



SCALE^{UP}

community-driven
bioeconomy development

Report outlining a governance structure and future roadmap for the metaCSEI

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EXECUTIVE SUMMARY

This report aims to provide a general overview of the SCALE-UP Bioeconomy MetaCluster – a pioneer International Cluster of Social and Ecological Innovation (metaCSEI) in the bioeconomy designed to create a versatile and interdisciplinary space to ensure the sustainability of the SCALE-UP regional platforms, uphold the SCALE-UP project legacy and contribute to the development of further research, innovation and collaboration opportunities after the end of project financing.

The development of the SCALE-UP Bioeconomy MetaCluster has been inspired by the EU's expert group on social economy and social enterprises and combined with different methodologies, approaches and tools used successfully in cluster development in Europe and applied in other EU projects, programmes and initiatives.

The report is divided into three main parts. The first one is focused on introducing the SCALE-UP project and its activities. It contains information about six regional bioeconomy platforms and an overview of different approaches to developing clusters and metaclusters, their relevance, added value and benefits. Moreover, a landscape of seven clusters and networks related to European bioeconomy development has been included to provide a more exhaustive overview of existing collaborative mechanisms and discuss how the SCALE-UP Bioeconomy MetaCluster will engage with them. The second part contains the project's approach to setting up the SCALE-UP Bioeconomy MetaCluster. It includes partners' visions, objectives and areas of cooperation, as well as governance structure and the roadmap for the implementation of the project with three consecutive and interconnected phases: preparatory activities (2024 and 2025), implementation (2026 and 2027) and follow-up and impact measuring (2028). The third part concludes the report and summarises the process and follow-up activities related to the SCALE-UP Bioeconomy MetaCluster, especially in orchestration activities and active search for funding opportunities.

The SCALE-UP Bioeconomy MetaCluster has been designed to contribute to collaboration between project partners, the members of the SCALE-UP Community of Practice, and other innovation agents interested in jointly fostering bio-based social and ecological innovations in a rural development context.

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Abbreviations

3P	People, Planet, Profit
AAP	Annual Action Plan
CAP	EU Common Agricultural Policy
CBE JU	Circular Bio-Based Joint Undertaking
CEE	Central and Eastern Europe
COSME	The Competitiveness of Enterprises and SMEs Programme
EBCA	European Bioeconomy Cluster Alliance
EC	European Commission
EGD	European Green Deal
EIE	European Innovation Ecosystems
ECCP	European Cluster Collaboration Platform
ESCP	European Strategic Cluster Partnerships
EU	European Union
ISP	Innovation Support Programme
MAA	Multi-Actor Approach
RBA	Regional Bioeconomy Alliance
RIS3	Research and Innovation Strategies for Smart Specialisation
RIV4BFS	Regional Innovation Valleys for Bioeconomy and Food Systems
SLRT	BBioNets Standing Liaison Round Table
TF	Task Force (for market assessment and business model design)
TRL	Technology Readiness Level
WP	Work Package

1 Background

This chapter provides an overview of the SCALE-UP project, its regional bioeconomy platforms, and different approaches to cluster and metacluster development and support programmes. It also describes a landscape of networks and clusters operating in Europe in the bioeconomy field.

1.1 Introduction to the SCALE-UP project

Since 2022, the European Union's funded project SCALE-UP has been supporting the community-driven bioeconomy development by implementing a holistic and comprehensive set of activities and tools to support regional multi-actor partnerships in identifying and scaling up innovative and sustainable bio-based value chains that build on regional resources.

The overall concept underpinning the SCALE-UP project builds on a holistic approach to boost the development of regional bioeconomies and promote social, environmental and economic benefits in the broader context of rural development (Gerdes et al., 2023).

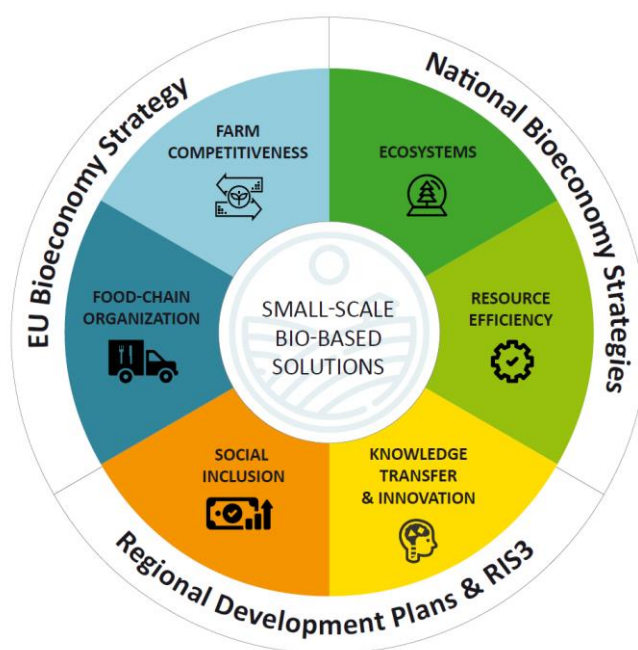


Figure 1. Visual representation of the conceptual framework guiding the work on the SCALE-UP project.

Source: Gerdes et al. (2023).

A four-phase methodology used in SCALE-UP consisted of the following elements:

- i) establish existing knowledge and set the stage for further research, as well as creating six regional platforms with local stakeholders;

- ii) facilitate cross-regional transfer of knowledge and demand-driven capacity building, and provide support to multi-actor partnerships to carry out market assessments and business model designs;
- iii) create a pan-European Community of Practice to facilitate sharing good practices and lessons learned across European regions and
- iv) disseminate and exploit project results in collaboration with key stakeholders (ibid.).

Through its approach with interconnected tools and activities, the SCALE-UP promotes cross-regional knowledge transfer and joint capacity-building activities that enable stakeholders to tackle existing challenges related to developing bio-based pathways for their regions, which are built on local resources and reflect shared values and objectives.

1.2 SCALE-UP regional bioeconomy platforms

One of the SCALE-UP project's main components was setting up six regional bioeconomy platforms. In this context, the SCALE-UP project aimed to support regional multi-actor partnerships in identifying and scaling up innovative and sustainable bio-based value chains and accelerating the development of market-ready bio-based products and services. The platforms were also crucial for engaging with the entire spectrum of regional bioeconomy stakeholders interested in community-driven bioeconomy development, ensuring the effective exchange of knowledge, facilitating matchmaking among regional actors, and overseeing the implementation of targeted innovation support services.

