Informative Report

MONITORING OF SMART SPECIALIZATION STRATEGY

Riga
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INTRODUCTION

The informative report "Monitoring of Smart Specialization Strategy" (hereinafter referred to as the report) is the first assessment of the implementation of the Latvian Smart Specialisation Strategy (hereinafter referred to as RIS3). It is developed in compliance with the assignment of the Cabinet of Ministers of 15 September 2015 – the Ministry of Education and Science and the Ministry of Economics have to ensure the implementation of RIS3 monitoring, including the development of the RIS3 progress report and impact assessment, and ordering the necessary thematic studies (protocol No. 47, § 35).

The report provides information on trends, targets and challenges for the development of the Latvian economy, the implementation of RIS3 programmes, measures and the progress towards acieveing the objectives, as well as analysis of RIS3 indicators and a plan of further activities.

Taking into account the objectives and scope of RIS3 (RIS3 is a strategy of economic transformation towards higher added value, productivity and more efficient use of resources), the report includes the progress of implementation of the measures included in the action plan of Guidelines for Science, Technology Development and Innovations for 2014-2020 (hereinafter referred to as STDI guidelines) and the National Industrial Policy Guidelines for 2014-2020 (hereinafter referred to as NIP) for the period from 2014 to 2016 and the plan of measures for 2018 – 2020.

STDI guidelines were approved by Cabinet Order No. 685 of 28 December 2013 (protocol No. 67, § 97); requiring the Ministry of Education and Science to submit to the Cabinet of Ministers the interim evaluation of the implementation of STDI guidelines by 1 June 2017. NIP is approved by Cabinet Order No. 282 of 28 June 2013 (protocol No. 32, § 62); it also provides that the Ministry of Economics shall submit to the Cabinet of Ministers the informative report on the interim evaluation of the implementation of NIP, as well as the plan of envisaged tasks and measures for 2018-2020 by 1 October 2017. The main objective of NIP is to facilitate structural changes in the economy in favour of production of goods and services with greater added value, int.al., to increase the role of the industrial, manufacturing and service modernization and export complexity development. The main objectives and settings of NIP are integrated into the National Development Plan for 2014 – 2020.

In preparing this report, the information on the progress and results of the tasks and activities within the framework of their competence set out in STDI and NIP guidelines is provided by the Ministry of Economy, the Ministry of Finance, the Ministry of the Interior, the Ministry of Education and Science, the Ministry of Culture, the Ministry of Welfare, the Cross-Sectoral Coordination Centre, the Ministry of Health, the Ministry of Environmental Protection and Regional Development, the Ministry of Agriculture, as well as relevant industry partners.

This report shall ensure the completion of the following tasks:

- Ex-ante conditionalities of the EU Cohesion Policy for the planning period 2014 – 2020, where ex-ante condition "the National Reform programme in line with the Smart Specialisation Strategy should be introduced to encourage private investments in research and innovation within the framework of an efficiently functioning research and innovation system" shall be applied to the research and innovation area;
- Cabinet Order No. 282 of 28 June 2013 (protocol No. 32, § 62) "On the Guidelines for the National Industrial Policy for 2014-2020", Article 5(1), which provides that the Ministry of Economy shall develop and submit to the Minister for Economics pursuant to the procedures specified by the CoM the informative report on the interim evaluation of the implementation of the National Industrial Policy Guidelines for 2014 -2020, as well as the plan of envisaged tasks and measures for 2018 -2020 by 1 October 2017;
- Cabinet Order No. 685 of 28 December 2013 (protocol No. 67; § 97) "On the Guidelines for Science, Technology Development and Innovations for 2014-2020", Article 4(1) and Cabinet Order No. 191 of 19 April 2017 (protocol No. 20, § 8) which instructs the Ministry of Education and Science to prepare and submit to the Minister of Education and Science the interim evaluation of the implementation of the Guidelines for Science, Technology Development and Innovations for 2014-2020.

The report comprises 10 chapters describing the concept of RIS3 and the linkage with the policy planning documents, characterizing the challenges for economic development and trends of structural transformation, assessing the indicators of achievement of policy results, as well as analysing RIS3 micro level indicators. The plan of further activities is outlined at the end of the report. The report has 6 appendices.

ABBREVIATIONS AND TERMINOLOGY

CSB	Central Statistical Bureau
PBMTCC	Pharmacy, Biomedicine and Medical Technology Competence Centre
EAFRD	European Agricultural Fund for Rural Development
EPO	European Patent Office
ERDF	European Regional Development Fund
EU	European Union
EC	European Commission
MoE	Ministry of Economics
ESFRI	*European Strategy Forum on Research Infrastructures*
ERIC	European Research Infrastructure Consortium
MoF	Ministry of Finance
IIT	Individual Income Tax
GDP	Gross domestic product
ICT	Information and Communication Technologies
IT	Information Technology
ITCC	IT Competence Centre
FP	EU Framework Programme
MoES	Ministry of Education and Science
INPP	Measure 1.2.1.4 "Introduction of New Products In Production"
MoC	Ministry of Culture
LAKIFA	Association of Latvian Chemical and Pharmaceutical Industry
ECL	Employers' Confederation of Latvia
LETERA	Latvian Electrical Engineering and Electronics Industry Association
LEO	LEO Research Centre
LIAA	Investment and Development Agency of Latvia
LICTA	Latvian Information and Communication Technologies Association
ALWDM	Association of Latvian Window and Door Manufacturers
MoW	Ministry of Welfare
LRISC	Latvian Research and Innovation Strategic Council
LFCC	Latvian Food Competence Centre
PELGSAFI	Guidelines on Promoting Exports of Latvian Goods and Services and Attracting Foreign Investments
LPA	Latvian Printers' Association
LFFC	Latvian Federation of Food Companies
LCCI	Latvian Chamber of Commerce and Industry
AHRL	Association of Hotels and Restaurants of Latvia
MASOC	Association of Mechanical Engineering and Metalworking Industries of Latvia
CoM	Cabinet of Ministers
MECC	Mechanical Engineering Competence Centre
CR	Cabinet Regulation
SMEs	small and medium-sized enterprises
LNDP	Latvian National Development Plan
NIP	National Industrial Policy Guidelines for 2014 – 2020
NIS	National Innovation System
NCP	National Contact Point within the EU Framework Programme
NGO	non-governmental organisations
OECD	Organisation for Economic Co-operation and Development
P&D	research and development
P&D&I	research and development, and innovations
CSCC	Cross-Sectoral Coordination Centre
FTE	full-time equivalent
RIS3	Latvian Smart Specialisation Strategy
RC	Rectors' Council
STEM	*Science, Technology, Engineering and Mathematics*
EIT	Enterprise Income Tax
MoEPRD	Ministry of Environmental Protection and Regional Development
SEDA	State Education Development Agency
SETECC	Smart Engineering, Transport and Energy Competence Centre
SC	State Chancellery
MoH	Ministry of Health
SMTCC	Smart Materials and Technology Competence Centre
NRC	National Research Centre
ALIE	Association of Light Industry Enterprises
MoA	Ministry of Agriculture
STDI	Science, Technology Development and Innovations
STDI guidelines	Science, Technology Development and Innovation Guidelines for 2014 –

SUMMARY

The evaluation report of RIS3 implementation is developed in accordance with its related long-term and medium-term national planning documents.Taking into account that RIS3 is a strategy of economic transformation towards higher added value, productivity and more efficient use of resources, the informative report covers an integrated analysis of the progress on the implementation of RIS3, STDI and NIP guidelines, including an analysis of the indicators in achieving policy action results brought forward in these policy planning documents and the plan for further actions. It is expected that NIP and STDI guidelines will be developed in the next EU structural fund programming period as well simultaneously assessing the possibility to consolidate several planning documents into a single one.An analysis of the development trends of the national economy shows that the Latvian economy lacks the incentives for more rapid economic growth. Competitiveness indicators show that the model of the Latvian economy has not changed and is still based primarily on low cost competitive advantages. The key prerequisite for sustainable and balanced economic growth is to boost the level of productivity based on the technological innovations, the improvement of production process management and last, but not least, the reallocation of existing resources to produce the greater added value products, i.e., the structural transformation of the national economy. The performer of the transformation process is an entrepreneur who decides to modernize production or shift resources to another industry/region/country, therefore the overarching goal of the Policy is to increase entrepreneurs' motivation to invest in development. The purpose of public investment and support is to reduce the costs of transformation mainly through the available knowledge base, increasing the quality of human capital and public services, and by providing a supportive business environment, including providing the entrepreneur with the opportunity to focus on productive investments, leaving for public intervention those investments that are not primarily focused on productivity , but ensure the creation of an appropriate ecosystem. Accordingly, the specific targeted support tools, for example, the investment in the creation or modernisation of infrastructure, should giveentrepreneurs the opportunity to be involved in the development and launching into production products with high added value.The progress towards the achievement of RIS3 objectives is characterised by the total investments in R&D, the position in the European Innovation Scoreboard and the productivity growth in the manufacturing industry. Although Latvia has been able to progress from the modest performance in the Innovation Scoreboard to the moderate one, the main economic knowledge-based and technology-based indicator –investments in R&D – is not increasing neither in the public nor the private sector. There were some positive developments regarding the indicator reflecting the proportion of high and medium-high technology industries in Latvian merchandise export (%), as well as the reducing research fragmentation as a result of structural reforms, creating a smaller number of stronger state-funded scientific institutions, promoting the increase of the number of scientific articles published in recognised international databases, as well as in the proportion (%) of the population aged 30-34 with a higher education. Without a further significant increase of public investments' volume it is impossible to ensure knowledge, technology and human capital necessary for more rapid economic growth, that in a long term could also ensure the change in the company's business model and consequently the knowledge-intensity of private sector's products and services. In the light of the above, if the current socio-economic conditions are maintained, significant risks can be identified that the results brought forward in policy planning documents are not to be achieved in the initially planned amount in 2020. In most of the RIS3 investment programmes (state budget-funded and EU funded that contribute directly to the achievement of RIS3 micro-level indicators), incentives to facilitate increase in RIS3 micro-level indicators have been incorporated and thus the progress towards the achievement of the RIS3 overall objectives and indicators of national economic transformation. However, certain programmes have initial indications of a failure to fully implement the planned performance indicators, which trigger a need to review the current incentives and incorporate new ones ensuring more effective progress towards the target. At the same time, it should be noted that most investment programmes had been started in the second half of 2016 and in the first half of 2017 so a full evaluation of their impact on the performance indicators are not yet possible to determine. As of January 2018 EU funded programmes have the following implementation status:

1) approved all investment programmes aimed at increasing science competitiveness (5 programmes);
2) approved all investment programmes aimed at strengthening the innovation capacity (4 programmes);
3) approved all investment programmes aimed at increasing entrepreneurial competitiveness (15 programmes);

In addition, during the period from 2014 by mid-2017 the improvement of the regulatory framework of science and business sectors' ecosystem was provided. Major accomplishments:

- On 12 November 2013 the new Cabinet Regulation No. 1316 ‘‘Procedures for Calculating and Allocating Basic Science Funding to Scientific Institutions’’ for the allocation of Basic Science Funding was adopted (including additional amendments on 28 October 2014 and on 24 November 2015) that changed the criteria and conditions for the allocation procedures of the Basic Science Funding to science by introducing incentives based on excellence and international competitiveness and cooperation with industry;

- On 1 July 2014 Cabinet Regulation No. 373 ‘‘Regulations on Research and Development Activity for the Application of the Enterprise Income Tax’’ was adopted laying down the procedures for the application of the enterprise income tax relief if the company has conducted research and development activities;
- On 14 July 2015 Cabinet Regulation No. 407 ‘‘Regulations on Accreditation of Higher Education Institutions, Colleges and Study Directions’’ was adopted laying down the regulatory framework to introduce the Standards and Guidelines for Quality Assurance in the European Higher Education Area at national level for assurance of the higher education system;
- On 28 July 2015 amendment to the Cabinet Regulation No. 994 ‘‘Procedures for Financing Institutions of Higher Education and Colleges from the Funds of the State Budget’’ was approved governing institutions of higher education regarding the granting of the funds from the State budget by introducing the financial allocations component based on the individual performance of the institution of higher education.
- On 23 November 2016 the Law On Institutions of Higher Education was amended establishing the Register of Students and Graduates and the amount of information to be included therein;
- On 23 November 2016 the Law “On Aid for the Activities of Start-up Companies” was adopted aiming at promoting the creation of fast-growing technology enterprises or newly created (start-up) companies in Latvia, as well as to promote the commercialisation of R&D results;
- On December 8 2016 the Law on Scientific Activity was amended determining the operation of the National Research Information System as a state information system, which compiles information about scientific activities carried out by scientific institutions and the persons involved therein;
- The new “Public Procurement Law’’ has been drafted and adopted, which, inter alia, provides for a simplified procedure for the evaluation of R&D projects by attracting foreign experts, thereby facilitating the implementation of procedures in line with international standards in the selection of R&D projects;
- On 17 January 2017 Cabinet Regulation No. 30 ‘‘Regulation of the Committee for the Assessment of Start-up Companies’ Activities’’ was adopted laying down the procedures for the Regulation of the committee for the assessment of start-up companies’s activities, as well as on 7 February 2017 Cabinet Regulation No. 74 ‘‘Procedures for the Submission of Applications of Aid Programmes for Start-up Companies and Administration Thereof’’ were approved.

For better RIS3 monitoring significant data collection improvements have been made: 1) Research and innovation survey data extension of CSB as of 2017; 2) the survey on the Career Development of Doctorate Holders in 2016; 3) the establishment of the Register of the National Research Information System and Register of Students and Graduates.In addition several thematic assessments are carried out that will provide information for RIS3 monitoring and taking further decisions, as well as experts from the International Bank for Reconstruction and Development (The World Bank) carry out a study on improving governance in Latvian higher education institutions and the modernisation of higher education, ex-post evaluation of the investments of the EU funds in R&I for the period 2007-2013, the evaluation of EU languages of higher education institutions and joint doctoral study programmes, as well as the evaluation of the efficiency of the Latvian science funding system conducted by a panel of experts of Horizon 2020 Policy Support Facility has been completed.The Entrepreneurial Discovery Principle is incorporated into all RIS3 implementation measures. For example, MoES developed a set of assessment criteria for the evaluation of the development strategies of higher education institutions, colleges and scientific institutions including a request for the involvement of related industry associations in preparing research programmes, the offered study programmes for STEM and development strategies. When assessing the submitted development strategies, the Interdepartmental Evaluation Commission asks, if necessary, to supplement or adjust the institutions' development plans and coordinate them with the professional associations and organizations representing the related sectors. In the programme of practical and post-doctoral research there is a requirement that project applications are accompanied by an opinion from an enterprise or sector association, thus ensuring compliance of the research with the industry development needs and the information flow between research organizations and relevant sectors. The project’s contribution to the achievement of RIS3 objectives and the development of specialization areas is evaluated. At the same time, the identification of new potential sectors of the national economy and their areas are expected within the framework of existing sectoral discussion platforms by identifying new and potential areas within existing sectors of the national economy and during bilateral meetings with fast growing companies where it is possible to identify new potential sectors of the national economy. The report contains an action plan for 2018 – 2020 including the implementation tasks for the state budget-funded and EU funded programmes and non-financial initiatives and incentives aimed at achievement of RIS3 objectives. According to their impact the measures are divided into 6 directions: 1) promoting innovation; 2) strengthening competitiveness; 3) attracting investments; 4) promoting exports; 5) improving business environment and 6) developing knowledge-base and human capital. Furthermore, the measures set out in the plan provide the new sources of financing and State order for research to promote economic growth of sectors, thematic calls in the areas of bio-economy, innovations and industry 4.0 and in the programmes of post-doctoral research.

1. RIS3 AND POLICY PLANNING DOCUMENTS

Latvian National Development Plan for 2014-2020.

The main medium-term development planning document in Latvia. NAP2020 is linked to the state budget and is flexible concerning changes in the national economy. On the one hand, NAP2020 is precisely defined – the objectives to be attained and their indicators are unchanged, on the other hand – flexible – the activities to achieve these objectives can be adapted in accordance with the most effective solution

Latvian National Reform Programme for implementation of "EU 2020" strategy

The goal of the ,,Eiropa 2020" strategy is to foster growth and employment in the EU as a whole and in every Member State. This strategy has three main priorities: smart, sustainable and inclusive growth. To achieve the priorities the strategy has 5 quantitative objectives, including employment, research and innovations, as well as education policy areas.

Guidelines for Science, Technology Development and Innovations for 2014-2020

The main objective is development of knowledge base and innovation capacity, as well as coordination of the innovation system. Strategic lines of action - to develop human resource capital of science, technology and innovation sector; to promote the international competitiveness of science; to modernize and integrate research and education sectors, increasing their ability to respond to future challenges; to create a more efficient knowledge transfer environment and strengthen corporate absorption and innovation capacity; to optimize the management of science, technology and innovation sector,

Guidelines for the National Industrial Policy for 2014-2020

These guidelines aim at promoting economic structural changes, increasing the production of goods and services with high added value, including strengthening the role of industry, allowing modernisation of industry and services, as well as expanding exports. The main action lines: availability of workforce and supply of education corresponding to the needs of economic development; development of industrial zones; availability of financing*; increasing innovation capacity; promoting exports; reducing energy costs**.

Guidelines for the Development of Education for 2014–2020

The goal - qualitative and inclusive education for the development of personality, welfare of people and sustainable growth. Lines of action - to increase the quality of education environment by improving the content and developing appropriate infrastructure; to promote value education based development of professional and social skills of an individual; to improve the efficiency of resource management by developing institutional excellence of educational

Guidelines for Promoting Exports of Latvian Goods and Services and Attracting Foreign Investments for 2013-2019

The goal - to increase competitiveness of Latvian national economy in open product markets, firstly, by fostering the increase in the high and medium-high technology industry production in terms of Latvian exports, and, secondly, to focus on external demand-oriented industries by attracting

Guidelines for the Regional Development for 2013-2019

To ensure a balanced state development and reduce differences in territorial development indicators the Guidelines for the Regional Development for 2013-2019 provide support measures for the regional development, as well as the role of municipalities in promoting entrepreneurship and innovations;

Structural changes in the economy in favour for production of the goods and services with greater added value, modernisation of manufacturing and service and development of export complexity.

The competitiveness of Latvian national economy in open product markets by fostering the increase in the high and medium-high technology industry production in terms of Latvian exports and to focus on external demand-oriented industries by attracting foreign direct investments (FDI) .

Guidelines for the National Industrial Policy for 2014-2020

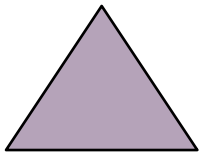
Guidelines for Promoting Exports of Latvian Goods and Services and Attracting Foreign Investments for 2013-2019

BUSINESS

Qualitative and inclusive education for the development of personality, welfare of people and sustainable State growth.

The development of the Latvian knowledge-base and innovation capacity, as well as coordination of the innovation system.

Guidelines for the Development of Education 2014-2020



Guidelines for Science, Technology Development and Innovations for 2014-2020
(Include RIS3 concept for transformation of national economy)

EDUCATION

SCIENCE

Programme for the implementation of Priority Axis 3 of the national economic development established in the CoM Action Plan

Innovation as a prerequisite for economic transformation, the private sector's motivation to invest in research and development 47 % of the total investments in 2018. This priority includes - the improvement of national innovation system, the development of human resources, the development of motivation measures for researchers and business and stimulation of their collaboration, the coordination, concentration and availability of resources; support for creation/improvement and export capability of competitive and innovative products and processes in traditional sectors and processes of the Latvian economy, as well as in high and medium-high technology industries.

Transformation of Latvian economy, the competitive edge based on knowledge and innovation, the development of the Latvian innovation system

2. RIS3 CONCEPT

Latvian Smart Specialisation Strategy (RIS3) is a strategy of economic transformation towards higher added value, productivity and more efficient use of resources. The strategy of the transformation of the national economy is closely related to the current development on national economy level and advantages (existing and potential) of competitiveness.

An essential precondition for the transition to an innovative economy is strengthening the innovation system of Latvia, eliminating its shortcomings and promoting interaction among all subjects of innovation system – business, science and education, as well as the improvement of the institutional environment.

RIS3 objective – to increase innovation capacity and establish innovation system fostering and supporting technological progress in the national economy.

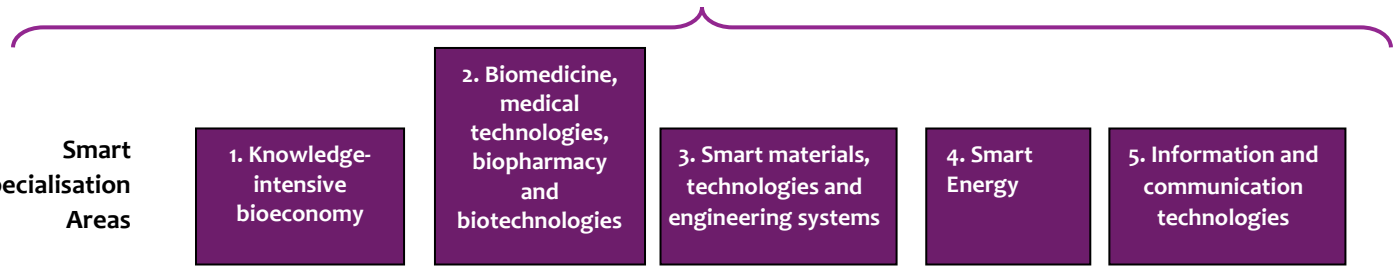
The task of RIS3 – to ensure the setting of development priorities and regular review thereof, targeted focusing of the public investments, including the choice of policy instruments appropriate for strategy setting and the development of a monitoring system that allows following the impact of public investment and ensures maximum progress towards the achievement of the objectives to be attained.

In line with the Guidelines on Research, Technology Development, and Innovation for 2014–2020 RIS3 aids in the discovery of competitive advantages, choice of strategic priorities and the selection of such policy instruments that unlock the highest potential for a knowledge-based State, thus ensuring the growth of the national economy.

Pursuant to RIS3 objectives, RIS3 public investments programmes focus on strengthening innovation capacity of Latvian national economy and reducing innovation obstacles.

Transformation Directions of National Economy, Priorities and Specialisation Areas Established by RIS3

Transformation directions	Growth priorities
Change of the production and export structure in traditional economy areas	***Priority 1:*** More efficient use of primary products for the manufacture of products of higher added value, development of new materials and technologies, as well as diversification of their application. More extensive use of non-technological innovations and the potential of the Latvian creative industry for the production of goods and services with a higher added value in the economic sectors.
The sectors of future growth, where products and services with a high added value exist or could appear.	***Priority 2:*** New products/services which production requires to establish an efficient identification system that could find and provide support for the development of new products within the framework of the existing sectors and cross-sectors, as well as the creation of new sectors with a high growth potential.
Sectors with a significant horizontal impact on and contribution to the transformation of the economy.	***Priority 3:*** An increase in energy efficiency, including the development of new materials, optimization of production processes, introduction of technological innovations, use of alternative energy
	Priority 4: A modern and up-to-date ICT system in private and public sector.
	Priority 5: A modern and able to respond to future labour market needs education system which promotes the transformation of the national economy and the development of competencies, entrepreneurial ability and creativity for
	Priority 6: Advanced knowledge base and human capital in areas of knowledge, in which Latvia has a comparative advantage and which are important in the process of transformation of the national economy: in areas of knowledge related to the development of knowledge-intensive bioeconomy, biomedical, medical technology, biopharmacy and biotechnology, intelligent materials, technologies and engineering systems, smart energy, and ICT sectors, as well as in key technologies identified by the EC (nanotechnology, micro-and nano-electronics, photonics, advanced materials and
	Priority 7: Identification and specialization of the existing resources of the territories, proposing the possibilities and directions of potential economic development, including the leading and prospective business directions in municipal



IZMunEMZino_01022018_RIS3progress; Informative Report "Monitoring of Smart Specialization Strategy"

3. LINKAGE OF SMART SPECIALISATION AREAS WITH THE SECTORS OF THE NATIONAL ECONOMY AND SCIENCE

Practically all economic sectors may use the created knowledge of different branches of science in any of the RIS3 specialisation areas. Figure 1 illustrates the linkage of RIS3 specialisation areas with the sectors of the national economy (in line with the NACE Rev.2 classification) and science sub-sectors (according to OECD classification of Fields of Science), as well as specifies which country's scientific institutions, including higher education institutions, are in each RIS3 specialization area.

Figure 1. Linkage of RIS3 Specialisation Areas with the Sectors of the National Economy and Science Sub-Sectors

National scientific institutions, including higher education institutions:		LUA, UL, RTU, DU (Horticulture), LSIW, SILAVA, BIOR, AREI, LIAE, NBG (11)	UL, RSU, RTU, LBRSC, LIOS (5)	UL, RTU, ISSP UL, (3)	RTU, UL, IPE (3)	RTU, UL, VUC, IMCS UL, IECS (5)
Sub-sectors of OECD classification of scientific and technological sectors		Earth and related Environmental ciences; Agriculture, Forestry, and isheries; Animal and Dairy science; Veterinary science; Agricultural biotechnology; Physical sciences; Chemical sciences; Biological ciences; Economics and Business; Industrial biotechnology; Environmental biotechnology; Environmental biotechnology; Materials engineering; Civil engineering; Mechanical engineering; Mathematics	Basic medicine; Clinical medicine; Health sciences; Medical biotechnology; Physical sciences; Chemical sciences; Chemical engineering; Biological sciences; Mathematics; Materials engineering	Civil engineering; Electrical engineering, Electronic engineering, Information engineering; Mechanical engineering; Chemical engineering; Materials engineering; Medical engineering; Environmental engineering; Environmental biotechnology; Industrial biotechnology; Nano-technology; Physical sciences; Chemical sciences; Mathematics	Electrical engineering, Electronic engineering, Information engineering; Earth and related Environmental sciences; Environmental engineering; Mechanical engineering; Industrial biotechnology; Mathematics; Chemical sciences; Chemical engineering; Materials engineering	Computer and information sciences; Mathematics; Electrical engineering, Electronic engineering, Information engineering; Mechanical engineering; Civil engineering
The sectors of the national economy	RIS3 Specialisation Areas	**Knowledge intensive bioeconomy**	**Biomedicine, med. technologies, biopharm. and biotech.**	**Smart materials, technol. and engineering systems**	**Smart energy**	**ICT**
A	Agriculture, forestry,					
BDE	Other manufacturing					
C	Food industry					
C	Light industry					
C	Woodworking					
C	Manufacture of paper and printing					
C	Chemical industry					
C	Manufacture of non-metallic minerals					
C	Metalworking					
C	Manufacture of electrical and optical equipment					
C	Manufacture of machinery and equipment					
C	Manufacture of vehicles					
F	Construction					
G, I	Trade, accommodation					
H	Transport and storage					
J-S	Other commercial services					
OPQ	Public services					

Medium transfer potential
High transfer potential
An innovative product can be used in all sectors of national economy

In 2014, 14 public discussions were organised attended by more than 500 representatives from scientific institutions, education institutions and industry associations. In these discussions it was concluded that the sectors of the national economy in Latvia are characterized by a relatively high level of specialisation, therefore, specialisation as a whole is not a challenge for the national economy of Latvia. Latvian export-oriented enterprises are highly specialized and are constantly looking for specialization opportunities in niches and specific product sectors. One of the most important core principles for the implementation of

the Smart Specialization Strategy does not choose "winning sectors" or avoid selectivity. Instead, the primary focus is on the creating a business environment that facilitates innovative activities and the development of human capital. One of the issues in these discussions was to identify the possible niches of the competitiveness within the framework of each specialization area.

The actual research directions of the Competence Centres and the cluster programme with the relevant financial instruments cover all the initially identified RIS3 specialization areas. New areas are not identified, but the lines of research in the field of Smart materials, technologies and engineering systems, as well as in the field of Information and communication technologies, respectively - Smart materials, technologies and engineering systems - advanced production technologies and engineering systems, Smart materials, technologies and engineering systems – smart materials and appropriate Information and communication technologies – information and communication technologies and Information and communication technologies – machinery construction (electronics) are extracted in more details.

Figure 2. The Potential Specialization Niches of the Latvian Industry within the Framework of Smart Specialization

Specialisation Areas	The potential specialization niches of the industry in the view of the discussions of 2014	Research direction/result; Competence centres[1]	Clusters (the programme had been launched from 2017)
1. Knowledge-intensive bio-economy	Sustainable and productive forest growing in changing climatic conditions; Full use of wood biomass for chemical processing and energy; Innovative, risk-reducing plant and animal breeding technologies; Development of innovative high value-added niche products from wood, traditional and unconventional agricultural plant and animal raw materials; Technological solutions for the use of plant and animal breeding and processing by-products; Food safety.	▪ Increasing the product-market for Latvia's producers products (LFCC)[2] ▪ Increase of manufacturing added value and competitiveness (LFCC) ▪ Increase of forest capital value and development of forestry (FSCC)[3] ▪ New wood-based materials and technologies (FSCC)	▪ Food Products Quality Cluster ▪ Latvian Wood Construction Cluster ▪ CLEANTECH LATVIA (cross-sectoral cluster) ▪ Smart City Cluster (cross-sectoral cluster)
2. Biomedicine, medical technologies, bio-pharmacy and biotechnology	Chemical and biotechnological methods and products for the production of pharmaceutical and bioactive substances; Development and research of new and existing human pharmaceutical products and veterinary drugs; Molecular and individualized treatment and diagnostic methods and cell technologies; Functional foods, therapeutic cosmetics and bioactive naturally occurring substances.	▪ Original and genetic drugs – the research of the active medicinal substances for the development new, including off-patent medicines, the assessment of specific substances for treatment of certain diseases, etc. (PBMTCC)[4] ▪ The development of drugs from naturally occurring substances (PBMTCC)	▪ Life Science Cluster of Latvia - LifeScience.lv
3. Smart materials, technologies and engineering systems	Implant materials, composite materials, thin layers and coatings, equipment, machinery and working machines, glass fiber products and smart glass-based materials.	▪ Smart materials, technologies and engineering systems - advanced production technologies and engineering systems ▪ Automated engineering systems and materials manufacturing technologies. (MECC) ▪ The development of transport technologies (MECC) ▪ Smart materials, technologies and engineering systems – smart materials ▪ The development of smart coatings and materials, smart technologies, nano-technologies and nano-materials. (SMTCC)[5]	▪ Metalworking Cluster ▪ Green and Smart Technology Cluster (cross-sectoral cluster) ▪ Printing and Media Technology Cluster
4. Smart Energy.	Resource prices; intensity of consumption of energy resources; the EU Climate and Energy Framework. 2030.	▪ To promote the development of new products and technologies. (SETECC)[6]	▪ Latvian Electronics and Electrical

[1] The council for each competence centre is established to determine conformity with the niche on the basis of the strategies developed
[2] LFCC - "Latvian Food Competence Centre"
[3] MECC - "Mechanical Engineering Competence Centre"
[4] PBMTCC - "Pharmacy, Biomedicine and Medical Technology Competence Centre"
[5] SMTCC - "Smart Materials and Technology Competence Centre"
[6] SETECC – "Smart Engineering, Transport and Energy Competence Centre"

		▪ To foster the development of new products of the export-oriented enterprises to enter new and more efficient markets. (SETECC)	Engineering Cluster
5. Information and communication technologies.	Innovative knowledge management, methods and tools for system modelling and software development; innovative use of sectoral ICT hardware and software; cyberphysical systems, language technologies and the semantic web; the infrastructure of large scale data and knowledge; information security and quantum computers; methods for testing computer systems.	▪ Information and communication technologies – information and communication technologies ▪ Innovative knowledge management, system modelling and software development methods and tools, their use (ITCC)[7] ▪ Innovative sectoral ICT hardware and software applications (ITCC) ▪ Bulk data and knowledge infrastructure (ITCC) ▪ Information and communication technologies – machinery construction (electronics) ▪ The development of new products in the field of electronics, electrical engineering (LEO)[8]	▪ Information Technology Cluster

[7] ITCC - "IT Competence Centre"
[8] LEO - "LEO Research Centre"

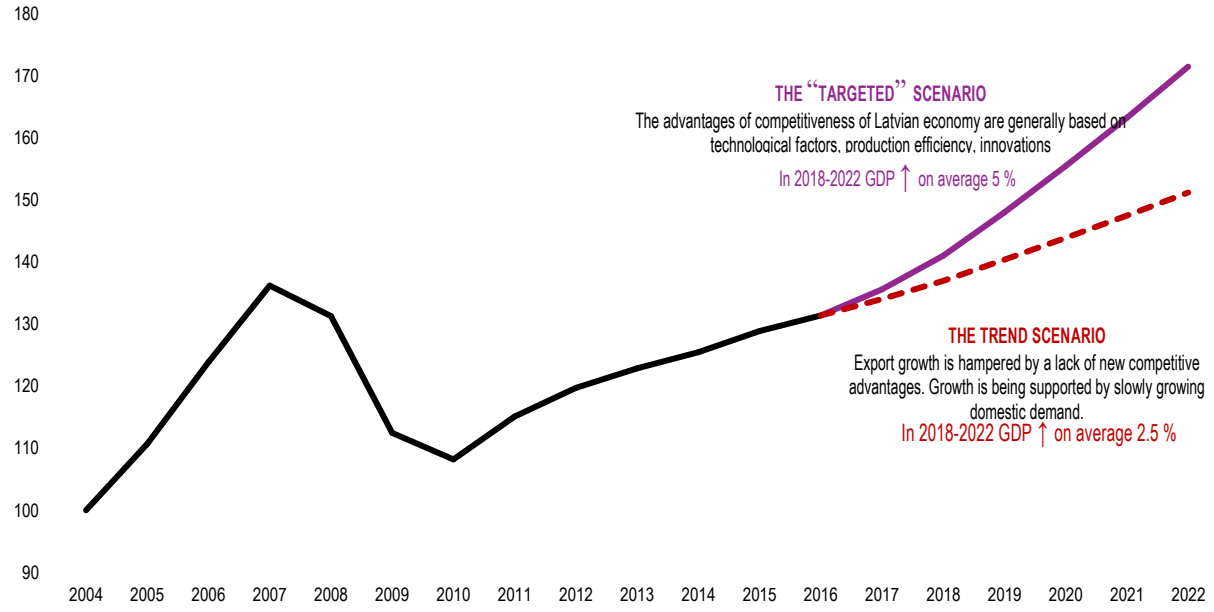
4. TRENDS, TARGETS AND CHALLENGES OF ECONOMIC DEVELOPMENT

The economy of Latvia is macroeconomically balanced, but there is lack of incentives to create new competitive advantages in all processes related to the expanding and modernization of production.

The economy of Latvia had experience a rapid recovery after the crisis – in 2011 and 2012 GDP grew on average by 5.1 %. In the years to come, the growth had slowed down gradually – over the last four years GDP increased on average by 2 percent annually (Figure 3). These clear macroeconomic disproportions in the economy of Latvia have been eliminated and the risks of economic vulnerability against internal and external shocks have been reduced. Although the economy of Latvia is macro-economically balanced now, there is lack of incentives for more rapid economic growth. There are no explicit trends, which determine the main drivers of growth. In the short term growth is defined by different temporarily conjuncture conditions and they are not promising lasting contributions to provisions of further growth.

Economic activity in general has not reached pre-crisis levels. The dynamics of competitiveness indicators show that the model of Latvian economy has not changed and the benefits of low cost competitive advantage still remains. Remaining at the current situation, economic growth rates in the medium term can only be achieved at 2-3 % per year and the Latvian economy is at risk of getting into the middle-income-trap.

Figure 3. Growth of Latvian national economy, GDP dynamics, 2004 = 100



The Government's objective is to facilitate a balanced and competitive development of the national economy in the medium term to achieve a sustainable and balanced GDP growth of 5 % every year.

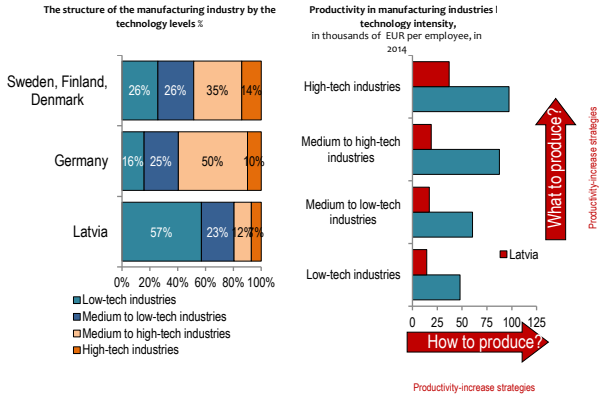
The main prerequisite for the sustainable and balanced economic growth is to boost productivity levels. One of the main challenges is the creation of a new competitive advantages that is related to the investments in human capital, technologies, innovation and research by developing a fit-for-purpose public investment and support mechanism and by focusing private investments. Creating new competitive advantages is an important condition for the expansion of export market outlets and the increase of export volumes. In the present circumstances the competitiveness of Latvia in external and internal markets will be determined by the ability to reduce the productivity gap with technologically advanced countries.

Productivity increases are based not only on technological novelties, the improvement of production process management, but also on the reallocation of existing resources to produce products with greater added value, i.e., the structural transformation of the national economy. Consequently, it is fundamentally important to concentrate state investment and support mechanisms on creating the necessary preconditions and a favourable environment by selecting fit-for-purpose instruments, on the other hand, by allowing enterprises to invest in products and their development. Having analysed the existing situation, it

follows that State intervention in the form of financial instruments does not provide a sufficient return directly on the production of added value products and structural transformation of the national economy, namely , it does not motivate entrepreneurs to choose the transformation path. Accordingly, in order to motivate entrepreneurs to choose the production of higher added value products, it is necessary to invest by the State in provision of knowledge-base and human capital and establish the right support instruments that would allow enterprises to focus on productivity without making long-term contributions to investments that do not achieve productivity returns.

