



Mapping of EU Member States' / regions' Research and Innovation plans & Strategies for Smart Specialisation (RIS3) on Bioeconomy

Task 3

Case Study Report Latvia

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1. Short Regional Bioeconomy Profile

Name of the case region/country	Latvia
Member State	Latvia
GDP – Euro per capita (2014)*	11 800
Total ESIF Research & Innovation per capita per year*	47.99
Total H2020 per capita per year*	4.33
Value Chain Approach to the Bioeconomy**	Foods and beverages; Forest-based primary production; Crop-based primary production; Bio-energy and fuel from biomass; Bio-based chemicals
Thematic Focus of the Bioeconomy Approach**	Food Processing; Forestry and Wood; Biopharmaceuticals; Biochemical products; Wood-based biomass
Research and Innovation Fields highlighted for the Bioeconomy**	Biology, Biotechnology, Chemistry, Life Sciences; Forestry sciences ; Quality, Health, Security in Processing; Agronomy and crop sciences, oenology, etc.; Nano Technologies, New Materials
Bioeconomy Activity Level**	Middle
CASE STUDY SUMMARY	
Bioeconomy Approach	Interest to explore higher value added products/value chains
Bioeconomy Ecosystem	Bioeconomy based on primary production and low value added manufacturing
Bioeconomy Policy Support	Weak national support, high dependency on EU funding
Successful initiatives and Good Practices	Competence centres and industry/export clusters
Main Needs, Gaps and Bottlenecks	Coherent approach, definition, and goal for bioeconomy on national level. Strengthened innovation system

* Source of the data: S3 – Regional Viewer: <http://s3platform.jrc.ec.europa.eu/synergies-tool>

** Data collected by this Study project in Task 1.

2. Regional Bioeconomy Ecosystem

2.1 Origin of Interest of the region in the Bioeconomy

Latvia has no national bioeconomy strategy. However, currently the country is looking into developing such a strategy and the Government of Latvia has assigned the Ministry of Agriculture to develop the bioeconomy strategy document for Latvia until 30th June 2017.

The bioeconomy enablers and drivers in Latvia include first and foremost an abundance of biomass – in particular from forestry – coupled with a need to increase production efficiency and production of higher value added products. Latvia is also highly dependent on Russia's fossil resources, therefore taking into account the recent tension between EU and Russia, it is very important to gain more independence in the energy sector and to develop national energy production. Development of bio-based energy is one way ahead.

The smart specialisation strategy is providing certain attention to the development of the bioeconomy. Overall this strategy aims at a “Transformation of the economy towards higher added value, productivity and more effective usage of resources”. More specifically two out of five priorities within the smart specialization strategy target the bioeconomy, namely; “Knowledge intensive bio economy” and “Biomedicine, medical technologies, bio-pharmacy and biotechnologies”

However, neither biotechnology nor biomedicine is the field in which Latvia's industry or scientists have the greatest capabilities, competencies or resources. It is rather organic synthesis and pharmacology. The smart specialisation area are not selected based on evidence but rather on the general compromise between what fields of science are perceived to be promising and making at least some correlation with business needs.

Bioeconomy sectors are estimated to stand for 55 % of added value of goods produced in Latvia, where wood processing industry is one of the largest industrial sectors, and is an important contributor to the overall growth of the manufacturing industry. The sector accounts for over 20% of the total added value in the manufacturing industry but the most part of the exported production is currently with relatively lower added value products such as rough timber, sawn wood products etc.. The relatively higher value added products – plywood, particle boards, craft articles, etc. account for 34% of total wood exports. The proportion of these higher value added products is almost 10 percentage points higher than in 2005, but still significantly lags behind the EU-15 countries export structure, where higher value added production accounts for more than half of all export products.

