

## ***Action Plan for Development of a Knowledge-Driven Bioeconomy Innovation Ecosystem in Vidzeme Region in Latvia***

### ***Introduction***

The Action Plan (further in the document called - AP) aims *to create, develop and strengthen the bioeconomy innovation eco-system in the Vidzeme region. The purpose is to establish preconditions for knowledge-driven bioeconomy innovation and to provide support to those who innovate.*

A knowledge-driven bioeconomy is one in which the generation and use of knowledge will come to play a major part in the creation of growth of the economy of the region, and the wealth of its society today and in the future. In a knowledge-driven bioeconomy production and services are based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence. There is a greater reliance on intellectual capabilities than on physical inputs or natural resources.

The AP is elaborated within the project “Rural RDI milieus in transition towards smart Bioeconomy Clusters and Innovation Ecosystems”, funded by the Interreg Baltic Sea region Programme (further in the document called – RDI2CluB). Two of Latvia’s partners: Vidzeme Planning Region and the Institute of Environmental Solutions coordinated elaboration of the AP. Authorities working with the implementation of Latvia’s smart specialisation strategy, universities, RDI institutes, business development bodies, clusters, SMEs in bioeconomy business and others were involved and consulted in the AP elaboration process. The opinion of civil society was considered in the planning process.

The AP includes measures and actions, structured in two groups:

- 1) *internal (regional and/or national)* measures and actions (to be implemented by one or several actors at a regional or national level);
- 2) *transnational* measures and actions (to be implemented by involving partners from two or more other regions, especially from the RDI2CluB partnership).

The AP implementation starts in 2019. Three periods for implementation of the actions are foreseen:

- *Short term actions – for 3 years* (immediate actions to be implemented in the time period 2019-2021, inter alia those to be implemented within the RDI2CluB project);
- *Medium term actions – for 3-5 years* (to be implemented in the nearest future, the indicative year of start – 2022);
- *Long term impact actions*, (foreseen to start from 2024, however, earlier initiatives will be promoted).

The Action Plan contains *the following sections*:

1. SWOT analysis;
2. Objectives defined considering the SWOT results, the region’s bioeconomy potential and relevant policies and priorities of Latvia, the Baltic Sea Region (BSR) and European Union (EU);
3. Actions necessary to achieve each objective;
4. Measures foreseen for monitoring, revision and updating of the AP.

Explanation of abbreviations and terms used is provided behind the table of contents in order to ease reading of the document.

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## Explanation of Abbreviations and Terms Used

<i>Abiotic resources</i>	Resources available in the nature, but not derived from living organisms, for example, soil
<i>AP</i>	The Action Plan developed within the RDI2CluB project by Vidzeme Planning Region and the Institute of Environmental Solutions
<i>Biorefinery</i>	Using biomass instead of oil for producing energy and chemicals
<i>Bio-resources</i>	Non-fossil biogenic resources which can be used by humans for multiple purposes: to produce food, substantial products, and/or energy carriers
<i>Biotic resources</i>	Resources related to or resulting from living organisms, for example plants, animals
<i>B2B</i>	Business-to-business
<i>BSR</i>	Baltic Sea Region
<i>CAP</i>	European Union Common agricultural policy
<i>Circular bioeconomy</i>	Economy where use of wastes, co-products and residue sources resonates well with circular economy principles of making the most efficient use of natural resources, with transition from virgin to secondary materials in production
<i>Counterproductive</i>	Having the opposite of the desired effect
<i>CSB</i>	Central Statistical Bureau of Latvia
<i>Ecosystem</i>	Network of public and private organisations involved in bioeconomy directly or indirectly, resources they held and use for promotion, development of bioeconomy, mechanisms and tools used for development and for cooperation
<i>EU</i>	European Union
<i>EUSBSR</i>	The European Union Strategy for the Baltic Sea Region
<i>Farm</i>	Farm or an agricultural holding, or holding is a single unit, both technically and economically operating under single management and which undertakes agricultural activities within the economic territory of the European Union, either as its primary or secondary activity. Non-agricultural products and services may also be provided by the holding <a href="https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Agricultural_holding">https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Agricultural_holding</a>
<i>HEI</i>	Higher education institution
<i>Institutional memory</i>	The collective knowledge and learnt experiences of a group. As turnover occurs among group members, these concepts must be transitioned. Knowledge management tools aim to capture and preserve these memories
<i>KETs</i>	Key enabling technologies, as defined in the EU Industrial policy <a href="https://ec.europa.eu/growth/industry/policy/key-enabling-technologies/description_en">https://ec.europa.eu/growth/industry/policy/key-enabling-technologies/description_en</a>
<i>Knowledge driven</i>	Knowledge-driven bioeconomy is one in which the generation and use of knowledge will come to play a major part in the creation of growth of the economy of the region, and wealth of its society today and in the future
<i>LLU</i>	Latvia University of Life Sciences and Technologies
<i>Maturity</i>	The state, fact, or period of being mature
<i>NGO</i>	Non-governmental organisation
<i>PrA</i>	Priority area
<i>PhD</i>	Postgraduate doctoral degree
<i>R&amp;D</i>	Research and development (abbreviation used in EUSBSR)
<i>RDI</i>	Research, development and innovation
<i>RDI2CluB</i>	The project “Rural RDI milieus in transition towards smart Bioeconomy Clusters and Innovation Ecosystems”, funded by Interreg Baltic Sea region Programme
<i>RIS3</i>	Smart specialisation strategy of Latvia
<i>RTD</i>	Research and technological development
<i>SMEs</i>	Small and medium enterprises according to the definition stated in the European Union recommendation No. 2003/361
<i>SWOT</i>	Strengths, weaknesses, opportunities and threats

## 1. Overview of Vidzeme Region's Bioeconomy Potential

The bioeconomy comprises those parts of the economy that use renewable biological resources from land and water – such as crops, forests, fish, animals and microorganisms – to produce food, materials and energy, and to provide services<sup>1</sup>.

Vidzeme region has an abundance of renewable biological resources. Key resources and their potential use are defined as the priority development areas of the Vidzeme Region Sustainable Development strategy<sup>2</sup>. They are:

1. *High value-added wood products.*
2. *Production of healthy food and drinks.*
3. *Biomass for the chemical conversion and production of energy.*

*Other specialisations are ICT and services, specifically recreation & sustainable tourism.*

In order to develop a knowledge driven bioeconomy, special attention in the Vidzeme region will be paid towards the development and exploitation of Key Enabling Technologies (KETs) in all fields of the economy defined as promising and having potential. KETs are a group of technologies: micro and nanoelectronics, nanotechnology, industrial biotechnology, advanced materials, photonics, and advanced manufacturing technologies, having huge potential to be applied in multiple industries thus fuelling economic growth and to provide jobs in regions, thus helping to tackle societal challenges and promoting regional development.

In order to reach full bioeconomy potential, the key components and elements of the current bioeconomy innovation ecosystem were identified and analysed. The group of experts, involved in the elaboration of the AP for the Vidzeme region, has defined *three key components, forming the bioeconomy eco-system - a complex network of interconnected systems*. They are the following:

1. **Natural resources**, including biotic resources (relating to or resulting from living organisms, for example plants, animals), and abiotic resources (not derived from living organisms, for example, soil).
2. **Systems** such as the legal basis, structure and processes, networks and supporting measures.
3. **Stakeholders**: enterprises, researchers, organisations of enterprises, support organisations, such as innovation centres, business incubators and other, national authorities planning and adopting national policies and their implementation mechanisms, regional and public authorities, who create and ensure preconditions for business and increase of living conditions, as well civil society.

