



# SCALE<sup>UP</sup>

community-driven  
bioeconomy development

## Conceptual framework for the design and implementation of participatory activities in the SCALE-UP regions

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Gerdes, H., Kiresiewa, Z., Tarpey, J., Wolkerstorfer, G., Dauwa, L., Pammer, K., Bailet, N., Kalla, B., Macias Aragonés, M., Ronchel Barreno, C., Castillo Barrero, R., Kowalska, K., Mihajloska, E.



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<b>Responsible author(s):</b>	Gerdes, H., Kiresiewa, Z., Tarpey, J. (ECO); Wolkerstorfer, G., Dauwa, L., Pammer, K. (TMG); Bailet, N. (AC3A); Kalla, B. (BFR); Macias Aragonés, M., Ronchel Barreno, C., Castillo Barrero, R. (CTA); Kowalska, K. (UNIMOS); Mihajloska, E. (SDEWES)
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## EXECUTIVE SUMMARY

This report outlines the project's conceptual framework and provides guidelines for the design and implementation of community-driven activities in the six SCALE-UP regions.

The first chapter introduces the project's overall goal and specific objectives and gives a short overview of the focal regions and valorisation options that will be explored. To achieve its objectives and contribute to a sustainable bioeconomy development in the target regions, SCALE-UP will explore a broad range of biomass streams such as sawdust, bark, wood chips, logging residues, agri-food side streams and residues, hemp and other fibre plants, wet solid waste, and residues from olive oil production.

The second chapter presents the conceptual framework for the implementation of the project activities in SCALE-UPs regions. It builds upon the six priorities of the rural policy of the European agricultural fund for rural development (EAFRD) as outlined in the EU's Common Agricultural Policy (CAP), namely knowledge transfer and innovation, farm competitiveness, food chain organisations, ecosystem protection, resource efficiency and social inclusion. Furthermore, the chapter highlights the links to the overall policy framework in terms of a) how SCALE-UP's activities can deliver on the objectives of bioeconomy-relevant policies at EU, national and regional level, and b) potential synergies with these policies.

The third chapter describes the existing networks in each of the regions, how these will be mobilized as well as approaches for stakeholder engagement, capacity building and innovation support that are already in place. It further provides detailed information on the ambition of the planned stakeholder activities and outlines strategies for ensuring the sustainability of the regional multi-actor platforms beyond the project life, e.g., by integrating them into the existing infrastructures of SCALE-UP's regional partners.

The fourth chapter lays out the founding principles of SCALE-UP, namely the principles of co-creation, openness and inclusiveness, sustainability, and transparency, and provides guidelines for the implementation of community-driven activities in the regions. The guidelines refer to the establishment of the regional multi-actor platforms and to the identification and promotion of individual bio-based solutions.

The fifth and final chapter of this report outlines how the regional project activities will inform the development of a comprehensive, evidence-based framework that links bio-based solutions to rural development goals and enables rural communities to effectively identify, compare and implement alternative bio-based development pathways. In addition, the chapter outlines relevant aspects that will be considered in the development of the framework such as the overall policy framework, insights on the design and practical implementation of targeted stakeholder engagement, lessons learned regarding the definition of shared objectives and common visions for bio-based developments in a regional context.

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## Abbreviations

<b>CAP</b>	<b>Common Agricultural Policy</b>
<b>CLLD</b>	<b>Community-led local development</b>
<b>EAFRD</b>	<b>European agricultural fund for rural development</b>
<b>EC</b>	<b>European Commission</b>
<b>EU</b>	<b>European Union</b>
<b>LEADER</b>	<b>Liaison entre actions de développement de l'économie rurale</b>
<b>metaCSEI</b>	<b>Meta Cluster on Social and Ecological Innovation</b>
<b>NGO</b>	<b>Non-governmental organisation</b>
<b>R&amp;D</b>	<b>Research &amp; Development</b>
<b>R&amp;I</b>	<b>Research &amp; Innovation</b>
<b>RIS3</b>	<b>Research and Innovation Strategies for Smart Specialisation</b>
<b>S3</b>	<b>Smart specialisation strategy</b>
<b>SMEs</b>	<b>Small and medium-sized enterprises</b>

# 1 Introduction to the SCALE-UP project

The overall goal of SCALE-UP is to support regional multi-actor partnerships, consisting of private businesses, governments and policymakers, civil society organisations, and researchers in identifying and scaling-up innovative and sustainable bio-based value chains that build on regional resources. Through its approach, SCALE-UP will adapt, implement and evaluate tools to help regional actors to overcome the apparent bottlenecks towards fully exploiting bioeconomy potentials in their region. A four-phase methodology will: 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.

In addition to the focus on increasing capacity and knowledge on the bioeconomy among relevant actors in the regions, a key feature of SCALE-UP is the business development programme to be applied by the local communities. With an emphasis on the principles of co-creation, transparency and open innovation, the project will provide advisory support to innovators and regional stakeholders to assess market conditions, elaborate business plans and identify compatible funding sources for 12 bio-based solutions.

Specifically, SCALE-UP aims to achieve the following objectives:

- Increased capacity and knowledge of multi-actor partnerships to accelerate the development of marketable products and services and to improve the market penetration of bio-based solutions.
- Improved knowledge about the potential of nutrient recycling in the regions.
- Successful deployment of existing practical and scientific knowledge.
- High level of awareness and understanding of the bioeconomy and its potential and impacts among local communities.
- Strengthened collaboration between primary producers, SMEs, clusters, social actors and policymakers.
- Promotion of regional, rural, local/urban and consumer-based transitions towards a sustainable, regenerative, inclusive and just circular economy and bioeconomy across all regions of Europe.

To meet the project objectives, SCALE-UP will engage with key stakeholders and establish 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). Cross-regional transfer of knowledge and joint capacity-building activities will enable stakeholders to tackle existing challenges and develop bio-based development pathways for their regions, which build on local resources and reflect shared values and objectives.

**Table 1: Relevant biomass streams and identified valorisation options in the SCALE-UP regions**

Region	Biomass streams	Valorisation options to be explored in SCALE-UP
<b>Northern Sweden</b>	Sawdust, bark, logging residues, needles	Fractioning of biomass for heat and power, biofuels and chemicals
<b>Mazovia</b>	Agri-food side streams and residues (apple pomace, prunings)	Production of new fertilizers, new functional additives, bio-based packaging
<b>French Atlantic Arc</b>	Fibre crops (e.g. flax and hemp)	Production of bio-based products from fibre plants (hemp, flax, etc.) for applications in building (insulation, agro-materials, etc.) and other markets (textile, food and feed, chemistry, etc.)

