Design Options Paper: Joint Strategy and New Services Design and Implementation

Project: Boosting innovation agencies for bioeconomy value chains

Acronym: BIO-Boost

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Part I - Introduction

I.1 Context

This document is deliverable 1.2. Design Options Paper: Joint Strategy and New Services Design and Implementation, a public deliverable developed by The National Centre for Research and Development with the contribution of all partners, developed under the scope of BIOBoost Project ID – 101096150, co-funded by the European Union through the Horizon Europe Programme.

The Design Options Paper: Joint Strategy and New Services Design and Implementation (DOP) outlines the framework for a joint strategy and new services design to enhance bioeconomy innovation ecosystems and developed on the basis of experience from project outcomes provided by 8 project partners: Food & Bio Cluster Denmark (FBCD - DK), CLIC Innovation OY (CLIC - FI), Bioeconomy for Change (B4C - FR), Lithuanian Innovation Centre (LIC - LT), National Centre for Research and Development (NCBR - PL), Unimos / AgroBioCluster (UNI - PL), ICT Murska Sobota (ITC - SI), onTech Innovation (ONT - ES) that are innovation agencies of the bioeconomy sector from the 7 EU countries (Denmark, Finland, France, Lithuania, Poland, Slovenia, and Spain) specialised in the bioeconomy ecosystems, bio-based industries, ecosystem innovation management, clusters, innovation networks, digital innovation hubs, ICT services, deep-tech, Industry 4.0 technologies (IoT, AI, blockchain, ERP, cloud, AR/VR, big data, robotics, etc.), as well creating and financing research and innovations programmes.

The DOP was created in the second year of the duration of the BIOBoost project to present joint strategy and new services development of the bioeconomy environment prepared as a valuable and usable document based on inputs from each project partner under WP1: Peer-to-peer learning, WP2: Challenges, and WP3 Cross-border SME support where all participating organisations actively contributed in the co-design and co-creation. The DOP is to serve as a complex document of the developed strategy and implementation recommendations worked out by the project partners a:

- solid “opening-up” strategy of increasing participation of diverse stakeholders;
- serve as an operative roadmap for designing and implementing new supporting services, tools and resources to facilitate and expand the support provided to innovation stakeholders.

To achieve the objectives of the BIOBoost projects and the WP1 Peer-to-Peer Learning Task 1.1 – Design Options Paper, which focuses on joint strategy and the design and implementation of new services, the project partners shared their best practices and experiences. They exchanged knowledge that enabled them to gather essential data and valuable insights. However, the Design Options Paper (DOP) was delivered before some key deliverables were completed, including D2.2 (Report and Evaluation of Impact from Challenges), D2.3 (Matrix of Innovation Opportunities), and D3.2 (Report and Evaluation of Impact from Cross-Border KAM). These deliverables may influence the outcomes presented in the DOP and inspire further developments in the document. Additionally, relevant reports recently published by Mario Draghi ("The Future of European Competitiveness - A Competitiveness Strategy for Europe"), Enrico Letta ("Much More than a Market"), and Manuel Heitor ("Align, Act, Accelerate") could significantly impact the future of the bioeconomy in the EU and may play a role in shaping a new Bioeconomy Strategy by the European Commission.

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I.2 General description

The BIOBoost project was created to increase the latent potential among EU member countries through the joint efforts of the participating innovation agencies to transfer good practices, exchange knowledge and experiences, build and expand networks, expand cooperation and enlarge the participation of more diverse innovation stakeholders and territories to existing successful initiatives in the bioeconomy, including agri-food, forestry, bio-based chemicals, materials, products, blue economy and bioenergy. It will also boost the international cooperation of the bioeconomy by encouraging emerging innovator countries to work more closely on shared objectives with the leading innovator countries and explore possible collaboration with non-UE.

I.3 Objective

The Design Options Paper: Joint Strategy and New Services Design and Implementation (DOP) integrates contemporary insights and related initiatives, addressing systemic challenges and fostering resilience, inclusivity, and competitiveness across Europe's bioeconomy sectors. It aims to guide innovation agencies in supporting SMEs with tailored solutions aligned with the European Green Deal, the EU Bioeconomy Strategy, and Smart Specialization Strategies. It advocates for a robust, collaborative, and innovation-driven approach to create a resilient and competitive European bioeconomy ecosystem.