The main challenge for the economy of Latvia as whole is the dominance of low and medium-low technology industries, and there is – through the smart specialisation strategy – an ambition to address these shortcoming within the bioeconomy sector. These shortcoming needs to mainly be addressed by the means of:

- Public intervention should focus on areas which have already proven their comparative advantage through the market self-selection process
- Resources needs to be concentrated in order to ensure transformation from low and low/medium technology industries to more advanced ones

Furthermore to unlock the full potential of Latvia's bioeconomy, a coherent approach is necessary to deal with complex and interdependent challenges, synergies and complementarities in policies, initiatives and sectors. More specific Latvia needs to:

- develop innovation – the capacity to generate, absorb and use technology and non-technology based knowledge to create new products, services, processes or organizational change that can add higher economic, social or environmental value
- develop cross-sectoral interdisciplinary research by joining and consolidating resources
- develop education at University and vocational education level
- develop appropriate advisory systems

In the case of Latvia, the most important sectoral clusters in bioeconomy are forest and wood processing cluster, agriculture and food cluster. These industries experience a markedly strong product relevance, and a relatively skilled workforce.

For public scientific institutions to become a driving force of innovations that provides the necessary infrastructure (testing laboratories, design offices, experimental workshops, pilot plants, etc.), innovation infrastructure needs to be built on the basis of collaboration of public and private sectors, such as public open access laboratories and experimental workshops and pilot plants.

2.2 Bioeconomy Stakeholders

The Ministry of Agriculture is the main ministry responsible for development of the bioeconomy in Latvia and in this capacity the Ministry act as secretariat to the Parliamentary Committees. Development of the bioeconomy encourages cooperation between the Ministry of Agriculture and other ministries: there is close collaboration with the Ministry of Environmental Protection and Regional Development on circular economy issues, and cooperation with the Ministry of Education and Science regarding the smart specialization strategy.

The research sector in Latvia is a strong proponent of the bioeconomy. Latvia University of Agriculture (LUA) together with a number of agriculture and food research institutes and forest sector research institutes established in September 2014 the “Latvia Bioeconomy Strategic Research Alliance”¹. This Alliance unites 400 doctors of science in a joint effort to enhance the competitiveness of Bioeconomy sectors through research and innovation.

Other prominent academic stakeholders are:

- Riga Technical University
- Latvian State Institute of Wood Chemistry
- Latvian State Forest Research Institute
- Institute of Food Safety, Animal Health and Environment

2.3 Bioeconomy – strategies, plans and projects

Even if there is no explicit strategy for bioeconomy, the challenges to realise the priorities in this area – raised in the smart specialisation strategy – are similar to generic strategies to transform the economy from dependency on production of raw material to more refined products and innovations. For sustainable development of the national economy of Latvia, it is necessary to promote structural changes of the economy in favour of production of goods and services with greater added value, including increasing the role of the industry, manufacturing and service modernisation and export development. The main emphasis to achieve this is on the support for economic transformation, providing science and technology driven growth and movement towards a knowledge-based capacity building. The smart specialisation strategy mention two explicit focus areas;

- Growth in sectors where there is or is likely to create products and services with high added value
- Branches with significant horizontal impact and contribution to economic transformation.

Currently, the productivity level of the national economy of Latvia is one of the lowest in the EU. A competitive advantage of the national economy of Latvia is cheap labour but in the free labour movement conditions it will not be possible to

¹ Members are: Latvia University of Agriculture, Research Institute of Agriculture, Research Institute of Agricultural Machinery, Latvian Plant Protection Research Centre, Institute of Food Safety Animal Health and Environment, Latvian State Forestry Research Institute, Latvia State Institute of Fruit-Growing, Pure Horticultural Research Centre, State Institute of Cereals Selective Breeding in Stende, Latvian State Institute of Agrarian Economics, State Priekuli Plant Breeding Institute, Agriculture Science Center of Latgale, Latvian State Institute of Wood Chemistry, Forest and Wood Products Research and Development Institute

maintain low labour costs continuously, hence the need to create incentives for new competitive advantages.