<b>Upper Austria</b>	Residues from bakeries and breweries, e.g. hops, draff/spent grain, bakery products	Protein from food waste, packaging from food waste (bioplastics, paper), polymers, feed
<b>Strumica</b>	Agricultural residues; raw materials from forest biomass	Production of fertilizers based on composting of waste generated by the agri-food sector; production of bio-based commodities (pots, containers, various types of packaging, construction boards, insulation materials)
<b>Andalusia</b>	Olive kernels, pomace, flowers, wood, branches, leaves	Biochemical compounds, essential oils, other bioactive compounds for cosmetics, chemicals, feed, biofertilizers

## 2 The project's conceptual framework

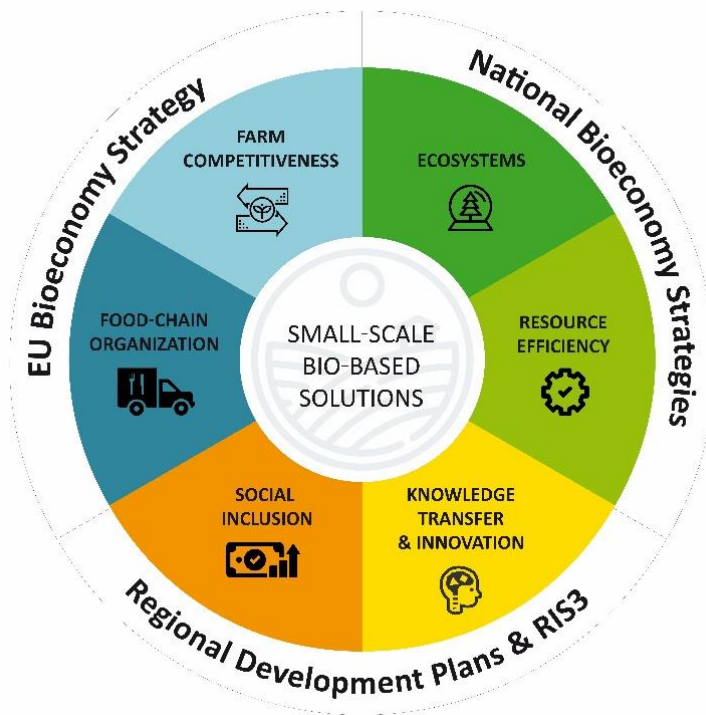
It is widely acknowledged that an innovative, circular and resource-efficient bioeconomy can offer social and economic opportunities to entrepreneurs in rural areas while reducing greenhouse gas emissions. However, small-scale technological developments that build on regional biomass resources have not yet gathered pace, and questions on how to promote an equitable distribution of the associated benefits among local communities and how to avoid detrimental effects of increased biomass production on regional ecological systems remain partly unanswered (Bezama et al., 2019). In short, the *sustainability* of bio-based innovations is a critical component, which needs to be explored in the attempt to mainstream bio-based solutions in European rural areas. The transition towards sustainable, regenerative, inclusive and just regional bioeconomies requires a comprehensive and, at the same time, functional framework that links bio-based solutions to rural development goals and principles of sustainable development, enabling rural communities to identify, compare and implement alternative bio-based development pathways.

Against this background, 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. As such, the 'second pillar' of the EU's Common Agricultural Policy (CAP), aiming at strengthening the social, environmental and economic sustainability of rural areas, provides a relevant framework for the proposed activities. Related to the need to embed the bioeconomy in the context of rural development, SCALE-UP will focus on the six priorities of the European agricultural fund for rural development (EAFRD) (see Figure 1)<sup>1</sup> as well as consider new rural development actions, which will be specified in national CAP strategic plans from 2023 onwards.

<sup>1</sup> [https://agriculture.ec.europa.eu/common-agricultural-policy/rural-development\\_en](https://agriculture.ec.europa.eu/common-agricultural-policy/rural-development_en)



Figure 1: Visualisation of the project’s conceptual framework



Source: own elaboration

By promoting social and technological innovations that create regional value added for a wide range of actors and for rural communities as a whole whilst considering the capacities of the regional ecological systems, SCALE-UP will ensure that bio-based solutions introduced in rural areas are in line with relevant policy objectives set out in the European Green Deal, while considering priorities and actions outlined in the EU Bioeconomy Strategy, relevant national bioeconomy strategies, regional development plans and smart specialisation strategies.

Specifically, the ‘second pillar’ of the CAP, aiming at strengthening the social, environmental and economic sustainability of rural areas, provides a relevant framework for the proposed activities. This piece of the legislation aims to support rural areas of the EU in meeting economic, environmental, and social objectives. National, regional and local authorities develop tailored multiyear rural development programmes based on a common set of available European measures. The new CAP that will come into force from 2023 contains policy reforms that aim to support sustainable agriculture and forestry in line with the ambitions of the European Green Deal. Included in this new CAP are ten key objectives:

- to ensure a fair income for farmers;
- to increase competitiveness;
- to improve the position of farmers in the food chain;
- climate change action;
- environmental care;
- to preserve landscapes and biodiversity;
- to support generational renewal;
- vibrant rural areas;
- to protect food and health quality;
- fostering knowledge and innovation.

While these objectives all align with the conceptual framework and goals of SCALE-UP, the objective on rural areas is worth specifically highlighting. This specifically aims to “promote employment, growth,

gender equality, including the participation of women in farming, social inclusion and local development in rural areas, as well as the circular bio-economy and sustainable forestry.” Here, we see support for and promotion of the bioeconomy as an explicit aim. Through the CAP national strategic plans<sup>2</sup>, countries outlined how they plan to achieve these objectives, including how they will promote the development of the bioeconomy. Furthermore, synergies between CAP strategic plans and national and regional bioeconomy strategies as well as regional development plans and Research and Innovation Strategies for Smart Specialisation (RIS3) could provide an important opportunity to foster successful bioeconomy implementation.

With its holistic, stakeholder-based approach and focus on regional development, SCALE-UP will further support the implementation of the EU’s long-term vision for rural areas towards 2040. Following extensive stakeholder and citizen consultation, the Commission developed the long-term vision along with the EU Rural Pact and Action Plan that aim to support rural communities and to enable businesses and citizens to reach their full potential. In this consultation the importance of the bioeconomy was specifically highlighted as both an opportunity for the future, with specific actions related to encouragement of modern technology deployment and the development of the bioeconomy. Furthermore, another challenge highlighted the limited engagement of land managers with developing the bioeconomy due to a lack of incentives and skills. Within the ten shared goals of the vision, the importance of bio-based products is specifically mentioned, with one of the goals for rural areas listed as: “Providers of food security, economic opportunities, goods and services for wider society, such as bio-based materials and energy but also local, community-based high-quality products, renewable energy, retaining a fair share of the value generated.” In addition, the Rural Action Plan promotes sustainable rural development with a focus on: territorial cohesion, access to jobs and training, improved infrastructure and services, attracting innovative businesses, and promoting sustainable agriculture and diversified economic activities. Here the involvement of primary producers, farmers and foresters and the development of bio-based solutions as planned in SCALE-UP are crucial to delivering on the long-term vision’s objectives.

Another relevant piece of legislation is the EU Bioeconomy Strategy, which was updated in 2019 to incorporate a strong focus on rural development. The updated strategy further proposes a framework for EU Member States to develop their own bioeconomy strategies and includes an action plan with three priority areas and 14 concrete actions. The three priority areas are:

- Strengthen and scale up the biobased sectors, unlock investments and markets
- Deploy local bioeconomies rapidly across the whole of Europe
- Understand the ecological boundaries of the bioeconomy

Within these priority areas, various actions can be directly linked to the work that will be carried out in SCALE-UP. In order to deploy local bioeconomies across Europe, SCALE-UP will directly contribute to creating pilot actions for the deployment of bioeconomies in rural areas, support regions to develop bioeconomy strategies, and promote relevant education, training and skills. Furthermore, the project places an important focus on understanding the ecological boundaries of the bioeconomy.

Apart from these EU strategies and action plans, SCALE-UP aims to ensure complementarity with the EU Green Deal, the European Digitalisation Strategy, the Circular Economy Package, the Waste Framework Directive as well as with national and regional legislations such as National Bioeconomy Strategies, Regional Smart Specialisation Strategies, and Rural Development Plans.

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<sup>2</sup> The approved Strategic Plans can be found here: [https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans-country\\_en](https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans-country_en)

### 3 Engaging with local stakeholders in the SCALE-UP regions

The following chapter describes how SCALE-UP aims to engage with relevant stakeholders in the six focal regions, focusing on the establishment and maintenance of the regional platforms, the implementation of targeted capacity-building activities, and the provision of innovation support services for local entrepreneurs.

