

CONSENSUS DOCUMENT

HOW TO BUILD EFFECTIVE REGIONAL STRATEGIES? Guideline for Regions, National Governments and Bioeconomy sectors



With the support of



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2. Introduction

The Europe 2020 Strategy calls for a bioeconomy as a key element for smart and green growth in Europe. Advancements in bioeconomy research and innovation uptake will allow Europe to improve the management of its renewable biological resources and to open new and diversified markets in food and bio-based products.

Establishing a bioeconomy in Europe holds a great potential: it can maintain and create economic growth and jobs in rural, coastal and industrial areas, reduce fossil fuel dependence and improve the economic and environmental sustainability of primary production and processing industries. The bioeconomy thus contributes significantly to the objectives of the Europe 2020 flagship initiatives "Innovation Union" and "A Resource Efficient Europe".

In order to provide regions and local actors with the tools needed to create a regional Bioeconomy, the European Regions for Research and Innovation Network (ERRIN), the European Regions for Innovation in Agriculture, Food and Forestry Network (ERIAFF) and the Biobased Industries Consortium (BIC) organised a joint event on 20th March 2015 with the title **"Boosting economic growth and facilitating investments through the bioeconomy: how to build effective regional strategies?"**.

The conference was a starting point for creating a European regional platform aimed at debating and exchanging information and best practices in order to:

- raise awareness on the potential of the bioeconomy for regional growth and jobs strategies
- help identifying regional bioeconomy strengths and weaknesses
- understand the DOs and DON'Ts of the bioeconomy
- identify obstacles and find solutions to effective deployment
- bring European, national and regional synergies to life
- stimulate inter-regional cooperation
- collectively set the circular economy in motion.

The findings from this event have been integrated in this document to support regions and local authorities to develop their Bioeconomy strategies.

The following 4 chapters highlight the steps that need to be taken for the development of an inclusive regional Bioeconomy.

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3. Why the bioeconomy?

- ✓ *To stimulate sustainable economic growth and create jobs;*
- ✓ *To reduce our dependence on imports in favor of bio-based products, materials and fuels that are “sourced and Made in Europe”;*
- ✓ *To reduce GHG emissions and mitigate climate change.*

a) Tackling our societal challenges

The bioeconomy helps Europe radically change its approach to production, consumption, processing, storage, recycling and disposal of biological resources. It contributes to the development of the renewable circular economy. Instead of fossil resources, the bioeconomy uses biomass and waste as feedstock to make greener everyday products such as food and feed ingredients, chemicals, materials and fuel. Advanced biorefineries and innovative technologies play the central role of converting the biomass into a variety of useful consumer products.

Business as usual or the linear economy of extract-use-dispose is no longer an option. Solutions are needed to cope with an increasing global population, rapid depletion of resources, increasing environmental pressures, and climate change. The Europe 2020 Strategy calls for a bioeconomy as a key element for smart and green growth in Europe.

In 2012, the EU published a Bioeconomy Strategy outlining key actions to be undertaken to reap the benefits of this high potential renewable and circular economy. In 2014, industry and the EU jointly launched a €3.7 billion public-private partnership on Bio-based Industries (BBI) focused on deploying Europe’s bio-based potential, while creating new value chains, from feedstock to products and markets. On 2nd December 2015, the European Commission announced the long awaited Circular Economy Package confirming the need for sustainable approaches to economic growth.

b) Leveraging Europe’s innovative industries

Europe is fully equipped to become a major competitive force in the global bioeconomy race. The US, Brazil and China (among others) are currently leading with significant investments in this high potential economy. The BBI initiative enables advancements in bioeconomy research and innovation, which will support Europe to improve the management of its renewable biological resources to open new and diversified markets in food and bio-based products. Deploying a bioeconomy in Europe can:

- Maintain and create economic growth and jobs in rural, coastal and industrial areas;
- Reduce fossil fuel dependence and improve the economic and environmental sustainability of primary production and processing industries.

c) What is the bioeconomy?

The 2012 EU Strategy [“Innovating for sustainable growth: a Bioeconomy for Europe”](#) describes the bioeconomy as a *“useful basis for a multi-dimensional approach, as it encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy. Its sectors and industries have strong*

innovation potential due to their use of a wide range of sciences, enabling and industrial technologies, along with local and tacit knowledge”.

As bioeconomy represents the production of renewable biological resources and their conversion into food, feed, bio-based products and bioenergy, it involves many operational fields of the European Union policies, such as agriculture, forestry, fisheries, food, paper production, chemical and biotechnological and energy industries. Given this wide range of operational fields, the strategy has been summarized into a [Bioeconomy Action Plan](#) which, among its goals, foresees to support the development of regional and national bioeconomy strategies.

