

Study on Available Funding Opportunities for Bioeconomy in the Alpine Region



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LIST OF ACRONYMS

AG	Action Group
AlpGov	Interreg project that aims to support effective and efficient EUSALP implementation
BSR	Baltic Sea Region
COSME	Competitiveness of Enterprises and Small and Medium-sized Enterprises
ERA	European Research Area
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
EUSALP	EU-Strategy for the Alpine Region
INTERREG	European Territorial Cooperation
R&D	Research and Development
R&D&I	Research, Development and Innovation
S3	Smart Specialisation Strategy
SDG	Sustainable Development Goals
SME	Small and Medium-sized Enterprise
TRL	Technology Readiness Level
VC	Value Chain

1 INTRODUCTION

The present "Study on Available Funding Opportunities for Bioeconomy in the Alpine Region" was produced within the framework of the AlpGov project and the Sub-Group "Cluster & Bioeconomy." It provides an overview of current and upcoming funding opportunities on Bioeconomy that reply to SMEs in this sector. The geographical focus of this study is the Alpine Region. The study serves as input for the preparation of a Bioeconomy Master Plan to strengthening the Bioeconomy along transnational value chains.

Bioeconomy touches a broad range of industrial sectors and encompasses the production of bio-based resources and their conversion into food, feed, bio-based materials, and energy. A bio-based value chain includes the primary production of bio-based resources, their conversion to higher-value goods via processing and commercialization on the market¹. Significant potential for the development of the Alpine Region is seen by transnational cooperation in the Bioeconomy field, especially as regards the closure of disconnected cross-border bio-based value chains. The public debated about the barriers, constraints and potential of Bioeconomy as a driver of resource efficiency, circular economy, and bio-based value chains. This has resulted in various funding programmes and initiatives at EU, national, regional, and local levels. Despite these efforts, bio-based value chains are still in the emerging phase. Bioeconomy markets are immature compared to other well-established industries such as automotive or manufacturing.

However, the latest news about the Pacific plastic garbage pack and related environmental and climate issues have dramatically changed consumers' and citizens' preferences and awareness. The public is requesting greener and more sustainable products and services. Increasingly, firms and governments are under tremendous pressure, and failure to meet requests might have a significant impact on the environment, society, and the economy. It becomes clear that unlocking the potential of Bioeconomy requires significantly more investment. It is less clear how to integrate various funding programmes at a time where a majority of transnational funding is coming to an end. Investors and banks are still reluctant to support bio alternatives. Macroregional approaches surface as a viable option². Thus, it is vital to get better insight into what the Alpine Regions are offering and how programs are delivered to SMEs and other actors in Bioeconomy.

Considering the persistent need for public investment in R&D&I on one side, but acknowledging the comparable complex and not well-aligned funding landscape on the other hand, this study provides an overview of EU, national/regional, and private funding opportunities focusing on relevant fields of Bioeconomy. The study collects and analyses information on existing funding schemes as well as areas where funding opportunities are missing. Based on this analysis, the current document provides recommendations for future fields of funding that should be provided, with a particular focus on SME support.

¹ Bioeconomy Shaping the Transition to a Sustainable, Bio-based Economy, University of Hohenheim, 2018

² Mateja, Dermastia, 2018, Study to Prepare a Synchronised Funding Scheme for Bioeconomy Development in the Alpine Region,

<https://www.alpine-region.eu/results/study-prepare-synchronized-funding-scheme-bioeconomy-development-alpine-region> (10 November 2019)

2 OBJECTIVES, SCOPE AND METHODOLOGY

This present Study on Available Funding Opportunities for Bioeconomy in the Alpine Region has collected and analyzed information on existing funding schemes. Additionally, the study examines fields where funding opportunities are missing and makes recommendations for future fields of funding. Importantly it provides an overview of existing funding opportunities for SMEs. The study contributes to the design of future fields of funding in the Alpine Region.

The study is structured along four steps, as requested in the Terms of Reference. It was refined to better capture the essence of the issues at stake. Focus is given on the EUSALP region that includes seven countries of which five are EU Member States (Austria, France, Germany, Italy, and Slovenia). It also includes non-EU countries (Liechtenstein and Switzerland) for a total of 48 Regions³. In the context of the study, the selection of target countries to be analyzed pays particular attention to the existence of Bioeconomy strategies and policies, which is backed by dedicated financial resources. Baden Württemberg and Lombardy were selected as the strongest in this regard and Slovenia as the only region from EU13 in the Alpine Space. Due to the broad scope of the bioeconomy, the study is focused on bio-based value chains based on biomass resources available in Alpine Space⁴.

In the first step, funding needs from the SMEs perspective were identified within selected sub-sectors. Three regions were selected to describe related strategies and policies intended to further develop the Bioeconomy sector. A detailed look was given on funding programmes and the strategies behind, including the European level (second step). Alternative funding sources, like bank loans, were also considered where public information was available. Within the third step, a matching analysis was conducted by comparing funding needs with current funding opportunities. By doing so, funding gaps were identified. Based on these findings, the final step led to recommendations on future fields of funding for the post-2020 period contributing to a more streamlined and aligned funding landscape. In order to help SMEs find funding possibilities in the selected fields of Bioeconomy, a short overview of existing funding opportunities for SMEs is presented.

The analysis was done based on publicly available studies and data as well as derived from expert opinions and related interviews. The members of the Sub-Group “Clusters & Bioeconomy” contributed by providing expert opinions. Further insights were provided from ongoing projects dealing with Bioeconomy in the Alpine Region (e. g. AlpBioEco⁵ or ARDIA-NET).

³ <https://www.alpine-region.eu/7-countries-and-48-regions>, last access: 26 November 2018

^{10a} Source: <http://valtellinanews.it/articoli/aree-interne-in-arrivo-finanziamenti-per-aziende-della-valchiavenna-20170113/>

⁴ <https://www.alpine-region.eu/7-countries-and-48-regions>, last access: 26 November 2018

^{10a} Source: <http://valtellinanews.it/articoli/aree-interne-in-arrivo-finanziamenti-per-aziende-della-valchiavenna-20170113/>

⁵ <https://www.alpine-space.eu/projects/alpbioeco/en/project-results/replicable-roadmap>

3 BIOECONOMY AND SECTORS

Bioeconomy encompasses the production of renewable biological resources and their conversion into food, feed, bio-based products and bioenergy⁶. It includes traditional sub-sectors: agriculture, forestry, fisheries, food, and pulp and paper production, and sub-sectors, like chemical, biotechnological, processing and manufacturing bio-based products and energy industries.

The Bioeconomy uses biomass resources e.g. resources containing non-fossil, organic carbon, derived from living plants, animals, algae, microorganisms or organic waste streams. These are summarized in the term “biomass”⁷. These elements are at the heart of circularity and sustainable development that delivers strong regions by creating a flourishing economy that respects the environment. This is done by reducing dependence on fossil fuels and finite materials without overexploiting renewable resources. It is also based on efforts directed at preventing biodiversity loss and land use change, regenerating the environment and creating new greener, circular-based, economic growth and job creation.

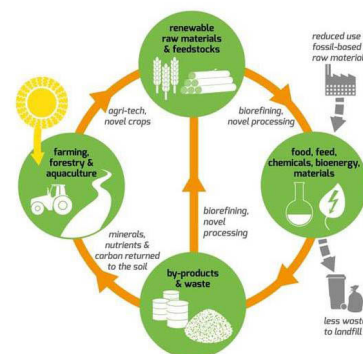


Figure 1: The Bioeconomy Circles (source: Biovale)

The European Bioeconomy encompassing the food, feed, beverage and primary sectors, has an annual turnover of €2.1 trillion. Bio-based industries (relevant chemicals, plastics, pharmaceuticals, paper and paper products, forest-based industries, textile sector, biofuels and bioenergy) account for €600 billion of this total. It provides jobs for 18.3 million Europeans, over half of them in primary biomass production (agriculture, forestry and fisheries). Bio-based industries employ 3.2 million people⁸. Industrial biotechnology – an important pillar of the bio-based industries – provides almost half a million jobs in the EU and over €31 billion in added value. By 2030 it may account for between 900 000 and 1.5 million jobs and €57 to 99 billion in added value⁹.

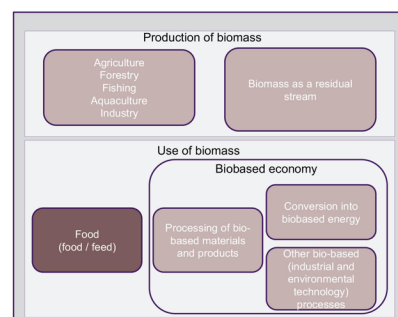


Figure 2: The Bioeconomy and bio-based economy (see footnote ⁹)

In conclusion, the bio-based industry sector has been selected for further consideration. It uses renewable biological resources in innovative industrial processes for manufacturing biomass-derived goods/products and services. Alpine Space is the home of wood, agriculture and agriculture residuals, and increasingly includes biowaste, wastewater treatments (like algae) in biomass production. The bio-based industry sector is of fundamental concern for Alpine Space as it supplies inputs and knowledge for promising technologies such as next generation of bio-materials, bio-cosmetics, bio-pharmaceutic, bio-fertilizers, bio-lubricants, and essential amino acids for feed production and bio energy.

⁶ Bioeconomy Development in EU Regions, EC (DG Research and Innovation), 2017, https://ec.europa.eu/research/bioeconomy/pdf/publications/bioeconomy_development_in_eu_regions.pdf, (17 November 2019)

⁷ Zorb, Ch., Lewandowski, I.; Kindervater, R.; Götttert, U.; Patzelt, D. (2018); Bio-based Resources and Value Chains <https://link.springer.com/book/10.1007/978-3-319-68152-8>

⁸ Bioeconomy in figures (2013), BIC, 2016.

⁹ Jobs and growth generated by industrial biotechnology in Europe, EuropaBio (European Association for Bioindustries), 2016.

4 BIOECONOMY STRATEGIES AND EXAMPLES REGIONS

EUROPE'S BIOECONOMY STRATEGY

Launched in 2012 and recently adopted, Europe's Bioeconomy Strategy addresses the production of renewable biological resources and their conversion into vital products and bio-energy¹⁰. In October 2018, the EU launched the updated Bio-economy strategy for Europe. The 2018 update of the strategy serves to accelerate the deployment of a sustainable European bio-economy so as to maximize its contribution towards the 2030 Agenda and its Sustainable Development Goals (SDGs). It contributes as well to the Paris Agreement on climate change¹¹. The updated Bio-economy Strategy highlights the importance of regional bio-economy strategies and of rural renaissance. Directly contributing to the sustainable management of natural resources, the Strategy proposes three main actions: i) Strengthen and scale up the bio-based sectors; unlock investments and markets, (ii) Deploy local bio-economies rapidly across the whole of Europe, and (iii) Understand the ecological boundaries of the bio-economy. The development of the Bioeconomy concept by the institutions of the EU was mirrored by efforts to establish this concept in the EU member states.

Besides national and regional authorities, there is an increasing number of macro-regional policy approaches among neighboring countries world-wide. As part of the European Union's Cohesion Policy reform, European regions are encouraged to build on their comparative advantages and foster smart, sustainable and integrated economic growth with the help of the European Structural Investment Funds (ESIF). ESIF envisages providing financial support for macro-regional initiatives, such as the Central and Eastern European Bioregions Forum. The Central-Eastern European Initiative for Knowledge-based Agriculture, Aquaculture and Forestry in the Bioeconomy (BIOEAST) is further promoting a strategic vision for Bioeconomy development in Eastern Europe, including countries like the Czech Republic, Hungary, Poland, Slovakia and Estonia, as well as in South East European countries like Bulgaria, Romania, Slovenia and Croatia.¹² In Northern Europe, the Nordic Countries (including Denmark, Finland, Norway, Sweden, the Faroe Islands, Greenland and Iceland) are currently developing a common Nordic Bioeconomy strategy. It will build on experience already gained in a variety of sectors and will promote further cooperation on Bioeconomy in all the Nordic Countries.¹⁴ Also in the Baltic Sea Region macro-regional Bioeconomy cooperation is fostered.