I.4 Background

The project aligns closely with the priorities of the European Green Deal, which underscores the importance of achieving climate neutrality by 2050 and recognises the circular bioeconomy as a critical enabler for sustainability. The circular bioeconomy plays a pivotal role in transforming industries and addressing climate challenges by emphasising sustainable practices and resource efficiency. BIOBoost also supports the EU Bioeconomy Strategy, which highlights progress in deploying bioeconomy strategies while addressing gaps in sustainable consumption and resource management.

Innovation agencies are central to the project's approach, leveraging their expertise to foster sustainable value chains and drive green and digital transformation, particularly in underperforming countries. These agencies facilitate cross-sectoral initiatives, encourage collaboration, and enable the transition to a competitive and sustainable bioeconomy.

Furthermore, BIOBoost contributes to the European Union's goal of enhancing the European single market as a platform for innovation, sustainability, and resilience. The project aligns with broader EU strategies by promoting competitiveness and fostering a bio-based economy that is a cornerstone of the Green Deal and Europe's long-term sustainability objectives.

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Part II - Joint Strategy and New Services Design and Implementation

II.1: Key challenges in the bioeconomy innovation ecosystem

During the preparation of the D1.1 Innovation Ecosystem Report in the early stage of the project, partners identified key challenges for the innovative bioeconomy sector.

As a result of cross-country collaboration between project partners, an overview of innovation ecosystems presented examples of good practices and successful initiatives with several key challenges faced by SMEs or innovation agencies. The experience and knowledge gathered during the project confirmed that the challenges have been adequately addressed.

Now, almost 2 years after the kick-off of the project, being enhanced by the knowledge gained during this time gathered thanks to the project's many implemented initiatives, concluded observations pointed out in the Innovation Ecosystem Report are even more up-to-date, which indicates that Europe needs a strong bioeconomy sector, which can be achieved by selecting appropriate good practices, ideas, activities or solutions ready to be implemented to address the challenges.

II.1.1 Regional disparities

Disparities in innovation levels persist in all EU regions, particularly between leading country innovators (e.g. Denmark, Finland) and emerging innovators (e.g. Poland, Slovenia). These disparities remain significant despite recent efforts, mainly because the challenge has only recently been identified in public discourse:

- Limited access to networks and resources.
- Unequal opportunities for green and digital transformation.
- Need for more integration of less developed countries into EU-wide initiatives.

II.1.2 Capacity and skills gaps

Innovation agencies and SMEs in underperforming regions face challenges in adopting advanced bioeconomy technologies such as IoT, AI, and blockchain. There is also a need for cross-border collaboration and expertise in bio-based technologies.

II.1.3 Financial constraints

SMEs, especially in high-risk bio-based sectors, need help to secure funding. Structural gaps in financial frameworks strongly interfere with early-stage and promising initiatives, particularly in widening regions.

II.1.4 Policy and infrastructure barriers

Fragmented regulatory frameworks and insufficient pan-European infrastructure disrupt cohesive bioeconomy development. Challenges remain in harmonising policies across diverse economic contexts.

II.1.5 Timing

Timely action is key to responding to identified challenges. It is a question of timely recommendations, the ability to react quickly to changing realities, or the appropriately timed implementation of policies. It is also a question of timing when implementing the results of the research and innovation initiatives, which must provide a well-timed framework for action to achieve the indicators properly. Shortening a timeframe for actions and deliverables may reduce the effectiveness of the final results or affect the quality of the indicators achieved.

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II.2: Joint Strategy for Innovation Ecosystem Enhancement

As part of the project activities, a joint Strategy for Innovation Ecosystem Enhancement was defined and adopted, where three main activities were designed with a special focus on peer learning, analysis of challenges and opportunities mainly through the organisation of hackathon workshops, and cross-border SME support with Key Account Management services. All these activities were successful in delivering a lot of valuable outcomes. The scheme below provides an excellent template for planning activities to strengthen the bioeconomy innovation sector.

II.2.1 Peer learning and capacity building

II.2.1.1 Study visits and staff exchanges should facilitate knowledge sharing and skill development by organising peer-to-peer exchanges and workshops, such as leveraging the Open Innovation Ecosystem Playbook (OIEP) and Disruptive Innovation Ecosystem (DIE) models to foster cross-sector collaboration.