The EU strategy will be revised in 2016 and 2017.

BOX 1 - A Public-Private Partnership on Bio-based Industries (BBI) to deploy Europe’s potential

The BBI uses Europe's untapped biomass and wastes as feedstock to make fossil-free and greener everyday products. At the heart of it are advanced biorefineries and innovative technologies that convert renewable resources into sustainable bio-based chemicals, materials and fuels.

Organised in five value chains – that range from primary production to consumer markets – the BBI will help fill the innovation gap between technology development and commercialisation, sustainably realising the potential of bio-based industries in Europe.

BBI objectives & benefits for Europe

- Create value by using resources more efficiently by maximising the potential of waste, agriculture and forestry residues;
- Diversify and grow farmers’ incomes: up to 40% additional margins with existing residues;
- Bring existing value chains to new levels and build new value chains, thus revitalising industry in rural environment;
- Realise a new generation of Bio-based materials and composites produced in biorefineries;
- Create a competitive Bio-based infrastructure in Europe, boosting job creation, 80% of which will be in rural and underdeveloped areas;
- Replace at least 30% of oil-based chemicals and materials with Bio-based and biodegradable ones (2030 target);
- Meet 25% of Europe’s transport energy needs with advanced biofuels (2030 target);
- Deliver bio-based products that are comparable, if not superior to non bio-based products in terms of price, performance, availability and environmental benefits;
- Achieve with new Bio-based products resulting from BBI an average CO2 emissions reduction of at least 50% compared to their fossil alternatives.

d) EU Regions have a crucial role to play

Regions have a crucial role to play in the creation of a truly pan-European bioeconomy by fully exploiting regional and local mobilization of local biological resources and waste streams. Acting both as enablers and recipients, EU regions interested in creating new opportunities for their farmers, industries and scientists and society will have a leading role to play in mobilising regional/local stakeholders, raising awareness and exchanging knowledge on new opportunities, creating incentives using their European Structural & Investment Funds (ESIF), encouraging new partnerships and fostering synergies and complementarities with the H2020 programme, facilitating and boosting public and also private investments and deployment by creating the right ecosystem and policies.

e) National bioeconomy strategies in the EU

Germany and **Finland** are two of the member states that have adopted national bioeconomy strategies.

The current **German Policy Strategy** on bioeconomy has as its goal a sustainable and internationally competitive bioeconomy, one that contributes to the successful mastery of the challenges at national and international level. The framework conditions must be structured so as to support the following objectives:

- a secure supply of high-quality food to the population in Germany;
- sustainable use of renewable resources while conserving biodiversity and soil fertility;
- securing and creating employment and value added, particularly in rural areas;
- strengthening the transition from an economy mainly based on use of fossil-based raw materials to an economy that is increasingly both efficient in terms of raw materials and also based on renewable resources

Finland can count on high level of expertise and industrial assets and also on huge quantity of renewable resources. The vision of the first Finnish bioeconomy strategy is that Finnish well-being and competitiveness will be based on sustainable bioeconomy solutions. The objective of the bioeconomy strategy is to increase the bioeconomy output to EUR 100 billion by 2025 and to create 100,000 jobs. The bioeconomy also produces other benefits for the national economy and Finnish society: in addition to increasing exports, replacing fossil fuels with renewable domestic natural resources will improve Finland's current account balance, reinforce the security of supply and increase our self-sufficiency in energy. The bioeconomy also supports the goals of sustainable development, biodiversity conservation and balanced regional development. The natural resources of the Finnish forests and waters and the opportunities for their sustainable use are exceptionally great on the EU and international scale.

Other Countries in the process of developing a national strategy or an action plan are Denmark, Estonia, the Netherlands, Italy, Sweden, United Kingdom (where Scotland is developing its own national strategy).

4. Understanding your regional bioeconomy strengths

There is no simple template for developing a regional bioeconomy strategy, but there are many tools and best practices across EU regions that can help.

a) Make the most out of existing strategies

Each EU region should have a Smart Specialisation Strategy (S3) in place identifying key strengths and opportunities for smart and sustainable growth. The Research and Innovation Strategies for Smart Specialisation ([RIS3](#)) should be a good starting point for each region to build their bioeconomy profile as it provides a SWOT analysis of the available economic sectors.

BOX 2 - JRC – Join research centre role and missions

The main role of JRC (Joint research centre) is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle. JRC Bio economic Observatory constantly produces statistics on investments in research, innovation and skills, mapping of policy initiatives at EU and national levels, bioeconomy profiles for EU Member States and EU regions, socio-economic analysis of bio-based value chains and environmental sustainability assessment of bio-based products. Data and information are collected along the three key pillars highlighted in the EU bioeconomy strategy: research (i.e. investments in research, innovation and skills); policy (i.e. reinforced policy interaction and stakeholder engagement) and markets (i.e. enhancement of markets and competitiveness in bioeconomy).