¹⁰ European Commission (2012a), "Innovating for Sustainable Growth: A Bioeconomy for Europe", Brussels

¹¹ A sustainable Bioeconomy for Europe: strengthening the connection between economy, society and the environment, Updated Bioeconomy Strategy, EC 2018

BIOECONOMY STRATEGIES IN ALPINE SPACE

The Alpine Space macro region does not currently have any specific Bioeconomy strategy. There is a huge thematic variety with regard to Bioeconomy-related strategies. A detailed analysis of regional Bioeconomy strategies of the EUSALP regions revealed that only a few follow a systematic approach¹². The findings were surprising, taking into account that Bio-based industries and Bioeconomy is assumed to be high on policy agenda in the Alpine Region. When taking a deeper look, the picture becomes clearer. E. g. **Bavaria**, an official Bavarian bio-based economy strategy was expected to be published since 2017, but further delayed due to changes in responsibilities within the government. In **Austria**, the bio-based economy strategy is part of the Austrian climate and energy strategy, but none of the Austrian region has any. In **Auvergne-Rhône-Alpes** various programs exists, but are mainly linked to forestry and agriculture. **Switzerland** does not have a specific bio-based economy strategy but has some policies and acts regulating the agricultural and wood sectors. The autonomous provinces of **Trento** and other Italian Alpine Space regions do not have a dedicated bio-based industry strategy so far, but make reference to the National Italian Bioeconomy.

On the contrary, **Baden-Württemberg** has a dedicated regional Bioeconomy strategy in place since June 2019, backed by significant investments. A similar situation also exists in **Lombardy**. A “Regional Strategy for Bioeconomy” is one of the objectives of the territorial government in Lombardy. However, it is not part of its core Smart Specialisation Strategy (see further details on the next pages). **Slovenia** supports Strategic Innovation Partnerships¹³ in various areas related to bio-based industry, among them: (1) Networks for the transition into circular economy which includes the support of technologies for sustainable biomass transformation and new Bio-based materials as well as technologies for use of secondary and raw-materials and the reuse of waste. Increased international partnering to promote Bio-based industries is actively encouraged. (2) SRIPs Smart buildings and homes, including wood chain operates in wide range of smart and sustainable buildings of wood or classic materials, home appliances and home management systems, and specifically includes wood, wood technology and wood value chain. It is organized into four focus areas: a) smart devices and systems, b) wood and wood chain, and c) active building management.

In conclusion. Only some of Alpine Space regions have a dedicated Bioeconomy policy in place, which is backed with dedicated financial resources. Since the study includes an analysis of current and upcoming funding opportunities, it serves to match selected regions with appropriate funding opportunities. Out of 48 EUSALP regions, there are only four that meet these requirements. Baden Württemberg and Lombardy were selected as the strongest in this regard and Slovenia as the only region from EU13 in the Alpine Space. Due to large scope of Bioeconomy the study is focused on bio-based value chains based on biomass resources available in Alpine Space.

¹² Mateja, Dermastia, 2018, Study to Prepare a Synchronised Funding Scheme for Bioeconomy Development in the Alpine Region, <https://www.alpine-region.eu/results/study-prepare-synchronized-funding-scheme-bioeconomy-development-alpine-region> (10 November 2019)

¹³ Strategic Innovation Partnership can be considered as novel cluster organization design for S3 , (21 January 2019)

5 FUNDING NEEDS OF SMES

SMEs, firms and start-ups active in Bioeconomy are facing a wider set of obstacles and constraints. Some of them are linked to the different stages of the bio-based value chain and some are more characteristic of SMEs and start-ups. There is a further set of barriers and bottlenecks such as lack of awareness, legal framework conditions, public (green) procurement or standardization that also hamper the ability of SMEs to become more engaged in the Bioeconomy. However, these have to be addressed by means other than public funding thus out of the scope of this study. First, we present general challenges related to the Bioeconomy sector and then specific challenges for SMEs.

Biomass / feedstock¹⁴: Feedstocks are the basis of all bio-based products, and ensuring consistent quality supply of sustainable feedstock is a key challenge for achieving high impact for bio-based products. Sustainable biomass can include by-products and residues from other processes (such as sawdust, wood chips or agricultural pruning), and dedicated crops. These biological resources can be difficult to mobilize from rural regions, which are often remote and may lack infrastructure. High feedstock costs, low quality of feedstock, immature conversion technologies, high costs for pre-treatments or difficulties of acquiring project finances such as conversion plants that require large investments are among the main issues.

Processing / conversion: Conversion processes are limited by the challenges of handling multiple different resources and the low current efficiency of conversion technologies. Compared to traditional, well-optimized processes, R&D&I as well as high capital investment requirements also limit development of bio-based conversion technologies. Process optimization is a key for cascading, industrial ramp up and lowering production costs. Public funding can lower the risks connected to such process optimizations or related upscaling. To date the majority of investments have been allocated to large scale facilities, which are in general the domain of large enterprises and might leave SMEs out of the bioeconomy mainstream.

Market application / end-use: Bio-based solutions need the development of infrastructures, requiring the involvement of many actors. Others are facing market entry barriers due to their novelty. Customers often have low awareness of the benefits of bio-based products. Others may actively reject them due to sustainability concerns about indirect land use change and the use of food crops as a biomass resource. However, in the last couple of years, customer and citizen awareness about the importance of sustainably sourced products has been increasing and buying behavior has changed. This may open the door for SMEs by allowing public funding to provide a much-needed spark for more rapid engagement in fast growing markets of sustainably sourced products.

Based on desk-top research, interviews with cluster managers and experts from the Sub-Group “Cluster & Bioeconomic” as well as on insights of projects, like AlplinkBioEco, DanuBioValNet, the authors identified eight prevailing needs and bottlenecks that SME currently face.

¹⁴ https://www.greenovate-europe.eu/sites/default/files/ButaNexT%20Policy%20Recommendations_0.pdf
(17 November 2019)

New business models and linkages with biomass producers and end-market value chains. SMEs and farmers are disconnected from value chains. Furthermore, farmers, as important source of biomass, face huge issues to gain access to the processing or demand side, which is often located outside rural areas. SMEs are experimenting with new business models and workable solutions to cross-link farmers, biomass producers and processors to assure sustainably sourced biomass for high end markets. Yet, initial schemes and programs to support such activities need to be developed. They are partly considered as start-ups and partly as agriculture programs. Examples can be found in digital solutions as demonstrated by Smart SMEs.

Distributed manufacturing. Distributed manufacturing is a viable option for SMEs to achieve local manufacturing scenarios that use amounts of locally available renewable raw and residual biomass for conversion to deliver locally demanded materials. The DanubioValNet project under the lead of BIOPRO GmbH identified examples in an innovative production of biomass, integrated bioplastics production, packaging solutions for agriculture, locally demanded eco- construction components or the usage of locally available lignocellulosic raw or residual materials to get pulp for paperboard production or paper molding. Such condensed decentralized manufacturing environments need machinery infrastructures of a highly integrated scaled down modular type, including logistical solutions.

Algen, Algal technology centre, a Slovenian SME turning wastewater into valuable products and energy using innovative algal technology. It connects waste-water producers (industry, municipal, agriculture) with producers of fertilisers, bio-stimulants, animal feed, biomaterials, coatings, biofuels as well as higher value products like lipids and pigments for pharmaceutical and cosmetics sectors. The water, remaining after algal biomass harvesting, can be recycled back to the technological processes or used for the irrigation of agricultural surfaces. Algal treatment results in 91% N and 64% P removal, 90% COD reduction and lowering of environmental CO2 footprint

Information exchange and knowledge transfer. The lack of awareness of concrete business opportunities related to Bioeconomy hampered the majority of SMEs and farmers to enter the Bioeconomy sector. Many SMEs need to build competence and knowledge to understand potential and create ideas. Thus, knowledge creation is important but also expensive. Funding schemes that facilitate knowledge transfer are effective tools to support SMEs in this regard. Such funding schemes can provide direct incentives for SMEs to gain knowledge or support related innovation infrastructures, like networks, cluster initiatives, knowledge platforms etc. that enable SMEs to meet with peers or partners from the academic sector to exchange experience and knowledge.

Strategic Research and Innovation Partnerships (Slovenia). The Slovenian government support “The Strategic Research and Innovation Partnership – Networks (SRIP)” as part of the implementation of the regional Smart Specialisation Strategy. The SRIP - Circular Economy represents a network of Slovenian businesses, educational and research institutions (RDI), non-governmental organisations and other interested parties. The vision of the SRIP – Circular economy is to sustainably increase the efficiency and competitiveness of the domestic economy in the transition into circular economy. This contains, among others, information sharing, experience exchange, technology transfer, etc. to provide sufficient information and access to pre-existing knowledge to interested SME.

Investments in up-scaling and infrastructure. Support infrastructure that can help SMEs to move ideas and solutions faster to the market is scattered across Alpine Space and is mainly focused on research. It is very hard and expensive for SMEs to test prototypes or lab-specimens for commercialization. Technological advances have shifted the Bioeconomy landscape in Europe, but not speedily enough. Related exploitation activities are connected to ramping-up production lines or scale-up of existing process technology facilities. For such ramping-up activities significant investments are often needed. These are, by nature, a huge challenge for SMEs. Public support or public investment programmes can help SMEs to reduce the related risks or provide financial means.

New products and processes / R&D&I on technologies and products (incl. services). The funding need for SME in the field of Bioeconomy is similar as in other sectors and depends on where the R&D&I activities are performed along the innovation chain. The nature and objectives of funding schemes often follow Technology Readiness Level (TRL approach) of the technology, products or services to be developed¹⁵ which might be hard for SMEs active in Bioeconomy. Doing R&D&I to develop bio-based products or technologies is often very complex and needs to bundle different competencies from different partners. Often, not all competencies are available within the region. At present SMEs can participate in several Horizon 2020 calls that might not be aligned with their local, regional markets and stakeholders. Thus, there is a need for funding schemes that allow collaboration within the Alpine Space

Bio-based dowels (Baden-Württemberg). As part of the sustainability strategy, the Fischer Group decided in 2014 / 2015 to develop new products made from bio-based material. Bio-based dowels were considered as a key product to enter the respective market. Although Fischer Group knew that starch could service as raw material, significant R&D was needed to be able to manufacture such dowels at a marketable price. Fischer entered a R&D consortium with BASF, Daimler, Bosch and others. Related investments to turn the idea into a marketable product were funded by 50 % in the frame of the German Bioeconomy programme. Today, the dowel represents the starting point for a successful transformation of Fischer Group into bioeconomic-related business.

Support in development of biodegradable plastics (Italy). Compostable bioplastics represent significant benefits for the waste collection, catering and packaging sectors where conventional fossil resource-based plastics would otherwise be pollutants of organic waste. The use of bioplastics lowers the level of landfill waste, contributes to the development of a circular Bioeconomy and retains valuable nutrients otherwise lost to landfill thus helping to improve resource efficiency. However, the raw material is 4 – 5 times more expensive than traditional plastic bags, whereas retailers and consumers are reluctant to invest in more expensive bioplastic bags. The Italian government successfully supported the R&D&I activities for the development of a new PLA-based plastic material, which is biodegradable. Novamont reported there was a 50% decrease in single-use of non-biodegradable plastic bags. The result was a positive change in consumer behavior towards composting organic waste using the biodegradable and compostable carrier bags in a selected region.

