

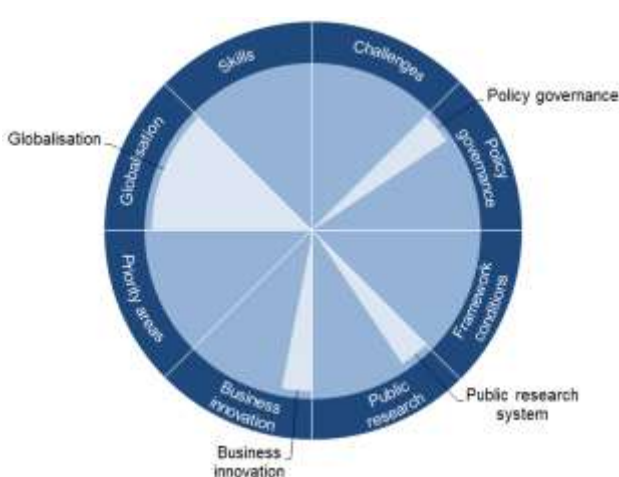
## LITHUANIA

Following a 15% plunge in GDP in 2009, the Lithuanian government launched broad economic reforms. Combined with spending cuts and tax rises, these led to a quick recovery in 2010. Since then Lithuania has been one of the fastest-growing EU economies, with GDP rising by 4.1% a year on average over 2011-2014. Labour productivity has increased steadily since 2009 (2). Lithuania's GERD also has increased but is still far below the OECD average (1). The funds from abroad increased from 10.7% of GERD in 2004 to 34.3% of GERD in 2014. The government has launched the Lithuanian Innovation Development Programme (LIDP) 2014-20 to support competitiveness and economic growth through innovation. LIDP is being implemented according to the action plans which cover the two periods: 2014-2017 and 2018-2020. Furthermore, the government has launched the National Programme for the Development of Studies, Research and Experimental (social and cultural) Development for 2013-2020 (NPDSRED). The Programme aims at strengthening the country's competitiveness and increasing welfare by developing education, R&D and innovation systems. It is being implemented according to the action plans for two periods: 2013-15 and 2016-18.

**Table 1.** Gross domestic expenditure on R&D (GERD)

	LTU	OECD
<b>GERD</b>		
USD million PPP, 2014	815	1 181 495
As a % of total OECD, 2014	0.1	100
<b>GERD intensity and growth</b>		
As a % of GDP, 2014	1.02	2.38
(annual growth rate, 2009-14)	(+6.9)	(+2.3)
<b>GERD publicly financed</b>		
As a % of GDP, 2014	1.51	0.61
(annual growth rate, 2009-14)	(-3.2)	(+2.5)

**Figure 1.** Major STI policy priorities, 2016





## Hot issues

### Improving the governance of the innovation system and policy

Creating a coherent R&D and innovation system is a long-term challenge and a strategic goal for LIDP 2014-2020 and NPDSRED. Until recently, lack of co-ordination of R&D and innovation policy by the responsible ministries led to fragmented and incompatible policies and weakened outcomes. In 2013, the Strategic Council for Research, Development and Innovation, led by the prime minister, was formed to co-ordinate STI policy and to manage the setting of priorities. The definition of guidelines around STI policy are currently being defined and are taking into consideration the inputs provided by the recent OECD Review of Innovation Policy of Lithuania. The Science Council has become the Research Council, which is actively involved in competitive research funding, and an Agency for Science, Innovation and Technology (MITA) is operating in order to foster industry-science co-operation and to create a friendly environment for business innovation. The role of MOSTA has been recently strengthened in order to become a STI intelligence body. The co-ordination group which consists of representatives of ministries, industry and science was created to manage the implementation of the smart specialisation processes. The recent preparation for smart specialisation strategies (RIS3) is an example of improved governance, with enhanced evidence-based decision-making and the involvement of all stakeholders.

### Encouraging business innovation in firms and innovative entrepreneurship

BERD is very low as a share of GERD (29.6%) and of GDP (0.30%) and far below the OECD median (5<sup>d</sup>). Lithuania has few large corporate R&D investors (5<sup>e</sup>). It ranks 20<sup>th</sup> on the World Bank's Ease of Doing Business Index (2016), ahead of many OECD economies. In recent years, new schemes were developed to encourage business innovation and innovative entrepreneurship under the Operational Programme for EU Structural Funds Investments for 2014-2020, which include business R&D funding, the promotion of clustering and networking and the support for SMEs. Innovative business promotion project (INOVEKS) (2013-15) was implemented to create opportunities for students, doctoral students and young researchers to generate and refine technological business ideas and establish technology based start-ups. The incubation project (TECHNOSTARTAS) (2013-15) was also implemented to stimulate commercialization of research results, foster new technology based products and develop business management in start-ups. Furthermore Lithuania has begun focusing on demand-side policy. The guidelines on innovative public procurement were published to stimulate public procurement of better quality items more adapted to customer needs, and providing superior performance in 2014. The Basis of Pre-Commercial Procurement were approved by the Government in 2015.