#### 3.1 Establishing and maintaining regional platforms

##### *French Atlantic Arc*

The Chambers of agriculture, representing the agricultural sector which plays a key role in bioeconomy, are members in various innovation and competitiveness clusters working to develop the bioeconomy. They also contribute to the consultations led by regional and local authorities for the development of strategies and roadmaps on circular economy and bioeconomy. When considering the value chains linked to the use of plant-based fibers, a wide range of stakeholders are already involved, from producers to processors, industry and supporting organisations. But to date, the fiber plant value chain lacks structure and coordinated actions to fully achieve its potential. The establishment of the regional platform (at Atlantic arc scale, involving Pays de la Loire, Normandy, Brittany, New-Aquitaine) will build on existing networks and working groups:

- Professional unions of the hemp and flax sectors (Agrochanvre, Interchanvre, Construire en Chanvre, etc.)
- Existing local roadmaps i.e. "Normandy Hemp Project 2020-2023" lead by the Regional Chamber of Agriculture of Normandy and the Regional association for promotion of bio-based building, which has a focus on hemp-based building materials.
- Local networks and associations, i.e.:
  - the "Bio-based community Pays de la Loire", a regional working group created in 2021 and gathering stakeholders in the Pays de la Loire region (and surroundings) to work on bio-based building;
  - the New-Aquitaine Hemp association, working on 6 pilot projects on the scale of test territories to develop local hemp value chains.

The establishment of the platform will also benefit from a supportive political context: in Brittany for instance, local public authorities have decided to support the revival of a hemp production on the territory.

The platform's ambition is to support innovation and contribute to the development of markets to produce plant-based fibers, in particular for the building industry. In this perspective, one possible line of work could be to enable the marketing of construction materials based on fibre plants, depending on the biomass available locally, rather than focusing only on one type of culture. The ambition is to bring together the actors of the fibre plant sector (flax, miscanthus, hemp, straw...), to foster a multi-actor and upstream/downstream approach.

The design of the regional platform will need to be made in consultation with the participating stakeholders. If the platform will be open to a large range of interested stakeholders (i.e. for sharing knowledge, information and experience), the steering group will need to be limited to a selection of highly interested and motivated stakeholders (5 to 10 persons) in order to be effective (i.e. in providing innovation-support and capacity building). They should be willing to dedicate part of their working time on the project on a voluntary basis, and the frequency of meetings will need to be adapted to their availabilities.

Due to the large area covered (Atlantic arc), meetings will be organised online. A hybrid format could be explored as an option to gather stakeholders physically in one location in each region (Normandy, Pays de la Loire, Nouvelle-Aquitaine, Brittany), and to connect during dedicated online sessions with the broader stakeholder group. Other options considered will be to organise a platform meeting in parallel to a public event gathering stakeholders and focusing on plant-based fibers (i.e. the Annual Hemp Meeting organised each year in Normandy). Some local events, based on collective experiences

around multi-stakeholder approaches (use of hemp in public buildings in New Aquitaine), could also be used to support the activity of the platform.

Steering group meetings will be organised online on a regular basis (to be defined with the participating members) and should occur at least once a year in physical format.

As the regional platform will build on existing networks, and thanks to the involvement of key players in the targeted value chain, this platform of collaboration, innovation-support and information sharing put in place by the SCALE-UP project should be taken up by one or several members of the steering committee. One already identified organisation is the Novéatech cluster of industrials working with biomass, created and animated by the Regional Chamber of agriculture of Normandy.

### **Andalusia**

The cluster participates as a member in the regional Digital Innovation Hub AGROTECH, which has recently received funding from the EC in order to boost its implementation. Also, CTA usually participates in actions carried out by the regional government in charge of bioeconomy and circular bioeconomy aspects (e.g. staff from CTA participated as external experts in the development of the Andalusian Circular Bioeconomy strategy). The Bioeconomy Cluster of Andalusia has been kicked-off in the context of the EU-funded project ROBIN with the participation of CTA and will be fully operative by the end of 2024-beginning of 2025. The Andalusian cluster will mainly support to SCALE-UP project activities with the quadruple helix stakeholder's engagement. Moreover, CTA participates in different regional networks such as the group of Technology Transfer Offices of all the Andalusian Universities.

The ambition of the Andalusian platform is to boost the adoption of small-scale solutions that could tackle one of the regional problems when it comes to biomass exploitation (lots of biomass but scattered over the regional in rural and coastal areas). Therefore, the aim is to support new solutions that allow the region to leverage on its potential. To do this, CTA will cooperate with technology developers and entrepreneurs in order to provide some capacity building that would provide them with the relevant skills to create new value chains that can contribute to regional development.

The aim is to involve stakeholders from the quadruple helix to have a well-balanced regional platform. It will be important to engage actors from the investment sector as they will provide relevant information and feedback on funding opportunities. Concerning the engagement approach, the communication will be done using CTA communication channels (weekly bulleting by email, social networks like LinkedIn and Twitter and also specific email campaigns when needed). As for the activities to be done, this could be either face-to-face or online (this would depend on the activity). A satisfaction survey will be circulated to the participants in order to gather their feedback and implement some continuous improvement and better customised foreseen actions to their needs.

The cluster participates in several EU-funded projects where the organisation develops activities with regional stakeholder platforms. Hence, the regional platform could be invited and/or integrated in any of the working groups that belong to these projects. Moreover, CTA usually organises Technical Sectoral Committees where CTA members are invited to learn and discuss about recent trends. It would be possible to involve the regional platform here. Finally, CTA has its own funding scheme and knowledge about public and private opportunities, so the aim is to continue supporting the selected entrepreneurs in the implementation of their solutions.

### **Strumica**

Strumica region has already established a steering group as part of the Open Innovation Platform and the Panel for bioeconomy development that is involved in the field of bioeconomy (created from the BE-Rural project). The steering group however is mostly related to public sector stakeholders and among a variety of engagements, they were actively involved in promoting the Bioeconomy development roadmap for Strumica region<sup>3</sup> at the regional and municipal level. Furthermore, the municipality of Strumica has well developed networks, structures and bodies at regional level that are less connected to and involved in the bioeconomy development, yet they represent a solid ground for catalysing the bio-based activities. For instance, the Local Action Groups (LAGs), the Network for Rural

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<sup>3</sup> Bioeconomy Development Roadmap for Strumica region: the [https://be-rural.eu/wp-content/uploads/2021/12/BE-Rural\\_D5.3\\_SDEWES-Skopje\\_EN.pdf](https://be-rural.eu/wp-content/uploads/2021/12/BE-Rural_D5.3_SDEWES-Skopje_EN.pdf).

Development, the Office for Local Development, the Office for (EU) Projects. Here, the Environment Department could play an important role to connect the driving stakeholders for the bioeconomy development at regional level.

The role of the existing steering group established in the context of BE-Rural was to promote the bioeconomy at regional level via webinars, workshops, dedicated events (Meet the Mayor, educational events, pop-up store), etc. Their activities will be broadened as additional stakeholders will be invited to take part of the regional platform regarding the support the realization of the bio-based initiatives and business ideas. The regional platform is planned to be established within the Environment Department in the municipality of Strumica as a working group that would include people with diverse backgrounds such as ecologists, farmers, agricultural professors, advisors and entrepreneurs who are dealing with composting and treatment/collection of agricultural residues. The establishment of the platform will be formalised by a Memorandum signed by the Mayor. The newly established regional platform would build upon the existing one and put additional focus on the promotion of biodegradability, assistance in applying for European and national funds, guidance to farmers for sustainable and circular agriculture and disposal of biodegradable waste with emphasis on the composting or other processing.

