



Executive summary of the public audit report

STATE INVESTMENT IN SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT WITH THE AIM OF INCREASING INNOVATION

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Full audit report in Lithuanian available on the website of the
National Audit Office: .

DEFINITIONS AND ABBREVIATIONS

HEI – higher education institution

OAC – open access centre

OECD – Organisation for Economic Cooperation and Development

EC – European Commission

EU – European Union

Provisions – provisions for the Lithuanian science and innovation policy change

JRP – joint research programme

LIC – Lithuanian Innovation Centre

GRL – the Government of the Republic of Lithuania

ASIT – Agency for Science, Innovation and Technology

RHEMAC – Research and Higher Education Monitoring and Analysis Centre

SEI – a science and education institution

SRED – scientific research and experimental development

Strategic Committee for SRED – Strategic Committee for Scientific Research, Experimental Development and Innovation

SAC – a small or average company

Valley – an integrated science, education and business centre

MSE – Ministry of Science and Education

ME – Ministry of Economy

SISR – State Institute for Scientific Research

Open access centre¹ – an organisational entity that functions on the basis of open access SRED resources (e.g., a set of equipment, a laboratory, a network of laboratories, a science and education institution research centre, etc.) and provides services necessary for the implementation of a scientific study and (or) an experiment.

Intellectual property² – non-material property which represents the result of human spiritual creation and mental labour, a mental (intellectual, cognitive, thought) product, protected by the law as any other form of property.

¹ Management Regulation of Open Access Centres, approved by Order No. V-852 of the Minister of Science and Education of the Republic of Lithuania, 08/06/2010 (amended version No. V-2117 of 10/11/2011), p 1.

² Available on the Internet at: <http://intelektinenuosavybe.lt/> [viewed on 30/12/2016].

Innovation³ – successful implementation of new technologies, ideas and methods by introducing new products and processes into the market or improving already existing ones (European Commission).

Scientific research and experimental development⁴ – systematic, creative study of nature, humanity, culture and society, and the use of results thereof.

Commercialisation of scientific research⁵ – the process of the development of a new idea and/or the transformation of scientific research into commercial products or services, and their introduction into the market.

Scientist⁶ – a researcher with a PhD.

Researcher⁷ – a person with a higher education qualification engaged in furthering knowledge, conceptualising or creating products, processes, methods and systems, or heading scientific research and experimental development projects.

Patent⁸ – legal form of protecting inventions, issued by the State Patent Bureau in accordance with the provisions of the Patents Law.

Risk capital⁹ – alternative source of business funding in the form of investment into the capital of own companies. Such investment is usually implemented into innovative companies characterised by a high potential for growth and development.

Valley¹⁰ – the potential of scientific research, studies and knowledge-receptive business (the totality of subjects), usually concentrated on a single territory, having a common or related infrastructure, and purposefully contributing to the development of knowledge society and the increase in the competitiveness of the economy of Lithuania.

Smart specialisation¹¹ – strategic state aid to scientific research and innovation; in developing the strategy, Lithuania, just like other European Union countries, had set its own priorities for scientific research, experimental development (SRED) and innovation in accordance with current or potential competitive advantages.

³ Available on the Internet at: <http://www.verslas.lt/kas-yra-inovacija/> [viewed on 27/03/2017].

⁴ Law on Higher Education and Research of the Republic of Lithuania No. XI-242, 30/04/2009 (amended version No. XII-2534 of 29/06/2016), Article 4, Paragraph 15.

⁵ Available on the Internet at: http://leidykla.vgtu.lt/conferences/CIBME_2011/pdf/2011-zemlickiene.pdf [viewed on 16/12/2016].

⁶ Law on Higher Education and Research of the Republic of Lithuania No. XI-242, 30/04/2009 (amended version No. XII-2534 of 29/06/2016), Article 4, Paragraph 14.

⁷ Ibid., Article 4, Paragraph 28.

⁸ Patents Law of the Republic of Lithuania No. I-372 of 18/01/1994 (amended version No. XI-1261 of 23/12/2010), Article 3.

⁹ Available on the Internet at: <http://invega.lt/lt/rizikos-kapitalo-investicijos/> [viewed on 30/12/2016].