Bioeconomy observatory

The Bioeconomy Observatory aims to create a database of development in the bioeconomy field. Moreover has been presented by the European Commission as a tool for policy-makers, stakeholders and business people to give a clear vision about bioeconomy projects at national and regional level. Thanks to the mapping instrument, it is possible to evaluate the policies and future innovation programs. This tool shows that the main committed are the Finnish regions, as South Ostrobothnia, Central Ostrobothnia, Central Finland. They concentrated the policies on production of biomass for bio refining. Furthermore other regions as Flanders in Belgium, Lombardia in Italy and Wales in UK are implementing programs on food sustainability and also on biomass production as a factor in the energy mix. In particular Flanders region focused his efforts on energy efficiency.

Each region filled up a complementary module. Leading investments, ideas and research projects are indicated in each module.

What is a smart specialisation?

Smart specialisation is a strategic approach to economic development through targeted support to Research and Innovation (R&I). More generally, smart specialisation involves a process of developing a vision, identifying competitive advantage, setting strategic priorities and making use of smart policies to maximise the knowledge-based development potential of any region, strong or weak, high-tech or low-tech.

RIS3 main objectives

- To make innovation a priority for all regions
- To focus investment and create synergies
- To improve governance and to get stakeholders more closely involved

BOX 3 - S3PLATFORM - RIS3

Smart specialisation platform is an instrument created by the European Commission to provide professional advice to EU countries and regions for the design of their research and innovation strategies. Thanks to a large database, it is possible to match different regions in different fields and receive a complete information about their investment and research projects. One important tool developed by the S3P to support the regions is the Eye@RIS3 database. The Eye@RIS3 has been developed as a tool to help strategy development rather than a source of statistical data. Regions are encouraged to introduce/update input in the database, which will produce a realistic map of the process of RIS3 development. Focusing our research on bioeconomy investment programs, the database shows that ten European regions are investing in this field: The most involved countries in this process are Finland and Poland. Others regions are spread all over Europe, examples are Castilla La-Mancha in Spain, Languedoc-Roussillon in France and Saxony-Anhalt in Germany.

In Finland the leading regions are Kainuu, Pohjois-Karjala, Keski-Suomi, Satakunta. Finland has plentiful forest resources, indeed the priority field is forestry biomass and wood industry. A point in common with polish region is the development of efficient use of waste, developing a production chain of recycle industries, focus on management of pollution control.

Lubelskie region, in Poland, is the most dynamic in chemicals and scientific research, paying attention also on food quality and security, rising a crop and animal production.

b) Avoid duplication - seek complementary and coordinated approaches

There may be communication or even coordination gaps between national and regional levels. The bioeconomy is one area where coordination and complementary approaches are needed. It is therefore essential that both regional and national strategies (if they exist at both levels) complement and support each other to send the right signals to investors and consumers-alike.

All EU regions, not only leading ones, can benefit from the transition towards the bioeconomy. Creating a **regional strategy** and acting accordingly can facilitate coordination and collaboration at both intra and inter regional level. There are four fundamental ingredients needed when developing a regional bioeconomy strategy:

- A clear and long-term political commitment;
- A stable and future oriented investment climate;
- A committed business community willing to take the lead and invest;
- A Smart Specialisation Strategy in place that fully acknowledges the horizontal and cross sector nature of the bioeconomy.

c) Regional leadership is key

A successful bioeconomy strategy requires innovative inter and intra-disciplinary efforts and **more regional coordination** on the integration of knowledge and skills from a wide range of bioeconomy areas. It is therefore critical for regions to act as the linking pin between different sectors, regional knowledge institutes, companies, local authorities, national government and civil society. Regions ought to facilitate stakeholders' engagement. With 2/3 of bioeconomy investments taking place at the regional level, leadership is critical to effectively guide bottom-up initiatives and in transiting towards a sustainable bio-based society.

d) A competitive regional bioeconomy through strategic partnerships and new value chains

If Europe is to compete with the US, China and Brazil, new bio-based value chains and new bridges between sectors like agriculture, food and feed, pulp and paper, chemistry, bioenergy, biofuels, end-users and consumers should be developed.

Interregional cooperation is essential to combine and complement regional strengths and create new comprehensive, competitive and innovative value chains. It is therefore important to consider an inter-regional cluster approach to become competitive, rather than strictly aiming at being regionally self-sufficient. As a bioeconomy EU region, it may be useful to look into ways of cooperating with other regions as a means to reinforce existing or new value chains and form globally competitive clusters.

