



RDI2CluB:
Rural RDI milieus in transition towards smart bioeconomy clusters and innovation ecosystems

projects.interreg-baltic.eu

Action Plan of the Świętokrzyskie Voivodeship for development of the bioeconomy innovation ecosystem

Świętokrzyskie Voivodeship
Regional Science and Technology Center
Foundation for Education and Social Dialogue Pro Civis

Kielce, 2019

Table of contents

INTRODUCTION	1
1. Rationale behind the Action Plan of the Świętokrzyskie Voivodeship	2
2. SWOT analysis	3
3. Objectives and actions	7
4. Monitoring, evaluation and updating of the Action Plan	8
5. Attachments	9
Description of objectives.....	9
Description of selected actions	11
Table of abbreviations and terms	18

INTRODUCTION

This document was elaborated within the project #R043 RDI2CluB „Rural RDI milieus in transition towards smart Bioeconomy Clusters and Innovation Ecosystems”.¹

The project has been implemented since October 2017 under the Programme Interreg Baltic Sea Region, priority 1 ‘Capacity for innovation’ within specific objective 1.2 ‘Smart specialisation’. The project will be implemented until 30 September 2020.

RDI2CluB is one of the flagship projects within the Bioeconomy Policy Area of the European Union Strategy for the Baltic Sea Region (EUSBSR). Such projects are pilot examples of desired actions within a given policy and show the progress in the Strategy implementation.

RDI2CluB partnership consists of the following 12 partners:

- P1 JAMK University of Applied Sciences (Finland)
- P2 Regional Council of Central Finland (Finland)
- P3 SSYP Kehitys Oy Ltd. (Finland)
- P4 Inland Norway University of Applied Sciences (Norway)
- P5 Hedmark County Council (Norway)
- P6 Tretorget Ltd (Norway)
- P7 Regional Science and Technology Center (Poland)
- P8 Świętokrzyskie Voivodeship (Poland)
- P9 Foundation for Education and Social Dialogue Pro Civis (Poland)
- P10 Institute for Environmental Solutions (Latvia)
- P11 Vidzeme Planning Region (Latvia)
- P12 Stockholm Environment Institute Tallinn Center (Estonia)

¹ More information about the project is available on the websites: www.rdi2club.eu (English); www.rdi2club.umws.pl (Polish), www.rdi2club.procivis.org.pl (Polish, English) and <http://rcnt.pl/index.php/onas/projekty/rdi2club-2/> (Polish).

1. Rationale behind the Action Plan of the Świętokrzyskie Voivodeship

The Action Plan of the Świętokrzyskie Voivodeship (Action Plan), aims at supporting smart, sustainable and inclusive bioeconomy growth on rural areas of the voivodeship, by development of a regional innovation ecosystem for the bioeconomy.

The Action Plan is a roadmap referring to the European Union policies and strategies, the European Union Strategy for the Baltic Sea Region as well as national and regional strategic documents. The objectives and actions mentioned in the Action Plan were defined on the basis of the analysis of the current state and future potential of the regional bioeconomy², joint interests and intentions identified by regional stakeholders as well as on the basis of the SWOT analysis of the regional innovation ecosystem.

The Action Plan of the Świętokrzyskie Voivodeship consists of:

1. a SWOT analysis describing weaknesses, strengths as well as opportunities and threats for the development of the innovation ecosystem of the Świętokrzyskie Voivodeship,
2. summary of identified objectives and actions selected for implementation to develop the bioeconomy of the Świętokrzyskie Voivodeship (their descriptions are attached to the Action Plan),
3. measures foreseen for monitoring, evaluation and updating the Action Plan.

Implementation of the Action Plan commences in 2019. For the purposes of this Action Plan there were defined three implementation periods:

- *short-term actions* – immediate actions to be started or implemented in the time period 2019-2021, including actions to be implemented within the RDI2CluB project,
- *medium-term actions* - to be started or implemented in the medium term (3-5 years). Indicative year of **start / finalization?** – 2022.
- *long-term actions* - to be started or implemented **from** 2024.

It is planned to continue the actions after the project has been completed, as per current needs of the region and in line with new external funding possibilities, e.g. under the new financial framework of the European Union 2021-2027.

² See: Regional Bioeconomy Profile of the Świętokrzyskie Voivodeship ‘Towards a bioeconomy cluster in Świętokrzyskie Voivodeship’ available at: <https://berst.databank.nl/dashboard> . The Polish translation of the Profile ‘W kierunku klastra biogospodarki w Województwie Świętokrzyskim’ is available at the project website www.rdi2club.umws.pl .

2. SWOT analysis

Based on the current state of the bioeconomy in the Świętokrzyskie Voivodeship carried out by an external expert, who worked on provided quantitative and qualitative data, this SWOT analysis of the regional innovation ecosystem was elaborated.

