies.
2. Coordination and alignment of policies between EU – national – regional levels
 - Bioeconomy strategies in all EU member states and more regions
 - Clearer and more tangible added value of coherent, comprehensive bioeconomy policy
 - Effective coordination bodies and processes
3. Financing for scaling-up + start-up funding and fostering demand-side policies
 - Ensure continuous funding access across the innovation chain
 - Better tailored support for start-ups / companies along their development journey
 - Bundling Public-Private Efforts
 - Strategic Approach and coherent policy mix for bio-based products

The action points will be presented for each of the leverage points.

¹¹ Taking the existence of a dedicated bioeconomy strategy as indicator for a coherent strategic approach to bioeconomy, only 11 EU Member States have published such a policy document (Austria, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, the Netherlands, Portugal, Spain (status in April 2025)).

¹² <https://www.shapingbio.eu/media/d3gp2et3/d4-1-recommendations.pdf>

6.2 Outline of Action Points – ‘Development and implementation of a coherent and comprehensive bioeconomy framework’

Action type	Proposed activities	Objectives	Tools /Instruments	Stakeholder responsible
Coordination Mechanism	<ul style="list-style-type: none"> Organize regular meetings at the national level and between national and EU to identify joint priorities 	<ul style="list-style-type: none"> Establish regular collaboration between sectoral policy and holistic bioeconomy policy 	<ul style="list-style-type: none"> Create a cross-ministerial group for multilevel support & mutual learning, e.g. quarterly coordination forum with rotating chair 	Supranational level: EC (DGs), National Level: Policy-makers, regional level: authorities
Coordination Mechanism	<ul style="list-style-type: none"> Foster local implementation of bioeconomy by establishing regional strategies and local bioeconomy councils 	<ul style="list-style-type: none"> Integrate bioeconomy actions with regional development and sustainability policies 	<ul style="list-style-type: none"> Regional strategies and workplans Local councils 	Regional and local authorities; clusters
Coordination Mechanism	<ul style="list-style-type: none"> Foster bioeconomy implementation through instruments, e.g. standards and certification schemes, regulations or laws 	<ul style="list-style-type: none"> Strengthen bioeconomy deployment across Europe 	<ul style="list-style-type: none"> Enabling act or decree; budget annex Implementation timeline. 	All stakeholders
Networking & Outreach	<ul style="list-style-type: none"> Run broad stakeholder workshops on successful and unsuccessful cases 	<ul style="list-style-type: none"> Promote peer learning through case studies and testimonials to increase capacities for implementation 	<ul style="list-style-type: none"> Expert workshops/panels to distil success factors Regional stakeholder validation and monitoring. 	Industry, PDIs, clusters, regional/ national authorities
Networking & Outreach	<ul style="list-style-type: none"> Launch a Bioeconomy Learning Platform to raise awareness, 	<ul style="list-style-type: none"> Systematize peer-to-peer learning. 	<ul style="list-style-type: none"> Online platform Public dashboards 	All stakeholders

	foster coordination, and enable mutual learning, can include policy.	<ul style="list-style-type: none"> • Enable accountability and learning. 	<ul style="list-style-type: none"> • Open datasets 	
Knowledge Exchange	<ul style="list-style-type: none"> • Create a shared Bioeconomy Indicator Framework 	<ul style="list-style-type: none"> • Exchange common indicators across levels to improve bioeconomy monitoring and benchmarking 	<ul style="list-style-type: none"> • Indicator handbook • Template datasets • Inventory of side/by-products 	Statistical offices, ministries.
Knowledge Exchange	<ul style="list-style-type: none"> • Quantify regional goals for biomass mobilisation and intended uses. 	<ul style="list-style-type: none"> • Align supply with sustainable demand. 	<ul style="list-style-type: none"> • Biomass balance sheets • spatial planning tools, availability assessments 	Agriculture/forestry agencies, Industry (SMEs, large Enterprises)
Knowledge Exchange	<ul style="list-style-type: none"> • Set agreements with universities and vocational training centres to co-develop future-proof qualifications. 	<ul style="list-style-type: none"> • Align skills supply with emerging needs for capacity-building 	<ul style="list-style-type: none"> • Curriculum advisory boards • Joint teaching teams 	Academia (Universities), Chambers of commerce.