Networks like **ERRIN**, **ERIAFF** and the **Bioeconomy Pilot of the Vanguard Initiative** offer collaborative platforms and provide partnership for collaboration on an inter-regional bioeconomy Smart Specialisation Strategy.

BOX 4 - ERRIN, ERIAFF AND THE BIOECONOMY PILOT OF THE VANGUARD

ERRIN (European Regions for Research and Innovation Network) promotes knowledge exchange between its members, focusing on joint actions and project partnerships to support regional research and innovation capacities. Through these actions ERRIN seeks to contribute to the implementation of the Europe 2020 Strategy, the Innovation Union flagship initiative and Smart Specialisation strategies.

Main objective of the **ERIAFF** (European Regions for Innovation in Agriculture, Food and Forestry) Network is to improve the performance of the EIP network itself by acting as organizers of information flow and links between stakeholders across their territories as well as actors the European Union, and to develop interregional Operation Groups which are already linked by common priorities and goals.

The **VANGUARD** Bioeconomy Pilot concerns the implementation of synergies in new bio based value chains across regions based on smart specialisations of the regions. If Europe has to compete with China, the United-States and Brazil, new integral Bio-based value chains and new connections between sectors like chemistry, agro, bioenergy, biofuels, and paper should be developed leading to new business opportunities through interregional cooperation and exchange of information and ideas. The focus is not so much on the R&D phase but rather on the demonstration and piloting stage of new value chains.

5. Proactively mobilising regional actors and resources: regional governments as facilitators

The bioeconomy embraces a wide range of possible territorial developments, involving different actors, sectors and interests.

One of the most important roles of **regional governments** is linking actors in their territories, shaping the way bioeconomy is developed and affects their citizens. Hence, in a growing sector like the bioeconomy, the public role is very important as facilitator between wide and different competences: science, business, policy-making, civil society and finance. The goal can be achieved through the use of complementary solutions, such as:

- Creation of clusters;
- identifying bioeconomy leaders and in all the other potentially related sectors;
- creating brainstorming and information exchange sessions between stakeholders;
- clearly defining the role of funding institutions and other potential private investments;
- mobilising external partners and experts.
- Linking up to global value chains.

It is also clear that the way actors will be involved must follow a **value chain approach**. The final product will be the outcome of the distribution of the value along the production chain: it is therefore very important to avoid predominant position of few subjects, and recognizing the role of each passage and every identity within the process.

The political sphere should be fully involved and facilitates trust within this multidisciplinary frame. Policy makers' support is necessary as the bioeconomy concerns and involves citizens. Therefore we need tools that allow communication and information exchange among very different interests and actors. **Monitoring and evaluation mechanisms** should be deployed for always having a clear vision of what is happening and widely share the information.

In this context Regions should stimulate the transition towards a bioeconomy society fully considering their great capability in boosting and concretely realizing **public acceptance**. Many instruments are needed for creating a good environment for the bioeconomy: new laws, targeted information to the consumers about opportunities and new value chains, specific education and training projects, exchange of best practices and knowledge between regions and at EU level. The relevance of using procurement and calls for proposals in order to stimulate the standardisation of the bioeconomical processes through requirements focused on sustainable and circular way of producing, should also be highlighted.

The importance of a **sustainable approach**, which always keeps the environmental component in the foreground is crucial. For this reason biomass producers should be fully integrated in the bioeconomy value chain, from the small farm owner, to the forestry, till those subjects who are positioned upstream of the supply chain, which have to understand the importance of reducing impacts and promote the mobilization of local biomasses. In this sense, bioeconomy will be able to reduce the fossil fuel consumption, contrasting in that way the oil-based society in favor of a new and cleaner reusing system of producing and living.

BOX 5 - Regional Bioeconomy Clusters around Europe

Picardie : IAR (Industries & Agro Resources) Cluster has actively supported the development of biorefining through innovative projects and the creation of road maps referring to them. This strategy means that the IAR Cluster contributes to bio economics in terms of not only scientific advances, job creation, energy and environmental efficiency, but also, and most significantly, regional recovery. (<http://www.iar-pole.com/?lang=en>)

South-western of Netherlands: Bio Based Delta is established in the South-western of Netherlands, where entrepreneurs, knowledge institutes and governments in Zeeland, Zuid-Holland and Brabant work together towards a biobased economy. Biobased Delta researches and develops alternative raw materials to replace or supplement fossil fuels. This theme comprises four programmes : Algae and seaweed, Agro (residual) flows, natural fibres and ingredients. This region has a large agro, horticulture and chemical sector, advantageous geographic location (along the Antwerp-Rotterdam axis), room for various deep sea ports, and provides the setting for collaboration between multinationals, the SME sector, knowledge institutions and government agencies. (<http://biobaseddelta.nl/pagina/english>)