Strengths	Weaknesses
<ul style="list-style-type: none"> • The development policy of Poland, as well as Świętokrzyskie region, puts a lot of emphasis on bioeconomy, as well as related sectors of economy • Region has extensive experience and effectiveness in implementing cohesion policy and makes good use of its competences • The regions of Sandomierz - Opatów and Kazimierza Wielka are a very large fruit and vegetable producer, with very good refrigeration and storage facilities and good organization of producers • The agricultural land of the region is mostly of good fertility and high quality soil class, which creates conditions for a significant increase in biomass productivity • Świętokrzyskie region is characterized by significant and evenly distributed biomass resources throughout the area • The biomass of the region comes from very different sources and guarantees high biodiversity • Significant biomass potential is the responsibility of the State Forests. • The region has extensive experience in the production of biogas and bioenergy • Region is well recognized as location of construction industry, and crafts making extensive use of bio-based products 	<ul style="list-style-type: none"> • The Świętokrzyskie region has no leading entities or highly specialized business networks focused on the bioeconomy • The region does not have its own large capital resources and is heavily dependent on exogenous factors, both Polish and international • Agricultural and vegetable production is characterized by high production potential, but rather a poor processing base for high-tech products • The market potential and market competitiveness of agriculture is severely limited by the excessive fragmentation of farms • The main wood keeper, namely State Forests, is not to well integrated with the economy of the region and rarely engages in economic or research activities with regional science or business units • Soil productivity is at risk of a long-term systematic decline in soil organic matter, which threatens to cause desertification • Soil productivity is also severely limited by low water resources (small and unevenly distributed annual rainfall, and very low irrigation opportunities) • The current agrarian structure and not very high efficiency for agricultural production do not create conditions for generating large surplus biomass for purposes other than food or feed

<ul style="list-style-type: none"> • Tradition of not only Świętokrzyskie region, but also the whole Poland is very intensive use of other forest resources than wood - berries, mushrooms, strawberries, herbs and others • Fruit, vegetable and forestry products processing sectors are well established in the region • There are significant research resources in selected areas of biology, chemistry, physics or construction in the region • The region is home to Kielce Technology Park, Regional Science and Technology Centre and Starachowice Special Economic Zone • Regional universities (Polytechnic, the public University and few private universities) provide education in several attractive fields of study (information technology, biology and microbiology, chemistry, mathematics, medicine, construction, electronics and robotics, etc.) guaranteeing full employment to graduates • Universities are introducing more and more courses of study in English language with a large share of international students • In the region there is a rich tradition of using products of biological origin in medicine (herbal medicine, wraps and medicinal patches, etc.) • The sale of clothing and household goods made of natural fibres (flax and hemp) is also increasing, also use of these fibres for the production of consumer products (tablecloths, artistic products, sconces, toys, etc.) • Manufacturers of bio-based products have extensive knowledge as to their processing, preservation, durability and value in use • Majority of the areas in the region offer a good or very good level of technical infrastructure necessary to run a business • The region has a newly built fibre optic cabling system and every municipality enjoys a very good access to ICT services 	<ul style="list-style-type: none"> • Current experience with the use of biomass for energy purposes illustrates the rather low potential in ensuring permanent supply and maintenance of biomass quality standards • The production of wood and wood chips covers only fuel needs, wood industry (sawn timber, chipboard) and furniture. Both the industry of our region and all of Poland is an ever-increasing importer of wood • The region has rather limited scientific resources, which have the potential to carry out applied research in the bioeconomy sector. • Quite significant research capacities in chemistry, biology, microbiology and other related fields have to be much better coordinated. • Despite many years of efforts, the region does not have much success in creating technological clusters, the bioeconomy ones are only at the seed stage. • Due to region's location in the middle of very strong scientific and business centres, the region is exposed to migrations both to recognize universities and to work after completed studies in the region. Strong migration trends also apply to directions outside Poland • The local market, despite the quite large population of the region, is not too absorptive. • There is no uniform biomass standardization system, set for biomass based products • Social awareness in the sphere of bioproducts is increasing, however, it is only a few percent of the population, what limits the market potential. • Although the region has resources for promotion, it does not have a joint promotional program for bio-products and products of natural origin, in which it has significant production capacities
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Opportunities	Threats
<ul style="list-style-type: none"> • Region is very rich in natural resources, both in minerals and in biomass and it is very biodiverse - 67% of the land is legally protected from excessive anthropo-pressure • A high share of SMEs in the structure of entities allows the region's economy quickly react on market expectation and make very good use of new economic trends or market conditions • The construction and building materials' sectors are highly competitive, with a high potential for bioeconomy products production and use • The last few years have shown a very dynamic development in the production of fibrous plants and is still growing • Significant resources and very good forest management carried out by the State Forests, as well as by private forests owners • In the development programmes of the region, the natural and environmental issues are strongly emphasised, as well as the emphasis is put on their economic use. • Very good soils and high agrarian culture in the sugar beets and fruit-growing (Sandomierz and Opatów sub - regions) and vegetable-growing (Kazimierza Wielka) regions create very good initial potential for a significant increase in agricultural productivity, including production for non-food purposes. • Large potential is beginning to be created by emerging as well as already operating producers' groups of farmers and gardeners. • New directions of cultivation (fibrous plants and bushy berries, cherries) create a serious development opportunity. • Biotechnology and issues related to the industrial use of biomass are 	<ul style="list-style-type: none"> • Lack of a policy to coordinate the extraction and efficient use of biomass for industrial purposes • Local enterprises are characterized by low economic power and limited potential to invest in R & D & I • Low level of interest of enterprises in the EU and Polish government support measures aimed at research, innovation and implementation of new technologies • In the current shape, the region's economy is only slightly benefiting from the bioeconomic potential, and the pace of reorientation in this direction is very slow • Inhabitants of the region, especially farmers, still have a very low level of acceptance for using crops for industrial non-food purposes. • Foresters operate in a centralized and hierarchical manner, limits their possibilities of economic cooperation at the regional level. • A crucial problem in maximising biomass production is a significant part of legally protected areas. • The growing scale of set-aside and fallow land with very low productivity is a threat. • There is no long-term policy and programs to protect soils and improve their fertility. • Weak business and scientific connections in bio-economic value chains, limits development and does not allow the use of synergy effects. • Large global entities do not show interest in conducting research and new implementations in Poland or in the region, they also do not cooperate or integrate in any scope of local business.

recorded in several national and regional smart specializations.