In effect, study visits and staff exchanges implemented under the project proved to be a key element of the project, providing numerous valuable knowledge and lessons learned, which served to map the most effective and relevant lessons for international cooperation and networking, developing relationships between partner organisations, and providing expertise and inspiration, also thanks to its flexible approach. Study visits and staff exchanges also impact education and skills development. It was facilitated by exchanging experiences and best practices, strengthening links between partner organisations, or exchanging different management cultures and ecosystems. These activities also influenced the mutual exchange, strengthening and broadening cooperation or providing sustainable linkages between project partners. This has enabled a range of activities, e.g., an overview of national policies and strategies, exchange of information on national bioeconomy support instruments, sharing successful methodologies, transfer of good practices between partners, cross-comparison of existing initiatives in support of innovation, or exchange of views on existing barriers in bioeconomy sectors.

The project partners identified some additional activities that could be implemented to increase the impact of the activities undertaken on study visits:

- Exchange of educational events;
- Promotion of international cooperation in different regions of the EU;
- Supporting international cooperation outside the EU in line with current trends in EU external relations;
- Develop adapted support instruments and methodologies for cross-border applications;
- Encouraging the involvement of young people;
- Facilitating mobility for research and knowledge

Additional activities for staff exchanges:

- Minimum 3 years project duration to achieve better impact;
- More time to develop and use additional activities;
- Innovation excursions to local ecosystems;
- Innovation tours to innovation centres, research institutions and accelerators;
- Exchange of speakers;
- Thematic knowledge exchange programme;
- AI tools targeting cross-border innovation support services;
- Workshop on joint development of innovation policies.

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II.2.1.2. Training programme - hackathon events[1] are designed to develop training modules tailored to managing digital and bioeconomy innovations, focusing on cutting-edge technologies.

Organised hackathons encounter several challenges, which the partners have successfully addressed. These include inviting a sufficient number of high-quality SMEs, effectively following up with invited SMEs to ensure successful implementation across Europe and providing support and knowledge on funding and financing to enhance the impact of the training. However, significant challenges remain, particularly in encouraging the transition of SMEs toward more sustainable bioeconomy solutions and engaging SMEs in collaboration without offering financial incentives.

II.2.1.3. Cross-border Initiatives[2] involve the creation of Key Account Management (KAM) services to provide targeted SME support, which provides the basis for developing a time-banking system for regional knowledge and service exchange.

The project partners provided high-quality, targeted cross-border innovation support services by delivering cross-border support to SMEs. It was also a platform for mutual support, focusing on helping SMEs and start-ups accelerate the innovation process. This activity also allows for knowledge transfer and the use of skills acquired or refined during peer learning activities.
However, testing and proving new concepts or trying out in practice methods learned from other partners in a controlled environment requires more excellent skills to achieve the predefined indicators of success. Considering the existing few regional or innovative differences, especially in the bioeconomy sector, cross-border initiatives are challenging and require individual and tailored approaches delivered by experienced managers in offering cross-border key account management services.

II.3: Measures of Success

The success of achieving the assumed objectives of the adopted strategy and the implementation of new services is always determined by key performance indicators, including their scale/significance and adequately designed and defined specific outcomes for the project's duration and beyond the project's life cycle. Using the example of the BIO-Boost project, we present a model set of sample KPIs and outcomes addressed to the methodologies and services included in the DOP, setting the framework for measuring the project's success. In measuring success, as crucial as KPIs and outcomes, it is mandatory to present risk management with a description of the risks and proposed risk mitigation measures according to project management methodologies.

[1] A more detailed analysis of the challenges and opportunities held in hackathon workshops implemented under the BioBoost project will be provided in the D2.2 Report and evaluation of the impact of challenges and D2.3 Matrix of innovation opportunities scheduled to be published at the end of the project, after completion of the DOP.

[2] A more detailed analysis of cross-border SME support and Key Account Management services implemented under the BioBoost project will be provided in the D3.2 Report, and an evaluation of the impact from cross-border KAM is scheduled to be published at the end of the project, after completion of the DOP.

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II.3.1 Key Performance Indicators (KPIs): The presented KPIs determine the comprehensive scale and significance of the project's contribution.