As shown in Figure 2, SCALE-UP established regional bioeconomy platforms in its six focal regions:

- Northern Sweden (covering Norrbotten, Västerbotten, Västernorrland, Jämtland),
- Mazovia (Poland),
- the French Atlantic Arc (covering Pays de la Loire, Normandy, Brittany, Nouvelle Aquitaine),
- Upper Austria,
- Strumica (North Macedonia) and
- Andalusia (Spain)

Diverse stakeholders—including private businesses, governments and policymakers, civil society organisations, and researchers—are engaged in supporting them in overcoming the apparent bottlenecks and fully exploiting the bioeconomy potential in their regions.

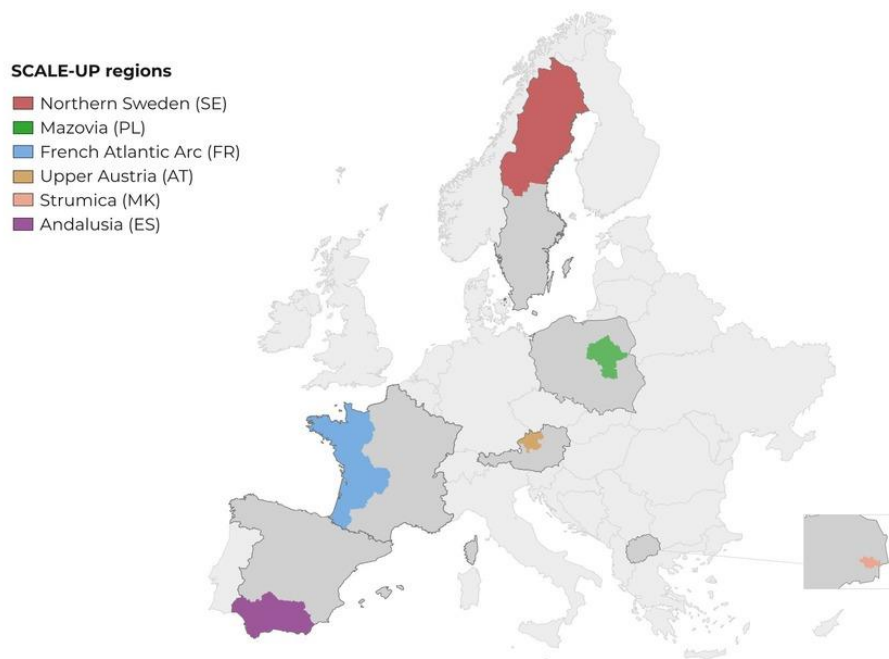


Figure 2. SCALE-UP regions

The regions have been selected as case studies because they hold available a range of promising ‘valorisation options’ (bio-based solutions building on regional biomass streams) in the agriculture and forestry sectors as well as the food industry, which can be replicated in the respective countries and macro-regions. Each regional platform has attracted public, private, non-governmental and educational organisations to work together.

- **Northern Sweden** focuses on forestry residues, such as logging residues and sawmill by-products, that can be utilised for bioenergy production and other value-added products, such as chemicals. The regional platform is coordinated by BioFuel Region (BFR).
- **Mazovia in Poland** is a significant apple producer, yielding considerable apple side streams such as apple pomace and prunings from apple trees. These by-products can be transformed into wood products, fertilisers, functional food ingredients, and various other value-added items. UNIMOS manages the regional platform.
- **The French Atlantic Arc region (Pays de la Loire, Normandie, Bretagne, Nouvelle-Aquitaine)** is known for producing straw and fibre crops, such as flax and hemp. These crops can be used to produce paper, textiles, and construction products. Due to changes in French building regulations, the market for bio-based insulation products is growing rapidly. This provides an excellent opportunity to use fibre crops for building insulation. The Association of Chambers of Agriculture of the Atlantic Area (AC3A) coordinates the regional platform.
- **Strumica** is the largest agricultural producer in North Macedonia, generating abundant agrarian residues, such as crop residues and food production residues. These residues

can be utilised for composting, producing valuable organic fertilisers that promote soil quality and sustainably improve agricultural productivity. The Macedonian Section of the International Centre for Sustainable Development of Energy, Water and Environment Systems (SDEWES-Skopje) coordinates the regional platform.

- **Upper Austria** has a diverse food processing industry, generating a wide range of food by-products, such as fruit and vegetable residues and bakery and brewery by-products. These by-products can be used for biogas production, chemicals, functional food ingredients, and the development of other innovative bioeconomy applications. The regional platform is coordinated by Business Upper Austria—OÖ Wirtschaftsagentur (TMG).
- **Andalusia** is the world's leading olive oil-producing region and generates substantial residues, including olive pomace and olive tree prunings. These side streams can be converted into high-value chemicals, fertilisers, and other value-added products. The regional platform is coordinated by CTA (SCALE-UP Project, 2023).

Within the platforms, dedicated steering groups have been set up, and the entire spectrum of bioeconomy stakeholders has been engaged in a comprehensive set of SCALE-UP activities.

Taking into consideration the deployment and operationalisation within those regional platforms across Europe, there is an urgent need to ensure their sustainability beyond the project's conclusion and establish flexible and adaptable collaborative spaces that can not only support ongoing bioeconomy initiatives, but can also facilitate the exploration of further collaboration opportunities, while promoting the wider dissemination of the SCALE-UP legacy across other European regions and countries.

For this reason, different approaches to clustering and metaclustering development have been investigated, together with different initiatives present in the European landscape, to ensure the best possible way to continue SCALE-UP after the project financing ends.

1.3 Approaches to the cluster and metacluster development

Clustering is a strategic economic development concept involving the geographical concentration of interconnected businesses, suppliers, and institutions within a specific industry or sector (Porter, 1990).

By bringing together firms and organisations in proximity, clustering fosters collaboration, innovation, and resource-sharing, increasing competitiveness and efficiency. This collaborative environment encourages knowledge exchange and the establishment of networks, which can enhance productivity and drive innovation.

