



# GOVERNMENT OF THE REPUBLIC OF LITHUANIA

## RESOLUTION

### LITHUANIAN INNOVATION STRATEGY FOR THE YEAR 2010-2020

February 17, 2010, No. 163  
Vilnius

Implementing the State Long-Term Development Strategy, approved by Resolution No. IX-1187 of 12 November, 2002, of the *Seimas* of the Republic of Lithuania (Official Gazette 2002, No. 113-5029) and the National Lisbon Strategy Implementation Programme 2008-2010, approved by Resolution No. 1047 of 1 October, 2008 of the Government of the Republic of Lithuania (Official Gazette, 2008, No. 124-4718), the Government of the Republic of Lithuania *d e c i d e s t o* :

1. Approve of Lithuanian Innovation Strategy for the year 2010-2020 (added).
2. Assign the Ministry of Economy together with the Ministry of Education and Science to:
  - 2.1. prepare and approve a plan of implementation means for the year 2010-2014 of Lithuanian Innovation Strategy for the year 2010-2020 until July 1, 2010
  - 2.2. prepare and approve a plan of implementation means for the year 2014-2017 of Lithuanian Innovation Strategy for the year 2010-2020 until January 1, 2014.
  - 2.3. prepare and approve a plan of implementation means for the year 2017-2020 of Lithuanian Innovation Strategy for the year 2010-2020 until January 1, 2017.
3. Assign the Ministry of Economy together with the Ministry of Education and Science to coordinate implementation of Lithuanian Innovation Strategy for the year 2010-2020.

Prime Minister

Andrius Kubilius

Minister of Economy

Dainius Kreivys

APPROVED

By Resolution No. 163 of 17 February, 2010 of  
the Government of the Republic of Lithuania

## LITHUANIAN INNOVATION STRATEGY FOR THE YEAR 2010-2020

### I. GENERAL PROVISIONS

1. Lithuanian Innovation Strategy for the year 2010-2020 (hereinafter – the Strategy) is a long-term strategic planning document which sets vision, objectives, goals and results to be achieved in the field of Lithuanian Innovation up to 2020. The purpose of this Strategy is to mobilize and manage state resources effectively: to create competitive knowledge economy based on the latest technologies and qualified human resources.

2. This Strategy was developed in accordance with the State Long-Term Development Strategy, approved by Resolution No. IX-1187 of 12 November, 2002, of the Government of the Republic of Lithuania (Official Gazette, 2002, No. 113-5029), the National Lisbon Strategy Implementation Programme 2008-2010, approved by Resolution No. 1047 of 1 October, 2008 of the Government of the Republic of Lithuania (Official Gazette, 2008, No. 124-4718), the science, technology and innovation development provisions of the Action Programme of the Government of the Republic of Lithuania, approved by Resolution No. XI-52 of 9 December, 2008 of the *Seimas* of the Republic of Lithuania (Official Gazette, 2008, No. 146-5870).

3. Definitions used in this Strategy:

**Innovation** – the process by means of which social and economic needs are met with new ideas and new products, services or business and organizational models are created; they are successfully introduced into existing markets or are capable of creating new markets.

**Innovation system** – a complex of interrelated organizations, links and means of their interaction.

**Research and experimental (social, cultural) development (hereinafter - R&D)** – systematic artistic activity for knowledge of nature, human, culture and society and use of its results.

**Creative society** – society of production of nonmaterial values; its resources are knowledge, and result is information.

**Creativity** – a complex of personal qualities that allow to achieve original, socially relevant, new quality results of activity; it is the process of mind (mental) and social process, incorporating discovery of new ideas and concepts or new links and interactions between known ideas and concepts.

**Entrepreneurship** – personal way of thinking and the social, managerial and other expertise, enabling to adapt the available knowledge in everyday life, i.e., specific skills, providing an opportunity not only to organize one's own business but also to take the risk of the decisions made.

