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ANALYTICAL REVIEW OF IMPLEMENTATION OF SMART SPECIALIZATION STRATEGY IN THE RIGA PLANNING REGION

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INTRODUCTION

The Smart Specialization Strategy and National Industrial Policy Guidelines 2014-2020 are two mutually coordinated parts of Latvia's economic development plan, which also facilitate achievement of the common goal – structural change of the national economy to increase the proportion of high added value products and services in export¹. Smart Specialization Strategy activities are oriented towards promotion of knowledge intensive economics by investments in research, innovation and similar facilitating activities. The Policy of Science, Technology Development, and Innovation Framework 2014-2020 stipulates development of the globally competitive Latvian science, technology and innovation sector that will completely satisfy demand of national economy and society². The smart specialization area incorporates all industry, science and education representatives who create knowledge of a concrete smart specialization area and are crucial to its profitability, as well as those who provide education based on this knowledge. The National Industrial Policy Guidelines 2014-2020³ describe innovation as one of the main pillars supporting the sustainable increase of competitiveness, productivity and export stability.

The Ministry of Economics defines roles of Smart Specialization Strategy participants⁴ as follows:

- Role of **INDUSTRY** – to be involved in innovation activities as well as to create innovations (demand side, driving force of excellence).
- Role of **UNIVERSITIES** – to act as knowledge centers (innovation centers):
 - to create a diverse knowledge base, to stimulate innovation application in companies through development of human capital and access to knowledge, and to integrate resources in industries (capacity building);
 - to integrate resources in industries and in regions (ecosystems for innovation).
- Role of **SCIENTIFIC INSTITUTIONS** – to evolve and rediscover relevant specific knowledge for smart specialization industries (supply side).

Since the beginning of the implementation of the Smart Specialization Strategy in Latvia close activity monitoring and discussions of industry professionals have highlighted several essential observations, e.g. industries in Latvia are highly specialized in relative terms, therefore specialization is not the problem. The main obstacle hindering economic development is the lack of a qualified labor force. Industry professionals have stressed the role of the universities and research institutions in supplying high quality specialists⁵. Collaboration among research institutes and enterprises is suboptimal⁶.

This analytic review focuses on various development indicators of five smart specialization areas: (1) knowledge intensive bioeconomy, (2) biomedicine, medical technologies, bio-pharmacy and biotechnologies, (3) smart materials, technology and engineering systems; (4) information and communication technologies; (5) smart

¹Smart Specialization strategy. Retrieved from: <http://www.izm.gov.lv/en/Science/smart-specialisation-strategy>

²National Industrial Policy Guidelines 2014-2020. Retrieved from: <https://ec.europa.eu/growth/tools-databases/dem/monitor/content/latvia-%E2%80%9Cnational-industrial-policy-guidelines-2014-2020>

³ See above 2.

⁴Ministry of Economics (2016). Proposal for national innovation system administration approach. Retrieved from: http://ilgtspejigaattistiba.saeima.lv/attachments/article/640/Prezent%C4%81cija_LPISP_27052016.pptx

⁵ Information report "National Industrial Policy Guidelines 2014-2020 implementation action plan which includes action plan of Smart Specialization strategy and system description of resultative indicators, development progress". Retrieved from: <http://tap.mk.gov.lv/mk/tap/?pid=40334802>

⁶ See above 2.

energetics – in the Riga Planning Region (hereafter – RPR) comparing those today to the starting point of 2014 when the Smart Specialization Strategy was confirmed.

Socioeconomic Situation of the Riga Planning Region

The Riga Planning Region's Sustainable development strategy for 2014-2030⁷ has eight priorities: 1. vital natural movement and migration; 2. communities and self-sufficiency; 3. ecologically tolerant way of living and area; 4. globally competitive areas; 5. high-quality transport and logistics; 6. municipalities – driving force of development; 7. sustainable living environment; 8. smart development.

Analysis of the Riga Planning Region's smart specialization opportunities⁸ identifies the following entrepreneurial division of its municipalities: **Development centers** (Riga, the capital city – a center of international relations, entrepreneurship, higher education, research and development; and regional centers (e.g. Limbaži, Ogre, Sigulda, Tukums) with similar function but on a more localized scale); **Pierīga** (municipalities located geographically close to Riga, providing a labor force and set of specialized services/products); **Coastal** (municipalities which are bound to promote “green” industries (knowledge intensive bioeconomy), and provide products of high quality, including small ports, fisheries, nature and health tourism); **Inland** (municipalities with products from local resources (existing and potential), including industries such forestry, agriculture, fishery in rivers/lakes, nature/health tourism, specific education options).

Residential and economic indicators of the Riga Planning Region. Overall labor force demand in Latvia is forecast to increase by 5.6% till 2020 (compared to 2011)⁹. There were 1.097 million residents in the Riga Planning Region in 2017 which is 56% of the current labor supply in Latvia (CSB). In all municipalities of the Riga Planning Region, unemployment levels have decreased by an average of 0.82% since 2014, a significant contribution also resultant from the initiation of EU programming period 2014 – 2020. Average salaries in industries relevant to smart specialization areas are gradually increasing and overall are 5% higher than the average in Latvia (see Annex 1). 75% of higher education and research institutions are located in the Riga Planning Region¹⁰, and 76% of all students in vocational and higher education programs in Latvia are studying there. According to OECD data¹¹, approximately 27% of students who entered higher education in 2017 selected programs related to natural sciences. The Riga Planning Region contains 35% of Latvia's schools which are attended by 111,200 or 53.4% of the country's children. Reviews created by MEPRD¹² show that EU funding acquired by the Riga Planning Region is substantially higher than in other regions in Latvia and totals up to EUR 222 million. For successful implementation of the Smart Specialization Strategy, a specific regional development model will be used as a framework (see Annex 3), as well as a set of specific measures (see Annex 4).

⁷ Riga Planning Region sustainable development strategy 2030. Retrieved from: http://rpr.gov.lv/wp-content/uploads/2017/12/RPR-Strategy-2030_res_STRATEGY.pdf

⁸ A study „Smart specialization opportunities in Riga Planning Region”. Retrieved from (in Latvian): http://rpr.gov.lv/wp-content/uploads/2017/12/Petijums_Rigas-planosanas-regiona-viedas-specializācijas-iespejas_ALPS_2014.pdf

⁹ Smart Specialization strategy. Retrieved from: <http://www.izm.gov.lv/en/Science/smart-specialisation-strategy>

¹⁰ Statistics review on higher education in Latvia in 2017. Retrieved from: <http://izm.gov.lv/lv/aktualitates/2857-publicists-statistikas-parskats-par-augstako-izglitiba-latvija-2017-gada>

¹¹ Education at a Glance: OECD indicators. Retrieved from: <http://www.oecd.org/education/skills-beyond-school/EAG2017CN-Latvia-Latvian.pdf>

¹² MEPRD. Analytical reports on investments and monitoring indicators of EU funding in 2014-2020. Retrieved from: www.raim.gov.lv

1 KNOWLEDGE INTENSIVE BIOECONOMY

A knowledge intensive bioeconomy facilitates innovation and the competitive capabilities of relevant industries in the area (e.g. agriculture, food production, forestry, and fishery) on a regional and international level, as well as supports Latvia's input in relation to EU common goals. The bioeconomy in Latvia has significant development potential on three levels: usage of agricultural lands for production, intensification of resource usage, and improvement of the added value of manufacturing¹³.

1.1 Smart specialization area participants in the Riga Planning Region

The part of the bioeconomy connected to agriculture and forestry is especially relevant for small inland municipalities, as well as for large wood production companies located in Riga which manufacture high added value export products. Companies connected to the food production industry are located throughout the territory of the RPR.

Innovation centers – human capital clusters

Innovation centers in this context are locations where people – scientists, researchers, students, industry representatives – deliberately gather to create and implement ideas, innovations, to research industry constraints and identify new ways to overcome them. Within the RPR knowledge intensive bioeconomic area, such innovation centers include higher education establishments (e.g. University of Latvia (UL), Riga Technical University (RTU)) and corresponding research institutions located in the capital city Riga, as well as research and collaboration centers located in other districts of the Riga Planning Region, e.g. the Forest Sector Competence Centre of Latvia, Latvian Wood construction cluster, National Rural Network (VLT), Food products quality cluster, etc.

Infrastructure – the basis for net present value

Part of the research infrastructure in the Riga Planning Region is available at the corresponding universities (e.g. University of Latvia (UL), Riga Technical University (RTU)) and was built during 2013 – 2017 and is used for educating students and schoolchildren i.e. the future workforce. Another part of “closed” infrastructure are corresponding factories of companies located in the RPR, as well as ports mainly used for transporting products of this smart specialization area. Such districts include: Riga, Mārupe, Inčukals, Stopiņi, and Saulkrasti in the coastal zone. Infrastructure related to agriculture and food production is located in almost every RPR municipality: e.g. organic farms¹⁴ in Aloja, Limbaži and Tukums, etc. or agricultural producers such as the “Ķekava” bird factory in Ķekava District.

Industry participants – driving forces for excellence

Participants in the knowledge intensive bioeconomy are located throughout the Riga Planning Region. The main organizations listed by niches and roles are shown in Table 1.

Table 1. Main participants of knowledge intensive bioeconomy in the Riga Planning Region

¹³Analytic description of the ecosystem of Smart specialization area “Knowledge intensive bioeconomy”. Retrieved from: https://cfla.gov.lv/userfiles/files/1111_Ecosystem%20-%20Bioeconomics.docx

¹⁴Organic farms in Latvia. Retrieved from: <http://www.bioinfo.lv/>

Knowledge intensive bioeconomy niches	RPR Innovation centers - human capital clusters	RPR Infrastructure – net present value	RPR Industry participants – driving forces for excellence
Niche 1: Sustainable and productive forestry activity in changing climate condition (more efficient forest management and forest resource management technologies) (forest industry)	LSFRI Silava Latvian Forest Owners' Association Latvian Wood Industry Federation Ogre State Technical College	JSC Latvijas Finieris (4 factories in Riga) PATA Ltd. (factory in Inčukalns District) BSW Latvia Ltd. (factory in Stopiņu District) Rīgas meži Ltd. (Ogre)	JSC Latvijas Finieris JSC Latvija valsts meži Metrum Ltd. Amberwood Latvia Ltd.
Niche 2: Innovative high added value timber/wood products (forest industry, timber manufacturing)	Latvian Wood Industry Federation	JSC Latvijas Finieris (4 factories in Riga) Marko KEA Ltd. Kronospan Riga Ltd.	JSC Latvijas Finieris Kronospan Riga Ltd.
Niche 3: Complete use of wood biomass for chemical processing and energy (forest industry, timber chemical processing)	Latvian State Institute of Wood Chemistry	PATA Ltd. (Inčukalns) JSC Latvijas Finieris (4 factories in Riga) Jauda koks Ltd. (Ogre) PolyLabs Ltd. (Rīga)	
Niche 4: Innovative, risk reducing plant and animal breeding technologies (agriculture, veterinary medicine)	Genetic research institutes Sigulda CMAS Latvian Association of Breeders	Eko Terra Ltd. Pūres dārzkopības izmēģinājuma stacija Ltd. (Tukums District) Aloja Starkelsen Ltd. (Aloja District)	
Niche 5: Innovative high added value niche product production from traditional and unconventional agricultural plant and animal raw materials (food production)	BIOR Ogre State Technical College (OSTC) Mechanics and Technology College of Olaine (MTCO)	Biolat JSC (Salaspils District) Orkla Confectionery & Snacks Latvija Ltd. (Riga) Staburadzes konditoreja Ltd. (Riga) Puratos Ltd. (Tukums District) JSC Rīgas dzirnavnieks (Riga) Sidrabjērs Ltd. (Mārupe District) JSC Latvijas balzāms (Riga) Fazer Latvija Ltd. (Ogres District)	
Niche 6: Plant and animal breeding and technological solutions for using recycled by-products (agriculture energetics)	RTU IESE, Latvian Fund for Nature (LFN) OSTC MTCO	Keizarsils SIA (Salaspils District) Zaļā Mārupe SIA (Mārupes District) Pellet 4Energia SIA (Riga)	
Niche 7: Food safety	BIOR	BF “Kekava” (Ķekava District) Other large food production companies	
Niche 8: Fishery	BIOR, Latvian Hydroecology Institute	Latvian Small Hydropower Association	

The locations of the main participants in the area are shown on [smart specialization map](#).