Each of the above-listed three components in the Vidzeme region and Latvia currently consists of separate, faintly connected elements. They are insufficiently promoted at the national level, even in the situation of the adopted Latvia's Bioeconomy strategy (in 2017).

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<sup>1</sup> Innovating for Sustainable Growth, <https://ec.europa.eu/research/bioeconomy/index.cfm>

<sup>2</sup> [http://www.vidzeme.lv/lv/reģiona\\_attistibas\\_planosanas\\_dokumenti](http://www.vidzeme.lv/lv/reģiona_attistibas_planosanas_dokumenti)

## 2. SWOT Analysis

The SWOT analysis helped to identify opportunities and threats for the development of a knowledge-driven bioeconomy innovation ecosystem in the Vidzeme region. Separate analysis was performed for each of the three components of the bioeconomy innovation ecosystem: 1) *natural resources*, 2) *systems*, and 3) *stakeholders*. Some of the findings refer to more than only one component and are appropriately described.

### 2.1. Natural Resources

The component includes two main elements:

- a) *biotic resources* (relating to or resulting from living organisms, for example plants, animals),
- b) *abiotic resources* (not deriving from living organisms, for example, soil, water, minerals).

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>▪ Existing biotic and abiotic resources (land, forest and water based) are relatively easily accessible</li> <li>▪ Reasonable volume of agricultural and forestry resources per capita</li> <li>▪ Existing land-based and forest-based resources can ensure the relatively high and persistent quality of raw material (for example, soil quality in combination with a favourable climate is a precondition for growing high-quality crops, concentration of active compounds in plants, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Limited detailed information and data on bio-resources - types and volumes, economic value and exploitation trends</li> <li>▪ Existing bio-resources used mainly for low added-value goods production; satisfactory current profitability of bio-resources based businesses does not require qualitative change</li> <li>▪ Insufficient investments into the smart increase of biotic resources as the country's and region's capital</li> <li>▪ Insufficiently used bio-resources potential for the development of nature-based services</li> <li>▪ Low knowledge and comprehension of public authorities and business on the negative impact of investments looking from a cross sectoral perspective (principle of connectivity, negative externalities, downstream costs)</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>▪ Smart use and application of bio-resources to produce high quality and safe products and services, while observing sustainable production principles and waste utilisation</li> <li>▪ Use of bio-resources for the development of a social and economic environment responding to sustainability principles and facilitating modern customers' demand (nature as an environment for favourable living + high quality work conditions and services)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing national-level funding mechanisms for entrepreneurship development are aimed mostly at promoting intensive economy (criteria applied: production volumes, export volumes, fast increase of profit, etc.), not for smart economy development (criteria applied: reuse, zero waste production cycle, etc.)</li> <li>▪ Globalisation and climate change are causing new challenges (for example, new plant and animal diseases, new pests and need for their control technologies, need for new crop varieties, etc.)</li> </ul>

### 2.2. Bioeconomy System

The Bioeconomy system is viewed in the AP as a broad set of structures and processes, having a role, function and impact on the development of the bioeconomy innovation eco-system. They are: a) legislation, b) national and regional policies, strategies, and their implementation plans, c) services provided by public and private institutions, developed and provided with the aim of supporting innovation and bioeconomy development, d) formal and informal networks involving different types of stakeholders, e) available financial instruments and financial resources, f) infrastructure (hardware, software), g) tools ensuring the gathering and accumulation of data and information.

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>▪ “Vidzeme Sustainable Development strategy 2030”, where the region’s smart specialisation areas are defined, justifies the selected direction</li> <li>▪ Latvian High Added Value and Healthy Food cluster can serve as the basis for the bioeconomy knowledge pool in the Vidzeme region</li> <li>▪ Well-developed and continuously improving research hardware in Latvia’s research institutes and universities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing innovation support structures and measures lack maturity, performance is fragmented, they are addressing bioeconomy in a limited scope and extent</li> <li>▪ Several national level innovation support measures are counterproductive</li> <li>▪ A lack of investments for the implementation of the Vidzeme Sustainable Development strategy</li> <li>▪ A lack of knowledge, skills and information at the companies’ level to innovate and to produce high added value products from available biomass, and to use biomass for biorefinery</li> <li>▪ Insufficient knowledge, skills at the companies’ level to find markets for the biomass-based products and services and to define and demonstrate their competitive advantages</li> <li>▪ Knowledge developed at public RDI institutions is not advertised among industries at a sufficient level</li> <li>▪ Professional and higher education content does not respond to the bioeconomy development trends and needs</li> <li>▪ Low level of collaboration among bioeconomy stakeholders</li> <li>▪ Sporadic collaboration between research bodies and companies</li> <li>▪ A lack of value-chain based membership in existing bioeconomy related clusters</li> <li>▪ Limited production means the more efficient use of bio-resources (outdated production facilities and technologies)</li> <li>▪ Absence of infrastructure (technical facilities) for piloting bioeconomy products and services</li> <li>▪ Weakly explored and coordinated exploration of the existing RTD infrastructures</li> <li>▪ Limited and hardly available data on bio-resources and their economic value</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>▪ Change of EU paradigm towards a smart and sustainable, not intensive economy</li> <li>▪ Adoption of Latvia’s RIS3 strategy in 2014 justifies the selected direction</li> <li>▪ Adoption of Latvia’s Bioeconomy strategy in 2017 justifies the selected direction</li> <li>▪ Availability of RTD and piloting hardware outside Latvia</li> <li>▪ Possibility to engage foreign RDI and innovation experts to support regional stakeholders (researchers and innovators) in RDI activities and to increase their capacity</li> <li>▪ Public demand and the government aim for Latvia’s economic development have created favourable preconditions for bioeconomy “buy-in” at the highest political level</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unpredictability and changeability of national policies, for example, Regional development policy, Common agricultural policy</li> <li>▪ The National bioeconomy strategy does not explore clusters as a driving force for its implementation</li> <li>▪ Insufficient investments for the implementation of Latvia’s RIS3 strategy and Latvia’s Bioeconomy strategy, weak political intentions to ensure the availability of resources</li> <li>▪ Relatively low attractiveness of the Vidzeme region in the view of potential investors</li> <li>▪ A lack of national level support tools, aimed at promoting the bioeconomy and especially innovative bioeconomy (for example, bio-based products and services are insufficiently considered in the already adopted and applied green procurement legislation and regulations, etc.)</li> <li>▪ Existing national level funding mechanisms are aimed at promoting the development of intensive (aimed at increasing the production volumes, export volumes, profit, etc.), not for smart economy development (biorefinery, reuse, zero waste production cycle, etc.)</li> <li>▪ A lack of funding instruments encouraging companies to start the production of high added value products from bio-resources</li> <li>▪ Methodology for the accumulation of statistics does not provide a full set of information for analyses and forecasts of the bioeconomy</li> </ul>

### 2.3. Bioeconomy Stakeholders

Bioeconomy stakeholders are:

- a) enterprises, especially SMEs, already engaged or having intentions of being engaged in any of the bioeconomy areas;
- b) research, technological development and innovation institutions (RDIs);
- c) higher education institutions (HEIs);
- d) vocational and lifelong learning education institutions;
- e) clusters, other organisations of enterprises (for example, associations, chambers);
- f) organisations supporting and encouraging business, innovation, technological development, such as innovation centres, business incubators and other;
- g) national authorities: ministries, responsible for the development and adoption of national policies and their implementation, other public bodies, implementation tools for managing these policies;
- h) regional and local public authorities, who create and ensure preconditions for business and life, and support economic development in the area.