The regional platform could contribute to rural development through:

- Maintaining a constant dialogue between different groups of stakeholders
- Harmonization of policies and measures in strategic and planning documents at the regional and national level
- Assistance in applying to relevant financial mechanisms
- Organization of educational events related to a specific supply chain
- Organization of fairs and other promotional events
- Cooperation with the traditional Strumica festival and establishment of a corner for the promotion of the bioeconomy
- Identification of good bioeconomy examples and linkage in other regions in North Macedonia (e.g. South East Planning region) and at the national level (e.g. Faculty of Technology and Metallurgy laboratory working on materials for tiles based on waste from raw rice)

The regional platform would ideally consist of 5 to 10 people well aware of the bioeconomy issues and relevant current topics that will be part of the core working group and at the same time covering different stakeholders' groups, mainly focusing on the business, R&I and public sector. However, representatives from the NGO sector should not be left out, as they are the voice of the farmers which are the primary providers of bio-based products. The engagement formats will vary depending on the needs, but hybrid models will be included. Online and onsite meetings and workshops will be held. The frequency of meetings will also be dependent on the activities, events or needs for the project, but it could vary from several short bilateral calls to a more formal meeting on monthly level. A mailing list or joint calling groups (ex. Viber) as means for communication is preferred in local regions. The communication with the other regions can go through the Planning Regions, with previously defined agenda that will be shared in a timely manner. The meetings could be held with presentations in the resource centre (if possibly established within the Regional platform in the premises of the Environmental Department) with a wider circle of lecturers adequate for a specific topic.

Sustainability will be ensured by making the platform part of an existing and operational structure – either within the municipality itself or some other structure that already operates in the region. By enhancing the cooperation with the existing stakeholders and involving relevant and bioeconomy-business oriented stakeholders, the sustainability of the platform should be secured. Continuous communication with the regional platform (meetings or workshop) beyond the project life will ensure the promotion of the bioeconomy on regional level. The municipality of Strumica will be in charge of maintaining the platform after the end of the SCALE-UP project.

### ***Mazovia***

The AgroBioCluster coordinated by UNIMOS Foundation gathers 56 members representing agri-food companies, research and education organizations, public institutions, local action groups and business support organizations. Most of its members are in rural areas in the Radom region. The AgroBioCluster



cooperates at regional level with other complementary clusters, scientific institutions and public authorities. It is also a co-founder of the Eastern European Food Clusters Network and member of the European PlantInterCluster Network (PIC Network).

The aim of the regional platform is to contribute to rural and regional development in the Mazovia region and raise awareness about the potential of underutilized resources. The platform will foster existing partnerships by engaging them in long-term relationship building around common bio-based objectives, supporting new business development and exploration of innovation and new R&D cooperation opportunities.

The engagement of regional stakeholders will be based on existing networks and will cover quadruple helix representatives from the whole agri-food value chain and connected sectors relevant for bioeconomy development. The communication will be done using UNIMOS and AgroBioCluster communication channels and will include offline, online and hybrid meetings and events. Synergies with existing projects will be established to maximise impact of the SCALE-UP project and additional funding opportunities will be gathered to allow financing of potential bio-based projects. At the beginning, it is foreseen to engage up to 10 stakeholders and with the project implementation, the regional platform will grow. Format and dates for meetings will be coordinated with local partners in rural areas and will be aligned with their calendar.

The platform will be sustained via AgroBioCluster, metaCSEI and preparation and submission of further bio-based projects. UNIMOS will actively search for additional funding opportunities from the regional government, EU funds for Poland and EU Programmes such as Horizon Europe.

### ***Upper Austria***

The Food Cluster Upper Austria provides an existing regional network for stakeholders in the food industry and is part of the Business Upper Austria location agency (Business Upper Austria - OÖ Wirtschaftsagentur GmbH), which is a main driver for innovation and contact partner for companies in Upper Austria. The Food Cluster Upper Austria provides support for stakeholders to realize projects and to connect stakeholders. With a network of not only private businesses but also academia and research agencies, policy makers in Upper Austria as well as different associations and civil society, the Business Upper Austria GmbH provides the foundation for the regional platform in Upper Austria.

The state Upper Austria supports the initiative “United against food waste”. The initiative’s mission is to reduce food waste to a minimum and provide services for food waste monitoring for needs analysis and reduction of food waste, educational content for awareness building for consumers as well as for food production companies. Upper Austria is part of the Austrian network “Bioeconomy Austria”, which consists of different regions in Austria, clusters, research, policy makers and civil society. The Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, the Food Cluster Lower Austria ecoplus and the BioBASE GmbH provide cross-regional networks for the stakeholders within Austria.

In the research, science and innovation domain, the University of Applied Sciences Upper Austria and the research institute for Feed and Food Quality, Safety and Innovation (FFoQSI) play a key role for the bioeconomy. The University of Applied Sciences Upper Austria offers the study courses “Food Technology and Nutrition” and “Bio- and Environmental Technology” as well as the integrated Center of Excellence for Food Technology and Nutrition for research topics in the food industry. Additionally, a study course for sustainability is planned. Within FFoQSI scientific and strategic innovations are developed for plant and animal foods and for ensuring quality from field to plate.

The aim of the SCALE-UP regional platform is to further broaden the bioeconomy network in Upper Austria and push bioeconomy in rural areas. Furthermore, the knowledge transfer and exchange between existing partners and new stakeholders will be facilitated, which contributes to finding innovative solutions for the individual challenges of bioeconomy. The role of the regional platform will be to find best practices and to facilitate the implementation of innovative project ideas with stakeholders.

In order to engage the regional stakeholders within the regional platform, the communication channels of the Food Cluster Upper Austria will be used. Additionally, a “regional platform kick-off” workshop (e.g., within the frame of an existing format such as a sustainability brunch) is planned. Furthermore, at least five relevant stakeholders within the network of the Food Cluster Upper Austria will be chosen

as members of the steering group. It is planned to engage two members of private businesses, which act along the identified value chains in Upper Austria, two members of research and development and one or more members of the public/civil society institutions as actors of the steering group. The steering group will be responsible for strategy work, controlling, reporting as well as dissemination along each step of the value chains defined within the SCALE-UP project. Annual meetings and regular updates (planned format: quarterly meetings) are planned, also after project end, in order to engage the stakeholders in the regional platform.

It is planned to sustain the regional platform in Upper Austria after the SCALE-UP project ends, mainly by continuous information flow within the platform using the infrastructure and communication channels from Business Upper Austria to reach the regional stakeholders. An example being that the steering group informs the regional stakeholders about follow-up projects of SCALE-UP or future projects related to the bioeconomy topic.

### ***Northern Sweden***

The Biofuel Region has been active in supporting the bioeconomy in Northern Sweden for the past 20 years and has already established fruitful cooperation and strong networks within different themes such as biomass logistics, upgrading and biorefining; biogas, wood fuel and with different kinds of stakeholders. The stakeholders are other bioeconomy clusters, politicians, regional strategists in the bioeconomy, policymakers, researchers and companies. We will also complement existing networks to contribute to the project's goals without establishing or bypassing organisations that already exist.

The overall aim of the regional platform will be to further strengthen the bioeconomy in Northern Sweden by facilitating knowledge exchange and cooperation among stakeholders. The aim will also be to support the bioeconomy policy framework for the forest bioeconomy both nationally and at EU level and to market the region's bioeconomy resources - both biomass and industry - and research infrastructure in order to attract funding and investments.

Understanding of stakeholders' needs is crucial for true stakeholder involvement. With a better understanding, involvement can be built step by step. An ideal composition of the regional platform would be a quadruple helix involving 1-2 stakeholders from each of the already existing networks and new ones identified during the project.