Yorkshire: BioVale is a bioeconomy innovation cluster in the UK's Yorkshire and Humber region. Initiated by stakeholders from local government, the cluster is now directed by a group reflecting biobased industries such as AB Agri, Drax, Croda and other smaller companies in the advanced agri-tech and horticulture. BioVale is developing new connections between companies (large and small) and academics in the waste, agricultural, chemical and biomass energy field creating opportunities for waste-based biorefineries in the North of England. The BioVale initiative has already contributed to development of projects over €35m and substantial private sector investment in commercialization of bio-based products. (www.BioVale.org)

Central Denmark: Biocluster.dk consists of a consortium that includes Central Denmark Region, Aarhus University, Danish Agriculture and Food Council, Viborg Municipality, VIBORGEgnens Erhvervsråd and Agro Business Park. This cluster works inside the entire value chain from the production of biomass to logistics and processing/refining of biobased products. The main idea is to develop and sell biobased high value products within six markets: Pharma, biochemical and materials, food ingredients, energy, feed and fertiliser. (<http://biocluster.dk/>)

Bioeconomy-related regional and interregional Clusters

Lombardy Green Chemistry Association: shaped by Italbiotec Consortium, University of Milan, Polytechnic Milan and Innovhub aims to create synergy between researchers and industries. The main ideas involved organic waste and biomass application in order to produce green energy and goods. (<http://www.chimicaverdelombardia.it/>)

Bioeconomy Cluster of Central Finland: Central Finland is recognized as the Bioenergy Region in Finland. The strongest branches of economic activity are pulp and paper, wood products, forestry and production of machineries and equipment. The Bioeconomy cluster of Central Finland represented by JAMK University of Applied Sciences generates actions to develop, educate, research and promote new businesses based on renewable natural resources and especially in the field of bioenergy. (<http://fibic.fi/>)

Baltic BioEconomy Cluster is a special interest group, consisting of research departments, SMEs and representatives of academia and administration from Germany, Poland, and Lithuania (project partners in the EU South Baltic Region project Eco4Life), collaborating with institutions from the Northern Baltic Sea.

The aim of the Baltic Biomaterial Cluster is to develop a common transregional approach for a Knowledge Based Bioeconomy KBBE in the whole Baltic Sea Region, according to the policy of the ScanBalt flagship project "Baltic Sea Health Region" as part of the EU Baltic Sea Strategy.

(<http://www.eco4life.info/>)

Europe's Bioeconomy intercluster - 3BI

3BI gathers together the leading bioeconomy clusters in the Netherlands, France, the UK and Germany. Their goal is to support European companies to access important new markets based on renewable raw materials successfully. This strategic cluster is made up by:

- BioEconomy Cluster focuses on wood. (Germany)
- BioVale focuses on biowastes. (UK)
- IAR focuses on the valorisation of renewable resources from agriculture, forest and algae into food and non-food products. (France)
- Biobased Delta focuses on a range of novel biological resources for its chemical industry. (The Netherlands)

All of them use bio-refining to convert biological resources into materials, chemicals, fuels, food and feed. They plan to work together in the research, development and deployment of novel high-tech approaches to the conversion of biomass and waste streams into value-added products and applications. This is a great opportunity to share information and ideas to promote a common sustainable solutions for lower carbon footprint and to substitute fossil raw materials in industrial scale.

Box 6 - Communicating the Bioeconomy

The best way to explain what the Bioeconomy is and how it could be host in everyday life is to show up concrete results and tools. A key aspect of the bioeconomy is its renewable raw materials base, reducing the consumption of fossil fuels, such as coal, oil and natural gas. Bioeconomy in everyday life has to show environmentally friendly products, cost-efficient, innovative and energy-saving goods. That's why the European Commission created a booklet to illustrate goods which everyone use day-to-day ([Booklet.pdf](#)):

- Car tyres produced by dandelion-based rubber to substitute typical latex from the subtropical rubber trees. Researchers at the Fraunhofer Society in Germany have turned a wild plant into a useful plant, which is robust and high yielding.
- Bioplastic bottles are based on renewable raw materials that can be used for different plastic products. Classic plastic PET is produced using two different chemical building blocks, one of which is monoethylene glycol (MEG). MEG can now partially be made from ethanol that comes from sugar cane.
- The German company Lignotubes Technologies uses real wood veneer as the basis for lightweight tubes for bicycles to substitute carbon or iron or aluminum. This lignotube is made from a multilayer composite material of wood veneers.