Participants of international funding programmes² show that most success stories related to R&I came about when Latvian R&I organisations were getting more specialised in the same, or complementary, area as their partners from more advanced economies. Due to foreign partners comparative advantage in the same field of science, they chose to outsource and allocate their resources to the most efficient use instead.

3. Bioeconomy Policy Support

3.1 General support framework

Until the national bioeconomy strategy is published (June 2017) the main document is the “Analytical Description of the Ecosystem of the Area of Smart Specialization Strategy; Knowledge Intensive Bioeconomy”.

From the national multi-funded Operational Programme "Growth and Employment" 10.58% of the total allocations (approximately 500 million euro) are envisaged to support R&I in Latvia, helping the country reach its national Europe 2020 target of 1.5 % of the GDP invested in R&I. In particular, the OP contribution is expected to increase Latvia's innovation potential by having the share of innovative SMEs increased to 40% (from 29.9% in 2010). In addition the following priorities may also fund projects relevant for the development of bioeconomy in Latvia; supporting the competitiveness and innovation of SMEs (7.11%) supporting the shift towards a low-carbon economy in all sectors (10.88%) environment, sustainable use of natural resources and adaptation to climate change (14.1%)

3.2 Bioeconomy Policy Support

In general, presence of specific national bioeconomy funding schemes is weak, which makes the development of the bioeconomy dependent on EU funds. Nevertheless there are some relevant national initiatives/programmes:

- ❖ Latvia have established in total eleven thematic sector boards, where scientists and entrepreneurs give recommendations to authorities. The goal is to increase added value in their sectors and to give recommendations for science, research and technology development and innovation projects. Four of these eleven boards are oriented towards Bioeconomy:

² Stairway to Excellence Country Report: Latvia

- agriculture and food production
 - forestry and wood production
 - biodiversity for creation of new technologies
 - pharmacy and biomedicine
- ❖ Bioeconomy related studies in the National Research Programme 2014–2017:
- Forest and Earth Entrails Resources: Research and Sustainable Utilization – New Products and Technologies (ResProd), Latvian State Institute of Wood Chemistry
 - Agricultural Resources for Sustainable Production of Qualitative and Healthy Foods in Latvia (AgroBioRes), Latvia University of Agriculture
 - Economic Transformation, Smart Growth, Governance and Legal Framework for Sustainable Development of the State and Society – a New Approach to the Creation of a Sustainable Learning Community (EKOSOC – LV), Latvian academy of Science
 - The value and dynamic of Latvia’s ecosystems under changing climate (EVIDEnT), Latvian Institute of Aquatic Ecology
- ❖ Support for start-ups with high growth potential where bioeconomy enterprises can apply for R&I support in early phases.

In order to develop the existing Latvian bioeconomy, general efforts in order to achieve transition to innovative economics is also necessary. In order to do so the innovation system needs to be improved by eliminating its weaknesses and promoting interaction among all subjects of the innovation system: business, science and education, as well as the financial and regulatory systems.

The main problems of the Latvian innovations system are the following:

- Existing business models are poorly oriented to innovation. At the moment, economic competitiveness is based on the exploitation of cheap labour and natural resources, the export structure mostly contains products of low or medium–low technology industries. The current low innovation capacity and knowledge absorption capacity in the business sector reduces the possibilities to achieve a rapid improvement of the situation.
- Poor collaboration between the business sector and science, as well as insufficient use of creative and intellectual capital in the creation of innovations, This significantly restricts adoption of new technologies and innovative solutions in the production.
- The current education system does not ensure consistency between labour demand and supply. In areas that are particularly important for the

development of Latvian bioeconomy – engineering and natural sciences – in a medium time horizon demand will exceed supply with 27 %, or 22 000 persons.

- Insufficient capacity of science and research, technology development and innovation. Latvia has too few employees in science, research, technology development and innovation, and insufficient renewal of staff involved in these areas.