¹⁰ The Concept of the Establishment and Development of Integrated Centres for Science, Studies and Business (Valleys), approved by Order No. 321 “Concerning Approval of the Concept of the Establishment and Development of Integrated Centres for Science, Studies and Business (Valleys)” of the Government of the Republic of Lithuania, 21/03/2007 (amended version No. 308 of 01/04/2014), p. 5.11.

¹¹ Available on the Internet at: <http://sumani2020.lt/apie-sumania-speciaizacija/apie> [viewed on 16/12/2016].

SUMMARY

In order to develop a competitive economy and increase national well-being, it is important to encourage both technological and social innovation, which leads to progress, creates jobs, helps to attract private national and foreign investment, and contributes to the sustainable development of the national economy. For this reason, Lithuania pays particular attention to the encouragement of cooperation between science and business in the development and implementation of innovation. Within this context, scientific research and experimental development (SRED) may be seen as incentive measures.

During the audited time period, expenses related to SRED had been rising annually, although in 2015 they were still below the EU average (see Table 1).

Table 1. Expenses related to SRED as a percentage of the GDP

	2015	EU average	Target for 2020
General expenses for SRED	1.04	2	n. d.
Public expenses for SRED	0.76	N/A	0.9 (previously – 1.9)
Business expenses for SRED	0.28	1.3	0,9

Source – Statistics Lithuania and the National Progress Programme for 2014-2020¹²

The area where Lithuania lags the most is in business expenses for SRED. This was emphasised by the European Commission, the OECD, etc., who had assessed the progress made by Lithuania. In 2012–2015, expenses related to SRED (which consist of foreign, government and business funds, as well as those of the sector of higher education and non-profit institutions) amounted to 1,395 million EUR, and yet Lithuania remained 24th on the European Innovation Scoreboard among 28 countries. In 2016, Lithuania held the 35th place in the Global Competitiveness Index among 138 countries. According to the same index's Innovation and Smart Business Subindex, Lithuania had gone down by six points (holding the 37th place in 2015), ending up in the 43rd place.

The aim of the audit was to assess whether state investment into scientific research and experimental development, designed to increase innovation, was effective.

During the audit, we have analysed:

- the management and coordination of the valleys;
- the effectiveness of the valley programmes;
- the effectiveness of measures designed to promote cooperation between science and business;
- state plans for ensuring greater effectiveness of investment into SRED.

Audit time period – 2012–2015.

In order to implement a valid and comprehensive assessment, we have collected information from the ministries engaged in the development of SRED policy (MSE and ME), subjects operating in the valleys (universities, valley associations, OACs and STP), and representatives of RHEMAC, ASIT, LIC and business. During the audit, we have analysed documents and legal acts,

¹² Approved by Order No. 1482 of the Government of the Republic of Lithuania, 28/11/2012.

submitted questionnaires to subjects, communicated directly and conducted a phone survey of 100 companies.

We have determined that investment into SRED had failed to ensure that all planned results would be achieved.

Around 298.7 million EUR were invested into the measures of encouraging the cooperation between science and business, namely the development of the valleys and their infrastructure. This type of investment project in the field of science and studies has no precedent in Lithuania. The results of the project and the lessons learned during its implementation are significant in the development of policies related to science and studies. However, the Ministry of Science and Education, responsible for the coordination of the valley programmes, had failed to summarise the project results and present them to the public.

During the implementation of the valley programmes, special attention was paid to the update of infrastructure, which was developed as a means to ensure the cooperation between science and business, to develop innovation, and to attract private investment both from Lithuania and abroad. Ambitious aims for the valley programmes were set and specific target specified, but information regarding their achievement was provided neither by the valley associations, nor the Ministry of Science and Education. The valley programmes are still valid, but there are no organs, such as the Valley Monitoring Committee and the Valley Monitoring Group, which were supposed to ensure the management and coordination of the valleys themselves, and the valley associations are implementing only some of their assigned functions. Business rarely uses the equipment of the laboratories that operate on the principle of open access. When implementing the orders of national economic subjects, only 31 percent of the work was performed in open access centres. During 2012-2015, the average equipment load in 13 (of 25) audited centres was 44 percent. The Ministry of Science and Education had noted that two of the largest SRED infrastructure projects were late and had been finished as late as by March of 2016 (the Centre for Physical Sciences and Technology – 69,195,925.34 EUR and the Life Sciences Centre – 41,075,805.95 EUR). Therefore, they were not operational during the time of audit. It is expected that these centres will improve the results of the valley programmes.