6.3 Outline of Action Points - ‘Coordination and alignment of policies between EU – national – regional levels’

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
Coordination Mechanism	<ul style="list-style-type: none"> • Prepare or update bioeconomy strategies with quantified targets, clear responsibilities, and time-bound action plans linked to budgets. 	<ul style="list-style-type: none"> • Ensure coherent strategies that guide policy implementation. 	<ul style="list-style-type: none"> • National/regional implementation plans with KPIs • budgeted multi-annual workplans. 	National ministries, regional authorities, EC (DGs)
Coordination mechanism	<ul style="list-style-type: none"> • Align national or regional strategies with bioeconomy high level principles and EU strategies, but adapt to national and regional specificities, strengths and opportunities. 	<ul style="list-style-type: none"> • Ensure coherence across governance levels. 	<ul style="list-style-type: none"> • Coordination, dialogues and networking across international, EU, national and regional levels; • participation in respective platforms • leverage the EC semester. 	National ministries, regional authorities, EC
Knowledge exchange	<ul style="list-style-type: none"> • Map regional bioeconomy strengths and opportunities and organise inter-regional learning. 	<ul style="list-style-type: none"> • Improve knowledge base to give higher strategic importance to bioeconomy in regions. 	<ul style="list-style-type: none"> • Regional mapping • SWOTs • strategies, roadmaps, • inter-regional working groups • study visits. 	Regional authorities and initiatives; clusters; chambers.
Knowledge exchange	<ul style="list-style-type: none"> • Systematically analyse different models, good practice and success factors in bioeconomy coherent policy design and coordination 	<ul style="list-style-type: none"> • Provide basis for benchmarking current practices against best practices to induce learning and improvement 	<ul style="list-style-type: none"> • Commissioned studies with recommendations and guidance for practical implementation, CSAs, research projects. 	EC (DGs), national ministries, think-tanks.

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
Networking & Outreach	<ul style="list-style-type: none"> • Make “coherent bioeconomy policy and its coordination” a standing topic in policy 	<ul style="list-style-type: none"> • Good practice exchange and mutual learning to improve quality of bioeconomy strategies, coherence and coordination of policies. 	<ul style="list-style-type: none"> • European Bioeconomy Policy Forum, international fora (OECD, Global Bioeconomy Summit, FAO) • dissemination of research results of the topic leading to good-practice inventories (e.g., Deploying the bioeconomy in the EU report) 	EC, OECD, Global Bioeconomy Summit, FAO, National & regional policy makers
Networking & Outreach	<ul style="list-style-type: none"> • Run broad, structured quintuple helix stakeholder dialogues as input to strategy and policy development. 	<ul style="list-style-type: none"> • Improve legitimacy, ownership and quality of national and regional bioeconomy strategies and action plans. 	<ul style="list-style-type: none"> • Multi-stakeholder forums • Co-creative dialogue • Processes and platforms, • Citizen panels • Targeted hearings. 	Industry, PDIs, Academia (Universities), local and regional authorities, NGOs, citizens
Incentive Scheme	<ul style="list-style-type: none"> • Provide evidence for the relevance of bioeconomy by demonstrating performance of Europe’s biobased sector in international comparison, by communicating success stories, and by showing that member states/regions with clear priorities obtain greater returns from EU support. 	<ul style="list-style-type: none"> • Motivate the development of shared visions and dedicated bioeconomy strategies at national and regional levels • make benefits of bioeconomy more tangible, sustain momentum 	<ul style="list-style-type: none"> • EU-wide harmonised indicators for monitoring; annual monitoring reports • Open dashboards • Regional strategy to RIS3 • Participation in Horizon Europe projects • PPPs, flagship projects, IPCEI initiatives • Media toolkits, showcase events 	EC, JRC, national and regional institutions, industry associations, clusters, media