And civil society organisations as a voice of the public and its various groups.

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>▪ Constantly increasing economic activity in the region (characterised as an increase in number of economically active enterprises and improvement of the regions' economic performance)</li> <li>▪ High specific weight of companies engaged in industries exploring bio-resources</li> <li>▪ Short geographical distances between bioeconomy stakeholders in the region that make it comparatively easy to cooperate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Insufficient availability of human resources, holding productive knowledge</li> <li>▪ Insignificant number of innovative and knowledge intensive companies, having the capacity to develop clusters and to become key drivers of the bioeconomy</li> <li>▪ High specific weight of small-size low-target companies without innovation capacity and the capability to enter foreign markets</li> <li>▪ Low RTD acceptance level at companies</li> <li>▪ Weak power of impact of companies producing bio-resources based goods and services</li> <li>▪ Low level of collaboration among bioeconomy stakeholders</li> <li>▪ Lack of value-chain based membership in existing bioeconomy related clusters</li> <li>▪ Sporadic, short-term collaboration between research bodies and companies, difficulties agreeing on common objectives and benefits</li> <li>▪ Low awareness level of the public and stakeholders on the value of bio-resources</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>▪ Significant number and critical mass of national and regional stakeholders interested in bioeconomy development</li> <li>▪ RDI human capital in the Vidzeme region: Institute of Agricultural Resources and Economics, Institute of Environmental Solutions, Vidzeme University of Applied Sciences, Cesis branch of Riga Technical University, and other</li> <li>▪ Increase of specific weight of consumers observing sustainability principles on a daily basis</li> <li>▪ Increase of consumer demand for products and services proving quality and safety, and observing sustainability principles throughout</li> </ul>	<ul style="list-style-type: none"> <li>▪ Temporality of innovation support bodies (viability depends on the availability of EU funds and political priorities)</li> <li>▪ Existing innovation support measures lack maturity and are fragmented, they involve the bioeconomy to a limited scope and extent</li> <li>▪ Frequent change of human resources at the public institutions and lack of institutional memory are often causing "re-invention of bicycle" instead of continuing the development of support system and tools</li> <li>▪ The financial sector does not invest in bioeconomy areas with long-term capital return and measures where the result depends on various external factors (for example, weather conditions)</li> </ul>

<p>the whole lifecycle (production, delivery, utilisation)</p> <ul style="list-style-type: none"> <li>▪ Interest of existing companies to develop and grow faster</li> <li>▪ Increase of awareness on new business models, aiming to develop products for sale (not for production)</li> <li>▪ Increase of demand for sustainability (Scandinavia – Valmiermuiza case)</li> <li>▪ Readiness of RTD institutions to respond to business companies’ need for innovation</li> <li>▪ Several support measures provide SMEs with an opportunity to attract human resources – knowledge holders and innovators for RDI activities (for example, PhD students having ideas and developing new products and services)</li> <li>▪ Existing support measures provide an opportunity to create spin-offs (enterprise + researcher)</li> </ul>	
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### 3. Summary of Objectives and Actions

According to the SWOT, there are various factors affecting bioeconomy development either positively or negatively, and there was a risk of creating “a broad wish list”, if each SWOT aspect is to be addressed. The experts agreed, that in order to keep the focus on the “knowledge-driven bioeconomy innovation ecosystem”, it is required to increase the critical mass of all types of stakeholders being aware of the bioeconomy, to encourage and stimulate knowledge holders and creators, to encourage and promote the application and exchange of this knowledge, as well to create favourable preconditions for innovation. Special attention must be paid to the involvement and encouragement of youth and innovators in local communities in rural areas. Six objectives and fourteen actions, striving to satisfy these intentions, are summarised below. In chapter No. 4 more detailed information is provided about the objectives and the actions.

**Objective No. 1. To raise *awareness* of bioeconomy stakeholders on the bioeconomy and smart and sustainable exploitation of bio-resources.**

A1.1. To raise awareness, recognition and enhance knowledge of bio-resources owners, managers and RTD institutions on bio-resources value, potential, effective and sustainable exploitation.

A1.2. To raise awareness and comprehension of the society on the bioeconomy and role and tasks of individuals and communities in the preservation, sustainable and economically efficient exploitation of bio-resources.

A1.3. To identify potential bioeconomy multipliers, spreading bioeconomy and sustainability ideas and concepts in society.

**Objective No. 2. To promote the *development, availability and exchange of knowledge* necessary for businesses to produce bio-resources based products and services.**

A2.1. To promote targeted collaboration among innovative SMEs and farms, processing bio-resources into innovative, high added value products and services, and RTD institutions; especially among farms, small-

scale family-based producers and SMEs, whose resources and competences are complementary and necessary for innovative business initiatives.

A2.2. To develop a bioeconomy hub, gathering, holding, regularly updating and disseminating information and knowledge necessary for the development of bioeconomy industries.

A2.3. To develop and provide support services to bioeconomy enterprises, especially to SMEs and farms.

**Objective No. 3. To develop a bioeconomy cluster.**

A3.1. To transform the Latvian High Added Value and Healthy Food Cluster into the Latvian Food-Based Bioeconomy Cluster, and to promote and encourage its activities.

**Objective No. 4. To ensure the availability of actual, evidence-based bioeconomy data and information and its dissemination to bioeconomy stakeholders.**

A4.1. To initiate the improvement of bioeconomy statistics methodology in order to enable regional and national stakeholders with data necessary to measure the current situation and forecast progress.

A4.2. To carry out a detailed study and mapping on the Vidzeme region bioeconomy resources and their potential.

A4.3. To disseminate study and mapping results and identified bioeconomy development trends to interested stakeholders and potential investors.

**Objective No. 5. To promote the improvement of policies and strategies, related to the bioeconomy, and their implementation tools.**

A5.1. To promote the improvement of national level bioeconomy policies and strategies, their relevance to global trends and needs of bioeconomy related industries.

A5.2. To facilitate the improvement of existing and development of new bioeconomy support tools and measures.

**Objective No. 6. To increase attractiveness of the Vidzeme region as a desirable location for innovation in the bioeconomy and for investment in the bioeconomy.**

A6.1. To create and disseminate economically justified tools proving the Vidzeme region's attractiveness to potential investors.

A6.2. To increase the visibility of the Vidzeme region bioeconomy innovation eco-system and its advantages to bio-resources owners and managers.

#### 4. Detailed Description of Objectives and Actions

This AP section includes a description of the six defined objectives and their connection to the regional and national policies and strategies, description of actions planned for achievement of each objective, for each action, a list of potential partners, results to be achieved, indicators to be used for measuring achievements and identified relevant funding programmes.