6. Define common ambitions and objectives as the basis for the strategy

- ✓ *Demand/business oriented approach (economic modelling), upscale*
- ✓ *Regions as launching customer*
- ✓ *Stable investment climate, adm./fin. Barriers (financial needs)*

The next step towards creating a common bioeconomy strategy within a region is to identify shared ambitions and objectives, which in a later stage can and should link up in the global value chain for bioeconomy. It should here be highlighted that the ambition should not be to create strategies, which run in silos, but rather to see bioeconomy as a cross-sectorial approach, which can gather and create wider regional partnerships.

When setting up common ambitions and objectives it is important to look at both the regional/local and industrial demand and supply side, defining the role each actor should play and to create a sustainable investment climate.

In previous chapters, the Smart Specialisation strategy has been mentioned and for good reasons. The development of such a strategy should not only map regional priorities and sectorial opportunities for strengthening, but also identify key actors within a region.

Regional authorities have a significant role to play in the setting of the common framework where ambitions and objectives should be set out. Regional authorities can support and improve local infrastructures and partnerships in a strategic way, creating the capacity and framework conditions towards the stairways of excellence, i.e. facilitating the regional stakeholders participation in Horizon 2020 programme. At the same time, the regional authorities have a major role to play towards the exploitation of the bioeconomy and can boost investment in bioeconomy and promoting the use of bio-based products and other new innovative solutions also through public procurement.

Using findings and goals identified in the smart specialisation strategy can serve as a first step in gathering the regional stakeholders from the quadruple helix (partnership between public sector, private sector, academia and citizens/end users) and from that point set targeted objectives in the field of bioeconomy. A dialogue initiated by regional authorities can help to mobilise the key actors and identify ways of using existing resources in a more efficient way. This can also help identify where the financial, administrative and knowledge gaps may be.

The quadruple helix should jointly look at bioeconomy and divide tasks between the partnerships that are most suitable for each actor. One of the ambitions should be to create a complementary approach where sectors and actors collaborate rather than having the public and private sector competing. By joining forces there is also a higher initiative for public acceptance of the work. Local banks and investors can also play a significant role in the up-scaling of the regional value chain and can support the SMEs. An example where a regional authority works with (private) investors when setting up regional projects is the region of Picardie from France. With this approach the regions decrease their investment risks and assure that the regional ambition will be fulfilled. Red tape is known for being an obstacle when involving SMEs, Nevertheless, the Polish region of Pomorskie have dealt with this by involving entrepreneurs in the revision of regional administration and legislation. The entrepreneurs are part of the regional dialogue and present their “wish list” for effectiveness of administrative burden.

Box 7 – Examples of regional strategies

North Karelia (Finland)

North Karelia has been selected by the Finnish government to be the centre responsible for the coordination of bioeconomy related development activities in Finland. Furthermore North Karelia is a European forerunner in the use of renewable energy. Almost two-thirds of the energy used in this region comes from renewable sources, mainly from wood energy. The regional programme put the 2030 as the final limit to be completely fossil fuel free. The smart specialization is focused on forest bioeconomy as a natural and innovative utilisation of forests helping the low-carbon economy.

Flanders Region (Belgium)

Flanders has opted to develop a sustainable providing opportunities for green growth and job creation, the further development of a circular economy, cross-border clustering, strengthening of competitiveness and the potential for research and innovation in Flanders. The impact of the bio-based economy (BBE) is already significant in Flanders region, in fact in Flanders, bio-based products (e.g. paper, wood, bioplastics and biochemicals) already create five times as much added value and ten times more employment than bioenergy. Almost half of the total gross margin from the BBE is generated by fine chemicals, biopolymers and bioplastics. These sectors are also characterised by a high degree of dynamism, growth and innovation. ([bioeconomy-in-flanders](#))

Värmland (Sweden)

Region Värmland has identified forest-based bio-economy as its first priority in its recently adopted Regional Smart Specialisation Strategy (VRIS3). In its RIS3, Värmland set out a vision for the bioeconomy in the region: *“With more than 150-year-long history within paper manufacturing, we conceive creative meetings between tradition and renewal and show the way using bio-based innovations originating from the forest to foster a fossil-free and sustainable society”*. (<http://www.regionvarmland.se/wp-content/uploads/2015/03/VRIS3-150522.pdf>)

Extremadura (Spain)

Extremadura Government has launched the Extremadura Bioenergy Plan 2015-2020, included in the Smart Specialisation Program to accelerate the creation of the bioenergy sector. The investment will pay attention on biomass demand, production and supply and research and innovation projects. The Government announced a full investment of 70M€. Moreover Agrotech Plan is a plan shaped for the application of technology to agriculture. The goal is to become a world leader in production of agro-technology taking in account the bio production increasing the market and the productivity.