¹⁵ The TRL measures the maturity of a technology under development. IT ranks from the initial concept (level 1) to its commercial maturity through to the full deployment of the product in the marketplace (level 9 EC, 2016, Annex G of the General Annexes: Horizon 2020 Work Programme 2016–2017.

<https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html>. (18 November 2019)

Market introduction. Bio-based products are facing several market barriers. e.g., production costs are the main barrier to growth of the bio-based chemicals' market, as they are still higher than for their traditional counterparts. Other products, like bio-based polymer products are challenged by reluctant behavior of consumers or end-buyers. SMEs need support schemes to provide financial support to commercialise their innovative products and services.

Education and skills development. Most education schemes or curricula are not yet adapted to Bioeconomy thinking. In fact, SMEs need well trained young graduates with appropriate Bioeconomy-related knowledge and skills. Company level lifelong learning approaches can help SMEs to build such competence in-house. Public funding can facilitate such workforce development, since at the beginning, objectives and targets related to such investments are often not clear.

Support of Start-up. Bioeconomy represents an innovative area, driven by technical or non-technical inventions and innovations. Many of them are created during R&D&I activities and need to be exploited later on. Here is where start-ups can play an important role. By nature, start-ups need access to finance at the beginning of their life cycle that can be provided by public or private resources.

In conclusion. SMEs needs are complex and many times combine overlapping issues. Meeting demands requires an inclusive and holistic approach that address economic, social and environmental challenges. Gen Z leaders like Greta Thunberg are pushing sustainability into the mainstream which is opening doors for investments impacting the economy, society and the environment. However, public investments in the coming years might be a game changer to allow SMEs with weaker market position to become engaged. This can further benefit SMEs, firms and investors by de-risking their investments in the bio-based ventures. However, while technologies are of critical importance to move the agenda forward, any viable opportunities for SMEs must include linkages and visibility to bio mass sourcing and biomass availability as well as to high end markets.

6 FUNDING OPPORTUNITIES FOR THE RELEVANT FIELDS

In this chapter funding opportunities in three regions are presented.

6.1 FUNDING OPPORTUNITIES IN BADEN- WÜRTTEMBERG

6.1.1 Regional Strategy and Funding Opportunities

In Baden-Württemberg, researchers, research institutes, companies, networks, cluster initiatives and others have the possibility to apply to funding schemes on federal level as well as on state level. This includes funding schemes that are directly aimed at Bioeconomy as well as funding schemes that support one or various sectors of the bio-based industry. Funding is provided by several Bioeconomy related strategies in place.

Since 2007, the Sustainability Strategy Baden-Württemberg¹⁶ provides a platform to discuss how principles of sustainability can be adapted and implemented for any branches of society, economy or politics. The regional government has decided to introduce sustainability as the key decision criterion for all its activities. Key areas of the Sustainability Strategy are:

- Climate and energy
- Use of resources
- Education for sustainable development

In order to engage with the public, a number of action programmes (AP) have been initiated, spanning all areas of social life. To address key audiences, three initiatives inherent in the framework of the

- Sustainability Strategy have been initiated:
- Initiative of the economy on sustainability (WIN)¹⁷
- Youth initiative on sustainability (“we reap what we sow”)¹⁸
- Municipal initiative on sustainability¹⁹

The **Resource Efficiency Strategy Baden-Württemberg**²⁰ is another guiding principle of the Regional Government of Baden-Württemberg, both in terms of ecology and economy. Intelligent use of scarce resources shall ensure:

- Decoupling of economy growth and resource use while maintaining manufacturing industry and regional economic structure
- Parallel to the National Sustainability Strategy, the aim is to double resource productivity between 1994 and 2020
- Develop regional economy towards a lead market and lead supplier of resource productivity technologies
- Ensure safe and stable supply of resources for the region’s economy by enhancing efficiency in the provision of primary resources and accelerating the use of secondary resources

¹⁶ <https://www.nachhaltigkeitsstrategie.de/informieren/politik/die-strategie.html> (18 November 2019)

¹⁷ <https://www.win-bw.com/startseite.html> (17 November 2019)

¹⁸ <https://www.wir-ernten-was-wir-saeen.de/jugendinitiative> (17 November 2019)

¹⁹ <https://www.nachhaltigkeitsstrategie.de/informieren/zielgruppen/kommunen.html> (17 November 2019)

²⁰ <https://um.baden-wuerttemberg.de/de/wirtschaft/ressourceneffizienz-und-umwelttechnik/landesstrategie-ressourceneffizienz/> (18 November 2019)

Five areas of actions are proposed within the Regional Resource Efficiency Strategy:

- Development of innovation and technology
- Material- and energy efficiency in companies
- Sustainable sourcing of resources and stable supply of region's economy with resources
- Use secondary resources and strengthen circular economy
- Further develop control indicators and performance parameters to account for resource efficiency

Research and development are fundamental for the desired structural change towards a Bioeconomy and, thus, the guiding principle of the regional **Research Strategy Bioeconomy**²¹. Research activities and training of young experts are promoted within this strategy in order to contribute to the development of innovative and sustainable economic approaches that use biomass instead of fossil resources while at the same time avoid negative effects on the environment, climate and society. An interdisciplinary and systemic approach also promotes to develop sustainable products and processes. This systemic approach is applied to three exemplary research areas by analysing the entire value chain including genotype selection, biomass production and conversion, product development as well as analysis of economic, ecological, ethical and societal aspects.

Due to increasing biomass demands, worldwide emerging competition between food, feed, fuel, and new products will intensify. Biomass production could improve by selecting and breeding suitable strains. Development of new extraction and processing methods likewise may improve utilisation of biomass for production of valuable materials as well as utilisation of a higher share of components. Even components that have so far been considered waste products can now be used for production of platform chemicals and biofuels. New materials and products have to be evaluated carefully for health, climate and social impacts. Consumer acceptance of new products and processes is crucial for the economic perspectives of innovations.

A second funding round has been initiated in December 2017 and is designed to run from 2018 until 2020. Its framework follows a twofold approach. In funding line A, emphasis is put on the transferability of ideas and techniques of academic research into commercial application. Funding in line B shall encourage unconventional approaches towards Bioeconomy. Inherent in both lines of funding is the focus on topic areas such as lignocellulose, microalgae and bioeconomic modelling as well as making use of regional potentials for innovations in bio economic applications.

²¹ <https://biooekonomie-bw.uni-hohenheim.de/mission> (18 November 2019)

Category	Name and objectives of funding programme	Technological scope	Mode of delivery / funding
Development of technological or non-technological innovations	Name: European Innovation Partnerships (EIP) – Agricultural Productivity and Sustainability (Agri)	Agriculture and related Bioeconomy sectors	Grant
	Name: “Spitze auf dem Land!”	Technologically open, application for rural area purposes	Grant
	Name: Innovationsgutscheine A (Innovation-Vouchers)	Technologically open	Grant (vouchers) technologically open
	Name: Financial support for innovation activities	Technologically open	Soft loan
Creation of innovative companies	Name: start-up-financing	Technologically open	Soft loan
	Name: Startfinanzierung80	Technologically open	Bank loan, 80 % of loan backed by regional state bank
Support for improving capacities	Name: financial support for lifelong learning	Technologically open	Grant to cover costs for work force development
	Name: Agricultural investment funding programme (AFP) for individual farmers AFP, part B	Technologically open, but diversification must target new fields of Bioeconomy	Grant
Eco-innovation	Name: Resource efficiency	Resource efficiency, interlinks are given to bio-based industry application	Soft loan

A detailed list of ongoing or planned funding opportunities is given in Appendix 1.

6.1.2 Funding Opportunities on Federal Level

At the national level specific calls dedicated to Bioeconomy exist within the *National Research Strategy BioEconomy 2030*. The implementation of this strategy is shared by the Federal Ministry for Education and Research (BMBF) and the Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU). The main topic of the strategy is the structural change and transition from a fossil resource-based economy towards a bio-based economy, including among others: sustainable food production, bio-based energy, renewable bio-based material, but the funded project includes also in a broader sense societal, political and economic challenges. The different funding programmes can be grouped along the Bioeconomy value chain (s. Figure 3).

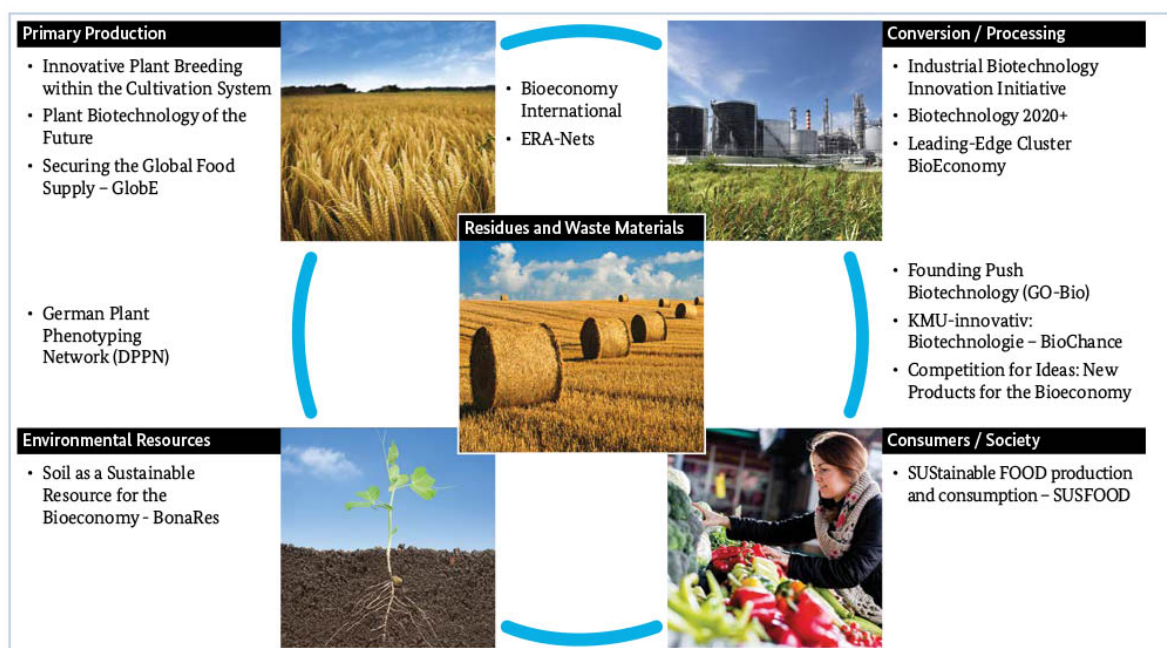


Figure 3: Funding programmes in the field of Bioeconomy (source: BMBF - Destination Bioeconomy)

Several other funding schemes that are not specifically dedicated to Bioeconomy but are integral part of a bio-based economy complement the offer at federal level:

- Under the authority of the Federal Ministry of Education and Research (BMBF) calls are also funded through the programme “From Materials to Innovation”. Material platforms, material innovation, sustainable and efficient resource use as well as cooperation projects between SME and Research along the value chain are central part of the programme. Its aim is development of new materials for a diverse range of products. Technologies along the whole value chain are being funded.
- The Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU) supports applied research in the construction sector in order to increase competitiveness and sustainability in the European perspective through the research programme “Future Building. The initiative consists of three parts: research projects, contract research and funding programmes for model projects.