4. Other definitions used in the Strategy are defined by laws and other legal acts of the Republic of Lithuania.

## **II. CURRENT SITUATION ANALYSIS OF THE INNOVATION AREA**

5. Country's economy is currently affected by the global economic decline and financial crisis. Innovation can help to overcome the crisis and promote economic recovery. New products, technologies, processes, business models and organizational structures would enhance competitiveness of enterprises in both domestic and foreign markets. In most developed countries innovation has long been the main engine for the economic growth, enabling achievement of high business efficiency and profitability, and rapidly improving quality of life for their citizens.

6. Structure of the Lithuanian economy is not modern. More added value is created in agriculture in Lithuania than in most European Union (hereinafter - EU) countries. The share of services in the economy did not change much for the past decade; it still constitutes slightly more than 60 percent of the country's gross domestic product (hereinafter – GDP), while the EU average is more than 70 percent of GDP. Traditional manufacturing dominates in the country's industry. It is oriented to processing of raw materials, using moderately advanced and non-advanced technologies. Manufacturing that uses advanced and moderately advanced technologies constitutes only one-fifth of sales of the Lithuanian extraction and manufacturing industries (Annex 1). Most of the Lithuanian industrial sectors compete with industry of countries with low or moderate economic development and, therefore, have few advantages.

7. Country's exports of goods and services have increased in recent years (in 2006 it was 48.8 billion Litas, in 2007 – 53.3 billion Litas and in 2008 – 66.9 billion Litas). The export share of products, produced by industries with advanced and moderately advanced technologies, also increased each year but not enough to reach the EU average. According to the data of Statistical Office of the European Commission (hereinafter – Eurostat), in 2006 the export share produced in these sectors accounted for 33.1 per cent, while the EU average was 48.1 per cent. Market services, requiring much knowledge, accounted for only 13.8 per cent of services exports (EU average was 48.7 per cent).

8. Our country is still far behind the majority of EU member states by labour productivity. According to Eurostat, added value created in one working hour increases every year in the Lithuanian economy but in 2008 it accounted only for 61.5 per cent of the EU average. Low indicators of value-added performance are partly due to poorly developed sector of advanced and moderately advanced technologies in the country.

9. According to the European Innovation Scoreboard data of 2008, the Lithuanian Summary Innovation Index (hereinafter – SII) is 0.29, while the EU-27 average SII is 0.47. According to SII, Lithuania overtakes only Romania, Latvia and Bulgaria. Such backlog of the Lithuanian SII compared to other countries is due to insufficient R&D funding (in 2007 it received 0.82 per cent in Lithuania, while in the EU – 1.85 per cent of GDP) and industrial

property protection indicators (in 2005 there were 1.3 European patents and only 0.5 patent under the Patent Cooperation Treaty for 1 million of Lithuania's population; while in the EU countries – 105.7 European patents and 52.2 patents under the Patent Cooperation Treaty).

10. In order to promote private investment in R&D and innovation, the *Seimas* of the Republic of Lithuania passed Law of Amendments and Supplement of Articles 2, 12, 13, 17, 18, 21, 23, 26, 28, 30, 31, 38<sup>1</sup>, 47 and 50 and Appendices 1 and 3 and Supplement by Article 17<sup>1</sup> to Law on Corporate Income Tax of the Republic of Lithuania of 10 April, 2008 (Official Gazette, 2008, No. 47-1749), which enables enterprises to deduct their costs for R&D from income three times. It is also allowed to write off fixed assets used for activity of R&D to costs in a shorter period. Law of Amendments and Supplement of Articles 2, 5, 12, 34, 38<sup>2</sup>, 41 and 58 and Supplement by Article 40<sup>1</sup> and Chapter IX<sup>1</sup> to Law on Corporate Income Tax the Republic of Lithuania of 18 December, 2008 (Official Gazette, 2008, No. 149-6000) provides that the enterprises, which invest in essential technological renewal, have the following reliefs of corporate income tax: such enterprises have a possibility to reduce their taxable profits up to 50 percent.