1.2 Human resources

Existing scientists at higher education institutions

Development of technologies in the knowledge intensive bioeconomy is closely related to the regional climate. Research is frequently localized and industries such as agriculture and forestry often oriented towards needs of local enterprises. The main research institutions related to knowledge intensive economy in wood processing industry in the RPR are Latvian State Forest Research Institute “Silava” (LSFRI Silava), Latvian State Institute of Wood Chemistry (KKI), VMF Latvia Ltd. In food production, the main research organization is the Institute of Food Safety, Animal Health and Environment “BIOR”. A total of 400 PhDs work in the knowledge intensive bioeconomy in Latvia¹⁵ (ca. 60-65% are working in the RPR). Scientific personnel are actively involved in

¹⁵ Analytic description of the ecosystem of Smart specialization area “Knowledge intensive bioeconomy” – reference to Strategic Alliance of Bioeconomy (page 9). Latvia University of Life Sciences and Technologies: report of a rector Irina Pilvere on 25/09/2015.

industry related research networks and cross-border projects such as NOVA-BOVA, European forest institute ([EFI](#)) network, FP6, FP7, H2020, ECOLOGICA, Erasmus+, etc.

Existing entrepreneurs – private companies and state-established institutions

More than 50,000 people from the Riga Planning Region worked for companies related to knowledge intensive bioeconomy in 2017 (industries can overlap in various SSS areas, see Annex 2). The largest companies which employed more than 1,000 people are located in Riga and represent industries such as woodworking (JSC Latvijas Finieris), forestry (JSC Latvijas valsts meži) and waste management (Clean R Ltd.). Some large companies employing over 250 people are located in Sigulda District (Kokapstrāde 98 Ltd.; woodworking), Babīte District (Lāči Ltd.; food production), Ogre District (Fazer Latvija Ltd.; food production), Salacgrīva District (Brīvais vilnis Ltd.; food production).

Next generation – students and schoolchildren

To develop a new workforce in the knowledge intensive bioeconomy, quality education from school to higher education diploma is crucial. During the 2014-2020 EU programming period in Latvia, the quality education objective in Latvia is fulfilled by intensive involvement of schools in STEM related specific object programs and activities, mainly concentrating on relevant knowledge areas summarized in Annex 5, Table 12. Implementation of these objectives in Latvia is overseen by the Ministry of Economics, the State Education and Development Agency (SEDA) and the National Centre of Education (NCE) of the Republic of Latvia. Besides the higher education programs available at universities mentioned above, students after 9th grade can study at vocational education colleges: Riga State Technical College (publishing, woodworking), Ogre State Technical College in Ikšķile (woodworking, forestry, food production) and Mechanics and Technology College of Olaine (food production). To ensure better specialization, vocational education in the RPR should be strengthened even further.

1.3 Main industry indicators

The largest companies with an annual turnover of more than EUR 10 million are located in Riga, Babīte, Stopiņi, Ādaži, Salaspils, Sigulda, Ropaži, Tukums, Limbaži and Jaunpils districts. The main industry indicators are summarized in Table 2.

Table 2. Main development indicators in knowledge intensive bioeconomy in the Riga Planning Region

Year	Number of enterprises in the RPR	Turnover of the area, M EUR	Number of employees of the area	Turnover of the area per 1 employee thousand EUR
2016	777	5538,81	50914	108,79
2015	775	5480,32	50802	107,88
2014	768	5852,19	51339	113,99
2013	740	6176,14	49911	123,74

2 BIOMEDICINE, MEDICAL TECHNOLOGIES, BIO-PHARMACY AND BIOTECHNOLOGIES

The smart specialization area of biomedicine, medical technologies, bio-pharmacy and biotechnologies requires long-term and sustainable development process. It consists of four main steps: creation of basis and applied knowledge, development of technologies,

clinical trials and market introduction. An effective partnership between academic institutions and innovative medicine technology manufacturers is essential.

2.1 Smart specialization area participants in the Riga Planning Region

Innovation centers – human capital clusters

Innovation centers in the biomedicine, medical technology, bio-pharmacy and biotechnology smart specialization area in Latvia are higher education institutions located in the RPR such as the University of Latvia (UL), Riga Stradiņš University (RSU), Riga Technical University (RTU) and the state research institutes - the Latvian Institute of Organic Synthesis (IOS) and the Latvian Biomedical Research and Study Centre (BMC). Within the IOS, a pharmacy and biomedicine national research center (VNPC) has been created with participating organizations IOS, BMC, UL and RTU¹⁶, which not only provide research infrastructure but also offer the function of a research consortium¹⁷. Essential innovative input in functional food and in biotechnology of veterinary medicine area is created by the research center BIOR, EFSA contact point in Latvia.

Infrastructure – the basis for net present value

A considerable part of the current infrastructure in the RPR belongs to higher education institutions such as University of Latvia (e.g. Academic Center for Natural Sciences), Riga Technical University, Riga Stradiņš university (including clinical research institutes located near the hospitals) which was partially reconstructed in 2007-2013 programming period and is available for student education. In addition, state-established research centers (e.g. IOS, KKI, EDI, BMC, BIOR) have infrastructure that is available for state economic development needs and implementation of the Smart Specialization Strategy through specific objectives during the 2014-2020 programming period. The owners of private (closed) infrastructure are companies representing industries in this area.

Industry participants – driving forces for excellence

Participants in this area are located close to Riga and in Pieriga regions. See main organizations listed by specific niches and roles in Table 3.

Table 3. Main participants of biomedicine, medical technologies, bio-pharmacy and biotechnologies in the Riga Planning Region

Biomedicine, medical technologies, bio-pharmacy, biotechnologies niches	RPR Innovation centers - human capital clusters	RPR Infrastructure – net present value	RPR Industry participants – driving forces for excellence
Niche 1: Pharmaceutical and bioactive ingredient sourcing chemical and biotechnological methods and products	RSU UL RTU MSAC MTCO	IOS BMC UL RTU	JSC Grindex JSC Olainfarm Rīgas Farmaceutiskā fabrika Ltd.
Niche 2: Research and development of new/existing human and veterinary medicine	RSU Pharmacy Faculty LU Pharmacy Faculty RTU MSAC	IOS BMC BIOR UL	JSC Grindex JSC Olainfarm Rīgas Farmaceutiskā fabrika Ltd. Unipharmalab Ltd.
Niche 3: Molecular and	RSU (incl. its institutes)	BMC	Rīgas Farmaceutiskā

¹⁶ SEDA. Discussion cycle on the further development scenarios of National Research Centers. Retrieved from: http://viaa.gov.lv/lat/zinatnes_inovācijas_progr/viedas_sPECIALIZĀCIJAS_iev/vieda_sPECIALIZĀCIJA_jaunumi/?text_id=38382

¹⁷ Latvian Institute of Organic Synthesis. Pugovičs, O., PhD (19.04.2016.). Presentation: “Latvian Institute of Organic Synthesis - Development tasks in post-NRC period”. Retrieved from:

http://www.izm.gov.lv/images/zinatne/Konferences_materiali/OSI_attistibas_uzdevumi.pdf

individualized medical services and diagnostics, cellular technologies, genomic analysis	P. Stradiņš Clinical University Hospital RAKUS Children Clinical University Hospital, UL	IOS Cilmes šūnu tehnoloģijas Ltd. RSU UL	fabrika Ltd. Asla Biotech Ltd. Biosan Ltd.
Niche 4: Functional food products, medical cosmetics and bioactive natural ingredient products	Institute of Microbiology and Biotechnology UL MTCO	BIOR Institute of Microbiology and Biotechnology UL	Silvanols Ltd. AD Smart Ltd. Madara Cosmetics Ltd. Biolat Ltd. Solepharm Ltd. Rīgas Farmaceutiskā fabrika Ltd.
Niche 5: <i>connected health</i> – health technologies, telemedicine	UL RTU CSIT	EDI BMC MII UL	Large ICT area companies Future medicine group Ltd. GenEra Ltd.

The locations of the main participants in the area are shown on [smart specialization map](#).

2.2 Human resources

Existing scientists at higher education institutions

The main scientific institutions related to this smart specialization area in the RPR are Riga Stradiņš University (RSU), University of Latvia (UL), Riga Technical University (RTU), Latvian Institute of Organic Synthesis (IOS), Latvian Biomedical Research and Study Centre (BMC). The innovative health technology industry in Latvia is currently undergoing a process of change: the previous linear, internal R&D&I structural model has been transferred to network innovation¹⁸. National research institutions such as BMC are increasingly cooperating with the University of Latvia (Biology and Medicine Faculty) through active involvement in the study process and development of study programs, including at doctoral level. In addition, there are other prospective network building and cooperation incentives from BMC and IOS: based on common infrastructure developed within Pharmacy biomedicine NRC; the future vision is to create Structural Biology Center and Personalized Medical consortium to consolidate biomedical, biopharma and clinical research in Latvia; and to create a national biobank network¹⁹.

Existing entrepreneurs – private companies and state-established institutions

Just under 40,000 people from the Riga Planning Region worked from companies connected with biomedicine, medicine technologies, bio-pharmacy and biotechnologies in 2017 (industries can overlap in various SSS areas, see Annex 2). The largest companies which employed more than 1,000 people were located in Olaine Municipality (JSC Olainfarm). Other companies employing more than 250 people are mainly located in Riga and Jurmala. These are human health related companies and are mainly state and municipality established organizations. Industry professionals emphasize that there is a lack of effective *start-up* companies in pharmacy industry which could attract risk capital and bring scientific research products to shopping shelves in pharmacies.