Strengthened cooperation within the existing regional bioeconomy platforms during the project time frame will strengthen the possibility to continue work after the project has ended. Cooperation with existing sister projects and new forms of cooperation established during the project will further strengthen the capacity of the platform to hitch-hike and arrange joint conferences and meetings with a low budget in the future. Capacity building in the platform and/or in the different networks can attract new forms of cooperation and funding.

## **3.2 Building capacity among regional stakeholders**

### ***French Atlantic Arc***

Bioeconomy is an increasingly relevant topic at all levels (EU/national/regional) and the French Atlantic arc has strong assets through the agricultural sector. Therefore, regional councils, agri-food and bioeconomy clusters are very active on the topic and propose events and webinars to raise awareness among stakeholders. In Normandy, a regional observatory of agro-resources is currently under development (led by the Chambers of agriculture in cooperation with Biomass Normandie). Research is also involved and there are existing studies on the bio-based building value chain (i.e. "Maillons project: disseminate inter-regional low carbon building" or specific studies done by the Union for Social Housing of Normandy).

SCALE-UP's capacity-building activities shall help the stakeholders to unlock current barriers for the development of plant-fibre-based solutions to fully exploit the bioeconomy potential in the area. The main challenges faced are the lack of structuration, difficult access to the market for innovations, lack of awareness (for both political, industrial and general publics) and the lack of investments. Another important ambition of SCALE-UP's capacity-building activities is to help the members of the regional platform to assess the sustainability of the bio-based solutions to be deployed. The capacity-building activities should provide the stakeholders with tools to develop community-based, resource-efficient

and circular bioeconomy models, ensuring cascading-uses of the biomass and the definition of a hierarchy of uses to avoid situations of competition over the biomass resources.

In the Pays de la Loire (one of the regions composing the French Atlantic Arc), SCALE-UP's sister projects BIO RURAL and RURAL BIO UP will also implement capacity-building and experience-sharing activities involving regional stakeholders relevant to bioeconomy. Here, synergies for joint activities will be explored,

### **Andalusia**

Andalusia has been one of the first regions in Europe in issuing a regional Circular Bioeconomy Strategy, developed by the regional ministry. In addition, the regional ministry has participated in the following publicly funded projects that have, as a common goal, to contribute to the spread a development of regional bioeconomy: thematic partnership under S3 Agri-food European Platform (S3P TRACEABILITY AND BIG DATA IN THE AGRIFOOD VALUE CHAIN , led by the Andalusian government), ICT-BIOCHAIN (where CTA also participated and devoted to the development of a DIH for digitalisation of biomass logistics), POWER4BIO (peer learning among regions), BlueBioMED (blue bioeconomy in the Mediterranean area, ZeroW (where CTA also participates and aims to reduce food waste losses) and ROBIN (where CTA also participates and where the objective is to enhance bioeconomy regional governance models). Moreover, Andalusia was selected as one of the 6 Model Demonstrator Regions for Sustainable Chemistry by the EC. Finally, CTA has also implemented several projects in the region that involve stakeholders such as urBioFuture and bioBEC (devoted to university-academia cooperation and bioeconomy education), BIOSWITCH (to support brand owners in their transition to bio) and MPowerBIO (to support start-ups and entrepreneurs).

The main aim of capacity-building activities is to provide the stakeholders the tools necessary to further develop new technologies to successfully introduce them in the market. In Andalusia, there is a large portion of feedstock (biomass sources) and a demand for bioproducts, but the region lacks a transformation industry. Thus, international cooperation for value chain creation and new business connection would be very interesting. Stakeholders also request more training on certification and labelling schemes.

### **Strumica**

The municipality of Strumica along with three other municipalities from the South-eastern Planning Region was one of the target regions in the BE-Rural project. As the project was oriented towards the creation of bio-based strategies and roadmaps for enhanced rural and regional development, the region is a frontrunner in delivering documents with such content. Prior to that, the stakeholders that will be included in the regional platform have participated in and organized many events related to the bioeconomy. BE-Rural's Capacity Building & Knowledge Exchange activities have increased the stakeholder's knowledge and have raised the awareness of the general public and targeted stakeholders on this matter. Moreover, the regional stakeholders have experience with organising seminars, conferences, pop-up store, educational events with students and teachers in the field of bioeconomy, circular economy and sustainability for example:

- BE-Rural's Capacity Building & Knowledge Exchange activities for public, business, NGO sector and academia
- Activities for the promotion of the roadmap for bioeconomy development
- Educational events for teachers and students

Also, there are other NGOs that are implementing good cross-border practices related to composting or handling the agricultural waste in a proper way (for example: Interreg – IPA CBC project: Composting home, Civica Mobilitas: "From agricultural waste to black gold").

The bioeconomy foundations and basic knowledge for the bio-based sector in Strumica region was set within the BE-Rural project. Therefore, it is of utmost importance to continue the capacity building, upgrade the knowledge and expand the group of stakeholders tackled. Yet there are many novel approaches and innovations, especially in the bio-based business sector that need to be explored. There are many challenges that should be addressed, such as the digitalisation in the bioeconomy sector. Also, modern terms such as social innovation or innovation governance are rather distant even for the key stakeholders in the rural areas, especially the primary producers. Gathering business and

R&I remains a burden to be overcome with the SCALE-UP activities in order to introduce innovative models of cooperations or different approaches, such as community driven activities in bioeconomy development. In order to make an impact on regional level capacity building, the regional platform activities could contribute by having, for instance:

- Common repository (base) with documents of interest to the bioeconomy for the platform members. Additionally, the platform may assign administrator that will take care of the database and upload the documents that are shared among the members.
- Common mailing list for the members of the platform to which SDEWES-Skopje will regularly send capacity building materials (webinars, documents, events, etc.)
- R&I and academic representatives invited by the members of the platform who would present innovations and opportunities for new businesses to interested investors
- Promotion of good practices and experiences from other SCALE-UP regions
- Lectures/seminars on social innovations

### ***Mazovia***

UNIMOS has been implementing several projects and initiatives in the field of bioeconomy, starting with the setting up of AgroBioCluster in 2015 and executing both regional and European projects in the field of agri-food bioeconomy. Regional projects included agri-food alliances (ALLIANCES), coordination of cross-sectoral collaboration (INTERNEXUS), envisioning of future development of agri-food sector in Mazovia (FUTURO), animation of regional development in Radom region (ORKIESTRA 21 and 22), cross-cluster collaboration (INTERCLUSTER), boosting entrepreneurship in bioeconomies (STARTUP+), among others. At European level, UNIMOS is engaged in circular bio-based projects related to feather revalorization into new agri-food products (UNLOCK), creation of short food supply chains (agroBRIDGES) and food safety, quality and authenticity (AURORA). Since 2015, UNIMOS and AgroBioClusters actively participate in the working groups of Regional Intelligent Specializations (RIS3) and are member of PlantInterCluster Network (PIC Network).

The ambition of the SCALE-UP capacity building programme is to inspire local stakeholders, open up new development opportunities based on the biomass availability to be used as new valuable source and provide ready-to-apply tools to successfully implement their bio-based concepts and ideas.

### ***Upper Austria***

There are several projects related to bioeconomy in the food sector in Upper Austria. The EU-funded project GODANUBIO, for example, supports regional bioeconomy development in a significant and sustainable way.