11. Lithuanian research system has acquired features of extensive development in recent years. This was partly influenced by infrastructure of research that did not correspond to market demands, fragmented investment of the first stage of the EU structural funds and predominance of formal assessment criteria of research activities. Principle of competitive financing of research was started to apply more widely only in 2008 when Research Council of Lithuania was reformed and legitimized as a fund provider of science programmes; therefore, the level of research lagged not only behind leading countries but also a part of the new EU member states too much. Poorly developed infrastructure of laboratories and small groups of scientists often determine a lack of abilities to initiate larger projects of the EU framework programme and manage them. Lithuanian scientists, who obtained academic degree at universities abroad and managed research projects in public and private institutions, rarely return to Lithuanian institutions due to poor competitive financing, unattractive conditions for career prospects, complicated administrative procedures and closed hierarchical structures. Supply of jobs for specialists, having such qualification, in business is also low because of poor innovation of enterprises and poor orientation towards support of research innovation. According to the data of the Department of Statistics to the Government of the Republic of Lithuania, 18,500 employees took part in R&D activities in Lithuania, 6,300 of whom held academic degree or pedagogical degree, in 2007. According to a number of R&D employees, Lithuania does not lag behind the EU average much (according to the data of Eurostat, there were 11.5 R&D employees for 1,000 labour force in Lithuania in 2007 and 14.6 R&D employees in EU). Most R&D employees work at higher education and government institutions; only 13.7 percent of R&D employees worked in business sector in 2007. Much more R&D employees work in most EU member states (the average of EU member states in 2007 was 42.3 percent).

12. EU structural support for the year 2007-2013, more than half of which is provided to allocate for the implementation of the Lisbon Strategy related goals, opens more development possibilities for financial incentives of innovation in business. World experience suggests that a properly working network of institutions of innovation support infrastructure is of the same importance as financial incentives. Integrated science, studies and business centers (valleys) created in Vilnius, Kaunas and Klaipeda should also promote innovation development. Implementing four programs of joint research, research development will be coordinated in particular sectors: natural resources and agriculture, biomedicine and biotechnologies, materials science and physical and chemical technologies and engineering and information technologies.

13. In order to implement and coordinate innovation policy in an optimal way, it is necessary to establish a permanent institution, Agency for Science, Innovation and Technology. Action programme of the Fifteenth Government of the Republic of Lithuania, part III “Plans for Seven Major Changes for the year 2008-2009”, clause 25 provides the establishment of this agency.

14. Due to present complicated economic situation, priorities have to be changed: it is necessary to move from traditional manufacture oriented towards processing of raw materials, real estate and economy of technical infrastructure to creative and intellectual manufacture and services, creating high added value.

Creativity of human resources and entrepreneurship determine innovation and innovation determine the creation of added value in the market, public welfare and competitiveness of the country.

Creative work creates high added value and allows big increase of income, providing long-term competitive advantage. A lack of creativity and related renewal may encourage stagnation and suppress ability to react to changes of cultural, business and other circumstances of social life, which reduces competitiveness.

Productivity and export would be increased only by widely implemented innovation.

### **III. ANALYSIS OF STRENGTHS, WEAKNESSES, POSSIBILITIES AND THREATS OF INNOVATION DEVELOPMENT**

15. A summary analysis of resources is presented in this chapter. Strengths, weaknesses, possibilities and threats (hereinafter – SWOT) are revealed, considering competitiveness of the Lithuanian economy and changes promoted by innovation development

16. Strengths:

16.1. Expenses for research of public sector in the year 2000-2007 increased up to 37.29 percent of GDP and now almost reach the EU average.

16.2. A number of R&D employees does not lag behind the EU average much.

16.3. Increase of export potential and extent in recent years.

16.4. Close economic relations with other EU countries and countries, belonging to the European Economic Area.

16.5. Lithuania is the leading country among EU member states according to a number of inhabitants, having higher or post-secondary education, and a number of persons (aged 20-29), who have specialities in social and engineering sciences and humanities.

16.6. A lot of Lithuanian citizens studied, obtained an academic degree, underwent a period of training and obtained unique professional experience in world education institutions and private companies in the last two decades.

16.7. Reliefs of corporate income tax for enterprises that invest in R&D and technological renewal were approved.

16.8. Infrastructure of telecommunication and services of information society (RAIN, e. signature, 3.5 G and high penetration of mobile connection) was developed.