The concept has been evolving and has been widely applied in Europe. In terms of actors engaged, the approach has been evolving from the triple helix approach (business-academia-government) to the quadruple helix concept, engaging additional communities (business-academia-government-community). Currently, and similarly to the SCALE-UP regional platforms, it is a broad spectrum of entities, including large firms, SMEs, start-ups, research organisations, incubators/accelerators, technology centres, public or policy institutions, NGOs, and civil society bodies. Volpe et al. 2016 defined it as a collective entity formed by individual users living on a territory and interacting with university, industry, and government as customers, citizens, or members of a community in order to contribute to building innovation paths which are able to promote the socio-economic growth of the territory. The quintuple helix concept has also been developed recently, adding the environment as a natural capital for society.

Clusters are also seen as a network of relations where public and private organisations interact in a value-creating process. They can emerge in various sectors, such as technology, manufacturing, or bioeconomy, and are often supported by regional policies and initiatives. This is why the European Union has been stimulating the creation of partnerships between cluster organisations and/or other cluster actors, using diverse programmes and initiatives, including:

- **Euroclusters – Joint Cluster Initiatives** - cross-sectoral, interdisciplinary and trans-European strategic initiatives of industry clusters and other economic actors that contribute to building resilience and accelerating the transition to the green and digital economy. Built upon European Strategic Cluster Partnerships (ESCP), they implement the EU Industrial Strategy to create new business opportunities for SMEs and integrate them better into European and global strategic value chains. (EISMEA) (European Innovation Council and SMES Executive Agency, 2024).
- **European Innovation Ecosystems (EIE)** - aiming to create more connected and efficient innovation ecosystems to support the scaling up of companies, encourage innovation, and stimulate cooperation among national, regional, and local innovation actors (European Commission, 2021-2024).
- **Regional Innovation Valleys for Bioeconomy and Food Systems (RIV4BFS)** aim to enhance and speed up the implementation of the bioeconomy in local areas, addressing the innovation gap within the EU, especially in Central and Eastern European countries. (European Commission, 2023).
- **Circular Bio-Based Joint Undertaking (CBE JU)** - a €2 billion partnership between the European Union and the Bio-based Industries Consortium (BIC) that funds projects advancing competitive circular bio-based industries under Horizon Europe, the EU's research and innovation program (Circular Bio-based Europe Joint Undertaking, 2025).
- **Mission Soil' A Soil Deal for Europe'** - to establish 100 living labs and lighthouses to lead the transition towards healthy soils by 2030. (European Commission, 2023.)

The multi-actor approach (MAA) has been widely promoted and applied in the above-mentioned instruments and the SCALE-UP project. It involves all relevant actors with complementary backgrounds and expertise to co-create and share knowledge, best practices, and innovative solutions responding to the needs of the users, farmers, foresters, and advisors, using a bottom-up approach. MAA stimulates innovative activity through interactions, exchanging knowledge and expertise to contribute effectively to technology transfer, networking and dissemination. It also supports the creation of a better understanding of the interconnections involving local and regional communities, as well as instruments and public-private actions that enhance the innovation ecosystem. (European CAP Network, 2023).

Having in mind SCALE-UP multi-actor regional partnerships, project partners also investigated the concept of Clusters of Social and Ecological Innovation (CSEI) that has been studied since 2019 by the group on social economy and social enterprises (GECES) of the European Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs. CSEI is defined as a group mainly of social economy entities with mainstream enterprises, civil society organisations, public authorities, education and research institutions that cooperate in a particular location to improve local economic, ecological and societal prosperity (3p) and regeneration by facilitating cooperation, pooling of resources and enhancing innovation capacity. (European Commission, 2021).

The report of CEGES, as a group, highlighted that clusters of social and ecological Innovation (CSEI) are ideal vehicles to align local SMEs, social enterprises, citizens' initiatives, local-regional governments and research to help the digital and sustainable transition of a regional and proximity economy. They provide prosperity in territories in numerous sectors, help build resilient local value chains and serve a broad range of stakeholders. The main strength of these clusters is their capacity and know-how in terms of cooperation stemming from the values of the social economy, as well as their capacity to experiment and innovate. (European Commission, 2021). Additionally, CSEI may support boosting different types of innovations, including economic, social, ecological and governance innovation.

The application of the above-mentioned approaches and initiatives may holistically foster better interlinkages between diverse stakeholders and territories, enabling agile co-discovery of cooperation areas in the bioeconomy to lay the ground for implementing regional and pan-European activities and new collaborations ignited within and between SCALE-UP regional platforms and European's innovation ecosystems that form a basis for the meta-cluster.

The concept of meta clustering is related to using the collective power and diverse abilities of different clusters to set a new bar for innovation, collaboration across fields, and global competitiveness. Metaclusters have a versatile approach that helps tackle complex problems, promote sustainable development, and allow the exchange of knowledge and technology among sectors (ECCP, 2024).

Metaclustering provides various benefits to enhance collaboration and innovation across sectors and borders. Firstly, it improves collaboration and innovation by creating a platform for

rapid research and development (R&D). It facilitates synergies among businesses from different sectors and trust building among its members, promoting resilience and cooperation needed during economic uncertainties. Secondly, they strengthen integration into the European market, particularly connections across regions and countries, driving progress and fostering economic cooperation in Europe's dynamic landscape. Moreover, they foster the exchange of information and best practices among members, leading to improved skills and operational performance. Members benefit from a substantial resource pool of shared knowledge, facilitating the diffusion of successful practices and solutions across regions. Additionally, metaclusters offer comprehensive support and services specifically designed for SMEs, ensuring they access innovation, new services, and valuable market insights. By participating in European-funded projects, metaclusters can tackle common issues such as talent attraction, technology transfer, and large-scale sustainability efforts. Finally, the metaclusters influence policymaking at various levels—local, regional, national, and EU—by offering informed insights that contribute to developing favourable regional growth and development policies. (ECCP, 2024).

The European Commission actively supports the development of bioeconomy clusters, networks, and initiatives through policy frameworks, funding initiatives, and strategic partnerships. These networks drive innovation, foster sustainable practices, and support the transition to a bio-based economy.

1.4 European landscape of collaborative networks

The current European landscape of active collaboration networks in the field of bioeconomy is dynamic, diverse, and evolving due to the unprecedented degree of global interconnectedness. It encompasses various stakeholders such as clusters, research institutions, industries, governmental bodies, and non-governmental organisations. Below, four examples of active collaborative mechanisms have been included.