Next generation – students and schoolchildren

¹⁸ Analytic description of the ecosystem of Smart specialization area “Biomedicine, medical technologies, bio-pharmacy and biotechnologies”. Retrieved from: https://cfla.gov.lv/userfiles/files/1111_Ecosystem%20-%20Biomedicine.docx

¹⁹ Latvian Biomedical Research and Study Centre. Development Strategy 2015 -2020 (completed 30.03.2017). Retrieved from (in Latvian): http://bmc.biomed.lu.lv/files/2017/5/1/bmc_strategija_30_03_2017_low_cN.pdf

To develop a new workforce in biomedicine, medical technologies, bio-pharmacy and biotechnologies, quality education from school to higher education diploma is crucial. During the 2014-2020 EU programming period in Latvia, this is being fulfilled by intensive involvement of schools in STEM related specific object programs and activities, national and international level school competitions, mainly concentrating on relevant knowledge areas summarized in Annex 5, Table 13. Higher education in professions essential to the area is possible to acquire in University of Latvia (Biology Faculty, Medicine Faculty, Physics, Mathematics and Optometry Faculty), Riga Stradiņš University (biomedicine, industrial pharmacy, medicine, public health and social welfare programs etc.), Riga Technical University (medical engineering, physics, material sciences, applied chemistry and other programs). Vocational education is available at Mechanics and Technology College of Olaine (biotechnology), as well as medical colleges of UL and RSU. Vocational education should be strengthened in the RPR.

2.3 Main industry indicators

The largest companies whose annual turnover is over EUR 10 million are located in Riga, Olaine, Babīte, Ogre, Tukums, Jaunpils, Sigulda and Jurmala districts. See Table 4.

Table 4. Main development indicators in biomedicine, medical technologies, bio-pharmacy and biotechnologies in the Riga Planning Region

Year	Number of enterprises in the RPR	Turnover of the area M EUR	Number of employees of the area	Turnover of the area per 1 employee thousand EUR
2016	421	1862,96	39327	47,37
2015	403	1783,39	39150	45,55
2014	374	1767,09	39174	45,11
2013	367	1685,28	37650	44,76

3 SMART MATERIALS, TECHNOLOGY AND ENGINEERING SYSTEMS

Smart materials, technologies and engineering ecosystem is a combination of specific processes and their participants which results in creation of smart materials – such materials which are changing their qualities influenced by external stimuli; and smart technologies and engineering systems are manageable processes which can adaptively change when influenced by external physical, social, economic, psychologic and emotional factors. The close connection of this area to social sciences, health sciences and ethics is the distinguishing feature of this area compared to other SSS areas²⁰.

3.1 Smart specialization participants in the Riga Planning Region

Innovation centers – human capital clusters

Innovation centers of smart materials, technologies and engineering systems in the RPR are universities that provide study programs in natural sciences. For example, one such innovation cluster is located at the RTU Scientific Base in Ķīpsala where several area-relevant faculties and institutes (e.g. the Faculty of Power and Electrical Engineering (PEE), Faculty of Materials Science and Applied Chemistry (MSAC), Institute of Materials and Structures (IMS), RTU Innovation and Technology Transfer Center) are located. Other separate innovation centers are state research institutes of the University of

²⁰ Analytic description of the ecosystem of Smart specialization area “Smart materials, technologies and engineering systems”. Retrieved from (in Latvian): https://cfla.gov.lv/userfiles/files/1111_Ecosystem%20-%20Smart%20materials.docx

Latvia and subsidiaries widely spread in the Riga Planning Region (incl., Institute of Astronomy in Botanical Garden of the University of Latvia, Baldone observatory, Institute of Atomic Physics and Spectroscopy, Institute of Mathematics and Informatics (IMI UL), Institute of Polymer Mechanics (IPM), Institute of Solid State Physics (ISSP UL) etc.). Moreover, RSU Medical Education Technology Center (e.g., innovative technologies in medicine, nanoprobe, adaptive optics etc.), Art Academy of Latvia, Faculty of Design (e.g. technologies for spatial, applied and textile design), Latvian Academy of Sport Education in the sports can also be considered as innovation centers.

Infrastructure provision – the basis for net present value

A considerable part of the research infrastructure is available at higher education institutions in the RPR, especially infrastructure which was developed during EU funding 2007-2013 programming period at RTU Scientific Base at Ķīpsala. Private research and development infrastructure are owned by existing electronical and mechanical equipment manufacturing companies of this smart specialization area in Latvia. One of the industrial clusters run by such companies is located in the Ganību Street area due to its optimal location to transportation routes and the possibility to use or reconstruct existing manufacturing infrastructure. Companies compliant with the smart materials, technologies and engineering systems area are also producers of high added value products mentioned also before in bioeconomy, biomedicine, medical technologies, biopharmacy, biotechnologies, and smart energetics area since production of high added value products requires high quality and innovative materials, production technologies and engineering systems. Industry participants of this smart specialization area in the RPR have great multiplication effect and exporting capacity.

Industry participants – driving forces for excellence

Participants of this area are located throughout the Riga Planning Region. See main organizations listed by specific niches and roles in Table 5.

Table 5. Main participants of smart materials, technology and engineering systems in the Riga Planning Region

Smart materials, technology and engineering systems niches	RPR Innovation centers - human capital clusters	RPR Infrastructure – net present value	RPR Industry participants – driving forces for excellence
Niche 1: Implant materials	RTU MSAC RTU RSU	Underdeveloped	Underdeveloped
Niche 2: Composite materials (i.e. civil engineering materials and building constructions)	RTU MSAC RTU Institute of Silicate Materials Institute for mechanics of materials (UL)	Latvijas Finieris JSC, Rotons Ltd. (Ādaži District) AM Energy Ltd. (Ķekava District), Izoterms Ltd. (Stopiņi District), Knauf Ltd (Stopiņi District), other material producers	
Niche 3: Thin layers and coatings (i.e. building solutions)	ISSP UL Institute for mechanics of materials (UL)	Groglass Ltd, JSC Olaine chemical factory “Biolars”	
Niche 4: Appliances (incl. electrotechnics and electronics, information engineering)	RTU FEE TSI Riga State Technical College (RSTC)	HansaMatrix JSC, Baltic Scientific Instruments Ltd., Volfburg Ltd. (Salaspils), Saf Tehnika JSC, Sidrabe JSC, MASOC companies	
Niche 5: Mechanisms and working cars	RTU META RSTC	Rīgas elektromašīnbūves rūpnīca Ltd., Automatizācija Ltd, CNC SAAN Ltd. (Mārupe District), Fonons Ltd., other MASOC companies	
Niche 6: Fiberglass products	RTU MSAC	Underdeveloped	Underdeveloped
Niche 7: High level chemical solutions	RTU MSAC Institute for mechanics of materials (UL), Wood Chemistry	Grindeks JSC, Olainfarm JSC, JSC Olaine chemical factory “Biolars” etc.	

The locations of the main participants in the area are shown on [smart specialization map](#).

3.2 Human resources

Existing scientists at higher education institutions

In the field of smart materials, technology and engineering systems, the largest scientific input is created by scientists from the two largest universities in Latvia – the University of Latvia, Institute of Solid State Physics, and Riga Technical University (RTU). The RTU has also established a research platform “Materials, Processes and Technologies” which provides various influential studies of the area, e.g. synthesis of nanoparticles or calculation of large real-life construction dimensions, structural strength tests and durability predictions. Many of the inventions are patented and result in publications.

Existing entrepreneurs – private companies and state established institutions

In 2017, approximately 20,600 people from the Riga Planning Region worked for companies related to smart materials, technologies and engineering technologies (industries can overlap in various SSS areas, see Annex 2). Large companies which employ more than 250 people are mainly located in Riga and represent industries such as woodworking, manufacturing of electrical equipment (e.g. Rīgas elektromašīnbūves rūpnīca JSC), ship equipment manufacturing (e.g. Rīgas Kuģu būvētava JSC).

The future generation – students and schoolchildren

To develop a new workforce in smart materials, technologies and engineering systems area, quality education from school to higher education diploma is crucial. During the 2014-2020 EU programming period in Latvia, this is being fulfilled by intensive involvement of schools in STEM related specific object programs and activities, mainly concentrating on relevant knowledge areas summarized in Annex 5, Table 14. To build up interest among youngsters, through involvement in EU and state funded projects, schools and youth centers in the RPR have great possibilities to provide extracurricular lessons in robotics, airplane modelling, construction, chemistry, natural sciences etc. Higher education in smart materials, technologies and engineering systems is available at RTU Mechanical Engineering, Transport and Aeronautics Faculty; Physics, Mathematics and Optometry Faculty and Chemistry Faculty of the University of Latvia and elsewhere. Vocational education of the area is available at Riga Building College (e.g. engineering systems), Riga State Technical College in Riga and Limbaži. Vocational education will be strengthened to provide higher specialization possibilities at earlier education stages.

3.3 Main industry indicators

The largest companies whose annual turnover is over EUR 10 million are located in Riga, Ķekava, Mārupe, Stopiņi districts. The industry indicators are summarized in Table 6.

Table 6. Main development indicators in smart materials, technology and engineering systems in the Riga Planning Region

Year	Number of enterprises in the RPR	Turnover of the area M EUR	Number of employees of the area	Turnover of the area per 1 employee thousand EUR
2016	386	2088,76	20611	101,34
2015	388	1967,30	20698	95,05
2014	393	1907,56	21068	90,54
2013	369	1993,09	20464	97,40

4 INFORMATION AND COMMUNICATION TECHNOLOGIES

Information and communication technologies is a combination of knowledge, methods, techniques and hardware equipment which provides acquisition, storage and distribution of data of any kind using computer-based and digital tools. Information technologies are tools which are used or created to solve the data-related issues of many other industries²¹.

4.1. Smart specialization participants in the Riga Planning Region

Innovation centers – human capital clusters

Innovation centers of ICT area in the Riga Planning Region are considered to be creative coworking spaces located close to large IT companies, e.g. “VEF kvartāls” in Riga near Accenture and Tieto Latvija, SWH offices in the Skanste neighborhood Riga, “Barons kvartāls” and other IT companies near the Cēsu Street and Brīvības Street crossing, collaboration spaces created by universities in Latvia (e.g. RISEBA H2O), the newly established Riga IT demo center at the National Library of Latvia (NLL), as well as other IT professional gathering and cocreation sites such as TechHub Riga and Mill Riga, etc. In the RPR, 8 of 13 higher education schools provide ICT programs. In smaller RPR districts, local knowledge centers such as libraries, vocational education organizations, schools, cultural centers, incubators are considered to be ICT innovation contact points.