#### 17. Weaknesses:

17.1. Few companies develop innovation; their research and abilities of (technological) development and innovation are not sufficient.

17.2. Education system (secondary schools and universities) is fragmented and quality of studies does not correspond to economy and society needs of today.

17.3. Hierarchical closeness of higher education and research institutions, unattractive structure of salaries and few career possibilities do not allow young talented people join these institutions and encourage brain drain.

17.4. Business sector invests in R&D too little.

17.5. There are too few R&D employees in business, especially in high-technology industry.

17.6. Innovation system is fragmented; internal relations among participants of innovation system are poor.

17.7. According to security indicators of industrial property (a number of patents and design), Lithuania lags behind the average of EU countries much.

17.8. Infrastructure of research is fragmented; a part of infrastructure does not correspond to the requirements of today.

17.9. Inter-institutional activities aimed at development of science and business cooperation and implementation of purposeful innovation policy are poorly coordinated; there is no institution that is directly responsible for development of science and business cooperation.

#### 18. Opportunities:

18.1. Law on Science and Studies of the Republic of Lithuania (Official Gazette, 2009, No. 54-2140) passed in 2009 allows to solve questions of intellectual property, finance research on the programme competitive basis and encourage scientists to undertake applied research.

18.2. Approved joint research programs will enable the coordination of research development and ensure proper use of EU structural funds.

18.3. Implementing programmes of science, studies and business centers (valleys), science potential and financial and scientific resources are concentrated via integration of research institutes and infrastructure, which will work according to principle of open access, is renewed.

18.4. World resources of oil and gas that are becoming depleted, their increasing demand, concentration of these resources in politically unstable countries and ecology problems will encourage to look for alternative energy sources and use energy efficiently.

18.5. Increase of extent of joint project activities implemented by EU companies and education institutions will allow using financial and intellectual EU resources better and take over experience of innovation dissemination.

18.6. Demand of products, having higher added value, is growing.

18.7. Enterprises will join international clusters which will promote development of innovation activity.

18.8. Participation in international research and (technological) development programmes.

18.9. EU financial support for business innovation in the year 2007-2013 is provided.

18.10. Intellectual potential is concentrated in business sectors open to science; private and public R&D infrastructure is formed and developed.

18.11. Foreign direct investment is developed and technologies are adopted; patent rights and licences are acquired, scientific or production experience and unpatented know-how are drawn.

19. Threats:

19.1. Lithuania does not withstand international competition; therefore, the most talented students, doctoral students and scientists leave Lithuania.

19.2. A lack of strategic (long-term) innovation.

19.3. Political instability and political decisions made are often inconsistent.

19.4. Strong and constantly developed R&D and innovation infrastructure, stable policy and financial resources in developed neighbour states may reduce advantage of innovation system created in Lithuania in competition for business innovation.

19.5. Low quality of research and technological development and narrow application of their results in business may increase present problems of enterprise competitiveness and raise new problems.

19.6. Qualified labour force, which is getting more expensive, may encourage the best pupils of general education school to choose popular specialities and reduce popularity of engineering and natural sciences; in this way, supply of qualified labour force for potential investors would decrease as well.

19.7. Growth of R&D and innovation sector and economy competitiveness in Brazil, Russia, India, China and other Asian countries.

19.8. Decline of international competitiveness of Lithuanian enterprises.

20. Considering the discussed condition of innovation and performed SWOT analysis, attention in this strategy is mostly paid to the following major problems, which directly affect innovation of Lithuania:

20.1. too low quality of human resources and material facilities.

20.2. a lack of creativity and entrepreneurship in private and public sectors.

20.3. a lack of systematic approach to innovation, poor culture of inter-institutional cooperation and a lack of cooperation traditions between business and science.

#### **IV. VISION, OBJECTIVES AND GOALS OF INNOVATION DEVELOPMENT**

21. The vision of this strategy is as follows: the basis of the Lithuanian economy is the production of high added value products and services; its competitiveness in the global market will be determined by environment favourable for innovative business; the system of education, science, research and development, interaction with business will help to educate a creative society and will create high-level knowledge base for novelties.