Scale and significance of the project's contribution		
Key Performance Indicators (KPIs)	**Scale / significance**	**Explanations**
KPI 1: Number of stakeholders involved in study visits	20+	7 study visits will include active participation from 20+ external stakeholders / innovation agencies bringing new concepts to the cooperation (WP1)
KP1 2: Innovation ecosystem relationships	20+	Establishment of permanent and wider networks from innovation ecosystem (IE) representatives' participation in study visits, and connections of networks / owners / members to other regional ecosystems, creating a web of IE2IE-IE2R and IE2IE-IE2B connections (WP1)
KP1 3: Number of staff exchanges	12+	Staff exchanges may be carried out by staff to other partner organisations or to external stakeholders involved in the actions if relevant / feasible (WP1)
KPI 4: Number of organisations involved in challenge events / hackathons	160+	The consortium will run at least 8 hackathon events, which will include an average of 20+ organisations involved in teams, to provide solutions. (WP2)
KPI5: Number of SMEs presenting innovative cases for funding	50+	Focusing on the widening regions, the partnership will organise a series of webinars and workshops to help SMEs become more active in EU research and innovation funding (T4.3)
KPI 6: Number of SMEs involved in the cross-border KAM initiatives	24+	Selected and screened SMEs will be able to use a KAM from another organisation to support their development. This is seen as an aid to the SME and a P2P learning experience for the innovation agencies concerned. (WP3)
KPI7: Number of SMEs reached/engaged with in total	450+	240+ SMEs will be actively engaged in hackathons / events and cross-border KAM (WP3). A further 210 will take part in funding webinars and workshops on funding (WP4)
KPI 8: Number of policymakers reached	100+	At least 100 policymakers and stakeholders at various levels will be reached during the implementation of the final conference, with the aim of addressing future investment and support requirements.

II.3.2 Expected outcomes

As indicated in this section, the DOP outcomes aim to achieve long-term goals of reducing innovation disparities across EU regions, strengthening bioeconomy value chains and sustainable practices, and enhancing resilience and competitiveness of bioeconomy sectors, which reflect the project's main objectives:

- Expected outcome 1: Increased inclusiveness by enlarging the participation of more diverse innovation actors and broadening participation among EU countries' territories in already existing successful initiatives and networks that interconnect European innovation ecosystems and promote the deployment and scale-up of innovative solutions.
- Expected outcome 2: Reduce the innovation divide in Europe and reinforce the innovation aspect of the European Research Area in the areas of inclusiveness and connectivity, improving the innovation capacities of Member States and enabling them to engage in joint efforts for sustainable growth and economic development.

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II.4: Design of new services

During study visits, staff exchanges, and implementing training programs such as hackathons, we gathered insights on challenges and opportunities within innovation ecosystems and cross-border initiatives through the KAM service. These activities led to the collection of various ideas aimed at proposing new services that could serve as valuable guidance for tailoring future offerings.

As a result, we present two services proposed by SMEs and start-ups that have benefited from the project: Networking and Collaboration Platforms and the Entrepreneurial Discovery Process (EDP). Additionally, other ideas were compiled during the development of the DOP, such as Innovation Tools, a program to support international grants and support for Green and Digital Transformation. These ideas were evaluated through a survey addressed to project partners.

Based on this information, a list of proposed ideas was created to reflect our project experiences and address the challenges identified throughout the project and the DOP.

II.4.1 Big challenge events

Coordination of problem-solving sessions in partnership with large enterprises and through public procurement processes. These sessions addressed specific challenges, including waste reduction, alternative materials, food management, and sustainable practices, pertinent to the current issues businesses and public services face. The objective was to establish a connection between start-ups or small and medium-sized enterprises (SMEs) and significant investors within the bioeconomy sector, thereby facilitating the following initiatives:

- Scale-up initiative
- Technology transfer processes

II.4.2 Innovation tools

Implement innovative tools and methodologies to align SMEs with green and digital opportunities and current social and market needs. Introduce bioeconomy-specific metrics to evaluate societal and environmental impacts by offering joint acceleration and incubation activities or cross-border boot camps.

II.4.3 Activating participation in international grants

More intense support for transnational cooperation and expanding services is crucial. It would support the SMEs and start-ups in expanding internationally to other EU and non-EU countries. It is related to the need to support entities looking for international grants to react to the financial constraints of the SMEs having difficulties accessing funding, particularly in early-stage start-ups, fostering collaboration, and addressing regional disparities in the bioeconomy innovations sector.

