Ministry of
Education and Science
Republic of Latvia

RIS3 in the context of Europe2020: The Role of Universities

March 25, 2015

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Outline

1) Latvian RIS3 – a strategy for transformation of economy towards production of higher added value products and services
2) Role of Universities in implementing RIS3
3) Implementation and monitoring of RIS3

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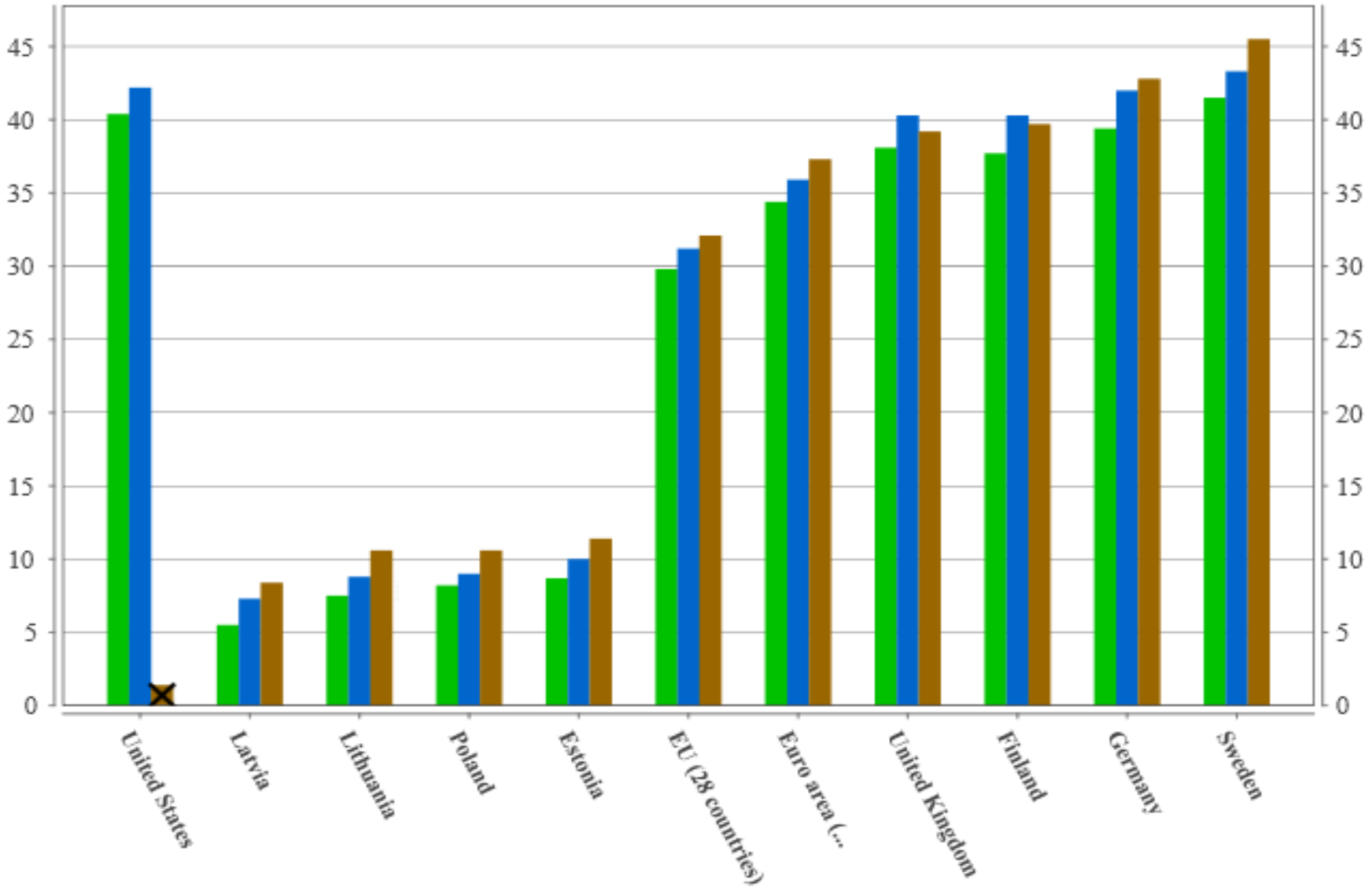
RIS3 challenge: productivity

RIS3 aims to correct a policy failure to boost growth in all regions of EU by creating future domestic capabilities and comparative advantage, especially in sectors where small incremental changes can leverage substantial return