22. The objective of this strategy is to build a creative society and create the conditions for the development of entrepreneurship and innovation.

23. Objectives and goals of innovation development are as follows:

23.1. to accelerate Lithuania's integration into the global market ("Lithuania without borders");

23.1.1. to strengthen knowledge base and develop integrated science, studies and business centers (valleys) of the international level;

23.1.2. to participate actively in the creation of the European Research Area;

23.1.3. to promote business networking and joining international innovation networks;

23.1.4. to participate in the implementation of international initiatives (Strategy for the Baltic Sea Region, Knowledge and Innovation Communities created by European Institute of Innovation and Technology, activities of European Space Agency and others);

23.1.5. to develop export of high added value products and services and business internationalisation;

23.1.6. to promote foreign direct investment in high added value products and services;

23.2. to educate a creative and innovative society;

23.2.1. to create education and higher education system which promotes creativity and innovation;

23.2.2. to promote entrepreneurship of education of various levels and private sectors;

23.2.3. to promote life-long learning;

23.3. to develop broad-based innovation:

23.3.1. to promote technological, non-technological, social and public innovation;

23.3.2. to encourage enterprises, having considerable growth potential;

23.3.3. to promote innovation oriented towards demand and consumers' needs;

23.3.4. to increase access of small and medium-sized enterprises to various funding sources;

23.3.5. to establish conditions to commercialize research: to create necessary infrastructure (technology transfer centre) and legal mechanisms;

23.3.6. to develop effective mechanisms of business and science cooperation and schemes for support of joint business and science projects;

23.4. to implement a systematic approach to innovation;

23.4.1. to ensure inter-institutional coordination when implementing the state innovation strategy;

23.4.2. having reorganized research institutes, strengthen their cooperation with business;

23.4.3. to strengthen interaction among science, studies and business;

23.4.4. to establish Agency for Science, Innovation and Technology, the institutional structure, responsible for business and science cooperation;

23.4.5. to ensure periodic (every two years) international assessment of Lithuanian innovation system and management reforms of public sector.

24. Since none of the states can be leading in all areas, it is important to choose economy sectors where Lithuania would be able to apply limited resources best and achieve the most optimal results. The most promising sectors in Lithuania should be chosen the ones that create high added value and have a critical mass of human potential of high qualification, development potential in the market and possibilities to increase productivity. Therefore, it is likely that the growth of the Lithuanian economy will be further determined by traditional industries in the future but their competitiveness in the global market will depend on whether business will perceive the importance of advanced technologies and will be able to use their possibilities.

25. High added value is also created by the following sectors of Lithuanian manufacturing industries, which are quite competitive in the international market: manufacture of food products and drinks, manufacture of wood and wood products, manufacture of furniture, manufacture of textiles and manufacture of chemicals, chemical products and chemical fibre. Advanced and medium-advanced technology industry should help traditional industry to become innovative industry of consumer products. Sectors of biotechnologies and laser technologies and industry of electricity and optical equipment have high potential in Lithuania. Sector of information and communication technologies is promising as well. Services of transport and logistics competitive in the international market, which have high development potential in innovation use, also create high added value

26. Lithuania should give especially much attention to the following new promising economy areas, which could determine the country's welfare in the future: clean technologies, future energetic, creative industry, welfare and wellness areas (pharmacy, medical and

wellness services, medical and wellness equipment, technical and gear area, production of ecological agricultural and food products and other).

## **V. RESULTS OBTAINED IN INNOVATION AREA (ASSESSMENT CRITERIA)**

27. Implementation results of this strategy will be assessed according to indicators of European Innovation Scoreboard, which are annually announced by the European Commission (Annex 2).

28. The data announced publicly by the Department of Statistics to the Government of the Republic of Lithuania, Eurostat and Organisation for Economic Co-operation and Development (OECD) will be used for observation and assessment of this strategy. Data of sociological polls and research can also be used.

29. State institutions and institutions responsible for the implementation of this strategy, are responsible for observation of changes of European Innovation Scoreboard indicators within their competence.