- Funding is provided by the Federal Ministry for Agriculture and Food (BMEL) for Pilot and Demonstration Projects for Biodiversity, Plant Production and Animal Welfare and aiming at topics about biodiversity, plant production (including specialty crops) and animal welfare. New techniques or processes should be tested, that are not yet commonly used.
- The same Ministry provides Innovation funding for the food, agricultural and consumer protection. Technical and non-technical sustainable innovations are supported by this programme. Competitiveness and economic innovation capacity shall be strengthened. Funding is prioritized for research, development and demonstration projects in the respective fields.
- Within the FONA3-Framework Programme, which started in 2015, the Federal Ministry of Education and Research (BMBF) supports Research for Sustainable Development. Among others, the Green Economy, Future Cities and Energy Transition are part of the programme (Studies, innovative Applications, Moderation of Stakeholders are funded).
- The Federal Ministry for Food and Agriculture (BMEL) supports research and development approaches as well as demonstration projects for Renewable Raw Materials. The funding is directed at product development from native renewable resources for material and energy. Resource efficiency, environmental sustainability and increasing competitiveness in forestry and agriculture and related sectors are further topics.
- The same Ministry has a funding programme for organic farming and other types of sustainable agriculture (BÖLN). Funding is aimed at fostering the transition towards organic farming and sustainable agricultural practice.

Category	Name and objectives of funding programme	Technological scope	Mode of delivery / funding
Support in R&D&I projects	Name: Bioeconomy International	Bioeconomy	Grant
	Name: Central Innovation Programme for SMEs (ZIM)	Technologically open	Grant
	Name: KMU innovative	Technologically open	Grant
	Name: Industrielle Gemeinschaftsforschung (IFG)	Technologically open	Grant
Development of technological or non-technological innovation	Name: Bioeconomy 2030 – New ideas for new products	Bioeconomy	Grant
	Name: Go-Inno	Technologically open	Grant
Creation of innovative companies	Name: EXIST-Start-up Support	Technologically open	Grant
	Name: High-Tech Gründerfonds (HTGF)	Technologically open	Loan and private equity

A detailed list of ongoing or planned funding opportunities is given in Appendix 2.

6.2 FUNDING OPPORTUNITIES IN LOMBARDY

6.2.1 Regional strategy and funding opportunities in Lombardy

Lombardy, the first region in Italy, has adopted the law "Lombardy is Research and Innovation"²² (No. 29 of 23 November 2016) created to enhance investment in research and innovation and promote the competitiveness of the economic-productive system, well-being and the quality of services provided to citizens and businesses. The law organized the governance of regional interventions by introducing new coordination mechanisms and identifying strategic instruments to support innovation. The main new features introduced are:

- Forum for Research and Innovation with consultative, proactive and informative functions
- Governing body that draws up a three-year "Strategic Work program for research, innovation and technology transfer"

The "**Regional Strategy for Bioeconomy**" is one of the objectives of territorial governance in Lombardy that is being implemented outside the core Smart Specialisation Strategy. This Action Plan allows Lombardy to have a programming system to enhance services and technologies to support the industrial sector and to make the regional context attractive for national and foreign investors.

The main pillars for this purpose are:

- Creation of integrated Bio-refineries in the territory to obtain high added value products (Biochemicals, Biomaterials)
- Development and optimization of innovative technologies and efficient processes through R&D and scale-up activities to pilot plants and demonstrators' construction
- Development of new bio-based products (obtained partially or totally from materials of renewable origin), with low environmental impact and with benefits from a social and economic point of view, able to develop new functionalities or guarantee superior performance compared to traditional products
- Development of new markets for bio-based products, through specific measures aimed at boosting productivity and resource efficiency
- Stimulation of the development of innovative technologies and the promotion of intra-sectoral collaboration along the actors of the value chain
- Facilitation of the exchange of knowledge between different stakeholders (agricultural, research, industrial, institutional) and creating an environment conducive to investment and facilitating access to finance.

The Lombardy Region promotes and supports a local Bioeconomy through the **Lombardy Green Chemistry Association-LGCA**²³. The goal of the cluster is to create at regional level "the best framework

²² Legge Regionale 23 novembre 2016 , n. 29 - Lombardia è ricerca e innovazione
<http://www.regione.lombardia.it/wps/portal/istituzionale/HP/DettaglioRedazionale/istituzione/direzioni-general/direzione-generale-ricerca-innovazione-universita-export-e-internazionalizzazione/legge-lombardia-ricerca-innovazione> (18 November 2019)

²³ For more information Lombardy Green Chemistry Association <http://www.chimicaverdelombardia.it/en/>

conditions for the setting up of a bioeconomy based on the use of biomass from agriculture, forest and waste, following the principles of sustainability and cascading use and through the active involvement of the whole value chains”.

LGCA is a key actor for the implementation of the Bioeconomy Strategy Lombardy. It does not provide funding itself, but supports the Bioeconomy actors with non-monetary support measures. The Cluster actions are focused on the main pillars:

- Sharing best practices to support research and innovation activities focused on: use renewable resources as raw materials, creation of integrated Biorefineries, promotion of bio-based products
- Stimulate research and investments in new technologies in the Bioeconomy sector
- Promote dialogue with the stakeholders in the local areas in order to stimulate Bioeconomy at national and regional level

LGCA promotes calls for proposals in the field of Bioeconomy with the aim of encouraging the collaborations within knowledge triangle. IT further supports the policy-making process and initiates public-private-dialogues ("Economic Partnerships") and, thus, contributes to the creation of thematic communities towards the Collaborative Platform of Open Innovation, etc.

Category	Name and objectives of funding programme	Technological scope	Mode of delivery / funding
Eco-innovation	POR FESR 2014 - 2020:Bando presentazione domande di agevolazione sulla linea di intervento FRIM FESR 2020 Ricerca&Sviluppo	Eco-Innovation, focus on Biorefineries and Green Chemistry	Soft loan
Creation of innovative companies	“Intraprendo” measure for Start Ups	Technologically open	for each single project 10% Grant plus 90% Repayable financial support
Support for improving capacities	Innovation Line	Technologically open	100 % Repayable financial support

A detailed list of ongoing or planned funding opportunities is given in Appendix 3.

6.2.2 Funding Opportunities of National Level

The present National Strategy for Bioeconomy²⁴ is designed to stimulate the production of new knowledge, technologies, services and capacity building. It also updates regulations and promotes public awareness. More specifically, it boosts sustainable and locally-rooted economic growth by bridging gaps between research and economic sectors with an emphasis on Small and Medium Enterprises (SMEs). Aligning the EU, national, regional policies, and regulations is also an important objective of the national strategy. It promotes the Bioeconomy in the Mediterranean area via the implementation of PRIMA and BLUEMED initiatives. To implement the national Bioeconomy strategy, the following R&D&I needs are addressed:

- To boost sustainable and resilient primary production
- To improve resource management and efficiency
- To improve multiple functions and benefits of land, rural and abandoned areas
- To contribute to improving the primary production in the Mediterranean area
- To improve human and social capital and social innovation
- To boost production of bio-based products and biofuels in the framework of a circular economy
- To foster “Demonstration plants/test beds for cascading use of biomasses” through R&I
- To contribute to boosting a Mediterranean bio-based Industry
- To boost sustainable exploiting of marine resources: i) To protect and valorize marine environment
ii) To contribute to boosting a MED marine bio-economy through the BLUEMED R&D&I actions

Most of the R&D&I objectives are currently funded by the FRI programme

Category	Name and objectives of funding programme	Technological scope	Mode of delivery / funding
Support for R&D projects	FRI Programme	Several innovation areas, including Bioeconomy	Combination of grant (20 %) and soft loan (80%)

A detailed list of ongoing or planned funding opportunities is given in Appendix 4.

²⁴ BIT- Bioeconomy in Italy, 2017

6.3 FUNDING OPPORTUNITIES IN SLOVENIA

While Slovenia has no dedicated Bioeconomy strategy, there are funding programmes and calls from different national public authorities available for clusters, companies and R&D institutions, which can in part fund activities in relevant value chains. First, calls can be funded under the Operational Programme for the Implementation of the European Cohesion Policy in the 2014 - 2020 period (Government Office for Development and European Cohesion Policy). Second, the Slovenian Smart Specialisation Strategy - S4 is a platform for concentrating development investment on areas where Slovenia has the critical mass of knowledge, capacities and competences, and where there is innovation potential for placing Slovenia within global markets and enhancing its recognisability. S4 is based on a model of “open and responsible innovation”, including social innovation.

A critical contemplation regarding various aspects and consequences of the process of increasing (market) competition and market specialisation for the individual and the society is indeed an integral element of the smart specialisation process. In addition to purely economic parameters and conditions, the introduction and penetration of new technologies depends on a wide range of soft factors. S4 therefore places great emphasis on non-technological and social aspects at various levels (individual, social groups, organisations), e.g. in terms of identifying, defining and evaluating the individual thematic areas and future societal needs, joint co-decision, etc.

Key principles pursued during S4 implementation:

- Consistency of the policy mix in terms of the degree of technological development, over time and in terms of the size of projects
- Integrated approach that addresses in a comprehensive manner R&D&I, infrastructure, human resources, demand-side measures, regulation and internationalisation
- Strategic approach with clearly defined priorities and tailored governance structure
- Complementarity in relation to other financial instruments (leverage), and between grants and refundable types of support
- S4 focuses on technologies and areas which will show results by 2020 and which predominantly pertain to the current economic structure and its potential, by also supporting emerging industries and areas. The share of the latter in the financing structure, by also taking into account the funds used for research and development in the framework of promoting entrepreneurship, will be targeted at approximately 20%.
- Tailored response in terms of the specificity of individual priority areas.

The S4 prioritises several pillars and domains, among others Circular Economy, networks for the transition to a Circular Economy, sustainable food, and sustainable tourism. Accordingly, the S4 provides funding opportunities for the private and public sector to support R&D&I in selected fields of the Bioeconomy as well as for other measures needed to develop this sector forward (Appendix 5).

Category	Name and objectives of funding programme	Technological scope	Mode of delivery / funding
Support for R&D projects	Support for RDI projects TRL (6-9)	Technologically open	Grant
	Demonstration and pilot projects	Technologically open	Grant
	SME Instrument – Seal of excellence SME Instrument Phase 1 SME Instrument Phase 2	Technologically open	Grant
Development of technological or non-technological innovation	Support for creative and cultural sector	Technologically open	Grant
Creation of innovative companies	SEED financing for start ups	Technologically open	Loan
	Mezzanin financing: Name: Incentives for Start Ups	Technologically open	Grant
Support for improving capacities	Digital Hub	Technologically open	Consulting, advice
Networking and Clustering	Strategic Research and Innovation Partnerships or SRIPs	Bioeconomy and sustainability	Grant

6.4 SUPPORT SCHEMES ON EUROPEAN LEVEL

On European Level, there are several very different programmes that provides funding (mainly grants) or access to finance (mainly loans), which specifically focus on Bioeconomy or which are technologically open and can be used for SMEs, firms and R&D institutions to turn ideas into innovation. In order to facilitate a access to current or upcoming funding or financing opportunities, the EU created a dedicated ACCESS TO FINANCING PORTAL, which can be considered as related entry point

https://europa.eu/youreurope/business/finance-funding/getting-funding/access-finance/index_en.htm

The most relevant funding programmes are:

Bio-based Industries Joint Undertaking (BBI JU) is a € 3.7 billion Public-Private Partnership between the EU and the Bio-based Industries Consortium. Operating under Horizon 2020, this EU body is driven by the Vision and Strategic Innovation and Research Agenda (SIRA) developed by the industry. It is a major public and private effort € 3.7 billion investments in bio-based innovation from 2014-2020 and € 975 million of EU funds (Horizon 2020) and € 2.7 billion of private investments. Each year BBI published calls for proposal based on the Work program which based on BBI KPI, SIRA and public private consultation. Main focus area are: i) foster a sustainable biomass supply with increased productivity and building new supply chains, ii) Biorefineries: optimise efficient processing through R&D and demonstrate their efficiency and economic viability at large-scale demo/flagship biorefineries

and iii) Markets, products and policies: develop markets for bio-based products and optimise policy frameworks.