II.4.4 Green and digital transformation support

Implement leverage tools like Digital Maturity Assessments to enable SMEs to adopt advanced technologies such as AI, IoT, and blockchain for process optimisation. Incorporate digital tools for real-time collaboration and multi-stakeholder engagement. Digital adaptation may be fundamental in filling the skills gap challenge.

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II.4.5 Networking and collaboration platforms

Expand international connections through platforms like the European Cluster Collaboration Platform[3] (ECCP) and Enterprise Europe Network[4] (EEN) to form resilient European value chains.

II.4.6 Entrepreneurial Discovery Process (EDP)

Enhance EDP in the bioeconomy innovation ecosystem to identify emerging opportunities in bioeconomy sectors, such as sustainable packaging and renewable materials. This dynamic, interactive process where key stakeholders identify and prioritise areas of economic opportunity might be beneficial to address challenges[5].

II.5: Implementation

A key element in the implementation of the DOP is the identification of recommendations for the implementation of the proposed services. On this basis, four pillars were identified to implement the assumed services successfully.

II.5.1 Governance and coordination

Consortium partners should:

- Define clear, predefined roles and responsibilities;
- Establish a monitoring framework to evaluate the progress of implementation, achievement of the results and outcomes;
- Integrate adequately adopted management methodologies to adapt project objectives to the challenges and dynamically changing circumstances.

II.5.2 Integration with existing frameworks

Align new services with EU-level strategies such as Horizon Europe, Smart Specialization Strategies, and the Green Deal to ensure coherence and amplify impact.

II.5.3 Stakeholder engagement

Project objectives and indicators must align new services with EU-level strategies such as Horizon Europe, Smart Specialization Strategies, and the Green Deal to ensure coherence and amplify impact.

II.5.4 Training and dissemination

To achieve measures and objectives, adequate training and project dissemination are needed. Therefore, during implementation, it is recommended to:

- Host webinars, workshops, and conferences to disseminate project results.
- Publish open-access guidelines and success stories to inspire replication and promote the achieved results.
- Create and follow dissemination, communication and exploitation project plan.

[3] https://www.clustercollaboration.eu/
[4] https://een.ec.europa.eu/
[5] https://publications.jrc.ec.europa.eu/repository/handle/JRC123818

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II.6: Policy recommendations

In this section, we have collected a summary of recommendations for policymakers that correspond to the challenges, opportunities, and knowledge gathered in the DOP and the most essential documents regarding the bioeconomy community. These recommendations can significantly contribute to strengthening the achieved project goals, continuing the initiated actions, and increasing the impact towards green transition and a more sustainable, resilient, circular bioeconomy.

II.6.1 Strengthen regional cooperation

Promote funding for international projects and international cross-border cooperations supporting the cooperation between different innovators consisting of representatives of the strong and emerging innovators. It is also crucial to support shared innovation infrastructures to foster inclusive growth.

II.6.2 Support SMEs and start-ups

Provide targeted financial incentives for green and digital transitions and develop tailored instruments for boosting bio-based innovations in widening regions.

II.6.3 Enhance training and resources

Invest in EU-wide bioeconomy capacity-building programs to provide adequate education and skill development. Moreover, evaluation metrics need to be standardised to ensure cross-regional comparability.

II.6.4 Boost strategic investments

Mobilise additional funding for R&I programmes and partnerships to strengthen Europe's bioeconomy innovation capacity.

II.6.5 Harmonize regulations

Standardise EU-wide guidelines for bioeconomy development and shared understanding and enhance cross-border collaboration.

II.6.6 Promote inclusive growth

Focusing on widening regions to ensure equitable access to bioeconomy opportunities would enrich and strengthen the European bioeconomy while also contributing to boosting European competitiveness.

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Part III – Conclusion

The BIO-Boost study visits, staff exchanges, hackathon events, and cross-border initiatives held in Denmark, Spain, Lithuania, Finland, France, Poland, and Slovenia have strengthened international cooperation, shared experiences, and integrated various innovation ecosystems. The actions emphasised in the DOP highlight the significance of technology transfer in the future bioeconomy landscape, which could enhance competitiveness and promote disruptive technologies within a more resilient and circular bioeconomy. Additionally, the DOP underscores the importance of digital transformation, cross-sector collaboration, and support for start-ups and small and medium-sized enterprises (SMEs).