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8. Annexes

a) Examples of EU Bioeconomy projects

Research and innovation

Berst

Berst project aims to discover the bioeconomy prospective at regional level. Thanks to the network Brest provides significant information of good practises and case studies to promote the development of smart specialization strategies based on regional bioeconomy potentials. <http://www.berst.eu/Default.aspx>

Biolinx

This project targets to create three large clusters in Europe in the lignocellulose, agro- and agro-waste feedstock sectors. Biolinx puts together leading roles in the bioeconomies of South West Netherlands and Flanders, the Nordic Countries and Northern Italy selecting and scouting more than 60 potential bioeconomy projects. <http://www.biolinx-project.eu/about>

ProBIO

ProBIO is a support action for KBBE projects which identifies KBBE(Knowledge Based Bio-Economy) research results to facilitate their uptake into the relevant sector. <http://www.probio-project.eu/project.html>

CommBeBiz

CommBeBiz is a networking project to help the research into bioeconomy value-chain for enterprises and policy-makers. This project targets five specialist bioeconomy segments: Food, Agriculture , Fisheries, Forestry, and Biotechnology. <http://www.commbebiz.eu/>

Bio-waste and biorefineries

First2Run

This project aims to demonstrate the possibility to create a biorefinery value-chain where low input and underutilized oil crops (i.e. cardoon) grown in arid and/or marginal lands and not in competition with food or feed, are exploited for the extraction of vegetable oils to be further converted into bio-monomers useful for cosmetic production. <http://www.first2run.eu/>

S2Biom

The main purpose of this project is to support the sustainable delivery of non-food biomass feedstock at local, regional and pan European level. In the S2Biom project, the research work foreseen will cover the whole biomass delivery chain from primary biomass to end-use of non-food products and from logistics, pre-treatment to conversion technologies. <http://www.s2biom.eu/en/>

Chimio

The project will develop an integrated biorefinery platform transforming the chemical constituents of EU, African and Asian crustacean shell waste into “drop-in” and novel chemical intermediates to produce high value, high performance bio-based polymers at high atom efficiencies. <http://www.chibiofp7.fraunhofer.de/index.html>

Forestry and new bio-based products

Infres

The goal is to improve the competitiveness of forest energy by reducing the fossil energy consumption and the material loss during the supply chains. INFRES concentrates to develop concrete machines for logging and processing of energy biomass together with transportation solutions and ICT systems to manage the entire supply chain. New hybrid technology is demonstrated in machines and new improved cargo-space solutions are tested in chip trucks. <http://www.infres.eu/>

Eco2Wood

This projects aims to define technical potential and obstacles for the use of wood in carbon efficient construction, to develop practical solutions for calculating and optimising the carbon footprint of different wood construction systems. <http://www.eco2wood.com/>

b) Some models of biorefineries in Europe

Màtrica is joint venture between Versalis (part of ENI, a global leader in the manufacture and marketing of petrochemical products) and Novamont, a company at the forefront of the bio-plastics industry. The Matrìca project has reconverted a former petrochemical facility at Porto Torres (Italy) into an integrated green chemistry plant. Starting from selected vegetable raw materials with low levels of environmental impact, Matrìca produces a series of innovative intermediates using an integrated agricultural production chain. They are used in various different industries: bio-plastics, bio-lubricants, home and personal care products, plant protection, additives for the rubber and plastics industry, and food fragrances. (<http://www.matrica.it/>)

Sekab is located in Domsjö (Sweden) is the premier biorefinery based on wood raw materials in Europe. renewable wood raw materials are converted into various green products with a very diverse scope of use. One of them is second generation Ethanol, produced by the cellulose being broken down into sugar. Cellulose is the material that essentially builds up plants' cell walls and it is available in virtually unlimited quantities. The greatest advantage of SEKAB's process is its very wide raw material base. Residues from agriculture and forestry are the materials most used today, but energy crops can also be used. (<http://www.sekab.com/>)

Metza Group created Metsä Fibre, a world-leading producer of softwood pulp for high-quality paper producers in Europe and Far East. Their product brand is Botnia, which covers high- quality pulps as well as technical support and logistics service concept. This group is planning to build a bio-product mill in the existing mill area in Äänekoski, Finland. The pulp mass will be used as a raw material in the manufacture of paper, paperboard and other products. (<http://www.metsagroup.com/en/Pages/default.aspx>)

CelluComp is a key player inside the bio-based production in Scotland. CelluComp has invented a proprietary process that is unique in allowing the properties of cellulose nano-fibres to be fully utilized, baptized Curran. Curran fibres are strong, stiff and light. Bio-composites based on Curran can be based on a variety of conventional resins such as epoxy, polyurethane and polyester. Some examples are the Curran powder or the Curran paste. (<http://cellucomp.com/>)

c) ERRIN Smart Specialisation Bioeconomy mapping

The ERRIN bioeconomy working group carried out a mapping exercise in the spring of 2015. The mapping showed the involvement of 24 regions active in the development and implementation of regional bioeconomy strategies in Europe.