<b>Objective No. 1</b>	<b>To raise <i>awareness</i> of bioeconomy stakeholders on the bioeconomy and smart and the sustainable exploitation of bio-resources</b>
<i>Regional policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>· Vidzeme Region Sustainable Development strategy 2030</li> <li>· Vidzeme Development Programme 2015-2020</li> </ul>
<i>National policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>· The Smart Specialisation Strategy (RIS3) of Latvia</li> <li>· Latvian Bioeconomy strategy 2030</li> <li>· Sustainable Development Strategy of Latvia until 2030</li> <li>· National Development Plan of Latvia for 2014–2020</li> </ul>
<i>Sub-objectives of EUBSR Strategy policy area “Bio-economics” addressed</i> <a href="https://www.balticsea-region-strategy.eu/action-plan">https://www.balticsea-region-strategy.eu/action-plan</a>	<ul style="list-style-type: none"> <li>· Involvement of the business community, increase knowledge on sustainable forest management</li> <li>· Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with the bioeconomy</li> </ul>
<i>EUBSR sustainability principles addressed</i>	<ul style="list-style-type: none"> <li>· Sustainable bio-resource management and circular bioeconomy</li> <li>· Healthy, nutritious locally produced food and food security</li> <li>· Resilient and diverse ecosystems (climate proofing, biodiversity...)</li> <li>· Inclusive rural economic development</li> <li>· Sustainable consumption</li> </ul>

<b>Action No. 1.1</b>	<p><b>To raise awareness, recognition and enhance knowledge of bio-resources owners, managers and RTD institutions on bio-resources value, potential, effective and sustainable exploitation.</b></p> <p>Foreseen activities:</p> <ul style="list-style-type: none"> <li>· To organise and provide bioeconomy-related seminars, workshops, innovation days, hackathons etc. aiming to raise awareness and recognition on a) bio-resources economic value, b) trends of their application in the BSR region, EU and world-wide for the development of high quality, high added value bioeconomy products and services, c) impact of investments while looking at the cross sectoral perspective and other issues, d) globalisation and climate change as opportunities for the development of new products and services</li> <li>· To gather bioeconomy success stories and disseminate them to bio-resources owners, managers and researchers, thus raising their awareness about bioeconomy potential and inspiring them for RTD initiatives and innovation</li> <li>· To develop the bioeconomy awareness and recognition raising catalogue, demonstrating the added value and benefits of a value-chain based approach applied by stakeholders in the BSR region, and to disseminate the catalogue to bio-resources owners, managers and other stakeholders</li> </ul>
<i>Implementation period</i>	<b>Short / medium / long term actions</b>
<i>Results to be achieved</i>	<ul style="list-style-type: none"> <li>· Increased awareness, recognition of the bioeconomy among bio-resources owners, managers and RTD institutions</li> <li>· Increased knowledge of bio resources owners, managers and RTD institutions about bio-resources value, potential, application, and effective and sustainable exploitation</li> </ul>

<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>· Increase of the number and specific weight of bio-resources owners, managers and RTD institutions being aware of the bioeconomy, potential of bio resources and their possible application for the development of new products and services</li> <li>· Increase of the number and specific weight of knowledge-driven business initiatives</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>· Statistics data on new businesses, SMEs performance, RTD investments in SMEs and other (source: CSB)</li> <li>· Data on knowledge-driven business initiatives (source: business support and innovation support structures)</li> <li>· Opinion surveys</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>· Farms and SMEs, especially in rural areas</li> <li>· RTD performers: universities, research institutes, technology and/or innovation bodies</li> <li>· Regional and local public authorities</li> <li>· Business and innovation development promotion and supporting bodies</li> <li>· Policy making and legislative stakeholders</li> <li>· Other (society in general, especially the youth)</li> </ul>
<i>Potential partners/partnerships</i>	<p><i>RDI2CluB project partners:</i></p> <p>Regional Council of Central Finland (Finland)  JAMK University of Applied Sciences (Finland)  SSYP Kehitys Oy Ltd. (Finland)  Hedmark County Council (Norway)  Inland Norway University of Applied Sciences (Norway)  Tretorget AS (Norway)  Świętokrzyskie Voivodeship (Poland)  Foundation for Education and Social Dialogue Pro Civis (Poland)  Stockholm Environment Institute Tallinn Centre (Estonia)</p>
<i>Potential funding instruments and mechanisms to be used for implementation</i>	<p>Interreg Programmes (e.g. Baltic Sea Region, Central Baltic, Latvia-Estonia)  Funding programmes of the Nordic Council of Ministers</p>
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	<p>PrA No. 1 Agriculture, forestry and fisheries  PrA No. 2 Food and feed production  PrA No. 3 Bio-based construction and building materials  PrA No. 7 Bio-based energy, incl. transport  PrA No. 8 R&amp;D services in biomass  PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)</p>
<i>Cross sectoral priorities addressed</i>	<p>Communication, education, sustainable development</p>

<b>Action No. 1.2</b>	<p><b><i>To raise awareness and comprehension of the society on the bioeconomy and role and tasks of individuals and communities in the preservation, sustainable and economically efficient exploitation of bio-resources.</i></b></p> <p>Foreseen activities:</p> <ul style="list-style-type: none"> <li>· To encourage local, regional and national public authorities to include the bioeconomy in their development strategies, plans and agendas</li> <li>· To address educational institutions (at all levels) to include the bioeconomy and sustainability messages in educational content</li> <li>· To raise awareness and interest of the society on the bioeconomy and to promote it among society, especially the youth, by using all types of media</li> </ul>
<i>Implementation period</i>	<b>Short / medium / long term actions</b>
<i>Results to be achieved</i>	Increased awareness and comprehension of the society, especially the youth, on the bioeconomy and role and tasks of individuals and communities on the preservation, sustainable and economically efficient exploitation of bio-resources

<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>· Increase in the number and specific weight of society understanding the bioeconomy and being aware of the preservation, sustainable and economically efficient exploitation of bio-resources</li> <li>· Number of educational institutions addressed to include the bioeconomy into educational content</li> <li>· Increase of the number of local and regional strategies, plans, where bioeconomy concepts and appropriate initiatives are integrated</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>· Data from opinion surveys of society awareness</li> <li>· Overview of educational institutions, which have included the bioeconomy into educational content</li> <li>· Overview of local and regional strategies, plans, where bioeconomy concepts and appropriate initiatives are integrated</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>· Universities</li> <li>· Regional and local public authorities</li> <li>· Other: colleges, general and vocational education institutions</li> </ul>
<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Financial sources of regional and local public authorities
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	<p>PrA No. 1 Agriculture, forestry and fisheries</p> <p>PrA No. 2 Food and feed production</p> <p>PrA No. 3 Bio-based construction and building materials</p> <p>PrA No. 7 Bio-based energy, incl. transport</p> <p>PrA No. 8 R&amp;D services in biomass</p> <p>PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)</p>
<i>Cross sectoral priorities addressed</i>	Communication, education, sustainable development.

<b>Action No. 1.3</b>	<b><i>To identify potential bioeconomy multipliers, spreading bioeconomy and sustainability ideas and concepts in society.</i></b>
<i>Implementation period</i>	<b>Medium term actions</b>
<i>Results to be achieved</i>	Increased awareness and comprehension of the society, especially the youth, on bioeconomy and sustainability ideas and concepts
<i>Indicators for measuring achievements</i>	Number of bioeconomy multipliers involved
<i>Mechanisms, tools to be used for measuring achievements</i>	Data from opinion surveys of society awareness
<i>Stakeholders to be involved</i>	Other (society, especially the youth)
<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	<p>Interreg Programmes (e.g. Baltic Sea Region, Central Baltic, Latvia-Estonia)</p> <p>Funding programmes of the Nordic Council of Ministers</p> <p>Financial sources of regional and local public authorities</p>
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	<p>PrA No. 1 Agriculture, forestry and fisheries</p> <p>PrA No. 2 Food and feed production</p> <p>PrA No. 3 Bio-based construction and building materials</p> <p>PrA No. 7 Bio-based energy, incl. transport</p> <p>PrA No. 8 R&amp;D services in biomass</p> <p>PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)</p>
<i>Cross sectoral priorities addressed</i>	Communication, sustainable development.