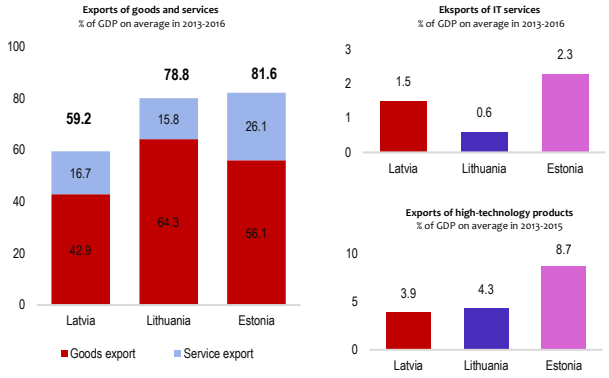
4.1. THE CHALLENGES FOR LATVIAN NATIONAL ECONOMY DEVELOPMENT

LATVIAN INDUSTRY SPECIALISES IN LOW-TECHNOLOGY SECTORS



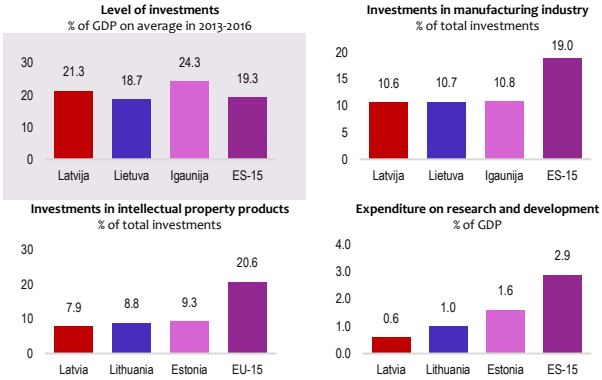
It is necessary to foster diversification of production and technological modernisation

RELATIVELY LOW INCOME GAINED FROM EXPORTS



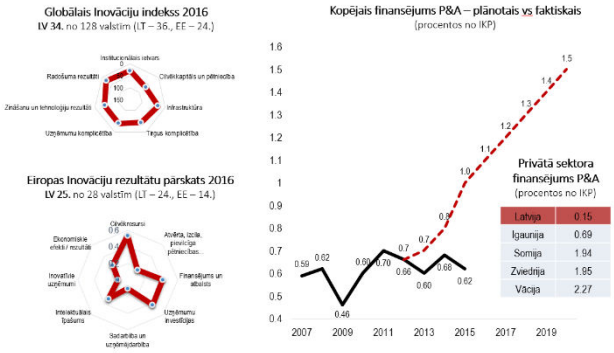
Reforms that will facilitate a switch to the production of products with a higher added value are required

UNSUSTAINABLE INVESTMENT STRUCTURE



Reforms that will facilitate a switch to the production of products with a higher added value are required

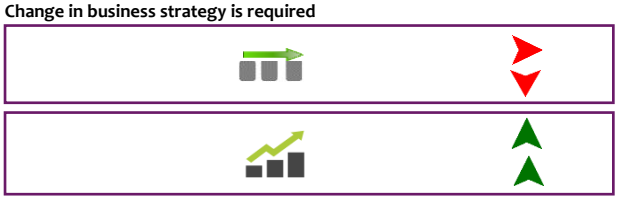
LATVIAN INNOVATION SYSTEM IS WEAK



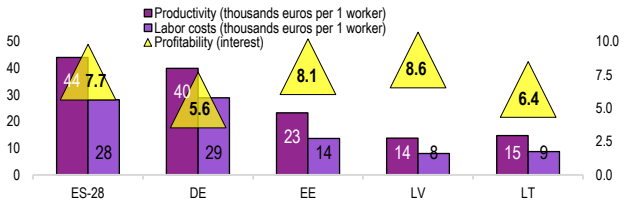
It is necessary to find complex solutions to eliminate weaknesses in the Latvian innovation system by improving Latvia's position in international ratings

BUSINESS STRATEGIES ARE NOT FOCUSED ON THE DEVELOPMENT OF INNOVATIONS

Change in business strategy is required



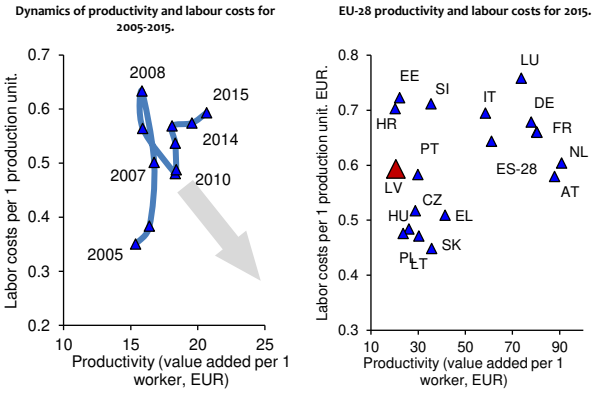
High profitability — as an obstacle for changing the business model Food industry: example



The performer of the transformation process is the entrepreneur — who decides to modernise production or shift resources to another industry/region/country. The overarching goal of the Policy is to increase entrepreneurs' motivation

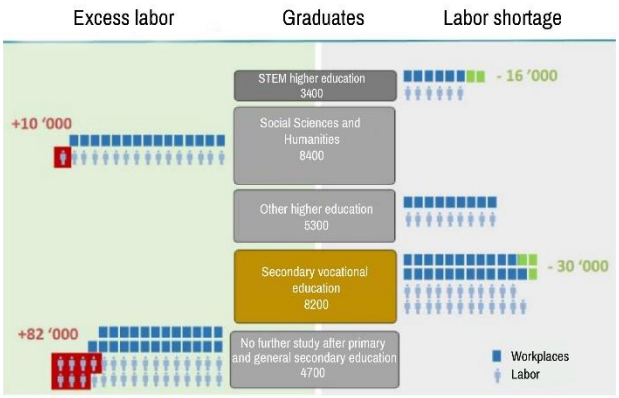
LABOUR COSTS ARE GROWING FASTER THAN PRODUCTIVITY

MANUFACTURING INDUSTRY



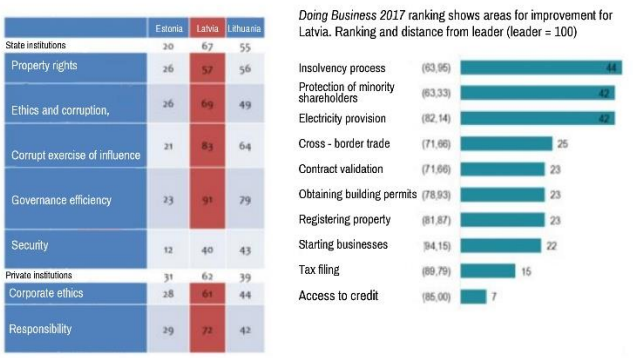
It is necessary to reduce the productivity gap with highly developed countries in order to prevent stagnation and avoid middle-income-trap.

THERE ARE LABOUR MARKET DISPROPORTIONS



Structural reforms that will reduce the imbalances in labour demand and supply are required

INSTITUTIONAL AND BUSINESS ENVIRONMENT SHORTCOMINGS HAMPER THE EFFICIENT REDISTRIBUTION OF RESOURCES



	Estonia	Latvia	Lithuania
State institutions	20	67	55
Property rights	26	57	56
Ethics and corruption,	26	69	49
Corrupt exercise of influence	21	83	64
Governance efficiency	23	91	79
Security	12	40	43
Private institutions	31	62	39
Corporate ethics	28	61	44
Responsibility	29	72	42

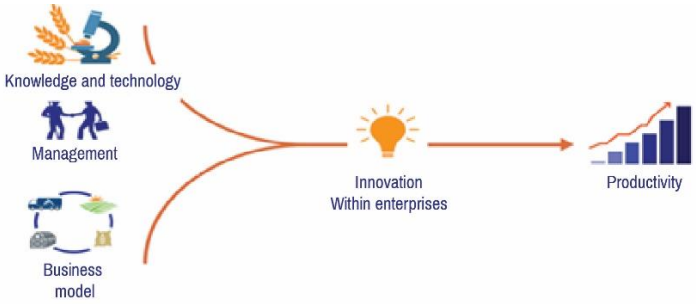
Doing Business 2017 ranking shows areas for improvement for Latvia. Ranking and distance from leader (leader = 100)

It is necessary to improve the institutional and business environment by removing obstacles to more efficient use of resources.

The national economic structural transformation process is largely dependent on the quality of the institutional framework (legislation, state investments and support, and economic and political institutions), which ensure the efficient operation of products and resource markets, minimizing the redistribution process costs and risks, thereby strengthening the county's competitive benefits.

The Latvian economy is closely integrated in the international markets. Therefore, in creating new competitive advantages Latvia has to adapt to global challenges that change the traditional business model:

- increase in production factors and international mobility of capital. Now the development of global economy is very weak, therefore, a greater competition in talent, product, labour and capital markets can be observed.
- production fragmentation, specialisation of states in a particular sector or product value-added chain are made. Latvia must seize the opportunity to become involved in global supply and production chains, where excellence at all production stages and levels, suppliers and cooperation partners' competences and innovations in related industries and different regions matter for manufacturing of the end-product. Latvia's currently low innovation performance indicates not only insufficient public investment in knowledge base and human capital, but also (and probably much more) entrepreneurs' low demand for innovations;
- the fast growing, new industrialized countries with the benefits of cheap labour. Competitiveness of Latvia's producers is still based on cheap labour advantage. But we must consider that increasing labour cost is an inevitable process in open labour market conditions. This means that Latvia could lose its low labour cost advantage faster than gaining higher added value production. Furthermore, by continuing such business model there is a growing risk of losing talent;
- for attracting private investments there are greater demands on institutional environment and infrastructure. The Latvian institutional environment has several shortcomings (distortions). The most significant are the high share of the shadow economy and poor-quality public services.



- The performer of the transformation process is the entrepreneur – who decides to modernise production or shift resources to another industry/region/country. Increasing entrepreneurs' motivation for changing the business model and gaining and building knowledge on new competitive advantages is the main policy objective.

5. STRUCTURAL TRANSFORMATION DIRECTIONS OF NATIONAL ECONOMY

Structural transformation is a process that is sometimes called "climbing up the technology ladder" in the form of higher industrial productivity. This is related to the reallocation of resources to higher productivity sectors, as well as the diversification of production and technological modernisation.

The structure of the national economy is largely determined by the existing comparative competitive advantages which have to change over time, therefore, structural transformation shall be based on the creation of new competitive advantages.

The structural transformation process is pre-determined to a certain extent. It is based on the existing structure of the national economy that can be conditionally divided into 4 sector development groups:

- traditional economic sectors (the largest – woodworking, food industry, chemistry and pharmacy, transit services);
- future growth sectors (such as ,,Smart materials, technologies and engineering systems" and ,,Biomedicine, medical technologies, bio-pharmacy and biotechnology");
- sectors with a significant horizontal impact (information and communication technologies, energy efficiency solutions and technologies;
- business services.

In the transformation process, the state's structural policy and industrial policy play an important role. Each of the sectoral groups has its own specific transformation incentives that should be the main purpose of the proposed discussions.

Several of the basic transformation elements are already outlined in the Guidelines for the National Industrial Policy for 2014 – 2020.

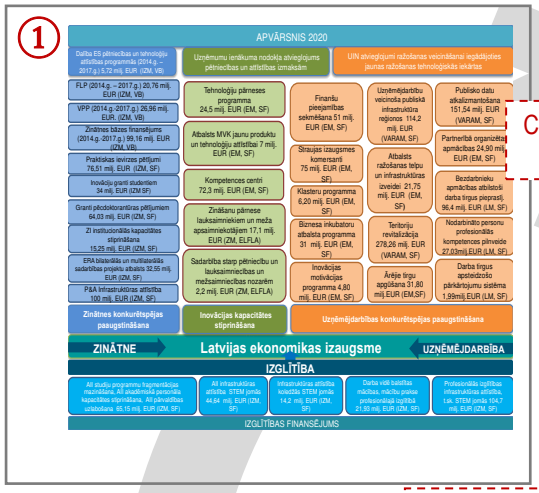
- The development of Clusters. The existence of developed clusters is a prerequisite for structural transformation. This in particular refers tothe traditional sectors. Clusters provide benefits through access to specialized suppliers, service providers, use of resources, ideas, scientific researches and other external effects.
- Inclusion in Global Value Chaines ensures growth in exports and higher productivity. For example, higher productivity can be obtained by a Latvian company operating in the direct supply chain of the car producer rather than being perceived as one of the suppliers to the company belonging to the value chain. One of the company of the Latvian wood industry sector supplying the raw materials to the automotive sector through the use of an intermediary involved in the supply chain would like to achieve such effect.
- The development of niche products. Latvian industrial companies cannot compete in mass production. The Latvian economy is characterised by small companies. Its specific feature is niche products. A niche product is a unique product (with specific application characteristics that correspond to a certain group of consumers) that is not in high demand (it is not mass production), but it can be produced and sold in sufficient quantities to make a profit. In the case of niche products, the competitive advantages are related to the fact that the large companies are not interested in producing such products due to limited demand.

The purpose of public investment and support is to reduce the costs of transformation mainly through high-quality public services and provide a supportive business environment.

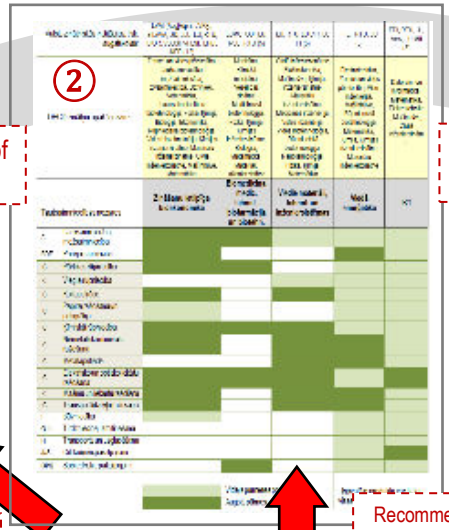
The transformation challenges change the traditional business model which should be based on at least a medium-term business strategy and must be based on an excellent business environment where mutual trust between economic subjects (between entrepreneurs, between state institutions and entrepreneurs, employers and employees) is a key element. It is made up of legislation and relevant state and local government institutions.

6. RIS3 MONITORING FRAMEWORK

Scheme No. 1 "RIS3 Monitoring Framework"



Concentration of resources



Results to be achieved

RIS3 overall objectives (assess the impact of implemented programmes in terms of indicators' change within the framework of ex-post evaluation):

	Base	2017	2020
Investments in R&D (% of GDP)	0.6 (2013)	1.2	1.5
The position in the European innovation index group	Modest (2013)	modest	moderate
Productivity in the processing industry	20,126 (2013)	24,500	29,000

Macro level indicators (assess the impact of programmes in terms of indicators' change within the framework of ex-post evaluation):

	Bāze	2017	2020
Private sector investments in R&D (% of total investments)	21.8 (2013)	46	48
The proportion of innovative companies (% of all companies)	30.4 (2012)	35	40
Proportion of high and medium-high technology industries in Latvian merchandise export (%)	23.8 (2012)	27	31
The number of scientific personnel in research and development (in the public, private sector)	5593 (2013)	6300	7000
A smaller number of stronger state-funded scientific institutions	42 (2013)	30	
Proportion of graduates (ISCED level 5 and 6) in the STEM fields from the total number of graduates, %	19 (2012)	25	27

Macro-level indicators for monitoring

Income from licences/patents of scientific institutions (EUR)
Business co-funding for R&D projects (EUR)
The number of the companies that have received support to launch new products in the market
The merchant's turnover from the implementation of research results into economic activity or commercialization
Newly established companies by scientific institutions (spin-off)
The amount of loans granted to micro and small enterprises (EUR)
The number of innovative businesses that have received preparation and start-up capital support in their early development phase
The number of businesses that have received venture capital funding in the expansion phase
The number of young researchers supported for implementing post-doctoral research
Newly created jobs employing scientists in the public sector/business sector
Funding raised for H2020 confirmed project applications (LV part; EUR)
Scientific articles published in the international databases (Scopus, Web of Science)
Number of employees who have improved their professional competency
STEM the number of students who earned Master's degree
financial investment in intangible and fixed assets outside Riga

Changes, if necessary

Proposals, access to funding of programmes

Recommendations for a shift in priorities, actualisation of niches

Policy makers

Proposals

Entrepreneurial Discovery Principle

The goal - to identify/update the possible niches of the competitiveness at the level of each sector, identify obstacles and problems, and provide feedback on the effectiveness of the implementation of the measures and the necessary changes.

Participation, recommendations

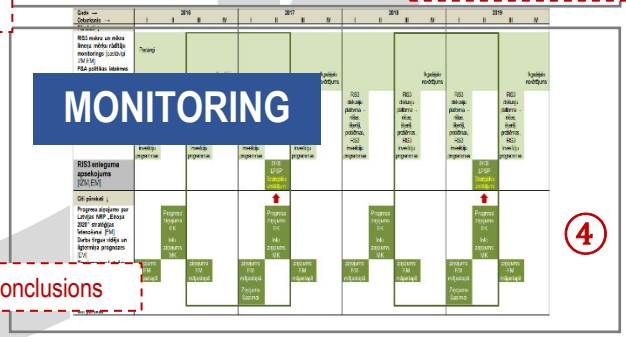
Opinion, recommendations, identified obstacles, problems

Analysis of the results

Strategic tasks

Latvian Research and Innovation Strategic Council (LRISC)

(provides a collaborative platform between state governance institutions, scientists, entrepreneurs and research funders, coordinates the cooperation between institutions and parties involved in the preparation, implementation and monitoring of RIS3).



Conclusions

① Instruments for addressing the problems of innovation system
② Priority sub-sectors of knowledge that have the greatest potential for the improvement of competitiveness of the national economy
③ Monitoring indicators for the impact assessment of macro- and micro-level
④ Monitoring - the preparation of the reports on RIS3 macro and micro level performance indicators
⑤ Presentation of reports and conclusions to LRISC
⑥ Ministries involved in the implementation of RIS3

7. TARGET INDICATORS HIERARCHY

Targets in the policy planning documents at all levels are coordinated.

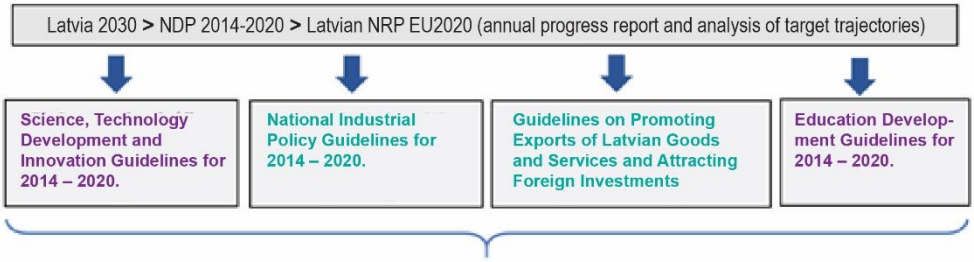
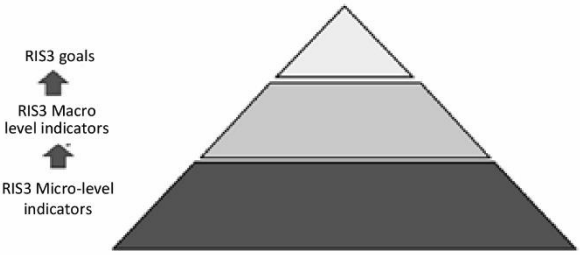


Figure 4. RIS3 Monitoring Indicators



The purpose of the RIS3 monitoring system is to ensure public contribution to the achievement of RIS3 objectives in terms of efficiency, sustainability and public value. Its task is to enable decision-makers to evaluate the impact of investments and, if necessary, to make changes to the strategy or its implementation tools. The monitoring system is designed to follow the achievement of RIS3 objectives at three levels: The overall objectives of RIS3, RIS3 macro level indicators, RIS3 micro level indicators.

For better RIS3 monitoring significant data collection improvements are made:

1) An extension of CSB research and innovation survey data as of 2017. The extended research survey will cover data (a) on expenditure for research activities by financial sources and types of economic activities at NACE Rev. 2 2-digit level, (b) on scientific staff by sectors and research areas. Within the scope of the extended innovation survey the data on innovative active enterprises by type of economic activity will be derived at NACE Rev. 2 2-digit level, as well as by planning regions.
2) The survey on the Career Development of Doctorate Holders in 2016;
3) The establishment of the Register of the National Research Information System and Register of Students and Graduates.

In addition a number of thematic evaluations have been conducted that will provide information on further RIS3 monitoring and taking further decisions, as well as the experts from the International Bank for Reconstruction and Development (the World Bank) carry out a study for improving governance in Latvian higher education institutions and modernisation of higher education, in the third and fourth quarter of 2017 ex-post evaluation of the investments of the EU funds in R&I for the period 2007-2013, the evaluation of EU languages of higher education institutions and joint doctoral study programmes, as well as an evaluation of the efficiency of the Latvian science financing system carried out by a panel of experts under the Horizon 2020 Policy Support Facility have been completed.

The progress towards the achievement of RIS3 overall objectives is characterised by the total investments in R&D (% of GDP), the position in the European innovation index group and the productivity growth in the manufacturing industry. Although Latvia has been able to progress from the modest performance in the innovation index group to the moderate one, the main economic knowledge-based and technology-based indicator – the investments in R&D – shows a negative growth rate and productivity in manufacturing industry remains unchanged . Contributions to R&D demonstrate both public and private sector investments in research and represent the knowledge-intensity of economic knowledge.

As the indicators of RIS3 overall objectives and macro level target indicators are also target indicators of the medium term policy planning documents, the progress towards the achievement of RIS3 objectives has been assessed in the context of these policy planning documents

8. POLICY ACHIEVEMENT RESULT INDICATORS

Progress towards achieving the overall RIS3 objectives is characterised by the total investments growth in R&D (% of GDP), a change of structure, changes in the position of Latvia in the European innovation index group and productivity growth in the manufacturing industry. Although Latvia has been able to progress from the modest performance in the Innovation Scoreboard to the moderate one, this is mainly due to the investments of the EU funds contributions to human capital and equipments in Latvian enterprises made in 2007-2013.

Figure 5. Indicators of achievement of RIS3 objective

	Aim reaching indicators	2010	2013	Fact	Progress	2020	Policy policy planning document	
	European Innovation Index Group (EIS position)	„modest"	„modest"	„moderate" (2016)	▶	„moderate"	STDIP[9]	The overall objectives of
	Investments in research and development in 2020 amounts to 1.5% of GDP (%)	0.6	0.6	0.44 (2016)	▼	1.5	STDIP, NIP, SRP	
	Productivity in manufacturing industry (EUR per worker)	18.5	20.3	23.6 (2016)	▶	29,000		
IV_1	The number of scientific personnel in research and development	5563	5593	5120 (2016)	▼	7000	STDIP	The direct and indirect impact of government policy
IV_2	Number of students that earned degree in universities or colleges (thousands/people)	26.5	23.9 (2014)	15.8 (2016)	▼	24.6	STDIP	
IV_3	Proportion (%) of population aged 30-34 with a higher education	33	37 (2014)	43 (2016)	▲	40	STDIP	
IV_4	A smaller number of stronger state-funded scientific institutions	40	40 (2014)	22 (2017)	▲	20	STDIP	
IV_5	Scientific articles published in the international databases	1032	1100 (2014)	1820* (2016)	▲	1500	STDIP	
IV_6	Success rates for membership in the EU framework program (%)	22.8	22 (2014)	12.7 (2016)	▼	30	STDIP	
U_1	Proportional increase of the private sector investments in research and development (private sector investments in research and development, % of total investments)	38	21	20,0% (2015)	▼	48	STDIP	
U_2	The number of scientific personnel employed in the private sector (% of the total, according to full-time equivalent)	22.7 (2011)	18 (2014)	20.6 (2015)	▶	23	STDIP	
U_3	Granted European patents, applied from the scientists that reside in Latvia	11 (2011)	13 (2014)	16 (2016)	▼	50	STDIP	
R_1	The proportion of innovative companies (% of all companies)	29.9	30.4 (2012)	25.5 (2014)	▼	40	STDIP	Transformation of national economy
R_2	Proportion of the manufacturing industry as a share of GDP (%) in 2020 reaches 20 %	13.4	12.7	12.5 (2016)	▼	20	NIP	
R_3	Productivity growth in the manufacturing industry in 2020 compared to 2011 is 40 %	92.8	101.8	118.3 (2016)	▶	140	NIP	
R_4	Growth in the manufacturing industry in 2020 compared to 2011 is 60 %	95.1	102.3	113.1 (2016)	▶	160	NIP	
R_5	Increase in exports (in annual average constant prices, %)	26.8	1.0	2.6 (2016)	▶	5 (2018-2020, annual average)	PELGSAFI	
R_6	The proportion of high technology products in total Latvian exports (%)[10]	4.8	8.0	9.8 (2015)	▶	11%	PELGSAFI	
R_7	Proportion of high and medium-high technology industries in Latvian merchandise export	4.8	8.0	9.8	▶	31%	STDI	
R_8	FDI performance index (in the Baltic region)	1.6	3.0	1.4 (2016)	▼	1.2 (2018-2020, annual average)	PELGSAFI	

* The indicator shows the number of publications in the SCOPUS database. In 2016 Web of Science database contained 2,172 publications

The indicators specified in the policy planning documents were grouped according to the EIS methodology by breaking down three groups of indicators: (ENABLERS) innovation drivers outside the business sector (IV); (FIRM ACTIVITIES) business activity in the field of innovation (U); (OUTPUTS) business innovative activities reflecting the transformation of the national economy towards the greater added value and innovative economy (R).

Designations: ▲ – the indicator has improved; ▼ – the indicator has deteriorated; ▶ – the indicator has not changed significantly; "-" – no data;

– *European Innovation Scoreboard 2016*[11]

The primary economic knowledge-based and technology-based indicator – investments in R&D – has not increased and productivity in the manufacturing industry has not changed significantly. Contributions to R&D demonstrate public investments in research and represent the knowledge-intensity of sectoral

[9] Hereinafter in Figure 5: STDI guidelines.

[10] To identify the changes in the export structure and ensure international comparability of data, adjustments in the Guidelines were made in respect of the definition of performance indicators. So the Eurostat methodology will be used in the future, which is based on the recording of high-tech exports by product groups rather than the business profile.

[11] For detailed information on Latvia's performance in all indicators used in the European Innovation Scoreboard see Annex 5.

enterprises. Taking into account that this indicator measures the volume of R&D in the national economy and the fact that investments in R&D are directly related to the availability of the knowledge base and human capital, the knowledge-intensity of products, services and technology-intensity and, accordingly, productivity, in 2013 the government committed to increase state budget investments in R&D, at the same time integrating incentives defined in the R&D funding programmes to increase the volume of private R&D. The government hereby committed not only invest in research, but also signalled to the Latvian society and the European Commission its political commitment to move towards a higher productivity economy, as well as undertook international commitments on the basis of which EU funds are invested in STDI sector to improve its performance. Without a further significant increase of public investments it is impossible to ensure the knowledge-base, technologies, human capital and cooperation networks necessary for more rapid economic growth. Already in the medium term it could ensure the change in the company's business model and the knowledge-intensity of the private sector's products and services reflected by the private sector investments in R&D. At the same time, such a situation poses risks of not reaching the performance indicators for structural fund investments planned in the Operational Programme "Growth and Employment", the achievement of which to some extent is outside the impact of the structural funds as it requires behavioural changes and a long-term commitment, thus signalling a positive structural transformation of the national economy, characterized by the number of new jobs in R&D[12] and external funding attracted by scientific institutions[13] (indicator data and present values see in Figure 39 and Sub-chapter 9.1 "RIS3 micro level indicators", pages 44-45 and 46). A significant non-achievement of the above listed indicators may result in a financial correction in 2023, and therefore to cause losses to the state budget.

The indicators of RIS3 overall objectives and macro level target indicators and the progress towards their achievement are summarized in Figure 5. The dynamics of comprehensive indicators by years for the period 2008 to 2016 can be found in Annex 6 "RIS3 objective achievement indicators for 2008 – 2016". Of all macro level aim reaching indicators there were some positive developments regarding the indicator reflecting 1) the proportion of high and medium-high technology industries in exports of Latvian goods (%), 2) the consolidation of research as a result of structural reforms, creating a smaller number of stronger state-funded scientific institutions, 3) the number of scientific articles published in recognised international databases, 4) the proportion (%) of the population aged 30-34 with a higher education. Furthermore, for those indicators which performance is directly related to investments in R&D, the progress of performance indicators is negative to stimulate growth insufficient amount of investments in R&D.

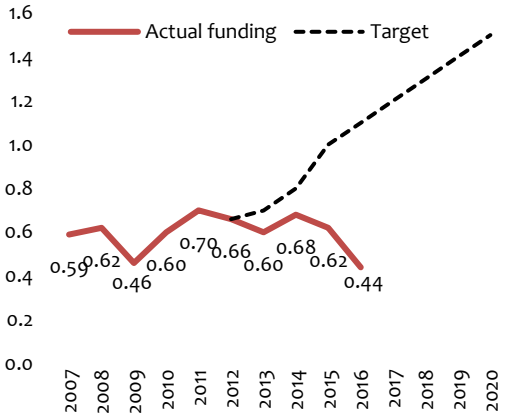
All related policy planning documents (NIP, STDI guidelines) are in principle aimed at achieving of RIS3 objectives. However, those documents have different base years. It is therefore important that one reference period in RIS3 monitoring further to be used.

[12] 1.1.1. SAO outcome indicator: "Number of young researchers in the supported entities, full-time equivalent".

[13] 1.1.1. SAO outcome indicator: "Private investments which supplement state support for innovation or research and development projects " and result indicator: "External funding raised by the state and higher education sector for scientific and research work ".

Latvia's total expenditure on R&D in 2016 was EUR 110.4 million or 0.44 % of GDP. That is not only considerably lower than it was planned in 2016 (1.1 %), but also less than the average in previous years. This decrease is explained by the reduction of private and international (EU funds) sector investments in combination with public investments stagnation (Figures 7, 8 and 9). The planned policy of RIS3 envisaged a set of measures in which a significant increase in public investments in combination with EU funds contributions to sectoral infrastructure and human capital would ensure a gradual increase of private-sector investments.

Figure 6. Total expenditure for R&D
% of GDP



Taking into account that the objective of public and EU funds investment is to provide preconditions and incentives for private sector investment growth, the negative development trend observed clearly indicates that the structure of the national economy remains not only unchanged, but also deteriorates. Moreover, in fact, one of the most important incentives for growth is not activated.

In order to facilitate an increase in public investment in R&D and develop sectoral human capital, in 2018 the state budget funding for science and research has been increased by EUR 3.4 million. It has been determined that the State Research Programmes further to be financed from the budget of the relevant sector. Starting from 2018 an additional EUR 2 million are allocated from the budget of the Ministry of Economics for that purpose - the implementation of the State Research Programme in the field of energy.

Changes in macro-level indicators show that the planned progress towards the target in 2020 to achieve a level of the national economy structure that is characterized by 1.5 % of investment in R&D (% of GDP) is not being reached (Figure 6). Total expenditure for R&D has not increased.

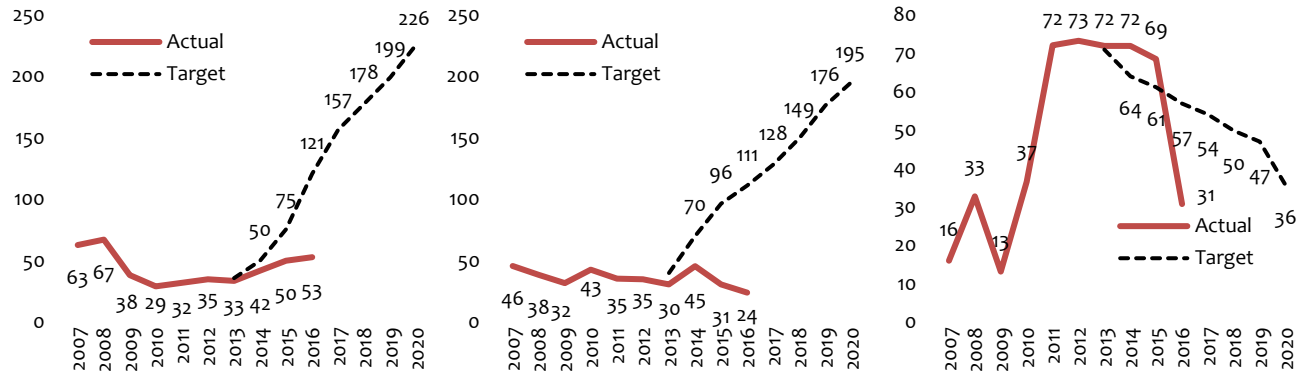
To increase the knowledge-intensity within the private sector in terms of the private sector investments in R&D, RIS3 provided for an annual increase in public investments reaching in 2014 nearly EUR 49.8 million, in 2015 — EUR 75.4 million, in 2016 — EUR 120.9 million (Figure 7).

As shown in Figure 7, the planned increase in public investment in R&D in 2016 had been lagging behind the planned investments by 68 million. Thus the State has failed to fulfil the RIS3 plan and failed to invest in the knowledge and technology necessary for the promotion of the development of the national economy. The state budget investments in 2013-2016 increased by only EUR 19.3 million. This increase was mainly based on Basic Science Funding of scientific institutions or institutional funding (significantly less than necessary and planned) intended primarily for maintaining scientific infrastructure and co-financing for participation in EU funded projects. The state budget investment in research has not been increased at all, thus creating a situation where the modernized research infrastructure and human resources funded by EU funds are not burdened and knowledge necessary for economic development cannot be sufficiently provided. A situation in which persons employed in research did not have job opportunities neither in public nor in private sector is therefore created. In the view of the global nature of

Figure 7. State funding for R&D
million EUR

Figure 8. Business funding for R&D
million EUR

Figure 9. Foreign funding for R&D
million EUR



the research labour market, the decisions taken during the preparation of the government budget not to fund research have contributed to a "brain drain" - Latvia continues to lose talent in the global high value-added sector labour market. It poses even greater risks of possible non-occurrence of the national economic transformation towards higher added value.

Investments in research are also provided for in Article 33, Paragraph two of the Law on Scientific Activity laying down an annual increase of funding for scientific activity in the amount of no less than 0.15 % of GDP until the state-allocated funding for scientific activity reaches at least one per cent of the gross domestic product. The seriousness of the situation has also been stated in the European Commission study[14] on the expected results of Cohesion Policy within the programming period 2014-2020, which concludes that during the programming period2014–2020 Latvia has not only the lowest allocation of national funding for R&D among the Baltic States of total public funding[15], but also the lowest amount of funding for R&D planned within Cohesion Policy[16]. In fact, the current planned investments, even if they are invested in full scale, are insufficient to ensure the desired development and could objectively result only in such structure of the national economy in which knowledge-intensity is around 0.8 % of Latvia's GDP.

By 2016, within RIS3 the expected EU funding (foreign) was above EUR 7 million annually. (Figure 9). This development is explained by the fact that the government's decision not to invest the planned funding in research was offset by additional EU funding in the consolidation and development of scientific institutions in 2014 and 2015, which simultaneously financed institutional changes and allowed the scientific institutions to involve personnel in the administration of changes, thus in the short term retaining talent attracted by EU funds contributions. Although, as a result of that measure, the risks of losing personnel were slightly reduced. However, the number of staff in Latvian scientific institutions has decreased significantly. This measure has not been able to compensate the situation that arose in 2016 when the EU funding (foreign) for research fell by EUR 37.8 million or 55 % annually and an increase in investments planned in STDIP was not implemented.

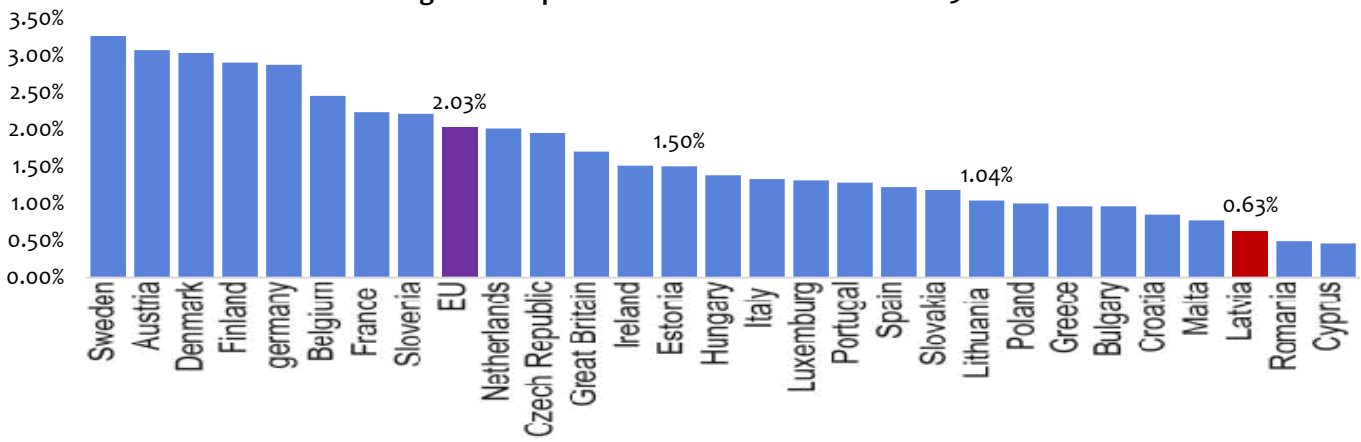
Thus, in comparison with other EU Member States, Latvia is still among those countries which have not taken a de-facto strategic decision to invest in a knowledge-based and technology-based national economy (Figure 10). Latvia with a total expenditure for R&D of EUR 152.3 million or 0.63 % of GDP in 2015 is comparable to that of traditionally low-value-added economies such as Cyprus and Romania. At the same time, for example, the structure of national economy of Estonia, the Czech Republic and Slovakia is already much closer to the EU average.