Another step will be the implementation of the Austrian Bioeconomy Action Plan (BioEco) of the Austrian Federal Ministries, in which the conversion towards more sustainable consumption habits (e.g., awareness building to reduce food waste), circular economy and sustainable resources in the food industry as well as innovative developments for side stream utilization, recycling and process optimization via academia, research and process optimization are relevant activities for the SCALE-UP project. Within the regional project "SCHALTwerk Kremsmünster 2030" two focus areas are the development of a circular-economy community within Upper Austria, as well as the regional strategy in a subregion in Upper Austria for successfully implementing the climate goals. The discussion forum "Ökosoziales Forum Oberösterreich" provides a sustainability brunch and regular meetings, which enable stakeholders to discuss topics throughout all bio-based value chains and relevant topics in the bioeconomy.

The SCALE-UP capacity-building activities shall help to further develop the bioeconomy in Upper Austria. The ambition is to introduce more stakeholders from rural areas to bioeconomy business models with best-practice examples from other countries but also from other regional stakeholders in Upper Austria. One challenge to be addressed is the potential communication barrier between stakeholders with different interests (e.g. policy makers, private businesses, research facilities, etc). Through SCALE-UP's capacity-building events and the project partners as bridge-builders, the knowledge exchange between the regional stakeholders will be facilitated in a way to tackle the challenge. An additional aim of the capacity building-activities is awareness building towards

bioeconomy-related topics for all age groups (children to elderly) in order to establish the activities as a future-oriented approach (<https://oekosozial.at/oberoesterreich/>).

### ***Northern Sweden***

Bioeconomy is very strong in Northern Sweden and rather well established as a concept. Many stakeholders (bio clusters, R&D, innovation hubs, regional authorities, regional forest programs and commercial life) already work hard to further support the bioeconomy development. In general, conferences and several meetings in the bioeconomy context take place almost every week. During 2023, Bioeconomy North will arrange the national conference for bioeconomy together with existing networks. During this event, a vision for the future development of the bioeconomy in Northern Sweden region will be processed.

Current forest management practices are heavily debated in Sweden and in the EU policy context. NGOs for example are questioning the sustainability of the forest bioeconomy and the debate between interest groups in cities and forest owners in rural areas is highly polarized. As such, the dissemination of knowledge about the framework under which the forest bioeconomy operates today and facts about the current and future forestry is crucial to overcome the polarization. The Biofuel Region will disseminate this knowledge and ensure that the perspectives of forest owners are included in the debates.

In addition to SCALE-UP, two new EU-funded projects have started up at Biofuel Region in autumn 2022 (BioModels4Regions within Horizon Europe and BioBoosters financed from Interreg Baltic Sea Region). The Biofuel Region will further strengthen our EU cooperation to support the bioeconomy development in our region.

## **3.3 Providing support to bio-based innovators**

### ***French Atlantic Arc***

The chambers of agriculture are local advisors and trainers for farmers as well as actors for R&D. They work at a grass-root level with farmers and local authorities and are key players in the development of rural areas. Furthermore, diverse public funds exist to support R&D in bioeconomy and enhance multi-actor partnerships, such as the call for projects “GRAINE” lead by ADEME (National agency for ecological transition) to finance research projects to improve management, production and valorisation of biomass (bioeconomy as a lever of ecological and energy transition), or the “Regional call for circular economy projects” implemented by the Regional Council of the Pays de la Loire region and supporting regional innovators in implementing circular bio-based solutions.

SCALE-UP's business development support activities will help bringing upstream (agricultural, producers) and downstream (industrial, processors) actors together to develop markets for plant-based fibers, ensure that biomass demand matches supply and that the added-value is fairly spread among the actors in the chain. These activities will help to develop the financial viability of bio-based solutions: an important need identified is to provide information on possible sources of funding, and to develop replicability of bio-based solutions implemented locally.

### ***Andalusia***

Andalusia has an important entrepreneurship ecosystem. Incubation and acceleration programmes such as Cajamar Innova, Minerva, Espacio RES, Andalucía Open Future, among others, foster entrepreneurship and help companies to consolidate their businesses. In terms of financing, there are public-private venture capital funds with an interest in bioeconomy issues, as well as the Andalusian Association of Business Angels. Also, CTA participates in several European projects to facilitate the financing of 'bio' SMEs, such as P2PfinBIO and MPowerBIO.

The role of SCALE-UP's business development support activities in Andalusia will help innovators to be connected to a network with local stakeholders (local government, business community, academic institutions and primary biomass producers, etc.) to help them learn and link to markets.

### ***Strumica***

The Strumica region is lagging EU progressive and developed rural areas due to the lack of proper policy and finance mechanism and schemes, but it also lacks knowledge and readiness for bio-based



solutions. Strumica region does not have a specific support scheme for bio-innovators at present, however, within the previous activities related to the bioeconomy sector, we came across small-scale examples of bio-based innovations, for instance sustainable clothing, organic soaps, biodegradable food packaging, composting, etc, examples that are worth being financially supported. Besides establishing strong cooperation with those innovators, their good examples were promoted and supported on national level via media coverage.

SCALE-UP's business development support activities would significantly make an impact on regional level. The region is known as the largest exporter of agricultural products, indicating many agricultural residues which remain improperly handled. Within the project, the business support activities would help mitigate this issue, thus it will contribute on many fronts, such as building capacities, promoting new bio-based business models and ideas, strengthening regional R&I activities, improving multi-actor and cross-sectoral cooperation. Among other support activities, there are several ways for the regional platform with the representatives of the municipality to contribute to community-driven rural development:

- Support to include the following measures in the planning municipal and regional documents: Support in the form of additional direct payments; Investment grant for starting a business; Easier access to agricultural land and Mandatory training and advisory support - part of the Business sector strategic goals from the roadmap for the bioeconomy development of the Strumica region
- Joint organization of stakeholders for applications for the Innovation Fund through the Regional Platform
- Assistance to interested entities in the preparation of an application for self-employment on the topic of bioeconomy through calls from USAID, etc.
- Support for training for the business sector to apply for different funds and grants that would contribute to the development of bio-based business.
- Assistance in business matchmaking and profound collaboration with business accelerators

### ***Mazovia***

In Mazovia region there are several support measures for bio-based innovators, still most of them are in Warsaw and stakeholders from rural areas are not always aware of all the possibilities. At local level, the Local Action Group Razem dla Radomki offers several tools and measures for entrepreneurship, investments and promotion of circular economy. Warsaw (capital of Mazovia region and Poland) is the headquarters for various investments funds, national and regional funding and support organizations (NCBIR, PARP, NCP). UNIMOS is also stakeholder of the EU-funded MPowerBIO project and participated in BIOSWITCH project activities.

The role of SCALE-UP's business development support activities in Mazovia region would be to equip local stakeholders with practical business tools to empower new bio-based business initiatives and development of new products and services based on their territorial biomass potential.

### ***Upper Austria***

The Upper Austrian funding programme "Programme for the implementation of cooperative research and development projects or for the implementation of cooperative organizational projects at Upper Austrian companies (SKU)" provides financial support to (bio-based) innovators to realize their projects in cooperation with other business partners and research institutions. Further funding options are the Upper Austrian funding programmes "Easy2innovate" for research & development projects as well as the Austrian funding programme "Innovationsscheck" ("Innovation cheque") for SMEs with research and innovation projects.

The role of SCALE-UP's business development support activities in Upper Austria is to provide a broad network of stakeholders to innovators with bio-based ideas in order to facilitate the cooperation with private businesses (financial support), academia and research (feasibility) and policy makers (compliance) and thereby facilitate the introduction of new products on the market.

## Northern Sweden

The role of the business support activities in Northern Sweden will be to further strengthen bioeconomy stakeholders and networks to boost bio-based innovations and investments in rural areas by:

- mapping and presenting business opportunities based on the forest industry and forest by-products and supporting multi-actor partnerships within this project;
- supporting innovators with expertise and matchmaking;
- identifying promising innovations and linking them with key stakeholders that can help them develop their business ideas further;
- making use of existing business-supporting structures in the region;
- involving businesses and innovators in Hackathons;
- identifying and presenting funding opportunities both at national and at EU level; and
- highlighting opportunities to expand bio-business for existing biomass terminals (BioHubs) located in rural areas in Northern Sweden.