- Bioeconomy is one of the leading branches of the economy benefiting from public support (EU and Polish Government) in the current programming period and will be covered by such support in the future.
- Several technology companies operating in the construction materials industry or the production of dietary supplements, special-purpose foods (for climbers and cosmonauts), cosmetics and medicines are a good starting point for the bioeconomy.
- Local biomass producers (eg vegetable fiber) are involved in nationwide and even international value chains with a bio-economic profile.
- Regional authorities carry out activities stimulating the creation of clusters and cooperation groups in several selected areas, such as health-oriented tourism, modern and competitive agriculture or construction.
- A rapidly growing environmental and consumer awareness is a huge opportunity, creates a strong social pressure on the development of environmentally friendly sectors of the economy and low level of exploitation of natural resources.
- A big chance are companies specializing in the production of wooden products that use its very wide application possibilities in a practical and useful way in human life (30,000 applications).

- Region did not develop an integrated system of entrepreneurship and innovation support for the bioeconomy
- Organizing farmers and gardeners have significant problems in developing permanent forms of cooperation with processing plants and large store chains as key recipients of their products
- Despite the considerable potential in the production of biomass and the large variety of manufactured products, the region does not have a promotion and marketing system for such products, as well as it failed to develop a recognizable brand of bioproducts. However, the single companies in the sector are doing well in the promotion.
- A major threat will be the introduction of bio-type products to the market, which will essentially quench qualitatively from their counterparts produced on the basis of another raw material.

3. Objectives and actions

The objectives and actions presented in Figure 1 were defined on the basis of the analysis of the bioeconomy current state and potential in the Świętokrzyskie Voivodeship and the SWOT analysis. In the process there were engaged regional and national stakeholders working for implementation of RIS, such as universities, RDI institutions, business support institutions, clusters, SMEs in bioeconomy, public authorities and other interested parties.

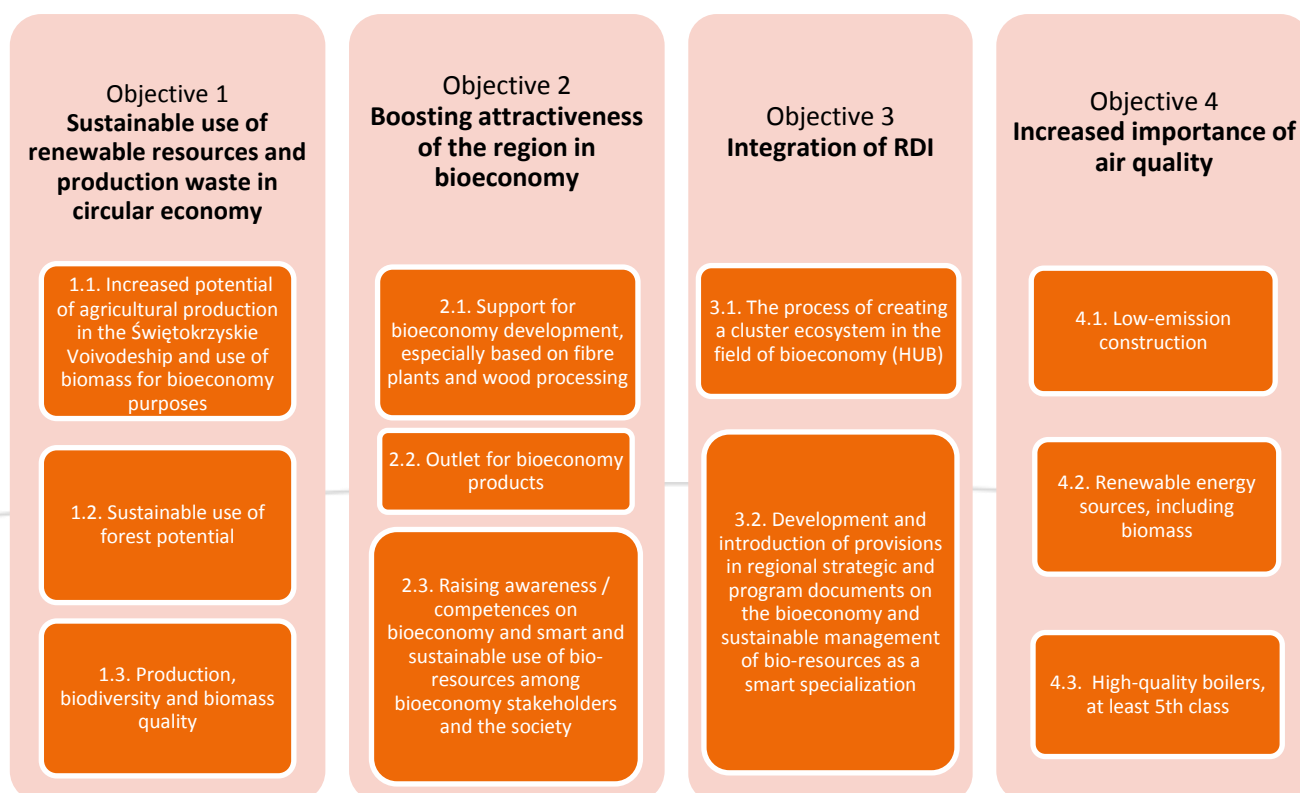


Figure 1. Objectives and actions for development of the bioeconomy in the Świętokrzyskie Voivodeship

As the bioeconomy is an extremely vast field, the objectives and actions were identified as broadly as possible, as not to limit development opportunities of the Świętokrzyski Voivodeship in this area.