1. **European Bioeconomy Cluster Alliance (EBCA)** The European Bioeconomy Clusters' Alliance was formally established on February 10, 2025, by signing a Memorandum of Understanding by 14 leading clusters from 11 EU Member States in Brussels. The primary objective of the EBCA is to facilitate collaboration across borders to drive innovation and sustainability in the bioeconomy sector. Additionally, the alliance aims to support research and development, facilitate the scale-up and industrialisation of bio-based solutions, build strong value chains, and develop new markets for bioproducts as sustainable alternatives to fossil-based materials. By fostering cooperation among diverse stakeholders, the EBCA seeks to enhance the overall impact of the European bioeconomy. (European Cluster Collaboration Platform, 2025.)
2. **Regional Bioeconomy Alliance (RBA)** The Rural Bioeconomy Alliance was launched on May 31, 2023, as a collective of European-funded projects promoting circular rural bi-

oeconomy initiatives throughout the EU. The RBA's principal objective is accelerating the development of sustainable circular bioeconomy practices in rural areas. This initiative encompasses various projects focusing on sharing knowledge, disseminating successful practices, and facilitating stakeholder communication. Furthermore, the RBA aims to support the adoption of circular bioeconomy concepts and provide policy recommendations to the European Commission, thereby contributing to the advancement of the rural bioeconomy (RELIEF – euRopean bio-Economy ALLianceE in Farming. (Rural Bioeconomy Alliance, 2025).

3. **BBioNets Standing Liaison Round Table (SLRT)** The Standing Liaison Round Table (SLRT) is a collaborative platform that transcends individual partnerships by uniting various EU-funded projects. It fosters valuable connections, enhances outreach, and promotes cross-fertilisation of ideas among participants. By aligning projects with similar objectives, the SLRT facilitates joint initiatives and establishes a collective roadmap, amplifying the impact of each endeavour. This initiative is instrumental in advancing innovation and sustainable resource management within the bioeconomy. (BBioNets, 2025).
4. **The European Circular Economy Stakeholder Platform (ECESP)** was established in March 2017 as a joint initiative of the European Economic and Social Committee (EESC) and the European Commission. The objective of the ECESP is to drive the implementation of the circular economy in the Member States, regional and local governments, civil society organisations and businesses. The platform also aims to strengthen cooperation among stakeholder networks to facilitate the exchange of expertise, good practices, knowledge, and lessons learned in the circular economy. As a “network of networks”, it goes beyond sectoral activities and highlights cross-sector opportunities. It also provides a meeting place for stakeholders to share and scale up practical solutions and address specific challenges. (European Circular Economy Stakeholder Platform, 2019).
5. **European Bioeconomy Alliance (EUBA)** is a cross-sector alliance of bioeconomy organisations dedicated to mainstreaming the bioeconomy and achieving its full potential in Europe. Its mission is to lead the transition towards a post-petroleum society by striving to raise EU, national and regional leaders’ awareness of the benefits of the bioeconomy and bio-based industries and by making bioeconomy mainstream above and beyond the research and innovation policy. EUBA is also focused on mobilising and engaging stakeholders to realise the potential of the European bioeconomy and advocating for a coherent, flexible and stimulating policy environment for bio-based solutions. (European Bioeconomy Alliance, 2025).
6. **Bio-based Industries Consortium (BIC Consortium)** is a collaborative entity formed through a public-private partnership to advance a sustainable and competitive bio-based industry across Europe. Established in Brussels in 2013, this non-profit organisation represents the interests of the private sector within a Public-Private Partnership (PPP) with the European Commission. The BIC Consortium encompasses a diverse range of members across the entire value chain, including industries such as agriculture, aquaculture,

chemicals, forestry, and waste management. Additionally, it collaborates with associate members from research institutions and trade associations. In 2021, the consortium initiated a second partnership with the European Commission, known as the Circular Bio-based Industries Joint Undertaking (CBE JU), to support the development of a sustainable and environmentally friendly future for Europe's bio-based industries. (Bio-based Industries Consortium, 2021).

7. **European Bioeconomy Network** is an alliance of 160 EU-funded projects and initiatives that promote the bioeconomy. The main goal is to maximise the efforts, increasing knowledge sharing, networking, mutual learning, and coordination of joint activities and events. It maximises the impact of the European Commission-funded projects participating, creates opportunities and networks, and significantly increases the awareness of bioeconomy in Europe, thanks to the joint efforts of the involved projects. (European Bioeconomy Network, 2023).

The SCALE-UP Bioeconomy MetaCluster will complement the above-mentioned platforms and be linked to them through different inter-organisational linkages, already existing collaborations and interproject synergies. It will be mainly through project partners who are members of the BIC Consortium and/or via different EU projects that are part of the European Bioeconomy Network alliance. Different possibilities of engaging and interconnecting with the above-mentioned initiatives will be investigated to select the most suitable communication channels further and jointly explore potential synergies and complementarities leading to the identification of concrete cooperation areas, design of common actions and their future implementation.

2 SCALE-UP Bioeconomy MetaCluster

This chapter provides an overview of the collaborative process of setting up the SCALE-UP Bioeconomy MetaCluster. It includes the methodology and approach used, the definition of the objectives, and the governance structure and roadmap for three years after the end of the SCALE-UP project.

SCALE-UP Bioeconomy MetaCluster will operate simultaneously at regional and pan-European levels and will consist of a unique and versatile combination of SCALE-UP legacy, primarily built on regional platforms, with SCALE-UP partners' individual and shared pool resources powered with collective vision, intelligence and actions to foster specific social, ecological, and technological innovation capacities for community-driven bioeconomy development in rural zones.

Acting as a cross-cutting structure, SCALE-UP Bioeconomy MetaCluster provides an intraregional, regional, European and Pan-European dimension and multilevel collaboration space,

enabling the transfer of knowledge, scaling of innovation, and cross-pollination of ideas across diverse regional contexts. It also represents a strategic and integrative mechanism that will allow identification of further research, innovation and collaboration opportunities, fostering collaboration among diverse actors and enhancing visibility and policy influence at the EU level. It is crucial for the sustainability of the SCALE-UP regional bioeconomy partnerships, as well as to allow broader outreach of the SCALE-UP legacy beyond the project.