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
Incentive Schemes	<ul style="list-style-type: none"> • Use EU support instruments to develop dedicated bioeconomy strategies and coherent policies. 	<ul style="list-style-type: none"> • Accelerate uptake of good practice in regions and Member States without a coherent bioeconomy policy. 	<ul style="list-style-type: none"> • CSAs • BIOEAST Initiative, • Regional Innovation Valleys, pilot regions • Study visits. 	Regions and national authorities

6.4 Outline of Action Points – ‘Policies for commercialization activities and demand-side instruments’

Action Type	Proposed activities	Objectives	Tools / Instruments	Stakeholder responsible
Knowledge Exchange	<ul style="list-style-type: none"> • Open access national database of bioeconomy information, biobased resources & actors 	<ul style="list-style-type: none"> • Increase transparency and accessibility of bio-based resources. • Information for strategic and operative decisions 	<ul style="list-style-type: none"> • Development of a centralized digital platform • Integration with EU-level databases, Special national call on open access 	Policy makers and regional authorities, SMEs and industry players in the bioeconomy
Twinning/ Mentorship	<ul style="list-style-type: none"> • Twinning program to develop innovation ecosystem. 	<ul style="list-style-type: none"> • Strengthening innovation ecosystems in less advanced regions through knowledge exchange and capacity building. 	<ul style="list-style-type: none"> • Twinning and mentoring programs, Study visits and joint workshops, best practice sharing and ecosystem roadmaps. 	Emerging and moderate innovator countries, Innovation hubs and incubators, regional development agencies and universities
Networking & Outreach	<ul style="list-style-type: none"> • Communicate the bioeconomy to attract start-ups. 	<ul style="list-style-type: none"> • Position bioeconomy as high-potential sector, Convince ministries about the value of the bioeconomy. 	<ul style="list-style-type: none"> • Branding campaigns, success stories, media outreach, Policy briefs, economic impact studies, stakeholder dialogues. 	Entrepreneurs, tech start-ups, innovation hubs, media; National ministries, policy makers, funding authorities.

Incentive Scheme	<ul style="list-style-type: none"> Easier access for SMEs to funding. 	<ul style="list-style-type: none"> Make public equity schemes more inclusive, Support SMEs in pilot and demonstration activities, strengthen business cases for equity investment, Build local support structures for bioeconomy start-ups. 	<ul style="list-style-type: none"> Simplify application procedures Introduce SME-focused equity instruments Vouchers or innovation grants Capacity building for support organizations Regional networking, funding toolkits Technical assistance and mentoring programs. 	National and EU funding bodies, Start-up incubators, innovation agencies
Incentive Scheme	<ul style="list-style-type: none"> EIB and national bank cooperation on funding opportunities. 	<ul style="list-style-type: none"> De-risk private investments in high-potential bio-based projects. 	<ul style="list-style-type: none"> Guarantee schemes (e.g. InnovFin, InvestEU) Collaboration with venture capital and private equity. 	National governments and financial ministries, financial institutions & investors
Incentive Scheme	<ul style="list-style-type: none"> Expand the CBE JU budget and scope to finance more projects. 	<ul style="list-style-type: none"> Increase the reach and impact of EU-level funding for bio-based innovation., Install a CBE JU additional program focused on multiplication and adaptation of already developed new value chains 	<ul style="list-style-type: none"> Advocate for budget expansion cross-sectoral projects Launch dedicated calls Support regional adaptation Promote knowledge transfer. 	EU institutions (e.g. CBE JU), Bioeconomy consortia, project developers, regional authorities
Incentive Scheme	<ul style="list-style-type: none"> Introduce milestone-based funding instruments. 	<ul style="list-style-type: none"> Incentivize sustainable product development, reinforce public equity schemes and incentivize 	<ul style="list-style-type: none"> Tex system based on Life Cycle Assessment (LCA) Pricing concept for negative impacts of fossil fuels 	National governments, EU Commission, Regional