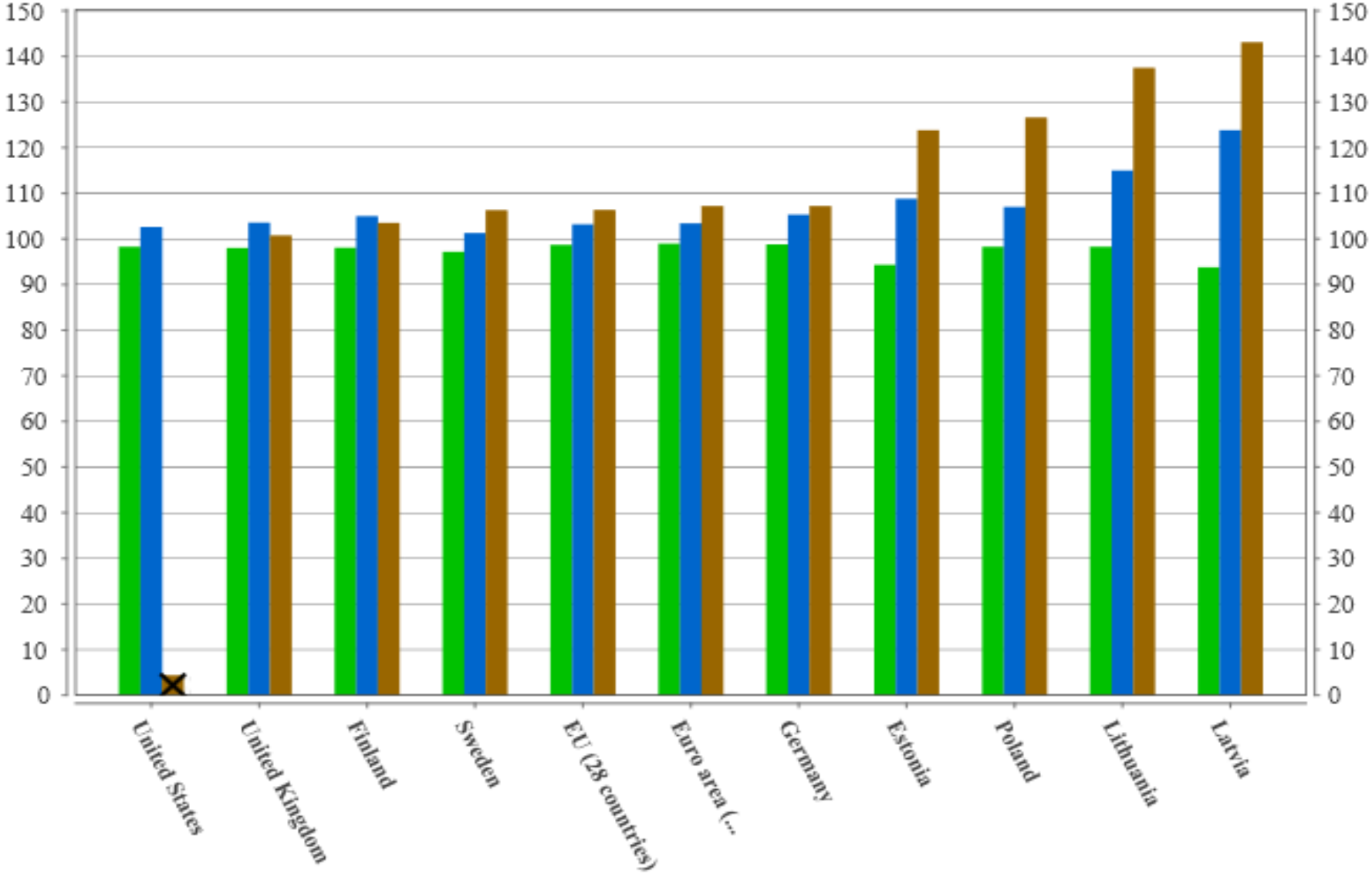
In a nutshell - How to enable significant productivity improvement?

Labour productivity
Euro per hour worked(ESA95), 2004-2008-2013



Labour productivity

Euro per hour worked, index 2005 = 100, (ESA95), 2004-2008-2013



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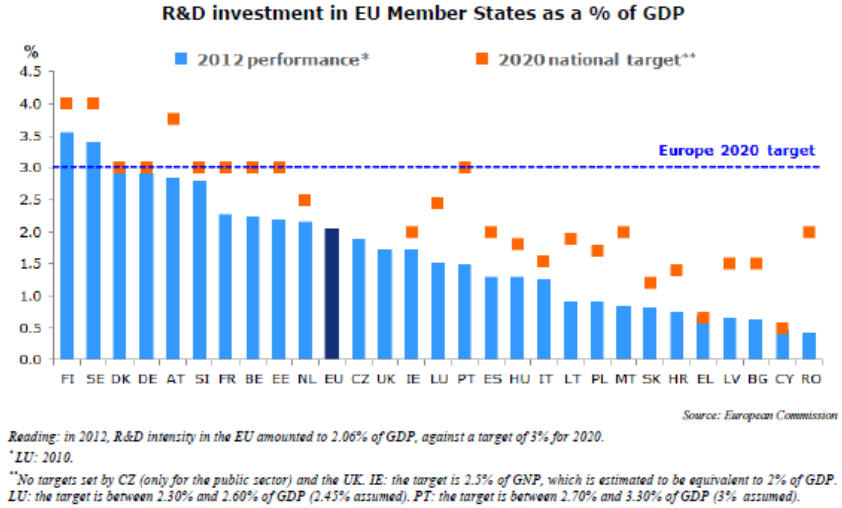
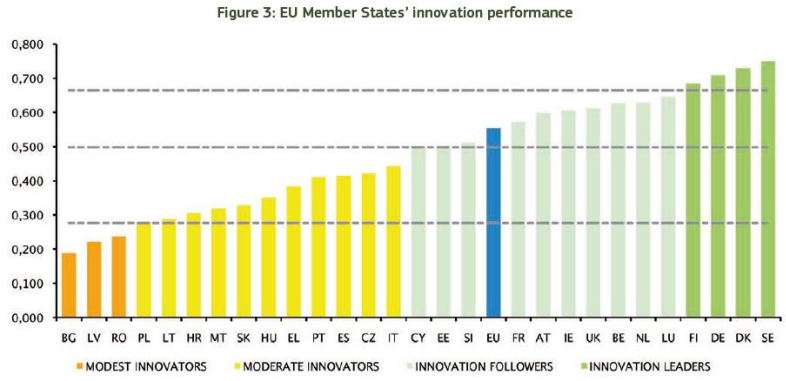
RIS3 challenge: Target of 3% R&D investment