Infrastructure - the basis for net present value

The largest ICT state infrastructure owners in Latvia (e.g. Latvian Television, Lattelecom) and communication infrastructure owners in Latvia (e.g. Tele2, LMT) are mainly located in Riga. Infrastructure for research and education now is available at nearly all higher and vocational education establishments. Some of the highest data processing, storage and transfer technologies which are required for ICT smart specialization research are located in ICT institutes and other related subsidiaries of the largest state universities.

Industry participants – driving forces for excellence

Participants in this area are mainly located in Riga and nearby districts such as Mārupe and Ķekava. See main organizations listed by specific niches and roles in Table 7.

Table 7. Main participants in information and communication technologies in the Riga Planning Region

Information and communication technologies niches	RPR Innovation centers - human capital clusters	RPR Infrastructure – net present value	RPR Industry participants – driving forces for excellence
Niche 1: Innovative knowledge management, system modeling and programming methods and tools	IMI UL RTU TSI ISMA	Accenture, Tieto Latvia, Exigen Services Latvia, Draugiem group, Visma Enterprise, Mobilly, C.T.Co etc.	
Niche 2: Innovative ICT hardware and software applications	ICT industry associations	Hardware: Samsung, Tele2, LMT, Telia Latvija, Lightspace Technologies, Mikrotikls etc. Software: Visma Enterprise, Accenture, Tieto Latvia, Exigen Services, Draugiem group, Evolution Gaming	
Niche 3: Cyber physical systems, language technologies and semantic web	IPE, EDI RTU UL	Accenture, Tieto, Exigen Services, Tilde	

²¹ Analytic description of the ecosystem of Smart specialization area “Information and telecommunication technologies”. Retrieved from: https://cfla.gov.lv/userfiles/files/1111_Ecosystem%20-%20Information%20and%20Communication%20Technologies.docx

Niche 4: Big data and its infrastructure	IMI UL EDI IKT industry associations	Lattelecom companies, Latvian Television
Niche 5: Information safety and quantum computers	IMI UL EDI IKT industry associations	Lattelecom companies, Latvian Television, Atea, Tieto Latvia
Niche 6: Computer systems testing technologies, BPO services	Computer Sciences Faculty UL IMI UL	Lattelecom companies, Evry Latvia, Atea, companies providing professional and consultancy services in Latvia

The locations of the main participants in the area are shown on [smart specialization map](#).

4.2 Human resources

Existing scientists at higher education institutions

The ICT area in Latvia, and correspondingly in the Riga Planning Region, is used for scientific infrastructure networks (i.e., national research centers, academic base network), national research platform and industrial and new product/technologies development projects (ie. in CCs). The IT competence center creates meaningful synergy with the National Research Centre of Information Communication and Signal Processing Technologies. One of the mid-term objectives of this center is to create NRC coworking networks nationally and internationally by actively integrating into the scientific space of the EU, through involvement in ESFRI and other consortiums, networks and projects.

Existing entrepreneurs – private companies and state-established institutions

Approximately 15,600 people from the Riga Planning Region worked for companies related to smart materials, technologies and engineering technologies in 2017 (industries can overlap in various SSS areas, see in Annex 2), of those 50% worked for the nine largest ICT companies employing over 250 people (eight of these companies are located in Riga and one in Ķekava District at Valdlauči).

The future generation – students and school children

To develop a new workforce in the ICT area, quality education from school to higher education diploma is crucial. During the 2014-2020 EU programming period in Latvia, this is being fulfilled by intensive involvement of schools in STEM related specific object programs and activities, mainly concentrating on relevant knowledge areas summarized in Annex 5, Table 15. Schools already provide various extracurricular lessons in programming and multimedia to increase interest of youngster in the ICT. Higher education possibilities in the Riga Planning Region are provided by large state and private universities (e.g. UL, RTU, TTI, ISMA, EKA). Vocational education is available at almost every vocational school of the Riga Planning Region.

4.3 Main industry indicators

The largest companies whose annual turnover is over EUR 10 million are mainly located in Riga and Ķekava District. The main industry indicators are summarized in Table 8.

Table 8. Main development indicators in ICT area in the Riga Planning Region

Year	Number of enterprises in the RPR	Turnover of the area M EUR	Number of employees of the area	Turnover of the area per 1 employee thousand EUR
2016	211	1458,74	15595	93,54
2015	203	1323,82	13611	97,26
2014	202	1162,10	12661	91,79
2013	189	1101,08	12132	90,76

5 SMART ENERGETICS

Latvia's smart energetics specialization area, and in the Riga Planning Region in particular, where approximately half of industry-related enterprises and the majority of educational and scientific resources of the country are located, has great potential to find its niche areas in each of the four areas of European Energy networks, i.e. development of smart networks, development of next generation technologies for energy generation from renewable resources, improvement of energy efficiency, and sustainable energy for transportation²².

5.1 Smart specialization area participants in the Riga Planning Region

Innovation centers – human capital clusters

The main innovation centers related to the smart energetics area are Riga Technical University (RTU), Institute of Physical Energetics (IPE), University of Latvia (UL), Institute of Solid State Physics of the University of Latvia (ISSP UL). Important industry development input is provided such state organizations as the Administration of the Latvian Environmental Protection Fund (ALEPF) and sector associations such as the Latvian Renewable Energy Federation (LAEF) and the Latvian Biomass Association (LATbio) etc. which are actively participating in development of sectoral politics.

Infrastructure – net present value basis

Open infrastructure needed for research is mainly provided in Riga in higher education establishments such as ISSP UL, Physics, Mathematics and Optometry Faculty (UL), all faculties of RTU, Institute of Materials and Structures of RTU, RTU Enerģija Ltd., Institute of Physical Energetics. The largest owners of the national infrastructure for energy generation and distribution are state-owned companies located in the Riga Planning Region (e.g. JSC Latvenergo and its subsidiary companies, JSC Latvijas gāze, etc.), other manufacturers of the equipment for energy generation and consumption.

Industry participants – driving forces for excellence

Participants in this field are primarily located throughout the Riga Planning Region. See main organizations listed by specific niches and roles in Table 9.

Table 9. Main participants of smart energetics in the Riga Planning Region

Smart energetics niches	RPR Innovation centers - human capital clusters	RPR Infrastructure – net present value	RPR Industry participants – driving forces for excellence
Niche 1: Development of smart networks – demand-supply systems, smart houses, homes, appliances and home automation systems	ISSP UL IPE PMF UL RTU	Latvenergo JSC Augstsprieguma tīkls JSC Rīgas Siltums JSC Latvijas elektriskie tīkli	SAF Tehnika JSC HansaMatrix JSC UAV Factory Ltd.
Niche 2: Development of next generation technologies for energy production from renewable energy resources	RTU Energy Administration of Latvian Environmental	JSC Latvijas gāze JSC City water distributing companies	Komforts JSC (Tukums) HansaMatrix JSC Agro Lesterne (Tukums)
Niche 3: Improvement of energy efficiency – energy efficiency of buildings and infrastructure of residential areas	Protection Fund MASOC CSDD Inspecta Latvia	Building of various municipalities	Komforts JSC (Tukums) Jauda JSC Termolat Ltd. SCM Latvia Ltd.

²² Analytic description of the ecosystem of Smart specialization area “Smart energetics”. Retrieved from: https://cfla.gov.lv/userfiles/files/1111_Ecosystem%20-%20Smart%20energetics.docx

Niche 4: Sustainable energy for transportation – new technologies, improvement of implementation, electro-mobility	JSC Aviācijas pētniecības centrs Ltd. LATbio	Gas station owners, car electric stations build in various municipalities	Ekodoma Ltd.
			Authorized dealers of large car production companies (e.g. Moller Auto Latvia)

The locations of the main participants in the area are shown on [smart specialization map](#).

5.2 Human resources

Existing scientists at higher education institutions

In the area of smart energetics, the largest scientific input is provided by scientists from the two largest universities in Latvia – the University of Latvia, Institute of Solid State Physics, and Riga Technical University (RTU). The RTU has also established a research platform “Materials, Processes and Technologies”, where, in connection with smart materials, technologies and engineering systems, and knowledge intensive bioeconomic areas, innovative usage of alternative resources for energy generation and innovative energy efficient solutions in spatial design, construction, manufacturing, engineering, etc. are sought after and nurtured.

Existing entrepreneurs – private companies and state-established structures

In 2017, more than 22,000 people from the Riga Planning Region worked for companies related to smart energetics (industries can overlap, see in Annex 2). Large companies in this sector that employ more than 250 people are mainly located in Riga (e.g. JSC Latvenergo, JSC Sadales tīkls, JSC Latvijas gāze, JSC Gaso, Clean R Ltd., Rīgas ūdens Ltd., JSC Rīgas Siltums, JSC Augstsprieguma tīkls and JSC Rīgas Kuģubūvētava, etc.).

The future generation – students and schoolchildren

To develop a new workforce in smart energetics quality education from school to higher education diploma is crucial. During the 2014-2020 EU programming period in Latvia, this is being fulfilled by intensive involvement of schools in STEM related specific object programs and activities, mainly concentrating on relevant knowledge areas summarized in Annex 5, Table 16. The main higher education establishments in the smart energetics area in the RPR are natural sciences and engineering faculties of the University of Latvia and RTU. Vocational education is available at Riga Building College (engineering), Riga State Technical college, VECC Riga State Technical college (e.g. construction, renewable energy programs). The vocational education sector needs to be strengthened.

5.3 Main industry indicators

The largest companies whose annual turnover is over EUR 10 million are located in Riga, Stopiņi, Salaspils, Mārupe, Babīte, Olaine districts. See total indicators in the Table 10.

Table 10. Main development indicators in smart energetics in the Riga Planning Region

Year	Number of enterprises in the RPR	Turnover of the area M EUR	Number of employees of the area	Turnover of the area per 1 employee thousand EUR
2016	310	2719,86	22140	122,85
2015	316	2789,79	21601	129,15
2014	308	3152,44	21859	144,22
2013	291	3731,97	21401	174,38

6 Available EU Structural Funds and Other Financial Instruments

Total available funding for Latvia (ESF, ERDF, and the Cohesion Fund) from EU funding is EUR 4.4 billion in the 2014-2020 programming period.²³ A detailed breakdown by sector is provided in Figure 1.