As each action is per se a 'project within a project', during the RDI2CluB project there will be implemented short-term actions considered as priorities for development of the regional bioeconomy (actions 2.3, 3.1, 3.2) and one medium term action of big potential for further enhancement of cooperation with project partners (action 4.1). The detailed description of the identified objectives and actions selected for implementations constitute attachments to this Action Plan.

Medium-term and long-term actions (which are to be implemented after the RDI2CluB project completion) will be clarified at a later period, according to the current needs of the region and the new financing possibilities, inter alia within the new financial framework of the European Union 2021-2027.

4. Monitoring, evaluation and updating of the Action Plan

The monitoring, evaluation and updating of the Action Plan will be based on implementation schedules elaborated in collaboration with regional stakeholders involved in actions selected for implementation.

RDI2CluB project partners responsible for coordination of the implemented actions (Regional Science and Technology Center for actions 3.1 and 3.2, Marshal Office of the Świętokrzyskie Voivodeship for actions 2.3 and 4.1) will, at least every 6 months, prepare a brief information on the state of implementation of the actions and recommendations concerning the need to update implementation schedules and actions. The information and recommendations will be based on quantitative and qualitative data gathered by entities engaged in the implementation of the actions and external stakeholders. Until the end of 2020 this information is also contained within the reporting process on the RDI2CluB project implementation.

The evaluation will be on-going, based on data received in monitoring of the Action Plan and implementation schedules of given activities.

The Action Plan will be updated according to the current needs, however not later than in the second half of 2020, that is before the implementation of the RDI2CluB project is concluded.

5. Attachments

Description of objectives

Objective No 1:	Sustainable use of renewable resources and production waste in circular economy
Regional policies and/or strategies addressed	<ul style="list-style-type: none"> Development Strategy of the Świętokrzyskie Voivodeship until 2020. The Research and Innovation Strategy (RIS3). From Absorption to Results – How to Stimulate the Potential of Swietokrzyskie Voivodship 2014-2020+ Programme for environmental protection of the Świętokrzyskie Voivodeship for 2015-2020 with the outlook until 2025. Waste management plan for the Świętokrzyskie Voivodeship for 2016-2022
National policies and/or strategies addressed RIS3 area + KETs if relevant	<ul style="list-style-type: none"> National Development Strategy 2020 National Strategy for Regional Development 2010-2020 Strategy for Energy Security and the Environment – outlook until 2020. Strategy for sustainable development of rural areas, agriculture and fisheries for 2012-2020. Strategy for innovation and efficiency of the economy. “Dynamic Poland 2020”. National smart specialization: <ul style="list-style-type: none"> Circular economy - water, fossil raw materials, waste Innovative technologies, processes and products of the agri-food and forest-wood sectors Bio-economy agro-food, forest-wood and environmental
Sub-objectives of EUBSR Strategy policy area ‘Bioeconomy’ addressed https://www.balticsea-region-strategy.eu/action-plan	<ol style="list-style-type: none"> Improved recycling of nutrients in agriculture. Involvement of the business community, raising the level of knowledge on sustainable forest management. Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with bioeconomy. Realizing the bioeconomy in the Baltic Sea region: development of a sustainable bioeconomy in the Baltic Sea region. Contributions to the development of the European Bioeconomy: Baltic Sea region participation in wider EU efforts and projects to realise the bioeconomy.
EUBSR sustainability principles addressed	<ol style="list-style-type: none"> Sustainable bio-resource management and circular bio-economy Resilient and diverse ecosystems Inclusive economic and social prosperity

Objective No 2:	Boosting attractiveness of the region in bioeconomy
Regional policies and/or strategies addressed	<ul style="list-style-type: none"> Development Strategy of the Świętokrzyskie Voivodeship until 2020. Programme for environmental protection of the Świętokrzyskie Voivodeship for 2015-2020 with the outlook until 2025. Waste management plan for the Świętokrzyskie Voivodeship for 2016-2022
National policies and/or strategies addressed RIS3 area + KETs if relevant	<ul style="list-style-type: none"> National Development Strategy 2020 National Strategy for Regional Development 2010-2020 Strategy for Energy Security and the Environment – outlook until 2020. Strategy for sustainable development of rural areas, agriculture and fisheries for 2012-2020. Strategy for innovation and efficiency of the economy. “Dynamic Poland 2020”. National smart specialization:

	<ul style="list-style-type: none"> • Circular economy - water, fossil raw materials, waste • Innovative technologies, processes and products of the agri-food and forest-wood sectors • Bio-economy agro-food, forest-wood and environmental
<p>Sub-objectives of EUSBSR Strategy policy area 'Bioeconomy' addressed</p> <p>https://www.balticsea-region-strategy.eu/action-plan</p>	<p>2. Improved recycling of nutrients in agriculture.</p> <p>8. Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with bioeconomy.</p> <p>9. Realizing the bioeconomy in the Baltic Sea region: development of a sustainable bioeconomy in the Baltic Sea region.</p> <p>10. Contributions to the development of the European Bioeconomy: Baltic Sea region participation in wider EU efforts and projects to realise the bioeconomy.</p>
EUSBSR sustainability principles addressed	<p>1. Sustainable bio-resource management and circular bio-economy</p> <p>5. Sustainable consumption</p>