The BBI JU is, without doubt, one of the most suitable European funding schemes for industry to get engaged and supported in Bioeconomy. However, awarded funding proposals indicate that preference might be given on bigger firms. Furthermore, focus is given on Biorefinery developments.

The EIC Accelerator (previously SME Instrument) is part of the European Innovation Council (EIC) pilot that supports top-class innovators, entrepreneurs, small companies and scientists with funding opportunities and acceleration services. The EIC Accelerator supports high-risk, high-potential small and medium-sized enterprises and innovators to help them develop and bring onto the market new innovative products, services and business models that could drive economic growth. Selected companies receive funding and optional equity. They are offered business coaching and mentoring to scale up their innovation idea. They get extra acceleration services to connect with investors, corporates and like-minded entrepreneurs. EIC Accelerator helps to develop your business concept further into a market-ready product, service or process aligned with your company's growth strategy. Activities could, for example, include trials, prototyping, validation, demonstration and testing in real-world conditions, and market replication. If the activity concerns a primarily technological innovation, a Technology Readiness Level (TRL) of 6 - 8 is envisaged for projects requesting grants only. Projects can receive between € 0.5 and € 2.5 million in the form of grants. Projects should normally take 12 to 24 months to complete, but could be longer in exceptional and well-justified cases. From 5 June 2019, the EIC Accelerator offers blended finance in the form of an optional investment in equity in addition to the grant, to single for-profit SMEs. Grants will finance activities from TRL 6-8. Activities above TRL 8 will be financed only through blended finance. The maximum of investment in the form of equity is € 15 million. It is one and only instrument targeted exclusively SME and where SMEs should apply alone. *The EIC Accelerator is a very suitable funding scheme for entrepreneurs considering to invest in Bioeconomy. The funding schemes and amount of funding are very attractive. However, reality reveals that the schemes are heavily oversubscribed and related proposals have to compete with those from other sectors, which might be considered to be more attractive.*

LIFE Programme: The Life Programme is an important EU funding instrument for environment and climate action. For the current funding period 2014 – 2020 it has a budget of € 3.4 billion. LIFE has two prevailing sub-programmes. One, the Environment sub-programme, offers funds for nature conservation and biodiversity, environment and resource efficiency as well as for environmental governance. The Climate Action sub-programme funds projects targeting climate change mitigation, climate change adaptation, climate governance and information.

Currently, the 2019 working programme is finished and no specific news are available for 2020. However, it is certain that both sub-programmes will have a call in 2020. It will be two-stage application process for the Environment sub-programme and a one-stage application process for the Climate Action sub-programme. Both calls will likely come out in April 2020²⁵.

INTERREG supports cross-border infrastructure, job market integration and cultural exchange (so-called INTERREG A). The thematic priorities are comparably broad (e. g. research and innovation).

²⁵ <https://ec.europa.eu/easme/en/section/life/calls-proposals> (25 November 2019)

However, they are pre-defined and fixed over the entire programme period (currently 2014 – 2020). Funding rules are set by the EC. The related strategy and scope of the calls cannot be much influenced by the regions since the INTERREG scheme can be understood as a tool to implement macro-regional strategies. INTERREG also covers transnational cooperation in larger areas such as the Alpine Space Region aiming at territorial integration of these areas (INTERREG B). From 2014 to 2020, the EU is providing 1.39 billion euros for this type of cross-regional cooperation³. INTERREG C supports interregional cooperation between regions, but does not aim to directly support research, development and innovation. However, it has to be noted that there is no additional INTERREG call for the Alpine Space Region left in the current programming period.

The INTERREG A scheme can be used to get engaged in R&D&I with selected partners from neighboring region. However, there are limitations when it comes partner selection (must come from neighboring regions) and funding conditions (no prepayment, long re-imbursement period).

Under the ERA-NET scheme, national authorities identify RDI areas and related programmes they wish to coordinate RDI activities mutually. The participants in these actions are therefore programme 'owners' (typically ministries) or programme 'managers' (typically funding agencies managing RDI programmes). Although invented by European member states, the ERA-NET was well acknowledged by the EC. Involvement of the EC in the ERA-NET scheme of the European Member States has further increased over the last decade. Currently, there is a very relevant ERA-NET call on materials, supporting the circular economy and Sustainable Development Goals out, which suits well to the current demands of SMEs from the Alpine Region.

The ERA-NET scheme in general is a very suitable tool to support businesses to get engaged in R&D&I. However, it very much depends on the availability of calls available.

The EUROSTARS approach supports international innovative projects led by R&D-performing SMEs. EUROSTARS is a joint programme between EUREKA and the European Commission, co-funded from the national budgets of 36 participating countries and the European Commission through Horizon 2020. For the 2014-2020 period, it has a total public budget of €1.14 billion. Consortium members apply in their home countries within the framework of existing national calls. Given the case that all international consortium partners receive approval from the national programme owners (or related programme management authorities), the international consortium receives funding. Under EUROSTARS, the national programmes are not aligned or synchronised.

The EUROSTARS approach is a very suitable tool to support businesses to get engaged in R&D&I. However, it very much depends on the availability of calls available.

There are additional support schemes offered in European level that provides access to finance, mainly by loans. Such loans will mainly be channeled by local financial institutions, like banks or venture capitalists. They are working with European institutions. This enables local institution to provide additional financing to interested businesses. The exact financial conditions – the amount, duration, interest rates and fees – are determined by these financial institutions. The figure below illustrates the relationships between local financial institutions and European peers

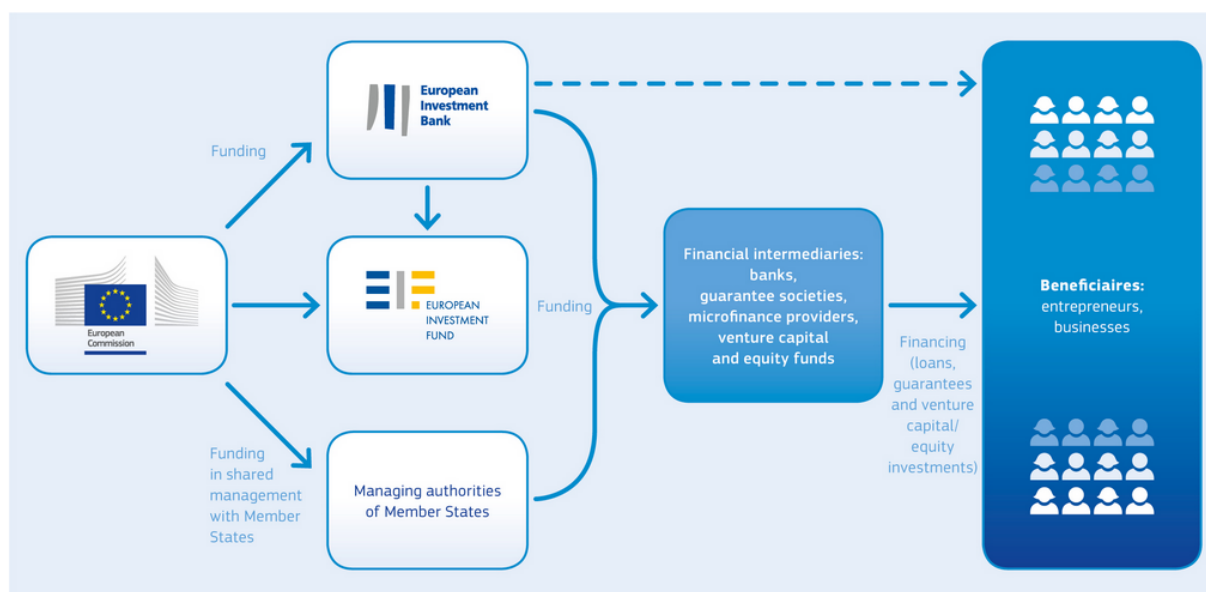


Figure 4: Relationship between beneficiaries, local and European financing institutions (source European Commission)

COSME, EU programme The Programme for the Competitiveness of Enterprises and Small and Medium-Sized Enterprises (SMEs) – COSME ("Programme") -is the EU's programme to strengthen the competitiveness and sustainability of enterprises, to encourage an entrepreneurial culture and to promote the creation and growth of SMEs. It contributes to the overall objectives of the Europe 2020 strategy on smart, sustainable and inclusive growth while seeking to optimise synergies with other Union programmes such as Horizon 2020 and the European Structural and Investment Funds (ESIF). The key objectives of COSME are

- Improving access to finance for SMEs in the form of equity and debt,
- Improving access to markets, particularly inside the Union but also at a global level
- Improving framework conditions for the competitiveness and sustainability of enterprises, particularly SMEs, including in the tourism sector, and
- Promoting entrepreneurship and entrepreneurial culture

European Fund for Strategic Investments (EFSI). As of 14 November 2017, operations approved under the EFSI represent over €43 billion of financing, which triggered €251.6 billion of investments in projects located across all 28 Member States. The EFSI's initial timeline (2015-2018) is extended to 2020 with an increased investment target of at least €500 billion by 2020. The EIAH will play a bigger role in providing technical assistance to project promoters at a local level, so that more regions and sectors benefit from EFSI support. EFSI is demand driven and will provide support for projects everywhere in the EU, including cross-border projects. Projects are considered based on their

individual merits. To benefit from financing under EFSI deployed through the EIB Group, projects need to undergo the respective EIB Group due diligence process, in order to verify if they are eligible for EIB Group financing and for a possible backing of EFSI.

The European Investment Advisory (EIAH, or the Hub) is designed to act as a single point of entry to a comprehensive offer of advisory services and technical assistance. It aims to provide targeted support to identify, prepare and develop investment projects across the European Union. The Hub is a partnership between the EIB and the European Commission. Both institutions contribute financially to the initiative. The EIB is responsible for the management of the Hub which is established within the Bank. The EIAH offers i) A single point of entry to a wide range of advisory and technical assistance programmes and initiatives for public and private beneficiaries, provided by high-level experts, ii) A cooperation platform to leverage, exchange and disseminate expertise among the EIAH partner institutions and beyond, iii) An instrument to assess and address new needs by reinforcing or extending existing advisory services or creating new ones as demand arises. The EIAH aims to strengthen support for project development and preparation across the Union. It builds on the expertise of the European Commission, the EIB Group, National Promotional Institutions and Member States' Managing Authorities.

The European Investment Project Portal (EIPP)²⁶ was established by the European Commission in order to provide greater transparency about EU investment opportunities. It is part of the Investment Plan for Europe and is designed to support investment in the real economy. The EIPP to serves as a bridge between EU project promoters and investors. The Portal offers EU based private and public project promoters a convenient way to boost the visibility of their investment projects. EIPP showcases these projects in a structured user-friendly way, thus attracting investors worldwide, who will be able to reinforce their own pipelines with more European projects. The projects shall have a minimum total project cost of EUR 1 million).