<b>Objective No. 2</b>	<b>To promote the <i>development, availability and exchange of knowledge necessary for businesses to produce bio-resources based products and services</i></b>
<i>Regional policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• Vidzeme Region Sustainable Development strategy 2030</li> <li>• Vidzeme Development Programme 2015-2020</li> </ul>
<i>National policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• The Smart Specialisation Strategy (RIS3) of Latvia</li> <li>• Latvian Bioeconomy strategy 2030</li> <li>• Sustainable Development Strategy of Latvia until 2030</li> <li>• National Development Plan of Latvia for 2014–2020</li> <li>• Latvia’s Guidelines on National Industrial Policy 2014 -2020</li> </ul>
<i>Sub-objectives of EUSBSR Strategy policy area “Bio-economics” addressed</i> <a href="https://www.balticsea-region-strategy.eu/action-plan">https://www.balticsea-region-strategy.eu/action-plan</a>	<ul style="list-style-type: none"> <li>• Improved recycling of nutrients in agriculture.</li> <li>• Added value through cooperation within Baltic fisheries and aquaculture</li> <li>• Synergies from cooperation between the Rural Development Programmes</li> <li>• Involvement of the business community, increase knowledge on sustainable forest management</li> <li>• Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with the bioeconomy</li> </ul>
<i>EUSBSR sustainability principles addressed</i>	<ol style="list-style-type: none"> <li>1. Sustainable bio-resource management and circular bioeconomy</li> <li>2. Healthy, nutritious locally produced food and food security</li> <li>3. Resilient and diverse ecosystems (climate proofing, biodiversity...)</li> <li>4. Inclusive rural economic development</li> </ol>

<b>Action No. 2.1</b>	<p><b>To promote targeted collaboration among innovative SMEs and farms, processing bio-resources into innovative, high added value products and services, and RTD institutions; especially among farms, small-scale family-based producers and SMEs, whose resources and competences are complementary and necessary for innovative business initiatives.</b></p> <p>Foreseen activities:</p> <ul style="list-style-type: none"> <li>• To organise targeted events (B2B events, workshops, hackathons, innovation days, master classes, etc.) for bringing together entrepreneurs, especially farms, small-scale family-based producers and national and foreign researchers</li> <li>• To increase the capacity and efficiency of existing innovation support bodies acting as business and innovation promoters, coaches, mediators etc.</li> <li>• To strengthen clusters and associations, bringing together and empowering bioeconomy enterprises, especially farms, small-scale family-based producers in rural areas</li> </ul>
<i>Implementation period</i>	<b>Short / medium term actions</b>
<i>Results to be achieved</i>	<ul style="list-style-type: none"> <li>• Promoted and strengthened collaboration among SMEs, farms and RTD institutions</li> <li>• Promoted generation and development of innovative business ideas and their transformation into innovative products and services</li> </ul>
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Number and scope of initiatives arising from services provided by innovation support bodies</li> <li>• Number, scope and results of the collaboration initiatives of SMEs, farms and RTD institutions</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• SMEs, farms opinion surveys of innovation support bodies’ performance and quality</li> <li>• Analysis of information and data provided in innovation support bodies’ reports about initiatives arising from the services provided</li> <li>• Analysis of information and data about SMEs, farms and RTD institutions collaboration and results arising from these activities (RTD annual reports)</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs, farms</li> <li>• RTD performers: universities, research institutes, technology and innovation centres and other</li> </ul>

	<ul style="list-style-type: none"> <li>• Innovation support bodies</li> </ul>
<i>Potential partners/partnerships</i>	<p><i>RDI2CluB project partners:</i></p> <p>Regional Council of Central Finland (Finland)          JAMK University of Applied Sciences (Finland)          SSYP Kehitys Oy Ltd. (Finland)          Inland Norway University of Applied Sciences (Norway)          Foundation for Education and Social Dialogue Pro Civis (Poland)</p>
<i>Potential funding instruments and mechanisms to be used for implementation</i>	<p>ERDF funding programmes for the development of business support services          EU centralised funding programmes for the promotion of innovation and RTD: H2020, COST, COSME          Interreg Programmes (e.g. Baltic Sea Region, Central Baltic, Latvia-Estonia)</p>
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	<p>PrA No. 1 Agriculture, forestry and fisheries          PrA No. 2 Food and feed production          PrA No. 3 Bio-based construction and building materials          PrA No. 7 Bio-based energy, incl. transport          PrA No. 8 R&amp;D services in biomass          PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)</p>
<i>Cross sectoral priorities addressed</i>	<p>Education, sustainable development.</p>

<b>Action No. 2.2</b>	<p><b><i>To develop a bioeconomy hub, gathering, holding, regularly updating and disseminating information and knowledge necessary for development of the bioeconomy industries.</i></b></p> <p>Foreseen list of knowledge and information to be provided in the hub:</p> <ul style="list-style-type: none"> <li>• Incoming or emerging technologies and trends</li> <li>• Existing and foreseen standards, laws, regulations having an impact on the bioeconomy and bio-resources based business</li> <li>• Available expertise in the specific fields of the bioeconomy (a pool of external experts in various bioeconomy fields)</li> <li>• A list of bioeconomy business initiatives searching for development sources - investors' search tool</li> </ul>
<i>Implementation period</i>	<b>Short term action</b>
<i>Results to be achieved</i>	Access to information and knowledge necessary for the development of bioeconomy industries ensured
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Number of SMEs and farms using the hub for the acquisition of information and knowledge, attraction of investors</li> <li>• Number and scope of RTD and business initiatives arising from information and knowledge provided by the hub</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• SMEs, farms opinion surveys about the bioeconomy hub performance quality</li> <li>• Analysis of information and data about initiatives realised using resources provided in the hub</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs, farms</li> <li>• RTD performers: universities, research institutes, technology and innovation centres and other</li> <li>• Other (individuals)</li> </ul>
<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	<p>RDI2CluB project funding          Interreg Programmes (e.g. Baltic Sea Region, Central Baltic)</p>
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	<p>PrA No. 1 Agriculture, forestry and fisheries          PrA No. 2 Food and feed production          PrA No. 3 Bio-based construction and building materials          PrA No. 7 Bio-based energy, incl. transport          PrA No. 8 R&amp;D services in biomass          PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)</p>