The proposed DOP serves as an operational roadmap with a robust strategy to design and implement new support services, tools, and resources to facilitate and expand assistance for innovation stakeholders.

The document has been prepared with a strong focus on increasing the participation of diverse stakeholders. The DOP emphasises that reducing the innovation divide in Europe and reinforcing the innovation aspect of the European Research Area, particularly in terms of inclusiveness and connectivity, represents one of the most significant challenges facing Europe today. Based on the DOP and all BIO-Boost activities, we propose a set of seven key joint conclusions:

1. **Importance of cross-sector synergies**: Collaboration between sectors such as agriculture, biotechnology, energy, and digital technologies is essential for achieving sustainable development in the bioeconomy.
2. **International cooperation**: The exchange of experiences and best practices among EU countries is vital for reducing the innovation gap and enhancing the innovation capacities of member states.
3. **Support for start-ups and SMEs**: There is a need for increased financial and organisational support for start-ups and SMEs to introduce innovations and participate in international projects effectively.
4. **Digital transformation**: Digital technologies such as artificial intelligence, the Internet of Things (IoT), blockchain, and robotics play an increasingly important role in the bioeconomy and are crucial for its future development.
5. **Education and skills development**: Investing in education and skills development in new technologies and innovations is necessary to prepare younger generations for the challenges of the bioeconomy.
6. **Management of innovation ecosystems**: Effective management of innovation ecosystems, including establishing and coordinating advisory boards in collaboration with larger companies, is critical for the success of innovative projects.
7. **Sustainable development and circular economy**: Promoting sustainable practices and principles of the circular economy is essential for achieving sustainable economic growth and environmental protection.

These conclusions reflect the shared priorities and challenges discussed during the project's activities and indicate directions for future actions to strengthen the innovative aspect of the bioeconomy. This will help build a resilient, inclusive, and competitive European bioeconomy ecosystem that supports sustainable economic growth, cooperation on shared priorities, and exchanging knowledge and experiences to help the European community address current challenges together.

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14. Manuel Heitor report - *Align, act, accelerate, that might be impactful for the future of the bioeconomy in UE*;
15. European Green Deal;
16. The European innovation scoreboard (EIS)[6];
17. The European Digital Strategy[7] ;
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List of attachments:

Annex No.1 Knowledge Produced

Importance of Regional Ecosystems in Bioeconomy:
Innovation ecosystems across different EU regions (leaders, moderate innovators, and widening countries) are critical for fostering collaboration and addressing regional disparities in bioeconomy innovation.

Cross-border Collaboration Frameworks:
The BIO-Boost project highlights the significance of Key Account Management (KAM) services in strengthening SME support across borders and fostering international cooperation.

Role of Digital Tools in Bioeconomy:
Integrating advanced digital technologies (IoT, AI, blockchain) has been crucial in modernizing bio-based industries and improving supply chain transparency.

Customized SME Support Models:
Tailored innovation support services are needed to address bioeconomy SMEs' unique needs effectively.

Lessons from Widening Countries:
Challenges such as limited infrastructure, financial constraints, and governance issues in widening countries underscore the need for targeted capacity-building initiatives.

Alignment with the Green Deal and Bioeconomy Strategy and Research Policy:
Taken actions must be adapted directly to the EU Bioeconomy Strategy and Green Deal objectives, emphasizing sustainability, circularity, green and digital transformation. Moreover, to achieve practical bioeconomy governance, research outputs need to be aligned with policy frameworks to create coherent strategies for sustainability.

Shared Learning through Peer-to-peer Initiatives:
Study visits and workshops enable knowledge transfer among innovation agencies, strengthening regional ecosystem capacities.

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Annex No. 2 Lessons Learned

Tailored approached:
National bio-economy systems have various and different strengths that require tailored approaches to address the unique strengths and weaknesses of regional bioeconomy ecosystems.

Collaboration and Capacity Building is crucial:
Collaboration of all stakeholders, including public, private, and citizens, is essential for impactful bioeconomy innovation.
Strengthening the capabilities of innovation agencies would directly impact the effectiveness of the delivered bioeconomy support services.

To foster innovations, focus on SME training and skills development offers are needed:
SMEs require targeted support to overcome barriers in funding, green and digital transformation, or cross-border collaboration.
Practical problem-solving events like hackathons effectively engage diverse stakeholders and might provide innovative solutions for bioeconomy challenges.