Given that another national audit (regarding how universities manage, use and dispose of fixed state assets) was already commenced, during the present audit we only assessed the use of equipment procured during the implementation of the valley programmes.

The audit has shown that the rent of premises is the main activity of the Science and Technology Parks established in the valleys, which were supposed to attract and support commercial enterprises operating in the field of SRED, as well as commercialise the results of the studies conducted by science and studies institutions.

We have analysed the measures for the encouragement of cooperation between science and business that are being implemented by the Ministry of Science and Education, and the Ministry of Economy. We have chosen to assess those measures and activities that were not assessed by national auditors during their audits "An Assessment of the Programme "The Development of Studies and Science" Implemented by the Ministry of Science and Education" and "An Assessment of the Programme "The Development of the National Science and Study System" Implemented by the Research Council of Lithuania"¹³.

¹³ National Audit Office reports: No. VA-P-50-5-21 of 26/10/2016 and No. VA-P-50-6-22 of 26/10/2016.

During the audit, we have determined that the implementation of the measures had failed to achieve all of the specified targets, which had led to their revision and reduction. After the reduced targets had been achieved, the effect of the measures turned out different than planned. For instance, it was planned to attract 57 million EUR in private investment into "Inoklaster Lt+", but later the sum was reduced to 13.64 million EUR. Regardless of the fact that some of the measures for the years 2007–2013 did not garner much demand and therefore did not receive many requests, similar measures were planned again for 2014–2020. If no action is taken to encourage the use of said measures, they may not receive the planned number of requests and therefore fail to have the desired effect.

The fact that cooperation between science and business is not growing more active is evident from the ratio of funds received from economic entities for the implementation of SRED-related orders on the one hand, and the basic state budget funding for the development of SRED and artistic endeavours on the other hand. During 2012–2014, the ratio had decreased (0.15 in 2012, 0.14 in 2013, and 0.10 in 2014).

We have determined that scientists are not interested to work in business; the number of companies making use of SRED-related tax relief is decreasing; and the newly developed system "eScience Gateway" had failed to attract business proposals. In the near future, the state plans to implement the provisions for science and innovation policy change¹⁴, and to encourage the development of the risk capital sector in order to attract private investment into SRED. We will observe the implementation of these new initiatives.

The following public audit conclusions and recommendations were drawn upon the assessment of the audit findings.

CONCLUSIONS

1. Given inappropriate management and coordination, as well as the failure to pay enough attention to the transfer of technology, the development of the commercialisation of SRED and services for the encouragement of innovation, the cooperation between science and business was not ensured as planned:
 - 1.1. The activity of the open access centres had failed to attract business as planned (the average load of the audited centres in 2012–2015 was 44 percent; some of the audited open access centres were not used by external consumers at all; and, in 2013–2014, some of them were operating at a loss). After the adoption of the new open access regulation, the operators (study and science institutions) have not been required to account for the indicators of specific activities since 2016. Having failed to ensure that these centres be used by business representatives, the maintenance of the equipment and buildings will become a burden on the state. The elimination of accountability for the indicators of activity in the Open Access Regulation fails to encourage the centres to strive for superior results (Subsection 1.3).
 - 1.2. Science and technology parks are mostly engaged in the rent of premises, even though they have also been assigned other functions (e.g., the transfer of technology and the

¹⁴ Approved by Order No. XII-2654 of the Seimas of the Republic of Lithuania, 27/09/2016.

commercialisation of scientific research findings). This means that investment into them might not be recovered. Furthermore, it is not clear which of the companies operating in the parks are conducting innovative activities, because there is no legal definition of such companies (Subsection 1.4).