Source: IUS 2014



Reading: in 2012, R&D intensity in the EU amounted to 2.06% of GDP, against a target of 3% for 2020.
**LU: 2010.*
***No targets set by CZ (only for the public sector) and the UK. IE: the target is 2.5% of GNP, which is estimated to be equivalent to 2% of GDP. LU: the target is between 2.30% and 2.60% of GDP (2.45% assumed). PT: the target is between 2.70% and 3.30% of GDP (3% assumed).*



Note: Average performance is measured using a composite indicator building on data for 25 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1. Average performance reflects performance in 2011/2012 due to a lag in data availability.

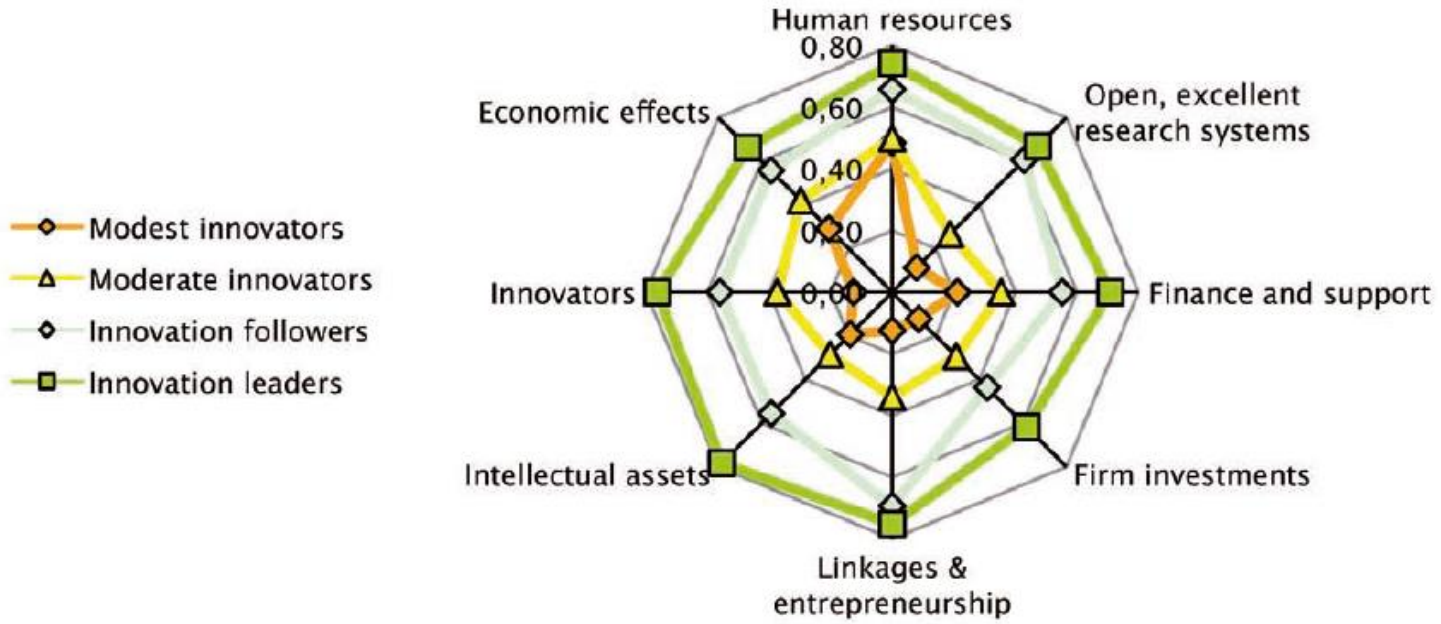
The Core (Innovations Leaders):
Fewer in numbers
Higher prosperity
Combination of scale and diversity
Higher international connectedness
Agglomeration advantages: learning, sharing and matching of agents, actors and activities, and opportunities for the pooling of financial risk across sectors and firm types

The Non-core (Modest, Moderate and Followers):
Larger in numbers
Lower prosperity
Higher industry specialization
Higher local embeddedness
Small market potential

Higher levels of entrepreneurship and innovation observed in core reg./ Adaptation and application of ICTs across of wide range of industries have exacerbated the differences between core and none-core regions (McCann and Ortega-Argilés, 2011)

RIS3 challenge: priorities for intervention

Figure 4: Country groups: innovation performance per dimension



Source: IUS 2014

Relative strenght:
Human resources

Priority interventions:
- Linkages & Entrepreneurship
- Firm investments
- Innovators
- Open, excellent research system

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RIS3 for Latvia: "Hybrid Strategy"

Transformation of economy towards higher added value, productivity and more effective usage of resources

Objective: to increase innovation capacity and to create innovation system that promotes growth of economy

Directions:

1. **Structural changes of production and export in the traditional sectors of the economy;**
2. **Growth in sectors where there is or is likely to create products and services with high added value;**
3. **Branches with significant horizontal impact and contribution to economic transformation.**

Priorities:

1. **High added value products**
2. **Productive Innovation System**
3. **Energy Efficiency**
4. **Modern ICT**
5. **Modern education**
6. **The knowledge base** *(Bio-economy; Biomedicine, medical technologies, biopharmacy and biotechnology; Smart materials, technology and engineering, Smart energy; ICT)*
7. **Polycentric development**

Specialization areas:

1. **Knowledge-based bio-economics**
2. **Bio-medicine, medical technologies, bio-pharmacy and biotechnologies;**
3. **Advanced materials, technologies and engineering systems**
4. **Smart energy**
5. **Information and communication technologies.**

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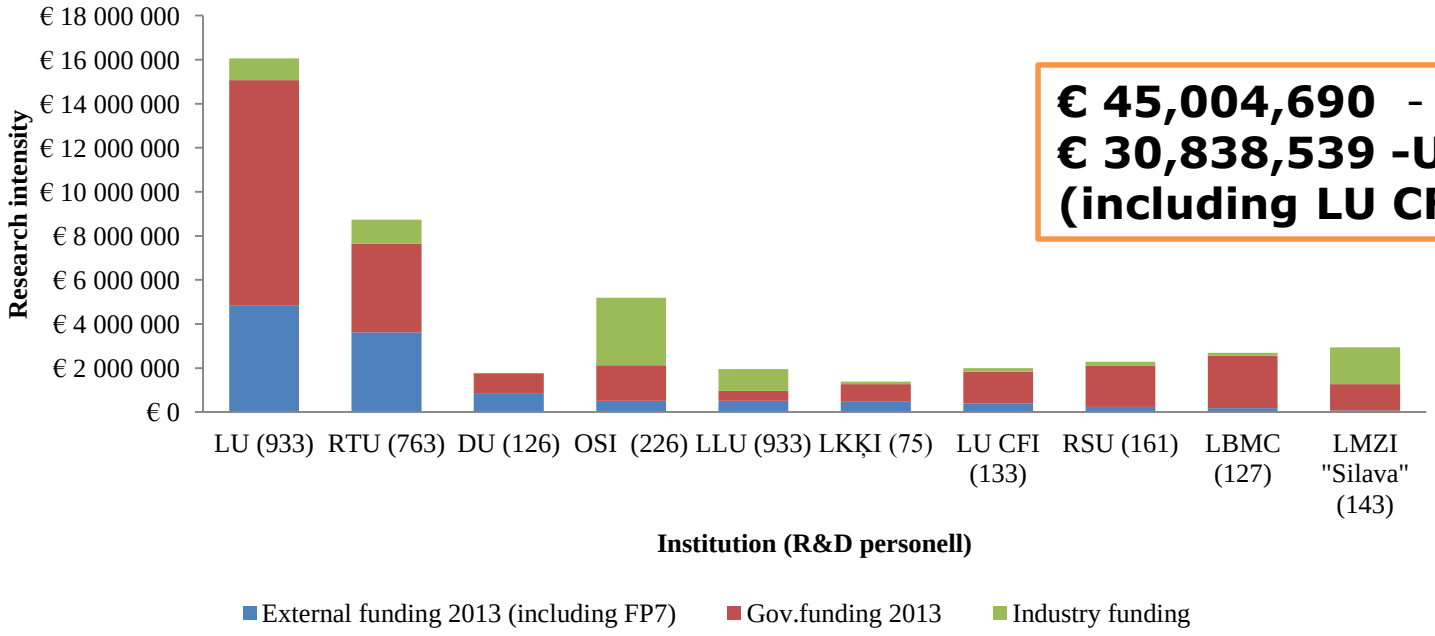
RIS3 challenge: Central Role of Universities

About 70% of research is performed in Universities.

TOP 10 research performers in 2013, ordered by external funding attracted



€ 45,004,690 - Total
€ 30,838,539 -Universities, (including LU CFI)

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RIS3 challenge: Central Role of University

Role of Universities – Knowledge Hubs:

•to develop **sufficiently diverse knowledge base** (supply side)

•to **boost innovation capacity** of firms thru provision of human capital and access to knowledge (demand side)

•to **generate S&T human capital that is sufficiently embedded and connected** (absorptive capacity)

•**to pool resources across sectors and regions** (innovation ecosystem)**.**

Proven - **Public investment** in scientific research **in universities** leads to:

•Economic growth through an **increase in private sector productivity**

•Beneficial economic and societal impacts through **increased interaction between the academic and private sectors**

•**Public investment in research increases** rather than diminishes **private sector investment** (complimentarity)

Role of Government – Enabler

RIS3 challenge: Central Role of University

	R&D Personel	External funding 2013 (including FP7)	Gov.funding 2013	Industry funding	Total
University of Latvia	933	€ 4,822,764	€ 10,250,542	€ 982,608	€ 16,055,914
Riga Technical University	763	€ 3,623,368	€ 4,021,823	€ 1,088,062	€ 8,733,253
Daugavpils University	126	€ 863,312	€ 891,936	€ 15,545	€ 1,770,793
Institute of Organic Synthesis	226	€ 510,446	€ 1,608,383	€ 3,071,708	€ 5,190,537
University of Agriculture of Latvia	78	€ 509,837	€ 458,205	€ 985,050	€ 1,953,091
Institute of Wood Chemistry	75	€ 468,157	€ 802,407	€ 115,985	€ 1,386,549
UL Institute of Solid State Physics	133	€ 393,444	€ 1,445,644	€ 154,631	€ 1,993,718
Riga Stradiņš University	161	€ 232,044	€ 1,872,850	€ 179,967	€ 2,284,861
Biomedical Study Centre	127	€ 171,532	€ 2,388,008	€ 134,895	€ 2,694,435
Institute of Forest Science "Silava"	143	€ 80,014	€ 1,188,353	€ 1,673,172	€ 2,941,539
Total	2765	€ 11,674,918	€ 24,928,150	€ 8,401,622	€ 45,004,690