[14] Available at: http://ec.europa.eu/regional_policy/en/information/publications/studies/2016/study-on-the-expected-results-of-cohesion-policy-in-estonia-lithuania-and-latvia-within-the-programming-period-2014-2020

[15] Cohesion Policy funding in Latvia amounts to nearly 70 % of total public funding, while in Estonia it amounts to 40 %, in Lithuania — 30 %.

[16] On the whole during the programming period 2014–2020 Latvia invests EUR 467 million of overall Cohesion Policy funding, Estonia – EUR 642 million, Lithuania – EUR 638 million.

Figure 10. Expenditure on R&D as % of GDP in 2015



Considering separately the amount of Latvia's per capita expenditure on R&D, Latvia's expenditure on R&D in 2015 represents only EUR 25 per year, which is 13.6 % of the EU average and about 5 % of Luxembourg, Denmark, Austria and Sweden. In 2015 Latvia's GDP per capita was 64 % of the EU average. Comparing Latvia's indicators with Lithuania and Estonia, where GDP per capita is only slightly higher than in Latvia (Lithuania — 73.3 % of the EU average, Estonia — 73.6 %), it is evident that the total amount of expenditure on R&D per capita in Lithuania is EUR 133 (72 % more than in Latvia) and in Estonia is EUR 231 (200 % more than in Latvia). This difference clearly demonstrates that, unlike Lithuania and Estonia, Latvia at the political level has not made the development of high-value-added economy as a priority. Already in the medium term this poses a risk that Latvia will not be able to get out of the low economic position.

The proportion of activeand innovative enterprises in the reporting period for 2012 – 2014 decreased by 4.9 %, while the number of enterprises with only non-technological innovations - marketing and organizational - increased by 10.1 %. Thus, in the reporting period for 2012 – 2014 the proportion of innovative enterprises (% of all enterprises) was 25.5 % (2010 – 2012 – 30,4 %). 60.2 % of industrial sector companies and 47.9 % of service sector companies introduced technological innovations, while non-technological innovations were introduced by 39.8 % of industrial sector companies and 52.1 % of service sector companies.

Figure 11. Share of Innovative Enterprises (%) and Objective until 2020

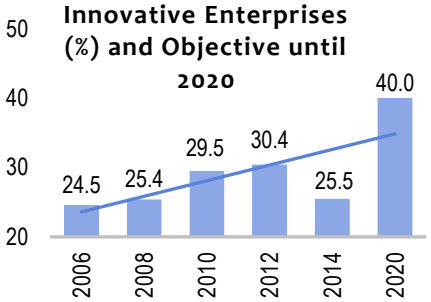
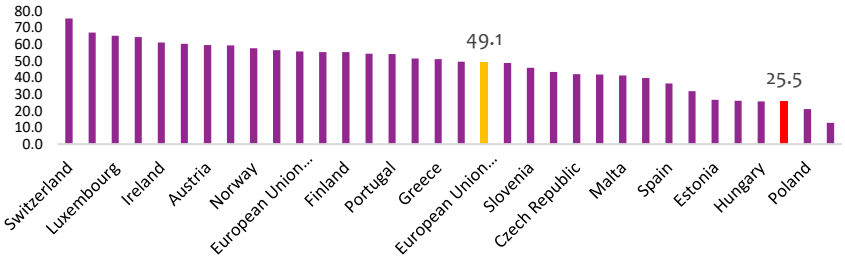


Figure 12. Number of Innovative Enterprises, % of the Total Number of Enterprises (2014)



It should be concluded that the innovation and research capacity of Latvian companies is insufficient to ensure the creation of new competitive advantages and long-term business growth. This is largely due to the existing structure of the economy, the low manufacturing industry share which is dominated by low or medium-low technology industries. The Latvian companies' structure mainly consists of micro and SMEs (in 2013 – 99.6 % of all economically active individual entrepreneurs and commercial companies. Of them, micro-enterprises – 86.2 %, small-sized enterprises – 11.1 %, medium-sized enterprises – 2.3 %).

Furthermore, the innovation potential and performance of micro and SMEs is affected both by the limited human resources and the financial resources available to these enterprises for the implementation of R&D and innovation activities, including limited opportunities to attract funding due to the high risks associated with technological and business development. Similarly, Latvian companies in the majority of cases haveengage less in cross-sectoral cooperation, more specifically — underdeveloped cooperation with research institutions in Latvia and abroad.

The decrease of private sector's expenditure on R&D is the result of a combination of many factors, in particular, Russia's embargo on certain products and the devaluation of the Russian ruble, as well as the termination of one of the largest manufacturing company's — A/S "Liepājas Metalurgs" — activities. As a result of the Russian crisis, the turnover of Latvian companies exposed to the Russian market have decreased, therefore companies were forced to make radical cost reductions - redundancies, freezing investment projects, as well as postponing innovation and R&D activities.

Between 2012 and 2015 exports of high and medium-high technology industry products (at current prices) increased by 7,3 %. Positive changes in the structure of exports are reflected by an increase in the proportion of high-tech products. Although the proportion of high-tech products of total exports is still lower than the EU average, since 2012 it has increased almost one-and-a-half times (Figure 13).

Figure 13. The share of high technology products in total Latvian exports, (%)

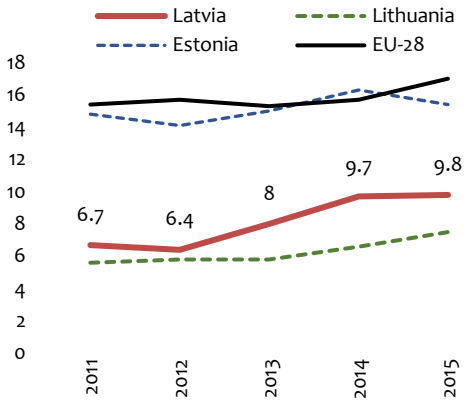
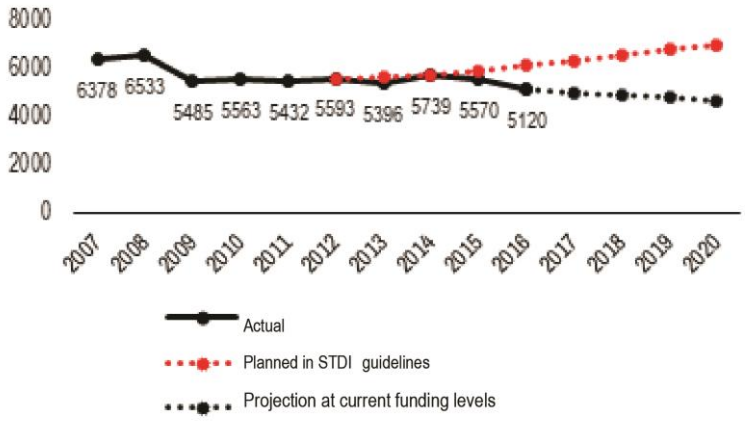
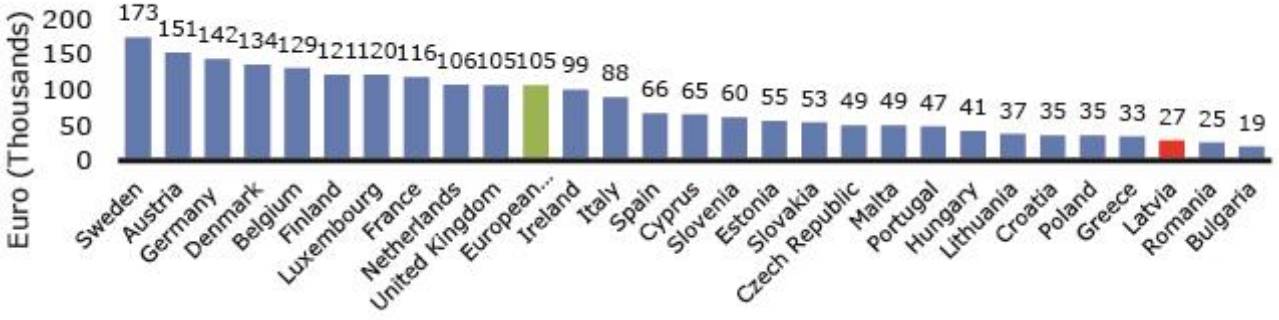


Figure 14. Number of Scientific Personnel (Measured in FTE (Full Time Equivalent)) Compared to Indicators Provided in STDI Guidelines



The absence of new R&D investments and the funding gap are also the reasons for **the reduction in the number of scientific personnel in R&D.** Progress is not being made to meet the target of 7000 scientific personnel in R&D by 2020. The current funding for R&D does not even allow for the number of scientific staff to be held at 2012 levels (Figure 14). Moreover, taking into account the absence of the compensatory EU funding in 2016, there is a substantial decrease in the number of scientific personnel in 2016. The decrease in the number of scientific personnel in recent years characterizes the total amount of funding for the science sector and the amount of research carried out and, without increasing the sector's funding, no increase in the number of scientific personnel is expected. This trend is also reinforced by the fact that Latvia's expenditure on R&D for 1 scientific worker is significantly lower than in other EU countries and also in other Baltic States (Figure 15). In order to facilitate the achievement of this indicator in the action plan for 2018 – 2020, the tasks set out in Paragraphs 1.13, 1.13a, 1.14, 1.24, 6,13, 6.14, establish performance and outcome indicators. The RIS3 macro-level indicator "The number of master's programme students, doctoral students involved in R&I projects" is also aimed at the achievement of those results and is intended to reach some targets in which incentives to Practically-oriented Research, Innovation Grants to Students, Competence Centre Programmes, Technology Transfer Programme, Science Basic Science Funding, State Research Programmes, Fundamental and Applied Research Projects and Higher Education Institution Performance Funding are incorporated. However, despite inscentives, the science funding available for these programmes, is insufficient to achieve this indicator by 2020.

Figure 15. R&D Expenditure per 1 Scientific Worker in 2015 (Thousands Euro)



The activities of the previous funding period 2007 – 2013 play a significant role in attracting human resources employed in science, for example, the implementation of sub-activity "Support for the Implementation of Doctoral Study Programmes" resulted in a significant increase in the the number of PhD graduates in recent years. Between 2011 and 2013 the number of Doctoral degree holders increased by 138 % (Figure 16).

To a large extent as a result of these investments, it had been possible to significantly improve the age structure of human resources in science - to increase the number of scientific workers between the ages of 35 and 44 in the period between 2012 and 2015 from 21.1 % to 23.4 %, and to maintain a stable number among 25- to 34-year-olds (Figure 17). Taking into account that at the end of the implementation period of the sub-measure "Support for the Implementation of Doctoral Study Programmes" the number of Doctoral degree holders have decreased significantly, new research programmes and incentives are needed to facilitate the attraction of talent to research work.

Figure 16. Changes in the Number of Doctoral Degree Holders in Higher Education Institutions in Latvia (Number)

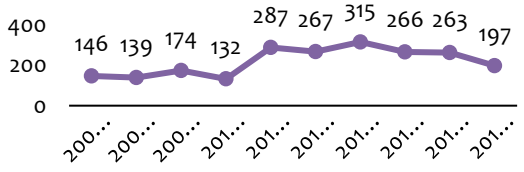
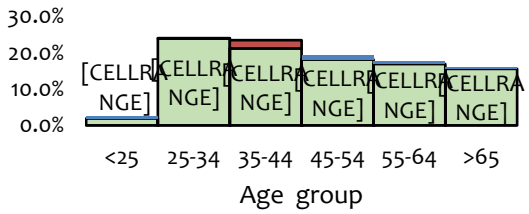
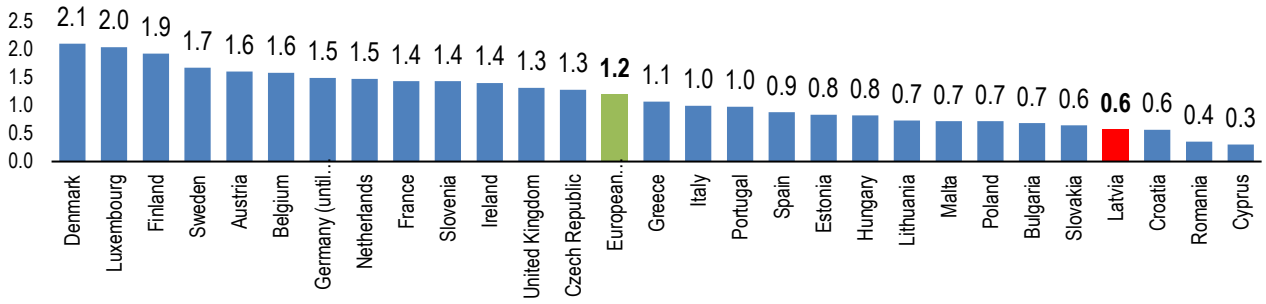


Figure 17. Age Structure of Scientific Personnel in 2015 (% of the Total Number) and Changes Compared to 2012



Planned values are achieved in those indicators that are related to structural reforms carried out in the R&D sector. The implementation of these reforms was a prerequisite for the alocation of EU funds to science and innovations for 2014-2020. For example, reduction in the number of the number of state-funded scientific institutions from 42 institutions in 2013 to 20 in 2020 has already been almost reached in 2017, when 22 state-funded scientific institutions received funding. This progress was supported by a number of measures. First, the consolidation of scientific institutions was stimulated by changes in the regulatory framework on the procedures for allocating Basic Science Funding to scientific institutions - in 2013 it was determined that from 2016 this funding will no longer be allocated to those institutions which have received low results in the international evaluation of scientific institutions. At the same time, for the self-initiated consolidation of research institutions and the development of research programmes based on the RIS3 priorities, support was given within the scope of Sub-activity 2.1.1.3.3 "Development of Institutional Capacity of Scientific Institutions" of the EU funds. Although the scientific institutions carried out all the tasks assigned by the government

Figure 18. Share (%) of Scientific Personnel (Measured in FTE) of the Total Number of Persons Employed in 2015



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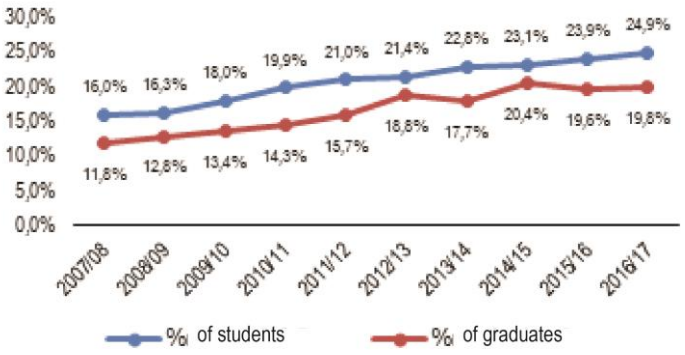
the implemented consolidation activities and the concentration of knowledge and human capital in the strongest state scientific institutions has not yet been followed by corresponding activities at national level with regard to the provision of the complete Basic Science Funding of scientific activity and State commissions. Latvian research resources are concentrated in the 22 strongest scientific institutions receiving Basic Science Funding. However, Basic Science Funding is granted only at 65 % of the calculated one, thus not allowing the scientific institutions to fully realize their potential. It is necessary to ensure the full amount of Basic Science Funding in order to enable the scientific institutions to increase the amount of their work, thus investing in the achievement of RIS3 overall objectives increasing the amount of investment in R&D (% of GDP).

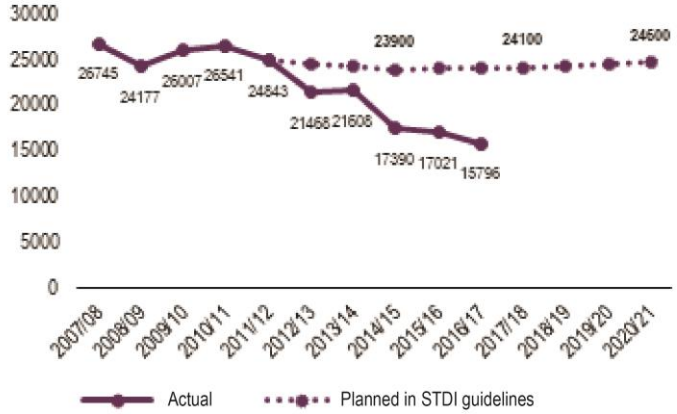
Figure 19. Proportion of Students and Graduates in STEM Programmes of the Total Number of Students and Graduates



No success has been made towards **increasing the number of graduates in STEM study programmes** to the extent planned in RIS3. The proportion of the students studying in a STEM study programme has gradually increased which is explained by the reallocation of study places within which STEM study places are given a higher priority. However, the trends of recent years show that the rate of increase in the number of graduates in STEM study programmes has been significantly slower and has not increased in the last 3 years (Figure 19).

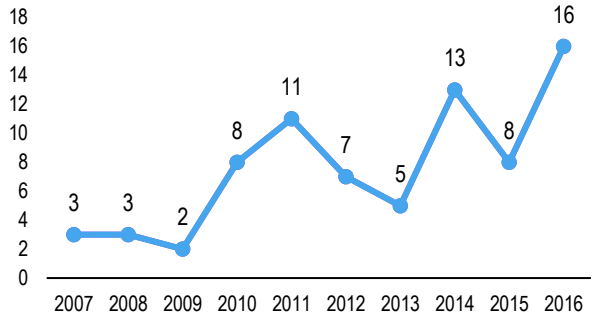
To a large extent these data show that students' dropout rates have been significantly increased in STEM study programmes in recent years. A fall in the number of graduates is caused by a combination of factors including the relatively low level of financing of higher education per student, the quality of secondary education, etc. – the trends of recent years show that the total number of graduates decrease faster than the total number of students, as between 2011 and 2016 the total number of students has decreased by 14.5 %. These common trends are also applicable for the STEM study programmes; to ensure the training of high-quality specialists in the STEM sector where significant labour shortages are expected, it is necessary to implement measures to prevent problems related to the number of graduates.

Figure 20. Graduates Number Changes in Higher Education Institutions in Latvia (Number)



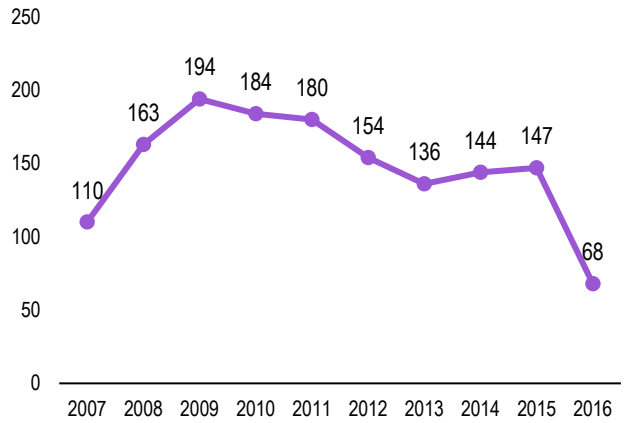
There is a significant decrease in the number of students who have earned degrees in universities or colleges. STDI guidelines stipulate that the number should be held at a stable level around that of 2011 (Figure 20). Actual data shows a 36% decline in the number of graduates between 2011 and 2016%, largely arising from the overall decrease in the number of students mainly due to demographic factors (for example, the proportion of population aged 30-34 with a higher education is constantly rising which shows that the value of higher education among the population of Latvia is very high), but other factors also play an important role (incomplete funding, the quality level of secondary education, students' dropout rate, etc.). This is also one of the indicators in which it is clearly predictable that the indicators set out in STDI guidelines cannot be achieved in 2020 due to a significant drop in the number of matriculated students, but measures that will reduce the dropout of the existing students need to be taken to maintain this indicator at least at the level of 2016.

Figure 21. Number of Patents Granted to the Residents of Latvia by the European Patent Office (Number)



As for growth in the number of patents – the number of patents granted has fluctuated between years, and its slightly growing trends are considerably lower than those projected in the guidelines (Figure 21).

Figure 22. Patents Granted by the Patent Office of the Republic of Latvia Based on National Applications (Number)



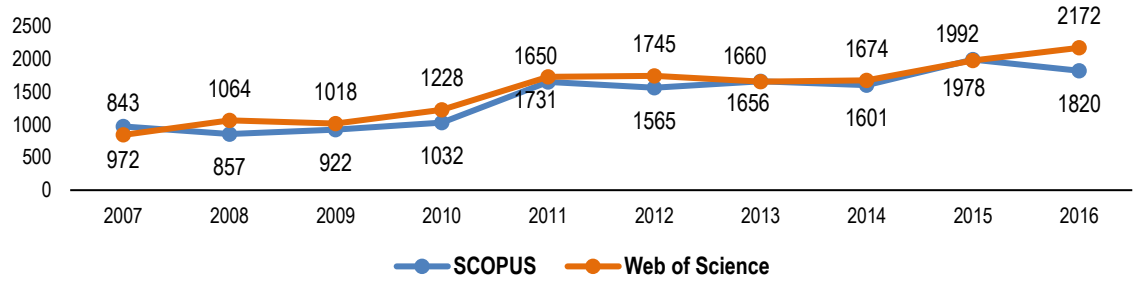
The proportion of the patents granted to Latvian residents by the European Patent Office (hereinafter referred to as EPO) relative to the total number of patents granted has not changed substantially; in 2011 and 2016 0.02 % of the total number of those patents was granted to Latvian residents. The total number of patents granted to Latvian residents is very low against a background of Western European countries, for example, compared with Germany whose residents have been granted 18,728 patents in 2016. Considering the number of patents granted per one million inhabitants, in 2016 Latvia has granted 8 patents which comprise 3 % of that of Germany (230 patents per one million population). The trends in the number of EPO patents granted by Latvia are similar

with other Baltic States (Estonia has granted 10 EPO patents in 2016, Lithuania — 16).

The increase in the number of patents granted by EPO in 2016 is partly explained by the rapid decrease in patents granted by the Patent Office of Latvia (Figure 22).

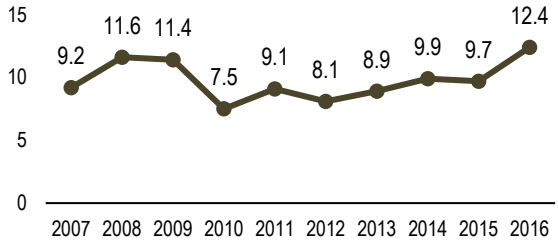
When evaluating the number of scientific articles published in recognised international databases, this indicator is provided with substantial increase in 2016, significantly exceeding the planned values for indicators in SCOPUS and Web of Science databases in 2020 which largely related to the fact that incentives were established in the legislation (regulations on Basic Science Funding of scientific activity, measures of EU funding, etc.) and the great importance is given to the publications in these databases.

Figure 23. Changes in the Number of Publications in SCOPUS and Web of Science Databases



Looking at the change in the number of publications in journals indexed in SCOPUS and Web of Science databases (Figure 23), a positive trend can be observed both at a 10 years scale and since 2013 (when the regulations on Basic Science Funding of scientific activity were adopted). Between 2013 and 2016, the total number of publications indexed in journals included in SCOPUS and Web of Science databases has grown by 10 % in SCOPUS and 31 % in the Web of Science database. It is certainly encouraging that the number of publications in journals included in these databases have increased due to the increase in the total number of articles published in al scientific journals.

Figure 24. SCOPUS Publications Share (%) Top 10 % Journals (According to SNIP)



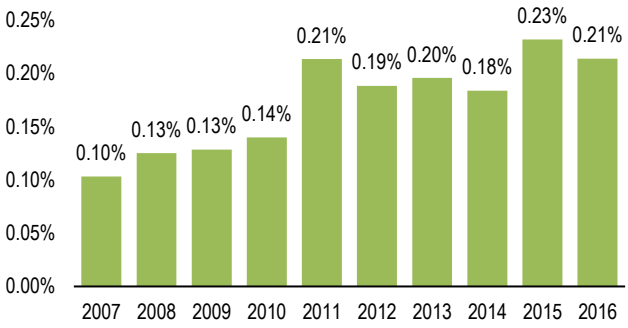
At the same time, it is to be welcomed that the increase in the number of publications has not been due to a fall in quality as shown by the proportion of the number of publications in top 10 % scientific journals (Figure 24), which has increased in recent years.[17] Figure 24 illustrates the high capacity of the Latvian science sector to respond to external legislative incentives, increasing the number of scientific results quantitatively without reducing the quality.

Trends in the recent years show that the growth of the number of publications in Latvia moves at a faster pace compared to the EU average, as demonstrated by the fact that since 2007 the share of SCOPUS publications from Latvia of total EU publications has increased from 0.10 % to 0.21 % in 2016. The key to this growth is that Latvia, like other EU New Member States, aims to reach the Western European level, which is also reflected in the results of scientific activity (Figure 25).

The comparison in the number of publications within the framework of the 6 OECD sciences sector

25.attēls. Latvijas zinātnisko publikāciju īpatsvars no ES-28 kopējā publikāciju skaita

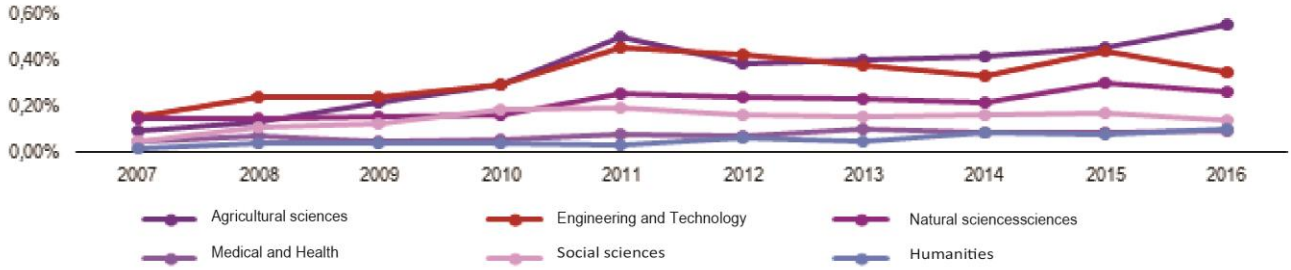
Figure 25. Latvian Scientific Publications Share of the Total Number of ES-28 Publications (SCOPUS)



[17] SNIP (Source Normalized Impact per Paper) is a bibliometric in of scientific journal in view of the differences between scientific

groups should be considered separately; the results show that in most areas of science the number of publications has increased at a faster pace than the EU average with the best results in agricultural sciences, engineering and natural sciences (Figure 26).

Figure 26. Proportion of Latvian scientific publications from the total number of EU-28 publications (SCOPUS)



Altogether 1114 project applications with Latvian participants (1392 Latvian researchers) have been submitted to EU framework programme "Horizon 2020" by February 28 2017 from which over 400 projects (36% of a total of submitted) have received an evaluation above the quality threshold. 131 project proposals have been funded and contract have been signed for a total amount of 35.22 MEUR (Figure 42). Considering that Latvia's success rate in the framework programme "Horizon 2020" is 12.57 % (Figure 43), the trend towards higher success projected in STDI guidelines (and thus an increased attraction of funding of programme) cannot be provided to the extent envisaged. However, it is important to note that the achievement of the indicator is affected by several external factors, namely overall high competition and limited available funding[18], for the implementation of the programme "Horizon 2020" . Overall, the average success rate of project applications in the programme "Horizon 2020" according to eCORDA data is 12.17 %, which indicates that Latvia's performance is equivalent and even slightly higher than the EU average. When developing policy result inficators included in the STDI guidelines, it was taken into account that the success rate of Latvian representatives of FP7 in the project calls was 21.3 % and the average success rate within the 7th FP was 21.8 %. At the same time, when analysing the Latvia's success in the programme "Horizon 2020", it is important to focus not only on the performance of Latvia on a regional level, but also on the number of competitive parameters within the EU Member States as a whole.. According to CORDIS data, 13 EU Member States during the implementation of the 7th FP and the programme "Horizon 2020" to date have received less than 5% of the total funding for the framework programmes (Latvia – 0.1 % in both the 7th FP and the programme "Horizon 2020")[19]. Among other things, the low performance of EU-13 Member States can also be explained by the comparatively low level of public funding for R&D (compared to EU-15 Member States), which significantly hampers the creation of a critical mass in research excellence. In turn, scientific excellence in the programme "Horizon 2020" is the main criterion for the evaluation of applications for EU framework programmes.

Figure 27. Results indicators – defined in the National Industrial Policy Guidelines for 2014-2020.

NIP policy performance indicators	Base value (year)	2016 Objective	Current	Progress	2020
Proportion of processing industry as a share of GDP (%) in 2020 reaches 20 %	14.1 (2011)	17.4	12.5 (2016)	▼	20

[18] According to the Horizon 2020 Annual Monitoring Report 2015 (available at https://ec.europa.eu/research/evaluations/pdf/archive/h2020_monitoring_reports/second_h2020_annual_monitoring_report.pdf#view=fit&pagemode=none), 44.8 % of all proposals submitted in 2014 and 2015 were evaluated above the quality threshold and, in general, to ensure the implementation of all the projects evaluated above the quality threshold during this period an additional EUR 41.6 billion would be required.

[19] Data as of March 2016.

Productivity growth in manufacturing industry in 2020 compared to 2011 is 40 %	100 (2011)	122	116.4 (2016)	▶	140
Growth in manufacturing industry in 2020 compared to 2011 is 60 %	100 (2011)	129	113.1 (2016)	▶	160
Investments in research and development in 2020 amounts to 1.5% of GDP (%)	0.7 (2011)	1.1	0.62 (2015)	▼	1.5

In the manufacturing industry the annual average growth rate is slightly behind the target indicators. However, this was mainly due to a decrease in the number of employees (on average by 0.6 % annually). While the manufacturing sector has grown on average by 2.5 % annually, i.e., almost twice as slow as expected. Growth in the manufacturing sector is mainly based on productivity growth rather than growth in the labour force. On such trends the productivity level in 2020 may lag behind the target indicators by only 8 percentage points.

Figure 28. Proportion of the manufacturing sector as a share of GDP (%)

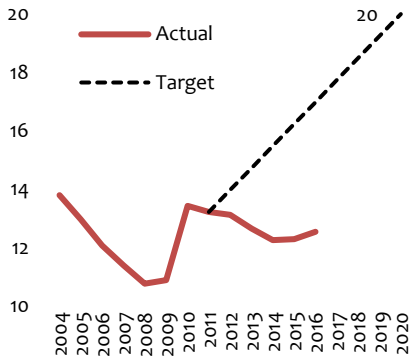


Figure 29. Changes in the volume of the manufacturing sector, 2011=100

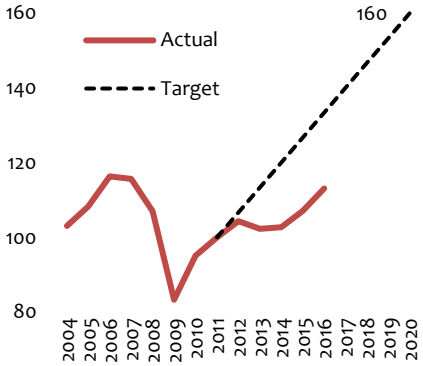
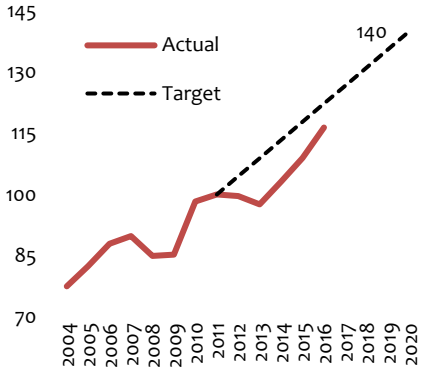


Figure 30. Changes in the productivity of the manufacturing sector, 2011=100



The objective to achieve the proportion of manufacturing industry accounting for 20 % of GDP in 2020 will not be achieved. Over the last 5 years with a share of over 12-13 % of GDP in the manufacturing industry a rapid increase in the share of the industry is not expected. During the crisis period structural changes in the economy to be taken into consideration do not occur. For example, during the period 2008 2010 the manufacturing industry grew from 9% to 13 %, but at the same time civil engineering dropped from 10% to 5%. Under normal economic growth conditions significant structural changes do not take place rapidly, as all sectors are closely connected. A significant increase in production volumes in the manufacturing sector drives demand for products and services from other sectors. Growth of other sectors is expected to increase respectively (Figure 28 – 30).

Figure 31. Result indicators defined in the interim evaluation for 2013 -2015 of the implementation of the Guidelines for Promoting Exports of Latvian Goods and Services and Attracting Foreign Investments for 2013-2019.

Performance indicators	Base value	Current	Progress	Objective	
	2015			2018	2020
Increase in exports (in annual average constant prices, %)	1.4	2.6 (2016)	▶	5 (2018-2020, annual average)	
The proportion of high technology products in total Latvian exports (%)[20]	9.8	9.8 (2015)	-	10,5%	11%
FDI performance index (in the Baltic region)	1.5	1.4 (2016)	▼	1.2 (2018-2020, annual average)	

[20] To identify changes in the export structure and ensure international comparability of data, adjustments in the Guidelines were made with respect of the definition of performance indicators. So the Eurostat methodology will be used in the future, which is based on the recording of high-tech exports by product groups rather than the business profile.

Figure 32. Changes in exports, an annual average over a three-year-period, in comparative prices, 2007=100

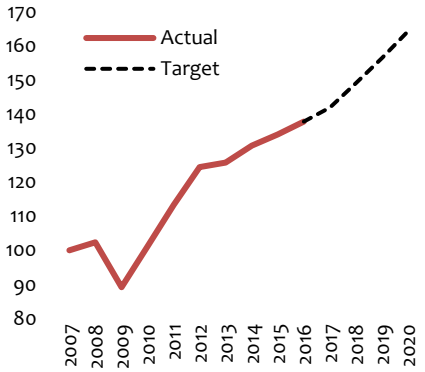


Figure 33. The proportion of high technology products in total Latvian exports, (%)

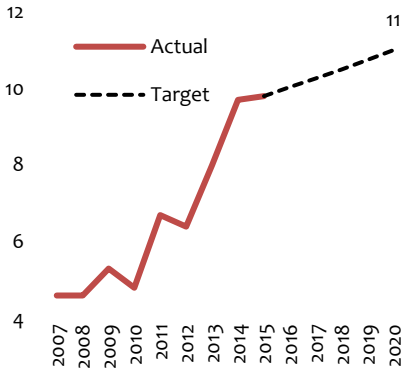
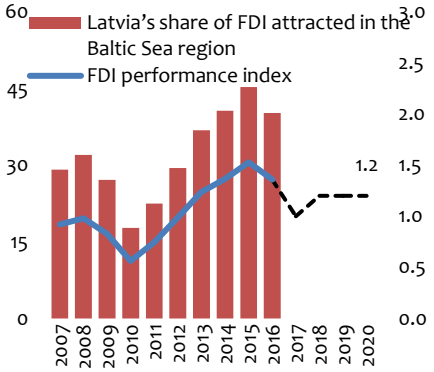


Figure 34. FDI performance index, an annual average over a three-year-period, %



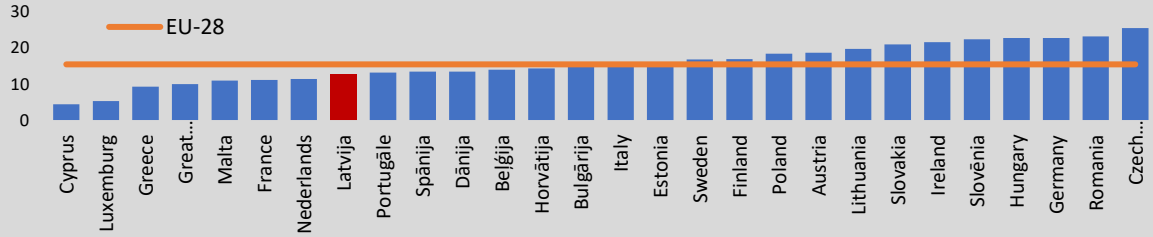
During the period 2014-2016 Latvian export volumes grew at an annual average rate of 3.1 %, lagging behind the objective pursued in the Guidelines (increase in average annual exports - 5 %). The decline in export growth was mainly influenced by weak external demand due to slow economic growth in the Latvia's largest EU trading partners, the Russian economic downturn, and the Russian embargo on imports of food products. Slow growth in exports can partly be explained by the weakening of competitiveness due to the faster growth of labour costs than productivity growth (Figure 32).

Box 1

The structure of the manufacturing industry in the Baltic States

Latvia is characterised by a low share of processing manufacturing industry of the national economy. Even during years of rapid growth it has not exceeded 14 % (measured on the basis of value added). In the last three years the share of the total value added in the manufacturing is 13 %, which is lower than the EU average (15.5 %), as well as lower than in Lithuania (19.7 %) and Estonia (15.9 %) (Figure 35).