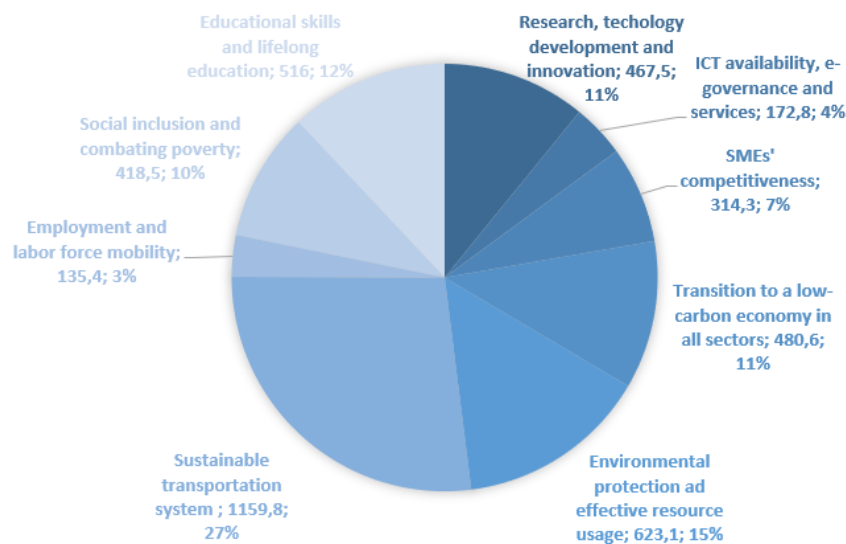


Figure 1. EU funding available to Latvia in 2014 – 2020 period divided by relevant investment areas; M EUR.

During the 2014 – 2021 programming period for Latvia, planned funding of EUR 46.4 million has been allocated from the European Economic Area (EEA) Financial Mechanism, while EUR 48.0 million from Norway Financial Mechanism for Latvia is also available, resulting in total available funding of EUR 94.4 million from both mechanisms²⁴. A considerable number of specific objective programs related to Smart Specialization strategy implementation have already been launched in 2016 and 2017. See detailed information about specific objectives of the 2014 – 2020 programming period in Annex 6.

7 Best practice

Selection of best practice companies or excellence drivers is based on following indicators (in line with industry characteristics): stable turnover growth, stable export growth, high added value per employee, positive development correlation with R&D investments, including involvement in EU funding programs in 2014-2020. Selected municipalities are demonstrating public administration example providing solid grounds for development. Positive and result-oriented synergy between people, infrastructure and industry is also important.

This [smart specialization map](#) (click on the link) contains a set of best practice enterprises and municipalities.

²³ EU funding in 2014 - 2020 programming period, divided by areas: <http://esfondi.lv/finansejuma-sadalijums-2>

²⁴ EEA and Norwegian Financial Mechanisms: <https://www.eeagrants.lv/?id=121>

8 SWOT ANALYSIS

8.1 Riga, Jurmala and regional centers Sigulda, Ogre, Limbaži, Tukums

Strengths	Weaknesses
<ul style="list-style-type: none"> - Possibility to develop innovation clusters; - Riga as the ICT and financial center of RPR; - Jurmala: a city with developed tourism, recreation, real estate market segments; - Education institutions and industry representatives are actively participating in EU funding programs; - Labor force has higher salaries, opportunities to work for international enterprises, acquire new knowledge and improve personal competitiveness; and as residents they have favorable residency declaration opportunities; - Proximity of higher and vocational education establishments provides various possibilities for lifelong learning. 	<ul style="list-style-type: none"> - Lack of co-creation space, especially in industries related to smart materials, engineering systems, smart energetics; - Science institute collaboration with industry is quite slow-moving, which is possibly caused by a lack of mutual collaboration platforms; - In Jurmala and regional centers - relatively weak horizontal impact smart specialization areas - ICT and smart energetics. - Lack of well-managed and interval-based public transportation flow
Opportunities	Threats
<ul style="list-style-type: none"> - For Riga: to build the focus on smart specialization areas connected with the already strong ICT area, as well as smart energetics; - Use free territories for smart material, technology and engineering systems infrastructure development; - For Jurmala and other regional centers: focus smart specialization activities towards knowledge intensive bioeconomy and biomedicine which are not yet sufficiently developed in these areas. 	<ul style="list-style-type: none"> - Disagreements and disparities between Smart specialization areas' decision makers could impede successful development of the specific area; - Lack of consistency in policy makers' decision making may be a threat for further development.

8.2 Other municipalities in the Riga Planning Region

Strengths	Weaknesses
<ul style="list-style-type: none"> - Separate municipalities have developed specialized vocational and lifelong learning opportunities to create a new labor force or/and provide retraining possibilities for the existing labor force; - Some municipalities take great care of residents declaring possibilities and possible real estate tax reliefs. 	<ul style="list-style-type: none"> - Aging of labor force and personnel of municipality administration; - Separate municipalities have high territory management expenses; - Lack of professional project management capacity. - Lack of well-managed and interval-based public transportation flow
Opportunities	Threats
<ul style="list-style-type: none"> - Wide territories of forests and agricultural lands are also available along with access to natural resources useful for development of knowledge intensive bioeconomic areas. 	<ul style="list-style-type: none"> - Fragmented decision making of the responsible bodies that impede development; - Lack of consistency in policy makers' decision making may be a threat for further development.

9 Guidelines for Further Implementation of Smart Specialization Strategy in the Riga Planning Region

The Riga Planning Region is central to leading smart specialization strategy implementation. Today's focus should be on uncovering and optimizing existing resources and opening new routes of smart specialization. It is crucial to strengthen cooperation and synergy of the organizations through NRC, competence centers, technology development infrastructure and online coworking platforms. It is important to be a proactive leader and to lead market approach by investing or/and lowering the administrative burden to stimulate open future technology and industry development, attracting concentrated world class knowledge.

Development of interval-based transportation system in the RPR can be an instrumental solution to facilitate an effective knowledge transfer along with human resources flow.

Investment in the future workforce plays an important role and should be directed towards its concentrating locations i.e. schools, mainly improving STEM infrastructure and meaningful and applicable education of natural sciences, biology, chemistry, physics, economics, mathematics, computer sciences, not only in formal education but also through extra curriculum lessons and interest activities like programming, robotics, modelling, mechanical and machine engineering, aeronautics, etc.

The competence center (CC) support program has a significant impact on future development and must be sustainably maintained. Methodical planning of high technology park infrastructure in the Riga Planning Region is recommended. Such infrastructure will most definitely stimulate interdisciplinary and cross-functional cooperation for development of innovative methods and effective learning and knowledge transfer. ERDF financing is vital to the fulfilment of the technological needs of SMEs, especially in ICT, often used to optimize internal processes, as well as to accumulate, process, expand knowledge for industry growth on a national scale.

Innovation in the context of Smart Specialization strategy in Latvia is seen not only as new invention, but also as an effective and efficient way to overcome internal and external constraints. Successful market restructuring, which is already happening in Latvia at national and regional level, requires effective communication, cooperation and constant objective-result monitoring. These are crucial conditions for the implementation of the strategy in real life as planned.

Another important factor in monitoring strategy realization progress is to account for R&D&I investments on a micro (enterprise level). Regular investment efficiency monitoring at all three levels – human resources, infrastructure and non-material resources – is a strong basis for making timely business decisions.

Relief of the administrative burden for project implementing organizations is recommended (if necessary, other quality monitoring tools can be developed). Cooperation between organizations administering projects and organizations implementing projects should be strengthened.

Vocational education should be improved in the Riga Planning Region, especially in the realms of bioeconomy, biomedicine, smart materials development, which are vital educational areas albeit ones occupying specific niches.

10 Recommended Solutions for Policy Makers by Smart Specialization Area

10.1 Knowledge intensive bioeconomy

- The knowledge intensive bioeconomy is the most widespread smart specialization area in the Riga Planning Region. It is crucial to stimulate its development through municipalities which territories are greatly covered with forest and agricultural lands;
- There are municipalities in the Riga Planning Region like Jurmala, Sigulda, Aloja, Tukums which have well-developed bioeconomic area, but it is crucial to think of products with higher added value (e.g. patented products) that might not be suitable for direct manufacturing but are highly sought after in EU and globally and are maximally energy efficient.

10.2 Biomedicine, medicine technologies, bio-pharmacy and biotechnology

- Proceed with already successfully initiated development of NRC and CC, support entrepreneurs in this area with tax and other administrative burden reliefs;
- Some municipalities need to rethink maintenance costs of their healthcare institutions.

10.3 Smart materials, technology and engineering systems

- In Riga and Pierīga districts like Ogre, Mārupe, Jūrmala, high tech parks should be established where professionals of the area could meet and create interdisciplinary cooperation to elaborate innovative products with high export potential;
- Vocational education and fiscal politics require restructuring to favor development of higher added-value products and development of such producers in the RPR.

10.4 Information and communication technologies

- Participation of large enterprises in development of human capital of this area should be stimulated. Since the biggest companies are located in Riga it means that the capital city is central to develop the area not only in the RPR but overall in Latvia;
- Remote the RPR municipalities should contact ICT companies directly and involve them in development of local knowledge centers such as schools through investments in infrastructure or participation in learning process (e.g. digital learning tools, extracurricular activities in programming, logics, building algorithms);
- Riga Planning Region should rethink reducing of ICT centralization in Riga and systematic expansion to other RPR municipalities through business incubators, creative and youth centers through ICT niches not connected to development of infrastructure and those that have low entrepreneurship startup expenses.

