LITHUANIAN RIS3: HOW IT WAS DESIGNED

MOSTA
STEBĖSENA IR ANALIZĖ

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Contents

Summary

Lithuania – a formerly Soviet occupied state – has a legacy of the communist past. The sectors of business and science are struggling to meet the highest global standards, and the apparatus of the decision-making is still to learn the core lessons of governance. Prior to the accession to the EU in 2004, Lithuania embraced laissez-faire approach to its economic development. The government believed, that free market will regulate itself, and science-business cooperation will flourish naturally. However, the paradigm shift happened within the adoption of EU polices, which required for national strategic planning.

Alas the efforts to adopt the best EU derived governance practices bore too few fruits: the innovation policy was not cohesive; instead, the funding and planning were scattered between two ministries, and the yield of positive results was low. In the 2016 Lithuania is among the lowest ranked EU member states in the organization's innovation score board.

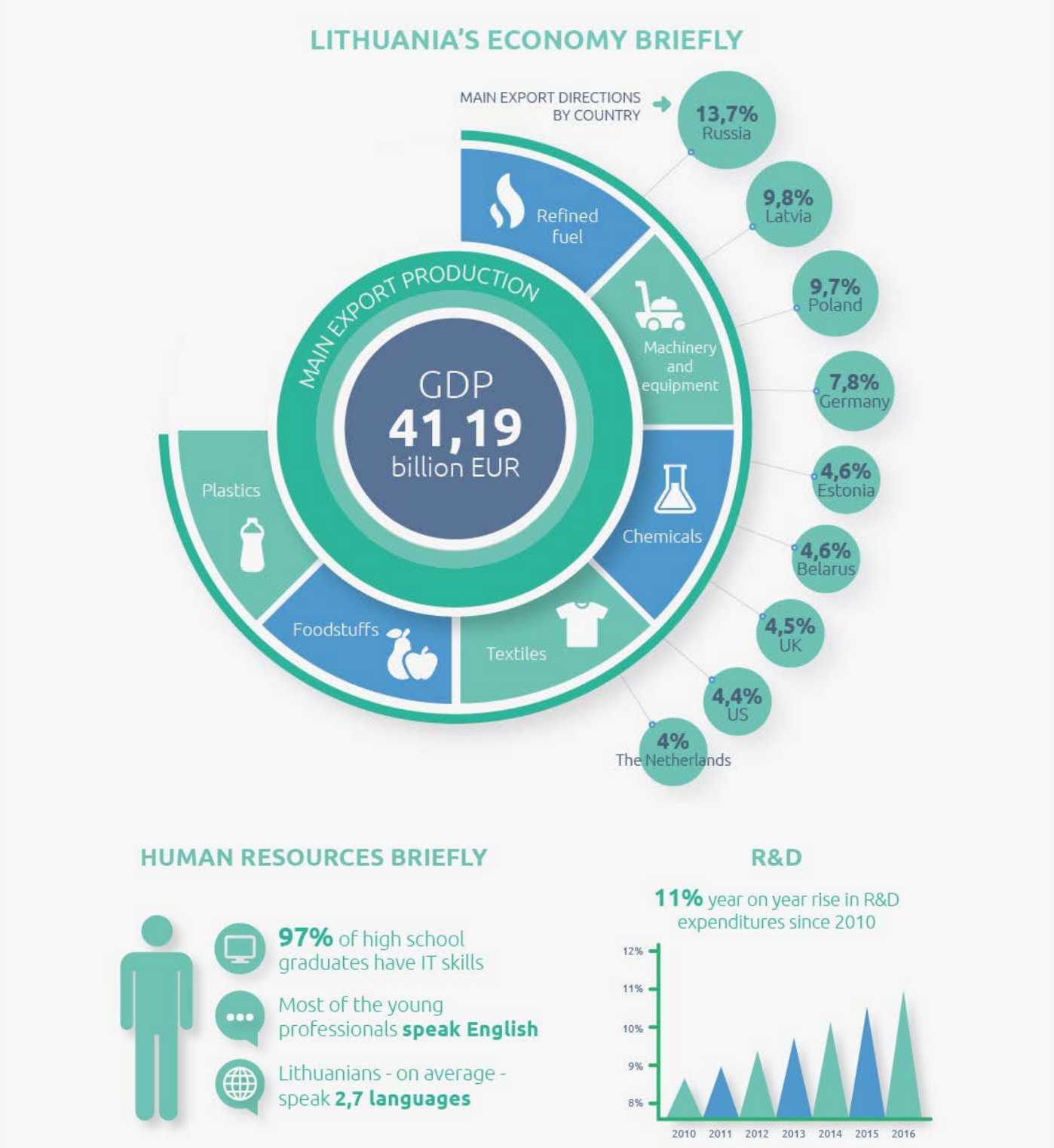
The positive change in Lithuanian innovation performance had to be changed with the framing of the national Research and Innovation Smart Specialization Strategy (RIS3). The process has started in the 2013, and finished in the 2015. It has been framed by applying various different methods, such as analyzes, foresight, surveys, and panel discussions. Entrepreneurial discovery process (EDP) was also applied to foster the collective ownership and involve the stakeholders.