Figure 35. Proportion of manufacturing industry (% of GDP)

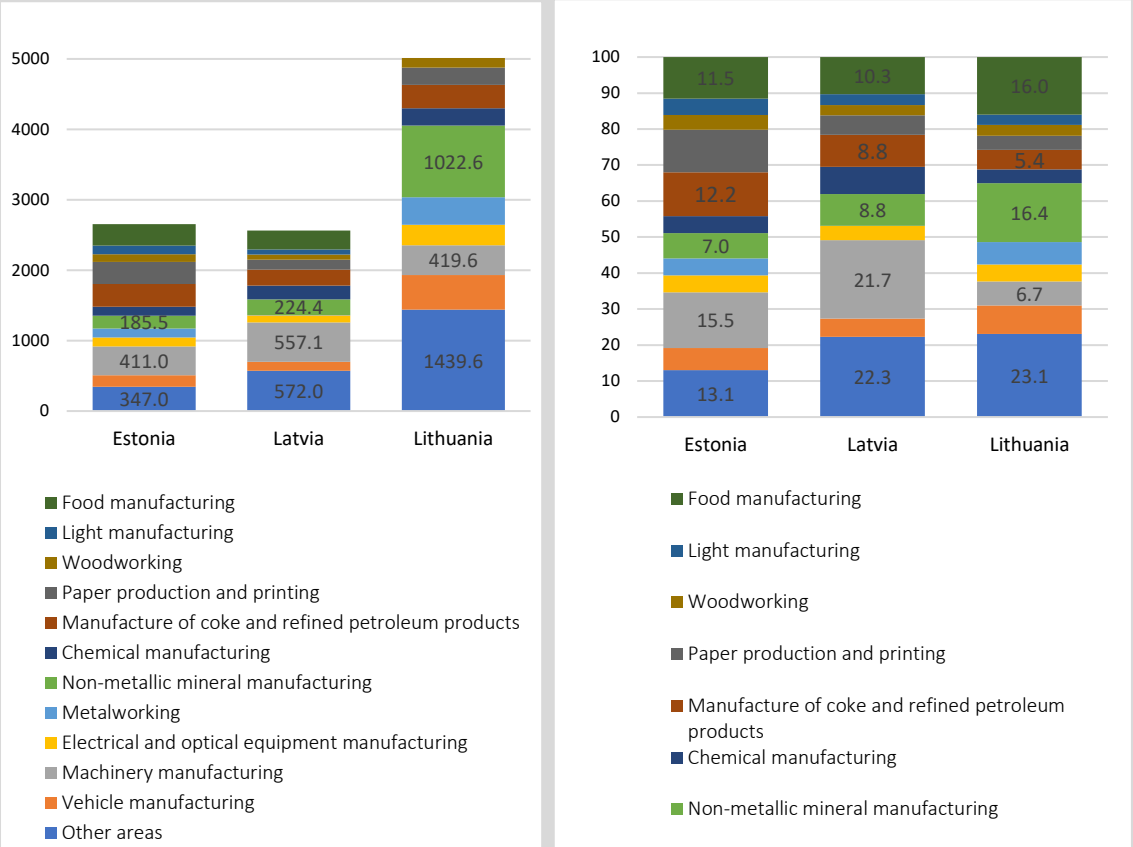


The structure of the manufacturing industry in the Baltic States is broadly similar with about half of manufacturing being in low technology industries. In Latvia the share of low-technology industries among manufacturers is 58 %, in Lithuania - 55 % and in Estonia - 46 %. The large proportion of low-tech industries in Latvia and in other Baltic States, is mainly due to traditional industries such as food production and woodworking, which are strong industries due to the the availability of natural resources and the relatively cheap labour force (natural benefits). However, it should be noted that in Latvia the share of these two sectors as a percentage of the value added in the manufacturing industry is 44 %, which is almost one and a half times higher than in Estonia (29 %) and Lithuania (30 %) (Figures 36 and 37).

The structure of the manufacturing industry.

Figure 36. The added value of the manufacturing industry sub-sectors by sub-sectors (EUR million, at current prices)

Figure 37. The structure of manufacturing industry's on average in 2012-2015 (%)



The share of the value added by high-tech sectors in the the manufacturing industry in Latvia is 6.3%, which is similar to that of Estonia (6.3%) and almost more than one-and-a-half times in Lithuania (3.8%). The average share of hi-tech sectors in the EU countries is almost more than one-and-a-half times higher than in the Baltic States. It should be noted that the technological structure of the manufacturing industry is gradually improving. There are some consistent trends in Latvia in connection with the decrease of the share of low-tech industries.

On current trends of global economic developments, external environmental uncertainty, as well as given the latest forecasts of economic growth, Latvia's export growth rate is likely to remain moderate over the next years.

Although the changes in exports have only been moderate in recent years, it should be noted that the export structure has improved. This is demonstrated by an increase in the proportion of high-tech products. Although the share of high technology products in total Latvian exports is still lower than the EU average (17 %), however, it has been growing every year (Figure 33). In 2015 the share of high technology products in total Latvian exports constituted 9.8 % (in 2012 – 6,4 %), which is higher than in Lithuania, however, it is still more than two times lower than that of Estonia.

The FDI performance index describes how attractive Latvia is to foreign investors from the Baltic region (Figure 34). The intensity of the attracted FDI in recent years was rather moderate and the amount of FDI in Latvia during the period from 2014 to 2016 was almost half of the period between 2011 and 2013 and almost 3.5 times lower than in the years of rapid economic growth. However, it should be noted that FDI flows in our neighbouring countries were also at quite low. In general terms, the decrease in the intensity of FDI flows is primarily due to the reduction of global cross-border investment flows.This has been mainly due to increased geopolitical risks and the unpredictability of policy. As all the Baltic States in the medium term have the same overall trends in the dynamics of FDI flows, the FDI performance index[21] for Latvia is relatively high (1.4), i.e., slightly higher than that of the guidelines (on average 1.2 for 2018 – 2020).

[21] The index is the ratio between the state's share in global/group of states/regional FDI inflows and its share in global/group of states/regional GDP. To assess the effectiveness of the attraction of FDI policy in Latvia, FDI performance index in case of Latvia may be calculated in relation to the Baltic States as a whole. Having regard the volatility of FDI, data for a FDI performance index should be used for a period of at least three years instead of one (rolling average).

9. ANALYSIS OF RIS3 MICRO LEVEL INDICATORS

RIS3 micro-level indicators measure the progress towards achieving the overall objectives and macro-level indicators and describe indicators for the planned support instruments. The investment aimed at achieving RIS3 micro-level indicators is provided by investment programmes from the state budget and EU structural funds which are directed towards higher education, R&D and innovation and business development. The progress of the implementation of the investment programmes, including the status of the development of the implementation conditions (Cabinet Regulations) as at December 2017, see Figure 38.

In developing investment programmes for EU funds, the State Research Programmes, Fundamental and Applied Research Projects, etc., each responsible authority lists the planned outcome, as well as performance and impact indicators of one or more RIS3 micro-level indicators which it plans to achieve. Figure 39 includes information on the conditions embedded in the RIS3 investment programmes that stimulate progress towards achieving the indicator, as well as information on the performance of each investment programme in the fulfilment of RIS3 micro level indicators. A number of RIS3 programmes are currently only in the start-up phase of implementation, in part of the cases the current commitments undertaken within the framework of draft programmes are specified (data on the intended measures within the projects).

Data on the progress of the implementation of RIS3 micro-level indicators for EU funds' programmes is extracted from the Information Management System of the 2014-2020 programming period of European Union funds project applications and their reports. The data is gathered and collected by the institutions that sign contracts for implementing projects of the following programmes - CFCA, SEDA, LIAA, AFI, LAD. Simultaneously data is collected on the national level in OECD Fields of Science which enable an analysis of the impact of each investment programme on the field of specialization and the development of the corresponding economic sector.

Figure 38. Implementation status of RIS3 instruments

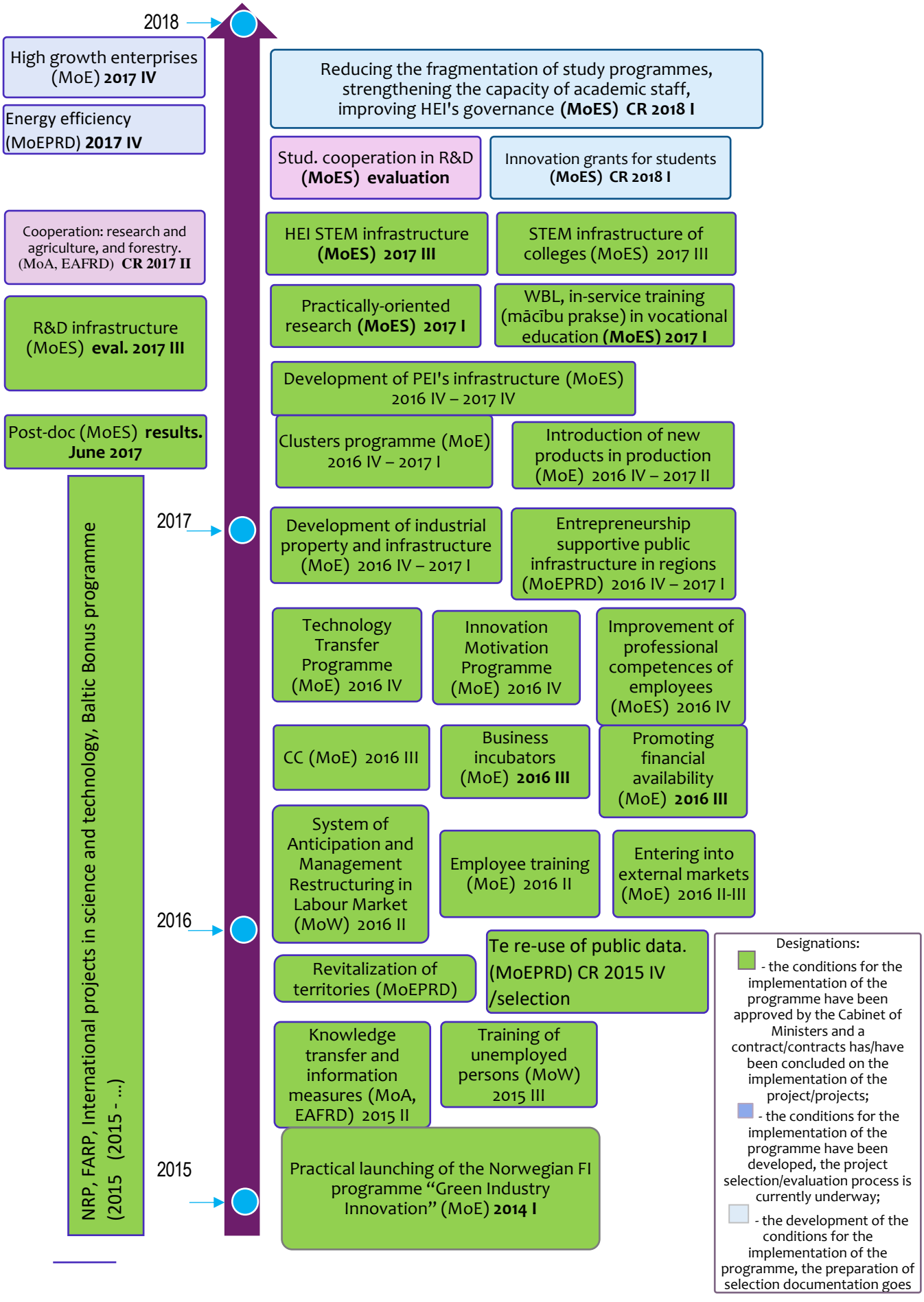


Figure 39. RIS3 micro level indicators

RIS3 MICRO LEVEL INDICATORS	Programmes that contribute to the achievement of the indicator			
	Source of funding	RIS3 programme	The incentives embedded in the programme implementation conditions to stimulate progress towards achieving the indicator	Results achieved/commitments undertaken
Income from licences/patents of scientific institutions (EUR)	SF	Practical research (1111), Post-doc (1112); International cooperation in science (1115)	- the social and economic impacts of research projects are evaluated, including measuring the knowledge and technology transfer of research results; - programme implementation conditions supporting the protection of technology rights.	Practical research (1111) - 160 In the second quarter of 2017 the contracts for the implementation of 74 research projects have been signed (total public funding MEUR 39.77) under which plans have been made to develop 35 patents, as well as 26 other licensable intangible assets and 99 commercialised new products or technologies); **Post-doc (1112) - 90** In the fourth quarter of 2017 the contracts for the implementation of 124[22] research applications have been signed (total public fund. MEUR 15.7) under which it is planned to develop 4 patents, as well as 90 commercialised prototypes of the new products and technologies.
		R&D infrastructure (1114)	- implementation conditions provide for the development of: (-) a medium-term development strategy for the project applicant, including, among other things, a plan for the improvement of knowledge transfer by promoting the transfer of research results in the national economy and commercialisation; (-) a cost-benefit analysis of the project, including the justification of the socio-economic return of the project.	The results achieved and commitments undertaken have not yet been possible to identify - the submission of projects by 2017 June, the evaluation of project applications are currently on-going.
		CC programme (1211); TTP (technology transfer, innovation vouchers, highly qualified employees) (1212), financial instruments (312)	CC programme: With the Seal of excellence criterion to develop new products and manufacturing technologies for the purpose of commercialisation the enterprise is entitled to the newly created intellectual property, which he/she further uses in his/her economic activity. TT programme: Within the framework of the commercialisation and patenting fund, it is possible to receive support for the consolidating industrial	The results achieved and commitments undertaken have not yet been possible to identify

[22] SEDA's data as of 31 December 2017 about measure 1.1.1.2 "Post-doctoral Research Aid".

			property rights - for the preparation, registration and maintenance of invention patents applications	Within the scope of TTP 10 projects for the commercialisation of scientific ideas have been approved by the end of 2017.
	SB (MoES)	Basic Science Funding	income from patents is stated as a part of the indicator for the calculation Basic Science Funding	In 2015 state SI receiving Basic Science Funding received income from patents in the amount of MEUR 0.36
		State Research Programmes 2014-2017	SRP laws and regulations define results such as the number of patents established and the number of plant varieties maintained, but do not define income as an indicator	5 patents have been developed within the scope of SRP projects between 2014 - 2017.
		FARP	the evaluation of projects takes into account the creation of new technological know-how and earmarked revenue from licences/patents	39 patents have been developed within the scope of FARP projects between 2014 - 2017.
		International Cooperation Programmes in Science and Technology Development[23]	in accordance with the implementation conditions for each programme[24]	During the period from 2014 to 2017, 104 agreements on the implementation of projects have been signed with the total amount of state budget funding - MEUR 11.18 and 5 patents have been developed within them.
Business co-funding for R&D projects (EUR)		Practical research (1111), Post-doc (1112)	- a research project application shall be accompanied by an opinion from a sectoral association on the significance of the research for the development of the sector of the national economy or the enterprise; - in the event of multiple projects receiving an equal number of points the evaluation conditions prioritize those projects which have attracted the most private sector co-funding; - the private co-financing attracted by the enterprises for the implementation of research projects is defined as one of the programme outcome indicators	Practical research (1111) – MEUR 2.69 In the second quarter of 2017 the contracts for the implementation of 74 research projects have been signed (total public fund. MEUR 39.77), for the implementation of which it is planned to attract private co-funding of MEUR 2.69 (of which co-funding by enterprises indicatively of MEUR 1.6); **Post-doc (1112) - MEUR 0.28**

[23] SEDA data as of 27 April 2017 about programmes:
(1) for which pursuant to Article 4(1) of the Cabinet Regulation of 26 May 2015 "Procedure of Granting of Aid for Participation in International Cooperation Programmes in the Area of Research and Technologies" the state budget co-funding has been allocated: for EU 7th Framework programme, the programme "Horizon 2020" (including ERA-NET, ERA-NET Plus and ERA-NET COFUND projects), public-public partnerships established pursuant to Article 185 TFEU or public-private partnerships established pursuant to Article 187 therein or the implementation of the projects approved within the scope of EURATOM programme; or
(2) the cooperation projects approved within the framework of international bilateral and trilateral agreements: "The Latvia-Belarus collaboration programme for science and technology", "Latvian-Ukrainian Cooperation Programme in the Area of Science And Technology", "Latvian-Lithuanian-Taiwan scientific cooperation aid fund", "Latvia-France Research Cooperation Programme "OSMOZE"".

[24] Hereinafter there is no information on the incentives embedded in the conditions for the implementation of the programme to achieve an indicator taking into account the diversity of programmes, as well as considering that most of the conditions for the implementation of the programme are not developed at national level.

	SF			In the fourth quarter of 2017 the contracts for the implementation of 124 research applications have been signed (total public funding MEUR 15.7) by which it is planned to attract MEUR 0.28 private co-funding
		Innovation grants for students (1113)	- an innovation grants project for higher education institutiosn is implemented in cooperation with at least one enterprise as a cooperation partner - 25% of the total eligible costs for the implementation of the innovation grant project should be privately funded (minimum euro 100,000)	Given that the conditions for the implementation have been developed, but the preparation of selection documentation is currently ongoing, results have not yet been achieved and commitments have not been undertaken
		Cooperation (support for the European Innovation Partnership (EIP) work groups; support for the development of new products, methods and technologies) (EAFRD)	- the conditions for the implementation of the measure stipulate that the maximum aid intensity for one project is 90 % (increased by 10 % in certain cases) with the co-financing equivalent to 10 % to be provided by the beneficiary	Because the implementation of projects has not yet started, the results have not yet been achieved and commitments have not been undertaken
		CC programme (1211); TTP (technology transfer, innovation vouchers, highly qualified employees) (1212), Introduction of new products in production (1214), financial instruments (312), cooperation (EAFRD)	CC programme: The proportion of total eligible costs granted to the project: - for industrial research (50 %-70 %) - for experimental development (25 %-45 %) - for feasibility studies (50-70 %) Given funding proportion may be increased to 80 % for effective cooperation and publicity. Innovation vouchers shall ensure that the proportion of funding granted of total eligible costs of the project is 60 % and funding is allocated for those R&D project activities that promote the business co-funding and R&D activities **INPP programme:** Specific eligibility criteria shall require that at least 20 % of the total eligible costs provided for in the project application should be research and development activities.	CC programme (1211): By the end of 2017 within the scope of measure business co-funding for R&D projects constitutes MEUR 9.86 Innovations vouchers (1212): 7 projects have been approved within the scope of the measure INPP programme (1214): 17 projects have been approved in 2017 that will attract private investments of MEUR 47,12
	SB (MoES)	Basic Science Funding	Business co-funding in the calculation Basic Science Funding taken into account as a part of the indicators related to R&D funding	Such indicator cannot be obtained from the information provided by the institutions
		State Research Programmes 2014-2017;	In the SRP rules,private sector co-funding for the implementation of projects included in the programme is defined as an indicator	There are no results for this indicator

		International Cooperation Programmes in Science and Technology Development	in accordance with the implementation conditions for each programme	During the period from 2014 to 2017, 104 agreements on the implementation of projects have been signed with a total amount of state budget funding - MEUR 11.18 and for their implementation private co-funding to implement projects will be attracted in the amount of MEUR 0.61
		FARP	There are no incentives for this indicator	There are no results for this indicator
The number of companies that have received support for introducing new products or technologies	SF	Practical research (1111), Post-doc (1112)	- in the event of an equal number of points, the evaluation conditions prioritze the implementation of those projects which are implemented in cooperation between a scientific institution and the enterprise (assessing the amount of the attracted private co-funding) - a research project application shall be accompanied by an opinion from a sectoral association on the significance of the research for the development of the sector of the national economy or the enterprise (focus on attracting enterprises); - the number of enterprises which receive support is defined as one of the programme outcome indicators	Practical research (1111) - 18 In the second quarter of 2017 the contracts for the implementation of 74 research projects were concluded (total public fund. MEUR 39.77), in the implementation of which 18 enterprises will receive support for the development of new products and technologies; **Post-doc (1112) - 18** In the fourth quarter of 2017 the contracts for the implementation of 124 research applications have been signed (total public fund. MEUR 15.7), in the implementation of which 18 enterprises will receive support for the development of new products and technologies.
	SF	CC programme (1211); TTP (technology transfer, innovation vouchers, highly qualified employees) (1212), Business Incubators (3116), Introduction of new products in production (1214), Financial instruments (312), Cooperation (EAFRD)	**Innovation voucher:** 1) Aid intensity within the scope of the programme is set at 60 % 2) In the programme's quality criteria, additional points may be obtained if the project previously has been assessed above the quality threshold within the framework of the Horizon 2020 programme and has received a Seal of excellence certification 3) The maximum amount is increased to EUR 25,000 **BI programme:** 1) the programme has been developed to support the creation and development of new viable and competitive businesses across Latvian regions; 2) within the scope of the measures the support is provided in the form of the pre-incubation and incubation aid 3) within the incubation programme the support for the acquisition costs of equipment (including facilities, materials, raw materials) may be obtained - 50 %	**Innovation vouchers (1212):** 7 projects have been supported within the scope of the measure **BI programme (3116):** Data as of 10 December 2017: 1) pre-incubation - 373 (including 18 in creative incubator) 2) incubation - 189 (including 15 in creative incubator) CC programme (1211):

			CC programme: 1) The objective of the measure is to increase the competitiveness of enterprises, promoting the cooperation of research and industrial sectors in implementing projects that develop new products and technologies and implement them into production. 2) In accordance with Cabinet Regulation No. 2 the project is implemented in the aided sector in one of the Latvian areas of Smart Specialization. 3) The commercial potential of a new product or technology - a new product or technology is being created or a substantially improved the existing product or technology and a well-grounded commercialisation plan for a new product or technology has been submitted. 4) Increasing the volume of commercialisation of company projects **INPP programme:** Specific eligibility criteria require a confirmation within the project application that during the project implementation or during the project monitoring period the project applicant will create at least one new product and implement it in production	By the end of 2017 within the scope of programme 144 enterprises received support INPP programme: At the end of 2017 the contracts have been concluded within the first round of programme and 17 enterprises have received support.
	SB (MoES; MoE – EIT rebate)	State Research Programmes 2014-2017	New technologies, methods, prototypes and services (number) developed within the framework of the programme which are approved in enterprises in SRP rules are defined as an indicator	46 prototypes have been developed within the scope of SRP projects
		FARP	There are no incentives for this indicator	The indicator is not applicable to the specific programme
		International Cooperation Programmes in Science and Technology Development	in accordance with the implementation conditions for each programme	During the period from 2014 to 2017, 104 agreements on the implementation of projects have been signed with the total amount of state budget funding - MEUR 11.18 of which 10 enterprises receive support for development of new products and technologies
		EIT rebate	EIT R&D tax incentive which can be applied to the following R&D costs: 1) the costs of the company's scientific and technical staff related to the company's research and development work, 2) the costs of research services received from scientific institutions, and 3) the costs of certification, testing and calibration services when receiving services from accredited certification, testing and calibration institutions. In line 63 of the annual EIT return it is possible to indicate the expenditure on research and development which can be written off using the value-adding coefficient "3".	The number of enterprises which received the tax rebate: In 2014 – 86 In 2015 – 30 In 2016 – 27

The enterprise's turnover from the implementation of research results into economic activity or commercialization	SF	CC programme (SAO 1211), Introduction of new products in production (1214)	**CC programme:** Boosting competitiveness **INPP programme:** The quality criterion stipulates that in the project application it has been confirmed that after a year of implementation of the project the research and development (R&D) activities will increase by at least 0.36 - 0.72 percentage points of the annual turnover of the enterprise which is directly related to the projest implementation (generated by the equipments obtained by the project) on average throughout the whole project monitoring period	At the early stage of implementation of the project an indicator is yet not identifiable
	SB (MoE)	EIT rebate	In line 63 of the annual enterprise income tax return it is possible to indicate the expenditure on research and development which can be written off using the value-adding coefficient "3".	Enterprises that declared the tax rebate have been invested in R&D: In 2014 – MEUR 0.44 In 2015 – MEUR 1.41 In 2016 – MEUR 2.17
Newly established companies created by scientific institutions (spin-off)	SF	Innovation grants for students (1113)	- within the framework of the programme students' innovative and entrepreneurial skills and competences have been improved	Given that the conditions for the implementation have been developed, but the preparation of selection documentation is currently ongoing, results have not yet been achieved or commitments still to be committed
		TTP (technology transfer, innovation vouchers, highly qualified employees) (1212)	Within the scope of TTP the following activities of scientific institutions are supported, which, where necessary, facilitate the formation of newly established companies: • for the development of a commercialisation strategy involving all the sectors concerned • for feasibility studies	An indicator is yet not identifiable
	SB (MoES)	Basic Science Funding	There are no incentives for this indicator	In 2016 scientific institutions had been established altogether 13 spin-off companies, whereas in 2020 it is projected to set up 62 spin-off companies.
		HE Basic Science Funding	There are no incentives for this indicator	The indicator is not applicable to the specific programme
		State Research Programmes 2014-2017	There are no incentives for this indicator	The indicator is not applicable to the specific programme
		FARP	There are no incentives for this indicator	The indicator is not applicable to the specific programme

Number of supported newly established enterprises	SF	Business incubators (3116), Financial instruments (312), Innovation Motivation Programme (1222)	**BI programme:** Natural persons (authors of business ideas) who are given support to develop a business model, conduct market research and update their basic entrepreneurial knowledge may receive pre-incubation support. Aid intensity in the pre-incubation is 100 %. Within the framework of the Motivation Programme the following activities aimed at creating new enterprises should be supported: 1) providing support measures for motivating innovative start-ups and existing innovative companies; 2) the provision of innovation marketing and advertising activities, audio and visual publicity (for example, the development and the use of an innovation and business portal for the distribution of information, broadcasting, documentaries, coverage on Latvian radio and television channels, press releases and publications in the most popular media in Latvia, the creation and maintenance of social media accounts, information updating, information collecting and publishing of booklets on success stories and examples of good practice in entrepreneurial education and commercial activity to stimulate public interest in the use of innovation and technology aimed at boosting competitiveness); 3) the implementation of the programmes aimed at the development of entrepreneurship and innovation (for example, educational programmes for school youth, training programmes and courses for start-ups and current entrepreneurs on topical business issues); 4) measures for promoting technological interest and creative activity (for example, practical training seminars on the commercialisation of knowledge, the protection on intellectual property with the representatives of contact-exchange (kontaktbirža) of venture capital risk capital and other representatives of investors);	**BI programme:** Data as of 10 December 2017: Within the scope of pre-incubation 373 natural persons have received support (including 18 in the creative incubator) that potentially can further evolve to represent the companies.
The number of young researchers supported for implementing post-doctoral research	SF	Post-doc (1112)	- the objective of the measure – support for young researchers to start a career implementing individual post-doctoral research	Post-doc (1112) - 124 In the fourth quarter of 2017 the contracts for the implementation of 124 research applications have been signed (total public fund. MEUR 15.7) under which 124 post-doctoral researchers will receive support

Newly created jobs, including those employing scientists in the public sector/business sector	SF	Practical research (1111), Post-doc (1112), International cooperation in science (1115)	- in the event of an equal number of points the evaluation conditions provide that the priority for the purpose of implementation should be given to the project which provides for a higher level (in terms of FTE) of involvement of young researchers; - the evaluation conditions provide for the evaluation of the social and economic impacts of research project, including the evaluation of institutional sustainability of the research project	Practical research (1111) - 43 (FTE) In the second quarter of 2017 the contracts for the implementation of 74 research projects have been signed (total public fund. MEUR 39.77), within the framework of which 43 newly created jobs for scientific staff; **Post-doc (1112) – 124 (FTE)** In the fourth quarter of 2017 the contracts for the implementation of 124 research applications have been signed (total public fund. MEUR 15.7), within the framework of which 124 jobs for young researchers (post-doctoral researchers))
		CC programme (1211); TTP (technology transfer, innovation vouchers, highly qualified employees) (1212), Business incubators (3116), Financial instruments (312)	**CC programme:** 1) Research quality assurance; 2) License agreements signed by the enterprises for the commercialisation of intellectual property **BI programme:** Within the the programme jobs for scientific personel will be created **INPP programme:** In the quality criterion "R&D jobs created in the company" additional points may be received, if in the project application it has been confirmed that the company will create new full-time R&D jobs with the average salary in the industry at the time of submission of the projects and they will be maintained during the entire follow-up period of the project.	**CC programme:** Number of enterprises cooperating with research institutions - 66 (the end of 2017) **BI programme:** Number of newly established enterprises - 62 (the end of 2017) **INPP programme:** In the currently approved 17 enterprise projects 39 jobs have been created employing other scientific workers (FTE)
	SB (MoES)	State Research Programmes 2014-2017	Regulations do not provide incentives for this indicator	5 newly created jobs in the private sector employing scientific staff.
		International Cooperation Programmes in Science and Technology Development	In accordance with the implementation conditions for each programme	During the period from 2014 to 2017, 104 agreements on the implementation of projects have been signed with q total amount of state budget funding - MEUR 11.18 and 32.42 jobs will have been newly created for scientific personnel.
		FARP	The project applications submitted for evaluation already include project manager, principal performers and performers. Their scientific qualification is one of the criteria for the evaluation of	There are no results for this indicator

			applications. It is not recorded whether these employees are already in employment relationship with SI or the employment relationship with the ZI will be re-established or reinstated. Only in certain cases the project envisages to attract doctoral students as performers without previously naming them	
Funding raised for H2020 confirmed project applications (LV part; EUR)	SF	International Cooperation in Science (1115)	- support for the development of project applications evaluated above the quality threshold in the programme "Horizon 2020", including the provision of greater support for the development of project applications in which the participant from Latvia is the project coordinator; - support for the implementation of a separate work package of the approved "Horizon 2020" project within the framework of the ECSEL Joint Undertaking	In view of the fact that the indicative deadline for starting up the projects is the second quarter of 2018, the results have not yet been achieved or commitments have not been made
		TTP (technology transfer, innovation vouchers, highly qualified employees) (1212)	Innovation voucher: In the programme's quality criteria additional points may be obtained if the project previously has been assessed above the quality threshold within the framework of the Horizon 2020 programme and has received a Seal of excellence certification	In the framework of the programme starting from April 2018 it will be possible to receive support for the H2020 SME Instrument Phase 1 Seal of Excellence projects
	SB (MoES)	"Baltic Bonus" initiative	- in the Baltic Bonus programme, implemented between 2014-2016, the amount of support for the development of project applications evaluated above the quality threshold in the programme "Horizon 2020" is differentiated, depending on (a) the sub-program in which the project was submitted; (b) the status of a Latvian participant as an project applicant (a coordinator/a partner) - greater support for the development of projects shall be provided for some financially more capacious projects and coordinators' projects	Support for the development of the project application has been provided for the 19 projects approved for implementation within the programme "Horizon 2020", which for the purpose of implementation obtained international funding in the amount of MEUR 1,71 (8 projects in 2015 with MEUR 0.37 EC co-funding and 11 - in 2016 with MEUR 1.34 EC co-funding for their implementation)
		State Research Programmes 2014-2017	The evaluation conditions provide Latvia's integration process in a single European Research Area and as performance indicator in the interim evaluation of scientific quality the number of applications submitted to H2020	34 applications have been submitted, no information on the number of applications approved
		FARP	The project applications have been evaluated as separate scientific projects, provisionally predicting that their successful start-up and completion would foster competitiveness of the involved scientists in Horizon 2020 calls for projects	There are no results for this indicator
Scientific articles published in journals indexed in the international	SF	Practical research (1111), Post-doc (1112), International cooperation in science (1115)	- the number of publications prepared within the scope of the project and published in journals in Scopus and Web of Science databases are defined as one of the programme outcome indicators - evaluation conditions require the evaluation of the scientific quality of research projects	Practical research (1111) - 482 2017 In the second quarter the contracts for the implementation of 74 research projects heve been signed (total public funding MEUR 39.77), within the framework of

databases (Scopus, Web of Science)				which it is planned to develop 482 publications (original scientific articles) **Post-doc (1112) - 488** In the fourth quarter of 2017 the contracts for the implementation of 124 research applications have been signedtal public fund. MEUR 15.7), within the framework of which it is planned to develop 488 original scientific articles
		Innovation grants for students (1113)	- the conditions for the implementation of the programme set out a mandatory requirement for students, including doctoral students and candidates for a scientific degree to publish the results of their innovation projects	Given that the conditions for the implementation have been developed, but the preparation of selection documentation is currently ongoing, results have not yet been achieved or commitments still to be committed
		CC programme (1211)	CC programme - the activities in the service sectors, as well as in the field of software are recognized as being supported if the research results are published in scientific journals, to organize scientific conferences or engage in scientific research. Funding may be increased by 15 percentage points if the research results are accepted for publication in at least two scientific papers.	CC programme: Number of co-publications by enterprises and researchers from knowledge-dissemination organisations - 35 (2017)
		Cooperation (support for the European Innovation Partnership (EIP) work groups; support for the development of new products, methods and technologies) (EAFRD)	The conditions for the implementation of the programme require the publications of the research carried out within the scope of the project and its results (n the website of the Ministry of Agriculture and on the European Innovation Partnership 'Agricultural Productivity and Sustainability' working group network)	Because the implementation of projects has not yet started, the results have not yet been achieved or commitments have not been made
	SB (MoES)	Basic Science Funding	In the calculation Basic Science Funding the publications by scientific staff of scientific institutions in Web of Science or SCOPUS databases are defined as one of the performance indicators. The regulations also stipulate that the MoES shall provide access to these databases	During the period from 2013 to 2016 the number of Latvia's Web of Science publications have increased from 1,656 to 2,172, SCOPUS from 1,660 to 1,820
		State Research Programmes 2014-2017	Scopus publications are a performance indicator according to SRP rules.	2014– 2017 581 publications were published in Web of Science and SCOPUS databases
		International Cooperation Programmes in Science and Technology Development	in accordance with the implementation conditions for each programme	During the period from 2014 to 2017, 104 agreements on the implementation of the projects have been signed with the total amount of state budget funding -

				MEUR 11.18 and 119 publications in Web of Science and SCOPUS databases have been published
		FARP	The FARP rules provide that the distribution of funding is also based on an analysis of the quality and reputation of scientific publications or the significance of the research papers published by the project manager in the international scientific arena may be confirmed by quantitative indicators such as the quotation index, the Hirsch index	In 2014 – 2017 560 publications were published in Web of Science and SCOPUS databases
Employees trained	SF	Employee training (1221; 1223), knowledge transfer (EAFRD)	**Employee training programmes (1221; 1223)** The project quality criterion "Number of persons trained within the project" stipulates that additional points will be awarded if additional employees are trained. Aid intensity depends on the status of the enterprise. Aid intensity for newly established micro enterprises — 70 %, on the other hand, for long-lasting enterprises — 30%.	Knowledge transfer (EAFRD) – 3152 employees trained (in agricultural, food-manufacturing (except for fishery products) and forestry sectors) Employee training: Altogether, 6211 employees of 678 enterprises (within measure 1.2.2.1 — 5303 employees of 384 enterprises and within measure 1.2.2.3 — 908 employees of 294 enterprises) have been trained
Number of master's programme students, doctoral students involved in R&I projects	SF	Practical research (1111)	- the evaluation conditions provide to evaluate the quality and effectiveness of the research project implementation, including the evaluation of the involvement of students in the implementation of the research	Practical research (1111) - 63 FTE 2017 In the second quarter the contracts for the implementation of 74 research projects heve been signed (total public funding MEUR 39.77), for the implementation of which it is planned to attract 148 students studying in the master's or doctoral study programmes in the amount of 63 FTE
		Innovation grants for students (1113)	- within the framework of the programme support is provided for the implementation of students' innovation projects	Given that the conditions for the implementation have been developed, but the preparation of selection documentation is currently ongoing, results have not yet been achieved or commitments still to be committed
		CC programme (1211); TTP (technology transfer, innovation vouchers, highly qualified employees) (1212)	CC programme: Appropriate funding intensity may be increased by 15 percentage points if within the scope of the research there is effective cooperation with at least one research and knowledge-dissemination organisation within the meaning of Article 2, Paragraph 90 of Commission Regulation No. 651/2014, where the latter bear at least 10 % of the eligible costs and have the right to publish their own research results	CC programme: Number of doctoral students involved in the research project - 93 (2017)

			TT programme: One of the requirements for attracting highly-skilled employees is that an attracted highly-skilled employees should have: • an employee has the appropriate higher education degree - at least a Master's degree or equivalent (including academic degrees conferred abroad) education in natural sciences, mathematics, information technologies, engineering and technologies, production and processing, as well as in design in accordance with the Regulations on Classification of Latvian Education;	
	SB (MoES)	Basic Science Funding	As the results of scientific activity in the funding calculation the doctoral theses defended by scientific staff of scientific institutions and the master's theses defended by scientific workers in the previous reporting period are evaluated.	In 2015 scientific staff of the scientific institutions that receive Basic Science Funding defended 118 doctoral theses and their scientific staff defended 175 master's theses.
		state Research Programmes 2014-2017	The evaluation conditions requireto evaluate the young researchers, master's programme students, doctoral students involved in the implementation (in FTE*)	Projects employ a total of 258 master's programme students, doctoral students (the number) with an indicative average FTE is ~0.15.
		FARP	The number of master's and doctoral students involved in the evaluation of project applications is a factor contributing to the evaluation of application	There are no results for this indicator
		HE funding	In the performance funding introduced in 2015 one of the criteria is the number of master's programme students, doctoral students employed in R&D in an institution of higher education and the number of Doctoral degree holders over the last 5 years.	Between 2014 and 2015 the number of young researchers employed in the higher education institutions has increased from 307 FTE to 397 FTE

9.1. RIS3 MICRO LEVEL INDICATORS

Income from licences/patents of scientific institutions (EUR)

The rules for calculating Basic Science Funding, are regulated by Cabinet Regulation No. 1316 "Procedures for Calculating and Allocating Basic Science Funding to Scientific Institutions" of November 12, 2013, contribute to the indicator "income from licences/patents for scientific institutions". One of the performance indicators referred to in Sub-paragraph 10.4 is income from the transfer of rights of inventions, patents or registered plant varieties and registered sources of the reproductive material of a forest within the previous financing period. The impact of this indicator in the calculation Basic Science Funding is relatively small, as it is only a small part of the indicator referred to in Sub-paragraph 10.4 (it is predominantly composed of industry commissioned research), which is one of 8 performance indicators that determine the total funding of a development coefficient for the scientific institution. For those scientific institutions receiving Basic Science Funding, income from licenses or patents in 2015 amounted to EUR 362,546 which constitutes 3.3 % of total income from contracted R&D work, patent and registered plant variety and reproductive forest material commercialization. and of the total amount of the transfer of rights of inventions, patents or registered plant varieties and registered sources of the reproductive material of a forest. Total income from the transfer of rights of intellectual property is relatively small and the total number of patents granted and applied for remains low. Rules on the allocation of Basic Science Funding provides additional support for institutions trying to patent inventions, maintaining patents, registering new plant varieties and protecting the rights to use them, the preparation for economic use (commercialisation).