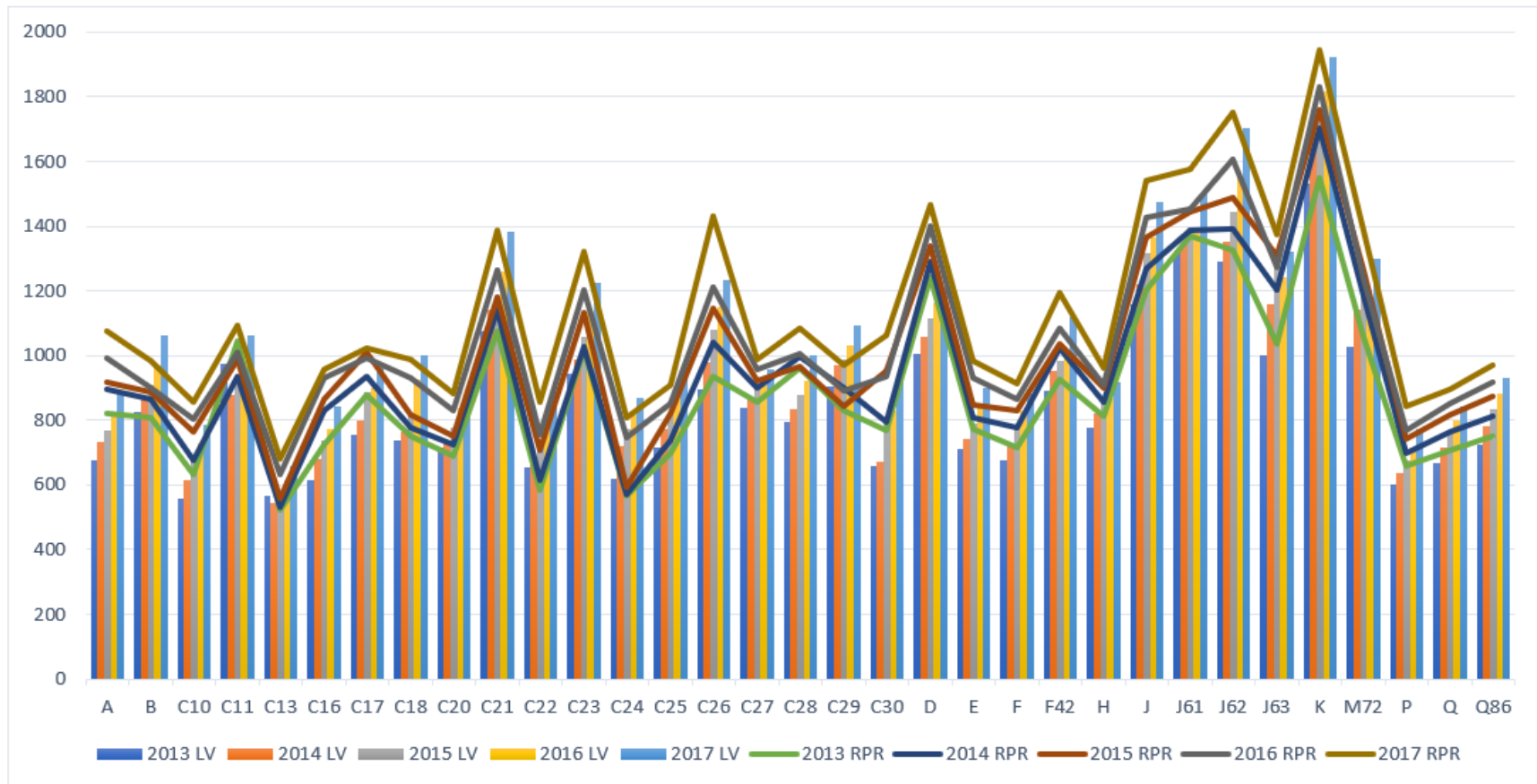
10.5 Smart energetics

- A smart energetics (or renewable energy technology) transfer center should be established in Riga along with contact points in other RPR municipalities;
- Coastal municipalities should be more actively involved in smart energetics movement by highlighting possibilities for renewable energy generation;
- Regional municipal policies should be oriented to energy saving; a separate review of energy consumption structure should be conducted; the main consumption points should be identified, and energy efficiency solutions obtained in cooperation with local entrepreneurs. Some districts in the RPR have already found such solutions – it is crucial to ensure horizontal knowledge and best practice transfer via the relevant networks.

Abbreviations

AF – application form
AV – added-value
BMC – Latvian Biomedical Research and Study Centre
BPO – business process outsourcing
CSB – central statistical bureau
CC – competence centers
EFSA – European Food Safety Authority
EM – Ministry of Economics
ERDF – European Regional Development Fund
ESFRI – European Strategy Forum on Research Infrastructure
EUR – euro
FDI – foreign direct investment
FTE – full-time equivalent
ICT/IT – information and communication technologies/information technologies
IECS – Institute of Electronics and Computer Science
IOS – Latvian Institute of Organic Synthesis
ISSP UL – Institute of Solid State Physics, University of Latvia
IZM – Ministry of Education
JSC – joint-stock company
JSPA – Agency for International Programs for Youth
KKI – Latvian State Institute of Wood Chemistry
KP VIS – Cohesion Policy Fund Management Information System in 2014-2020
LIDA – Latvian Investment and Development Agency
Ltd. – limited company
MEPRD – Ministry of Environment Protection and Regional Development
M – million
MTCO – Mechanics and Technology College of Olaine
NLL – National Library of Latvia
NRC – National Research Centers
OECD – Organisation for Economic Co-operation and Development
R&D&I – research and development and innovation
RDIM – Regional Development Indicators Module
REUH – Riga East University Hospital
RPR – Riga Planning Region
RTU – Riga Technical University
SIS – State Institute of Science
SISA – Social Integration State Agency
SME – small and medium enterprises
SO – special objective
SSS – Smart Specialization Strategy
STEM – Science, Technology, Engineering, and Mathematics
UL – University of Latvia
UR – Register of Enterprises (Lursoft.lv)
SEDA – State Education Development Agency of Latvia (VIAA in Latvian)
VECC – vocational education competence center

Annex 1. Dynamics of average salary in relevant industries of the Smart Specialization Strategy in Latvia and Riga Planning Region (2013 – 2017)



Annex 2. NACE 2 rev. in relevant industries of the Smart Specialization Strategy areas

NACE 2 rev. industries in relation to Smart Specialization strategy areas				
Knowledge Intensive Bioeconomy	Biomedicine, medical technologies, bio-pharmacy, biotechnologies	Smart materials, technology and engineering systems	Information and communication technologies	Smart Energetics
<p>A01 Crop and animal production, hunting and related service activities A02 Forestry and logging A03 Fishing and aquaculture B Mining and quarrying C Manufacturing: C10 Manufacture of food products C11 Manufacture of beverages C13 Manufacture of textiles C16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials C17 Manufacture of paper and paper products C18 Printing and reproduction of recorded media C20 Manufacture of chemicals and chemical products C23 Manufacture of other non-metallic mineral products C24 Manufacture of basic metals C26 Manufacture of computer, electronic and optical products C27 Manufacture of electrical equipment C28 Manufacture of machinery and equipment n.e.c. C29 Manufacture of motor vehicles, trailers and semi-trailers C30 Manufacture of other transport equipment D Electricity, gas, steam and air conditioning supply E Water supply, sewerage, waste management and remediation activities</p>	<p>C10 Manufacture of food products C20 Manufacture of chemicals and chemical products C21 Manufacture of basic pharmaceutical products and pharmaceutical preparations C26 Manufacture of computer, electronic and optical products C27 Manufacture of electrical equipment Q86 Human health activities</p>	<p>C13 Manufacture of textiles C16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials C20 Manufacture of chemicals and chemical products C22 Manufacture of rubber and plastic products C23 Manufacture of other non-metallic mineral products C24 Manufacture of basic metals C25 Manufacture of fabricated metal products, except machinery and equipment C26 Manufacture of computer, electronic and optical products C27 Manufacture of electrical equipment C28 Manufacture of machinery and equipment n.e.c. C29 Manufacture of motor vehicles, trailers and semi-trailers C30 Manufacture of other transport equipment</p>	<p>C26 Manufacture of computer, electronic and optical products J Information and communication: J61 Telecommunications J62 Computer programming, consultancy and related activities J63 Information service activities</p>	<p>B Mining and quarrying C23 Manufacture of other non-metallic mineral products C24 Manufacture of basic metals C25 Manufacture of fabricated metal products, except machinery and equipment C27 Manufacture of electrical equipment C28 Manufacture of machinery and equipment n.e.c. C29 Manufacture of motor vehicles, trailers and semi-trailers C30 Manufacture of other transport equipment D Electricity, gas, steam and air conditioning supply E Water supply, sewerage, waste management and remediation activities</p>
Related industries (indirectly affects all areas of smart specialization)				
(F) Construction, (F42) Civil engineering, (H) Transportation and storage, (K) Financial and insurance activities, (M72) Scientific research and development, P Education, (Q) Human health and social activities, (Q86) Human health activities				

Annex 3. Model of the Regional Competitiveness Drivers

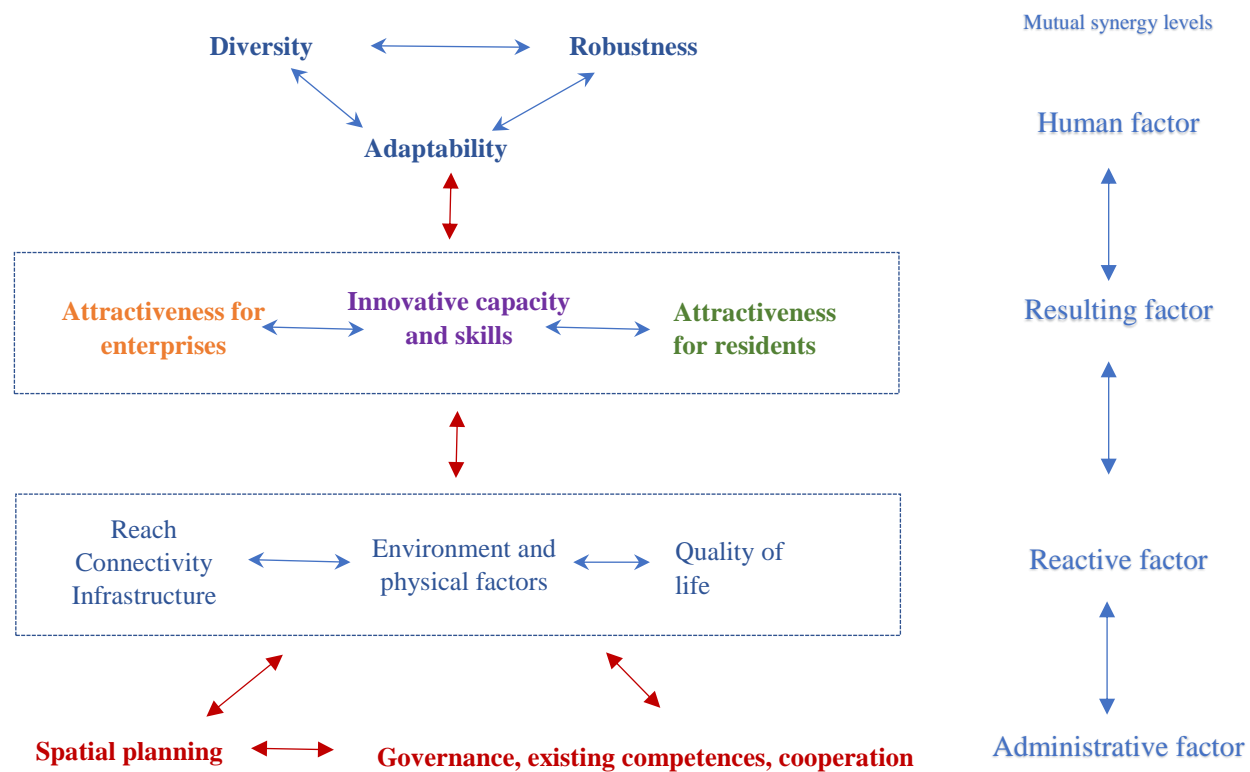


Table11. Regional competitiveness driving forces. ReRisk model. Workshop «ESPON research result usability to facilitate territorial development». VARAM, Riga. 24/01/2014. PhD Geogr. Andis Kublačovs. Completed with synergy levels.