## 3.4 Brief comparison of the six regions and potentials for joint activities

### *Similarities and differences among the regions*

The six regions covered by SCALE-UP differ in terms of socio-economic characteristics (e.g. regional GDP, labour productivity and employment rates, population dynamics) and the availability of biomass resources (see Table 1). These given differences imply that the bio-based solutions, which SCALE-UP will identify and promote across the six regions, will have to be addressed in different ways, taking into account the specific regional characteristics. This is also reflected in the individual stakeholder needs that have been identified and will be addressed in the frame of the project, as summarised in Table 2 below.

**Table 2: Identified needs per SCALE-UP region**

Region	Regional needs to be addressed in SCALE-UP
<b>French Atlantic Arc</b>	<ul style="list-style-type: none"><li>• Challenges related to upscaling from an existing product to a consistent value chain.</li><li>• Capacity building for interconnecting regional actors, based on the regional policy supported by the Regional Council on each of these topics.</li><li>• Hemp production is currently investigated by farmers and regional authorities as a serious perspective for diversification for farmers.</li></ul>
<b>Andalusia</b>	<ul style="list-style-type: none"><li>• Andalusia is the second biggest region in Spain (87.268 km<sup>2</sup>) with many rural and coastal areas. Although producers tend to group in big cooperatives, there are a lot of small cooperatives or single producers that are scattered in the region and that are not valorising their agricultural waste.</li></ul>
<b>Strumica</b>	<ul style="list-style-type: none"><li>• Insufficient information on the type and quantity of the agricultural residues and of waste generated, particularly from the agri-food sector.</li><li>• Lack of logistics centres to handle the feedstock.</li><li>• Lack of financing and loan facilities to cover investment costs and of subsidies related to the use of biomass for energy and bio-based products.</li><li>• Insufficient skilled workforce for bio-based and bioenergy applications and no relevant centres of excellence and vocational education and training.</li><li>• Undeveloped market for bio-based products.</li><li>• Lack of public support policies for development of bio-based industries.</li></ul>
<b>Mazovia</b>	<ul style="list-style-type: none"><li>• Insufficient of knowledge on how to transform agricultural waste into new products.</li></ul>

	<ul style="list-style-type: none"> <li>• Lack of competences and skills regarding green transformation towards circular economy/bioeconomy.</li> <li>• Undeveloped market for bio-based products.</li> <li>• Lack of knowledge about bio-based business models.</li> <li>• Lack of public support policies for development of bio-based industries.</li> <li>• Low level of competences related to application for EU funded in the field in R&amp;D.</li> </ul>
<b>Upper Austria</b>	<ul style="list-style-type: none"> <li>• Limited experiences in the valorisation of side products and in the development of new business models to reach SDGs (reduce food waste).</li> <li>• Waste in agricultural production: need for higher valorisation of products that remain on the field, e.g. products that are not fitting in requirements of consumers (e.g. curved or too small/too big cucumbers).</li> <li>• Insufficient awareness of food producers and of consumers as regards the potential of biobased goods.</li> </ul>
<b>Northern Sweden</b>	<ul style="list-style-type: none"> <li>• Bulky biomass assortments with lower quality distributed over large areas, making it expensive to harvest and transport to end users far away.</li> <li>• Potential solution BioHubs: effective logistics, upgrading, densification, sorting, sieving, fractioning of biomass assortments according to different end-user quality demands.</li> </ul>

However, despite the fact that the six focal regions represent diverse socio-economic, cultural, and ecological contexts, they share a common set of characteristics related to the (limited) endowment of awareness, knowledge and resources required for the further the development of the local bioeconomies. These include the low level of interconnectedness of relevant actors along new and/or adjusted bio-based value chains, the inefficiency of regional biomass logistics, an insufficiently skilled workforce for bio-based and bioenergy applications, the lack of knowledge on how to transform biomass side streams and residues into new products, an inadequate governance framework for the development of the bio-based sector, insufficient consumer awareness of bio-based products, and insufficient producer awareness of potential markets, among others. These challenges will primarily be addressed through local stakeholder engagement processes, which will be organised in the frame of the six regional platforms, as described in the chapters above. However, they also bring along the potential for cross-regional activities, aiming to share local knowledge and experiences in addressing relevant challenges.

### ***Potentials for joint cross-regional activities***

Joint activities involving stakeholders from all six regional platforms will primarily be organised in the frame of SCALE-UP's virtual training programme, consisting of seven thematic work streams, which focus on a range of key topics relevant for the identification and promotion of inclusive bio-based business models, value chains and governance structures. The implementation of the training programme will focus on knowledge sharing and mutual learning among the six regions. Within each of the seven work streams, three training sessions will be organised, in which experts from the six regions and beyond present best practices regarding bioeconomy development in a rural context. Each session will provide room for local stakeholders to reflect on the presentations, and to share their views with stakeholders from the other regions in a joint discussion round. To further support mutual learning and knowledge exchange among the six regions, SCALE-UP will organise two field trips to Strumica (North Macedonia) and Northern Sweden as well as an international study tour to Upper Austria, providing selected members of the six regional platforms with the opportunity to meet their peers and jointly explore and discuss a range of different topics (technologies, business models, engagement processes). Apart from facilitating direct interaction among stakeholders from the six regions, SCALE-UP will also facilitate joint thematic discussions in the frame of regional platform meetings: common guiding questions will be formulated, which will then be addressed within the six platforms. The outcomes of these discussions will a) guide the further implementation of the project's work plan, and b) be summarised in relevant project outputs, e.g. a policy brief.

## 4 Practical guidance for the design and implementation of community-driven activities in the SCALE-UP regions

The ambition of SCALE-UP is to promote bio-based solutions that reflect the priorities of rural communities in the six focal regions. In order to realise this ambition, the participatory activities in the six regions will be based on a number of key principles of stakeholder and public engagement. In addition, criteria related to community-led local development will guide the design and implementation of specific activities.

### 4.1 Key principles of stakeholder and public engagement

To meet the objectives of SCALE-UP, the project will build on the following principles of co-creation, openness and inclusiveness, transparency, and sustainability, all of which are reflected in the project's conceptual approach and work plan.

#### ***Co-creation***

SCALE-UP builds on the idea that providing spaces for co-creation for a broad spectrum of stakeholders will not only contribute to broader societal goals, but can stimulate a stronger demand for sustainable, innovative products and services in the regions. The development of bio-based solutions will thus be embedded in a structured participatory process, which ensures the proper evaluation of alternative business strategies and regional development pathways and their effects on the region. This implies that trade-offs will be made explicit and discussed among relevant stakeholders and the wider regional communities, aiming at the definition of shared objectives and the creation of mutually valued outcomes.

#### ***Openness and inclusiveness***

The implementation of the work in SCALE-UP will permit for the participation of all groups and individuals interested in contributing to the further development of rural bioeconomies in the six regions, including marginalised groups and 'unusual suspects' who are not directly related to a bio-based solution, but might still be interested in contributing to the broader rural development discourse. Besides the so-called 'triple helix', representing government, business and academia, SCALE-UP will encourage the participation of civil society (organisations) in the platforms, thereby facilitating multi-faceted discussions and the definition and implementation of broadly shared objectives. The SCALE-UP team further recognizes the importance of gender aspects for rural development and is aware that a gender bias could hinder the full realization of the potential of rural bioeconomies and will take into account the differential roles, needs and skills of men and women in the implementation of the project activities. A specific focus will be put on the inclusion of women in the regional platforms, steering groups and Task Forces for market assessment and business model design services

## ***Transparency***

In order to allow local stakeholders to join the regional platforms and ongoing discussions also at later stages of the project, all participatory activities and their outcomes will be documented and be made publicly available. Besides ensuring full transparency of the project's participatory activities, the SCALE-UP team will also evaluate their effectiveness to allow subsequent projects and initiatives to build on SCALE-UP experiences.