		sustainable innovation, Facilitate the growth of bio-based industries.	<ul style="list-style-type: none"> • Regional and international investment schemes • Subsidies and loans • Monitoring and evaluation frameworks • Quotas for the most harmful single-use items 	development agencies, Funding authorities
Coordination Mechanism	<ul style="list-style-type: none"> • Establishment of an operational expert group. 	<ul style="list-style-type: none"> • Provide strategic guidance to stakeholders • Identify strategic improvements through EU support mechanisms, • Assessment of the coherence of funding landscape by the Member States. 	<ul style="list-style-type: none"> • Formation of Advisory services and matchmaking • Use of Horizon Europe Policy Support Facility (PSF) • Comparative analysis of funding programs • Stakeholder mapping • Coordination meetings and policy dialogues 	National and regional funding bodies, Industry/Academia, National Ministries, EC
Coordination Mechanism	<ul style="list-style-type: none"> • Develop a transparent path for how and for what purpose a biotech IPCEI is implemented, • Provide more communication about the IPCEI concept. 	<ul style="list-style-type: none"> • Raise awareness and understanding of IPCEI, • Clarify procedures and strategic goals for launching a biotech IPCEI. 	<ul style="list-style-type: none"> • Information campaigns, • stakeholder workshops • targeted outreach, guidelines 	EU and national policy makers, biotech industry, innovation clusters, SMEs, industry associations, national ministries
Coordination Mechanism	<ul style="list-style-type: none"> • Harmonizing product and waste regulations. 	<ul style="list-style-type: none"> • Facilitate cross-border trade and innovation by aligning regulatory frameworks for bio-based products and waste management. 	<ul style="list-style-type: none"> • Regulatory gap analysis and benchmarking • EU-level coordination and standardization efforts • Stakeholder workshops and legal advisory panels. 	Regulatory authorities and standardization bodies, Bio-based product manufacturers,

				Waste management companies and recyclers.
Coordination Mechanism	<ul style="list-style-type: none"> • Create solutions for improved access to knowledge about regulations, options, and solutions. 	<ul style="list-style-type: none"> • Simplify access to regulatory and funding information 	<ul style="list-style-type: none"> • Centralized digital platforms • Helpdesks • Interactive guides 	Start-ups, SMEs, project developers.

7. Facilitating partners of the implementation workshops

Agriculture Research, Ltd. Troubsko (ART) is a private research organisation providing support and consultancy services to agriculture practice and to the Ministry of Agriculture. It has established a wide network of national and international partners and coordinates the BIOEAST HUB CR. BIOEAST is a macro-regional initiative supporting the transition to a sustainable circular bioeconomy in Central and Eastern Europe. It focuses on strategic research, innovation, and policy development to enhance bioeconomic growth in the region. The initiative is backed by government ministries, research institutions, and industry stakeholders.

Food & Bio Cluster Denmark (FBCD) is a Gold-label, non-profit cluster management organisation, science park, incubator and project organisation with nationwide coverage and headquarters located in the Central Denmark Region. FBCD provides services to companies and organisations within innovation, internationalisation, investment, funding, incubation and networking along the entire food and bioeconomy value chain.

The **Fraunhofer Institute for Systems and Innovation Research (ISI)** is an independent thought leader for society, politics and business. As a leading international institute for innovation research, it examines the scientific, economic, ecological, social, organizational, legal and political conditions for innovations and their subsequent effects. The Business Unit Bioeconomy and Life Sciences identifies current developments, explores their effects, determines the position of Germany and Europe in international competition and analyses the influence of policies. It is the coordinator of the ShapingBio project.

The **SUBMARINER** Network is a cooperation platform that brings together actors from the Baltic Sea Region to promote innovative and sustainable uses of marine resources. It integrates perspectives from local to transnational levels, connecting research institutions, businesses, policymakers, and civil society. SUBMARINER is a flagship initiative under the EU Strategy for the Baltic Sea Region (EUSBSR) and coordinates projects like Blue Mission BANOS, focusing on blue economy development. The network supports marine biotechnology, multi-use offshore solutions, and sustainable aquaculture, fostering regional development and participatory governance.

Tech Tour partners with corporations, governments, and regional development organizations to accelerate growth and innovation. Their partnerships help foster economic development, create jobs, and support high-growth companies shaping industries. Partners gain visibility, access to emerging technologies, and influence over policy frameworks. Tech Tour offers opportunities for collaboration through investment programs, scaling challenges, and high-profile events across Europe. This workshop was held in alignment with the Tech Tour Circular 2025 Programme.

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