Annex 4. Smart Specialization Strategy implementation and monitoring indicators

RIS 3 Micro level indicators (R (result) – result indicators; I (impact) – Impact indicator; O (output) – Output indicator)		Programmes that contribute towards achieving the investment indicator	
		SF	National budget
R	Income from licences/patents of scientific institutions (EUR)	Research and R&D infrastructure development programmes, Competence centre and Technology transfer programme (SO 111, SO 112)	Base funding; National research programmes
O, I	Business co-funding of R&D projects (EUR)	Research and R&D infrastructure development programmes (SO 111, SO 112)	Base funding; National research programmes
O	The number of the companies that have received support for introducing new products or technologies	Support programme for introducing new products/technologies (SO 112)	Corporate income tax allowances
I	Company income from new products or technologies introduced (EUR)	Competence centre programme (SO 112)	-
I	New companies established by scientific institutions (spin-offs)	Technology transfer support programme (SO 112)	Base funding, Higher education funding
O	The amount of loans granted to micro and small enterprises (EUR)	Financial instrument support	-
O	The number of businesses that have received preparation and start-up capital support in their early development phase, risk capital funding in the expansion phase	Financial instrument support	-
O	The number of new scientists supported for implementing post-doctorate research	Post-doctorate support programme (SO 111)	-
O, I	Newly created jobs, including the jobs for scientists in the public sector/business sector	Competence centre programme (SO 112), Post-doctoral support programme (SO 111), Business incubators	-
R, I	Funding raised for H2020 confirmed project applications (LV part; EUR)	Support programme for international cooperation in research and innovations (SO 111)	“Baltic Bonus” initiative
R	Scientific articles published in the international data bases (Scopus, Web of Science)	Research programme (SO 111), Competence centre programme (SO 112)	Base funding; National research programmes, Higher education funding, Support for fundamental and practical research
R	Employees trained	Training support programmes (SO 112, SO 822, SO 841)	
O	The number of MA students and doctoral students involved in R&D projects	Research programme (SO 111), Competence centre programme (SO 112)	National research programmes, Higher education funding

Kulikovskis, G. (2015). European Commission. JRC Science and Policy Report. Stairway to Excellence Country Report: Latvia. Sourced from: http://s3platform.jrc.ec.europa.eu/documents/20182/117536/S2E_Report_LV.pdf/541a6736-fd93-4d41-9b57-4a3e521df91b

Annex 5. Relevant Smart Specialization knowledge areas

Table 12 Relevant knowledge areas of knowledge intensive bioeconomy

Objective	Relevant field of expertise
Individual innovative applied research improvement for overall industrial progress	102 Informatics and computer science (school level and higher) 204 Chemistry technology (vocational and higher education) 205 Material engineering (vocational and higher education) 209 Industrial biotechnology (higher education)
Excellence groups of bioeconomy – multiplication & succession of skills and competences in the research	106 Biology (school level and higher) 104 Chemistry (school level and higher) 401 Agriculture, forestry and fishery (vocational and higher educ.)
Superiority of fundamental research (creation of exemplary research groups and practices)	101 Mathematics (school level and higher) 103 Physics (school level and higher) 104 Chemistry (school level and higher) 106 Biology (school level and higher)

Table 13. Relevant knowledge areas of biomedicine, medicine technologies, bio-pharmacy and biotechnologies

Objective	Relevant field of expertise
Individual innovative applied research improvement for overall industrial progress	102 Informatics and computer science (school level and higher) 204 Chemistry technology (vocational and higher education) 205 Material engineering (vocational and higher education) 209 Industrial biotechnology (higher education)
Excellence groups of biomedicine, medicine technologies, bio-pharmacy and biotechnologies – multiplication & succession of skills and competences in the research	104 Chemistry (school level and higher) 106 Biology (school level and higher) 301 Medicine (vocational and higher education)
Superiority of fundamental research (creation of exemplary research groups and practices)	101 Mathematics (school level and higher) 103 Physics (school level and higher) 104 Chemistry (school level and higher) 106 Biology (school level and higher)

Table 14. Relevant knowledge areas of smart materials, technologies and engineering systems

Objective	Relevant field of expertise
Individual innovative applied research improvement for overall industrial progress	102 Informatics and computer science (school level and higher) 202 Electrotechnics, information engineering (vocational and higher education) 203 Mechanical engineering (vocational and higher education) 204 Chemistry technology (vocational and higher education) 205 Material engineering (vocational and higher education) 210 Nanotechnology (higher education)
Excellence groups of smart materials, technology and engineering systems – multiplication & succession of skills and competences in the research	104 Chemistry (school level and higher)
Superiority of fundamental research (creation of exemplary research groups and practices)	101 Mathematics (school level and higher) 103 Physics (school level and higher) 104 Chemistry (school level and higher) 106 Biology (school level and higher)

Table15. Relevant knowledge areas of information and communication technologies

Objective	Relevant field of expertise
Individual innovative applied research improvement for overall industrial progress	102 Informatics and computer science (school level and higher) 202 Electrotechnologies, electronics, information engineering (vocation and higher education)
Excellence groups of ICT – multiplication & succession of skills and competences in the research	102 Informatics and computer science (school level and higher)
Superiority of fundamental research (creation of exemplary research groups and practices)	101 Mathematics (school level and higher) 103 Physics (school level and higher) 104 Chemistry (school level and higher) 106 Biology (school level and higher)

Table16. Relevant knowledge areas of smart energetics

Objective	Relevant areas of expertise
Individual innovative applied research improvement for overall industrial progress	102 Informatics and computer science (school level and higher) 203 Mechanical engineering (vocational and higher educ.) 205 Material engineering (vocational and higher educ.)
Excellence groups of smart energetics – multiplication & succession of skills and competences in the research	106 Biology (school level and higher) 104 Chemistry (school level and higher)
Superiority of fundamental research (creation of exemplary research groups and practices)	101 Mathematics (school level and higher) 103 Physics (school level and higher) 104 Chemistry (school level and higher) 106 Biology (school level and higher)

Annex 6. Available EU Structural Funds and Other Financial Instruments for Municipalities

Financing source Responsible ministry	Title of the Specific objective (SO) SO action Type of selection	Term of application submission
Direct relation to Smart specialization strategy implementation		
ERAF IZM MK 12.01.2016. Nr. 34	SAM 1.1.1. Palielināt Latvijas zinātnisko institūciju pētniecisko un inovatīvo kapacitāti un spēju piesaistīt ārējo finansējumu, ieguldot cilvēkresursos un infrastruktūrā Pasākums 1.1.1.1. Praktiskas ievirzes pētījumi, 2.kārta <i>Atklāta projektu iesniegumu atlase</i>	25.05.2018 - 03.09.2018
ERAF IZM MK 12.01.2016. Nr. 34	SAM 1.1.1. Palielināt Latvijas zinātnisko institūciju pētniecisko un inovatīvo kapacitāti un spēju piesaistīt ārējo finansējumu, ieguldot cilvēkresursos un infrastruktūrā Pasākums 1.1.1.1. Praktiskas ievirzes pētījumi, 3.kārta <i>Atklāta projektu iesniegumu atlase</i>	<i>Nākamā atlase ir paredzama 2019. g. vidū</i>
ERAF IZM MK 16.01.2018. Nr. 41	SAM 1.1.1. Palielināt Latvijas zinātnisko institūciju pētniecisko un inovatīvo kapacitāti un spēju piesaistīt ārējo finansējumu, ieguldot cilvēkresursos un infrastruktūrā Pasākums 1.1.1.3. Inovāciju granti studentiem, 1.kārta <i>Atklāta projektu iesniegumu atlase</i>	22.06.2018 – 01.10.2018
ERAF IZM MK 16.01.2018. Nr. 41	SAM 1.1.1. Palielināt Latvijas zinātnisko institūciju pētniecisko un inovatīvo kapacitāti un spēju piesaistīt ārējo finansējumu, ieguldot cilvēkresursos un infrastruktūrā Pasākums 1.1.1.3. Inovāciju granti studentiem, 2.kārta <i>Atklāta projektu iesniegumu atlase</i>	
ERAF IZM MK 06.06.2017. Nr. 315	SAM 1.1.1. Palielināt Latvijas zinātnisko institūciju pētniecisko un inovatīvo kapacitāti un spēju piesaistīt ārējo finansējumu, ieguldot cilvēkresursos un infrastruktūrā Pasākums 1.1.1.5. Atbalsts starptautiskās sadarbības projektiem pētniecībā un inovācijās, 3. kārta <i>Atklāta projektu iesniegumu atlase</i>	24.10.2017 – 31.12.2021
ERAF EM MK 10.05.2016. Nr. 293	SAM 1.2.1. Veicināt privātā sektora investīcijas P&A Pasākums 1.2.1.4. Atbalsts jaunu produktu ieviešanai ražošanā, 3.kārta <i>Atklāta projektu iesniegumu atlase</i>	<i>Nākamā atlase ir paredzama 2018. g. beigās</i>
ERAF EM	SAM 1.2.2. Veicināt inovāciju ieviešanu komersantos Pasākums 1.2.2.1. Atbalsts nodarbināto apmācībām, 2.kārta, u.c. <i>Atklāta projektu iesniegumu atlase</i>	
ERAF EM MK 26.10.2010. Nr. 997	SAM 3.1.1. Sekmēt MVK izveidi un attīstību, īpaši apstrādes rūpniecībā un RIS3 prioritārajās nozarēs Pasākums 3.1.1.1. Aizdevumu garantijas (Altum) Pasākums 3.1.1.2. Mezanīna aizdevumi (Altum) Pasākums 3.1.1.4. Mikrokreditēšana un aizdevumi biznesa uzsācējiem (Altum) Pasākums 3.1.1.5. Atbalsts ieguldījumiem ražošanas telpu un infrastruktūras izveidei vai rekonstrukcijai Pasākums 3.1.1.6. Reģionālie biznesa inkubatori un radošo industriju inkubators	
ERAF EM MK 12.04.2016. Nr. 226	SAM 3.1.2. Palielināt straujas izaugsmes komersantu skaitu Pasākums 3.1.2.1 Riska kapitāls (Altum) Pasākums 3.1.2.2 Tehnoloģiju akselerators (Altum)	