It will add value by serving as a versatile umbrella structure that connects geographically and thematically diverse regional bioeconomy platforms. It fosters collaboration, innovation, and knowledge exchange at a wider European level to address shared challenges in the bioeconomy sector. While regional platforms are deeply embedded in local contexts, leveraging specific biomass resources, industrial capabilities, and stakeholder networks provides a vital framework for upscaling and trans-regional learning.

This way, the SCALE-UP Bioeconomy MetaCluster enhances the impact of regional platforms by enabling cross-regional collaboration, scaling successful innovations, and boosting visibility and access to new partners, funding, and markets across Europe.

For regional stakeholders—including businesses, research institutions, public bodies, and NGOs—the SCALE-UP Bioeconomy MetaCluster offers tangible and strategic incentives to remain engaged and proactive including access to the pool of expertise and solutions on bioeconomy development, launchpad for both regional and international projects, as well as space for peer-to-peer learning, market intelligence, case studies and joint capacity building activities. For participating regions, the SCALE-UP Bioeconomy MetaCluster will offer access to a broader and already established network with experience of working together and expertise on boosting and adopting bio-based solutions tailored to local challenges.

2.1 Methodology and Approach

The report *Enhancing Stakeholder Involvement in EU Bioeconomy Policy* (European Commission, 2024) highlights that for an EU-led bioeconomy stakeholders' engagement, there is a need to leverage existing networks for wider reach, allowing stakeholder ownership to drive participation, ensuring visibility through proactive communication, reconciling conflicting objectives, supporting (financially) small stakeholders, and raising internal awareness within the EU institutions (Directorate-General for Research and Innovation (European Commission), 2024).

Taking this into account, the SCALE-UP Bioeconomy MetaCluster has been inspired by a combination of different methodologies and approaches for cluster development presented in Chapter 1, together with the operationalisation of SCALE-UP bioeconomy regional platforms, SCALE-UP holistic activities, as well as lessons learned from other EU-funded projects that SCALE-UP partners have been engaged in, such as UNLOCK (BBI JU), BIO-Boost (EIE) and AURORA (COSME) related to cluster excellence building and management, boosting bioe-

conomy innovations in European ecosystems and promoting Pan-European clustering across different countries and regions.

This approach created a basis for developing clustering activities and an international cluster of social and ecological innovation in the bioeconomy (MetaCSEI), being a voluntary, open partnership of the six SCALE-UP platforms, members of the Community of Practice and other innovation agents interested in further jointly fostering bio-based social and ecological innovations in a rural development context.

The holistic approach for the SCALE-UP Bioeconomy MetaCluster has been showcased in Figure 3.

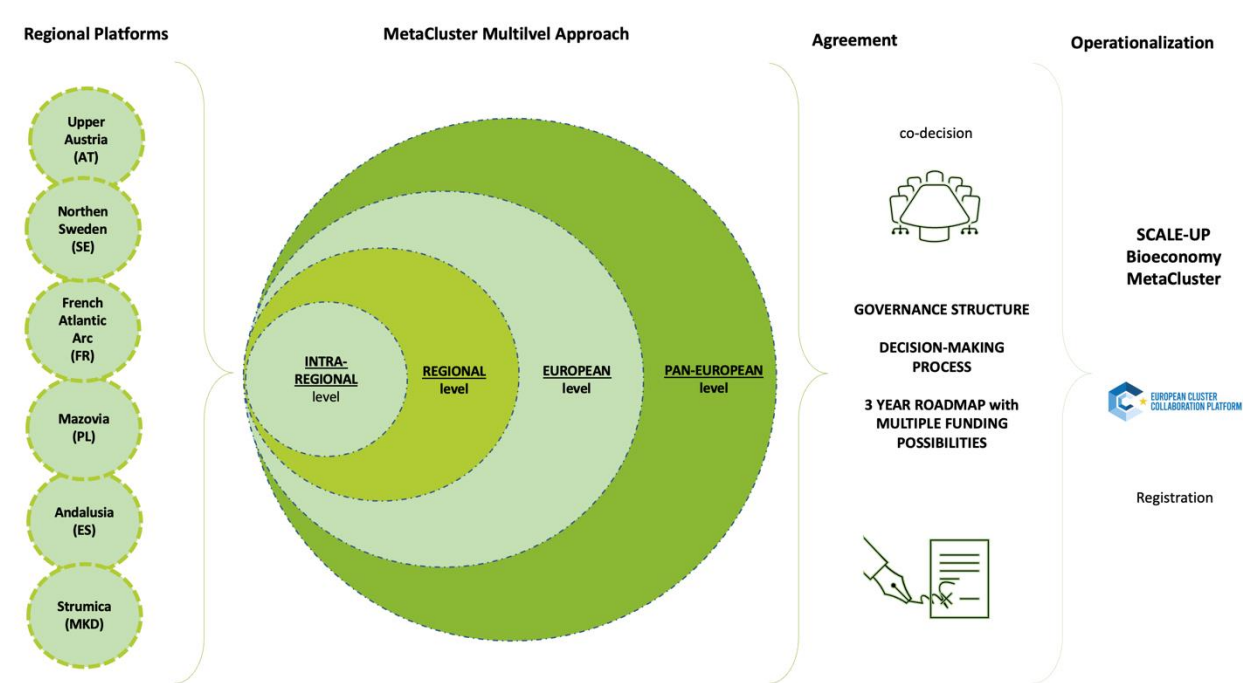


Figure 3. SCALE-UP Bioeconomy MetaCluster holistic approach.
Source: Rull Quesada, K.

Building upon regional partnerships since April 2024, SCALE-UP partners led by UNIMOS have implemented a series of collaborative activities to develop a collaborative meta-cluster initiative, MetaCSEI. Several strategic sessions and preparations were implemented, starting with a preparation phase related to designing and organising the process of exploring partners' needs and interests at regional and Pan-European levels regarding further clustering activities. Following an exploration session, a session was scheduled to delve into partners' project needs and interests over the next 36 months since June 2024, followed by a cross-analysis of the results from the exploration session and survey to identify financial opportunities. Next, the set of documents was prepared by UNIMOS to present the draft of an initial action plan with a governance structure, a decision-making process, a three-year roadmap,

and a framework for cluster agreement validation with SCALE-UP partners. Membership rules have been proposed. After gathering feedback on resources for SCALE-UP Bioeconomy MetaCluster development, project partners also worked on developing the SCALE-UP Bioeconomy MetaCluster branding strategy and its further registration on the European Cluster Collaboration Platform.