Objective No 3:	Integration of RDI
Regional policies and/or strategies addressed	<ul style="list-style-type: none"> • Research and Innovation Strategy (RIS3). From absorption to results – how to stimulate the potential of the Świętokrzyskie province 2014-2020 +; regional smart specializations: <ul style="list-style-type: none"> • Resource-efficient construction industry • Metal and foundry industry • Modern agriculture and food processing • Sustainable power industry growth • Development Strategy of the Świętokrzyskie Voivodeship until 2020.
National policies and/or strategies addressed RIS3 area + KETs if relevant	<ul style="list-style-type: none"> • National Development Strategy 2020 • National Strategy for Regional Development 2010-2020 • Strategy for Energy Security and the Environment – outlook until 2020. • Strategy for innovation and efficiency of the economy. “Dynamic Poland 2020”. • National smart specialization: <ul style="list-style-type: none"> • Sustainable energy • Circular economy - water, fossil raw materials, waste • Innovative technologies, processes and products of the agri-food and forest-wood sectors • Bio-economy agro-food, forest-wood and environmental
<p>Sub-objectives of EUBSR Strategy policy area 'Bioeconomy' addressed</p> <p>https://www.balticsea-region-strategy.eu/action-plan</p>	<p>4. Involvement of the business community, raising the level of knowledge on sustainable forest management.</p> <p>5. Cooperation: increasing the level of cooperation and synergy in the Baltic Sea region between the public sector and initiative of cooperation of non-governmental organizations, projects and stakeholders involved in the bioeconomy.</p> <p>6. Implementing the bioeconomy in the Baltic Sea region: developing a sustainable bioeconomy in the Baltic Sea region.</p> <p>7. Contributions to the development of the European Bioeconomy: Baltic Sea region participation in wider EU efforts and projects to realise the bioeconomy.</p>
EUSBSR sustainability principles addressed	<p>1. Sustainable management of bio-resources and bio-economy closed circuit</p> <p>4. Economic development of rural areas conducive to social inclusion</p> <p>5. Sustainable consumption</p>

Objective No 4:	Increased importance of air quality
Regional policies and/or strategies addressed	<ul style="list-style-type: none"> • Updated Air Protection Programme for the Świętokrzyskie Voivodeship and the plan of short-term actions. • Programme for environmental protection of the Świętokrzyskie Voivodeship for 2015-2020 with the outlook until 2025.
National policies and/or strategies addressed RIS3 area + KETs if relevant	<ul style="list-style-type: none"> • Strategy for Energy Security and the Environment – outlook until 2020. • Energy Policy for Poland until 2030. • Strategy for sustainable development of rural areas, agriculture and fisheries for 2012-2020.
Sub-objectives of EUBSR Strategy policy area 'Bioeconomy' addressed https://www.balticsea-region-strategy.eu/action-plan	<ul style="list-style-type: none"> 3. Cooperation: increased coordination and synergy in the Baltic Sea region among public sector and NGO cooperation initiatives, projects and stakeholders dealing with bioeconomy. 4. Realizing the bioeconomy in the Baltic Sea region: development of a sustainable bioeconomy in the Baltic Sea region. 5. Contributions to the development of the European Bioeconomy: Baltic Sea region participation in wider EU efforts and projects to realise the bioeconomy.
EUBSR sustainability principles addressed	<ul style="list-style-type: none"> 2. Sustainable bio-resource management and circular bio-economy 5. Sustainable consumption

Description of selected actions

Action No 2.3.	<p>Raising awareness / competences on bioeconomy and smart and sustainable use of bio-resources among bioeconomy stakeholders and the society.</p> <ul style="list-style-type: none"> • to organise meetings, seminars, workshops and other events promoting bioeconomy, its significance for climate protection, the environment and long-lasting resource security and shaping eco-friendly attitudes among different interested environments (authorities - self-governments, business, education, society – children, youth and senior citizens), • to actively participate in the selected exhibition events related to bioeconomy, • to join the already existing educational programmes for children and elderly people implemented by public universities in the region and other educational institutions, • to prepare and disseminate informative-promotional materials in the region popularizing bioeconomy and bio-attitudes, including, i.a. a catalogue of good practices on bioeconomy in the Baltic Sea Region in cooperation with i.a. partners from Latvia.
Type per implementation period	Short term actions – for 3 years (immediate actions, inter alia those to be implemented during the project within WP3 and WP4).
Results to be achieved	To raise awareness / competences among society and bioeconomy stakeholders on bioeconomy, the eco-friendly attitudes and smart and effective use of bio-resources available in the region.
Indicators for measuring achievements	<ul style="list-style-type: none"> • Number of conducted meetings, seminars, workshops and other events promoting bioeconomy and bio-attitudes and number of their participants, • Number of articles published on the project website www.rdi2club.umws.pl and number of Facebook posts published on project profile RDI2CluB_Swietokrzyskie; number of their