The process has started the global and domestic challenges, and national scientific and entrepreneurial potential. The investigation of the scientific excellence resulted in determining six top-notch scientific fields. Meanwhile, a review of Lithuanian economy strengths and prospects for knowledge-driven growth were investigated.

The results of the analyzes were verified by national surveys of various stakeholders and the RIS3 platform. The end result 6 broad priorities, which – in panel discussions – were added with in total twenty priorities. The final priority fields for national innovation priorities were mapped.

Interim evaluation of the Lithuanian RIS3 – which is planned to happen in second half of 2018 - will be based on the monitoring results and expert evaluation.

Background: Lithuania



Lithuania – a former Soviet state – still faces a number of challenges, which echoes from the past of the communist occupation. The challenges consist of many variables, which mainly derive from the transition period. Namely, the challenges are present regarding the public sector and the political-economic framework of the country.

In the 90's, when Lithuania regained its independence, small government and neoliberal ideas were in place. During the mentioned period, up to the mid 2000's, there was a consensus among the

policy makers that (1) the market will reallocate resources to the most productive and competitive sectors, (2) any Government intervention favoring specific economic activities or sectors distorts the market, (3) the efforts of economic long-term planning are remnants of the Soviet past and should be abandoned (Paliokaitė, Martinaitis, Reimeris, 2015). Briefly, the main economic focus was on privatization of state-owned enterprises and liberalization of the market.

The significant changes have happened in the 2004, when Lithuania became EU member state. Laissez-faire system was disrupted with EU's regulations and adoption of various criteria for economic performance. One of the major changes became the introduction of strategic planning and priority setting to the policy discourse.

Lithuania had no clear policy focus on innovations prior to framing the RIS3; the EU structural fund financing was scattered among various institutions without much coordination. This scattering happened because different ministries and funding institutions sought to pursue their own defined priority fields. Still, the major funding institutions are the Ministry of Science and Education, and the Ministry of Economics. The lack of strategic planning, policy coordination, and its implementation led to the financing of all the economic sectors and research fields.

The period of little or no strategic focus led to the strengthening of the traditional manufacturing economic sectors; Lithuania's export is still championed by the low-tech and mid-tech production. The majority of these enterprises are consumers rather than creators of innovation (Martinaitis, 2013).

Lithuania was slow to mainstream the ecosystem of innovations due to the shortcomings of the public sector. Among the challenges of Lithuanian public sector is its efficiency of governance (aggregate indicator of voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption), which has not been progressing much (Reimeris, 2016).

The deficiencies of the public sector are transferred to the field of innovation field as well. Although Lithuania is a relatively small country with very limited resources, the funding for R&I activities is still scattered among a number of various organizations and institutions.

The lack of coordination and a clear defined goal led to the funding of measurable outcomes, i.e. infrastructure. The programming period of 2007-2013 focused on building R&I infrastructure; five integrated centers of science, studies, and business were built. Furthermore, many more laboratories and open science centers were opened, thus an extensive and advanced infrastructure for R&I was set. Unfortunately, lack of adequate attention to the human resources had been put, therefore these objects do not reach their potential; most of them barely meets the lowest capacity.