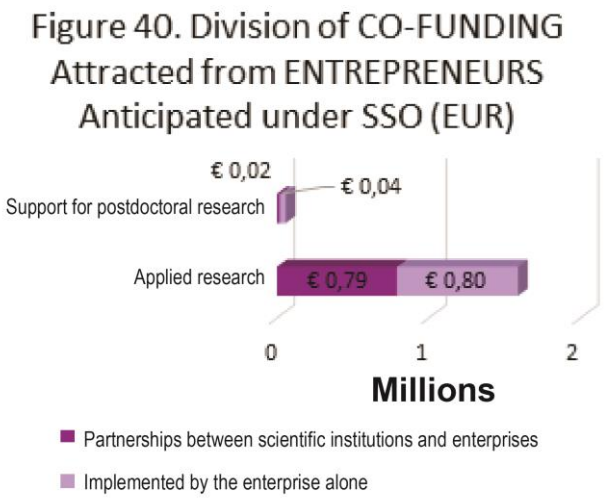
In the projects implemented within the State Research Programme during the period 2014 – 2017 5 patents have been developed (4 patents in the framework of the IMATEH project Innovative and Multifunctional Composite Materials from Local Resources for Sustainable Structures. 1 patent in the framework of the Letonika project Latvian Language Studies in the Context of the 21st Century Science). On the other hand, in the framework of Fundamental and Applied Research Projects between 2014 – 2017, 39 patents have been developed[25] of which 21 — are in engineering, 13 — in Chemistry, 2 — in Biology, 2 — Medicine and 1 — in Forestry.

In accordance with the projects approved for implementation within measure 1.1.1.1 "Practically-oriented Research" (hereinafter referred to as the measure 1.1.1.1) and measure 1.1.1.2 "Post-doctoral Research Aid" (hereinafter referred to as the measure 1.1.1.2) within the framework of the first project application selection round funding from EU structural funds, in those programmes during the period up to 2023 39 patent applications will be developed. In the first round of measure 1.1.1.1 contracts for the implementation of 74 research projects have been signed (total public funding MEUR 39.77), and 35 patents, 26 other intangible assets and 99 commercialised prototypes of new products or technologies to be developed within them, while 4 patents and 90 commercialised prototypes of new products or technologies - within the framework of the first project application selection round of measure 1.1.1.2, in which contracts for the implementation of 124,141 research applications with a total public funding of MEUR 15.7 have been signed.

In order to boost income from licences/patents for scientific institutions into scientific institutions, MoE implements two measures: 1) Competence Centre Programme through which the joint research by scientists and enterprises is supported to develop new products and manufacturing technologies for the purpose of their commercialisation (including the consolidating property rights); 2) Technology Transfer Programme through which the scientific institutions within the framework of the Patent Fund may receive support the consolidating property rights - for the preparation, registration and maintenance of invention patents applications.

[25] Including patent applications.

Business co-funding for R&D projects (EUR)



The EU Structural Funds programmes managed by the MoES contributing to this micro-level indicator of RIS3 are measures 1.1.1.1 and 1.1.1.2. According to the indicative results of the first round of selection of project applications of both measures, the total private co-funding for the implementation of R&D projects is planned in the amount of MEUR 2.8. At the same time, given that scientific institutions contribute their own private funds (non-public funding) to match private co-funding, a short analysis is given on the planned amount of enterprise co-funding for each of the measures. This includes information on how these funds were attracted (an enterprise's project is a single project or a partnership project between an enterprise and a scientific institution). For projects implemented under measure 1.1.1.1 with the total amount of public funding of MEUR 39.77 enterprise co-funding is planned at MEUR 1.58 and for the implementation of measure under 1.1.1.2 measure with the total amount of public funding of MEUR 15.7 - 0.06 or indicatively EUR 56,000 (Figure 40). Within the framework of both measure enterprise co-funding hass been secured. In measure 1.1.1.1 private co-funding by enterprises is equivalent to MEUR 0.79 to be implemented through partnerships (a research institution plus an enterprise), with a projected enterprise contribution to R&I activities of MEUR 0.80. In measure 1.1.1.2 – the amount of private co-funding within the scope of the post-doctoral research implemented individually by enterprises is EUR 38 thousand, and EUR 17.6 thousand for partnershipss between scientific institutions and an enterprises.Pursuant to the above, the planned attracted private investments for research and development projects under measures 1.1.1.1 and 1.1.1.2 do not contribute substantially towards private sector R&D investment growth. The relatively small amount of attracted private co-funding results from the nature of the planned research projects: in total, 8 projects are related to economic activity (7 or 9 % of the total number of projects approved for the implementation under measure 1.1.1.1 and 1 or 1 % of the total number of projects approved for implementation under measure 1.1.1.2). The objective set in the Operational Programme "Growth and Employment" is to attract MEUR 15.9 of private co-funding. This is to be achieved with the help EU structural funds, including those within the scope of practically-oriented research and post-doctoral research programmes — MEUR 12.83. Therefore, it is necessary to review the incentives currently embedded in both programmes for attracting private co-funding to implement R&D projects. An in-depth analysis and proposals for the incentives to be implemented are provided in the draft informative report developed by MoES "Analysis of the results of the first project application selection round and proposals for substantive and procedural improvements of further selection rounds of the Specific Aid Objective 1.1.1 "To increase the research and innovative capacity of scientific institutions of Latvia and the ability to attract external financing, investing in human resources and infrastructure" of the Operational Programme "Growth and Employment"".

In addition it should be noted that one of the indicators in the calculating Basic Science Funding is the amount of business co-funding obtained for R&D projects. In the calculation of funding it forms a part of total values for indicators defined in Regulations on Basic Science Funding sub-

sections 10.2. 10.3 and 10.4. Thus, Basic Science Funding also provides a financial incentive to increase the involvement of companies in R&D through the provision of co-funding.

The EU Structural Funds programmes managed by the MoES contributing to this micro-level indicator of RIS3 are measures 1.2.1.1., 1.2.1.2 and 1.2.1.4. By May 2017 within measure 1.2.1.1 business co-funding for R&D projects constitute MEUR 2.6. By May 2017 within measure 1.2.1.2 two projects have been submitted and according to the results of the first round of selection of project applications under measure 1.2.1.4, 16 projects have been approved which attracted private investments in the amount of MEUR 43.7.

The number of the companies that have received support for introducing new products or technologies

Within the first project application selection round under measures 1.1.1.1. and 1.1.1.2, altogether 36 enterprises will receive support to develop new products and technologies. 18 enterprises (or 24 % of the total number of projects) participate in the implementation of research projects under measure 1.1.1.1, and within measure 1.1.1.2 cooperation in the implementation of research projects is planned with 18 enterprises.

By May 2017 within the scope of measure 1.2.1.1, 106 enterprises have received support for developing new products and technologies. Within the first project application selection round under measure 1.2.1.4, 16 enterprises have received support to develop new products and technologies. Within measure 1.2.1.2 in the Innovation Voucher programme by now 2 enterprises have applied for the support to develop new products and technologies. By May 2017 within measure 3.1.1.6, 208 persons and 101 enterprises have received pre-incubation aid.

As of July 1 2014 EIT tax incentives for the company's R&D costs which can be written off in the year when they were incurred using the value-adding coefficient "3" are available to enterprises. Due to incentives in 2014 the aid granted had been used by 86 enterprises that declared a tax rebate of MEUR 0.44 and 30 enterprises that declared a tax rebate of MEUR 1.41 in 2015.

Newly established companies created by scientific institutions (spin-offs)

With regard to the support for the creation of those companies, for 21 higher education institutions and scientific institutions participating in the Specific Aid Objective 8.1.1 "To increase the number of upgraded STEM study programmes, including medicine and creative industries" and measure 1.1.1.4 "Development of R&D Infrastructure in the Areas of Smart Specialisation and Strengthening Institutional Capacity of Scientific Institutions" the number of newly established companies (spin-off companies) created by scientific institutions is also monitored as an indicator. In 2016, all the institutions together had established 13 such companies (the most spin-off companies were established by Riga Technical University and Vidzeme University - 5 each). By 2020 these institutions are projected to establish 62 new companies.

Basic Science Funding do not provide direct support for the creation of newly established companies.

Number of supported newly established enterprises

In order to support the increase of the number of newly created entrepreneurs, the MoE is implementing measures 3.1.1.6 and 1.2.2.2. By May 2017 under measure 3.1.1.6, 208 natural persons have received support within the scope of pre-incubation(including 18 in the creative incubator) that potentially could create new enterprises. Under measure 1.2.2.2 activities aimed at creating new enterprises are currently being implemented.

Newly created jobs, including those employing scientists in the public sector/business sector

By the end of 2016 within the scope of measure 1.2.1.1 implemented by MoE 23 enterprises cooperating with research institutions have received support. At present within the scope of the

measure, 46 master's and doctoral students are involved in the implementation of the projects. As measure 3.1.1.6 has just been launched, the number of newly created jobs currently is difficult to predict, as it will depend both on the results of pre-incubation and on the benefiting enterprises during incubation process that will develop into permanent establishments. Within measure 1.2.1.4 in the currently approved 16 enterprise projects 39 jobs have been created employing other scientific workers (FTE).
In the projects implemented within the State Research Programme during the period from 2014 – 2017 5 newly created jobs in the private sector employing scientific staff.
On the other hand, EU Structural Funds programmes 1.1.1.1 and 1.1.1.2 managed by the MoES are contributing to RIS3 micro-level indicators. According to the indicative results of the first round of selection of project applications for both measures, the creation of 167 jobs for young researchers (as a full-time equivalent) within SAO 1.1.1 have been planned. The objective set in the Operational Programme "Growth and Employment" is to facilitate the creation of 700 new R&D jobs by EU structural fund investments. Therefore, it is necessary to review the incentives currently embedded in both programmes for attracting young researchers. An in-depth analysis and proposals for the incentives and necessary actions to be implemented are provided in the draft informative report developed by MoES "Analysis of the results of the first project application selection round and proposals for substantive and procedural improvements of further selection rounds of the Specific Aid Objective 1.1.1 "To increase the research and innovative capacity of scientific institutions of Latvia and the ability to attract external financing, investing in human resources and infrastructure" of the Operational Programme "Growth and Employment"".

Funding raised for H2020 confirmed project applications (LV part; EUR)

To promote research cooperation in EU framework programmes between Baltic countries, in 2015 the implementation of the programme "Baltic Bonus" was started. The "Baltic Bonus" programme is implemented simultaneously in all the Baltic States, in cooperation with SEDA, the Lithuanian Agency for Science, Innovation and Technology and the Estonian Council of Science (in accordance with the cooperation agreement signed on June 27, 2015). Within the scope of the "Baltic Bonus" programme funding is provided to partially cover project development expenditures, which have received expert evaluation at the threshold value. To promote international co-operation in science and innovation, and especially to support cooperation in this field between the Baltic States, project applicants receive additional funding of EUR 1.000 for the development of projects which involve partners from the Baltic States. In 2015 support was provided to cover the development expenditure of 47 projects, in 2016 - to cover the development expenditure of 62 projects.

At the same time, investments have been made to achieve the micro-level indicators through measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation". Given that the evaluation of project applications are currently on-going, it is not yet possible to assess the contribution of this investment programme to the implementation of the micro-level indicator. To fully evaluate Latvia's participation in the programme "Horizon 2020", the following indicators are also to be considered:

- **the number of participations** has grown compared to FP7 achieving 0.37 % of the participation of all EU-28 States in the project calls in the "Horizon 2020" programme. In the 7th FP this indicator was 0.27 %. Latvia, overtaking Malta, Lithuania and Croatia, has stepped up to the 25th place in the list of Member States, by the amount of attracted funding. IN FP7 Latvia was number 27 in a list of 28 EU Member States. The number of submitted project applications indicate the increasing activity of Latvian institutions in writing project applications, and, on the basis of current data, it can be expected that until the end of the programme "Horizon 2020", the activities of Latvian representatives in the programme will definitely increase, compared to the participation activity in the 7th FP.

– Latvian participants who are project coordinators are 15 % (19 projects) of the total number of supported projects. Looking at the indicators of the 7th FP, where Latvian participants were project coordinators in 12.5 % cases throughout the implementation of the whole framework programme, it can be concluded that the initiative of the Latvian participants to assume a leading role in the implementation of projects is increasing. Considering that those projects in which the Latvian participant is a project coordinator has generally attracted MEUR 14.09 or 40 % of the total funding attracted by Latvian participants within the programme "Horizon 2020", it is necessary to work purposefully to strengthen the capacity and interest of Latvian scientific institutions to take the initiative to be the Lead Partner in the implementation of the project.

Figure 42. Participation of Latvia in the EU framework programmes

Indicator	5. FP (1999-2002)	6. FP (2002-2006)	7. FP (2007-2013)	"Horizon 2020" (2014-2017*)
Number of project applications	667	1027	1127	**1114**
Number of participations in project applications	776	1206	1424	**1392**
Supported projects	178	217	240	**131**
Number of participations in supported projects	204	258	337	**150**
Project Coordinators	2	11	30	**19**
Success rate (%)	26.7	21.1	21.3	**12.57**
EC funding (EUR, million)	14.6	21.6	49.04	**35.22**

* data as of 28 February 2017

Looking at the participation and success of Latvia and the two neighbouring Baltic states, Lithuania and Estonia (Figure 43), it can be concluded that Latvia has been less successful in terms of the number of applications submitted, in the number of successful projects and coordinators. However, it should be taken into account the total amount of human resources of scientific staff - if in case of Latvia they are 3613 FTE, then in Estonia — 4186 FTE and in Lithuania — 8124 FTE[26]. At the same time, Latvia more successfully attracts investments in the programme "Horizon 2020" than Lithuania and Latvia's success of project applications is the highest among the three Baltic States.

[26] Eurostat data for 2015.

Figure 43. Comparison of activity and success of participation in Horizon 2020 among the Baltic States

	Indicator	Latvia	Estonia	Lithuania
H2020*	Number of submitted project applications	**1114**	1662	1309
	Number of participations in project applications	**1392**	1941	1588
	Number of successful projects	**131**	198	150
	Number of project coordinators	**19**	67	29
	Funding for successful projects	**€ 35.22 million**	€ 66.25 million	€ 21.18 million
	Success rate	**12.57** %	12.03 %	12.15 %

***** data as of 28 February 2017

Scientific articles published in journals indexed in international databases (Scopus, Web of Science)

In the calculation Basic Science Funding the publication by scientific staff of scientific institutions published in original scientific articles in the journals of Web of Science or SCOPUS databases is defined as one of the performance indicators (without those publications this indicator takes into account published scientific peer-reviewed monographs and intellectual property maintained or registered abroad). In addition, rules on Basic Science Funding stipulate that the Ministry of Education and Science shall provide access to these databases for scientific institutions.

The scientific results obtained during the implementation of the State Research Programme between 2014 and 2017 have an impact on the total number of Latvian publications in Scopus and Web of Science databases, altogether 581 publications were prepared within those projects and published in those databases . The situation is similar in case of Fundamental and Applied Research Projects, in which the total number of publications exceeds 560.

Within the scope of the SAO 1.1.1 research projects (measures 1.1.1.1 and 1.1.1.2) the publication of 970 scientific articles has been planned. Within the first project application selection round under measure 1.1.1.1 it is planned to develop 482 international publications, of which 270 are planned to be published in journals included in Web Of Science and Scopus databases, while 195 – to be published in journals or conference proceedings, the citation index of which reaches at least 50 percent of the industry citation index. On the other hand, under measure 1.1.1.2 488 scientific articles are planned.

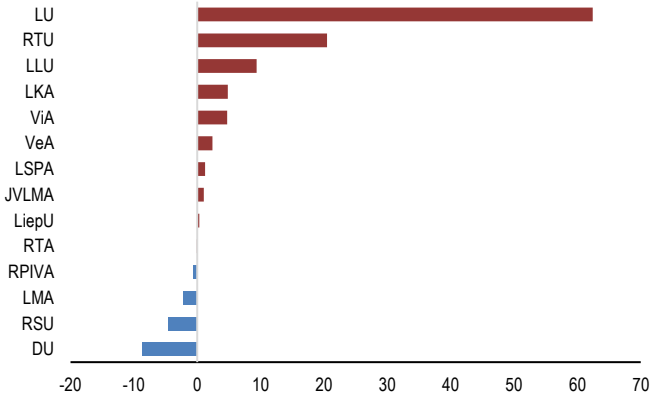
By the end of 2016 within measure 1.2.1.1, 9 co-publications by enterprises and researchers from knowledge-dissemination organisation have been published.

Employees trained

As for the number of employees trained, the contribution to this indicator is provided by Cabinet Regulation No. 617 "Regulations for the First and Second Project Applications Selection Round of Measure 1.2.2.1 "Support for employee training" of the Specific Objective 1.2.2 "To promote innovation within enterprises" of the Operational Programme "Growth and Employment"" of 27 October 2015. By May 2017 under measure 1.2.2.1, 193 enterprises were involved in training and 2404 unique employees were trained.

Number of master's programme students, doctoral students involved in R&I projects

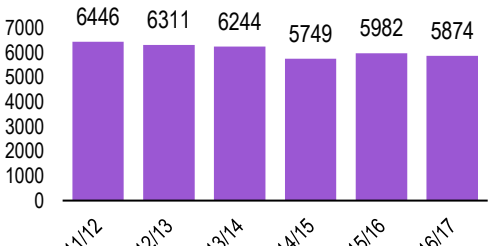
Figure 44. Changes in the Number of Master's, Doctoral Degree Holders and Young Scientists (Measured in FTE) Between 2014 and 2015



In 2015 a new funding model for higher education was introduced, based on three pillars, the second of which provides funding for higher education institutions based on performance. This funding was regulated by amendments to Cabinet Regulation No. 994 of 12 December 2006 "Procedures for Financing Higher Education Institutions and Colleges from the Funds of the State Budget", in Sub-paragraph 17.3 specifying the criteria by which this funding is granted to higher education institutions (in 2015 EUR 5.5 million, in 2016 and 2017 EUR 6.5 million).,

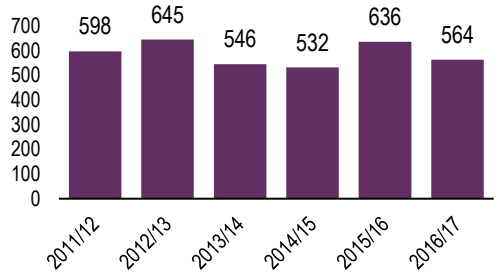
One of the criteria for calculating funding for higher education institutions is the master's programme students, doctoral students, as well as young scientists who have acquired a Doctoral degree, employed in the higher education institution as leading researchers, researchers and scientific assistants in the preceding year as a full-time equivalent.

Figure 45. Changes in the Number of Students Enrolled in Masters Programmes



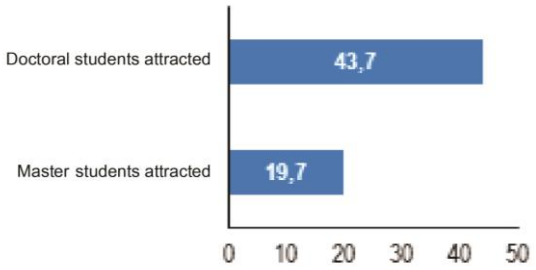
On the whole, between 2014 and 2015, the number of young researchers employed in higher education institutions has increased by 29% from 307 FTE to 397 FTE raising the number of researchers in the majority of higher education institutions (Figure 44). The reason for the increase in the number of young researchers is related both to the indicators supported by the second pillar funding (performance-based funding), and the implementation of EU Structural Funds' sub-measure 2.1.1.3.3 "Development of Institutional Capacity of Scientific Institutions" measure 2.1.1 "Science, Research and Development" of the Operational Programme "Entrepreneurship and Innovations" in 2015, under which scientific institutions have been consolidated affecting several higher education institutions which, as a result, have increased their scientific capacity.

Figure 46. Changes in the Number of Students Enrolled in Doctoral Programmes



As regards the involvement of master's programme students, doctoral students in R&D, changes in the number of students should be taken into account. The number of matriculated master's programme students, doctoral students has been stable in recent years, with a slight downward trend. Since 2011, the number of matriculated master's programme students in Latvian higher education institutions has decreased by 8.9 % (Figure 45) and the number of matriculated doctoral students — by 5.7 % (Figure 46).

Figure 47. Anticipated Number of STUDENTS Attracted under Measure 1.1.1.1. (Measured in FTE)



Within the scope of the SAO 1.1.1 the condition regarding the involvement of master's programme students, doctoral students in the implementation of R&D projects is incorporated into the conditions for the implementation of measure 1.1.1.1. To implement projects within measure 1.1.1.1, 148 master's programme students, doctoral students are to be recruited working a total of 63 FTE (Figure 47).

9.2. IMPLEMENTATION OF RIS3 PROGRAMMES

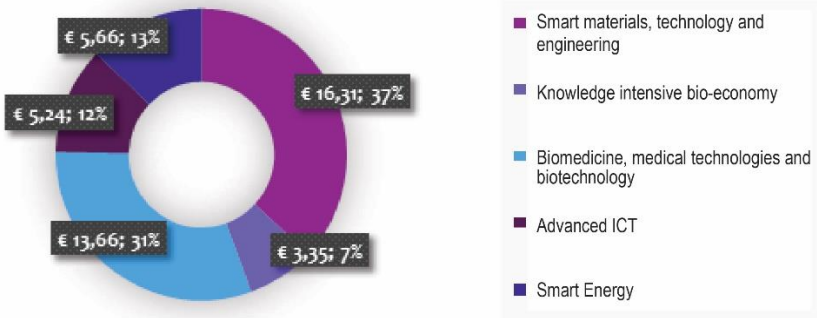
During the period from 2015 to 2018 (as of 31 December 2017), a number of measures have been initiated that contribute and ensure the fulfilment of the overall objectives, macro and micro level indicators set out within the scope of RIS3 monitoring. These activities cover both specifically tailored state aid instruments (programmes), changes to the regulatory framework, and other measures that help achieve not only RIS3 objectives, but also affect the implementation of the RIS3 overall task - to transform the national economy benefited the creation of higher added value and more efficient use of resources.

Altogether in the EU funds planning period from 2014-2020 EUR 491.2 million of EU (ERDF) funding are available to MoE for strengthening innovation and SMEs competitiveness. A total of up EUR 195.5 million of EU funding is available for innovation support activities, and for strengthening SMEs competitiveness - EUR 295.7 million. MoES as the responsible institution provides EUR 278.96 million (ERDF) investment to increase the research and innovation capacity of scientific institutions of Latvia and their ability to attract external funding by investing in human resources and infrastructure.

Practically-oriented research. On 12 January 2016 Cabinet Regulations on the Rules of implementation of measure 1.1.1.1 "Practically-oriented Research" (hereinafter referred to as the measure 1.1.1.1) was approved and the implementation of the programme was started. A total funding available up to 2023 for measure 1.1.1.1 is MEUR 76.5 (including ERDF MEUR 65) aiming to support research, which contributes to achieving the goals of the Latvian Smart Specialization Strategy, the development of human capital in science and technology and the creation of new knowledge to improve the competitiveness of the national economy. Within the scope of the measure support is provided for practically-oriented research by scientific institutions and enterprises implemented individually or in partnership to develop innovative solutions to tackle problems in national economy on a practical level ensuring knowledge transfer in Latvia's smart specialization areas and focusing support on research projects with high commercialisation potential. Under the conditions for the implementation of the measure, calls for project applications are organized in several rounds in order to make maximum use of the science infrastructure and human resources available in Latvia and to ensure the balanced contribution of investment, including the possibility for institutions to prepare their projects promptly as soon as demand for research and technological solutions arises and further develop the rejected project applications and submit them again in the nearest call. In the first quarter of 2017, the first project application selection round of measure 1.1.1.1 was completed and 74 research projects with a total funding of MEUR 44.2 (of which MEUR 39.77 — public funding of the programme) were supported. Within the first project application selection round under measure 1.1.1.1 greater investments are intended for the implementation of research in RIS3 specialisation areas "Smart materials, technologies and engineering systems" – by investing MEUR 16.99 MEUR and "Biomedicine,

medical technologies, bio-pharmaceuticals and biotechnology" – by investing MEUR 13.66 MEUR (Figure 48).

Figure 48. TOTAL FUNDING for Measure 1.1.1.1. Projects Broken down by RIS3 Fields of Specialization (Total Eligible Funding in Millions EUR, Including % of Total)



The activity has an impact on achieving the following RIS3 indicators:

Indicators for RIS3 objectives:

- *European Innovation Scoreboard (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Number of scientific personnel in R&D;*
- *Scientific articles published in international databases;*
- *Proportional increase of private sector investments in R&D;*
- *Number of scientific personnel employed in the private sector;*
- *European patents granted, applied to scientists residing in Latvia;*
- *Proportion of the manufacturing industry as a share of ICT and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export*

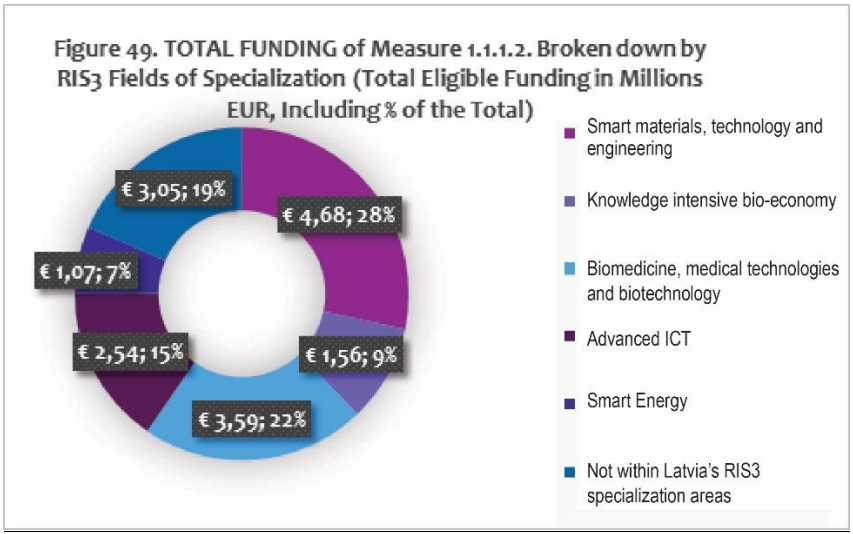
RIS3 micro level indicators:

- *Income from licences/patents of scientific institutions (EUR);*
- *Business co-funding for R&D projects (EUR);*
- *Number of the companies that have received support for introducing new products and technologies;*
- *Newly created jobs, including those employing scientists in the public sector/business sector;*
- *Scientific articles published in journals indexed in international databases (Scopus, Web of Science);*
- *Number of master's programme students, doctoral students involved in R&I projects.*

DEVELOPING MANAGEMENT METHODS FOR INDUSTRIAL AND PRODUCTION GREENHOUSES

Riga Technical University in cooperation with the Latvian University of Agriculture and SIA "Eltex" is conducting a study "Developing new management methods for greenhouse plant lighting systems for improving their energy and ecological parameters (uMol)".
Within the project new photo-biological management methods for existing production processes in greenhouses and auditing methods for evaluating energy efficiency and ecological parameters will be developed. During the project new measuring and management system devices will be developed, put into practice and tested. By using the new Bio-Energy System algorithms to be tested and compared to various sources of light in real greenhouse conditions, it is planned to achieve energy savings of up to 30 % while ensuring the same growth performance. It will be tested how an additional illumination affects the intensity of the formation of biologically active substances in vegetables (tomatoes, cucumbers, salads) in different seasons.

Post-doctoral Research. On 19 January 2016 Cabinet Regulations on Rules of implementation of measure 1.1.1.2 "Post-doctoral Research Aid" (hereinafter referred to as measure 1.1.1.2) was approved and the implementation of the programme was started. The total funding available for measure 1.1.1.2 up to 2023 is MEUR 60.8 (including ERDF MEUR 54.4) aiming to develop young scientists' skills and increase their scientific capacity by providing young scientists with the opportunity to start their career at scientific institutions and enterprises, as well as the improvement of research competencies, the renewal of human resources and the increase in the number of highly qualified specialists. Within measure 1.1.1.2 support is planned for approximately 455 post-doctoral students (young scientists within 5 years after obtaining a doctorate degree) to start their scientific career and for strengthening their competences. In December 2017 within the first project application selection round under measure 1.1.1.2 contracts with a total funding of MEUR 16.5 (of which MUER 15,7 — public funding of the programme) were signed to implement the supported actions[27]. 35 projects or 28 % of total post-doctoral research, investing MEUR 4.68 MEUR will be implemented in RIS3 specialisation area "Smart materials, technologies and engineering systems", 27 projects or 22 % - in RIS3 specialisation area "Biomedicine, medical technologies, bio-pharmaceuticals and biotechnology" with the total amount of eligible funding MEUR 3.59, as well as a large number of post-doctoral studies – 19 % of total number of those who/which received support for the total eligible funding of MEUR 3.05 will be implemented in one area of science which does not conform to any of RIS3 specialisation areas[28], but provides an important contribution to the implementation of one of the RIS3 determined growth priorities (Figure 49).



The activity has an impact on achieving the following RIS3 indicators

RIS3 indicators:

- *European Innovation Scoreboard Group (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Number of scientific personnel in R&D;*
- *Scientific articles published in international databases;*

RIS3 micro level indicators:

- *Income from licences/patents of scientific institutions (EUR);*
- *Business co-funding for R&D projects (EUR);*
- *Number of the companies that have received support for introducing new products and technologies;*

[27] Data as of 31 December 2017 taking into account that some research applications are still in the process of contracting, therefore, a small addition to the number of contracts concluded is possible

[28] Based on the researches carried out in social and humanitarian Field of Science

IZMunEMZino_01022018_RIS3progress; Informative Report "Monitoring of Smart Specialization Strategy"

- *Proportional increase of private sector investments in R&D;*
- *Number of scientific personnel employed in the private sector;*
- *European patents granted, applied to scientists residing in Latvia;*
- *Proportion of the manufacturing industry as a share of ICT and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export*
- *Number of young researchers supported for implementing post-doctorate research*
- *Newly created jobs, including those employing scientists in the public sector/business sector;*
- *Scientific articles published in journals indexed in international databases (Scopus, Web of Science);*

KNOWLEDGE BASE ON INNOVATION PROCESSES IN LATVIA

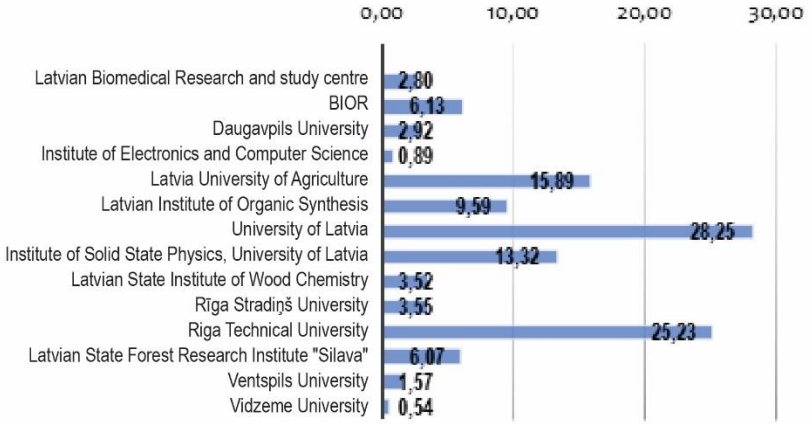
Within the framework of the post-doctoral research programme, the decision to approve the implementation (conditionally) was sent to 2 researches of innovation process, which implementation will contribute to strengthening national analytical capacity.

Researches of the innovation process in accordance with the informative report on the RIS3 monitoring system, contribute to the implementation of RIS3, including the development of evidence-based R&D policies.

Development of R&D Infrastructures in RIS3 Areas and Strengthening the Institutional Capacity of Scientific Institutions. On 16 August 2016 Cabinet Regulations on Rules of implementation of measure 1.1.1.4 "Development of R&D Infrastructures in RIS3 Areas and Strengthening the Institutional Capacity of Scientific Institutions" (hereinafter referred to as measure 1.1.1.4) was approved and the implementation of the programme was started. A total funding available up to 2023 for measure 1.1.1.4 is MEUR 120.25 (including ERDF – MEUR 102.96); the purpose of the measure is to strengthen the institutional capacity of scientific institutions and to concentrate research resources in competitive scientific institutions, improving the management efficiency of scientific institutions and control of resources and upgrading research infrastructures within the scope of the areas of smart specialisation of Latvia, thus promoting the involvement of scientific institutions in European Union level infrastructures and the use of research infrastructures held by scientific institutions to solve practical problems of the national economy. In accordance with the implementation conditions of measure 1.1.1.4 investments are planned for the development of 14 leading Latvian scientific institutions' infrastructure and strengthening their institutional capacity (Figure 50) at the same time financing the above mentioned intitutions to carry out preliminary work before submitting a project - together with interested parties, coordinating medium-term development strategies. Consequently, prior to writing project applications, work on the coordination of the medium-term development strategies of beneficiaries has progressed. The development and coordination of these strategies with the Ministry of Education and Science, sectoral ministries (if applicable) and sectoral associations were identified as a precondition to receive funding. At the same time, in order to facilitate the development and evaluation of more qualitative and sustainable project applications, in 2016, JASPERS experts provided assistance for developing conditions for selecting project applications (R&D infrastructure project evaluation criteria, their application methodology and socio-economic

analysis). At the end of 2017 the projects submitted by scientific institutions have been evaluated, contracts have been signed and the implementation of the projects has been started.

Figure 50. Investments Planned under Measure 1.1.1.4. (millions EUR)



The activity has an impact on achieving the following RIS3 indicators:

Indicators of achievement of RIS3 objective:

- *Investments in R&D 1.5 % of GDP;*
- *A smaller number of stronger state-funded scientific institutions;*
- *The number of scientific personnel in R&D;*

RIS3 micro level indicators:

- *Income from licences/patents of scientific institutions (EUR);*
- *Business co-funding for R&D projects (EUR);*

CREATIING A CENTRE OF SCIENTIFIC EXCELLENCE WITHIN THE PROJECT CAMART2

Investments of measure 1.1.1.4 will complement funding from the European Commission's framework programme "Horizon 2020", which within the framework of the sub-programme Spreading Excellence and Widening Participation Teaming has been awarded to the Institute of Solid State Physics, University of Latvia (ISSP UL):

- total funding MEUR 31 (MEUR 13.32 from measure 1.1.1.4)

- creating ISSP UL as a major Materials Science centre within Latvia and the Baltic Sea region with a high commercialisation capacity and the capability to operate effectively in the international research and innovation market

- cooperation partners: The Royal Institute of Technology (Sweden) and the Research Institute RISE Acreo (Sweden)

To facilitate Latvia's participation in the European Research Area and the European Strategy Forum on Research Infrastructures and the implementation of projects, thereby facilitating international cooperation in the area of research and technologies on 6 June 2017 the conditions for implementation of measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation" (the total planned funding — EUR 32.6 million, including ERDF funding EUR 27.7 million) were approved and as of 31 December 2017 the evaluation of project applications are currently on-going[29]. Within the scope of the 1.1.1.5, complementary measures are planned at the national and

[29] The first stage - the projects of MoES and SEDA are directed to the signing of the agreement; in the third round an evaluation for two projects submitted in the The EU Framework Programme for Research and Innovation

institutional levels for the development of international cooperation. The measure is divided into three project application selection rounds from which in the first round support will be provided for national level activities promoting international cooperation (the project implementer — MoES and SEDA). In the second round - measures to strengthen international cooperation at the institutional level, including support for the development of more competitive applications for programme "Horizon 2020" and the 9th Framework Programme In the third round, support is planned for the implementation of projects submitted within the programme "Horizon 2020", evaluated above the quality threshold, but not funded, with the support of ERDF. According to the planned, the implementation of the projects will begin in the first half of 2018.

In order to facilitate cooperation between the study process and the industry to facilitate the implementation of Student Innovation Grants to solve practical problems of the sector and society, at the end of 2017, the Cabinet of Ministers submitted the conditions for the implementation of the EU fund "Innovation Grants for Students" (total funding EUR 38 million, including ERDF funding of EUR 28.9 million). Contracts with beneficiaries — higher education institutions for the implementation of the projects are expected to be signed in the first half of 2018, while support for students is planned to start from the beginning of the 2018/2019 academic year - i.e., in September/October 2018.

Basic Science Funding .

To state scientific institutes, state higher education institutions and research institutes of state higher education institutions, including scientific institutes of state-founded higher education institutions — derived public persons, registered in the register of scientific institutions Basic Science Funding is allocated from the state budget in accordance with Cabinet Regulation No. 1316 "Procedures for Calculating and Allocating Basic Science Funding to Scientific Institutions" of 12 November 2013.

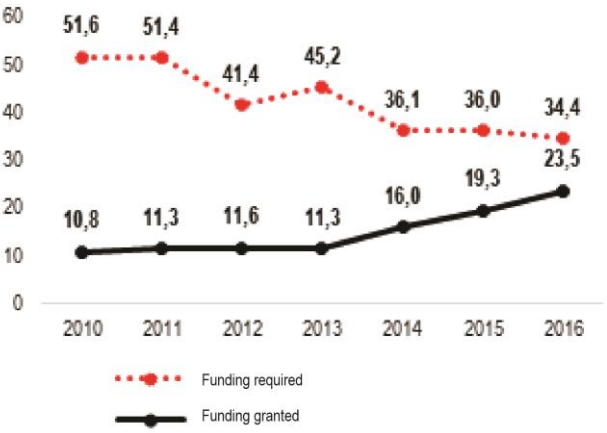
The scientific institution shall use the allocated Basic Science Funding for: the remuneration of scientific personnel, maintenance of a scientific institution and achievement of the objectives of the strategy of the research institution, including the patenting and maintenance of inventions, the registration of new plant varieties and the protection of their use rights, the preparation of commercialization for the provision of co-funding to the EU Structural Funds, other foreign and international funding instruments and international research projects.