²⁶ <https://ec.europa.eu/eipp/desktop/en/index.html?2nd-language=en>

Category	Name and objectives of funding programme	Technological scope	Mode of delivery / funding
Investments in bio based innovation	BBI	Bio Based value chains	Grants
Support for R&D projects	Develop and pilot circular systems in plastics, textiles and furniture sectors	Bio-based material	Grant
	Raw materials innovation for the circular economy: sustainable processing, reuse, recycling and recovery schemes	Bio-based raw material	Grant
	ERA-NET on materials, supporting the circular economy and Sustainable Development Goals	Bio-based material	Grant
	LIFE Programme	Focus on environment and climate change	Grant
Networking and Clustering	Network of European bioeconomy clusters to advance bio-based solutions in the primary production sector	Bioeconomy	Grant
Support of investments	The EIC Accelerator (previously SME Instrument)	Technologically open	Grant and equity
	European Investment Bank (Bioeconomy Fund)	Bioeconomy	Loan
	European Investment Advisory	Technologically open	Coaching, advise
	European Investment Project Portal (EIPP)	Technologically open	Loans
	COSME	Technologically open	Loans
Others	Diversifying revenue in rural Africa through bio-based solutions	Focus on Bioeconomy	Grant
	Public engagement for Bioeconomy	Focus on Bioeconomy	Grant

A detailed list of ongoing or planned funding opportunities is given in Appendix 6.

	<ul style="list-style-type: none"> European Investment Advisory European Investment Project Portal 		X X
Support of start-ups	<ul style="list-style-type: none"> Start-up financing (BW) Startfinanzierung80 (BW) EXIST-Start-up Support (DE) Name: High-Tech Gründerfonds (DE) "Intraprendo" measure for Start Ups LOM) Incentives for Start-up (SI) 		X X X X X X
Education and skills development	<ul style="list-style-type: none"> Financial support for lifelong learning (BW) Agricultural investment funding programme (AFP) for individual farmers AFP, part B (BW) 	X	X

Support in information exchange and knowledge transfer for SMEs is provided by all participating regions/countries as well as at the European level. The approaches employed in each area vary significantly. In Baden-Württemberg there is institutional funding (e. g. BIOPRO, the regional Agency responsible, among others, for Bioeconomy development). Furthermore, there are complementary regional networks that focus on specific bio-based industry related topics (e. g. cluster initiative INNONET Horb, targeting the manufacturing of bio-plastics). Lombardy and Slovenia provide funding for the operation of similar networks (e. g. Green Chemistry Cluster Lombardy or SRIP Circular Economy).

Most programmes provide funding for R&D&I, mainly targeting a TRL from 4 – 7. There is a broad variety of funding instruments, starting with very small grants (innovation vouchers) up to huge collaborative R&D&I projects. All participating regions and countries offer such schemes. There is a good mixture of programmes with a dedicated focus on Bioeconomy (focus on bio-based industry) and technologically open programmes. However, a funding gap becomes obvious for activities for low readiness level (TRL 1 – 3) as well as close to market introduction (TRL >7).

Support of start-ups is provided at all levels, whereas all these public and private initiatives are technologically open. In Baden-Württemberg, funding is also provided to support skill development within enterprises.

No funding opportunities in selected regions could be identified in value chain development. None of the regions / countries considered allow cross-regional cooperation to connect actors from the Alpine Region. Related programmes are neither open nor synchronised to enable cooperation along dedicated value chains. Consequently, there is no modality currently in place where targeted value chain development between certain regions is actively supported. This issue has already been stressed in a previous study²⁷.

Although common sense suggests that investments are needed to upgrade the Bioeconomy sector, funding is only available through BBI JU, the EIC Accelerator and the EIB, all of whom support investments in TRL 8 and TRL 9. Access to the European Investment Bank (EIB) is facilitated through the European Investment Advisory as well as through the European Investment Project Portal. EIB has just launched a new €100 million fund to stimulate private investment in the Bioeconomy and to help

²⁷ Mateja, Dermastia, 2018, Study to Prepare a Synchronised Funding Scheme for Bioeconomy Development in the Alpine Region, <https://www.alpine-region.eu/results/study-prepare-synchronized-funding-scheme-bioeconomy-development-alpine-region> (10 November 2019)

European bio-based companies gain ground in the race for capital. The fund, the first of its kind at the European level, responds to an increasing demand from the industry. However, at the regional or national level, similar support schemes were not identified.

A lack of funding opportunities has also been identified for market introduction of bio-based products. As indicated in Chapter 4.2, there are several barriers that cause an extension of the time needed for market introduction of bio-based products and technologies. Expanded funding opportunities could help SMEs to become more open and successful in this field.

8 CONCLUSION

There is a broad spectrum of funding opportunities for Bioeconomy development available. There are four different types, like funding programme targeting specific topics (e. g. bio-based materials), programmes, which are technologically open as well as financial instruments such as loans, etc. The forth funding programme support structural instruments (s. Fig. 5).

Funding programmes	R&D&I Focused on Bioeconomy	R&D&I Technologically open	Financial instruments	Support of infrastructure	
Funding objectives	R&D&I	Non-technical innovation	Stimulation of investments	Support of start-ups	Knowledge transfer
Instruments	Grant	Soft Loans	Loans	Consultancy / Networking	

Figure 5: Funding programmes, objectives and related instruments

Only 40% of all thirty-five identified programmes are specifically intended for bio-based industry development. All other are thematically open and can be used by all other sectors as well. Thus, any funding application dealing with Bioeconomy remains in heavy competition with those from other sectors. Taking into account that topics, like digitalization, Artificial Intelligence or e-Mobility are high on the agenda of many programme owners, makes it even more difficult for SMEs to get funding for Bioeconomy development. This also affects private investors as well as banks. In general, they are reluctant to become involved in bio-based value chains whilst the economic benefits are not yet proven, and social and environmental benefits are not considered as a value added. In addition, the research conducted as well as the interviews confirmed that crowd-funding is not yet a relevant option.

Whereas many comparable funding opportunities exist for R&D&I activities, funding gaps exist for the investment phase when up-scaling of processes or ramping-up of manufacturing processes are becoming relevant. Gaps also exist with regard to the market entry phase. Overall, there is a lack of alignment of regional and national funding opportunities with the Alpine Region strategy as well as at the European level. Whereas the Bioeconomy and related topics are high on the priority of the EUSALP, there are not many funding opportunities in this regard.

Accessibility for funding varies among the Alpine Regions. Actors from Baden-Württemberg, Lombardy and Slovenia seem to have better access due to regional and national funding. Actors from other regions, like Austria, do not have this possibility since most regions do not provide funding with focus on Bioeconomy.

The current funding landscape is strongly influenced by the fact that the current Structural Fund period is coming to an end (the same for Horizon2020). Baden-Württemberg is the only region in Alpine Space that uses funds that do not belong to ERDF and, thus, is not affected by the upcoming transition period. Using its own regional money allows more flexibility in terms of designing related funding

opportunities. As far as the Alpine Region is concerned, there is no funding scheme available that takes the current situation or dedicated needs of the actors from this macro region into account. The INTERREG scheme only allowed networking and experience exchange of Ministries and innovation support entities. It never allowed SMEs to conduct joint innovation measures. Furthermore, there are no opportunities upcoming in the near future. Thus, value chain development for bio-based industry within the Alpine Region is not supported. The huge potential of this region is not strategically supported.

All of the above-mentioned circumstances make it very difficult for interested SMEs to move into the Bioeconomy and to gain appropriate access to finance their innovative ideas on behalf of the European bioeconomy. Now is the time to discuss how to design the next funding period from 2021 – 2027 in order to provide targeted support for SMEs and R&D institutions operating in the broad range of the Bioeconomy. The following recommendation can help to initiate related discussion.

9 RECOMMENDATION FOR FUTURE FIELDS OF FUNDING

Some of the recommendations target the macro-regional / Alpine Regional level, others are more intended for the individual regions, committed to support bio-based industry in the future.

Develop common funding opportunities that better take the specific needs of the industrial actors from the Alpine Region into account.

So far, there is no funding scheme in place that considers the advantages, but also the needs of actors from the Alpine Region Bioeconomy sector into account. There are some regions, like Baden-Württemberg, Lombardy and Slovenia, that offer funding opportunities, whereas the majority of the Alpine Regions do not. Neither are any of the regional funding schemes aligned. This hampers strategic value chain development for bio-based industry in the Alpine Region. Actors from the private and public sectors act in isolation, whereas critical mass is missing. However, such critical mass of actors is needed to boost investment or penetrate new markets for bio-based products and technologies.

Synchronised or Joint Calls among regions targeting specific issues related to bio-based industry can be a good approach to cope with the existing challenge ²⁸. Using the very successful ERA-NET approach at the regional level can allow strategic value chain development along selected value chains within the Alpine Region. Such actions could be part of the next EUSALP strategy in the next years. Since Synchronised or Joint Calls all use existing regional funds, there is no need for additional funding. Rather, what is needed is better alignment and coordination.

Better alignment and transparency of regional, national and European funding schemes

Many funding opportunities exist at different levels. However, there is no alignment between regional, national and European levels. This leads to the current situation that R&D&I funding opportunities are available at all levels, whereas investment or market development support schemes are mainly missing. The result is that huge investments have been made in R&D&I, but related outcomes cannot be brought to market since appropriate funding schemes are missing. The intervention of the EIB might be a first step, but applying to EIB to receive loans is not best options for SMEs.

The upcoming ERDF funding period and the update of all Smart Specialisation Strategies shall be used by the programme owners from the Alpine Region to undertake more serious efforts towards better alignment of future funding opportunities with national and European levels as well as among the Alpine Regions themselves.

Increase focus on exploitation, market access and investments support

Most past and current funding opportunities support R&D&I, whereas not much support is given for investments in up-scaling or ramping-up processes. This limits the possibilities to commercialise previous R&D&I outcomes. Thus, it is strongly recommended to shift future budgets from R&D&I to exploitation and commercialisation support schemes. Such funding opportunities shall be available also on regional or national level, not just on European level (e. g. EIB, European Accelerator).

²⁸ Mateja, Dermastia, 2018, Study to Prepare a Synchronised Funding Scheme for Bioeconomy Development in the Alpine Region, <https://www.alpine-region.eu/results/study-prepare-synchronized-funding-scheme-bioeconomy-development-alpine-region> (10 November 2019)

Investments instruments are open for all areas and it is challenging for SMEs and startup enterprises to focus on the bioeconomy and to provide viable options in harsh competition with other technologies. Alpine Space SMEs and startups would benefit from support in terms of the preparation of applications and from “SME2” instrument focus on bioeconomy in Alpine Space value chains. Furthermore, they would benefit from a network of labs/centers (many established with ERDF and Horizon 2020) that offer equipment for prototyping and testing solutions and significantly de-risking investments. A funding scheme, in the form of a voucher, can cover the costs of the service for SMEs and startups from the bioeconomy.

Make European funding scheme for macro-regional collaboration more attractive for SMEs

In the past, funding schemes like INTERREG played an important role for cross-regional information and experience exchange. However, the INTERREG funding scheme is not SME-friendly. Long evaluation periods, late payments and high bureaucracy are significant barriers for SMEs. Simplification of procedures is necessary in order to mobilize more SMEs directly in the consortium and not only as a beneficiary. The Alpine Space project such as ARDIA NET and RING will test several of the above-mentioned options. To this end, we suggest establishing an ongoing exchange – consultation between projects that are testing a variety of funding options with AlpGov2, national and regional authorities in the Alpine Space to better align new funding schemes and programs.