## **VI. IMPLEMENTATION OF STRATEGY AND ACCOUNTABILITY**

30. This strategy is implemented by operators within competence indicated in the plan of implementation means of this strategy. Science and studies institutions, municipalities and social and economic partners participate in the implementation of this strategy.

31. The Ministry of Economy together with the Ministry of Education and Science considers problematic areas of Lithuania and respective indicators of European Innovation Scoreboard when preparing plans of implementation means of this strategy.

32. The Ministry of Economy together with the Ministry of Education and Science observes and assesses implementation of this strategy in every calendar year (in the year 2010–2020). They observe tendencies of changes of assessment indicators in innovation area, indicated in this strategy. The year 2008 is considered the base year of assessment.

33. It is intended to allocate competence of the Ministry of Economy and the Ministry of Education and Science in observing implementation and assessment of this strategy and indicate particular operators, responsible for the implementation of this strategy, in the prepared plans of implementation means of this strategy.

34. The Ministry of Economy and the Ministry of Education and Science may invite external experts for the assessment of this strategy, conduct sociological polls and so on.

35. Responsible operators, indicated in the plans of implementation means of this strategy, provide information of the prescribed form about the implementation of this strategy in the last calendar year within their competence to the Ministry of Economy by March 1 every year.

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Lithuanian Innovation Strategy  
for the year 2010–2020  
Annex 1

**STRUCTURE OF PRODUCTION SOLD BY EXTRACTION AND MANUFACTURING  
INDUSTRIES (IN PERCENT)**

	In 2002	In 2003	In 2004	In 2005	In 2006	In 2007	In 2008
Mining and quarrying	1.7	1.5	1.4	1.3	1.2	1.2	1
Manufacturing:	98.1	98.2	98.4	98.5	98.6	98.6	99
manufacture, using advanced and medium-advanced technologies:	17.3	17.5	17.5	16.2	16.7	21.1	20.8
manufacture of basic pharmaceutical products and pharmaceutical preparations	0.4	0.3	0.4	0.3	0.3	0.3	0.2
manufacture of computer, electronic and optical products	4.5	4.8	4.6	3.3	2.7	2.2	1.4
manufacture of chemicals and chemical products	5.1	5	5	5.4	6.4	10.9	11.9
manufacture of electrical equipment	1.9	1.8	1.8	1.7	1.7	1.6	1.4
manufacture of machinery and equipment n.e.c	1,3	1.4	1	1.1	1.3	1.4	1.9
manufacture of motor vehicles, trailers and semi-trailers	1.4	2	2.3	1.8	1.7	1.9	1.3
manufacture of other transport equipment	1.1	1	1.1	1.1	0.9	1	0.9
repair and installation of machinery and equipment	1.6	1.2	1.3	1.5	1.7	1.8	1.8
manufacture, using medium-advanced and low technologies and also low technologies:	80.8	80.7	80.9	82.3	81.9	77.7	78.2
manufacture of refined oil products	20.5	20.7	25.7	31.1	29.1	19.7	31.3
manufacture of food products	17.6	17.5	16.3	15.1	15	17.1	15
manufacture of furniture	3.7	4.1	4.6	4.1	4.7	5.2	4.7
manufacture of wood and wood products, except furniture	6.1	6.6	6	5.8	5.5	6.1	4.6
manufacture of rubber and plastic products	3.3	4.4	3.9	4.1	4.5	4.6	3.6
manufacture of other non-metallic mineral products	2.9	3.2	2.9	3.2	4.1	4.6	3.3
manufacture of beverages	4.2	3.8	3.1	2.9	2.8	3.3	2.9
manufacture of wearing apparel	9.6	8.9	7.1	5.4	4.5	4.1	2.9
manufacture of fabricated metal products, except machinery and equipment	1.9	2.7	3.3	3.4	3.8	4.7	2.8
manufacture of textile products	4.9	3.6	3.5	2.9	2.8	2.8	1.9
manufacture of tobacco products	1.4	1	0.9	1.2	1.6	1.6	1.5
manufacture of paper and paper products	1.5	1.4	1.2	1	1.2	1.3	1.1