	<p>followers,</p> <ul style="list-style-type: none"> • Number of informative-promotional materials on bioeconomy, #R043 RDI2CluB project and bio-attitudes; published and distributed in the region, • Number of exhibitions, where bioeconomy and bio-attitudes were popularized and number of their participants, • Number of educational programmes for children, youth and senior citizens focusing on popularizing bioeconomy, #R043 RDI2CluB project and bio-attitudes and number of their attendees.
<p>Mechanisms, tools to be used for measuring achievements</p>	<ul style="list-style-type: none"> • The programmes/presentations of meetings, seminars, workshops and other events popularizing bioeconomy and bio-attitudes and the lists of attendees, • Screenshots of websites, social media channels and other publications where bioeconomy and bio-attitudes were promoted and statistics on website visits / users or followers, • Copies of informative-promotional materials and documentation confirming their edition and distribution, • Information about trade fairs exhibitions where bioeconomy was promoted supported by the associating events programmes, the lists of attendees, number of exhibitors and visitors, presentations, • Information on educational programmes for children, youth and senior citizens during which bioeconomy, #R043 RDI2CluB project and bio-attitudes were promoted, presentations; the lists of attendees, etc.
<p>Stakeholders to be involved and their roles and benefits</p>	<ul style="list-style-type: none"> • Regional partners of the #R043 RDI2CluB project Roles/tasks: active participation in implementing the promotional action plan for bioeconomy, #R043 RDI2CluB project and bio-attitudes in Świętokrzyskie Region, Benefits: raising the awareness and competences on the advantages of bioeconomy development for the overall Świętokrzyskie Region; improving the well-being of its citizens; opportunities to influence Regional Policy towards bioeconomy resulting in obtaining the national and European Union funds. • The citizens/students in the Świętokrzyskie Region Roles/tasks: taking part in educational-informative events on bioeconomy, its significance for climate protection, natural environment and long-lasting resource security, Benefits: the increase of knowledge on bioeconomy resulting in healthier lifestyles, environmental protection, shaping eco-friendly attitudes; raising competences on the advantages of using bio-resources; the boost of citizens well-being in the region. • Entities responsible for supporting and promoting bioeconomy (knowledge and innovation centres, incubators, business support organizations, clusters, exhibition centres, etc.) Roles/tasks: participation in the development of informative-promotional action plan on bioeconomy and shaping eco-friendly attitudes, Benefits: extension of services offer by additional events on bioeconomy and smart and sustainable use of bio-resources for wide range of audience. • Entities dealing with education, research and technologies development (i.a. Kielce University of Technology, Jan Kochanowski University in Kielce, Leonardo da Vinci Science Center operating in the Regional Science and Technology Center) Roles/tasks: participation in the development of informative-promotional action plan on bioeconomy and shaping eco-friendly attitudes, education of children and youth (under the projects engaging children and youth) also senior citizens in the above-mentioned areas; Benefits: extended educational offer for children, youth and elderly people; raising the knowledge on bioeconomy, promotion of the universities; topics for new publications.

	<ul style="list-style-type: none"> Representatives of regional and local media: Roles/tasks: taking part in educational-informative events on bioeconomy, its significance for climate protection, natural environment and long-lasting resource security and shaping eco-friendly attitudes, Benefits: publication of materials and news on bioeconomy and eco-friendly attitudes and possibilities of smart and sustainable use of bio-resources; following the stream of creating eco-trends. Self-governments from the Świętokrzyskie Region: Roles/tasks: participation in meetings, events popularizing bioeconomy as the potential of economic development of the Świętokrzyskie Region and Poland based on biomass resources; support of the process of shaping eco-friendly attitudes among the society and the possibilities and ways to use biomass resources; popularizing the idea of bioeconomy in available media channels. Benefits: to spread knowledge on environmental protection and sustainable development; shaping eco-friendly attitudes among the overall society; to improve well-being and health of local societies; stimulating the society to activity – building civil society on environmental protection and sustainable development.
Potential partners/partnerships (if already identified).	<ul style="list-style-type: none"> Regional Science and Technology Center (PP7) as the unit implementing educational-informational programme for the society in frames of local pilots, under the #R043 RDI2CluB project, Regional Science and Technology Center (PP7) in cooperation with “Pro Civis” Foundation (PP9), as co-founders of Bioeconomy Knowledge Centre (HUB), Universities: The Jan Kochanowski University in Kielce, Kielce University of Technology (including Kielce University of Technology for Children and Kielce Open University of Technology); Leonardo da Vinci Science Center operating in Regional Science and Technology Center; Targi Kielce Exhibition and Congress Centre ; local and regional media in the Świętokrzyskie Voivodeship ; selected organizational sections from Marshal Office of the Świętokrzyskie Voivodeship, local self-governments from the świętokrzyskie, especially those included in local pilots within the project #R043 RDI2CluB (Buski Powiat, Municipality of Busko-Zdrój and Municipality of Solec-Zdrój)
Potential funding instruments and mechanisms to be used for implementation	<ul style="list-style-type: none"> – #R043 RDI2CluB project financial sources, – the budget of the Świętokrzyskie Voivodeship, – other national and EU funds
Priority bio-economy areas relevant to the Action	<p>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 4 Bio-based textile and clothing PA No 5 Pulp and paper PA No 6 Bio-based chemical industry 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-areas, eco-tourism etc.)</p>
Cross-sectoral priorities addressed	Communication, education.