The SCALE-UP partners laid the groundwork for broader regional and Pan-European collaboration in a collaborative process of co-creation and common working on the idea. Together, they developed a shared vision, defined key objectives, and identified priority areas for cooperation. They also reached consensus on funding strategies, management mechanisms, and a practical set of implementation tools to ensure continued collaboration beyond the lifetime of the SCALE-UP project.

2.2 Vision and objectives

The vision of the SCALE-UP Bioeconomy MetaCluster has been co-ideated and co-developed by project partners committed to building upon the collaboration foundations established during the SCALE-UP project.

The main driver in designing joint activities is the need to unlock the full potential of bioeconomy and bio-based value chains, enabling diverse regional and international stakeholders—from farmers to researchers, businesses to policymakers—to co-explore and co-create sustainable and circular solutions.

SCALE-UP Partners have been inspired by the ongoing building of a dynamic partnership that drives innovative approaches to regional and cross-sectoral cooperation toward a sustainable future in the field of bioeconomy and are willing to expand their impact beyond borders, industries, and traditional techniques. This is why they commit to setting up the SCALE-UP Bioeconomy MetaCluster of social, ecological and economic innovations (MetaCSEI) to keep enhancing interregional cooperation, fostering connectivity among European bioeconomy actors, and supporting the transition of regional ecosystems toward greener and more resilient practices.

The meta cluster aims to build a novel collaboration space with collective intelligence and a shared vision of regional and pan-European bioeconomy development. This will foster connectivity among countries, regions, and sectors and empower bioeconomy actors to meaningfully and actionably cooperate towards a sustainable and resilient future while preserving and expanding the legacy of the SCALE-UP Project.

The main objectives include:

- advancing sustainable bioeconomy practices by driving the development and adoption of innovative and sustainable bioeconomy solutions, focusing on efficient resource

use, climate resilience, and environmental sustainability across bio-based value chains;

- facilitating cross-regional and international collaboration by coordinating connections between businesses, research institutions, government bodies, and NGOs to foster a collaborative network that supports the bioeconomy's growth and addresses regional and global challenges;
- expanding partnerships and knowledge networks by engaging with new European and international partners to access cutting-edge knowledge, technologies, funding opportunities, and market connections, enhancing collaborative efforts and technological exchange;
- accelerating innovation and market integration by promoting the rapid development and commercialisation of bio-based innovations, unlocking new growth opportunities, and integrating these innovations into existing markets and sectors;
- testing and implementing novel tools, approaches, and methodologies to advance bioeconomy practices, leveraging experimentation to refine and enhance industry processes and solutions;
- supporting the development of educational and management programs that support skill development and knowledge sharing across the bioeconomy sector, building on insights gained from previous initiatives;
- identifying other opportunities for collaboration and innovation within the bioeconomy sector, fostering an environment that encourages continual growth and adaptation.

By interconnecting diverse bioeconomy ecosystems and pooling SCALE-UP partners' collective expertise, the SCALE-UP Bioeconomy MetaCluster's founders have committed to pioneering innovations that will drive the digital and sustainable transformation of bioeconomy sectors, creating resilient and thriving regions across Europe.

In the future, the SCALE-UP Bioeconomy MetaCluster may include new entities willing to join it, with a special focus on those already associated with the Regional Bioeconomy Platforms, the SCALE-UP Community of Practice, and participants of the SCALE-UP activities. Its integration, together with the value proposition offered for the SCALE-UP Bioeconomy MetaCluster, will be analysed and decided during the meetings of the Board of Managers.

2.3 Cooperation areas

To achieve the main objectives set for the SCALE-UP Bioeconomy MetaCluster, the SCALE-UP partners identified six complementary areas of cooperation to continue fostering bioeconomy development.

1. Innovation and R&D Collaboration: Facilitating joint research projects and innovation initiatives to drive bioeconomy technology and process advancements.
2. Development of Resilient Business Models: Sharing best practices and strategies for building adaptable and sustainable business models within the bioeconomy sector.
3. Skills Development and Education: Creating opportunities for training, capacity building, and education to equip stakeholders with the necessary skills and knowledge.
4. Stakeholder Engagement and Regional/International Cooperation: Fostering a collaborative environment where diverse stakeholders can engage, share resources, and collaborate on bioeconomy initiatives.
5. Commercialisation and Market Strategies: Developing strategies and support systems to enhance the commercialisation of bio-based products and improve market access.
6. Regulatory Alignment and Public Engagement: Addressing regulatory challenges collaboratively and working on increasing public awareness and acceptance of bioeconomy practices.

The cooperation areas are closely linked with the governance structure and implementation roadmap.

2.4 Governance structure and model

To effectively guide the SCALE-UP Bioeconomy MetaCluster development, project partners identified key principles and established the preliminary governance structure and operationalisation. The participatory governance structure is based on five synergic principles that include:

1. Continuous and inclusive learning
2. Collective experimentation
3. Strategic flexibility and agility
4. Collaboration and synergy
5. Consensus

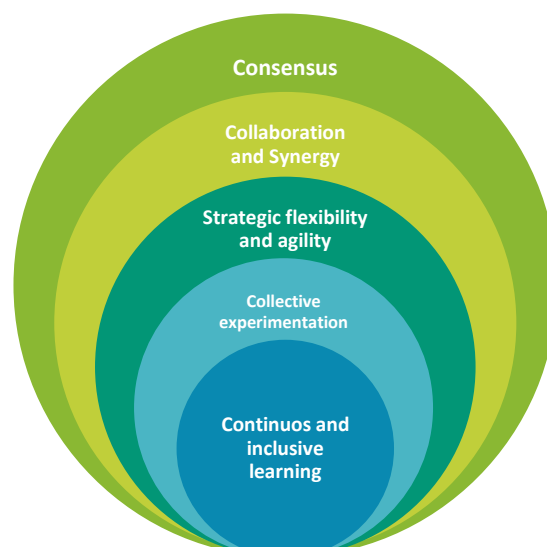


Figure 4. SCALE-UP Bioeconomy MetaCluster governance principles.