<i>Cross sectoral priorities addressed</i>	Digitalisation, education, sustainable development.
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<b>Action No. 2.3</b>	<b>To develop and provide support services for bioeconomy enterprises, especially to SMEs and farms.</b>  Foreseen activities: <ul style="list-style-type: none"> <li>• To prepare and ensure the availability of highly qualified and experienced innovation and change promoters</li> <li>• To develop cross-border tools ensuring knowledge and skills brokerage - possibility to get necessary assistance at the institutions of RDI2CluB partner regions</li> </ul>
<i>Implementation period</i>	<b>Short term action</b>
<i>Results to be achieved</i>	<ul style="list-style-type: none"> <li>• The online biobord.eu platform, which provides access to knowledge and skills necessary for the development of bioeconomy industries ensured</li> <li>• Increased capacity and efficiency of existing innovation support bodies</li> </ul>
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Number of SMEs, farms using developed cross-border tools for the acquisition of knowledge and skills</li> <li>• Number and scope of RTD and business initiatives arising after use of the tools</li> <li>• Innovation support bodies' performance quality</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• SMEs, farms opinion surveys on quality and appropriateness of the created tools</li> <li>• Number and scope of cross-border events organised</li> <li>• Analysis of information about initiated and realised measures, using the tools</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs, farms</li> <li>• RTD performers: universities, research institutes, technology and/or innovation bodies</li> <li>• Business and innovation development promotion and supporting bodies</li> </ul>
<i>Potential partners/partnerships</i>	<b>RDI2CluB project partners:</b> Regional Council of Central Finland (Finland) Tretorget AS (Norway)
<i>Potential funding instruments and mechanisms to be used for implementation</i>	ERDF funding programmes for the development of business support services Interreg Programmes (e.g. Baltic Sea Region, Central Baltic, Latvia-Estonia)
<i>Priority bioeconomy areas (PA) relevant to the Action</i>	PA No. 1 Agriculture, forestry and fisheries PA No. 2 Food and feed production PA No. 3 Bio-based construction and building materials PA No. 7 Bio-based energy, incl. transport PA No. 8 R&D services in biomass PA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Education, sustainable development

<b>Objective No. 3</b>	<b>To develop a bioeconomy cluster</b>
<i>Regional policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• Vidzeme Region Sustainable Development strategy 2030</li> <li>• Vidzeme Development Programme 2015-2020</li> </ul>
<i>National policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• The Smart Specialisation Strategy (RIS3) of Latvia</li> <li>• Latvian Bioeconomy strategy 2030</li> </ul>
<i>Sub-objectives of EUBSR Strategy policy area "Bio-economics" addressed</i> <a href="https://www.balticsea-region-strategy.eu/action-plan">https://www.balticsea-region-strategy.eu/action-plan</a>	<ul style="list-style-type: none"> <li>• Improved recycling of nutrients in agriculture</li> <li>• Involvement of the business community, increase knowledge on sustainable forest management</li> <li>• Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with the bioeconomy</li> </ul>

<i>EUSBSR sustainability principles addressed</i>	<ul style="list-style-type: none"> <li>• Sustainable bio-resource management and circular bioeconomy</li> <li>• Healthy, nutritious locally produced food and food security</li> <li>• Resilient and diverse ecosystems (climate proofing, biodiversity...)</li> <li>• Inclusive rural economic development</li> </ul>
<b>Action No. 3.1</b>	<p><b><i>To transform the Latvian High Added Value and Healthy Food Cluster into the Latvian Food-Based Bioeconomy Cluster, and to promote and encourage its activities.</i></b></p> <p>Foreseen activities:</p> <ul style="list-style-type: none"> <li>• Re-branding of the Latvian High Added Value and Healthy Food Cluster</li> <li>• Development and introduction of a new cluster's governance model</li> <li>• Involvement of new members, representing bioeconomy areas, currently not represented in the cluster</li> <li>• Setting of joint agendas (using the best international practices, e.g. Biobased Delta Cluster (the Netherlands))</li> <li>• Strengthening bioeconomy cluster's visibility, recognition and role in the Vidzeme region and in Latvia</li> <li>• Promotion of cluster's integration into the European and world bioeconomy networks</li> <li>• Development and provision of new services for cluster's SMEs</li> <li>• Bilateral/multilateral initiatives with other bioeconomy orientated formal and informal networks</li> </ul>
<i>Implementation period</i>	<b>Short/medium term actions</b>
<i>Results to be achieved</i>	The Latvian Food-Based Bioeconomy Cluster ensures qualitative knowledge-driven services to involved SMEs, and it is integrated into international bioeconomy networks
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Number of international bioeconomy-related networks the cluster is actively participating in</li> <li>• Number, scope and results of activities within international networking</li> <li>• Increase in the number of SMEs involved as cluster's members</li> <li>• Number, scope and relevance of new services provided to SMEs</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Reports developed by the cluster</li> <li>• SME opinion surveys about the quality and appropriateness of provided services, supported initiatives</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs</li> <li>• RTD performers: universities, research institutes, technology and innovation centres and other</li> </ul>
<i>Potential partners/partnerships</i>	<p><i>RDI2CluB project partners:</i></p> <p>Regional Council of Central Finland (Finland)  JAMK University of Applied Sciences (Finland)  Hedmark County Council (Norway)  Inland Norway University of Applied Sciences (Norway)  Tretorget AS (Norway)</p>
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Financial sources of the cluster ERDF funding programmes for the development of business support services Interreg Programmes (e.g. Baltic Sea Region, Central Baltic, Latvia-Estonia)
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	PrA No. 1 Agriculture, forestry and fisheries PrA No. 2 Food and feed production PrA No. 8 R&D services in biomass PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Education, sustainable development

<b>Objective No. 4</b>	<b>To ensure the <i>availability of actual, evidence-based bioeconomy data and information</i> and its dissemination to bioeconomy stakeholders</b>
<i>Regional policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• Vidzeme Region Sustainable Development strategy 2030</li> <li>• Vidzeme Development Programme 2015-2020</li> </ul>
<i>National policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• The Smart Specialisation Strategy (RIS3) of Latvia</li> <li>• Latvian Bioeconomy strategy 2030</li> <li>• Latvia's Guidelines on National Industrial Policy 2014 -2020</li> </ul>
<i>Sub-objectives of EUSBSR Strategy policy area "Bio-economics" addressed</i> <a href="https://www.balticsea-region-strategy.eu/action-plan">https://www.balticsea-region-strategy.eu/action-plan</a>	<ul style="list-style-type: none"> <li>• Improved recycling of nutrients in agriculture</li> <li>• Added value through cooperation within Baltic fisheries and aquaculture</li> <li>• Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with the bioeconomy</li> </ul>
<i>EUSBSR sustainability principles addressed</i>	<ul style="list-style-type: none"> <li>• Sustainable bio-resource management and circular bioeconomy</li> <li>• Healthy, nutritious locally produced food and food security</li> <li>• Resilient and diverse ecosystems (climate proofing, biodiversity...)</li> <li>• Inclusive rural economic development</li> </ul>

<b>Action No. 4.1</b>	<b>To initiate the improvement of bioeconomy statistics methodology in order to enable regional and national stakeholders with data necessary to measure the current situation and forecast progress.</b>
<i>Implementation period</i>	<b>Medium term action</b>
<i>Results to be achieved</i>	Improved availability of qualitative and diverse bioeconomy data necessary to measure the bioeconomy and forecast further progress at a regional and national level
<i>Indicators for measuring achievements</i>	Diversity and quality of bioeconomy data gathered by the Central Statistical Bureau of Latvia, Latvia University of Life Sciences and Technologies and possibly other institutions
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Statistics data base (<a href="http://www.csb.gov.lv">www.csb.gov.lv</a>)</li> <li>• Data gathered and published by LLU</li> <li>• Reports of bioeconomy progress elaborated by national public authorities (the Ministry of Agriculture, the Ministry of Economics, etc.)</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• RTD performers: universities, research institutes, technology and innovation centres and other</li> <li>• Regional and local public authorities</li> <li>• Policy making and legislative stakeholders</li> <li>• Other public institutions dealing with economy statistics</li> </ul>
<i>Potential partners/partnerships</i>	Central Statistical Bureau of Latvia Latvia University of Life Sciences and Technologies Partnership within the project BalticBiomass4Value (supported by the Baltic Sea Region programme)
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Interreg Programmes (e.g. Baltic Sea Region, Central Baltic) Financial sources of national public authorities Horizon 2020
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	PrA No. 1 Agriculture, forestry and fisheries PrA No. 2 Food and feed production PrA No. 3 Bio-based construction and building materials PrA No. 4 Bio-based textile and clothing PrA No. 5 Pulp and paper PrA No. 6 Bio-based chemical industry PrA No. 7 Bio-based energy, incl. transport PrA No. 8 R&D services in biomass PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Digitalisation, communication