## ***Sustainability***

SCALE-UP will equally address the three pillars of sustainability (social, environmental and economic sustainability) and explicitly promote the sustainable use of agricultural, forest and marine ecosystems. A special focus will be on the capacities of the regional ecological systems (soil, water, biodiversity) in relation to alternative bio-based development and biomass utilization pathways.

## **4.2 Addressing the priorities of rural communities**

The ambition of SCALE-UP is to identify and promote bio-based solutions that create regional value added for a wide range of actors and for rural communities as a whole, whilst considering the capacities of the regional ecological systems. To ensure that the priorities of rural communities are sufficiently addressed, SCALE-UP's activities are oriented along the objectives of the EU's rural development policy. This approach is strengthened by the implementation of structured participatory processes in the six focal regions. Drawing on the principles of community-led local development (CLLD) (cf. European Commission, 2014a), SCALE-UP will make sure that different stakeholder groups and their viewpoints are considered in the activities. This applies particularly to the establishment of the regional platforms and to the identification and promotion of specific bio-based solutions:

### ***1. Establishing and maintaining stakeholder platforms in the six SCALE-UP regions***

Following the 'area-based approach' of the LEADER programme, SCALE-UP targets homogenous, socially, and functionally cohesive territories, characterised by common traditions.<sup>4</sup> The regional focus of the project will enable the mobilisation of stakeholders from the respective regions and the creation of local partnerships, and will empower regional actors to develop sustainable bio-based value chains by mobilising locally available resources. The regional stakeholder engagement processes will be organised in the frame of the regional platforms. Here, the following aspects will be taken into account:

- The setup of the platforms considers the principles of co-creation, openness and inclusiveness as outlined in section 4.1.
- The ambition is to have all relevant stakeholder groups represented in the platform, including groups or actors who have a broader view on rural and/or regional development (going beyond individual value chains).
- If representation of all relevant stakeholder groups cannot be realized, the role of the platform facilitators is to ensure that relevant topics are taken up and addressed in the discussions (e.g. potential risks or detrimental effects of bioeconomy development).
- The overall objective is to facilitate a co-creation process that, ideally, reflects and addresses the priorities of the rural community at large – not only the ones of the most influential stakeholders.

### ***2. Promoting bio-based innovations that reflect the priorities of local communities***

The development of new, innovative bio-based models is at the heart of SCALE-UP. In the context of the project, 12 bottom-up, community-led bio-based solutions (two in each of the regions) will be explored. Taking into account the guidelines on CLLD for local actors as outlined by the European Commission (2014b), innovation in SCALE-UP is not exclusively connected to the development of new technologies, but also focuses on the generation of benefits (social, ecological and economic) for the local community and on the promotion of social innovation.

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<sup>4</sup> [https://enrd.ec.europa.eu/leader-clld/leader-toolkit/leaderclld-explained\\_en](https://enrd.ec.europa.eu/leader-clld/leader-toolkit/leaderclld-explained_en).



The regional multi-actor platforms will bring together a wide range of stakeholders such as farmers, foresters, clusters, business support organisations, social partners and non-governmental organisations with the aim to build capacity to identify and promote innovative bio-based solutions. Within the platforms, Task Forces consisting of members of the platforms' steering groups and further regional knowledge holders "will take part in the exploratory assessment of a business idea by contributing their specialized knowledge of the region, their professional experience, access to specific data, information and contacts, etc." (Anzaldúa et al., 2021a, p.8).

Ideally, the platforms will promote bio-based business models that:

- build on regional biomass resources (e.g., agricultural and forest residues, side streams from the food industry);
- strive to promote regional added value for rural communities (new employment opportunities, demand for innovative and sustainable products and services, efficient use of natural resources) and to respond to global challenges in locally adapted ways;
- are embedded in value chains that feature a wide range of regional actors, thereby contributing to distribution of income among the local communities;
- consider in first line the environmental sustainability, which means that the inputs and outputs of bio-based enterprises – in terms of used, consumed or degraded resources and emitted pollutants – shall not be as high as to hamper the regeneration of the regional ecosystem (Anzaldúa et al., 2021b, p.4);
- are in line with relevant policy objectives set out in the European Green Deal, the EU Bioeconomy Strategy and relevant national bioeconomy strategies and action plans (see chapter 2).

## 5 Conclusions and outlook

SCALE-UP's six focal regions feature different socio-economic and biophysical contexts. When it comes to the local bioeconomy potential, the individual case studies draw on agriculture and/or forestry-related biomass streams. In sum, a variety of valorisation options will be explored in SCALE-UP, showcasing different approaches, which aim to establish novel bio-based value chains that build on regional resources.

The ambition of SCALE-UP goes beyond providing innovation support services to individual entrepreneurs. The idea is to identify and promote bio-based solutions that benefit the wider rural community, e.g. by providing income opportunities for a wide range of actors and by safeguarding and fostering the region's environmental sustainability. The rural development objectives as outlined in the EU's CAP will provide the conceptual framework for the activities, while key principles of stakeholder and public engagement and defined criteria for community-led local development will provide practical guidance for realising the overall project ambition.

The six regional platforms will be the main instrument for the practical implementation and achievement of the project's objectives. Their establishment and maintenance will be grounded on structured stakeholder engagement processes, which aim at ensuring the representation of all relevant stakeholder groups, and at the design of bio-based development pathways that reflect the priorities of the rural communities. In this context, the regional project activities will create an evidence base for the promotion of small-scale biobased solutions that contribute to the achievement of broader rural development goals, specifically the six priorities of the EAFRD.

### **Infobox 1: The six priorities of the European agricultural fund for rural development (EAFRD)**

- 1) Supporting knowledge transfer and innovation in agriculture, the forestry sector and rural areas.
- 2) Improving the viability of agricultural holdings and the competitiveness of all types of agricultural activity and supporting innovative management methods and sustainable forestry.
- 3) Supporting the organisation of the food chain, the animal welfare system and the risk management system in the agricultural sector.
- 4) Restoring, preserving and improving the ecosystems connected with agriculture and the forestry sector.
- 5) Promoting resource efficiency and supporting the agricultural, food and forestry sectors in their transition to a low-carbon and climate-resilient economy.
- 6) Supporting social inclusion, poverty eradication and economic development in rural areas.

Source: BMEL (no date)

The experiences and lessons learned during the implementation of the participatory activities in the six regions will form the basis for an evidence-based guidance framework, which will provide regional stakeholders across Europe with concrete evidence regarding the development of small-scale bio-based solutions (Deliverable 5.3). It will cover and discuss:

- the relevance of the overall policy framework, specifically the EU's rural development policy, for the development of regional bioeconomies;
- insights on the design and practical implementation of targeted stakeholder engagement processes in the context of regional bioeconomy platforms;
- lessons learned regarding the definition of shared objectives and common visions for bio-based developments in a regional context;
- the identification of bio-based solutions that meet specific criteria related to broader rural development objectives;
- the requirements for realizing identified development pathways with a focus on a) the implementation of targeted innovation support services for entrepreneurs, and b) the creation of supporting framework conditions (specifically public and private funding sources); and
- the effective monitoring of regional bioeconomy activities and their outcomes.

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