This way, the SCALE-UP Bioeconomy MetaCluster has been designed as a flexible and versatile tool that creates a dynamic, open, and inclusive space to develop activities at regional and/or pan-European levels while ensuring the effective management of the multilevel SCALE-UP Bioeconomy MetaCluster, leading to improved collaboration, innovation, and sustainability.

Taking this into account, the SCALE-UP Bioeconomy MetaCluster has been built upon regional partnerships managed by respective SCALE-UP partners in Poland, Spain, France, Austria, Sweden and North Macedonia to ensure the continuation of regional platforms established during the implementation of the SCALE-UP project. The SCALE-UP partners who do not manage regional platforms contribute horizontally to the SCALE-UP Bioeconomy MetaCluster development with their expertise. The UNIMOS Foundation will act as the first orchestrator of the SCALE-UP Bioeconomy MetaCluster and will be responsible for coordinating its activities. Funding opportunities and resources for further cluster management will be explored to enable new entities to join the SCALE-UP Bioeconomy MetaCluster in the future.

The initial governance structure for the SCALE-UP Bioeconomy MetaCluster operationalisation has been established by all members of the SCALE-UP consortium, who hold the status of Founding Partners and meet once a year during the General Assembly that will guide strategic development of the SCALE-UP Bioeconomy MetaCluster. The SCALE-UP Bioeconomy MetaCluster will be guided by a rotating every six months Board of Managers coordinating the implementation of the correspondent activities set up in the Annual Plan. UNIMOS oversees the whole process.

The activities of the SCALE-UP Bioeconomy MetaCluster may be implemented at regional (Regional Platforms) and/or pan-European level (Meta-Platform) based on the three-year roadmap and Annual Action Plan (AAP) for the SCALE-UP Bioeconomy MetaCluster activities.

In order to boost visibility, the SCALE-UP Bioeconomy MetaCluster will be registered with the European Cluster Collaboration Platform (ECCP) and have its branding, including a logo. To ensure further activities after the end of SCALE-UP, the project financing, all Founding Partners will actively seek funding opportunities to support the SCALE-UP Meta Cluster's activities, exploit the SCALE-UP Project legacy, and ensure its sustainability. In the first year of the SCALE-UP Bioeconomy MetaCluster, the opportunities-seeking process will be coordinated by UNIMOS Foundation.

2.5 Roadmap

Considering the complexity of bioeconomy development at regional and pan-European levels and the lack of funding for joint activities after the end of the European Union's financial support, SCALE-UP partners need a systemic approach with proven, participative, holistic, and agile approaches and methodologies.

This will be done by multilayered configurations based on dynamic capabilities, strategic agility, flexibility, and ambidexterity. Wise multi-network orchestration, especially regarding available resources at three interconnected levels: intra-regional, regional, European and Pan-European.

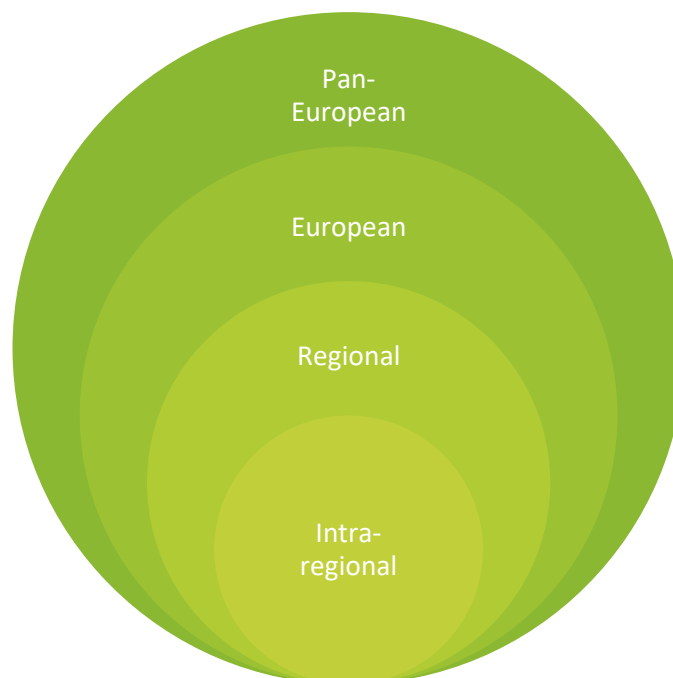


Figure 5. SCALE-UP Bioeconomy MetaCluster multilevel approach.

The *intra-regional level* is linked to European entities participating in the SCALE-UP six regional bioeconomy partnerships (SCALE-UP platforms) managed by six SCALE-UP partners in Spain, Austria, Sweden, Poland, North Macedonia, and France, including their members, entities, and individuals who were engaged in the SCALE-UP project activities and will be engaged in the sustainability of those platforms.

The *regional level* is related to the SCALE-UP project partners managing SCALE-UP regional bioeconomy platforms, networks, and stakeholders. Horizontally, they are supported by the SCALE-UP partners, who do not manage regional platforms but have unique knowledge and experience contributing to their development.

The *European level* is referred to as the SCALE-UP consortium, which combines their competences, brands, expertise, experiences, and links in the form of an inter-organisational alliance with a joint SCALE-UP Bioeconomy MetaCluster identity.

The *pan-European level* goes beyond the SCALE-UP consortium and inc. Its the Community of Practice, as well as other innovation agents from Europe and beyond who may in the future be interested in contributing to the SCALE-UP Bioeconomy MetaCluster development, including fostering bio-based, social, and ecological innovations in a rural development context.

SCALE-UP partners have strong potential, which relies on the interconnection of their expertise, competencies, and networks, which drives the impact towards the development of the bioeconomy. The SCALE-UP Bioeconomy MetaCluster will be created to support the long-lasting cooperation between the SCALE-UP partners and other connected entities after the end of project financing.