<b>Action No. 4.2</b>	<b>To carry out a detailed study and mapping on the Vidzeme region bioeconomy resources and their potential.</b>
<i>Implementation period</i>	<b>Long term action</b>
<i>Results to be achieved</i>	Diverse and qualitative data and information on the Vidzeme region's bioeconomy resources and their potential acquired
<i>Indicators for measuring achievements</i>	Data and information available
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Data and information scope (covering all types of bio-based resources in all Vidzeme region municipalities) and quality (data responds to actual situation, is well-structured and easy to use)</li> <li>• Feedback from stakeholders on data and information existence and quality (gathered in opinion surveys)</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs</li> <li>• RTD performers: universities, research institutes, technology and innovation centres and other</li> <li>• Regional and local public authorities</li> <li>• Other – individuals being owners of bioeconomy resources</li> </ul>
<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Interreg Programmes (e.g. Baltic Sea Region, Central Baltic) Financial sources of local and regional public authorities Horizon 2020 Funding programmes of the Nordic Council of Ministers
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	PrA No. 1 Agriculture, forestry and fisheries PrA No. 2 Food and feed production PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Communication, sustainable development

<b>Action No. 4.3</b>	<b>To disseminate study and mapping results and identified bioeconomy development trends to interested stakeholders and potential investors.</b>
	<p>Foreseen activities:</p> <ul style="list-style-type: none"> <li>• To create customised (demand based) fact sheets of bioeconomy - based business potential and development trends, and disseminate them to stakeholders</li> <li>• To present the results of the study, mapping and trends in bioeconomy-related events (to Vidzeme region and national stakeholders)</li> </ul>
<i>Implementation period</i>	<b>Long term action</b>
<i>Results to be achieved</i>	Awareness of stakeholders and potential investors about the Vidzeme region bioeconomy potential and the bio-resources' innovative application raised
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Number of new bioeconomy business development initiatives, realised by the region's enterprises, especially SMEs and farms</li> <li>• Number of new bioeconomy business development initiatives, realised by the region's enterprises, especially SMEs and farms with the involvement of foreign investments</li> <li>• Number of foreign investment proposals received at the local municipalities</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Statistics data base (<a href="http://www.csb.gov.lv">www.csb.gov.lv</a>)</li> <li>• Data of the Ministry of Economics and the Latvia Development and Investment Agency</li> <li>• Data on investment proposals, received at the local municipalities</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs, farms</li> <li>• Regional and local public authorities</li> <li>• Policy making and legislative stakeholders</li> <li>• Other – potential bioeconomy business investors, national public authorities dealing with economic development</li> </ul>

<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Interreg Programmes (e.g. Baltic Sea Region, Central Baltic) Financial sources of local and regional public authorities
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	PrA No. 1 Agriculture, forestry and fisheries PrA No. 2 Food and feed production PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Communication, sustainable development

<b>Objective No. 5</b>	<b><i>To promote improvement of policies and strategies related to bioeconomy, and their implementation tools</i></b>
<i>Regional policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>· Vidzeme Region Sustainable Development strategy 2030</li> <li>· Vidzeme Development Programme 2015-2020</li> </ul>
<i>National policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>· The Smart Specialisation Strategy (RIS3) of Latvia</li> <li>· Latvian Bioeconomy strategy 2030</li> </ul>
<i>Sub-objectives of EUBSR Strategy policy area "Bio-economics" addressed</i> <a href="https://www.balticsea-region-strategy.eu/action-plan">https://www.balticsea-region-strategy.eu/action-plan</a>	<ul style="list-style-type: none"> <li>· Improved recycling of nutrients in agriculture</li> <li>· Involvement of the business community, increase knowledge on sustainable forest management</li> <li>· Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with the bioeconomy</li> </ul>
<i>EUBSR sustainability principles addressed</i>	<ul style="list-style-type: none"> <li>· Sustainable bio-resource management and circular bioeconomy</li> <li>· Healthy, nutritious locally produced food and food security</li> <li>· Resilient and diverse ecosystems (climate proofing, biodiversity...)</li> <li>· Inclusive rural economic development</li> </ul>

<b>Action No. 5.1</b>	<p><b><i>To promote the improvement of national level bioeconomy policies and strategies, their relevance to global trends and needs of bioeconomy related industries.</i></b></p> <p>Foreseen activities:</p> <ul style="list-style-type: none"> <li>· To negotiate with national public authorities on the issues related to bioeconomy and sustainability (topicalities, intentions, plans, needs etc.)</li> <li>· To encourage national public authorities to update the Latvian Bioeconomy strategy and envisage clusters as a driving force for its implementation</li> <li>· To promote more specified and targeted inclusion of bioeconomy and sustainability into Latvia's Guidelines on National Industrial Policy</li> </ul>
<i>Implementation period</i>	<b>Long term action</b>
<i>Results to be achieved</i>	Relevance of national-level bioeconomy policies and strategies to global trends and needs of bioeconomy related industries increased
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>· Latvia's Bioeconomy strategy updated</li> <li>· Defined role of clusters in the implementation of Latvian Bioeconomy strategy</li> <li>· Bioeconomy and sustainability integrated in Latvia's Guidelines on National Industrial Policy</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>· Changes of Latvian Bioeconomy strategy</li> <li>· Changes of Latvia's Guidelines on National Industrial Policy</li> <li>· Available instruments and tools enabling clusters for proactive bioeconomy related actions</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>· Regional and local public authorities</li> <li>· Policy making and legislative stakeholders</li> </ul>

<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Financial sources of national and regional public authorities
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	PrA No. 1 Agriculture, forestry and fisheries PrA No. 2 Food and feed production PrA No. 7 Bio-based energy, incl. transport PrA No. 8 R&D services in biomass PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Sustainable development

<b>Action No. 5.2</b>	<b><i>To facilitate the improvement of existing and development of new bioeconomy support tools and measures.</i></b>  Foreseen activities: <ul style="list-style-type: none"> <li>• To encourage national public authorities to create a financial investment package for the development of the bioeconomy</li> <li>• To promote and lobby the availability and efficient functioning of existing innovation support bodies, thus avoiding “re-invention of bicycle” at each planning period and after the Parliamentary elections</li> <li>• To encourage local public authorities to create a joint financial investment package for implementation of the Vidzeme Sustainable Development strategy</li> </ul>
<i>Implementation period</i>	<b>Long term actions</b>
<i>Results to be achieved</i>	<ul style="list-style-type: none"> <li>• Long-term operation of existing innovation support bodies ensured</li> <li>• National financial investment package for bioeconomy development created</li> <li>• Regional financial investment package for implementation of the Vidzeme Sustainable Development strategy created</li> </ul>
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Active innovation support bodies themselves</li> <li>• National financial investment package available and provides support for bioeconomy related measures</li> <li>• Regional financial investment package available and provides support for the Vidzeme Sustainable Development strategy measures</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Analysis of information on innovation support bodies providing services for Vidzeme region stakeholders</li> <li>• National financial investment package available</li> <li>• Regional financial investment package available</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• National, regional and local public authorities</li> <li>• Business and innovation development promotion and supporting bodies</li> <li>• Policy making and legislative stakeholders</li> </ul>
<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Financial sources of national, regional and local public authorities
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	PrA No. 1 Agriculture, forestry and fisheries PrA No. 2 Food and feed production PrA No. 3 Bio-based construction and building materials PrA No. 4 Bio-based textile and clothing PrA No. 5 Pulp and paper PrA No. 6 Bio-based chemical industry PrA No. 7 Bio-based energy, incl. transport PrA No. 8 R&D services in biomass PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Sustainable development