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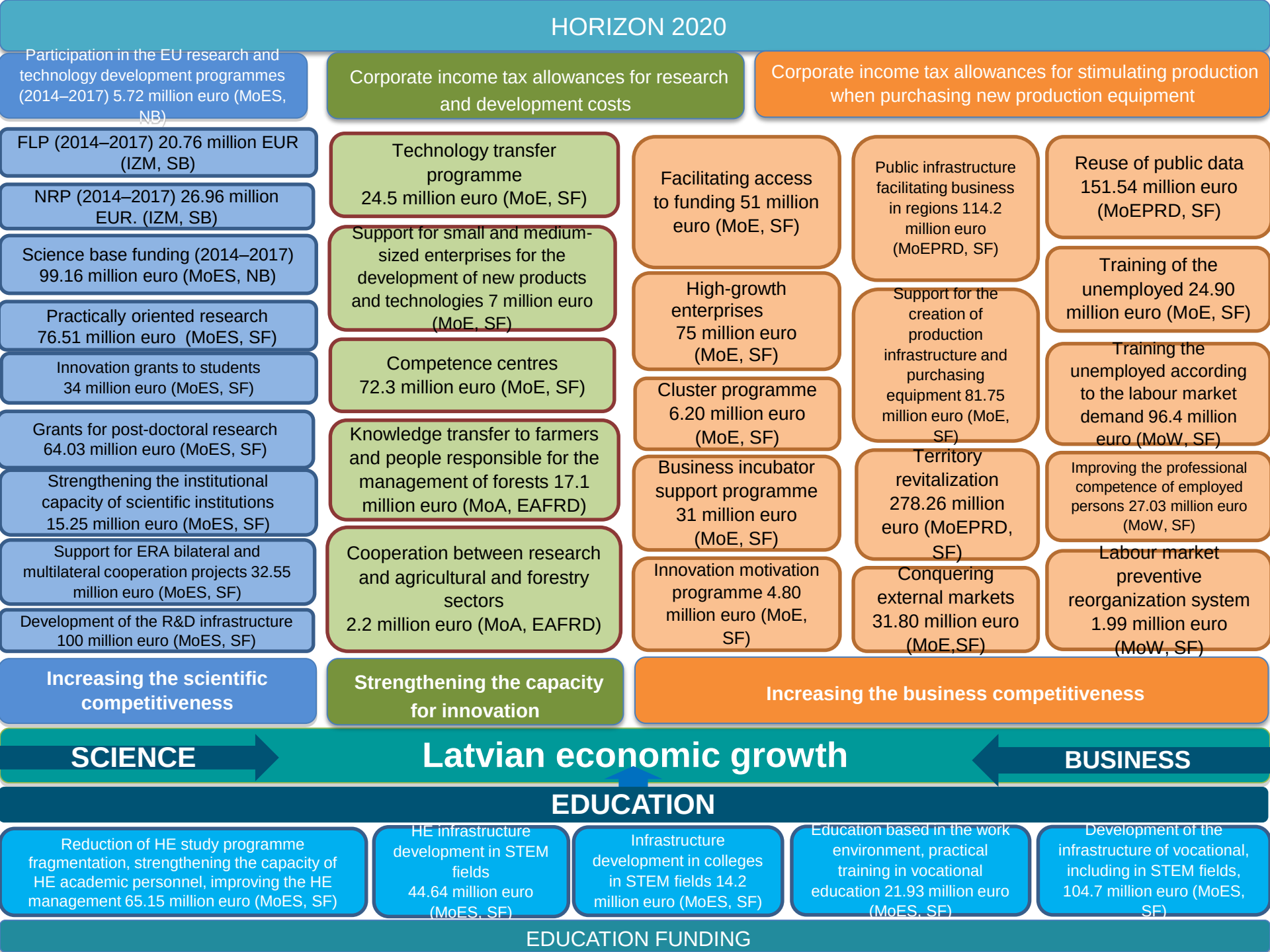
RIS3: Role of Government – Enabler

Core programmes to implement Science , Technology & Innovation Guidelines (2013) adopted in 2014 and in implementation:

1) **Structural reform and fostering excellence of Research Institutions** - concentrating research resources and developing research programs for internationally competitive Research Institutes and Universities (Knowledge Hubs) (10 MEUR);
2) **Reform of HE funding system** – introducing performance model, integrating study with research, and alligning the two with needs of sustainable economic development (5,5 MEUR for 2015)
3) **RIS3 implementation and monitoring system** - institutionalizing entrepreneurial discovery, excellence, relevance and sustainability.