Technology drives innovation and support in achieving digital and green transformation:
Adopting advanced technologies like AI and IoT can significantly enhance operational efficiency in bio-based sectors. Integrating digital tools with green initiatives might drive the modernization of bio-based industries.

Addressing Financial Gaps:
Financial constraints remain a significant barrier for SMEs, especially in less-developed regions. Targeted funding mechanisms are needed.

Sustainability is fundamental:
Projects must prioritize environmental, economic, and social sustainability to align with the European Green Deal.

Identification of success indicators:
Using identified, tailored and specialized metrics for impact assessment ensures the long-term success of bioeconomy initiatives.

Importance of peer learning:
Structured learning opportunities among agencies catalyse improvements in bioeconomy innovation strategies.

Resilience through diversity:
Involving diverse regions and stakeholders in bioeconomy initiatives builds resilience against systemic challenges.

Policy coherence will enhance impact:
Aligning European initiatives and national policies with EU-wide strategies ensures consistency and amplifies the impact of bioeconomy projects.

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Annex No.3 Summary of BIO-Boost Study Visits

The study visits under the BIO-Boost project aimed to reduce the innovation gap in Europe and strengthen the innovative aspect of the European Research Area. The focus was on integration and connectivity, improving the innovation capacities of member states, and enabling them to engage in joint efforts for sustainable growth and economic development.

Study Visit in Denmark
The innovation support system by Food & Bio Cluster Denmark was presented in Denmark. Visits to the Technical University of Denmark and a conference on bio-solutions innovation highlighted the importance of collaboration between science and business. Pitching sessions and visits to innovation hubs emphasised the role of education and support for start-ups.

Study Visit in Spain
In Spain, participants learned about the innovation ecosystem in the Andalusia region, visiting places like the PTS Health Sciences Technology Park and CIDAF. Pitching sessions and workshops facilitated the exchange of knowledge and experiences. Meetings with onTech Ambassadors highlighted the importance of international cooperation.

Study Visit in Lithuania
The agrifood forum in Lithuania focused on sustainable practices and circular economy principles. The C2Lab facilitated the maturation of project ideas and the building of business cases. As a moderate innovator, Lithuania emphasised integrating bioeconomy priorities into regional strategies.

Study Visit in Helsinki
The visit to Helsinki focused on open innovation and co-creation. The Open Innovation Ecosystem Playbook presentation and participation in the 4Recycling forum provided partners with a new perspective and approach to collaboration. This visit emphasised the importance of managing innovation ecosystems.

Study Visit in France
The BIOKET conference in Reims focused on key technologies supporting the bioeconomy. Visits to the Pomacle-Bazancourt biorefinery and the White Biotechnology Center of Givaudan showcased the latest achievements in biomass. The BIOBoost consortium meeting allowed for the exchange of experiences and the planning of further actions.

Study Visit in Poland
In Poland, a national report on Agriculture 4.0 was presented, highlighting the importance of synergies between various sectors. The visit also proved the importance of technology transfer in the future bioeconomy landscape, which might bring solutions to better competitiveness and support for disruptive technologies. The NUTRITECH program, the most significant instrument supporting the bioeconomy, brought many interesting projects, but there is a need for better stimulation of international cooperation. The engagement of the SMEs and start-ups in the hackathon reaffirmed its determination of the Polish market to reduce the innovation gap in the EU.

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Study Visit in Slovenia

In Slovenia, challenges in the agrifood sector and circular food economy were discussed. The future importance of digital and artificial intelligence concerning the need to preserve regional and national cultural heritage was emphasised. Visits to biotechnology companies such as ACIES BIO Ltd. and Green Point highlighted innovative approaches to production and traceability. The DIGI-SI AGRIFOOD hackathon emphasised the importance of digital tools in transforming the bioeconomy.

Conclusions

The BIO-Boost study visits strengthened international cooperation, exchanged experiences, and integrated various innovation ecosystems. The importance of digital transformation, cross-sector collaboration, and support for start-ups and SMEs was emphasised. These activities reduce the innovation gap in Europe and support sustainable economic growth, cooperation on shared priorities, and exchange of knowledge and experiences that may help the European community face current challenges together. Discussed issues indicated recommendations on the next steps needed to strengthen the innovative aspects of the European Research Area.

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