Background: briefly

The innovation strategy was governed by two different ministries; both of the ministries were serving their interest and goals, therefore no cohesive and coordinated innovation policy was framed. Furthermore, no evidence-based, well-grounded decisions were made, and this lack of this vision led to an extensive expansion of material base – which is easy to measure – and too little if any attention given to more difficult quantifiable outputs as fostering the pool of human resources and its potential.

Within the EU context, regarding the innovation scoreboard, Lithuania is considered to be a started region. The reason for such a low fairing is having a trait of having new governance practices meeting hard institutional obstacles in terms of traditional planning cultures and centralist governance systems (Reimeris, 2016).

RIS3 was seen as a solution to this poorly-managed approach to innovation strategy.

Designing Lithuanian RIS3

The design of Lithuanian RIS3 consisted of several main steps; it took analyzes, foresight, surveys, panel discussions and other tools to explore the present and future challenges, and the means and field of addressing them.

The activities were done in the framework of entrepreneurial discovery process. The process framed a bottom-up dialogue by representatives of science, business, public and the government authorities. It was a mean to mobilize various different stakeholders for a mutual goal. The process was based on constant communication and public accountability. Besides the goal for ready strategy, the process was aimed at the collective ownership of its output, thus the result.

The EDP objective – defined by Foray – is not about telling the innovation system actors what the right specializations are, but about accompanying emerging trends and improving coordination by providing the necessary public goods and creating additional incentives at critical bottlenecks to help the new activity to grow. Therefore, the outcome of the process is a structural evolution of the whole economy (Foray, 2011).

In order to figure out the challenges, identify the trend, and frame the priorities an analysis on the general background and global challenges had to be made, later verified by the stakeholders, and composed to a final roadmap.

Selecting the broad priority fields

Analysis

For main issues and contexts were selected for analyses: (1) global trends and drivers as challenges for Lithuanian R&I policy, (2) long-term national challenges facing Lithuanian economy and society, (3) research potential in Lithuania, and (4) review of the strengths of the Lithuanian economy and the prospects of knowledge driven growth.

For the global trends and drivers as challenges for Lithuanian R&I policy it was anticipated, that whenever there is a challenge or problem, market demand is likely to follow [that direction]. The anticipation was made regarding both global and domestic innovation demands and backgrounds. Therefore, the analysis was closely related to the dimension of long-term national challenges facing Lithuanian economy and society.

The research potential in Lithuania was analyzed by executing an evidence-based assessment of the present R&D capabilities; it included the field of scientific excellence as well as the fields of the most intensive science-business collaborations. The following table presents the scientific fields along with the variables of assessment, the ratings, and the final results.

RESEARCH POTENTIAL IN LITHUANIA

Research Areas	Score														
	Impact of research	Joint international publications	Frequently cited papers	National funding	International funding	International activity of doctoral students	Post-doctoral activities	Students' activity in research	Participation in Marie-Curie Programme	Infrastructure	Local business grants	International business grants	Joint publications with businesses	Ino-voucher programme	Overall rating
Physics	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**14**
Materials engineering	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**14**

Chemistry	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	Top notch
Biological sciences - Life Sciences	1	1	1	1	1	1	1	1	1	1			1	1	12	
Earth and related Environmental sciences	1	1	1	1	1	1	1			1	1		1		10	
Clinical medicine	1	1	1	1	1	1		1	1			1	1		10	
Electrical, Electronic and Information engineering					1			1		1	1	1	1	1	7	Prospective
Economics and Business incl. Management	1		1	1		1		1	1					1	7	
Civil engineering	1		1			1					1		1	1	6	
Mathematics	1		1	1			1		1						5	
Environmental engineering					1		1				1	1		1	5	
Agriculture, Forestry, and Fisheries				1	1				1	1	1				5	
Basic medicine	1	1				1				1			1		5	

Assessment of R&D potential in Lithuania

The top notch scientific fields for research were selected. The selection consisted of six fields: (1) physics, (2) materials engineering, (3) chemistry, (4) biological sciences/life sciences, (5) earth and related environmental sciences, and (6) clinical medicine.