Action No 3.1	The process of creating a cluster ecosystem in the field of bioeconomy (HUB): development and testing of a common innovation management model for the network of innovative bio-economic hubs in the BSR area
Type per implementation period	<ul style="list-style-type: none"> • Short-term activities - 3 years (ad-hoc activities, including activities implemented under the project in WP3 and WP4 work packages)
Results to be achieved	<ul style="list-style-type: none"> • Implementation of joint projects • Meetings, trainings and workshops organization for HUB participants • Encourage entities to participate in the Hub • Activation of local entities around the idea and partnership for the development of the bioeconomy in the region • Partnership agreement • Developing a common strategy
Indicators for measuring achievements	<ul style="list-style-type: none"> • Number of submitted projects • Number of organized meetings, trainings and workshops within the HUB • Number of entities • Number of entities participating in seminars • Number of seminar participants
Mechanisms, tools to be used for measuring achievements	<ul style="list-style-type: none"> • Common strategy • Number of attendees • Projects • A signed partnership agreement • Photos
Stakeholders to be involved and their roles and benefits	<ul style="list-style-type: none"> • SMEs as a private sector will stimulate activities related to the development of the bioeconomy as a branch of business which in consequence will translate into the share of the bioeconomy in the region's GDP. • RTD performers: universities, research institutes, technology and / or innovation entities will be more involved in R & D & I cooperation. • Regional and local authorities – adoption and implementation of a coherent regional policy • Stakeholders: decision-makers and legislators will shape the external and internal environment in the form of local law acts. <p>Benefits: HUB members will have an access to the workspace, office infrastructure, events and contact networks. Entities will be able to exchange their experience, knowledge, know-how or establish cooperation with each other. The implementation of joint projects will allow for the bio-economic development of the region, which will also improve the quality of the environment, the health of the society, the development of health-oriented tourism, which is the driving force of the Świętokrzyskie Province. It will enable cooperation of entities from various fields, which will contribute to the creation of new ideas for the development of the region. The cooperation of entities will allow to maximize company profits, strengthen cooperation between science and business, and commercialize research.</p>
Potential partners/partnerships (if already identified).	<ul style="list-style-type: none"> • Biomass of Świętokrzyskie (Biomasa Świętokrzyska), • Świętokrzysko-Podkarpacki Energy Cluster (Świętokrzysko-Podkarpacki Klaster Energetyczny), • Building Cluster INNOVATOR of Świętokrzyskie and Podkarpackie Province (Świętokrzysko-Podkarpacki klaster budowlany INNOWATOR). • Regional Fund for Environmental Protection and Water Management in Kielce, • Marshal Office of the Świętokrzyskie Voivodeship, • Municipal Office of Chęciny
Potential funding instruments and mechanisms to be used	<ul style="list-style-type: none"> • Regional Operational Programme for Świętokrzyskie 2014-2020, • Operational Programme Eastern Poland 2014-2020,

for implementation	<ul style="list-style-type: none"> Operational Programme Infrastructure and Environment 2014-2020, Regional Fund for Environmental Protection and Water Management, National Fund for Environmental Protection and Water Management, Loan Fund of the Świętokrzyskie Voivodship Ltd. Smart Growth Operational Programme 2014-2020 Own resources of beneficiaries (enterprises, research centers)
Priority areas relevant to the Action	<p>bio-economy</p> <p>PA No 1 Agriculture, forestry and fisheries</p> <p>PA No 2 Food and feed production</p> <p>PA No 3 Bio-based construction and building materials</p> <p>PA No 4 Bio-based textile and clothing</p> <p>PA No 5 Pulp and paper</p> <p>PA No 6 Bio-based chemical industry</p> <p>PA No 7 Bio-based energy, incl. transport</p> <p>PA No 8 R&D services in biomass</p> <p>PA No 9 Bio-based services (for example, green-areas, eco-tourism etc.)</p>
Cross-sectoral priorities addressed	Sustainable development

Action No. 3.2	Development and introduction of provisions in regional strategic and program documents on the bioeconomy and sustainable management of bio-resources as a smart specialization
Type per implementation period	<ul style="list-style-type: none"> Short-term activities - 3 years (ad-hoc activities, including activities implemented under the project in WP3 and WP4 work packages)
Results to be achieved	Records in regional strategic and program documents on bio-economy and sustainable management of bio-resources as a smart specialization
Indicators for measuring achievements	The number of regional strategic documents to which the provisions on the bioeconomy and sustainable management of bio-resources will be introduced as a smart specialization.
Mechanisms, tools to be used for measuring achievements	Strategy document
Stakeholders to be involved and their roles and benefits	<ul style="list-style-type: none"> SMEs as a private sector will stimulate activities related to the development of the bioeconomy as a branch of business which in consequence will translate into the share of the bioeconomy in the region's GDP. RTD performers: universities, research institutes, technology and / or innovation entities will be more involved in R & D & I cooperation. Regional and local authorities – adoption and implementation of a coherent regional policy <p>Benefits: Increase of innovativeness and competitiveness of the region; increase of innovativeness and competitiveness of enterprises; improvement of the quality of public services; improvement of the natural environment condition; greater opportunities for using EU programs; developing links and synergies between enterprises, research and development centers and the higher education sector; supporting the production and distribution of energy from renewable sources; supporting the energy efficiency of intelligent energy management and the use of renewable energy sources in public infrastructure, including in public buildings; developing and implementing new business models for SMEs; supporting the creation and expansion of advanced capabilities in the development of products and services; increasing the efficiency of the use of natural resources and raw materials.</p>
Potential partners/partnerships (if already identified).	<ul style="list-style-type: none"> Biomass of Świętokrzyskie (Biomasa Świętokrzyska), Świętokrzysko-Podkarpacki Energy Cluster (Świętokrzysko-Podkarpacki Klaster Energetyczny) Building Cluster INNOVATOR of Świętokrzyskie and Podkarpackie Province (Świętokrzysko-Podkarpacki klaster budowlany INNOWATOR).