Turning to the support from EU level; the European Commission’s “Action plan for the European Union Strategy for the Baltic Sea Region” is mention Bioeconomy as one of the main priorities, where marine energy, blue biotechnology and sustainable use of biomass are pivotal topics.

Furthermore the Interreg programme for the Baltic Sea has two priority Axes related to Bioeconomy:

- Efficient management of natural resources, targeting at the reduction of pollution of the waters in the Baltic Sea region and the strengthening of resource-efficient growth, in particular sustainable production and use of renewable energy, energy efficiency and resource-efficient blue growth. Total ERDF support to this priority is 84 million euro.
- Capacity for innovation, targeting actions to strengthening the ability of the Baltic Sea region to create and commercialise innovation. It aims at supporting a framework for the generation of innovations building on complementarity in a diverse region in such a way that new, smart combinations of competences and strengths can develop and reach its full potential. Total ERDF support to this priority is 84 million euro.

3.3 ESIF and H2020 resources for the Bioeconomy

ESIF funds (ERDF and EAFRD) are important for the development of the Latvian innovation system by supporting business incubators, higher education institutions and scientific institutes. Use of EU financial instrument in early stages have improved the possibility for projects to receive Horizon 2020 funding. The initiatives presented under section 4 are realised through EU funding.

The level of R&I expenditure based on GDP in Latvia (0.66%) is lower than the EU13 average (1.05%) and the EU15 countries (2.09%), and primarily concentrated in the academic sector. The largest group of FP7 beneficiaries were found among research organisations (42.6% in Latvia compared to 26.9 % in average). Private commercial beneficiaries only made up 10.9 % of the beneficiaries compared to 24.7% in average.

13 % (out of total of FP 7 funding of 48 million euro) were directed towards the bioeconomy relevant topics; food, agriculture and biotechnology. The national success rate in this area were higher than EU average.

Synergies between EU structural funds and FP were very few and limited according to the Stairway to excellence country report. The same report is even indicating that the EU structural funding have generated a distortion of R&I sector in Latvia. During the financial crisis, the budgets of the research organisations were cut significantly (by up to 30%), and EU funding was used for compensation of the budget cuts. In some cases, the funding was necessary to maintain research organisations' operations rather than develop new projects. For public research organisations EU funding made, and still makes up a significant part of the organisation's budget. While such an approach was reasonable and effective during the crisis, the consequences of it have created obstacles for the efficient use of EU funds. The extensive dependence of some organisations on the funds imposes limitations on the creation of a competitive funding distribution system. For those organisations losing funding for a project in any of the calls would mean that the organisation would not be able to continue its basic operations. Based on this background, when it comes to the R&I policy in general, and the smart specialisation strategy in particular, more attention should be paid to the creation of new and permanent R&I jobs and changes to the structure of the industry rather than focusing on R&I spending itself. Short term rent seeking in order only to maintain basic operations by use of EU funding must also be managed.

4. Successful Initiatives and Good Practices

4.1 Competence Centres (food and forest sector)

The Stairway to Excellence project as well as the process of RIS3 development, recognised the Competence Centre programme as an example of best practice in order to diffuse research results among private business; which is necessary to develop a more innovation driven economy. There exists two Competence Centres which are highly related to bioeconomy; "Food Competence Centre" and "Forest sector Competence Centre".

In general, a Competence Centre is a commercial entity founded by enterprises and research organisations which acts as an R&I project manager, coordinator and financing instrument exercising a high degree of autonomy in project selection. It only finances the R&I activities of enterprises and research institutions having potential commercial value. A Competence Centre usually only provides co-financing and, in turn, requests co-financing from enterprise(s) sponsoring the project. Government involvement in controls of the daily operation of the

Competence Centre is limited, mostly focusing on procurement procedures and controlling whether the Competence Centre is financing only R&I spending. The decisions of the institution are made by its council which mostly consists of business and science representatives. The Competence Centre are increasing interaction between business and public research organisations. Especially the following benefit are visible;

- Fast, business-like decision-making process: The business recognised that it is the first programme designed truly to support innovation. It is mostly emphasised that the primary reason for the positive outcome was based on the process and possibility of replacing unsuccessful projects quickly and inexpensively.
- Providing the possibility to understand the capacity of research organisations.
- Enabling more efficient and faster communication between the business and science communities, possible by means of money.
- Because the number of R&I jobs in business is limited, Competence Centres have adequate finances available to encourage companies to plan R&I activities relatively long term while creating new permanent R&I jobs.