<b>Objective No. 6</b>	<b>To increase attractiveness of the Vidzeme region as a desirable location for innovation in the bioeconomy and for investment in the bioeconomy</b>
<i>Regional policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• Vidzeme Region Sustainable Development strategy 2030</li> <li>• Vidzeme Development Programme 2015-2020</li> </ul>
<i>National policies and/or strategies addressed</i>	<ul style="list-style-type: none"> <li>• The Smart Specialisation Strategy (RIS3) of Latvia</li> <li>• Latvian Bioeconomy strategy 2030</li> </ul>
<i>Sub-objectives of EUBSR Strategy policy area "Bio-economics" addressed</i> <a href="https://www.balticsea-region-strategy.eu/action-plan">https://www.balticsea-region-strategy.eu/action-plan</a>	<ul style="list-style-type: none"> <li>• Improved recycling of nutrients in agriculture.</li> <li>• Involvement of the business community, increase of knowledge on sustainable forest management.</li> <li>• Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with the bioeconomy.</li> </ul>
<i>EUBSR sustainability principles addressed</i>	<ul style="list-style-type: none"> <li>• Sustainable bio-resource management and circular bioeconomy</li> <li>• Healthy, nutritious locally produced food and food security</li> <li>• Resilient and diverse ecosystems (climate proofing, biodiversity...)</li> <li>• Inclusive rural economic development</li> </ul>

<b>Action No. 6.1</b>	<b>To create and disseminate economically justified tools proving the attractiveness of Vidzeme region to potential investors.</b>
	<p>Foreseen activities:</p> <ul style="list-style-type: none"> <li>• To develop and disseminate materials on Vidzeme region bioeconomy business potential and other socio-economic benefits</li> <li>• To promote Vidzeme region bioeconomy business potential and other socio-economic benefits (through media, in events gathering potential stakeholders etc.)</li> </ul>
<i>Implementation period</i>	<b>Medium term action</b>
<i>Results to be achieved</i>	Interest of potential investors on attractiveness of the Vidzeme region raised
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Number of new bioeconomy business development initiatives realised with the involvement of investors</li> <li>• Number of investment proposals received at local municipalities</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Statistics data base (<a href="http://www.csb.gov.lv">www.csb.gov.lv</a>)</li> <li>• Data of the Ministry of Economics and the Latvia Development and Investment Agency</li> <li>• Data on investment proposals, received by the local municipalities</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs, farms</li> <li>• Regional and local public authorities</li> <li>• Policy making and legislative stakeholders</li> <li>• Other – potential investors</li> </ul>
<i>Potential partners/partnerships</i>	<ul style="list-style-type: none"> <li>• RD12CluB project partnership</li> <li>• The Foreign Investors Council in Latvia</li> <li>• Embassies of Latvia in foreign countries</li> </ul>
<i>Potential funding instruments and mechanisms to be used for implementation</i>	<p>Interreg Programmes (e.g. Baltic Sea Region, Central Baltic)</p> <p>Financial sources of national, regional and local public authorities</p>
<i>Priority bioeconomy areas (PrA) relevant to the Action</i>	<p>PrA No. 1 Agriculture, forestry and fisheries</p> <p>PrA No. 2 Food and feed production</p> <p>PrA No. 7 Bio-based energy, incl. transport</p> <p>PrA No. 8 R&amp;D services in biomass</p> <p>PrA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)</p>
<i>Cross sectoral priorities addressed</i>	Communication

<b>Action No. 6.2</b>	<b>To increase the visibility of the Vidzeme bioeconomy innovation ecosystem and its advantages to bio-resources owners and managers.</b>
<i>Implementation period</i>	<b>Medium / long term action</b>
<i>Results to be achieved</i>	Visibility and recognition of the created bioeconomy innovation eco-system and its advantages increased among bio-resources owners and managers
<i>Indicators for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Bio-resources owners and managers are aware and recognise the bioeconomy innovation eco-system, are using knowledge, skills, services, networking opportunities offered by the eco-system</li> </ul>
<i>Mechanisms, tools to be used for measuring achievements</i>	<ul style="list-style-type: none"> <li>• Reports, gathering data and information on initiatives started or implemented with support of the bioeconomy innovation eco-system</li> </ul>
<i>Stakeholders to be involved</i>	<ul style="list-style-type: none"> <li>• SMEs, farms</li> <li>• RTD performers: universities, research institutes, technology and innovation centres and other</li> <li>• Business and innovation development promotion and supporting bodies</li> <li>• Other – individuals bio-resources owners and managers</li> </ul>
<i>Potential partners/partnerships</i>	-
<i>Potential funding instruments and mechanisms to be used for implementation</i>	Interreg Programmes (e.g. Baltic Sea Region, Central Baltic) Financial sources of local and regional public authorities
<i>Priority bioeconomy areas (PA) relevant to the Action</i>	PA No. 1 Agriculture, forestry and fisheries PA No. 2 Food and feed production PA No. 7 Bio-based energy, incl. transport PA No. 8 R&D services in biomass PA No. 9 Bio-based services (for example, green-care, eco-tourism etc.)
<i>Cross sectoral priorities addressed</i>	Sustainable development

## 5. Monitoring, Revision and Updating of the Action Plan

The AP implementation process and progress will be assessed using the following approach:

1) **During the implementation of the RDI2Club project (till October 2020).** A summary report of activities started, ongoing and implemented will be elaborated by Vidzeme Planning Region and the Institute for Environmental Solutions *once in each six-month period (the same periodicity as the project reporting)*. The summary report will include a) description of activities started, ongoing and implemented (with reference to relevant actions/measures in the AP), b) quantitative and qualitative results achieved. *The summary report will be submitted to the project lead partner – JAMK University of Applied Sciences (Finland).*

2) **After the RDI2Club project is completed (starting from November 2020)** a summary report of activities started, ongoing and implemented will be elaborated *once in a twelve-month period (once per calendar year)*. The report will consist of two parts - one elaborated by Vidzeme Planning Region and the other by the Institute for Environmental Solutions. Each of the two partners will report on activities it has initiated or implemented in the respective year, results achieved, lessons learnt, new initiatives proposed.

3) **The revision and updating of the AP** can be performed, if partners have identified the need for exclusion of the objectives achieved and actions completed or necessity to integrate new objectives, actions, in order to ensure relevance of the AP to the current needs of stakeholders and target groups and observing external preconditions or challenges. Partners jointly decide, when and how revision and updating will be performed.

**Key performance indicators** to be used for measuring innovation ecosystem performance and achievements (in medium- and long-term perspective):

1. Increase of the specific weight of stakeholders aware on the bioeconomy.
2. Availability and relevance of services and knowledge necessary for the bioeconomy development measures.
3. Increase of number and specific weight of businesses dealing with knowledge-based bioeconomy.
4. Increase of the amount of national and international investments in the bioeconomy in the Vidzeme region.

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