10 SHORT OVERVIEW FOR SMES INTERESTED IN FUNDING OPPORTUNITIES

There is a broad spectrum of funding opportunities for Bioeconomy development activities available using different funding instruments. The most prevailing funding instruments are:

- **Grants**, which are non-repayable funds that are disbursed to a beneficiary by a grant entity or governmental organisation. To receive a grant, an application or proposal must be submitted to a potential funder and the recipient must meet certain qualifications. Most grants are made to fund a specific project and require some level of compliance and reporting.
- **Soft Loans**, which are loans with no interest or a below-market rate of interest. Also known as "soft financing" or "concessional funding," soft loans have lenient terms, such as extended grace periods in which only interest or service charges are due, and interest holidays. They typically offer longer amortization schedules than conventional bank loans.

The funding programmes, in with the funding instruments are embedded, can partly focus on certain R&D&I aspects of Bioeconomy (e. g. Bio-based industries) or can support R&D&I in all sectors (thematically open). Others are stimulating investments or providing support in infrastructure.

There is currently a transition period between the current ERDF and Horizon2020 funding period and the next one, which will start in 2021. Thus, comparable few funding opportunities exist. Even more, important programmes, like European LIFE or BBI Programme did not yet published their 2020 working programme, yet, whereas related programmes are not listed here.

In the following a detailed survey is given of funding opportunities on

- regional level: Baden-Württemberg, Lombardy
- national level: Germany, Italy, Slovenia
- European level: EU programmes.

Information related to dedicated funding opportunities are structured like following

- **Programme category:** it describes what category of actions is funded (e. g. R&D&I, investments, networking etc.)
- **Name, objectives and what actions are funded**, incl. link to detailed programme information (mainly official programme website)
- **Technological scope:** Is there is certain focus on Bioeconomy or not
- Who is **eligible** for funding; beneficiary
- **Kinds of funding instruments**, like grants, soft loans or loans
- **Max. funding volume** per project
- Programme duration (e. g. when or how long the programme / call is open)

10.1 Survey of funding opportunities in the field of biobased-industry (Baden-Württemberg)



Category	Name and objectives of funding programme	Technological scope	Beneficiary	Mode of delivery / funding	Amount of funding per project	Programme duration
Support for R&D&I projects Instruments supporting research and applied development activities	Name: European Innovation Partnerships (EIP) – Agricultural Productivity and Sustainability (Agri) Objective: Innovative solutions for challenges in agriculture, climate change, natural resource, food safety What is funded? Setting up of European Partnerships for agricultural productivity and sustainability. Joint product development is supported, too. More information: http://www.landesrecht-bw.de/jportal/?quelle=jlink&query=VVBW-MLR-20150730-SF&psml=bsbawueprod.psml&max=true&aiz=true	Agriculture and related Bioeconomy sectors	Companies, associations, NGO, R&D institutions interested to get engaged in such partnerships	Grant	Up to EUR 500.000 Funding rate between 10 - 100% depending of kind of costs	Continuously open until end of 2020
Development of technological or non-technological innovation Support to innovation only, without any activities regarding research and experimental development. It includes, for example, instruments supporting a technology upgrade in already existing enterprises, as a way of increasing innovation, managerial and organisational innovation, and the commercialisation of innovative products	Name: "Spitze auf dem Land!" Objective: Increasing innovative strength and maintaining technological leadership in rural areas What is funded? Development and application of innovative products and processes More information https://efre-bw.de/foerderaufruf/spitze-auf-dem-land-fa/	Technologically open, application for rural area purposes	SME with less than 100 employees	Grant	Min. EUR 200.000 Max. EUR 400.000 Funding rate up to 20 %	April – August 2020
	Name: Innovationsgutscheine A (Innovation-Vouchers) Objective: Companies can get up to 2500€ for research activities in the pre-market phase. These research activities includes studies, analysis and concepts What is funded? Preparation or testing to innovative project or products ideas More information https://www.bio-pro.de/datenbanken/foerderung/mfw-bw-innovationsgutscheine-a-und-b	Technologically open	SME	Grant (vouchers)	EUR 2.500	Unlimited

	Name: Financial support for innovation activities Objective: Companies can get beneficial credits for innovation activities. More information http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=6f18bc277e5b642429a08d2219379aaa;views;document&doc=7007	Technologically open	Businesses of all sizes	Soft loan	Up to EUR 5 Mio.	Unlimited
Creation of innovative companies Specific support for the creation or development of new enterprises with a strong innovative base, oriented towards the commercialisation of innovative products (e.g. innovative spin-offs).	Name: start-up-financing Objective: providing loans for young SMEs (not older than 5 years) with lower interest rates and no need of starting with the repayment in the first three years. More information http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=6f18bc277e5b642429a08d2219379aaa;views;document&doc=8022	Technologically open	Start-up or SMEs younger than 5 years	Soft loan	Up to EUR 5 Mio.	Unlimited
	Name: Startfinanzierung80 Objective: providing beneficial credits with the help of guaranteed security of the state bank. This means 80% of the loan volume is secured by the state. More information https://www.l-bank.de/produkte/wirtschaftsfoerderung/startfinanzierung-80.html	Technologically open	Start-up or SMEs younger than 5 years	Soft loan, but 80 % of loan backed by regional state bank	Up to EUR 800.000	Unlimited
Support for improving capacities Instruments aimed at promoting the development of skills and capabilities of SMEs or enterprises in general, so as to promote an entrepreneurship culture and	Name: financial support for lifelong learning Objective: Support of continuing education in SMEs. More information https://www.fortbildung-bw.de/fuer-interessierte/foerdermoeglichkeiten/	No technological focus	SMEs	Grant to cover costs for work force development	Up to EUR 20.000	Unlimited

capacities in general, or to provide knowledge on specific issues, such as the development of a business plan, ICT and green energy opportunities.	<p>Name: Agricultural investment funding programme (AFP) for individual farmers AFP, part B</p> <p>Objective: Support and funding of additional non-agricultural income activities for agricultural families that ensure rural competitiveness and enable structural change.</p> <p>More information: https://lw.landwirtschaft-bw.de/pb/MLR.Foerderung,Lde/Startseite/Foerderwegweiser/Agarinvestitionsfoerderungsprogramm+ AFP + +Teil+B </p>	Technologically open, but diversification must target new fields of Bioeconomy	Farmers (SME)	Grant	Up to EUR 200.000	Unlimited
<p>Eco-innovation</p> <p>Instruments meant to introduce environmentally-friendly products, processes and technologies into enterprises.</p>	<p>Name: Resource efficiency</p> <p>Objective: SMEs investing in measure for resource efficiency getting financial support from the state bank of Baden-Württemberg.</p> <p>More information: https://www.l-bank.de/produkte/wirtschaftsfoerderung/ressourceneffizienzfinanzierung.html </p>	Resource efficiency, interlinks are given to bio-based industry application	SMEs	Soft loan	Uo to EUR 1.5 Mio	Unlimited

10.2 Survey of funding opportunities to support biobased-industry (Germany)



Category	Name and objectives of funding programme	Technological scope	Beneficiary	Mode of delivery / funding	Amount of funding per project	Programme duration
Support for R&D&I projects <ul style="list-style-type: none"> Instruments supporting research and applied development activities 	Name: Bioeconomy International Objective: Support is given of collaborative R&D in the field of Bioeconomy. Involvement of partners from third countries is precondition for funding What is funded? Selected collaborative projects will be funded that aim to develop innovative solutions in the fields of securing global nutrition and ensuring sustainable agricultural production More information: https://www.bioeconomy-international.de/lw_resource/datapool/items/item_164/Bekanntmachung_Bioeconomy_International_2019_09_05_2019_financial_EN.pdf	Bioeconomy (Nutrition and sustainable agricultural production)	SMEs and research entities; collaborative R&D&I, non-EU partners are a must	Grant	Flexible funding amounts, varying from call to call	Last Call 8/2019 New calls expected for 2020
	Name: Central Innovation Programme for SMEs (ZIM) Objective: ZIM aims to foster the innovative capacity of SMEs through firm level support or through collaborative R&D&I with R&D institutions. What is funded? Development of new, innovative products, technologies or services More information: https://www.bmwi.de/Redaktion/EN/Artikel/SME-Sector/technology-neutral-project-support-01.html	Technically open	SME and research institutions;	Grant	Up to EUR 175.000	Unlimited
	Name: KMU innovative Objective: Support R&D and related capacities in new high-tech fields through cutting-edge R&D&I for SME What is funded? Development of new, innovative products, technologies or services More information: https://www.foerderinfo.bund.de/de/kmu-innovativ-761.php	Technically open; but different thematic calls	SME	Grant	Up to EUR 100.000	Unlimited

Development of technological or non-technological innovation Support to innovation only, without any activities regarding research and experimental development. It includes, for example, instruments supporting a technology upgrade in already existing enterprises, as a way of increasing innovation, managerial and organisational innovation, and the commercialisation of innovative products	Name: Bioeconomy 2030 – New ideas for new products Objectives: The programme funds feasibility studies for innovative ideas in the field of Bioeconomy. What is funded? Fundamental investigations into the technical feasibility of the product idea (feasibility study) More information: http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=c57c6bc4f2bcddd6725ce9e8f03d707e;views;document&doc=11962	Bioeconomy	SMEs and research entities (during feasibility study)	Grant	Up to EUR 65.000	Ongoing until 2021
	Name: Go-Inno Objective: Support of external management and consulting services for the preparation and implementation of product and technical process innovations in companies with technological potential What is funded? External management and consulting services for the preparation and implementation of product and technical process innovations More information: http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=c57c6bc4f2bcddd6725ce9e8f03d707e;views;document&doc=8558	Technically open	SME	Grant	EUR 20.000	Unlimited
Creation of innovative companies Specific support for the creation or development of new enterprises with a strong innovative base, oriented towards the commercialisation of innovative products (e.g. innovative spin-offs).	Name: High-Tech Gründerfonds (HTGF) Objectives: HTGF has been financing technology start-ups made in Germany since 2005. With know-how, entrepreneurial spirit and passion, the experienced team of investment managers and start-up experts accompanies the best companies on their way to exit. Who is funded? Business start-ups and small enterprises (not older than 3 years) from More information: http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=c57c6bc4f2bcddd6725ce9e8f03d707e;views;document&doc=9241	Technically open	Start-ups and SME, less than 3 years old	Loan and private equity	Up to EUR 600.000	unlimited

10.3 Survey of funding opportunities to support biobased-industry (Lombardy)



Category	Name and objectives of funding programme	Technological scope	Beneficiary	Mode of delivery / funding	Amount of funding per project	Programme duration
Eco-innovation Instruments meant to introduce environmentally-friendly products, processes and technologies into enterprises.	POR FESR 2014 - 2020:Bando presentazione domande di agevolazione sulla linea di intervento FRIM FESR 2020 Ricerca&Sviluppo Objectives: Support the economic exploitation of innovation through the experimentation and adoption of innovative solutions in processes, products and organizational formulas, as well as through the financing of the industrialization of research results", Specific objective is given to "Increase in business innovation activity" of the priority axis "Strengthening research, technological development and innovation" https://www.fesr.regione.lombardia.it/wps/portal/PROUE/FESR/Bandi/DettaglioBando/Agevolazioni/ricerca-e-sviluppo-2019/ricerca-e-sviluppo-2019	Eco-Innovation, focus on Biorefineries and Green Chemistry	SME	Soft loan	EUR 1 Mio	Until March 2021
Creation of innovative companies Specific support for the creation or development of new enterprises with a strong innovative base, oriented towards the commercialisation of innovative products (e.g. innovative spin-offs).	"Intraprendo" measure for Start Ups Objectives: "Intraprendo" promotes and incentives the entrepreneurial culture of Lombardy. It supports new business and self-employment. A special focus is on young people (less than 35 years) and older people (more than 50 years);	Technically open	Start-up's	for each single project 10% Grant plus 90% Repayable financial support	unknown	Until end of 2020