4.2 Support of industry Clusters and Support for Export Activities of Companies

Programmes with similar “soft” effects are “Support of Industry Clusters” and “Support for Export Activities of Companies”. The Industry Cluster support programme offers a funding of over €400.000 per cluster in order to facilitate cooperation between business entities, research, education and other organisations. The programme aims at boosting international competitiveness and innovation through covering costs of activities like cluster marketing and market research, human resource training within the industry, promotion of cluster international cooperation, promoting collaboration with the science community etc.. The programme “Supporting for Export Activities” is under the responsibility of the Ministry of Economics and is coordinated by the Latvian Investment and Development Agency (LIAA). The programme promotes the export facilitating activities, brought forward by individual merchants and associations of them, public authorities, municipalities and others. The aid is intended for encouraging activities like participation in international exhibitions, international conferences, trade missions, contact exchanges, potential trade partner visits.

5. Needs, Gaps and Bottlenecks to Deploy the Bioeconomy

First of all there is a lack of common understanding and common definition of what bioeconomy is which makes the cooperation between the main stakeholders difficult. The relevant policy fields, such as agriculture, energy, research and education etc. needs to coordinate; at the moment there are sometimes conflicting policies from the different policy fields. A national targets related to bioeconomy needs to be defined.

The Latvian innovations system needs to be improved, more specifically;

- Latvian researchers had a relatively low participation rate in FP7 and Horizon 2020, therefore it is important to stress on the actions that can be taken to increase the activity of the R&I actors with respect to Horizon 2020. One action is to raise the awareness about the programme, especially within the business sector. This can be achieved through more active operations of the National Contact Points which also have to orient their activities more towards the business sector and not only the academia.
- Concerning development of bioeconomy the shortage of people with secondary or higher degree in engineering and science is a problem.
- Current science and research capacity is weak. This is evidenced by a small number of persons employed in science, underdeveloped science and research infrastructure, lack of well-equipped laboratories for implementation of technology-oriented projects, as well as a weak commercialisation potential of research results and weak cooperation between the scientific and economic sectors.
- There is national legislation which requires researchers to cover all the costs associated with the intellectual property even before the commercial value of the product is proven. Potential losses in the market for individual researchers are significant if the product turns out to be financially unfeasible or unsuccessful. Thus, it reduces the number of researchers pursuing the commercialisation of their research. This issue could potentially be addressed by allowing the transfer of intellectual property rights from the research institution to the researcher at the initial stage of the commercialisation process

6. Information Sources

Literature and Documents:

Action plan for the European Union Strategy for the Baltic Sea Region, European Commission, 2015

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Smart Specialisation Assessment in Latvia, Pelse, Lescevic 2016

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The BIOECONOMY– strategy for rural and regional development in Latvia (perspectives of Latvian presidency) Irina Pilvere, Latvia University of Agriculture, Rector, Head of the Latvian Bioeconomy Strategic Research Alliance

Relevant websites:

<http://www.vbbkc.lv/?par-mums>

<http://www.zm.gov.lv/>

http://en.latbiotech.lv/index.php?option=com_content&view=article&id=120&catid=43&Itemid=132

<http://www.llu.lv/en/science-innovations>

<http://www.izm.gov.lv/en/Science/smart-specialisation-strategy>

https://em.gov.lv/en/sectoral_policy/innovation/

<http://innovation.lv/en/>

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