During the three-year strategy (2025-2028) or until identifying and seizing the new financing mechanism for SCALE-UP Bioeconomy MetaCluster operationalisation, SCALE-UP partners will be using different concepts and approaches to work together and boost SCALE-UP Bioeconomy MetaCluster activities. Special focus has been put on interconnecting the concepts of dynamic capabilities (Teece, 2007), ambidexterity (O'Reilly et al., 2007) to adapt it to the SCALE-UP Bioeconomy MetaCluster:

1. **Dynamic capabilities and network orchestration** – are individual and joint ability of SCALE-UP partners to integrate, build, and reconfigure internal and external resources/competences to address and shape rapidly changing business environments, as well as in terms of boosting skills, learning and managerial competences;
2. **Strategic flexibility** has been proposed to capitalise on change, cope with turbulent environments, and manage risks by promptly responding proactively or reactively to market opportunities and threats via leadership unity and a flexible resource pool. It is linked to the ability of an organisation to sense threats and react and adapt to changing requirements with minimum time, effort, cost and performance drop;
3. **Ambidexterity refers** to an organisation's ability to simultaneously exploit current organisational capabilities and explore future opportunities, especially to support companies and markets in being more resilient and coping with challenges.

Those concepts will collectively support the SCALE-UP Bioeconomy MetaCluster development, especially in efficiently integrating, building, and reconfiguring available human, project and financial resources. Additionally, they will leverage internal and external resources to foster innovation and growth in rapidly changing environments, enhancing skills, promoting continuous learning, and improving managerial competencies. It will also allow for maintaining leadership unity and utilising a flexible resource pool. The strategic agility will allow metaclus-

ter partners to sense and adapt to new requirements with minimal time, effort, and cost, ensuring sustained performance. Being ambidextrous will support project partners in navigating current challenges and activities, while developing new opportunities from a Pan-European metacluster perspective and thriving in dynamic innovation landscapes.

Having in mind those approaches, the roadmap for the implementation of the strategy will include three consecutive and interconnected phases (Figure 6):

- preparatory activities (2024 and 2025),
- implementation (2026-2027) and
- follow-up and impact measuring (2028).

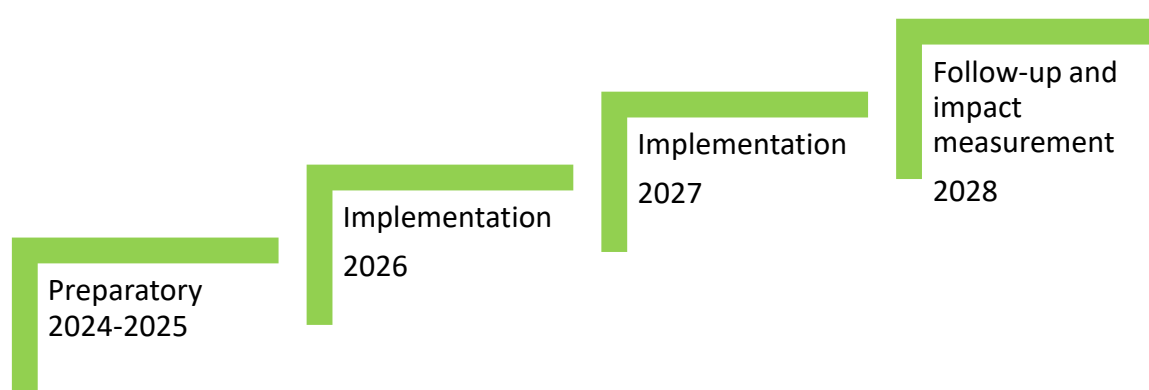


Figure 6. Phases of the Roadmap.

Each phase includes dedicated objectives and indicative key performance indicators (KPIs) that have been set as presented in Table 1 below.

Table 1. Roadmap objectives and KPIs.

Year	Objectives and KPIs
2024 2025	1. To introduce and operationalize the governance of SCALE-UP Bioeconomy MetaCluster structure 2. To promote the SCALE-UP Bioeconomy MetaCluster new brand regionally and internationally 3. To implement at least one joint activity at Pan-European level 4. To implement at least six regional activities (e.g. one per region) to continue Bioeconomy Regional Platforms animation
2026	1. To assess the implementation of the Annual Action Plan (AAP)

	2025 2. To implement at least one joint activity at Pan-European level 3. To implement at least six regional (e.g. one per region) activities to continue Bioeconomy Regional Platforms animation
2027	1. To jointly reflect on the implementation of Annual Action Plan 2026 2. To revise and update the SCALE-UP Bioeconomy MetaCluster strategy
2028	1. To co-design the SCALE-UP Bioeconomy MetaCluster 's development axes according to the new and available funding schemes and partners possibilities

To make the cooperation tangible, UNIMOS Foundation will draft an Annual Action Plan and share it with the SCALE-UP project partners to plan concrete activities in 2025. The plan will have two interconnected approaches—pan—Eu—opean and regional—and will be supported by the Funding Radar, which will be set up to identify funding opportunities for further SCALE-UP Bioeconomy MetaCluster activities.

3 Conclusions and follow-up

Overall, the experience of planning, setting up, and running the SCALE-UP project has been collaborative, enriching, and learning-oriented.

The process of creating a novel collaboration space ignited by the SCALE-UP partners' collective intelligence and shared vision started in April 2024. Since then, it has been oriented to support development simultaneously at regional and pan-European levels while ensuring that the SCALE-UP legacy will be shared, replicated, and maximised.

Special attention will be paid to ongoing projects in which SCALE-UP partners participate as partners, associate partners, stakeholders, or experts. The project consortium will do this by capitalising on already closed projects.

During the implementation of the SCALE-UP project, synergy building and cross-fertilisation between EU-funded projects and stakeholders have been continuously developed by identifying and seizing opportunities for joint activities, mutual learning and generation of potential cooperation projects. Special focus has been put on complementarities with initiatives funded under the Circular Bio-Based Joint Undertaking (CBE JU), Euroclusters, other EU projects, relevant networks, cluster initiatives, and platforms. This activity of continuously creating and strengthening linkages has been developed to trigger and generate more opportunities for

projects, research and innovations for the metacluster partners and will continue after the end of the SCALE-UP project.

An active search for new funding opportunities has already been initiated. The success of the SCALE-UP Bioeconomy MetaCluster will rely on the SCALE-UP partners' commitment to keep working together and promoting community-driven bioeconomy, as well as agile orchestration based on shared resources until a new funding opportunity is identified and seized.

Last but not least, it is crucial for stakeholders to actively engage based on a clear perception of the benefits resulting from collaboration within a SCALE-UP Bioeconomy MetaCluster.

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