The Basic Science Funding includes excellence-oriented criteria: 10% of the funding is allocated to scientific institutions which have received a high degree of appreciation in the international scientific evaluation; the calculations take into account scientific articles published in international scientific publications, etc. The funding provisions have introduced remuneration for the partial provision of research work for academic staff of state-funded higher education institutions - professors, associate professors and assistant professors who carry out scientific work. The assessment received by scientific institutions in the international evaluation of scientific institutions 2013, amendments to the Cabinet Regulation No. 1316 of October 2014, Paragraph 11.2 therein, stipulating that MoES does not provide the Basic Science Funding for scientific institutions, which in the international assessment of the activities of scientific institutions have received an assessment "1" and "2" (except those who participated in the project of consolidation of scientific institutions).

"Horizon 2020", evaluated above the quality threshold, but not funded by the Marie Skłodowska–Curie International Fellowships projects submitted for implementation for funds of measure on 1.1.1.5 is carried out In turn, within the framework of the second selection round for projects, the research institutions prepare project applications (deadline for submission — 18 January 2018).

Since 2014, when the new Basic Science Funding rules have come into force, the allocated Basic Science Funding has gradually increased from EUR 16.0 million in 2014 to EUR 23.5 million in 2016 due to the increase of funding in budget sub-programme of MoES 05.02.00 "Basic Science Funding". The additional funding is allowed to gradually increase the provision of Basic Science Funding (% of that determined in the regulation) from 21 % in 2010 to 68 % in 2016 (Figure 51). It should also be mentioned that the persistently underfunded Basic Science Funding and the absence of funding of research programmes would also significantly reduce the scientific capacity of state scientific institutions in terms of the number of scientific staff and the calculated total necessary funding from EUR 51.6 million in 2010 to EUR 34.4 million in 2016.

Figure 51. Required vs. Granted Basic Funding for Science (Millions Euro)



The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard (EIS position)*
- *Investments in research and development in 2020 amounts to 1.5% of GDP (%)*
- *Number of scientific personnel in research and development*
- *Scientific articles published in international databases*

RIS3 micro level indicators:

- *Income from licences/patents of scientific institutions (EUR);*
- *Business co-funding for R&D projects (EUR);*
- *Scientific articles published in journals indexed in international databases (Scopus, Web of Science).*

PROVIDING A NATIONAL LICENSE TO INTERNATIONAL SCIENTIFIC DATABASES

The amendments to the funding of the Basic Science Funding of October 28, 2014 stipulated that the Ministry of Education and Science ensures the maintenance of scientific databases within the academic network, as a result of which a national access license for SCOPUS and Web of Science databases, as well as the Scientific Direct scientific databases is provided.

Recent trends show that the usage of these databases from the side of Latvian scientists is very high, for example, the number of articles viewed and downloaded in the Science Direct database has increased from 300,138 articles in 2011 to 407,735 articles in 2016, which is a significant number at the existing Latvian science capacity.

State Research Programmes. On 7 October 2014 by Cabinet Regulation No. 558 „On State Research Programmes" 10 State Research Programmes 2014-2017 were approved. In addition, by the Cabinet Regulation No. 559 "On Supplementary State Research Programmes", 4 State Research Programmes have been approved. The total funding for research in the period from 2014 to 2017 is MEUR 27. The overall objective of the state research programme is to provide sustainable proposals for the restructuring the economy, using Latvia's potential for a building a knowledge-base economy in accordance with the objectives defined in the Smart Specialization Strategy. 53 out of 69 projects are carried out in the areas of the Smart Specialization Strategy (Figure 52). It should be noted that the funding available for researchers is too low to ensure that the overall objective is achieved: to employ a significant number of scientists and to ensure sufficient linkage with the development of economic sectors. Therefore, the State Research Programmes should be further funded by the relevant sectoral ministries in order to ensure new knowledge, technologies, their transfer to economic

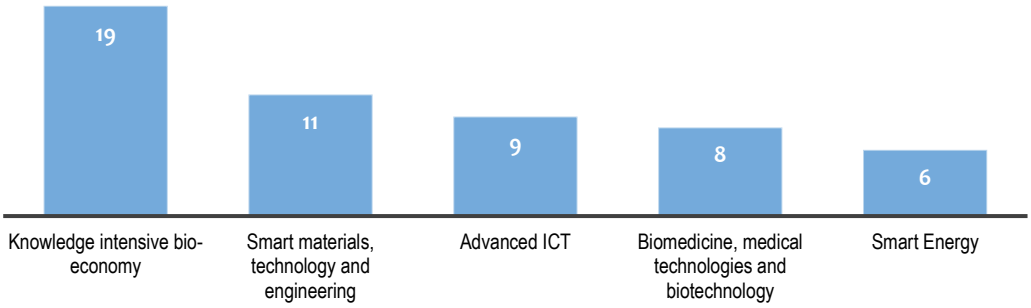
development, human capital necessary for development of the sector, as well as the implementation of policy based on scientific research and decision-making.

- *Scientific articles published in international databases*

RIS3 micro level indicators:

- *Income from licences/patents of scientific institutions (EUR);*
- *Business co-funding for R&D projects (EUR);*
- *Nnumber of the companies that have received support for introducing new products or technologies;*
- *Newly created jobs, including those employing scientists in the public sector/business sector;*
- Funding raised for H2020 confirmed project applications (LV part; EUR);
- *Scientific articles published in journals indexed in international databases (Scopus, Web of Science);*
- Number of master's programme students, doctoral students involved in R&I projects.

Figure 52. SRP Projects in RIS3 Fields of Specialization



The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard (EIS position)*
- *Investments in research and development in 2020 amounts to 1.5% of GDP (%)*
- *Number of scientific personnel in research and development*

National Research Programme "Energy efficient and low-carbon solutions for a secure, sustainable and climate variability reducing energy supply" (LATERNERGI) LATENERGI Head of the Programme is Dr.habil.sc.ing. L. Ribickis. The programme includes six projects: Innovative power electronic technologies for increasing energy efficiency of industrial and household sectors in Latvia, future power supply grids and harvesting of renewable resources; Optimization of power system development planning, energy production, selling and distribution; Sustainable climate policy and innovative, energy efficient technological solutions (KPIET); Innovative technologies for hydrogen and bio-fuel production, storage, quality control, quality sustainment and use in Latvia; Development of tools and assessment of energy and climate policy impact Complex research on renewable energy production and utilization for innovative technologies and investigation of biogas production potential in the waste recycling sector.

Within the framework of the programme, research is being carried out on technologically innovative, cost-effective solutions for the development of sustainable energy extraction and consumption, energy efficiency improvement and the development of environmentally friendly renewable energy resources.

National Research Programme “Forest and earth entrails resources: research and sustainable utilization – new products and technologies” (ResProd) ResProd Head of Programme is Dr.chem. B. Andersons. The programme includes six projects:

Even-age spruce stands cultivation potential in fertile forest ecosystems;

Research in sphere of wood processing, logistics and planning of forest products;

Biomaterials and products from forest resources with versatile applicability;

Research into the entrails of the Earth - new products and technologies

Within the framework of the research, solutions are sought to ensure the sustainability of utilization of forestry and the entrails of the Earth, rationally use the local resources of Latvia in the global market for the production of competitive products, while preserving sustainability, biodiversity and the social role of forests in the near future and for future generations.

Fundamental and applied research projects (FARP). On 29 March 2011 cabinet Regulations No. 227 "Procedure for evaluation, funding and administration of fundamental and applied research programme" The aim of the FARP is to create new knowledge and technological know-how, which forms the basis for the knowledge-base for the national economy and is the basis for the quality of higher education. Projects are financed from the State

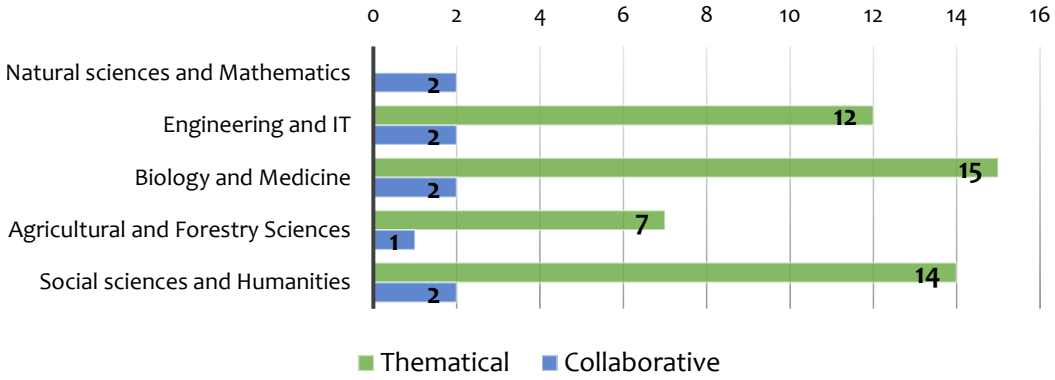
The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard (EIS position)*
- *Investments in research and development in 2020 amounts to 1.5% of GDP (%)*
- *Number of scientific personnel in research and development*
- *Scientific articles published in international databases*

RIS3 micro level indicators:

Figure 53. FARP Research Projects Broken down by Scientific Disciplines (Number)



Budget for Scientific Activities. Total FARP funding for 2014 - 2017 is EUR 14.36 million . Allocated funding in 2014, 2015 and 2016 was EUR 4.39 million per year and in 2017 it is EUR 1.20 million. In total 65 thematic research projects and 9 research cooperation projects have been approved within the framework of the FARP (Figure 53). The implementation of four-year projects ends in December 2017. Currently, the new Cabinet Regulation for the implementation of projects are being developed starting from 2018.

- *Newly created jobs, including those employing scientists in the public sector/business sector;*
- Funding raised for H2020 confirmed project applications (LV part; EUR);
- *Scientific articles published in journals indexed in international databases (Scopus, Web of Science);*
- The number of master's programme students, doctoral students involved in R&I projects.

DEVELOPING SMART BIOFILTRATION TECHNOLOGY FOR IMPROVING THE QUALITY OF WATER INTENDED FOR HUMAN CONSUMPTION

Riga Technical University project, supervised by Dr.sc.ing Tālis Juhna, in cooperation with LUA, UL, ISSP, IECS, IMCS UL, VPRI etc. carries out research on new technological solutions for the development of water treatment plants.Within the framework of the project, a new smart biofilter with original and modified biofilter material was developed, practically created and tested. The development of new biofilter technology is now underway. During the project, water network cleaning was carried out in various municipalities of Latvia (Riga, Ādaži, Dobele), as well as provided consultations for companies, optimizing their work. In addition, practical projects were carried out in developing countries (Pomacea, India). During the project, new knowledge has emerged and new technologies have been created, such as phosphorus binding technology to stop the formation of biofilms. Within the framework of the project, a new research direction and a group of scientists (10 FTE) has been created, which has attracted more than EUR 2 million for science. In addition, a "start-up" company "Conelum" was established which attracted EUR 200,000 of venture capital.

By 1 June 2017 MoE had developed a regulatory framework and had begun the implementation of all EU funded programmes that have a direct impact on the strengthening of innovation capacity, as well as increasing the competitiveness of SMEs:

Competence Centres On 5 January 2016 Cabinet Regulations on Rules of implementation of measure 1.2.1.1 "Support for the Development of New Products and Technologies within Competence Centres" (CC programme) was approved and implementation of the programme was started. The aim of the CC programme is to increase the competitiveness of enterprises by promoting cooperation between the research and industry sectors through the implementation of projects that develop new products and technologies and introduce them in production, thus promoting business cooperation with the research sector in the development and commercialization of new products and technologies. As a result of the selection of CC programme projects, the creation of 8 competence centres within RIS3 areas and sub-areas have been supported[30]. The total funding for the programme is EUR 72.3 million. By the end of 2023, the programme will support 100 entrepreneurs who receive grants for the development and promotion of new products and technologies, including private sector funding in R&D of at least EUR 12.8 million. As of 1 June 2017, the implementation of 129 projects has been started in all 8 Competence Centres (Figure 54).

Co-financing for R&D projects by enterprises involved in the CC programme as of 1 May 2017 is planned to be EUR 260,146.44. Altogether 106 companies have received support for introducing new products and technologies Information on business turnover from the introduction of research results into economic activity or commercialization will be available for the next reporting period. Within the framework of the CC programme 97 new jobs were created, incl. those employing scientific staff in the public sector. 46 master's programme students, doctoral students are involved in the implementation of the R&I projects. 9 scientific articles published in journals indexed in international databases (Scopus, Web of Science);

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation scoreboard (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *The number of scientific personnel in R&D;*
- *Proportional increase of the private sector investments in R&D;*
- *Number of scientific personnel employed in the private sector;*
- *Proportion of innovative companies;*
- *Proportion of the manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-*

RIS3 micro level indicators:

- *Business co-funding for R&D projects (EUR);*
- *Number of the companies that have received support for introducing new products or technologies;*
- *The enterprise's turnover from the implementation of research results into economic activity or commercialization;*
- *Newly created jobs, including those employing scientists in the public sector/private sector;*
- *Scientific articles published in journals indexed in international databases (Scopus, Web of Science);*
- *Number of master's programme students, doctoral students involved in R&I projects*

[30] 1. Knowledge-intensive bio-economy – innovative solutions for forestry and woodworking; 2 Knowledge-intensive bio-economy – innovative solutions for agriculture and food production; 3 Biomedicine, medical technologies, bio-pharmacy and biotechnology; 4 Smart materials, technologies and engineering systems – smart materials; 5 Smart materials, technologies and engineering systems - advanced production technologies and engineering systems; 6 ICT – machinery construction (electronics); 7. ICT - Information and Communication Technologies; 8 Smart energy.

high technology industries in Latvian merchandise export;

Figure 54. PERFORMANCE INDICATORS IN COMPETENCE CENTRES FOR 2016:

COMPETENCE CENTRE	Supported enterprises	Employment growth in the enterprise since the start of the research (number of employees)	Number of doctoral students involved in the research project (employed - contract and outsourcing)	Number of enterprises cooperating with research institutions	Number of co-publications by enterprises and researchers from knowledge-dissemination organisations	Private investment complementing state aid for R&D projects/EUR
Latvian electrical and optical equipment industry competence centre	15	17	14	5	0	625,000.00
Mechanical Engineering Competence Centre	17	11	5	6	1	76,222.34
Latvian Food Competence Centre	6	21	3		0	163,714.49
Smart Materials and Technology Competence Centre	16	20	17	0	2	204,591.97
Pharmacy, Biomedicine and Medical Technology	7	9	0	0	0	393,769.65
Information and Communications Technology Competence Centre	21	8	18	12	2	452,434.18
Smart Engineering, Transport and Energy Competence Centre	15	11	8	0	4	369,996.00
Forest Sector Competence Centre	9	0	19	0	0	315,317.81

SIA "SilvEXPO" has completed a research project "Physico-chemical characterization of needles polyphenols phospholipids liposomes and their soft-gelatin capsules (Skuju poliprenolu fosfolipīdu liposomu un to mīkstā želantīna kapsulu fizikāli - ķīmiskais raksturojums)" during which a new nanotechnology was created for incorporating active substances into the liposome and the closed photolipids double-layer system. The application of the new technology led to the creation of an innovative and export-capable product with an active substance that is more efficient and more economically accessible for prevention and treatment than conventional pharmaceutical forms.

Technology Transfer. On 25 October 2016 Cabinet Regulations on Rules of the implementation of measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (TTP programme[31]) was approved and the implementation of the programme was started. One of the objectives of the TPP programme is to support the know-how and competences of public research organizations when commercialising of research results, but especially to promote the commercialisation of research results owned by research organizations both in Latvia and abroad, while increasing the research organizations' income from the commercialisation of research results. The second objective of the programme is to promote innovation activity through micro and SMEs, technology

[31] TTP programme consists of three components: (1.) Promotion and Co-ordination of the Technology Transfer Process (ensuring of the operation of the Joint Technology Transfer Centre, as well as support for the commercialisation of research results of research organisations and patenting); (2.) Innovation Vouchers (support to the development of new or substantially improved products or technologies in micro and SMEs); (3.) Attracting highly-qualified employees (start-up companies aid instruments for attraction ofattracting highly qualified employees - for solving specific research activities, technological problems or for the development of new or significantly improved products and technologies).

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and knowledge transfer, supporting them to develop new or substantially improved products and technologies. The total funding for the programme is EUR 42.35 million. By the end of 2022 the programme envisages to provide support for 100 projects for commercialisation of research results, as well as to support 320 enterprises which receive grants for the development and marketing of new products and technologies. In February 2017 the project applications selection round to support innovation vouchers was announced, as well as from 18 April 2017 to 19 May 2017 the first selection round of projects for commercialisation of research results was organized. The programme is implemented by LIAA.

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Scientific articles published in international databases;*
- *Proportional increase of the private sector investments in R&D;*
- *Number of scientific personnel employed in the private sector;*
- *European patents granted, applied to scientists residing in Latvia;*
- *Proportion of innovative companies;*
- *Proportion of manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:

- *Income from licences/patents of scientific institutions (EUR);*
- *Business co-funding for R&D projects (EUR);*
- *Number of the companies that have received support for introducing new products or technologies;*
- *Newly established companies created by scientific institutions (spin-off)*

Support for Introduction of New Products in Production. On 10 May 2016 Cabinet Regulations on Rules of implementation of measure 1.2.1.4 "Support for Introduction of New Products In Production" (INPP programme) was approved and the implementation of the programme was started. The objective of INPP programme is to boost the productivity and competitiveness of enterprises by supporting their efforts to develop new products and technologies and to introduce them into production[32], as well as increasing private sector investments in R&D in line with RIS3. The total funding for the programme is EUR 60 million. By the end of 2022 the programme is expected to support 30 enterprises receiving grants launching new products in the market. At the same time, it is expected that as a result of the implementation of the INPP programme, private investments will be attracted in the amount of EUR 10.59 million complementing state aid for R&D and innovation projects. Within the first project application selection round (12 July 2016 - 12 September 2016) 16 projects with ERDF funding of EUR 23.44 million were approved. In the second half of 2017 it is planned to implement the second project application selection round of the INPP programme.

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Proportional increase of the private sector investments in R&D;*
- *Number of scientific personnel employed in the private sector;*
- *Proportion of innovative companies;*

RIS3 micro level indicators:

- *Business co-funding for R&D projects (EUR);*
- *Number of the companies that have received support for introducing new products or technologies;*
- *The enterprise's turnover from the implementation of research results into economic activity or commercialization;*
- *Newly created jobs, including those employing scientists in the public*

[32] Aid is granted to experimental technologies that have not previously been used for commercial purposes - at least 20 % of the project costs are unique components, and 80 % - the purchase of existing components.

- *Proportion of the manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

sector/business sector

SIA "**Light Guide Optics International**" Business profile is the manufacturing and sales of optical fibres and their products, and metal parts. The company is actively working on new solutions in the field of optical fibre processing and manufacturing of composites. Such solutions would enable production of higher precision instruments and medical instruments to be used, for example, in medical laser surgery.

Employee training. On 27 October 2015 Regulations Regarding the Implementation of the First Project Application Selection Round for the Measure 1.2.2.1 "Support for employee training" (technological training programme) was approved; on 14 June 2016 — Rules of Implementation of Measure 1.2.2.3 "Support for ICT and non-technological training, as well as for training to facilitate the attraction of investors" (non-technological training programme). The aim of the technological training programme is to provide enterprises with appropriately qualified workforce that would facilitate the transfer of knowledge and the development of new or improved products and technologies and introduction of them into production. The aim of the non-technological training programme is to promote the productivity and efficiency of micro and small enterprises by increasing the qualifications and skills of their employees in the fields of ICT and non-technological innovation, as well as facilitate the attraction of investors. The total funding available for both programmes are EUR 24.9 million. By the end of 2023 altogether 1300 enterprises will be supported in both programmes by providing training and continuing professional education for 11,080 persons. At the same time, in both programs the increase in the proportion of innovative enterprises was set as a specific performance indicator, reaching 40 % of the total number of enterprises (25.5 % in the reference period 2012-2014). Within the framework of the technological training programme, the contracts for the implementation of projects were signed with 10 sectoral associations (LAKIFA, MASOC, LICTA, the society "Zaļās mājas (Green Houses)", ALWDM LFFC, LPA, ALIE, AHRL, LETERA) as well as training had begun (as of 31 March 2017, 2387 persons in 179 enterprises have been trained). Within the framework of the non-technological training programme the contracts with 3 training practitioners have been signed (LICTA, LCCI, LIAA), as well as training has been started (as of 31 March 2017, 17 persons in 14 enterprises have been trained).

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:
- *European Innovation Scoreboard Group (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Proportion of innovative companies;*
- *Proportion of the manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:
- *Employees trained;*
- *Business co-funding for R&D projects (EUR);*

Small and Micro Enterprises (SMEs) project. By 31 December 2020 LICTA had begun implementing the project "Training of small and micro enterprises for the development of innovations and digital technologies in Latvia (Mazo un mikro komersantu apmācības inovāciju un digitālo tehnoloģiju attīstībai Latvijā)" (SMEs project). The project's training is planned in 3 thematic blocks:
1. Digital technologies;

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2. Digitization of enterprise internal processes;
3. Digital tools for the development of production and services.
For each training model an e-site will be created with descriptions of scenarios for introducing additional technologies and tools, and practical tasks for strengthening the acquired skills.

Innovation Motivation. On 10 May 2016 Cabinet Regulations on Rules of implementation of measure 1.2.2.2 "Innovation Motivation Programme (Motivation Programme)" was approved. The motivation programme aims at informing the general public about the importance of business and innovation, encouraging them to become entrepreneurs and practically involve them in the development of innovative ideas and solutions. The total funding available for motivation programme is EUR 5.3 million. By the end of 2023, the involvement of 10 thousand persons, as well as to support 100 enterprises which receive non-financial support. At the same time, an increase in the number of innovative enterprises – 40 % of the total number of enterprises is set out as a performance indicator in the programme. Since autumn 2016, the implementation of the programme has been launched. The programme is implemented by LIAA.

The activity has an impact on achieving the following RIS3 indicators:

IRIS3 indicators:

- *European Innovation Scoreboard (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Proportional increase of the private sector investments in R&D;*
- *Proportion of innovative companies;*
- *Proportion of manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:

- *Employees trained;*

Number of supported newly established enterprisess; Clusters (programme). On 5 April 2016 Cabinet Regulations on Rules of implementation of measure 3.2.1.1 "Clusters Programme" (Clusters Programme) was approved. The objective of the cluster programme is to promote co-operation between enterprises and research, education and knowledge-dissemination organisations and other institutions at local and international level, thus contributing to increasing the competitiveness of enterprises, increasing the export volume and the proportion of high value-added products and services in exports, as well as the formation of innovation and new products. The total funding available for the cluster programme is EUR 6.2 million. As a result of the first project application selection round 14 clusters – 8 sectoral and 6 cross-sectoral clusters started their operation from January 2017. At the moment of launching project the cluster programme combined 353 SMEs, but Cabinet Regulation stipulates that by the end of 2017 this figure should increase to at least 420 SMEs. Outcome indicators to be achieved up to 2023 provide that within the scope of the programme 360 enterprises will have received support, including 120 enterprises that will have received support in the form of grant.

The activity has an impact on achieving the following RIS3 indicators:

RIS indicators:

- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Proportional increase of the private sector investments in R&D;*
- *Number of scientific personnel employed in the private sector;*
- *Proportion of innovative companies;*
- *Proportion of the manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:

- *Nnumber of the companies that have received support for introducing new products and technologies;*
- *Business co-funding for R&D projects (EUR);*

Latvian IT Cluster. Latvian IT Cluster is a national-level cluster and is currently the only Latvian cluster that has been able to obtain the highest proof of European Cluster Excellence - The Silver Label of the European Cluster Excellence Initiative. Latvian IT Cluster received support from EU funds during the programming period 2007-2013, which allowed the cluster to develop, positioning itself as one of the drivers of the development of the IT industry and a valuable cooperation partner on the local and international level. In January 2017 Latvian IT Cluster started implementation of the project in the cluster programme for the current planning period. Currently this cluster combines 28 industry companies, which together employ 686 employees. Over the next 4 years the cluster plans to strengthen mutual cooperation to increase the competitiveness of enterprises at the international level. The cluster plans to implement activities to promote exports, turnover, innovation, productivity, internationalization, as well as for the achievement of other goals.

Access to finance. Financial instruments – guarantees, micro-credits, start-up loans, early-stage and late-stage venture capital instruments - facilitate access to finance for those entrepreneurs who have insufficient security, equity, insufficient credit and business history, as well as financial indicators that do not comply with commercial bank lending policies and due to high-risk transactions find it impossible to receive funding for the implementation of viable business projects from commercial banks and private investors. Aid in the form of financial instruments is also provided to enterprises operating in RIS3 priority sectors. The financial instruments are implemented within the framework of thematic objective 3 "Improving the competitiveness of SMEs". However, taking into account aid to the undertakings in the form of innovative, knowledge-based and technology-intensive financial instruments, in particular venture capital funds, it is also expected to have an impact on the first thematic objective "Strengthening research, technological development and innovation" and, accordingly, the achievement of the RIS3 objectives.

Acceleration funds. On 12 April 2016 Cabinet Regulation No. 226 "Regulations on Acceleration Funds for the Promotion of the Establishment, Development and Competitiveness of Economic Operators (Noteikumi par akcelerācijas fondiem saimnieciskās darbības veicēju izveides, attīstības un konkurētspējas veicināšanai)" was approved, under which support through financial intermediaries (managers of acceleration funds) will be provided for the design and development of innovative business projects. The purpose of the acceleration funds is to promote the development and competitiveness of economic operators by providing acceleration services (services free of charge, for example, mentoring, assistance for attracting industry experts, buyers, suppliers, partners and future investors) and funding (up to EUR 250) for entrepreneurial projects that hedge against risks of technological or industrial failure. Acceleration funds have not been introduced yet. Financial intermediaries in the framework of a public procurement procedure are evaluated.

Seed, Start-up Growth Capital Funds. On 2 August 2016 Cabinet Regulation No. 518 "Regulations on seed capital, start-up capital and growth capital funds for the establishment, development and competitiveness of economic operators (Noteikumi par sēklas kapitāla, sākuma kapitāla un izaugsmes kapitāla fondiem saimnieciskās darbības veicēju izveides, attīstības un konkurētspējas veicināšanai)" was approved, under which support through financial intermediaries (manager of seed capital, start-up capital and growth capital funds) will be provided for the development of innovative projects. The objective of seed capital, start-up capital and growth capital funds is to promote the creation, development and competitiveness of economic operators by providing seed capital, start-up capital and growth capital investment for the implementation of business projects. seed capital, start-up capital and growth capital funds currently have not been implemented and the alignment of the procurement documentation is under-way. The selection of financial intermediaries under the procurement procedure is scheduled for June 2017.

Loan guarantees. On June 7, 2016 amendments to Cabinet Regulation No. 997 "Regulations on Guarantees for the Improvement of the Competitiveness of Cooperative Societies of Enterprises and Related Agricultural Services (Noteikumi par garantijām komersantu un atbilstošu

lauksaimniecības pakalpojumu kooperatīvo sabiedrību konkurētspējas uzlabošanai)" were approved and the issuance of loan guarantees was started within the framework of the EU Structural Funds and the Cohesion Fund for the 2014-2020 programming period. The purpose of the loan guarantee programme is to develop micro, small and medium-sized enterprises by facilitating access to funding for the implementation of business projects, both at the stage of design and development, including the establishment and development of innovative enterprises. By 31 March 2017, 107 loan guarantees were issued in the amount of EUR 19.2 million .

Micro-credits and start-up loans. On 31 may 2016 Cabinet Regulation No. 328 "Regulations on micro-loans and start-up loans (Noteikumi par mikroaizdevumiem un starta aizdevumiem)" was approved and the implementation of micro-loans and start-up loans programmes within the framework of the European Union Structural Funds and the Cohesion Fund for the 2014-2020 programming period were launched. Start-up loans can be obtained by business start-ups and start-up companies implementing business ideas, while micro-loans are intended for micro, small and medium-sized enterprises to implement viable business projects - for investments and current assets. Aid is provided including RIS3 priority sectors. By 31 March 2017, 140 start-up loans were issued for EUR 2,801,270 and 40 micro-loans in the amount of EUR 520,277.

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard Group (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Proportional increase of the private sector investments in R&D;*
- *Proportion of innovative companies;*
- *Proportion of the manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:

- *Number of the companies that have received support for introducing new products and technologies;*
- *Business co-funding for R&D projects (EUR);*

SIA "PRIMEKSS" produces industrial concrete flooring. The company has created and patented a unique chemical composition of concrete additives "PrimeComposite", which allows concrete flooring to be thinner, while maintaining the necessary strength and tensile properties. The company operates in the Scandinavian market, in Germany and Israel. In October 2016 ALTUM granted loan guarantees for the total amount of EUR 1.44 million for the development of its operations, and the company also attracted InnovFIN counter-guarantees.

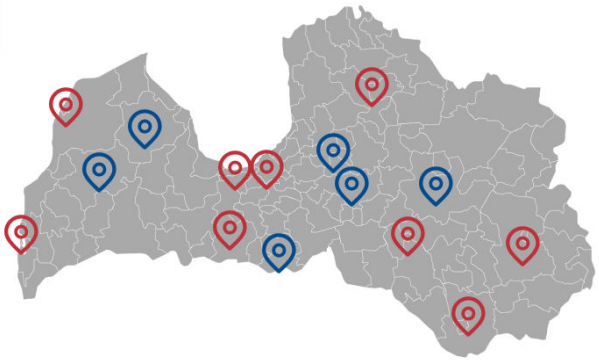
A/S "HansaMatrix" is developing new electronic products and systems, industrialization and a full range of manufacturing services, data network equipment, Internet of things, industrial systems and other high-value-added market segments. It is one of the leading manufacturers in the Baltic-Nordic region. In December 2016 ALTUM granted guarantees for the total amount of EUR 1.2 million for the creation of a new production facility in Ogre. InnovFIN counter-guarantees were attracted as well.

Squalio. IT solutions and services company "Squalio" has attracted funding of EUR 8 million by Bank "Citadele" with an ALTUM guarantee in the amount of EUR 3 million. The company plans to expand its operations in Europe and the Middle East, as well as to develop new services and product lines.

Part of the funding will be invested to develop the existing nine "Squalio" branches in Europe and the Middle East. The funding allocated by the bank will be invested in the development of cloud solutions, licensing management competence centres, the provision of IT platforms and other IT services that are essential for the development of new offers and for introducing them into the market. The enterprise will use a part of the funding for current assets, and a part of the funding for the implementation of specific projects.

Business Incubators. On 3 May 2016 Cabinet Regulation No. 279 "Regulations for the Implementation of Measure 3.1.1.6 "Regional business incubators and Creative Industries Incubators" of the Specific Objective 3.1.1 "To facilitate the establishment and development of SMSM, in particular in manufacturing and RIS3 priority sectors" of the Operational Programme "Growth and Employment"" (business incubators programme) was approved. The Business Incubator programme is implemented with the aim of supporting the creation and development of new viable and competitive businesses in Latvian regions, providing end-beneficiaries with the necessary business consulting, training and activities on general business issues, mentor support, environment (premises) and co-financing of grants for operating costs of entrepreneurs. The beneficiary and the implementer of the business incubator programmes is the Investment and Development Agency of Latvia. The total funding for the business incubator programme for regional business incubators is EUR 25.76 million, for creative industries business incubator — EUR 7.05 million . Together 15 incubation provision units have been created, i.e., 9 development centres of national significance in the municipalities, 5 development centres of regional significance in the municipalities and 1 creative industries business incubator in Riga (Figure 55). Business incubators

Figure 55. Regional Coverage Map for Business Incubators



programme runs until 31 December 2023; During this time the following performance indicators should be achieved: the number of newly established enterprises which receive support - 148, the number of enterprises which receive support (grant) - 200, the number of enterprises from creative industries which receive support - 40, employment growth in supported enterprises - 200 full-time equivalents, final beneficiaries receiving non-financial support in the form of pre-incubation - 180. From the fourth quarter of 2016 business incubators started their work and began accepting applications. Calls for obtaining pre-incubaton aid are carried out continuously (depending on the capacity of the respective business incubator), admission to incubator is organized once a quarter.

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard Group (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Proportional increase of the private sector investments in R&D;*
- *Proportion of innovative companies;*
- *Proportion of the manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:

- *Newly created jobs, including those employing scientists in the public sector/business sector;*
- *Number of supported newly established enterprises;*

Industrial territories. On 12 April 2016 Cabinet Regulation No. 227 "Regulations for the Implementation of Measure 3.1.1.5 ,,Support for Investments in the Development or Reconstruction of industrial property and infrastructure" of the Specific Objective 3.1.1 ,,To facilitate the establishment and development of SMEs, in particular in manufacturing and RIS3 priority sectors" of the Operational Programme "Growth and Employment""was approved. The purpose of the industrial and manufacturing facility programme is to develop territories and to promote the expansion of the manufacturing industry, enterprises and the formation of new enterprises, supporting the creation of industrial areas in the regions. The programme's target group is micro, small and medium-sized enterprises (hereinafter referred to as SMEs), which operate in manufacturing sectors in accordance with Annex 1 of Commission Regulation No. 651/2014 (in accordance with NACE Rev. 2 Section C, Manufacturing). Within the framework of the programme SMSM of the manufacturing industry and the managing body of ports, foundations and large companies (industrial territories operators) may receive funding. The planned ERDF funding for the development of manufacturing premises and industrial territories is EUR 24.8 million, divided into equal parts between five planning regions, except Riga, EUR 4.6 million for each region and the maximum available amount of ERDF funding for one project application — EUR 1.1 million. Within the programme the beneficiaries must provide private co-financing of at least EUR 21.7 million. By 31 December 2023 the following monitoring indicators should be submitted: 20 enterprises which received support (grants); private funding attracted to public funding — EUR 21,750,000; employment growth in enterprises which have benefited from investments - 467 (FTE). From 3 May 2016 to 3 August 2016 the project application selection and until 3 November 2016 the evaluation of project applications took place. 77 project applications were submitted to the Co-operation Authority, of which 39 project applications were supported and 39 agreements have been signed with the beneficiaries regarding the implementation of the projects. Until 30 April 2017 one project has been completed and the beneficiary has submitted to the Co-operation Authority a request for a final payment. As a result, the implementation of the monitoring indicators of measure 3.1.1.5 has begun. 1 enterprise which received aid (grant) has been supported and as a result of project implementation 12 new jobs (FTE) have been created. Total eligible costs of the completed project - EUR 1 million, including ERDF - EUR 454,000 and private co-funding – EUR 555,000.

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *European Innovation Scoreboard (EIS position);*
- *Investments in R&D 1.5 % of GDP;*
- *Productivity in the manufacturing industry;*
- *Proportion of innovative companies;*
- *Proportion of the manufacturing industry as a share of GDP and its productivity growth;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:

Number of supported newly established enterprises

SIA "Stiga RM" has built a new production facility in Kuldīga, which was opened in February 2017, thus expanding the operation and production of a new product - laminated birch plywood. With a new production site the company plans to increase both export volumes and productivity, and create new jobs as a result of the implementation of the project. The SIA "Stiga RM" project was developed in manufacturing industry NACE code 2: 16.21 "Manufacture of veneer sheets and wood-based panels", which is one of the RIS3 defined specialization areas "Knowledge-intensive bio-economics". The project will contribute to the implementation of RIS3 trends of economic transformation No. 1 "Change of the production and export structure in traditional economy areas" for Priority 1, as the project will provide more efficient use of primary products (birch veneer logs) in the production of products with high added value (laminated birch plywood).

Promotion of International Competitiveness. On 1 December 2015 Cabinet Regulation No. 678 "Regulations Regarding the Implementation of Measure 3.2.1.2 ,,Promoting International Competitiveness" of the Specific Objective 3.2.1 ,,Increase the Proportion of Exports of High-value Added Products and Services" in the Operational Programme "Growth and Employment"" was approved. The aim of the programme is to promote the international competitiveness of the sectors by supporting entrepreneurship and entering into foreign markets, ensuring the functioning of the foreign economic representation of Latvia and developing the international competitiveness of Latvia as a tourism destination in priority tourism sectors (business and events tourism, well-being tourism). The target group of the programme and the final beneficiaries are enterprises, cooperative societies (including agricultural cooperative societies or appropriate agricultural services' cooperative societies), farmers' or fishermen's farms, individual enterprises, associations, foundations that qualify for the status of economic operators (commercial enterprises) of small (micro), small and medium-sized enterprises in accordance with the provisions of Annex 1 of Commission Regulation No. 651/2014, as well as the managing bodies of ports, municipalities and planning regions (projects that do not cover economic activities). Support is intended for enterprises to enter into external markets, to increase their export-capacity, to evaluate the conformity of production facilities and products, and to ensure the operation of LIAA's foreign economic representations and to strengthen the international competitiveness of Latvian enterprises, including the implementation of external marketing measures, promotion of goods and services, and strengthening of international competitiveness of Latvia as a tourism destination in priority tourism sectors (business and events tourism, well-being tourism). The total planned eligible funding of the programme is EUR 60.9 million, including ERDF funding - EUR 51.8 million, State budget funding – EUR 4 million, and private, municipalities and planning regions co-funding – EUR 5.1 million . Within the framework of the programme, 2 contracts with the LIAA as the beneficiary have been signed: 1) on 14 March 2016 "Promoting International Competitiveness" with ID number 3.2.1.2/16/I/001; 2) on 26 April 2016 "Promoting the International Competitiveness of Tourism in Latvia" with ID number 3.2.1.2/16/I/002. In the project "Promoting international Competitiveness" support for target groups has been started on 15 March 2016; in the project "Promoting International Competitiveness of Latvia in Tourism" support for target group has been started on 2 May 2016. Until 30 April 2017 within the scope of the project No. 3.2.1.2/16/I/002 "Promoting International Competitiveness of Latvia in Tourism" 11 national stands were organized. Within the framework of the project, 8 tourism marketing and advertising campaigns have been implemented; 61 journalists', bloggers 'visits; 51 experiencing visits by foreign tourists, corporate and business event organizers; provided 65 tourist information and marketing materials; 199 events promoting Latvian tourism and a specialized tourism promotion was implemented; 3 tourism market research projects were

carried out; 16 activities for foreign tourists were developed in the regions of Latvia and 11 activities were carried out to attract business and for Latvia. Within the framework of project No.3.2.1.2/16/I/001 "Promoting International Competitiveness", 20 LIAA representations in 19 countries were provided (including 913 export projects/requests were processed by 30 March 2017); 37 national stands were arranged (278 target group clients participated); 42 seminars on external markets and foreign trade issues (more than 2000 participants) were organized; support for participation in 152 sectoral exhibitions (except national stands) abroad was provided; 57 trade missions were organized (including 11 visits of senior officials of Latvia in foreign countries), in which 484 enterprises participated; consultative support was provided to 30 March 2017 - 1203 consultations for the target group about LIAA services and support for export, as well as 1417 consultations on business partner search; support is provided to the target group's customers by supporting 15 enterprises in 10 international exhibitions abroad. An international export forum "Magnetic Latvia 2016" and the forum "Polaris 2016" (on August 9 2016.) have been organized. A business forum at the fifth meeting of the Prime Ministers of Central and Eastern European and China (within 16 + 1) (5 November-6 November 2016) was organized. The Mechanical Engineering and Metalworking Business Forum was organized (in Liepaja (Liepāja), on 2 February 2017, more than 250 participants). Support was provided for 18 target group customers to assess the conformity of production facilities and products.