Finally, the review of the strengths of the Lithuanian economy and the prospects of knowledge driven growth was analyzed. The analysis was done regarding the following 7 criteria: (1) export, (2) consistent growth in adding value, (3) high-tech or/and skilled staff as primary factors of production, (4) adopted competitive strategies, (5) has attracted substantial investments, (6) critical mass in the economy, and (7) has been previously prioritized in R&D funding. Afterwards, it was mapped according to 2 dimensions: (1) the potential for knowledge-driven growth, and (2) current competiveness and specialization. However, many of the filtered industries were of the traditional economic sectors, therefore not suitable for inclusion into RIS3. For this reason, the analysis output of that stage was further distributed into separate groups, which were (1) traditional sectors, (2) challenges ahead, (3) current cornerstones, (4) sectors in transition, (5) natural priorities, (6) emerging/niche knowledge-driven sectors. Finally, the national priorities and the rising/niche sectors' dimensions were selected. However, it wasn't a mechanical selection, but an expert-led, bottom-up, foresight-based process (Reimeris, 2016).

Verification of the analyzes

Verifications of the analyses results were made in various different groups of stakeholders. The main activities of verification consisted of the national survey, and consultations with the RIS3 platform.

The national online survey was executed; it had responses of 614 respondents. The survey had three target groups for mining respondents: (1) decision makers and representatives of administration bodies, associated research and business structures (250 respondents), (2) randomly selected chief executive officers of companies with a turnover exceeding ~300.000 EUR in 2011 (1.000 respondents), and (3) randomly selected researchers from Lithuanian research and study institutions (1.000 respondents).

The consultations with the RIS3 platform were made regarding various aspects such as governance and monitoring, and other related developments.