HORIZON 2020
Participation in the EU research and technology development programmes (2014–2017) 5.72 million euro (MoES, NB)
Corporate income tax allowances for research and development costs
Corporate income tax allowances for stimulating production when purchasing new production equipment
FLP (2014–2017) 20.76 million EUR (IZM, SB)
NRP (2014–2017) 26.96 million EUR. (IZM, SB)
Science base funding (2014–2017) 99.16 million euro (MoES, NB)
Practically oriented research 76.51 million euro (MoES, SF)
Innovation grants to students 34 million euro (MoES, SF)
Grants for post-doctoral research 64.03 million euro (MoES, SF)
Strengthening the institutional capacity of scientific institutions 15.25 million euro (MoES, SF)
Support for ERA bilateral and multilateral cooperation projects 32.55 million euro (MoES, SF)
Development of the R&D infrastructure 100 million euro (MoES, SF)
Technology transfer programme 24.5 million euro (MoE, SF)
Support for small and medium-sized enterprises for the development of new products and technologies 7 million euro (MoE, SF)
Competence centres 72.3 million euro (MoE, SF)
Knowledge transfer to farmers and people responsible for the management of forests 17.1 million euro (MoA, EAFRD)
Cooperation between research and agricultural and forestry sectors 2.2 million euro (MoA, EAFRD)
Facilitating access to funding 51 million euro (MoE, SF)
High-growth enterprises 75 million euro (MoE, SF)
Cluster programme 6.20 million euro (MoE, SF)
Business incubator support programme 31 million euro (MoE, SF)
Innovation motivation programme 4.80 million euro (MoE, SF)
Public infrastructure facilitating business in regions 114.2 million euro (MoEPRD, SF)
Support for the creation of production infrastructure and purchasing equipment 81.75 million euro (MoE, SF)
Territory revitalization 278.26 million euro (MoEPRD, SF)
Conquering external markets 31.80 million euro (MoE,SF)
Reuse of public data 151.54 million euro (MoEPRD, SF)
Training of the unemployed 24.90 million euro (MoE, SF)
Training the unemployed according to the labour market demand 96.4 million euro (MoW, SF)
Improving the professional competence of employed persons 27.03 million euro (MoW, SF)
Labour market preventive reorganization system 1.99 million euro (MoW, SF)
Increasing the scientific competitiveness
Strengthening the capacity for innovation
Increasing the business competitiveness
SCIENCE
Latvian economic growth
BUSINESS
EDUCATION
Reduction of HE study programme fragmentation, strengthening the capacity of HE academic personnel, improving the HE management 65.15 million euro (MoES, SF)
HE infrastructure development in STEM fields 44.64 million euro (MoES, SF)
Infrastructure development in colleges in STEM fields 14.2 million euro (MoES, SF)
Education based in the work environment, practical training in vocational education 21.93 million euro (MoES, SF)
Development of the infrastructure of vocational, including in STEM fields, 104.7 million euro (MoES, SF)
EDUCATION FUNDING

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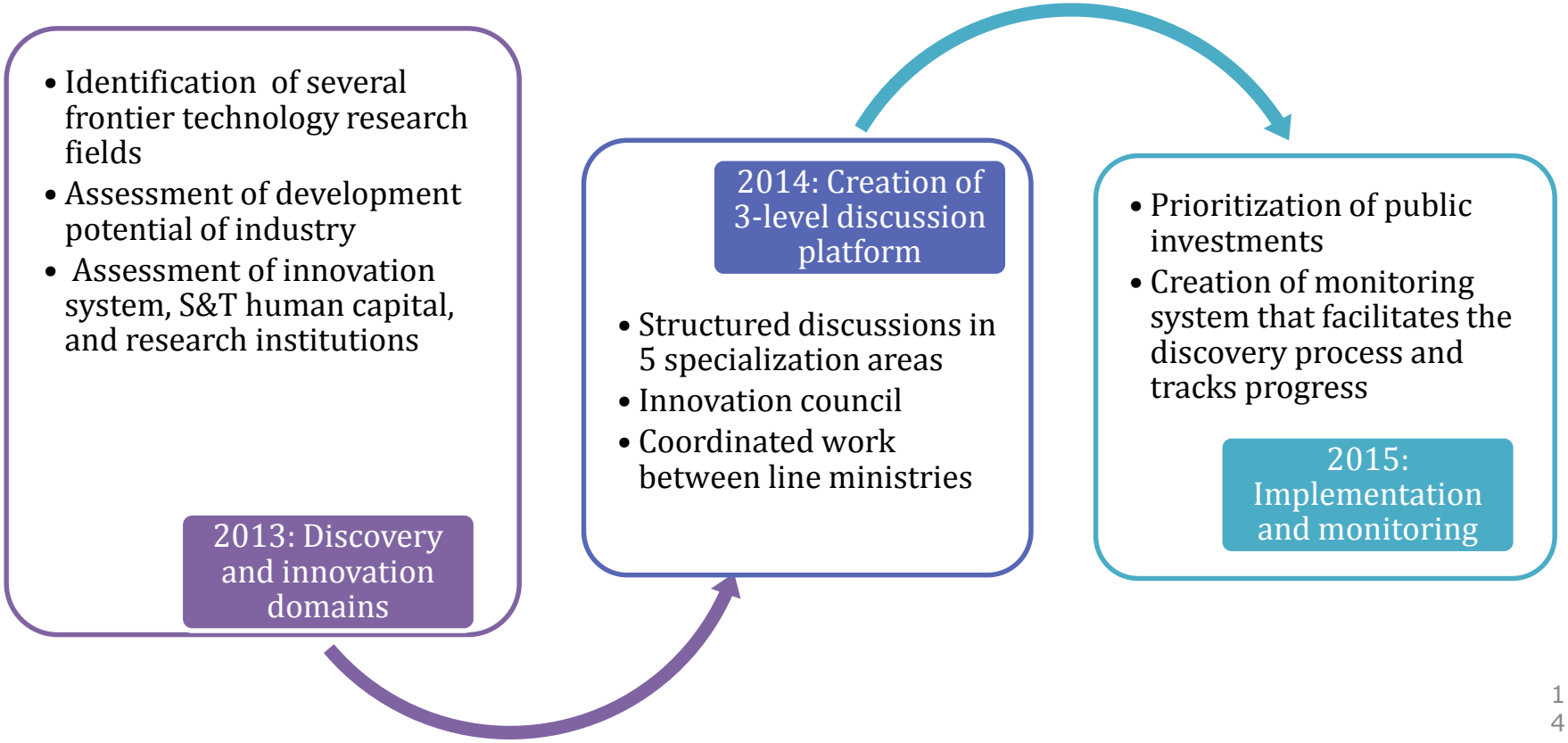
Outcomes of RIS3 process:

Specialization areas as coordination and discussion platform

Bringing together research and industry organizations, HE institutions and policymakers for setting priorities, designing policy instruments and monitoring progress.



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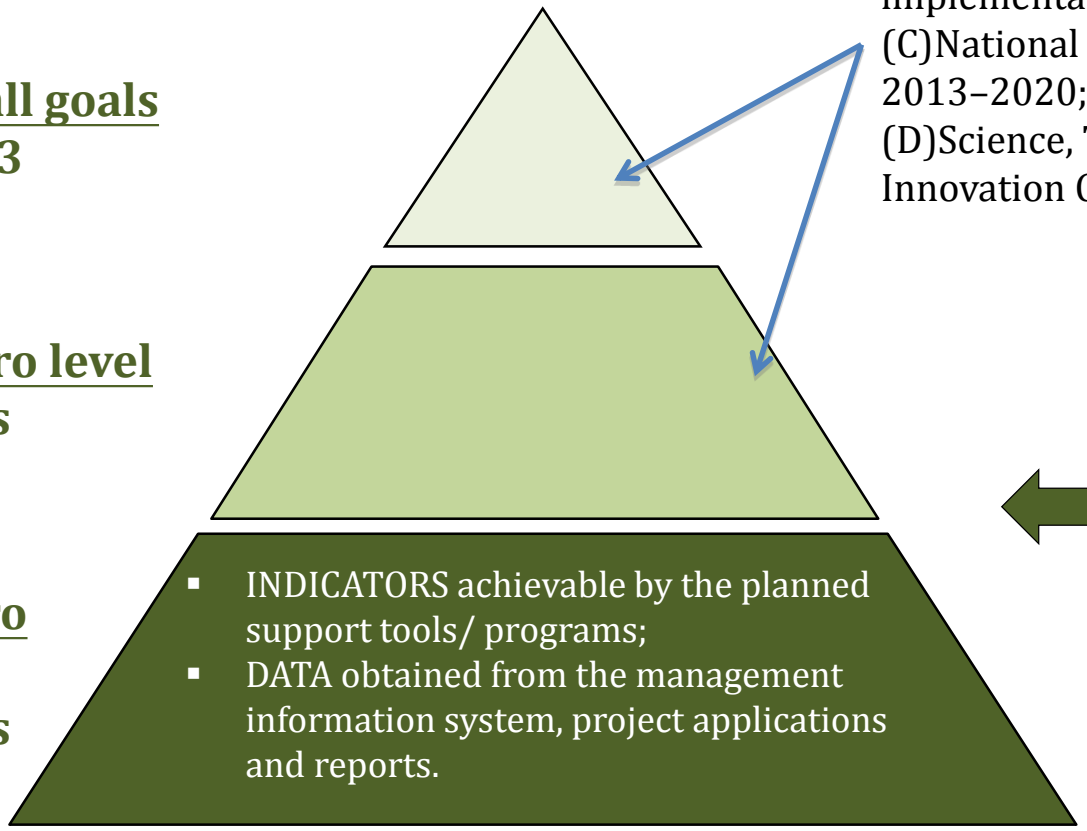
The concept of the RIS3 monitoring: Three-level monitoring system

Defined in:
(A)NDP 2014-2020;
(B)Latvia's NRP for "Europe2020" implementation;
(C)National Industrial Policy Guidelines 2013–2020;
(D)Science, Technology development and Innovation Guidelines 2014–2020.

The overall goals of the RIS3

RIS3 macro level indicators

RIS3 micro level indicators



The institutions involved:
LSISC, MoES (+SEDA)
MoE (+IDAL,)
MoF (+CFCA, DFI)
MoA (+RSS)
MoEPRD, Cross-Sectoral Coordination Centre

OVERALL GOALS (3)	Base value	2017	2020	Data source
(1) Investment in R&D (% from GDP)	0.6 (2013)	1.2	1.5	CSB
(2) Position in the EU Innovation Union Scoreboard	modest (2013)	modest	follower	EC
(3) Efficiency in the processing industry (EUR per employee)	20,126 (2013)	24,500	29,000	CSB
MACRO LEVEL INDICATORS (6)				
(1) Private sector investments in R&D (% of total investments)	21.8 (2013)	46	48	CSB
(2) Proportion of innovative companies (% of all companies)	30.4 (2012)	35	40	CSB
(3) Proportion of high-technology and medium-high-technology sectors in the export of Latvian goods (%)	23.8 (2012)	27	31	CSB
(4) The number of R&D personnel (public, private sector)	5593 (2013)	6300	7000	CSB
(5) A smaller number of stronger publicly-funded scientific institutions	42 (2013)	30	20	MoES
(6) Proportion of graduates (ISCED level 5 and 6) in the STEM fields from the total number of graduates, %	19 (2012)	25	27	MoES

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RIS3 for Latvia: Specialization Areas

Example of Advanced materials, technologies and engineering systems:

Fields and subfields of science with greatest potential for boosting competitiveness of economy

Offer of scientific institutions for specific niche selection: implant materials, composites, thin layers and coatings. Merchants offer - machinery (including electrical equipment), mechanisms and industrial machines.