The activity has an impact on achieving the following RIS3 indicators:

RIS3 indicators:

- *Proportion of innovative companies;*
- *Increase in exports;*
- *The proportion of high technology products in total Latvian exports and the proportion of high and medium-high technology industries in Latvian merchandise export;*

RIS3 micro level indicators:

Number of supported newly established enterprises

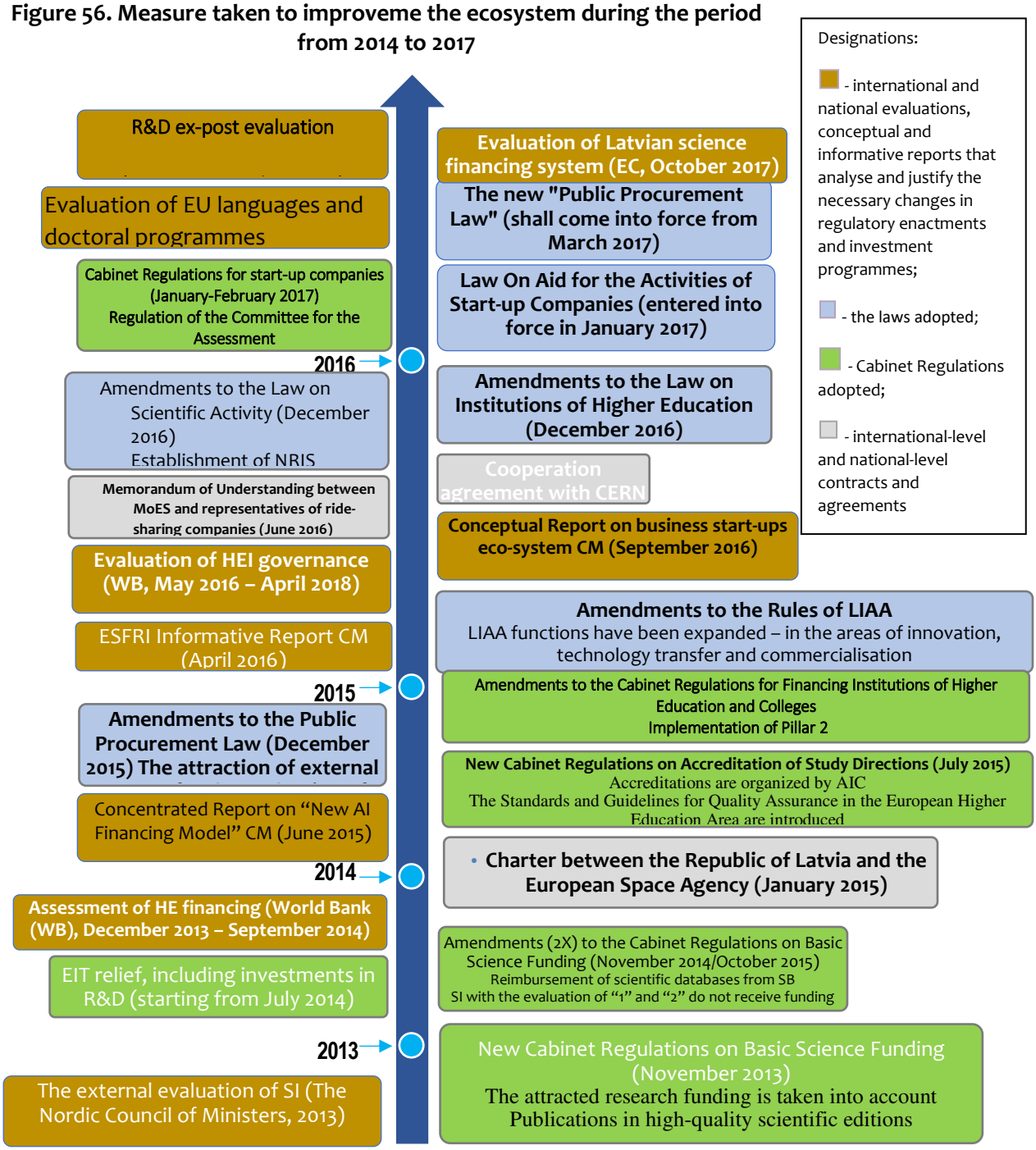
Within the scope of the programme, the company SIA "Rāmkalni Nordeco" participated in 3 national stands at international exhibitions abroad, 10 international exhibitions with an individual stand, went to the trade mission organized by LIAA to China, and obtained product certifications - FSSC 20200 certificate, BRC certificate, and successfully launched its products exports to China.

Support for "green" innovation. Since 2014 MoE has continued to implement the Norwegian Financial Instrument Programme "Green Industry Innovation". Within the scope of the programme support has been given for pre-incubation and incubation services, support has been provided for development and commercialization of new or significantly improved environmental products or technologies, for the purchase of new production equipment. By April 30 2017, 152 teams have received or continue to receive pre-incubation services in the Green Technology Incubator. In addition, a small-scale grant scheme has been implemented. 23 project implementers have been granted a total programme co-funding of EUR 2.4 million. 13 companies supported within the open tender are implementing projects with the total programme co-funding of EUR 5 million .

IMPROVEMENT OF THE ECOSYSTEM

In addition to supporting EU Structural Fund activities, since 2014 various measures have been implemented that ensure the improvement of the RIS3 ecosystem and the transformation of the national economy towards a competitive, knowledge-based economy.

Figure 56. Measure taken to improveme the ecosystem during the period from 2014 to 2017



On 12 November 2013 The Cabinet of Ministers approved Regulation No. 1316 "Procedures for Calculating and Allocating Basic Science Funding to Scientific Institutions" (hereinafter

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referred to as Cabinet Regulations on Basic Science Funding), which amended the previously applied procedures for calculating Basic Science Funding to scientific institutions and included new quality assessment criteria for the improvement of calculation and allocation Basic Science Funding to scientific institutions - in the calculating taking into account the amount of funding attracted within the framework of SI R&D projects, publications published in journals in high-quality recognised international databases and the scientific personel' progress towards improving their academic and scientific qualifications.

In the first quarter of 2014, an external evaluation was conducted by the Nordic Council of Ministers on the Latvian science and innovation policy system for the purpose to perform an objective analysis of the Latvian science situation in the context of the European Union Joint Research Area and Cooperation in Research in accordance with the cooperation interests of Nordic-Baltic countries. The main conclusions within the evaluation pointed to the low level of national funding in science, which, among other things, has resulted in a lack of qualified human resources, fragmentation of scientific institutions, including differentiating science and higher education, as well as often focusing on local and non-international research. The recommendations put forward in the evaluation suggested that the existing fragmentation and further institutional development within each science sector should focus on those institutions which are evaluated as the strongest international players in the field of science.

According to the recommendations of the external evaluation by the Nordic Council of Ministers, in the fourth quarter of 2014 and 2015 the MoES has drafted amendments to Cabinet Regulation on Basic Science Funding (-) by providing additional support to those institutions and their departments which have received high results in the international evaluation of scientific institutions (-) not allocating Basic Science Funding for low-rated institutions (with "1" and "2") from 2016; (-) increasing the minimum amount of workload of scientific staff required to qualify SI to receive Basic Science Funding; (-) determining additional allocation of Basic Science Funding to scientific staff of scientific institution that is also a higher education institution.

EIT relief in R&D Since 1 July 2014 (Cabinet Regulation No. 373 "Regulations on Research and Development Activity for the Application of the Enterprise Income Tax") companies can use **EIT relief** for the company's R&D costs[33]. EIT relief in R&D aim at promoting R&D activities for the development of new products and technologies in local companies, as well as fostering attracting foreign direct investments in knowledge-intensive sectors[34]. At the same time, the EIT rebate has an impact on the promotion of private sector investments in R&D. During the period of EIT relief the MoE has supported the functions of the Research and Development Activities Evaluation Commission[35] [36]. During the period from 1 July 2014 to 31 December 2014,

[33] A taxpayer may decrease their taxable income with EIT by the following eligible costs: (1.) by the amount of remuneration for the scientific staff and technical staff in enterprises; (2.) by the amount of remuneration for research services received from a scientific institution; (3.) by the amount of remuneration for accredited testing, certification and calibration services.

[34] Enterprises that declared the tax rebate in 2014 invested in R&D EUR 442 thousands, in 2015 – EUR 1.41 million .

[35] Cabinet Regulation No. 373 prescribes that for the purposes of assessment of R&D projects put forward by enterprises on the compliance with Article 1(29) of the Enterprise Income Tax Law, the Minister for Economics shall set up the Research and Development Activities Evaluation Commission (hereinafter referred to as the Commission) consisting of representatives from the MoE, MoES and LLIAA, as well as representatives from MoF and SRS without voting rights. The Commission's decisions are is recommendatory in character. The legislation of the Republic of Latvia (the Enterprise Income Tax Law and Cabinet Regulation No. 373) prescribes that an enterpriset shall not obliged to submit a project description to the Commission for examination. The merchant may submit an annual EIT declaration which includes R&D expenses, and the R&D project is submitted to the Commission if the merchant or the SRS is uncertain about the compliance of the project activities with R&D activities.

[36] To the Research and Development Activities Evaluation Commission: In the second half of 2014, 1 project was submitted, in 2015 - 9 projects, in 2016 - 8 projects.

86 companies declared tax rebate for R&D in the amount of EUR 1.33 million (investments made — EUR 0.44 million). In 2015 30 companies declared tax rebate for R&D in the amount of EUR 4.2 million (investments made — EUR 1.41 million). The Latvian EIT tax rebate has been ranked as the fifth most attractive for entrepreneurs among 44 countries of the world according to a 2016 OECD study on EIT tax rebate in R&D. **EIT relief for equipment**. To facilitate investments and contributions to research and development entrepreneurs may use EIT relief for the production of technological equipment provided for in the Enterprise Income Tax Law. The tax relief provides that the amount of depreciation in a taxation period, the acquired value or establishment value of each new production technology equipment in such taxation period shall be multiplied by the coefficient 1.5. According to the data of the State Revenue Service, in 2014 the tax relief had been applied to 1121 taxpayers, in 2015 —to 4082 taxpayers and by 9 November 2016 — to 39 taxpayers. EIT support for **major investment projects.** To promote investments in research and development, entrepreneurs may use the Enterprise Income Tax Law EIT. EUR 10 million of relief for investments made in eligible investment projects has been provided. *The* Law offers a tax rebate of 25 % (if the total initial amount of long-term investments does not exceed EUR 50 million) or 15 % (if the total initial amount of long-term investments exceeds EUR 50 million) for an investment exceeding EUR 10 million, for the taxpayers who have invested in fixed assets to be used for increasing the performance of economic activity in the priority sectors and have been made to establish a new place of entrepreneurship, increase production and service capacity, commence production of such new produce which the taxpayer has not produced previously, or significantly change the production process. By 15 May 2017 29 projects have been supported.

In the third quarter of 2014 the study carried out by the International Bank for Reconstruction and Development (hereinafter referred to as the World Bank) on the higher education national funding system was concluded by evaluating the sector's funding systems and providing recommendations for the development of a three-pillar funding model for higher education that is suitable for Latvia, in which Basic Science Funding (Pillar 1) ensures the sustainability of the system, performance funding (Pillar 2) contributes to the achievement of results, while development funding (Pillar 3) facilitates linkage with long-term economic development needs.

Based on assessment and recommendations made by the World Bank, MoES developed and on 29 June 2015 the Cabinet of Ministers approved the conceptual report "Introduction of a New Model for Financing of Higher Education in Latvia", which defined the mentioned three-pillar model and its implementation. According to this conceptual report, structural reforms of the sector are gradually being implemented to ensure the establishment of an efficient and sustainable higher education system. The reforms have created a new funding model for higher education based on three pillars, the second of which provides funding for higher education institutions based on the results achieved.

The second funding pillar was introduced in 2015 by amending Cabinet Regulation No. 994 of 12 December 2006 “Procedures for Financing Institutions of Higher Education and Colleges from the Funds of the State Budget”, specifying the criteria by which this funding is to be granted (EUR 5.5 million in 2015, EUR 6.5 million in 2016 and 2017). The criteria for calculating the funding of the second pillar (performance) taking into account the results achieved by the higher education institutions in employing young researchers, international and sectoral

studies carried out, the involvement of local authorities in research funding, and implemented creative and art projects.

On January 30, 2015 the Plan for European Cooperating State Charter (PECS Charter) between the Government of the Republic of Latvia and the European Space Agency had been signed according to which the European Cooperating State Agreement of 15 March 2016 signed by the Minister for Education and Science on behalf of the Government of the Republic of Latvia entered into force. Within this, as of the beginning of 2017 Latvian scientific institutions and commercial companies are implementing innovative, highly evaluated projects by experts from the European Space Agency. In the first and second call for projects that took place in 2013 and 2015, experts from the European Space Agency together with the Ministry of Education and Science selected 13 PECS projects to be funded by the European Space Agency. At the beginning of 2017, a third call for projects was published and its results will be known in the summer of 2017. From 2019,cooperation with the European Space Agency should be continued either under the European Cooperation Agreement or by joining the European Space Agency as a full member.

In order progress towards the introduction of international quality standards in the national higher education system, on July 14 2015 Cabinet Regulation No. 407 "Regulations on Accreditation of Higher Education Institutions, Colleges and Study Directions" was adopted. These provisions altered the institutional delegation process for accreditation by establishing that the accreditation process is provided by the Academic Information Centre and introduced a regulatory framework that ensures the implementation of Standards and Guidelines for Quality Assurance in the European Higher Education Area at the national level.

The fourth quarter of 2015. Amendments to the Public Procurement Law. In December 2015, Saeima adopted amendments to the Public Procurement Law, which provides for a simplified procedure for the recruitment of foreign scientific experts with the aim of promoting the competitiveness of scientific institutions in the single European Research Area, more effectively using funds allocated by public persons and optimizing the administrative resources necessary for the organization of procurement procedures. According to the amendments, if the conditions for the implementation of the programme include initial scientific quality of the project applications, as well as for the evaluation of the quality of the interim or final results to attract an expert registered in the database of experts of the European Commission or another expert database it is not required to do that in accordance with the procurement procedure set out in the Public Procurement Law, thereby significantly reducing the administrative burden of both the project selection authority and the experts involved in the evaluation, as well as providing a more streamlined process of evaluating project applications. The recruitment of experts registered in the EC Expert Database is provided for and implemented within the first selection round of project applications in the evaluation of scientific quality of research projects of measures 1.1.1.1 and 1.1.1.2. The conditions for recruiting experts registered in the EC expert database are also included in the conditions governing the implementation of measures 1.2.1.1. and 1.2.1.2, the appropriate expertise is also planned starting from the second project applications selection round of measure 1.2.1.4.

The second quarter of 2016. On 15 April 2016 the Cabinet of Ministers reviewed the informative report "On Latvia's Participation In the European Research Infrastructure Roadmap Consortium (ERIC) of the European Strategy Forum For Research Infrastructures" where Latvia agreed to participate in the European Research Infrastructure Consortium (ERIC)

and research infrastructure platforms, which are currently under development. In the informative report Latvia's participation in the mentioned ERIC and prospective ERIC results from a study commissioned by the Latvian Academy of Sciences in 2013 "The Capacity and Necessity of Latvian Scientific Institutions to Participate in ESFRI European Research Infrastructures. Situation assessment and recommendations". Each ERIC, in which Latvia joins, establishes a relevant Latvian National Partnership - a national consortium (to be established on the basis of a partnership agreement) with certain goals, tasks, plans and distribution of funding, taking into account RIS3 areas, the respective ERIC work plan and the Latvian National Partnership Plan. Based on Cabinet Regulation No. 259 of 26 May 2015 "Procedure for Granting of Aid for Participation in International Cooperation Programmes in the Area of Research and Technologies" the state budget sub-programme 70.06.00 "Participation in the European Union research and technology development programmes" covers expenditure for Latvian state participation in a paid-for consortium, but does not cover the expenditure for administrating the national consortia, which are necessary to fully participate in international consortia – for this purpose it is planned to provide co-funding within measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation". In 2018 it is planned to revise Latvia's participation in ESFRI Consortia.

Creation of a "Technology and Innovation Agency". Since April 2016 LIAA functions have been expanded (amendments to Cabinet Regulation No. 857 "Regulations of the Investment and Development Agency of Latvia") with the aim to develop LIAA as an Agency for the Support of Innovation and Technology Development. By amending LIAA regulations, the objective of the LIAA was expanded by establishing that it contributes to the competitiveness and export-capacity of Latvian enterprises in international markets, increasingforeign investments, implementing the tourism development state policy and state policy in the field of innovation. At the same time, it is determined that LIAA performs additional functions and tasks in the field of innovation and technology, more precisely:

- promoting business start-ups and development, innovations and technology transfer;
- promoting innovative entrepreneurship, including fostering cooperation between research and business sectors.

Gradually raising the capacity of LIAA, it is planned to develop it as "One Stop Agency" (Figure 57), which not only promotes the competitiveness and export-capacity of Latvian enterprises in international markets, encourages the attraction of foreign investment and implements tourism development policy andis also responsible for the implementation of the state policy in the areas of innovation and technological development, while providing the most comprehensive advisory support to entrepreneurs.

Figure 57. Action lines for the Investment and Development Agency of Latvia

Evaluation of HEI governance. In May 2016 an agreement was signed with the World Bank which provides for the evaluation of the internal funding models, internal governance arrangements and human resource policies in HEIs established by Latvian state. In the first phase of the research project (May 2016 - April 2017) internal funding and governance in Latvian higher education institutions was assessed. The second phase of the research (May 2017 - April 2018) is dedicated to the evaluation of doctoral studies, academic staff selection, election and remuneration processes in Latvian HEI. Already in the first phase of the research an interim report on Latvian doctoral studies and promotion system was prepared. Part I provides a summary of the main trends in doctoral education and training in Europe, Part II is focused on the current situation of doctoral education and training in Latvia, which is analysed in the context of international practices described in Part I. Part III provides recommendations for enhancing doctoral education and training in Latvia. This report launches a discussion on the doctoral and promotional system in Latvia, which will be further developed in the second phase of the research. The analysis carried out within the framework of the research and the recommendations made will be integrated into the specific support objectives of the EU structural funds investments in higher education that provide for investments in improving the quality, efficiency and accessibility of higher education.

Memorandum of Understanding between the Ministry of Economics and representatives of ride-sharing companies. On June 29 2016 a Memorandum of Understanding was signed between the Minister of Economics and the representatives of ride-sharing companies (Head of "Uber" in the Baltic States and Regional Manager of "Taxify"). The purpose of the Memorandum of Understanding is to strengthen the cooperation in the dialogue that is already open between the parties on the growing global demand for the sharing economy platforms and ride-sharing service providers, and their place in the Latvian economy. The signed memorandum will serve as the basis for a constructive dialogue on the inclusion of representatives of the transport industry in the Latvian market of transport services and the legal framework for their activities.

Conceptual Report on Business Start-ups and the Small Business Ecosystem. On September 29, 2016 the Cabinet of Ministers approved a conceptual report prepared by the Ministry of Economics on the business start-up and small business ecosystem, including the necessary support incentives. The report analysed a number of possible action models to create a more favourable tax and legal environment for business start-ups and small-sized

companies. The conceptual report mainly focused on supporting three forms of businesses - (1.) lifestyle companies with limited growth potential, (2.) high-risk start-ups in high-tech industries, and (3.) start-ups with predictable gradual growth. The main stEIS proposed in the report were related to the tax regime - the Cabinet of Ministers decided that from January 1, 2017 a special support model for fast-growing start-up companies and newly created companies should be created.

The cooperation agreement with CERN. On October 31, 2016 a cooperation agreement was signed between the European Organization for Nuclear Research (CERN) and the Government of the Republic of Latvia on scientific and technical cooperation in Particle Physics. The National Contact Point performs (indicatively) the following functions: coordinates the participation of Latvian representatives in the events organized by CERN, as well as visits by CERN representatives in Latvia, facilitates co-operation of Latvian researchers with CERN, provides a communication campaign for Latvia's cooperation with CERN, ensures the networking and exchange of information between CERN and Latvian scientific institutions etc.

Amendments to the Law On Scientific Activity. On December 8 2016 the amendments to the Law on Scientific Activity were adopted that brought forward the operation of the National Research Information System (NRIS) as a state information system, which compiles information about scientific activities carried out by scientific institutions and the persons involved therein; NRIS includes - 1) A register of Scientific Institutions; 2) A register of Persons Elected to Academic Positions; 3) an expert database of the Latvian Council of Science; 4) a database of scientific research projects; 5) a database of the scientific activity's results; 6) Reports on the scientific activity of scientific institutions ; 7) a database of international evaluations of the activity of the Latvian scientific institutions. In order to ensure the functioning of this system, in 2017 the new Cabinet Regulation regarding the system mentioned above and the new Regulation regarding the Annual Public Report of the Scientific Institution Registered in the Register of Scientific Institutions (which forms a part of NRIS) were laid down.

Amendments to the Law on Institutions of Higher Education. Article 46(1) of the Law on Institutions of Higher Education stipulate the establishment of a Register of Students and Graduates and the amount of information to be included therein. Amendments to the Law on Institutions of Higher Education entered into force on 1 January 2017. Based on Article 46(1) of the Law on Institutions of Higher Education, information regarding students, non-personalized statistical data on graduate employment and average income shall be included in the Register of Students and Graduates. That shall ensure the possibility to determine whether investments in higher education meet the needs of the labour market, society and the national economy by improving education policy planning. Under the terms of the Law, non-personalized statistical data on graduate employment and average income, and the status of an unemployed person or person seeking employment shall be submitted in the State Education Information System by the State Revenue Service and the State Employment Agency, using, among other thingssolutions for processing data suggested by the Central Statistical Bureau. The statistics shall be made publicly available on the website of the Ministry of Education and Science. On 13 April of this year amendments to the Cabinet Regulation that need to be updated in relation to the introduction of the Register of Students and Graduates were announced at State Secretaries' meeting. MoES has drafted amendments to Cabinet

Regulation No. 788 "Content of the State Education Information System, its Maintenance and Updating Procedure" of 17 August 2010, Cabinet Regulation No. 203 "Procedures for Preparation and Updating of Personal Files of Students" of 27 March 2007 and Cabinet Regulation "Procedures for Financing Institutions of Higher Education and Colleges from the Funds of the State Budget" of 2006, which are currently announced at State Secretaries' meeting (SSM) (minutes of 13 April 2017 No. 15, SSM-401, 402, 403) and currently their harmonization process is under way.

On 1 January 2017 the Law On Aid for the Activities of Start-up Companies prepared by the MoE entered into force. The purpose of this Law is to promote the establishment of fast growing technology enterprises or start-up companies in Latvia, thus promoting commercialisation of R&D and research results. In early 2017 related Cabinet Regulations were approved: Cabinet Regulation No. 30 "Regulation of the Committee for the Assessment of Activities of Start-up Companies" of 17 January 2017, as well as Cabinet Regulation "Procedures for the Submission of Applications of Aid Programmes for Start-up Companies and Administration Thereof" of 7 February 2017[37].

The new "Public Procurement Law". On 15 December 2016 the Saeima has adopted a new "Public Procurement Law", which entered into force on March 1, 2017. The new procurement procedure makes changes aimed at fostering innovations. The law requires the implementation of EU requirements for procurement organizations. The new Public Procurement Law establishes regulatory framework which wil be applied to services and supplies up toEUR 10,000 and for construction works up to EUR 20,000 (previously – EUR 4,000 and EUR 14,000 respectively) The new regulations introduce new types of procurement procedures – competitive negotiation procedures. It will enable contracting authorities to enter into negotiations with selected candidates in order to tailor the content of proposals to the contracting authority's needs. At the same time, the new regulation introduces an innovation partnership procedure as well. It will be applied to the development and subsequent acquisition of a new innovative product, service or construction work. The EU Directive in respect of procurements states that the legal regime is necessary in order to increase the efficiency of public spending, facilitating and the participation of small and medium-sized enterprises in public procurement, and to enable procurers to make better use of public procurement in support of common societal goals. The purpose of this Law is to ensure transparency of the procurement process, free competition of suppliers, as well as equal and fair treatment thereof, and effective use of contracting authority resources to minimise procurement risks.

R&D ex-post evaluation. In order to carry out the evaluation of the contribution of the European Union Structural Funds to the support activities of science, research and innovation in the programming period 2007 -2013 and the impact of these investments, in the first quarter of 2017 the Ministry of Finance in co-operation with the Ministry of Education and Science and the Ministry of Economics signed the agreement with SIA "FIDEA Technopolis" for conducting an impact assessment of these investments. The evaluation was carried out by SIA "FIDEA

[37] The following state aid shall be available for start-up companies:
- an aid programme for fixed payment (amount 2x min SSIMC) with the additional possibility to receive IIT and EIT (up to 100 %) relief;
- an aid programme to attract highly qualified employees (co-fundig of remuneration for atracted employees – 45 %) with the additional possibility to apply EIT (up to 100 %) relief;
- An investment made by a qualified venture capital investors at least EUR 30 thousand in start-up company's equity capital in each year of the submission of aid application is identified as one of the main criteria for granting aid to start-up companies.

Technopolis" in the period ending in December 2017 analysing the impact of support activities for science, research and innovation on the performance indicators regarding certain research institutions (leading Latvian scientific institutions that received support from the European Union structural funds during the programming period 2007 -2013 and also in the 2014 -2020 programming period) and the overall contribution to research and development in relation to Latvia's achievements in increasing the capacity for innovation, as well as identifying the activities that have had the greatest impact on the activities of the supported scientific institutions in relation to the invested funds. According to the conclusions of this evaluation[38], investments in science for the 2007 – 2013 planning period have generally been successful. The authors point out that during the evaluation period a number of common indicators characterizing a number of Latvian science systems have significantly improved - the volume of publications has significantly increased, scientific cooperation with industry has improved, both in terms of volume and quality, and the internationalization of science has improved. At the same time, attention has been drawn to the fact that R&D and human resources continue to be a major challenge. Namely, the current age structure with a higher proportion of young scientists allows to mitigate the impact of staff ageing, but retaining Latvian scientists remains a challenge. The main recommendation of the authors of this evaluation is to improve the system and principles of national public funding.

During the period till July 2017, according to the study commissioned by the Ministry of Finance in co-operation with the Ministry of Education and Science the development of the initial extended assessment of SAM 8.2.1 "To Reduce Fragmentation of Study Programs and to Strengthen Resource Sharing" took place, including the analysis of the current situation regarding doctoral study programmes (also joint ones) and study programmes in non-Latvian EU languages, assessing the experience of other EU countries in the implementation of joint doctoral study programmes, as well as developing proposals for joint doctoral study programmes and study programmes in non-Latvian languages, inter alia, providing an assessment of contributions to the development of existing and planned study programmes of higher education institutions in the implementation of the Latvian Smart Specialization Strategy and the strengthening of the HEI strategic specialization, and formulating recommendations to reduce or eliminate the identified challenges/obstacles. The analysis and recommendations were incorporated into SAM 8.2.1 implementation conditions to ensure progress towards the creation of unified, research-based doctoral studies in terms of quality standards and to prevent fragmentation of study programmes, including reducing the number of study programmes.

In order to evaluate the effectiveness of the Latvian science funding system, Latvia has attracted experts from the Horizon 2020 Policy Support Facility, which assessed the national science and innovation funding system by the end of 2017 and will prepare recommendations for its improvement to ensure the maximum effective investment of the limited investments, which simultaneously is in line with international best practice.

The plan of measures to improve the business environment. Measures to improve the business environment have been implemented since 1999. MoE, by engaging a wide range of sectoral ministries and organizations representing entrepreneurs, prepares and annually updates a plan of measures to improve the business environment, which is then subsequently approved by the government. During the reporting period 63 tasks of the plan of measures to improve the

[38] Available at: http://ej.uz/tpwi , Page 10

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business environment for 2014-2015 were implemented with the aim of "simple and high-quality services in business: more e-services", the implementation of the other 24 tasks are continued according to the new ***plan of measures to improve the business environment*** **approved by the Cabinet of Ministers on March 15, 2017** (key plan priorities: the implementation of the principle "consult first", especially at the start-up stage, simple and high-quality public e-services, introduction of business-environment-friendly infrastructure services, simplification of administrative requirements, especially in tax and accounting, reducing bureaucratic burdens and strengthening legitimate expectations in the regulatory framework).

0% EIT rate for reinvested earnings. On 9 May 2017 at the meeting of the Cabinet of Ministers the draft guidelines "State tax policy guidelines for 2018 - 2021", which envisage as of 1 January 2018 a reform of the EIT system by introducing a 0% EIT reinvested earnings, thus allowing companies to create capital savings by investing in business development.

Promoting smart immigration. On February 2 2017, in the final reading the Saeima supported the draft bill "Amendments to the Immigration Law", which includes, inter alia, several proposals submitted by the MoE with the aim of facilitating entry conditions for highly qualified employees, including employees in professions with a significant labour shortage. The amendments stipulate that starting from September 1 2017, the procedure for obtaining an EU Blue Card[39] will be facilitated, as well as the Cabinet of Ministers approving a list of occupations with a significant labour shortage. Subsequently, the representatives of those professions who will request an EU Blue Card will be subjected to a higher minimum wage criterion - applying the coefficient 1.2 instead of the current coefficient of 1.5 to the average wage for the previous year. In turn, for other employees, the term for vacancies in the vacancies registered by the State Employment Agency until the employer can hire an alien (up to 10 working days) will be shortened. Similarly, the amendments clarify the various grounds for granting a right to employment by specifying the right to engage in commercial activities as a separate type of right which does not entitle temporarily employed persons to full employment rights(up to 14 days in any 180-day period).

Working with the Latvian diaspora abroad. In 2017 LIAA began working on the development of a strategy for engaging the diaspora. The objective of the strategy is to identify and implement and intensify LIAA activities that would promote the involvement of the diaspora in the growth of the national economy of Latvia, focusing on promoting engagement in attracting foreign investment, promoting exports and technology transfers. The objective of the strategy is to identify and describe possible LIAA activities that, for example, ensure participation of diaspora representatives in the in advising the Technology Transfer Programme implemented by LIAA. The deadline for elaboration of the strategy — 1 August 2017.

The implementation of the entrepreneurial discovery principle[40] In order to ensure the entrepreneurial discovery principle within the framework of the RIS3 monitoring process

[39] The EU Blue Card will be available not only to foreigners who have higher education in the professional position or field in which they are employed but also those foreigners who do not have higher education in the professional position or field but have at least five years of professional experience in the professional position specified in the employment contract, or industry.

[40] The EDP is an inclusive and interactive bottom-up process in which participants from different environments (policy, business, academia etc.) produce and discover information about

structural changes were made in MoE and from April 2017 the Sectoral Policies Department has begun work to provide the micro-sectoral analysis, for example, interviews with enterprises to identify the obstacles to development at the product/niche level, including the identification of the most export-capable products and niches with the highest added value, an evaluation of the existing resource base (human resources, infrastructure), an in-depth analysis of producers clarifying the challenges that hamper the development opportunities of enterprises and the development and manufacture of products with a higher added value. For a more detailed description of the MoE and MoES's activities in the implementation of the entrepreneurial discovery principle see Annex 4 "Sectoral Discussion Platform – Implementation of Entrepreneurial Discovery Principle".

potential new activities, identifying potential opportunities that emerge through this interaction, while policy-makers assess outcomes and ways to facilitate the realisation of this potential (http://s3platform.jrc.ec.europa.eu/entrepreneurial-discovery-edp)

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10. PLAN OF MEASURES

Measures identified for ensuring economic growth are divided into six directions – "Improvement of the innovation system", "Strengthening competitiveness", "Promoting exports", "Stimulating Investments", "Improvement of the institutional and business environment", "Developing a knowledge-base and human resource capital". This chapter outlines a plan of measures for the following period by defining, in detail, specific support instruments and policy initiatives. For the contributions of the six directions to promoting knowledge-intensive national economic growth see Figure 58.

According to the preceding chapters, the Ministry of Education and Science has carried out significant work from the end of 2014 till the end of 2017 in order to ensure the development of the RIS3 ecosystem in order to promote the competitiveness of the science and technology industry and its linkage to the needs of society and economic development both through a series of changes in the regulatory framework, as well as in developing the conditions for the implementation of EU structural funds and state budget investments in science. In the subsequent period, it is necessary to continue the process. At the same time evaluating the commitments made by MoES under the current EU Structural Funds programme against the results to be achieved brought forward in the programmes in the context of the RIS3 micro-level indicators, the number of commitments undertaken under measures 1.1.1.1 and 1.1.1.2 regarding the involvement of the private sector in research, there is a risk of not achieving the expected results. To ensure thorough and evidence-based changes in the programme implementation conditions, the MoES is planning to develop a draft informative report "Analysis of the results of the first project application selection round and proposals for substantive and procedural improvements of further selection rounds of the Specific Aid Objective 1.1.1 "To increase the research and innovative capacity of scientific institutions of Latvia and the ability to attract external financing, investing in human resources and infrastructure" of the Operational Programme "Growth and Employment""[41], indicatively – by planning in the next rounds of measures 1.1.1.1. and 1.1.1.2 thematic selection of proposals within the RIS3 areas and priorities and taking additional measures to attract young diaspora scientists from abroad, to attract private co-financing and for enterprises to implement investment programmes. In addition it should be mentioned that, in order to assess the effectiveness of the Latvian science funding system the MoES has attracted experts from the Horizon 2020 Support Facility who will work on the evaluation of the national science and innovation funding system until the end of 2017. This report will include recommendations for the improvement of the funding system, therefore, further improvements in the legislation and other regulatory framework which currently are not yet identifiable would be possible.