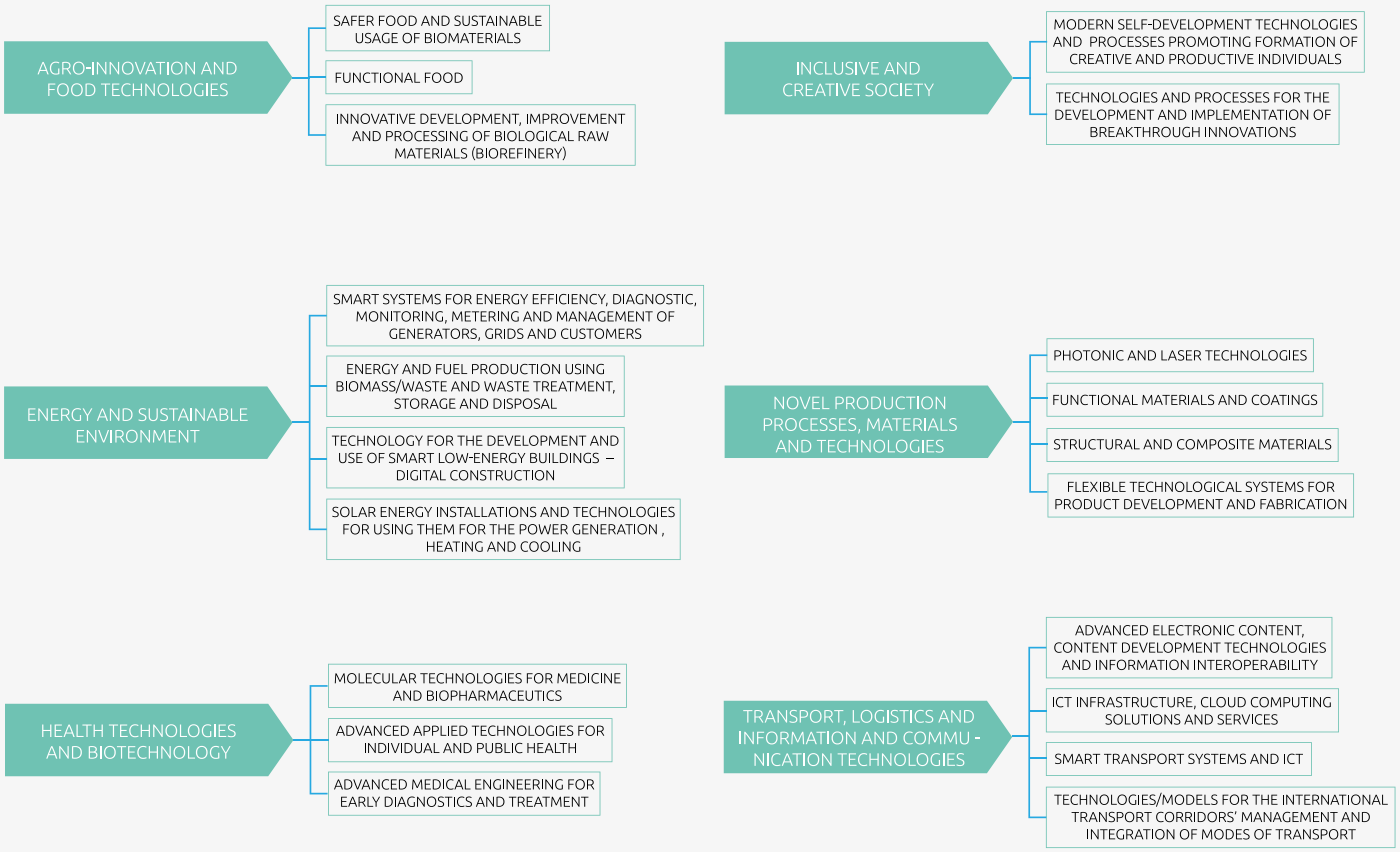
Mapping the priorities

6 preliminary priority areas were formulated after the analyzes were finished and verified. For the final mapping of the priorities 6 panel discussions with the stakeholders were organized. More than 100 experts from Lithuanian academia, science, business, and decision making institutions engaged

in the discussions. The composition of the participants had to help to verify the complex findings and to bind various actors to a collaborative engagement in implementing the strategy.

The aim of the panel discussions was twofold. On one hand it was aimed at extracting the knowledge on the most important needs and opportunities regarding the future challenges, clarifying specific R&D niches with substantial human resources and R&D infrastructure, and inquiring the business companies if they are interested in participation in creating the respective [to the challenges defined] technologies, processes, and products. On the other hand, the panel discussions aimed at receiving suggestions on what the priority fields – regarding technologies, processes or products – should incorporate.

After the discovery processes a number of fields were defined. The final output consisted of 6 broad fields accompanied with 20 priorities in total.



The broad priority fields were mapped in accordance to (1) high potential to increase global market share of Lithuanian ventures and commercialize available knowledge, (2) high R&I potential in private sector, (3) high R&D potential in public sector, and (4) field's importance in addressing national and global challenges. Additionally, the potential priority fields were selected in accordance to the existent R&D infrastructure, namely "Valleys". ICT – as a horizontal enabler between the priority fields – was taken into consideration, too.

Monitoring & Evaluation of the Lithuanian RIS3

Monitoring of RIS3 implementation will be based on combining various sources of data as ESIF implementation data, bibliometric analysis, international programme participation data, economic indicators, human resources data and etc.

Actual implementation of priorities will be monitored at the technology level. Every of 20 priorities in Lithuanian RIS3 can be broken down to a set of very specific technologies. The aim of the monitoring function is to assess how the applications from science and business compliment technologically.

Interim evaluation, planned to happen in second half of 2018, will be based on the monitoring results and expert evaluation.

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Prepared by:

Justinas Lapienis
justinas.lapienis@mosta.lt

Dr. Ramojus Reimeris
ramojus.reimeris@mosta.lt

MOSTA is a Lithuanian governmental policy analysis and policy advisory organization

http://mosta.lt/en
Geležinio Vilko str. 12, LT-03163, Vilnius, Lithuania
Phone: +370 5 212 6898, FAX +370 5 243 0402
info@mosta.lt


STEBĖSENA IR ANALIZĖ