- 1.3. The Ministry of Science and Education has failed to ensure appropriate coordination of the valley programmes and the achievement of specific aims. The monitoring of the valleys was terminated in 2013 with the dissolution of the Valley Monitoring Group. Not all of the associations responsible for their coordination engage in the collection of information on the implementation of the indicators of valley programmes; the development of strategies for the activities of the associations and strategic valley development plans; their annual activity reports are not submitted to other institutions responsible for the development of the valleys (e.g., the Ministry of Science and Education). Therefore, the Ministry of Science and Education, responsible for the coordination of the valley programmes, lacks data and does not account for the implementation of the indicators specified in the programmes (Subsections 1.1 and 1.2).
2. Not all of the audited measures of the Ministry of Science and Education, and the Ministry of Economy, designed to encourage cooperation between science and business, had been managed appropriately:
 - 2.1. Due to the protracted coordination of the measures with the Ministry of Finance (the Ministry of Science and Education disagrees with the position of the Ministry of Finance that science and study institutions are in possession of sufficient funds to contribute to the funding of SRED activities the same way business companies do), the planned aims of the measures of the Ministry of Science and Education were not achieved: 10 joint science and business initiatives had been planned in 2015, yet there were still no invitations to submit applications in late 2016 (Subsection 2.1).
 - 2.2. Some of the planned primary results of the measures of the Ministry of Finance were not achieved (e.g., there were plans to attract 105 million EUR in private investment into "Intelektas LT+", which was later reduced to 58 million EUR, and eventually attracted 61 million EUR) (Subsection 2.1).
 - 2.3. Even though the measure of the Ministry of Science and Education, aimed at the employment of highly qualified professionals within companies, failed to garner attention, there are plans to keep it going in 2014-2020, without taking any additional measures to stimulate interest during the EU programming period (Subsection 2.1).
3. State measures aimed at the development of more favourable conditions for business to become involved in SRED are not as effective as they could be:
 - 3.1. Due to tax risk and sunk administrative costs, companies tend not to use the SRED-related tax relief (Subsection 3.1).
 - 3.2. The "eScience Gateway" system, developed for 1.3 million EUR for the identification and administration of SRED results, had failed to attract business (Subsection 3.2).

4. Article 2 of the Resolution of the Seimas¹⁵, according to which the Government had to develop the implementation plan of the guidelines of Lithuanian science and innovation policy change by 01/12/2016, was not implemented (Subsection 4.2).

RECOMMENDATIONS

Having considered the European Union recommendation to rationalise the structure and funding of SRED, we present the following recommendations.

To the Ministry of Science and Education of the Republic of Lithuania

1. Assess the results of the implementation of the valley development programmes (as well as the achievement of the planned indicators) and account for them (Conclusion 1.3).
2. Periodically assess the scope (ratio) of internal and external consumers of the SRED infrastructure, which operates on the principle of open access. This could form the basis for an open innovation system, and encourage more effective use of public resources (Conclusion 1.1).
3. Having commenced the implementation of the encouragement measure for the Competence Centre and the innovation and technology transfer centres, assess whether it is effective and successful in providing the conditions necessary for the achievement of expected results, thereby ensuring monitoring which could lead to more effective use of funds (Conclusion 1.2).

To the Ministry of Economy of the Republic of Lithuania

4. In order to make the activities of the science and technology parks more effective, reinforce them by orienting their activities towards the achievement of results (Conclusion 1.2).
5. Determine the criteria necessary for the definition of a company engaged in innovative activities. This could help to avoid uncertainty in providing support and encouraging innovation (Conclusion 1.2).
6. Provide a legal definition of high-technology. This would ensure uniform treatment of the different sectors of high-technology and their purposeful development (Conclusion 2.3).
7. Encourage business to employ scientists by reducing the social security payments deducted from the salaries of researchers engaged in the implementation of SRED-related projects (Subsection 2.3).

To the Office of the Government of the Republic of Lithuania

8. Develop and approve an implementation plan of the provisions of the Lithuanian science and innovation policy change, approved by the Resolution of the Seimas¹⁶, specifying the measures of

¹⁵ Resolution No. XII-2654 "Concerning the Approval of the Guidelines of the Lithuanian Science and Innovation Policy Change" of the Seimas of the Republic of Lithuania, 27/09/2016.

purposeful coordination of the development of innovation and scientific progress, the implementation of research- and evidence-based strategic planning, and the development and implementation of innovation in the public and business sectors. Assess the implementation of the plan (Conclusion 4).

The plan for the implementation of the recommendations is provided in page 29.

¹⁶ Resolution No. XII-2654 of the Seimas of the Republic of Lithuania, 27/09/2016.