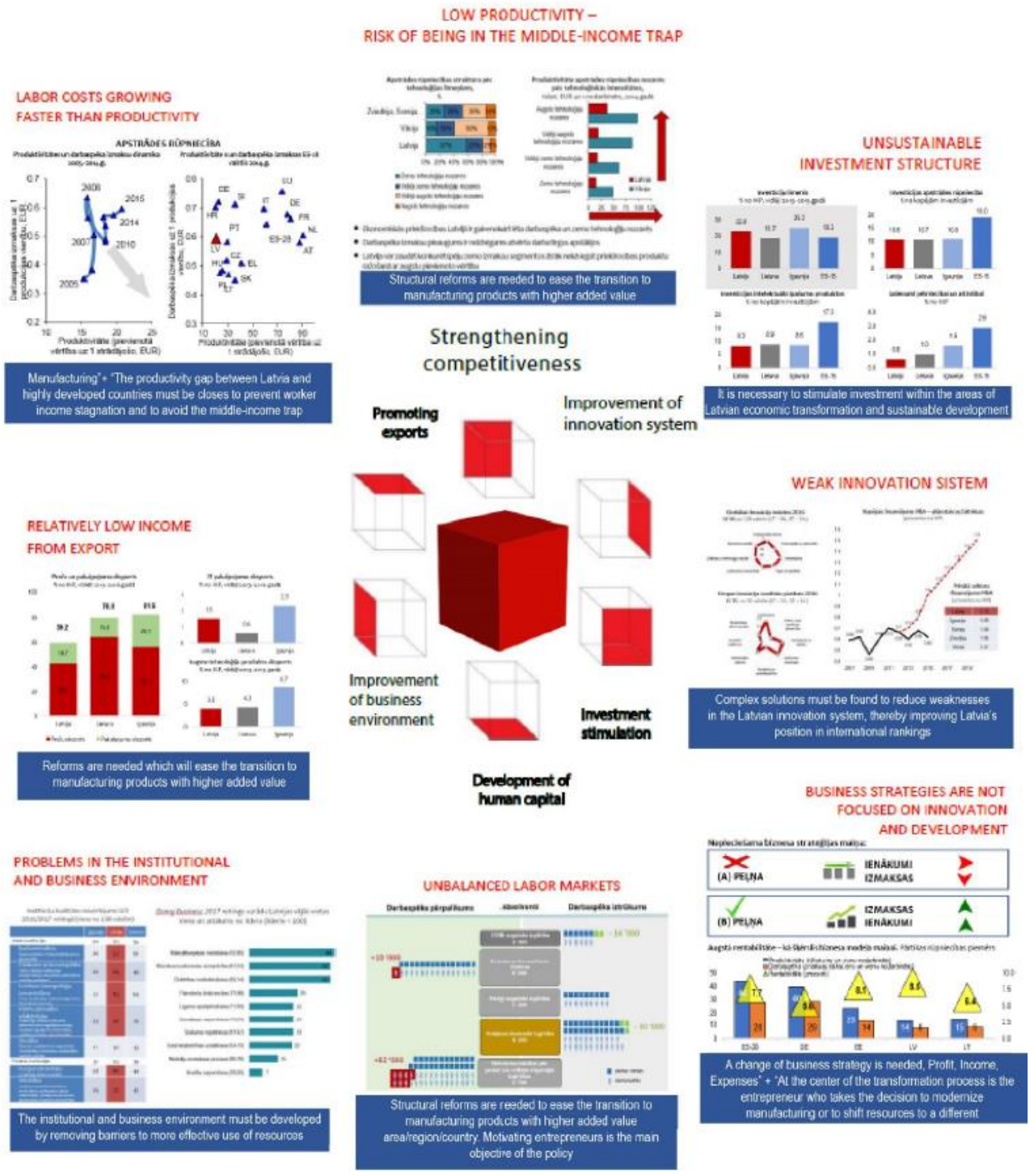
At the same time, the Ministry of Economics has implemented and plans to continue significant activities (support instruments, improvement of the regulatory framework, etc.), which have an impact on the improvement of the RIS3 ecosystem. These measures focus both on attracting private sector investment for R&D and innovation activities, increasing the number of new innovative companies, including setting up a new technology-oriented start-up environment and the availability of tax incentives, export promotion and the attraction of foreign direct investment, as well as measures aimed at developing human resources and raising

[41] The informative report has been prepared in compliance with the task set out in the minutes of the sitting of the Cabinet of Ministers protocol decision No. 60 of 8 November 2016, Paragraph 60, part 4 and MoES intends to submit a draft informative report for consideration to the Cabinet of Ministers in February 2018.

productivity. In addition, integrating demand and efficiency aspects it is essential to provide measures which provide for the public intervention to increase business activity and to create support infrastructure for companies to focus on investments to increase productivity by releasing financial resources for this purpose. In the current situation, the implementation of such measures is lacking in financial coverage and a set of measures needed to implement it. The whole range of these activities is closely interlinked and has an impact on the improvement of RIS3 indicators. At the same time, it should be noted that several qualitative and quantitative indicators are expected to be obtained by 2018 for the mid-term evaluation of innovation support activities from the EU structural fund is expected to obtain a quantitative and qualitative analysis of investments in research, development, innovation and entrepreneurship for the 2014 -2020 programming period, which would provide evidence-based policy planning, reviewing investment directions for the 2014-2020 programming period and offer tailor-made forms of support. In parallel, the Ministry of Economics will provide sectoral analysis of micro-enterprises, thereby strengthening feedback to sectoral companies, identifying appropriate interventions to improve the innovation capacity, productivity and external competitiveness of Latvian enterprises.

According to the informative report "The Smart Specialization Strategy Monitoring System" (protocol No. 47; § 35) reviewed by the Cabinet of Ministers on September 15 2015, the RIS3 monitoring report should be developed every two years, namely, the further reports should be prepared as of 1 June 2019, 2021 and 2023. A monitoring report, which will include information for the implementation of the action plan for the period 2017 -2020, as well as possible corrective actions, will be prepared by MoES in co-operation with the MoE and submitted to the Latvian Research and Innovation Strategic Council (LRISC). The LRISC will evaluate the report and, if necessary, propose strategic changes, providing recommendations to sectoral ministries to improve the implementation of RIS3 programmes.

Figure 58. Lines of action for knowledge-intensive economic growth



PLAN OF MEASURES FOR 2017 – 2020 .

1. Promoting Innovation

Support instruments and policy initiatives	Expected changes	Result indicators	Outcome indicators	Source and amount of funding	Institutions responsible for the execution of the task	Execution deadline (year)
1.1. Support for development of new products and technologies within competence centres	The amount of private sector investments attracted for R&D are grown, as well as new products and technologies are marketed CC members participate in the monitoring of the implementation of the strategies of higher education institutions and scientific institutions, including the preparation of study programmes offer and ensuring with the traineeship places	– Private sector investments in R&D (% of total investments) – The proportion of innovative companies (% of all companies) – Proportion of high and medium-high technology industries in Latvian merchandise export – The number of enterprises involved in the work of the sectoral expert council of higher education institutions. – Number of participations in the monitoring of the implementation of the strategies of higher education institutions and scientific institutions.	– Number of supported competence centres – 8 – Number of supported enterprises which receive grants for the development and marketing of new products and technologies (2023) – 100 – Number of projects to develop new technologies (2023) – up to 129 – The amount of private investments attracted for R&D (2023) – EUR 12.8 million – Labour market disproportions are down	measure 1.2.1.1 "Support for Development of New Products and Technologies within Competence Centres" (EUR 72.3 million)	MoE	2023
1.2. To increase the capacity of LIAA as "technology and innovation agency"	IDAL is established as "One Stop Agency" to support and promote innovation, business and technology transfer	– Income from licences/patents of scientific institutions (EUR) – Business co-funding for R&D projects (EUR); – The number of the companies that have received support for introducing new products and technologies; – Newly established companies created by scientific institutions (spin-off)	LIAA is continuously implementing "technology and innovation agency" support function	Measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (EUR 40.6 million)*	MoE, LIAA	2023
1.3. To initiate audits for research development in scientific institutions	Continuous auditing for research development owned by research organisations is ensured	– Income from licences/patents of scientific institutions (EUR) – The number of the companies that have received support for introducing new products and technologies; – Newly established companies created by scientific institutions (spin-off)	Audits in major Latvia's research organizations - on a regular basis	Measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (EUR 40.6 million)*	MoE, LIAA	2018

1.4. To ensure the process of submission of research developments projects for their commercialisation	The selection of projects for commercialisation of research results are provided regularly	– Income from licences/patents of scientific institutions (EUR) – The number of the companies that have received support for introducing new products and technologies; – Newly established companies created by scientific institutions (spin-off)	The selections of projects for commercialisation of research results (2018) – 4	Measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (EUR 40.6 million)*	MoE, LIAA	2018
1.5. Continue accepting SMEs projects in the form of innovation vouchers for the development of new products and technologies	The number of micro and SMEs enterprises involved in developing new products and technologies in cooperation with external service providers has increased	– Business co-funding for R&D projects (EUR); – The number of the companies that have received support for introducing new products and technologies	Micro and SMEs which receive grants for the development and marketing of new products and technologies (2022) – 320	measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (EUR 40.6 million)*	MoE, LIAA	2022
1.6. Implement measures for the transfer of ownership of a patent or the conclusion of license agreements with prospective investors	Increased number of contracts for the transfer of ownership or licenses, as well as increased research organizations' income from commercialization of research projects.	– Income from licences/patents of scientific institutions (EUR) – Newly established companies created by scientific institutions (spin-off)	Measures for the transfer of ownership of a patent or the conclusion of license agreements with prospective investors are organized on a regular basis	Measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (EUR 40.6 million)*	MoE, LIAA	2023
1.7. To provide support for investments in Experimental Technologies to develop equipments in order to release new products into the market	The number of enterprises which make investments in the development of new technological solutions with the intention to launch new products in the market have increased	– Business co-funding for R&D projects (EUR); – The number of the companies that have received support for introducing new products and technologies; – The enterprise's turnover from the implementation of research results into economic activity or commercialization; – Newly created jobs, including those employing scientists in the public sector/business sector	– Enterprises which receive grants for the launch of new products in the market (2022) - 30. – The amount of private investments attracted for R&D (2022) – EUR 10.59 million	measure 1.2.1.4 "Support for Introduction of New Products In Production" (EUR 60 million)	MoE	2022
1.8. To implement measures motivating the society members to become entrepreneurs and develop innovative solutions	The number of people involved in business and innovation activities has increased in all groups of society (primary and secondary school and vocational school students and teachers, students of higher education institutions,	Increase in the number of innovative enterprises – 40 % of total number of merchants	– Number of persons involved (2022) – 10,000 – Number of supported enterprises which receive non-financial support (2022) – 100	measure 1.2.2.2 "Innovation Motivation Programme" (EUR 5.7 million)	MoE, LIAA	2022

	emerging and existing entrepreneurs, developers of innovative ideas, individual inventors)					
1.9. To continue the work of the MoE commission for the evaluation of R&D projects for the EIT tax rebate in R&D and informing enterprises about R&D investment bonuses	The amount of private sector investments for R&D are grown, as well as new products and technologies are marketed	Private sector expenditures in R&D (% of total investments)	– expenditures in R&D declared by enterprises in 2017 - MEUR 2; 2018 - MEUR 2.5 – Number of projects evaluated by MoE R&D commission in 2017 - 8; 2018 - 10	Within the existing budget	MoE	2018
1.10 Establish a platform that will ensure the co-operation of all parties involved in raising the innovation capacity of Latvia and boosting its innovation rating in the European Innovation Scoreboard	A working group for the improving business environment has been set up, which looks at innovation issues in order to identify appropriate measures to improve the indicators included in the European Innovation Scoreboard	n/a	Meetings of the working group regarding the plan of measures to improve the business environment (innovation block) - 2 times a year Updated innovation measures for the plan of measures to improve the business environment - 1	Within the existing budget	MoE	2018
1.11. To create the external image of Latvia's innovations	Continuous implementation of innovation marketing activities for creating Latvia as a country with innovation potential is ensured	n/a	– Innovative marketing materials are developed – 1-2 per year – Participation in the events organized in Latvia and abroad is provided - 1-2 events per year	Measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (EUR 40.6 million)*	MoE, LIAA	2018
1.12. Provide changes to the guidelines for development of the medium-term strategy for state-owned capital companies, in order to the state-owned capital companies planning R&D activities by developing medium-	Provided changes to the guidelines for development of the medium-term strategy for state-owned capital companies, in order to the state-owned capital companies planning R&D activities by developing medium-term strategies include information on R&D activities and financial forecasts	Private sector investments in R&D (% of total investments)	– The number of state-owned corporations that invest in R&D has increased, as well as private sector investment in R&D has increased - constantly	Within the Cross-Sectoral Coordination Centre budget	CSCC	2018

	term strategies include information on R&D activities and financial forecasts						
1.13.	To continue the implementation of the Practically-oriented Research Programme (through the implementation of projects supported under the first round of selection, monitoring and, in particular, launching new thematic selection procedures for projects in RIS3 areas and priorities (indicatively - for the third round of project applications)	Amount of knowledge and technology and human resource capital in the areas and priorities of RIS3 has grown; Amount of private sector investments in R&D projects attracted by scientific institutions has grown; The number of private enterprise projects implemented by private companies or in the implementation of which private companies take part has grown.	- the number of R&D projects and the amount of research funding in RIS3 areas and priorities - the number of master's programme students, doctoral students employed in projects in RIS3 areas and priorities - business co-funding for R&D projects (EUR) - the number of enterprises implementing new product and technology development projects - newly created jobs, including those employing scientists in the public sector	- business co-funding for R&D projects (2023) - MEUR 9.62 - the number of enterprises cooperating with research institutions (2023) - 80 - number of young researchers in the supported entities (FTE) (2023) - 306[42] - Scientific articles related to the thematic areas and priorities of RIS3 and published in journals indexed in the international databases (2023) - 192 - number of new products and technologies related to RIS3 thematic areas and priorities (2023) - 114	measure 1.1.1.1 "Practically-oriented Research" (86.14 MEUR)	MoES, CFCA	2023
	1.13.a To continue the work of the CFCA project selection commission by improving the project selection procedures to ensure the selection of outstanding research applications that are relevant to RIS3	Funding is provided for those research projects that have the greatest potential to provide the knowledge and technology required to achieve RIS3 objectives and to develop human resource capital in RIS3 areas	The average assessment of the quality and relevance of the projects for RIS3 has increased	- Scientific articles related to the thematic areas and priorities of RIS3 and published in journals indexed in the international databases - the number of master's programme students, doctoral students involved in R&D projects - income from licences/patents of scientific institutions - business co-funding for R&D projects (EUR) - the number of the companies that have received support for	Within MoES budget, measure 1.1.1.1 "Practically-oriented Research" (86.14 MEUR)	Central Finance and Contracting Agency (CFCA), MoES	2023

[42] The value of the output indicator is provided within the Operational Programme "Growth and Employment" At the same time, MoES has applied for amendments No. 3 to the operational programme "Growth and Employment", asking to change the structure of the mentioned output indicator according to the actual situation proposing to reduce the value of the number of young researchers (new R&D jobs)

priorities with the greatest potential for achieving RIS3 objectives.			introducing new products and technologies - newly created jobs, including those employing scientists in the public sector			
1.14. To continue the implementation of the post-doctoral research programmes (through the implementation of projects supported under the first round of selection, monitoring and, in particular, launching new thematic selection procedures for projects in RIS3 areas and priorities (indicatively - for the third round of project applications)	The number of young RIS3 researchers who are involved in researches within RIS3 areas and priorities has increased; The number of young researchers attracting and re-emigrating from abroad has increased; Amount of private sector investments in R&D projects attracted by scientific institutions has grown; The number of private enterprise projects implemented by private companies or in the implementation of which private companies take part has grown; The attitude and understanding of the role of research in the economy has improved.	- the number of post-doctoral R&D projects and the amount of research funding in RIS3 areas and priorities - the number of young researchers attracting and re-emigrating from abroad - business co-funding for R&D projects (EUR) - the number of enterprises implementing new product and technology development projects - number of communication measures	- number of young researchers in the supported entities (FTE) (2023) - 394[43] - business co-funding for R&D projects (2023) - MEUR 3.2 - the number of enterprises cooperating with research institutions (2023) - 100 - Scientific articles related to the thematic areas and priorities of RIS3 and published in journals indexed in the international databases (2023) - 1280 - the number of new products and technologies for the development of which aid is provided (2023) - 416	Measure 1.1.1.2 "Post-doctoral Research Aid" (MEUR 64.03)*	MoES, SEDA	2023

[43] The current value of output indicator within the Operational Programme "Growth and Employment" It should be noticed that MoES has applied for amendments No. 3 to the operational asking to change the structure of the mentioned output indicator according to the actual situation proposing to reduce the value of the number of young researchers (new R&D jobs).

1.14.a To continue the work of the SEDA post-doctoral project selection commission by improving the project selection procedures to ensure the selection of outstanding research applications that are relevant to RIS3 priorities with the greatest potential for achieving RIS3 objectives.	Funding is provided for those RIS3 post-doctoral research projects that have the greatest potential to provide the knowledge and technology required to achieve RIS3 objectives and to develop human resource capital in RIS3 areas	The average assessment of the quality and relevance of the projects for RIS3 has increased	The increase of human resource capital in research organizations and sectoral enterprises related to RIS3 thematic areas and priorities	Measure 1.1.1.2 "Post-doctoral Research Aid" (MEUR 64.03) within MoES budget* measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation" (the first selection round, SEDA project)	SEDA, MoES	2023
1.15. To prepare thematic calls for project selection within RS3 areas and priorities	Thematic calls within five RIS3 areas and priorities with specific tasks set out for the development of the areas or the implementation of priorities have been prepared;	The number of projects and the amount of research funding within RIS3 areas and priorities; The number of young researchers attracting and re-emigrating from abroad; The number of young scientists employed in sectoral enterprises	see 1.13 and 1.14	Within MoES budget	MoES, SEDA	2018
1.16. To start participation of Latvia in international R&D cooperation initiative programmes (JPI, ERA-NET COFUND)	Together with other EU Member States, new RIS3 objectives and priorities have been prepared according to project calls	The number of JPI programmes	The amount of funding attracted from the programme "Horizon 2020" has increased (LV part)	measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation", 16.64 MEUR (the first selection round)*	MoES, SEDA	2023
1.17. To start funding the studies that have received the evaluation above the quality threshold in the programme "Horizon 2020", but due to the limited available funding have not been approved for	The number of project applications evaluated above the quality threshold in the programme "Horizon 2020" and supported by ERDF	The number of project applications evaluated above the quality threshold in the programme "Horizon 2020"	The amount of funding attracted from the programme "Horizon 2020" has increased (LV part)	measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation", MEUR 9.3 (the third selection round	MoES, CFCA, SEDA	2023

implementation.						
1.18. To start consultations on the development of the more competitive project applications within the programme "Horizon 2020" and the 9th Framework Programme	The number of consultations and their quality and compliance with the needs of the scientific institutions has increased	Increase in the number and volume of submitted projects The increase in the success rate for the membership in the EU Framework programmes (the number of project applications evaluated above the quality threshold in the programme "Horizon 2020" and the 9th Framework Programme – 543)	The amount of funding attracted from the programme "Horizon 2020" has increased (LV part)	measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation", 5.83 MEUR (the first selection round, SEDA project)*	MoES, SEDA	2023
1.19. To launch Latvian science communication campaign	A scientific communication campaign is being implemented involving the researchers and entrepreneurs of the Latvian diaspora	Growth and volume of cooperation networks Increase in the amount of international cooperation	The total amount of R&D implemented by scientific institutions has increased The amount of funding attracted from the programme "Horizon 2020" has increased (LV part)	measure 1.1.1.5 "Support for International Cooperation Projects in Research and Innovation", 10.81 MEUR (the first selection round, MoES project)*	MoES, LIAA	2023
1.20. To continue to implement R&D infrastructure development projects and strengthen the institutional capacity of scientific institutions	Monitoring of the implementation of development strategies of leading Latvian scientific institutions is under-way	The number of researchers (leading researchers, researchers, scientific assistants and scientific technical staff) who are working in improved infrastructure objects – in 2020 2163 Increase in the total volume of R&D projects implemented by scientific institutions; Increase in the amount of the orders in R&D made by sectoral enterprises Increase in the use of open R&D infrastructure; Increase in the amount of R&D projects financed from international sources; Increase in the amount of international cooperation	The total amount of R&D implemented by scientific institutions has increased The amount of funding attracted from the programme "Horizon 2020" has increased (LV part)	measure 1.1.1.4 "Development of R&D infrastructure in the Smart specialization areas and sustainment of the institutional capacity of scientific institutions", MEUR 120.25	MoES	2023

1.21. To launch a student innovation grants programme for the practical solutions of industry and society issues and the involvement of sectoral companies and patrons in the development of innovation in human resource capital	Foundations of innovation in Latvia have been set up and programmes co-financed by sector companies and patrons have been launched, aimed at graduates with innovation competence and entrepreneurship. The contribution of companies and patrons to higher education innovation funds has increased	Increase in corporate and student deposits in higher education innovation funds - in 2020: - business co-funding for R&D projects (2023) - MEUR 6.0 - the number of enterprises cooperating with research institutions (2023) - 270 - the increase in the number of bachelors, master's programme students, doctoral students involved in innovation projects (including candidates for a scientific degree) - the increase in the number of newly established companies created by scientific institutions (spin-off)	The number of innovative enterprises and employment in innovative enterprises has increased	Measure 1.1.1.3 "Innovation Grants to Students", MEUR 38.0	MoES	2023
1.22. To include RIS3 topics in the new priority directions for science in the implementation of FLP projects	New priority scientific directions defined according to the urgent and important challenges and common challenges facing by the Latvian society and economy, including in line with RIS3 objectives and the development of industry 4.0.	Priority areas of science include topics related to RIS3 objectives, priorities and areas	- Scientific articles in the area of 6 OECD knowledge fields related to the thematic areas and priorities of RIS3 and published in journals indexed in the international databases	MoES within the existing budget	MoES	2018
1.23. To create public procurement for science and develop new rules for state research programmes and new State Research programmes, including the state research programme funded by MoE in the field of energy and programmes funded by MoES in Latvian and in Letonika.	New sectoral ministries SRPs have been created, which are sectoral R&D orders in RIS3 areas and priorities, including energy, biomedicine and pharmacy, bioeconomy and security technologies	The number of programmes and the amount of research funding within RIS3 areas and priorities; - the number of young researchers attracting and re-emigrating from abroad - funding of sectoral ministries and state-owned corporations for R&D projects - the number of state-owned corporations implementing new product and technology development projects - number of communication measures	Knowledge and technologies necessary for the development of the sectors; Scientific articles related to the important sectoral development issues and published in journals indexed in the international databases Research institutes, higher education institutions and students involved in research and technological development of the sectors	MoES within 2018–2020 SRP in Latvian and in Letonika annually EUR 4.1 million MoE within 2018-2020 SRP energy annually EUR 2 million.	MoES, MoE etc. sectoral ministries, LCS, Administration of Studies and Research (ASR)	At least 3 new SRP in 2018 and 3 — in 2019

1.24. To create a conceptually new, excellent FLP programme that provides the knowledge base for the development of the economy, including the development of new rules for the implementation of FLP projects.	Improved FLP evaluation and funding arrangements by allocating funding for projects across all OECD disciplines of science according to priority scientific disciplines, determining the scientific quality of the main project evaluation criteria	- the number of FLP projects and the amount of research funding in 5 RIS3 areas and priorities - number of communication measures	- growth in human resources in R&D in all OECD disciplines of science, - knowledge base in all OECD disciplines of science.	MoES within the existing budget	MoES	2018
1.25. To develop guidelines for the practical implementation of innovation partnership procedures, and integrate innovation procurement requirements into all relevant RIS3 implementation programmes	An innovation partnership procedure has been applied within RIS3 programmes and the request for innovation is increasing	Within the Innovation Partnership procedure the number of procurement application cases	The amount of innovative enterprises and orders for scientific institutions	Within the existing budget	MoF, MoE	2020

2. Strengthening Competitiveness

Support instruments and policy initiatives	Expected changes	Performance indicators	Output/result indicators	Source and amount of funding	Institutions responsible for the execution of the task	Execution deadline (year)
2.1. To promote the emergence of fast-growing companies and the development of newly created companies	Improved ecosystem of Latvian newly created companies in five priority directions: – Visibility of the ecosystem of newly created companies in Latvia – Effective management of newly created companies'	– The number of newly created companies in Latvia – The amount of attracted investments for newly created companies	in 2020: – Newly created companies that have received support in the state aid programme - 30; – The amount of attracted investments for newly created companies – EUR 800 million ; – The number of newly created companies: 360 (on average 60	Within MoE budget; Measure 1.2.1.2 "Support for Improvement of Technology Transfer System" (40.6 million EUR)*; Within ALTUM budget	MoE, LIAA, ALTUM	2020

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	environment – A modern legal framework for the development of newly created companies – Attracting investments and access to finance for newly created companies – The team development and the attraction of talents to newly created companies		newly created companies per year)			
2.2. To support the creation and development of new viable and competitive businesses across Latvian regions;	– In 14 regional business incubators and 1 creative incubator in Riga have been provided for business-related services, training, mentoring by allocating grants, creating co-working spaces, organizing other events – promoting entrepreneurship and competitiveness in the regions of Latvia	The availability of business incubation services in the regions (MoE, LIAA) is provided	31 December 2023: – For 200 SMEs support (grant) is provided; – 148 newly created SMEs that receive support – 40 creative industries' SMEs that receive support – 180 pre-incubation aid recipients – 200 increase in the employment in terms of full-time equivalents in supported SMEs	Measure 3.1.1.6 "Regional business incubators and Creative Industries Incubator" (EUR 32.8 million)*	MoE, LIAA	2023
2.3. To ensure access to funding for enterprises for business start-ups and development, including RIS3 priority sectors	The access to financial instrument programmes and the achievement of the planned outcomes by 2023 have been provided	– Business co-funding for R&D projects (EUR); – The number of the companies that have received support for introducing new products and technologies; – Number of supported newly established companies	31 December 2023: – 790 enterprises which received financial support other than grants – number of supported newly established enterprises – 160 – private co-funding raised - EUR 12,750,000 – employment growth in supported enterprises - 160 full-time equivalents	For implementation of measures SAO 3.1.1 "Facilitate formation and development of small and medium-sized enterprises in particular in manufacturing and RIS3 priority industries" and SAO 3.1.2 "To increase number of high growth enterprises" (EUR 60 million)*	MoE, ALTUM	2023

3. Attracting investments

Support instruments and policy initiatives	Expected changes	Performance indicators	Output/result indicators	Source and amount of funding	Institutions responsible for the execution of the task	Execution deadline (year)
3.1. To promote innovation-intensive investments by amending the Guidelines for Promoting Exports of Latvian Goods and Services and Attracting Foreign Investments for 2013-2019, changing the focus from attracting labour-intensive investments to innovation-intensive investments	Investments in innovative and technology-intensive investments have been increased	n/a	– "Fortune 500" companies' investments attracted (2019) – 3	Within the existing budget	MoE	2019
3.2. To implement proactive activity for attracting investments	A proactive approach to attract investments was provided – Attracting "Fortune 500" companies' investments – In priority countries (markets) potential investment projects were identified (proposals for high-level officials' visits were prepared)	n/a	– "Fortune 500" companies' investments attracted (2019) – 3 – In priority countries (markets) potential investment projects were identified (proposals for high-level officials' visits were prepared) (2019) – 2-3	Within the existing budget	MoE, LIAA	2019
3.3. To encourage future investments by existing foreign investors in innovations and technologies	Post-service was introduced by providing assistance to foreign investors working in Latvia to identify areas in which to provide new investments	n/a	– 30 existing foreign investors have be approached	Within the existing budget	MoE	2018
3.4. Implement measures for staff training in compliance with the needs of investors	Qualifications and skills of the labour force enhancement training is provided in	Employees trained	Training is provided for 7 foreign investors (2023.)	measure 1.2.2.3 "Support for ICT and non-technological	MoE, LIAA	2023

	compliance with the needs of investors			training, as well as for training to facilitate the attraction of investors" (EUR 2.9 million)		

4. Promoting exports

Support instruments and policy initiatives	Expected changes	Performance indicators	Output/result indicators	Source and amount of funding	Institutions responsible for the execution of the task	Execution deadline (year)
4.1. To implement direct export support services for Latvian enterprises	To provided export services for enterprises	– Number of supported enterprises; – Number of implemented support measures	– 30 trade missions per year were organized, in which participate – 200 companies – Individual business visits of Latvian companies were organized per year – 80 – The average number of supported enterprises for participation in exhibitions – 85 enterprises/38 exhibitions; – The average number of stands set up for international exhibitions – 16	Measure 3.2.1.2 "Promotion of International Competitiveness" (EUR 60.9 million)	LIAA	2018
4.2. To ensure the availability of export credit guarantees	The availability of export credit guarantees was ensured	n/a	Export credit guarantees issued – 200	ALTUM support measures for issuing short-term export-credit guarantees and issuing medium-term and long-term export-credit guarantees (EUR 20 million)	MoE, ALTUM	2023
4.3. To implement cross-sectoral cooperation activities bringing together companies from different industries with a view to developing	A continuous process of promoting cross-sectoral cooperation is provided	The development of a new business model	Intersectoral cooperation projects - 4	Within the existing budget	MoE	2018

new products (for example, ICT and other industries (Industry 4.0))						
4.4. To provide support for cluster development and promote companies' specialization and engagement in global value chains	A sustainable cluster development platform has been created to facilitate exports, as well as innovation and productivity. Cluster Programme members participate in the monitoring of the implementation of the strategies of higher education institutions and scientific institutions, including the preparation of study programmes offer and ensuring with the traineeship places	– Number of supported enterprises; – Number of grants received; – The number of enterprises involved in the work of the sectoral expert council of higher education institutions. – Number of participations in the monitoring of the implementation of the strategies of higher education institutions and scientific institutions.	- 14 cluster 's creation or development projects were supported, the implementation of which involves at least 420 enterprises of which at least 120 ── received support (grant). - labour market disproportions are down	measure 3.2.1.1 "Cluster Programme" (EUR 6.2 million)	MoE	2023

5. Improving the Business Environment

Support instruments and policy initiatives	Expected changes	Performance indicators	Output/result indicators	Source and amount of funding	Institutions responsible for the execution of the task	Execution deadline (year)
5.1. Updating the plan of measures to improve the business environment	Reduced administrative burden, simplified procedures, the duplication of information has been avoided and facilitated the development of e-services in the services provided by the state and municipalities. Addition of the innovation section.	– Position "Doing Business"; – Position "Global Competitiveness Index" – Position "European Innovation Scoreboard"	Every year the updated plan of measures to improve the business environment has been submitted	Within the existing budget	MoE, MoF, MoJ, MoW, MoT, MoEPRD, MoH, MoA	2018
5.2. the implementation of the model of 0% EIT rate for reinvested earnings in Latvia	A more favourable tax system for the development of business was introduced: – In the following years the amount of credits has increased; – The capitalization of	n/a	– Total resident loan portfolio plus 5 percentage points; – increasing share capital (+ EUR 574 million in 2019) – reduced shadow economy (-1 %)	Within the existing budget	MoF, MoE	2018

	Latvian enterprises has improved; – The shadow economy has decreased.					
5.3. Prevention of overlapping information in tax returns and other reports - synchronization of the data contained therein	Reduced time for preparation and submission of reports to the SRS and CSB	A re-evaluation of the identified reports was carried out and the introduction of the most effective solutions was decided , which eliminates the requirements of bureaucratic burden for entrepreneurs.	Taking into account the identified issues amendments to Cabinet Regulations were submitted in accordance with the established procedure, which cancel the request for overlapping information.	Within the existing budget	MoE, CSB, MoF, SRS, MoEPRD	2018
5.4. Implementation of SRS EDS development measures	Reduced time to submit reports to the SRS	Improved SRS e-service functionality	Improved 4 EDS services	Within the existing budget	MoF, SRS	2018
5.5. Motivating of honest taxpayers	Proposals for the improvement of the In-depth Cooperation Programme have been developed, thus improving the cooperation between the taxpayer and the tax administration, while reducing the administrative burden of public administration	Proposals for improvement of the In-depth Cooperation Programme have been developed	The conceptual report on motivating of honest taxpayers has been submitted to the Cabinet of Ministers	Within the existing budget	MoE, MoF, SRS	2018

6. Developing Knowledge-base and Human Capital

Support instruments and policy initiatives	Expected changes	Result indicators	Outcome indicators	Source and amount of funding	Institutions responsible for the execution of the task	Execution deadline (year)
6.1. Analysis of labour force demand and supply trends or labour market disproportions	Access to labour market analysis on labour force demand and supply trends, including proposals for necessary actions are provided	**n/a**	An informative report on labour market medium and long-term forecasts is prepared - 1 report in two years	Within the existing budget	MoE	2018, 2020, 2022
6.2. To ensure the work of the Employment Council	The coordinated work of the responsible sectoral ministries has been implemented, which provides a coordinated	**n/a**	The Employment Councils are organized	Within the existing budget	MoE, MoES, MoW	2018

	response to the labour market, education quality issues and demographic trends					
6.3. To implement measures for the training of employees, which contributes to increasing the productivity of enterprises and developing new products and technologies	Availability of skilled labour is increased, knowledge transfer and the development and introduction of new or improved products and technologies in production is promoted	Employees trained	The number of supported entrepreneurs – 1300 (2023)	Activity 1.2.2.1. "Support for employee training" (EUR 24.9 million)	MoE	2023
6.4. To implement measures to increase the IT and digital skills of employees to increase the productivity of enterprises	Increased availability of skilled workforce able to use IT and digital tools and solutions to increase company productivity	Employees trained	Number of supported enterprises – 560 Number of persons trained – 6200	measure 1.2.2.3 "Support for ICT and non-technological training, as well as for training to facilitate the attraction of investors" (EUR 2 million)	MoE	2023
6.5. To implement measures for training employees in the field of non-technological innovations (marketing, lean process management, business models, etc.)	Improved performance of non-technology innovations in enterprises, including the development of new business models in order to increase the productivity of enterprises	Employees trained	The number of supported entrepreneurs – 740 (2023) The number of persons trained – 11,080 (2023)	measure 1.2.2.3 "Support for ICT and non-technological training, as well as for training to facilitate the attraction of investors" (EUR 2 million)	MoE	2023
6.6. Prepare and submit for approval to the Cabinet of Ministers draft regulation "List of Specialities (Professions) where Significant Shortage	A list of professions which are subject to preferences by the issuance of temporary residence permits with the right to employment is prepared in accordance with	Time for the drawing up of residence permits with the right to employment has been shortened for foreigners in the professions where LV is experiencing significant labour shortages.	Time for the drawing up of residence permits with the right to employment has been eased (accelerated) for foreigners and their employers,thus accelerating the integration of foreigners in the work process of enterprises and reducing the shortage	Within the existing budget	MoE	2018

of Labour Force is to beExpected and Where Foreigners May be Invited for Work in the Republic of Latvia"	Section 9, Paragraph seven of the Immigration Law.		of highly qualified specialists in professions where significant labour shortages are observed or are projected.			
6.7. Prepare and submit for approval to the Cabinet of Ministers draft regulations on the procedures by which professional experience can be recognized as valid for the receipt of an EU Blue Card in the respective professional position or field.	The number of issued EU Blue Cards has increased, thereby reducing the shortage of highly qualified specialists	n/a	The number of issued EU Blue Cards LV	Within the existing budget	MoE, MoI	2018
6.8. Provide STEM, including the modernization of the infrastructure of medical and creative industries study programmes in higher education institutions	The development of a territorially focused study and research infrastructure for strengthening the strategic specialization of higher education institutions has been promoted.	Number of upgraded programmes in RIS3 areas;	- service performance (number of persons) (2023): in higher education institutions - 2069, in colleges - 1023	The specific support objective 8.1.1 "To increase the number of upgraded STEM study programmes, including medicine and creative industries", MEUR 44.64	MoES	2022
6.9. To start the implementation of investments for the development of study programmes (reducing their total number) in study programs in non-Latvian EU languages and in joint doctoral study programmes	Reduced fragmentation of study programs and strengthened resource sharing	The number of new qualitative study programmes aimed at achieving RIS3 objectives, implementing priorities, or creating human resource capital in RIS3 areas.	- the number of study programmes closed (2023) - 220; - the number of joint doctoral study programmes (2023) - 11; - the number of newly developed study programmes in non-Latvian EU languages (2023) – 62 - the number of pedagogic study programmes (2023) - 22;	The specific support objective 8.2.1 "To Reduce Fragmentation of Study Programmes and to Strengthen Resource Sharing", MEUR 10.82	MoES	2023

6.10. To start investments for the development of academic staff (including attracting foreign lecturers for the work in Latvian HEI and support for the improvement of the competences and skills of the academic staff)	Strengthened academic staff of higher education institutions in strategic specialisation areas	Number of academic staff development programmes of higher education institutions	- number of foreign lecturers who have received support for work in a higher education institution in Latvia (2023) - 300 - number of doctoral students who have received support for work in HEI (2023) - 420 - the number of academic staff who have received support for the improvement of professional competence (2023) - 1140	The specific support objective 8.2.2 "To strengthen academic staff of higher education institutions in strategic specialisation areas", MEUR 34.34	MoES	2023
6.11. To start investments to strengthen the governance of higher education institutions	Better governance and performance in higher education institutions are ensured	Higher education institutions have established and strengthened the processes that ensure the implementation of RIS3 tasks (knowledge, human resource capital, enterprise innovation capacity and resource centres) set to higher education institutions	- higher education institutions, which have introduced development strategies and result management (number) (2023) - 20	The specific support objective 8.2.3 "To Ensure Better Governance in Higher Education Institutions", MEUR 20	MoES	2023
6.12. To continue developing the HE external quality assurance system (EQAR agency)	Improvement of the quality of the accreditation agency's performance and capacity building in order to ensure its compliance with international standards and the ability to perform accreditation and licensing in a qualitative manner	The number of evaluated HE programmes; The number of consultations provided to improve the quality of HE: HE quality monitoring system has been created and running	- the number of institutions meeting the requirements brought forward by the Quality Assurance Register for Higher Education (2023) - 1 - HE programmes quality compliance with RIS3 objectives	The specific support objective 8.2.4 "Support for Fulfilment of Requirements to the Agency Set by ERAQ", MEUR 1.5	MoES, AIC	2023
6.13. To continue the implementation of the practically-oriented research and post-doctoral support (through the implementation of	Enhanced the number of scientific personnel in research and development (in the public, private sector)	- the number of young researchers funded for implementing post-doctoral research - newly created jobs, including those employing scientists in the public sector	- number of young researchers in the supported entities (FTE) (2023) - 700[44]	measure 1.1.1.1 "Practically-oriented Research", 86.14 MEUR* and measure 1.1.1.2	MoES	2023

[44] The value of output indicator is provided within the Operational Programme "Growth and Employment" At the same time, MoES has applied for amendments to the operational programme "Growth and Employment", asking to change the structure of the mentioned output indicator according to the actual situation proposing to reduce the value of the number of young researchers (new R&D jobs)

projects supported under the first selection round and announcing the next round of project selection)				"Post-doctoral Research Aid", 64.03 MEUR*		
6.14. To develop new regulations for the implementation of SRP and FLP projects, which include incentives for the human resource capital formation with the competences required for achieving RIS3 objectives and priorities and knowledge needed for the fields. **(MoES)**	The new procedure for evaluating and financing SRP and FARP by setting the requirement to provide jobs for students in the implementation of the project	newly created jobs employing scientists in the public sector, including those ones employing undergraduate, postgraduate and doctoral students.		MoES within the existing budget	MoES	2018

***** Only part of indicated funding covers the implementation of the measure

Prime Minister Māris Kučinskis

Minister of Education and Science Kārlis Šadurskis

Applicant:
Minister of Education and Science Kārlis Šadurskis

Endorsement:
Deputy State Secretary Agrita Kiopa
of the Ministry of Education and Science –

Director of the Higher Education,
Science and Innovation Department

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35753
I. Griķe, phone 67047861, ieva.grike@izm.gov.lv
J. Paiders, phone: 67047963, janis.paiders@izm.gov.lv
J. Siliņš, phone 67013005, janis.silins@em.gov.lv