	<ul style="list-style-type: none"> Regional Fund for Environmental Protection and Water Management in Kielce, Marshal Office of the Świętokrzyskie Voivodeship, Consortium for the development of smart specialization: Sustainable energy development.
Potential funding instruments and mechanisms to be used for implementation	<ul style="list-style-type: none"> Regional Operational Programme for Świętokrzyskie 2014-2020, Operational Programme Eastern Poland 2014-2020, Operational Programme Infrastructure and Environment 2014-2020, Regional Fund for Environmental Protection and Water Management, National Fund for Environmental Protection and Water Management, Loan Fund of the Świętokrzyskie Voivodship Ltd. Smart Growth Operational Programme 2014-2020 Own resources of beneficiaries (enterprises, research centers)
Priority bio-economy areas relevant to the Action	<p>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 4 Bio-based textile and clothing PA No 5 Pulp and paper PA No 6 Bio-based chemical industry 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-areas, eco-tourism etc.)</p>
Cross-sectoral priorities addressed	Sustainable development

<i>Action No 4.1</i>	Low-emission construction through - use of the Norwegian technology in low-emission construction
<i>Type per implementation period</i>	<ul style="list-style-type: none"> Medium-term action - 5 years (to be implemented in the nearest future)
<i>Results to be achieved</i>	<ol style="list-style-type: none"> Construction of a model wooden low-energy building in the Norwegian technology. Comparison of operational costs for a traditional and a low-emission building.
<i>Indicators for measuring achievements</i>	Operational costs for a low-emission building.
<i>Mechanisms, tools to be used for measuring achievements</i>	Use of buildings – a comparative analysis of operational costs for a low-emission building and a building constructed in the Świętokrzyskie technology
<i>Stakeholders to be involved and their roles and benefits</i>	<ul style="list-style-type: none"> SMEs Roles/tasks: to define their objectives and needs, to participate in activities, to assign financial resources. Benefits: knowledge necessary for development of products and technologies, innovative products, increase in sales. Entities dealing with the development of research and technologies Roles/tasks: to prepare activities and estimate proposals for research fitting well to SMEs' needs and capabilities, to better communicate offered services to SMEs. Benefits: financial (income from carried out activities). Possible topics for new publications. Regional and local public authorities Roles/tasks: to support organizationally and financially structures which bring together SMEs and universities and provide support services leading to activities and development of new products and technologies. Benefits: long-term: increased income from taxes, due to better economic performance of

	SMEs. Possible increase in number of highly qualified workforce in a given area, development of the region.
<i>Potential partners/partnerships (if already identified).</i>	<ul style="list-style-type: none"> - State Forests - Hedmark County – Norway (Tretorget Ltd.) - Świętokrzysko-Podkarpacki Energy Cluster (Świętokrzysko-Podkarpacki Klaster Energetyczny) - Association “Effective Use of Energy in Świętokrzyskie” - Kielce University of Technology (Politechnika Świętokrzyska) - AGH University of Science and Technology in Krakow (Akademia Górniczo-Hutnicza w Krakowie) - Silesian University of Technology in Gliwice (Polityka Śląska w Gliwicach) - Science and Technology Park Euro-Centrum in Katowice - Stolbud Włoszczowa - Sawmill OLCZYK Ludwik Olczyk (Tartak OLCZYK Ludwik Olczyk) - and others.
<i>Potential funding instruments and mechanisms to be used for implementation</i>	<ul style="list-style-type: none"> - <i>The budget of the Świętokrzyskie Voivodeship</i> - <i>SMEs’ financing</i> - <i>National funding instruments established to support RTD activities</i> - <i>Available EU funds and other external international funds, e.g. Interreg Programmes, Norway grants, EU resources for RDI</i> - <i>Regional Fund for Environmental Protection and Water Management in Kielce (Wojewódzki Fundusz Ochrony Środowiska i Gospodarki Wodnej w Kielcach)</i> - <i>National Fund for Environmental Protection and Water Management (Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej)</i>
<i>Priority bio-economy areas relevant to the Action</i>	PA No 1 Agriculture, forestry and fishery PA No 3 Biobased building materials
<i>Cross-sectoral priorities addressed</i>	Sustainable development

Table of abbreviations and terms

<i>BSR</i>	Baltic Sea Region
<i>Ecosystem</i>	A network of public and private organizations involved in bioeconomy directly or indirectly, resources they hold and use for promotion, development of bioeconomy, mechanisms and tools used for development and for cooperation.
<i>EUSBSR</i>	The European Union Strategy for the Baltic Sea Region
<i>KETs</i>	Key Enabling Technologies
<i>Knowledge-driven</i>	Knowledge-driven is the one in which generation and use of knowledge plays the major part in creation of economic growth of the region and wealth of its society today and in the future
<i>RDI</i>	Research, technological development and innovation.
<i>RDI institutions</i>	Public and private research and innovation institutions, universities, technological centres, other bodies functioning as technologies and/or innovation testing, piloting, validation, transfer organisations.
<i>RDI2CluB</i>	Project 'Rural RDI milieus in transition towards smart Bioeconomy Clusters and Innovation Ecosystems', financed under the Programme Interreg Baltic Sea Region 2014-2020
<i>Regional Bioeconomy Profile</i>	Regional Bioeconomy Profile of the Świętokrzyskie Voivodeship 'Towards a bioeconomy cluster in Swietokrzyskie Voivodeship
<i>BERST</i>	Project BERST (BioEconomy Regional Strategy Toolkit) For benchmarking and developing strategies
<i>RTD</i>	Research and technological development
<i>SMEs</i>	Small and medium enterprises, as defined in the European Union recommendation No 2003/361 .
<i>EU Bioeconomy Strategy</i>	The Updated Bioeconomy Strategy of the European Union 'A sustainable Bioeconomy for Europe: strengthening the connection between economy, society and the environment', adopted on 11 October 2018