10.4 Survey of funding opportunities to support biobased-industry (Italy)



Category	Name and objectives of funding programme	Technological scope	Beneficiary	Mode of delivery / funding	Amount of funding per project	Programme duration
Support for R&D projects Instruments supporting research and applied development activities (which may, in some cases, include the commercialisation of innovation) of enterprises individually or in collaboration with the research centres of other firms	Name: FRI Programme Objectives: Support of large R&D projects to support innovations in Bioeconomy and other innovation areas. Support is given to firms and research institutions. https://www.mise.gov.it/index.php/it/incentivi/impresa/bando-grandi-progetti-r-s-fri	Several innovation areas, including Bioeconomy	SME and R&D laboratories	Combination of grant (20 %) and soft loan (80%)	EUR 4 – 40 Mio.	Until beginning 2020
Development of technological or non-technological innovation Support to innovation only, without any activities regarding research and experimental development. It includes, for example, instruments supporting a technology upgrade in already existing enterprises, as a way of increasing innovation, managerial and organisational innovation, and the commercialisation of innovative products	Name: National Innovation Fund (NIF) Objective: Provide innovative SMEs with better access to finance to turn innovative ideas into practice. What is funded? R&D and innovation related activities More information: https://www.mise.gov.it/index.php/it/incentivi/impresa/fondo-nazionale-innovazione	Technologically open	Start-ups and innovative SME	Venture Capital	unlimited	unlimited

10.5 Survey of funding opportunities to support biobased-industry (Slovenia)



Category	Name and objectives of funding programme	Technological scope	Beneficiary	Mode of delivery / funding	Amount of funding project	Programme duration
Support for R&D projects Instruments supporting research and applied development activities (which may, in some cases, include the commercialisation of innovation) of enterprises individually or in collaboration with the research centres of other firms	SME Instrument – Seal of excellence Projects which were judged to deserve funding but did not get it due to budget limits receive the Seal of Excellence. SME Instrument Phase 1 SME Instrument Phase 2 More information: https://www.spiritslovenia.si/razpisi/2016-12-09-Javni-razpis-DOPOLNJEVANJE-SME-INSTRUMENTA--Faza-1 https://www.spiritslovenia.si/razpisi/2017-08-04-Javni-razpis-DOPOLNJEVANJE-SME-INSTRUMENTA--Faza-2	Technologically open	SME	Grant	Max amount per funded project Phase 1: EUR 50.000 Phase 2: EUR 0,5 – 2,5 mio	Open
Development of technological or non-technological innovation Support to innovation only, without any activity regarding research and experimental development. It includes, for example, instruments supporting a technology upgrade in already existing enterprises, as a way of increasing innovation, managerial and organisational innovation.	Support for creative and cultural sector Objectives: Development of innovative projects and businesses in the creative and cultural sectors, for the development of new products, services and processes by applicants (businesses and other organisations), and for strengthening the links between the cultural and creative sectors and the economy. More information: https://www.czk.si/	Technologically open	SMEs	Grant	Max amount per funded project Max EUR 55.000	Open yearly

Creation of innovative companies Specific support for the creation or development of new enterprises with a strong innovative base, oriented towards the commercialisation of innovative products (e.g. innovative spin-offs).	SEED financing for start ups Seed capital Convertible loan for start up of innovative enterprises that have, during their testing on the market, already confirmed the existence of the problem with the prototype or MVP (Minimum Viable Product). Seed capital directly invested in a young enterprise (younger than five years). More information: https://podjetniskisklad.si/sl/produkti-sklada/program-mladi Mezzanin financing: Slovene Equity Growth Investment Programme (SEGIP) - support for innovative, fast growing SMEs and mid-cap companies that were established in Slovenia as well as foreign companies with projects that are creating new jobs in Slovenia. More information: https://www.sid.si/velika-podjetja/osnovne-informacije-o-segip	Technologically open	Start-ups	Loan	Seed capital: max EUR 75.000 Convertible loan: max EUR 200.000	Open
		Technologically open	Start-ups	Equity	EUR 2 - 7 Mio	Open
	Incentives for Start Ups Objectives: The purpose of the programme is the support of start-up enterprises with a potential for rapid growth and that develop innovative products, processes and services with high added value for a broader market More information: https://podjetniskisklad.si/sl/produkti-sklada/program-mladi	Technologically open	Start-up	Grant	Max amount EUR 54.000	Open
Support for improving capacities Instruments aimed at promoting the development of skills and capabilities of SMEs or enterprises in general, so as to promote an entrepreneurship culture and capacities in general, or to provide knowledge on specific issues, such as the development of a business plan, ICT and green energy opportunities.	Digital Hub Objectives: Competence Centres for Human Resources Development 2019-2022" with a view to improving the ten key employee competencies, thus increasing workers' adaptability, employability and efficiency – support to setting up and running of at least ten competence centres or partnerships of companies with other relevant organisations in priority areas of application identified in Slovenian Smart Specialisation Strategy.	Technologically open – Digital	SME	Consulting, advice	Max amount per funded project Not limited	Open

	More information: https://dihslovenia.si/					
Networking and Clustering <ul style="list-style-type: none"> Instruments specifically designed to support the establishment of partnerships, networking and clustering among enterprises and the formation of cooperation platforms. 	<p>Strategic Research and Innovation Partnerships or SRIPs</p> <p>Objectives: SRIPs are long-term partnerships between (1) business community, (2) research organisations, (3) state and municipalities, and (4) facilitators, innovation users and NGOs – so-called quadruple helix - to pool investment and intellectual potentials of Slovenian stakeholders, and help the stakeholders set up a comprehensive innovation ecosystem with the aim of entering global markets and improving the position in S4 priority areas.</p> <p>More information: http://mgt.arhiv-spletisc.gov.si/si/sripi/index.html </p>	Bioeconomy and sustainability	Innovative cluster and networking organisations	Grant	Up EUR 1 Mio (operational costs for running the cluster or network organisation)	Until end of 2020

10.6 Survey of funding opportunities to support biobased-industry (EU)



Category	Name and objectives of funding programme	Technological scope	Beneficiary	Mode of delivery / funding	Amount of funding per project	Programme duration
Support for R&D projects Instruments supporting research and applied development activities (which may, in some cases, include the commercialisation of innovation) of enterprises individually or in collaboration with the research centres of other firms	Name: Develop and pilot circular systems in plastics, textiles and furniture sectors Objective: The objective of this programme is to develop and pilot systemic circular economy innovations in plastics, textiles and furniture sectors that take into account value retention throughout the lifecycle of the product or service. Proposals are expected to bring together all relevant actors from across the value chain – from design and production, down to collection, sorting and reuse/repair/recycling – to rethink how to address the user's need through a circular economy lens (TRL 6 – 7). More information: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-sc5-28-2020;freeTextSearchKeyword=Circular%20economy;typeCodes=0,1;statusCodes=31094501,31094502;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=Default;sortQuery=openingDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageStat	Bio-based material	Consortia out of SMEs and R&D institutions	Grant	Up to EUR 7 Mio	Sept 2020
	Name: Raw materials innovation for the circular economy: sustainable processing, reuse, recycling and recovery schemes Objective: Actions should develop and demonstrate innovative pilots for the clean and sustainable production of non-energy, non-agricultural raw materials in the EU from primary and/or secondary sources finishing at Technology Readiness Levels (TRL 6-7). More information:	Bio-based raw material	Consortia out of SMEs and R&D institutions	Grant	Up to EUR 7 Mio	Sept 2020

	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-sc5-07-2020;freeTextSearchKeyword=Circular%20economy;typeCodes=0,1;statusCodes=31094501,31094502;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=Default;sortQuery=openingDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState					
	<p>ERA-NET on materials, supporting the circular economy and Sustainable Development Goals</p> <p>Objectives: The proposed ERA-NET aims at coordinating the research efforts of the participating Member States, Associated States and Regions in the field of materials, continuing the activities started by M-ERA.NET, for materials research and innovation, especially targeting the circular economy and Sustainable Development Goals (such as Goal 7 – “Affordable and clean energy”, by enabling electromobility through sustainable energy storage technology or Goal 9 “Industrial innovation and infrastructure”, by enhancing scientific research and upgrading the technological capabilities of industrial sectors).</p> <p>More information https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-nmbp-41-2020;freeTextSearchKeyword=Circular%20economy;typeCodes=0,1;statusCodes=31094501,31094502;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=Default;sortQuery=openingDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState </p>	Bio-based material	Consortia out of SMEs and R&D institutions	Grant	Will be decided once call is out	Febr 2020
Support of Investments	<p>Name: European Investment Bank</p> <p>Objectives: The European Commission and the European Investment Bank (EIB) are launching a new €100 million fund to stimulate private investment in the Bioeconomy.</p>	Bioeconomy	All kind of businesses	Loan	unknown	Open until end of 2020
<p>Networking and Clustering</p> <ul style="list-style-type: none"> Instruments specifically designed to support the establishment of partnerships, networking and 	<p>Name: Network of European Bioeconomy clusters to advance bio-based solutions in the primary production sector</p>	Bioeconomy	Cluster organisations	Grant	Up to EUR 2 mio	Jan 2020

clustering among enterprises and the formation of cooperation platforms.	<p>Objective: Proposals should establish a pilot network of national/regional 'Bioeconomy clusters' gathering relevant actors in the Bioeconomy (e.g. EU, national/regional policy and funding bodies, industry, academia, farmer associations and cooperatives, industry, researchers, civil society and NGOs). These clusters should develop appropriate strategies for the deployment of bio-based solutions involving the primary production sector, tailored to regional conditions and assets, and exploiting synergies between policy instruments, such as the common agricultural policy, regional funds and relevant national programmes.</p> <p>More information https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-fnr-15-2020;freeTextSearchKeyword=bioeconomy;typeCodes=0,1;statusCodes=31094501,31094502;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=Default;sortQuery=openingDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState</p>					
Others	<p>Name: Diversifying revenue in rural Africa through bio-based solutions</p> <p>Objectives: Proposals shall screen existing bio-based technologies that can be adapted and successfully transferred to rural African contexts. The focus should be on simple, robust technologies that can be operated and maintained locally, and suitable for operation at farm, village or rural community level (including mobile systems).</p> <p>More information https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-sfs-36-2020;freeTextSearchKeyword=Circular%20economy;typeCodes=0,1;statusCodes=31094501,31094502;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=Default;sortQuery=openingDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState</p>	Focus on Bioeconomy	SME and R&D institutes	Grant	Up to EUR 9 Mio	Sept 2020
	<p>Name: Public engagement for the Bioeconomy</p> <p>Objectives: Proposals will build upon sectoral communication activities at national, regional and local level through awareness raising about the Bioeconomy at large for European citizens. The actions shall promote the environmental and socio-economic benefits of Bioeconomy</p>	Focus on Bioeconomy	SME and R&D institutes	Grant	EUR 1 Mio	Jan 2020

	<p>areas through awareness-raising and education on sustainable production, consumption and lifestyles.</p> <p>More information : https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/fnr-10-2020;freeTextSearchKeyword=bioeconomy;typeCodes=0,1;statusCodes=31094501,31094502;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=Default;sortQuery=openingDate;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState</p>					
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