ERAF EM	SAM 3.2.1. Palielināt augstas pievienotās vērtības produktu un pakalpojumu eksporta proporciju Pasākums 3.2.1.1. Klasteru programma (2.kārta)	
ERAF VARAM MK 13.10.2015. Nr. 593	SAM 3.3.1. Palielināt privāto investīciju apjomu reģionos, veicot ieguldījumus uzņēmējdarbības attīstībai atbilstoši pašvaldību attīstības programmās noteiktajai teritoriju ekonomiskajai specializācijai un balstoties uz vietējo uzņēmēju vajadzībām (2. kārta) <i>Ierobežota projektu iesniegumu atlase (reģionālās nozīmes attīstības centri)</i>	23.04.2018. - 30.11.2021
ELGF, ELFLA, EZF ZM (LAD) MK 30.09.2014. Nr. 598 MK 30.09.2014. Nr. 600	Lauku attīstības programmas (LAP) investīciju pasākumi 2014-2020 (aktīvie 08.2018.): 1. Zināšanu pārneses un informācijas pasākumi 1.1. Profesionālās izglītības un prasmju apguves pasākumi (14.07.2018.-17.08.2018.) 1. Ieguldījumi materiālajos aktīvos 1.1. Atbalsts ieguldījumiem lauku saimniecībās (plānots sākt 2018.g. oktobrī) 1.2. Atbalsts ieguldījumiem pārstrādē (plānots sākt 2018.g. oktobrī) 1.3. Atbalsts ieguldījumiem infrastruktūrā (plānots sākt 2018.g. oktobrī) 5. Dabas katastrofās un katastrofālos notikumos cietušā lauksaimniecības ražošanas potenciāla atjaunošana un piemērotu profilaktisko pasākumu ieviešana 5.2. Atbalsts ieguldījumiem no epizootijas cietušo lauku saimniecību ražošanas potenciāla atjaunošanā 7. Pamatpakalpojumi un ciematu atjaunošana lauku apvidos 7.2. Ieguldījumi visu veidu maza mēroga infrastruktūras ierīkošanā, uzlabošanā vai paplašināšanā, tostarp ieguldījumiem atjaunojamos energoresursos un enerģijas taupīšanā (kārtā atvērta līdz 01.12.2019.) 16. Sadarbība 16.1. Atbalsts EIP* lauksaimniecības ražīgumam un ilgtspējai lauksaimniecības ražīguma un ilgtspējas darba grupu projektu īstenošanai 19. Atbalsts LEADER vietējai attīstībai 19.1. Sagatavošanās atbalsts 19.2. Atbalsts darbību īstenošanai saskaņā ar sabiedrības virzītas vietējās attīstības stratēģiju 19.3. Vietējās rīcības grupu sadarbības pasākumu sagatavošana un īstenošana 19.4. Atbalsts pamatdarbības izmaksām un iedzīvīnāšanai Pilns saraksts ar aktivitātēm 2014. – 2020. plānošanas periodā (kārtu grafiks) LAD prezentācija par pieejamo finansējumu	
ERAF VARAM	INTERREG Baltijas jūras reģiona transnacionālās sadarbības programma 2014.-2020.gadam (finansējums projektiem 248 milj. EUR) – VSS aktuālais finansējums: 1.prioritārais virziens „Inovācijas spējas” 2.prioritārais virziens “Efektīva dabas resursu pārvaldība” 3.prioritārais virziens „Ilgspējīga transporta nozare” 4.prioritārais virziens “Institucionālā kapacitāte makroreģionu sadarbībai” Vietne: https://www.interreg-baltic.eu/home.html	
ERAF VARAM	Citas aktuālas pārrobežu sadarbības programmas²⁵: Latvijas–Igaunijas pārrobežu sadarbības programma - 35,36 milj. EUR Centrālā Baltijas jūras reģiona (CB) pārrobežu sadarbības programma -65,65 milj. EUR Starpreģionu sadarbības programma URBACT III (pilsētvides attīstības jomā) – 69,84 milj. EUR; http://urbact.eu/urbact-latvija Starpreģionu sadarbības programma INTERREG EUROPE – 359 milj. EUR Latvijas–Krievijas (LV-RU) pārrobežu sadarbības programma – 23,81 milj. EUR	
Eiropas	2014.-2021.gada periodā VSS jomai aktuālais finansējums:	<i>Saskaņā ar</i>

²⁵ VARAM. “Eiropas teritoriālās sadarbība” programmas 2014.-2020.gadam http://www.esfinanses.lv/aaddmm/uploads/VARAM_2014-2020_ETS_14082015_Riga.pdf

Ekonomikas zonas (EEZ) finanšu	a) Pētniecība un izglītība (apsaimn. IZM, 10 milj. EUR) b) Vietējā attīstība, nabadzības mazināšana un kultūras sadarbība (apsaimn VARAM, 11,77 milj. EUR)	<i>finansējuma apsaimniekotāja izsludināto grafiku</i>
Norvēģijas finanšu instruments LIAA	2014.-2021.gada periodā VSS jomai aktuālais finansējums: a) Uzņēmējdarbības attīstība, inovācijas, mazie un vidējie uzņēmumi (apsaimn LIAA, 14,71 milj. EUR) b) Pētniecība un izglītība (apsaimn IZM, 7,06 milj. EUR) c) Klimata pārmaiņu mazināšana, pielāgošanās tām un vide (apsaimn. VARAM 16,47 milj. EUR)	
LIFE programmas LVAFa	LIFE programmas mērķis ir veicināt Eiropas Savienības (ES) vides un klimata politikas īstenošanu, attīstību un aktualizēšanu, piešķirot līdzfinansējumu projektiem, kas atbilst LIFE programmas mērķiem un rada papildus pievienoto vērtību ES. Par pieteikšanos šeit: www.lifeprogramma.lv	
ESF IZM, VIAA, JSPA u.c.	Ar pieredzi un zināšanu apmaiņu saistītās programmas: ESPON2020 – teritoriālās politikas attīstības zināšanu un politikas instrumentu pārnese tīklojums Erasmus+ - izglītošanās un pieredzes apmaiņa skolām un augstskolām Horizon2020 – pētniecības un inovāciju programma (80 miljrd. EUR finansējums)	
Indirect funding sources (through municipalities)		
ERAF VARAM MK 10.11.2015. Nr. 645 VSS joma: visas	SAM 5.6.2. Ieguldījumi degradēto teritoriju revitalizācijā reģionālas nozīmes attīstības centru pašvaldībās (2. kārtā) <i>Ierobežota projektu iesniegumu atlase (reģionālās nozīmes attīstības centri)</i>	21.04.2018. - 30.11.2021
ERAF VARAM MK 10.11.2015. Nr. 645 VSS joma: visas	SAM 5.6.2. Teritoriju revitalizācija, reģenerējot degradētās teritorijas atbilstoši pašvaldību integrētajām attīstības programmām, 1.kārta <i>Ierobežota projektu iesniegumu atlase (atlasi veic republikas pilsētu pašvaldības)</i>	<i>Atbilstoši republikas pilsētu laika grafikam</i>
ERAF SM MK 09.02.2016. Nr. 101 VSS joma: visas	SAM 6.3.1. Palielināt reģionālo mobilitāti, uzlabojot valsts reģionālo autoceļu kvalitāti <i>Ierobežota projektu iesniegumu atlase (atlasi veic republikas pilsētu pašvaldības)</i>	08.03.2016 – 30.06.2019
ERAF VARAM MK 17.11.2015. Nr. 653 VSS joma: IKT	SAM 2.2.1. Nodrošināt publisko datu atkalizmantošanas pieaugumu un efektīvu publiskās pārvaldes un privātā sektora mijiedarbību Pasākums 2.2.1.1. Centralizētu publiskās pārvaldes IKT platformu izveide, publiskās pārvaldes procesu optimizēšana un attīstība (2.kārta) <i>Ierobežota projektu iesniegumu atlase (tiešās pārvaldes iestādes, pašvaldības, valsts kapitālsabiedrības (deleģēto pārvaldes uzdevumu veikšanai) un tiesu varas institūcijas)</i>	05.04.2018 – 01.06.2020
ERAF SM VSS joma: IKT	SAM 2.2.1. Uzlabot elektroniskās sakaru infrastruktūras pieejamību lauku teritorijās, 2.kārta	
ERAF VARAM MK 04.01.2018. Nr. 13 VSS joma: viedā enerģētika	SAM 4.2.1. Veicināt energoefektivitātes paaugstināšanu valsts un dzīvojamās ēkās Pasākums 4.2.1.2. Veicināt energoefektivitātes paaugstināšanu valsts ēkās (2.kārta) <i>Ierobežota projektu iesniegumu atlase (sabiedriskā labuma organizācijas, valsts SIA, valsts akciju sabiedrības u.c. atb. MK noteikumu 1. pielikumam)</i>	07.03.2018 – 31.12.2019
ERAF VARAM MK 08.03.2016. Nr. 152	SAM 4.2.2. Atbilstoši pašvaldības integrētajām attīstības programmām sekmēt energoefektivitātes paaugstināšanu un AER izmantošanu pašvaldību ēkās (2.kārta) <i>Ierobežota projektu iesniegumu atlase (atlasi veic republikas pilsētu</i>	<i>Atbilstoši republikas pilsētu laika grafikam</i>

VSS joma: viedā enerģētika	<i>pašvaldības)</i>	
ERAF ZM MK 05.01.2016. Nr. 19. VSS joma: zināšanu ietilpīga bioekonomika	SAM 5.1.2. Samazināt plūdu riskus lauku teritorijās <i>Ierobežota projektu iesniegumu atlase</i>	22.03.2016 – 31.12.2018
KF VARAM MK 22.08.2017. Nr. 498 VSS joma: viedā enerģētika	SAM 5.2.1. Veicināt dažāda veida atkritumu atkārtotu izmantošanu, pārstrādi un reģenerāciju Pasākums 5.2.1.3. Atkritumu reģenerācijas veicināšana <i>Atklāta projektu iesniegumu atlase</i>	18.10.2017 – 18.10.2018
ERAF KM MK 24.10.2017. Nr. 635 VSS joma: zināšanu ietilpīga bioekonomika	SAM 5.5.1. Saglabāt, aizsargāt un attīstīt nozīmīgu kultūras un dabas mantojumu, kā arī attīstīt ar to saistītos pakalpojumus. Ieguldījumi kultūras un dabas mantojuma attīstībai nacionālas nozīmes attīstības centru pašvaldībās, 3.kārta <i>Ierobežota projektu iesniegumu atlase (pašvaldības iestādes, atlasī atbilstoši deleģēšanas līgumam veic republikas pilsētu pašvaldības)</i>	<i>Atbilstoši republikas pilsētu laika grafikam</i>
ERAF IZM MK 24.05.2016. Nr. 323 VSS joma: visas (nākotnes cilvēkkapitāla attīstīšana)	SAM 8.1.2. Uzlabot vispārējās izglītības iestāžu mācību vidi, 1.- 4. kārta <i>Ierobežota projektu iesniegumu atlase (pašvaldības)</i>	10.07.2017 – 20.12.2020
ERAF IZM VSS joma: visas MK 19.04.2016. Nr. 249 Nākotnes cilvēkkapitāla attīstīšana	8.1.3. Palielināt modernizēto profesionālās izglītības iestāžu skaitu - 1., 2. kārta <i>Ierobežota projektu iesniegumu atlase (prof. izglītības iestādes, republikas pilsētas)</i>	29.08.2016 – 31.12.2020
ESF IZM MK 09.01.2018. Nr. 27 VSS joma: visas (nākotnes cilvēkkapitāla attīstīšana)	SAM 8.2.1. Samazināt studiju programmu fragmentāciju un stiprināt resursu koplietošanu, 2. kārta <i>Atklāta projektu iesniegumu atlase</i>	26.06.2018 – 29.10.2018
ESF IZM VSS joma: IKT Nākotnes cilvēkkapitāla attīstīšana	SAM 8.3.1. Attīstīt kompetenču pieejā balstītu vispārējās izglītības saturu Pasākums 8.3.1.2. Digitālo mācību un metodisko līdzekļu izstrāde (1. 2. kārta)	
<i>Data sources: cfla.gov.lv, http://esfondi.lv, lad.gov.lv, varam.gov.lv</i>		



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