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(1 priedas)

	In 2002	In 2003	In 2004	In 2005	In 2006	In 2007	In 2008
printing and reproduction of recorded media	1.2	1.2	1.2	0.9	1.1	1.1	1
other manufacturing	0.7	0.7	0.7	0.7	0.7	0.9	0.9
manufacture of basic metals	0.4	0.3	0.2	0.2	0.2	0.3	0.5
manufacture of leather and leather products	0.9	0.6	0.3	0.3	0.3	0.3	0.2

The source is the data of the Department of Statistics to the Government of the Republic of Lithuania and calculations of the Ministry of Economy.

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Lithuanian Innovation Strategy  
for the year 2010–2020  
Annex 2

**INDICATORS OF LITHUANIAN INNOVATION STRATEGY FOR THE YEAR 2010–2020  
ACCORDING TO EUROPEAN INNOVATION SCOREBOARD**

It is sought that Lithuanian summary innovation index (according to summary value of all indicators) would reach the European average in 2020.

Indicator	EU-27* states	Lithuania*
SUMMARY INNOVATION INDEX (SII)	0.475	0.294
1. Costs:		
1.1. Human resources:		
1.1.1. S&E and SSH graduates per 1000 population aged 20-29 (first stage of tertiary education)	40.3	60.3
1.1.2. S&E and SSH doctorate graduates per 1000 population aged 25-34 (second stage of tertiary education)	1.11	0.61
1.1.3. Population with tertiary education per 100 population aged 25-64	23.5	28.91
1.1.4. Participation in life-learning per 100 population aged 25-64	9.7	5.3
1.1.5. Youth education attainment level	78.1	89
1.2. Finance and support:		
1.2.1. Public R&D expenditures (% of GDP)	0.65	0.58
1.2.2. Venture capital (% of GDP)	0.107	–
1.2.3. Private credit (relative to GDP)	0.131	0.61
1.2.4. Broadband access by firms (% of all firms)	77	53
2. Firm activities:		
2.1. Firm investments:		
2.1.1. Business R&D expenditures (% of GDP)	1.17	0.23
2.1.2. IT expenditures (% of GDP)	2.7	1.8
2.1.3. Non- R&D innovation expenditures (% of turnover)	10.3	0.64
2.2. Linkages and entrepreneurship:		
2.2.1. SMEs innovating in-house (% of SMEs)	30	17.7
2.2.2. Innovative SMEs, collaborating with others (% of SMEs)	9.5	10.3
2.2.3. Firm renewal (SME entries plus exits) (% of SMEs)	5,1	9
2.2.4. Public-private co-publications per million population	314	0
2.3. Throughputs:		
2.3.1. EPO patents per million population	105.7	1.3
2.3.2. Community trademarks per million population	124.6	20.4
2.3.3. Community designs per million population	121.8	2.6
2.3.4. Technology Balance of Payments flows (% of GDP)	1.07	0.08
3. Outputs:		
3.1. Innovators:		
3.1.1. SMEs introducing product or process innovations (% of SMEs)	33.7	19.7
3.1.2. SMEs introducing marketing or organizational innovations (% of	40	28.5

Indicator	EU-27* states	Lithuania*
SMEs)		
3.1.3. Resource efficiency innovators enterprises:		
3.1.3.1. Share of innovators where innovation has significantly reduced labour costs (% of firms)	18	10.7
3.1.3.2. Share of innovators where innovation has significantly reduced the use of materials and energy (% of firms)	9.6	8.5
3.2. Economic effects:		
3.2.1. Employment in medium-high and high- tech manufacturing (% of workforce)	6.69	2.44
3.2.2. Employment in knowledge-intensive services (% of workforce)	14.51	8.19
3.2.3. Medium and high-tech manufacturing exports (% of total exports)	48.1	33.1
3.2.4. Knowledge-intensive services export (% of total services exports)	48.7	13.8
3.2.5. New-to-market sales (% of turnover)	8.6	6.04
3.2.6. New-to-firm sales (% of turnover)	6.28	6.39

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\*Data of the European Innovation Scoreboard in 2008.

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