Country	Regions	National or Regional Strategy for Bioeconomy?	State of Progress of Bioec. in the Region ?	Is the Bioeconomy included in your RIS3?	Are your ESIF Funds used for funding Bioeconomy related initiatives?
Finland	Oulu	Yes	Advanced	Yes	Yes - (Not concrete examples)
	South Ostrobothnia	Yes	Advanced	Yes	Yes - (concrete examples)
	Central Finland	Yes	Advanced	Yes	Yes - (concrete examples)
	North Karelia	Yes	Advanced	Yes	Yes - (Not concrete examples)
	Kainuu	Yes	Less Advanced	Yes	Yes - but in future
	Satakunta	Yes	Advanced	Yes	Yes - (Not concrete examples)
Spain	Asturias	No	Less Advanced	Yes	Yes - (concrete examples)
	Extremadura	No	Less Advanced	Yes	Yes - (Not concrete examples)
	Castilla-León	Yes (RIS3)	Advanced	Yes	Not answered
	Navarra	Yes (Integrate)	Advanced	Yes	Yes - (concrete examples)
Sweden	North Sweden	Yes (RIS3)	Advanced	Yes	Yes - (Not concrete examples)
	Ostergötland (East Sweden)	Yes (RIS3)	Advanced	Yes	Yes - (concrete examples)
	Varmland	No	Advanced	Yes	Yes - (concrete examples)
Italy	Lombardy	Yes (RIS3)	Advanced	Yes	Yes - (Not concrete examples)
	Basilicata	Yes	Advanced	Yes	Yes - (concrete examples)
France	Lower Normandy	No	Less Advanced	Yes	Yes - (concrete examples)
Belgium	Flanders	Yes	Advanced	Yes	Yes - (concrete examples)
Denmark	Central Denmark	In Progress	Advanced	Yes	Yes - (concrete examples)
Poland	Lodzkie	No	Less Advanced	Yes	Yes - (concrete examples)
Netherlands	Gelderland	Yes	Advanced	Yes	Yes - (concrete examples)
UK	Scotland	Yes	Less Advanced	Yes	Yes - (concrete examples)
	Wales	Yes	Less Advanced	Yes	Yes
	Northern Ireland	No	Less Advanced	Yes	Not by the moment
NORWAY	North Norway	In Progress	Advanced		Not by the moment

Figure 1: List of 24 contributing ERRIN members, their state of play and use of ESIF for bioeconomy investments.

Aim and goals with a bioeconomy strategy

Regions participating in the ERRIN mapping responded with a great variety of ideas in relation with their objectives for Bioeconomy. This was expected due to the different regional profiles and maturity levels among the regions in their Bioeconomy strategies.

The main **aims** to achieve in relation with the Bioeconomy discovered in the mapping are divided in several themes such as;

- Create a sustainable economy

- Gaining investors and exports
- More jobs
- Better and new products
- Development and integration of bio-refineries per-sé and with the rural sector

Main goals expected to achieve in relation with regional Bioeconomy activities have their root on a strategies level and regions indicated that the main goals are to:

- use Bioeconomy as strategy for cluster development
- Bioeconomy as a reinforcement for models of entrepreneurial innovation
- Bioeconomy to maintain people linked to the territory
- Bioeconomy as a regional scale demonstrators builder
- Creation of more jobs
- Development of better products

Main challenges

Results from the mapping showed that the lack of capacity building along with the lack of awareness raising of the bioeconomy and its potential were the main obstacles for the implementation of the bioeconomy. The lack of research and development, regulation and red tape have also been highlighted as issues for reaching regional goals for the bioeconomy. Some regions proposes the European Union to provide EU strategies to overcome the above mentioned obstacles for regional implementation of regional bioeconomy strategies.

Barriers holding the Research and Innovation back

According to the surveyed regions they see financial instruments as a main barrier where more research and Innovation is needed. Logistics occurs to be a problem in the Nordic countries and the development of new technologies is another issue holding the R&I back in Europe.

How to involve the full regional ecosystem

Top priorities for involving actors from the whole Bioeconomy value chain have been identified to be the right Business Model/collaboration model and collaboration form such as clusters. Projects have also been listed as an important aspect to foster collaboration and involving all actors along the regional value chains.

For a full overview of the results from the ERRIN Bioeconomy mapping kindly see this link at ERRIN website: <http://errin.eu/content/errin-s3-bio-mapping-consensus-document>