Industry organizations

Groglass Ltd., JSC Sidrabe, Z-Light Ltd., JSC Jauda, JSC Valmieras stikla šķiedra, JSC Lode

Main research institutes

University of Latvia, Institute of Solid State Physics, Riga Technical University

Examples of Connectedness

Institute of Solid State Physics: Center of Advanced Materials Research and Technology Transfer (CAMART2) (Horizont2020 WIDESPREAD1-2014:Teaming action)

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RIS3 for Latvia: Specialization Areas

Example of Biomedicine, medical technologies, biopharmacy and biotechnology:

Fields and subfields of science with greatest potential for boosting competitiveness of economy

1) Chemical and biotechnological methods and products for obtaining pharmaceutical and bio-active substances; 2) Research and development of new and existing human and veterinary medicinal products; 3) Molecular and individualized treatment and diagnostic methods and cell technologies; 4) Functional food, medical cosmetics and bioactive natural products.

Industry organizations

JSC Olainfarm, JSC Grindeks, JSC Dzintars, Madara Cosmetics Ltd., Silvanols Ltd., Riga East University Hospital Ltd., Pauls Stradins Clinical University Hospital Ltd.

Main research institutes

University of Latvia, Riga Stradins University, Latvian Institute of Organic Synthesis, Latvian Biomedical Research and Study Centre

Examples of Connectedness

The Latvian Institute of Organic Synthesis: project ENABLE (European Gram Negative Antibacterial Engine) – IMI Programme; Latvian Biomedical Research and Study Centre: FP7 project Vector-borne Risks for Europe: Risk assessment and control of West Nile and Chikungunya virus (VECTORIE)

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RIS3 for Latvia: Specialization Areas

Example of Knowledge-based bio-economics:

Fields and subfields of science with greatest potential for boosting competitiveness of economy

(1) Sustainable and productive forest cultivation in variable climate conditions; (2) Innovative, competitive (niche) products with high added value; (3) Full usage of wood biomass for the chemical processing and energy; (4) Innovative, risk-reducing plant and animal breeding technologies; (5) Innovative high added-value niche product development from traditional and non-traditional agricultural plant and animal materials; (6) Technological solutions for plant and animal breeding and processing side-products usage for obtaining high added-value products; (7) Food safety.

Industry organizations

JSC Latvijas finieris, SJSC Latvijas Valsts meži, Pure chocolate Ltd., Fortum Ltd.

Main research institutes

Latvian University of Agriculture, Latvian State Institute of Wood Chemistry, Institute of Food Safety, Animal Health and Environment - "BIOR"

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RIS3 for Latvia: Specialization Areas

Example of Smart energy:

Fields and subfields of science with greatest potential for boosting competitiveness of economy

Electrical and smart grid studies using mathematical modelling methods, research on energy-efficient solutions in companies, research on applications of electricity in transport, bioenergy solutions, and solutions for energy self-sufficiency. EM offer: (1) Price of resources, (2) Intensity of consumption on energy resources, (3) ES climate and energy frame 2030.

Industry organizations

SJSC Latvijas gāze, JSC Rīgas siltums, SJSC Latvenergo, JSC Komforts, Grandeg Ltd., Sun Investments Ltd., Sinergo Ltd., Altenergo Ltd., Enefit Ltd.

Main research institutes

Riga Technical University, Institute of Physical Energetics, The Institute of Physics of University of Latvia

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RIS3 for Latvia: Specialization Areas

Example of Information and communication technologies (ICT):

Fields and subfields of science with greatest potential for boosting competitiveness of economy

Specialization niches (cyberphisical systems, photonics, biophotonics, micronanoelectronics, etc.) and horizontal platform for collaboration in solving society - important matters (such as health, transport, environment, public safety, etc.) for such sectors as an innovative knowledge management, system modelling and software development methods and tools; innovative sectors of ICT hardware (hardware) and software (software) applications; language processing and semantic web; large-scale data and knowledge infrastructure; information security and quantum computers; computer system testing methods.

Industry organizations

Lattelecom Ltd., Tilde Ltd., JSC Rix Technologies, JSC Exigen Services Latvia, Dati grupa Ltd., JSC SAF Tehnika, Hanzas Elektronika Ltd

Main research institutes

Riga Technical University, University of Latvia, Institute of Electronics and Computer Science, Institute of Mathematics and Computer Science

Examples of Connectedness

Institute of Electronics and Computer Science, Institute of Mathematics and Computer Science, Riga Technical University – FP7 ARTEMIS projects.

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Role of Knowledge Hubs (Universities):

- **Develop of sufficiently diverse knowledge base**
- **Boost innovation capacity of firms**
- **Generate S&T human capital that is sufficiently embedded and connected**
- **Pool resources across the sectors and regions**