### Addressing challenges of STI globalisation and increasing international cooperation

While the internationalisation of Lithuania's STI activities has made progress in recent years, it still remains weak in a number of respects. For example, Lithuania produced 304 international scientific co-publications per million population in 2012, compared to a European average of 343. The initiative that promotes the development of networks and co-operation in the Baltic Sea Region (BSR) focuses on the internationalisation of SMEs. Through the BSR Innovation Express Call in 2015, 27 new international collaboration projects were established in the region. Several programmes are being implemented to foster international co-operation. InnoConnect LT aims to foster international partnerships and networking through supporting to participate in international R&D initiatives in the European Union and to create contacts with international partners. SmartInvest LT and SmartInvest LT+ aim to attract the foreign direct investments in R&D. NPDSRED outlines that Lithuania will promote the international integration of Lithuania's research infrastructures by becoming a member of four international initiatives. This will be achieved in line with the Roadmap for Research Infrastructure in Lithuania and by integrating into ESFRI infrastructures that match Lithuania's areas of smart specialisation best and are developed at the national and EU level.





## Strengthening the public research system

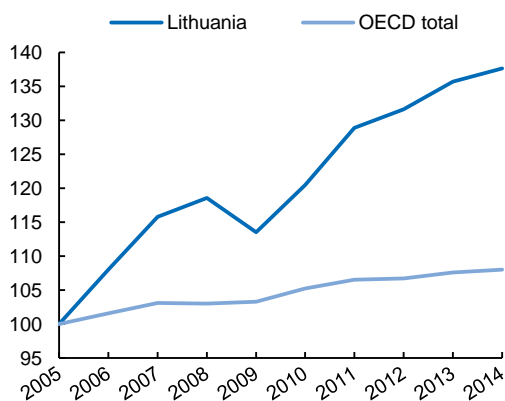
Although Lithuania has few leading universities (5<sup>b</sup>), higher education institutions account for 53.1% of GERD and the government sector for 17.3%. In 2009, the Parliament adopted a Law on Higher Education and Research to reform and restructure the higher education and research system. Reforms have focused on a modernization of the system by improving quality, accessibility, competitiveness and efficiency. A shift towards programme-based competitive funding increased the share of competitive R&D funding to one-third of overall R&D funding. The reorganisation and consolidation of HEIs and PRIs introduced new governance mechanisms in universities and colleges and increased their accountability, and external and independent evaluations were introduced. IPR frameworks were developed for inventions made in HEIs and PRIs. Adopted in December 2012, the National Programme for the Development of Studies, Research and Experimental Development for 2013-20 outlines further objectives for developing higher education, research and innovation systems. Joint initiatives are being implemented to promote business and science collaboration and look for new public and business relevant solutions. Open Access to Science and Research (MITAP) project was implemented to facilitate technology transfer in Open Access Centres with the aim of strengthening the international competitiveness of Lithuanian researchers. Furthermore, the government pursues its initiative of stimulating cooperation between businesses and research and higher education institutions through additional national budget funding granted to Science Institutions on cooperative R&D agreements.



## Some key STI performance indicators

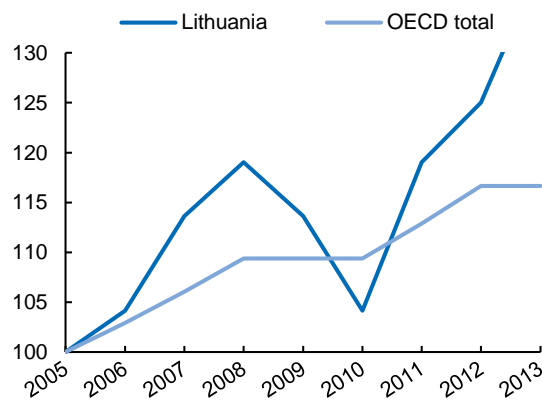
**Figure 2.** Economic performance

Labour productivity, GDP per hour worked,  
index 2005=100



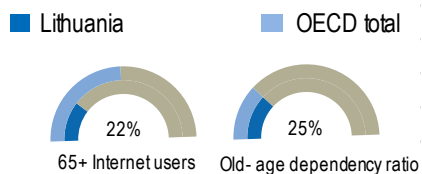
**Figure 3.** Environmental performance

Green productivity, GDP per unit of CO2  
emitted, index 2005=100



**Figure 4.** Ageing

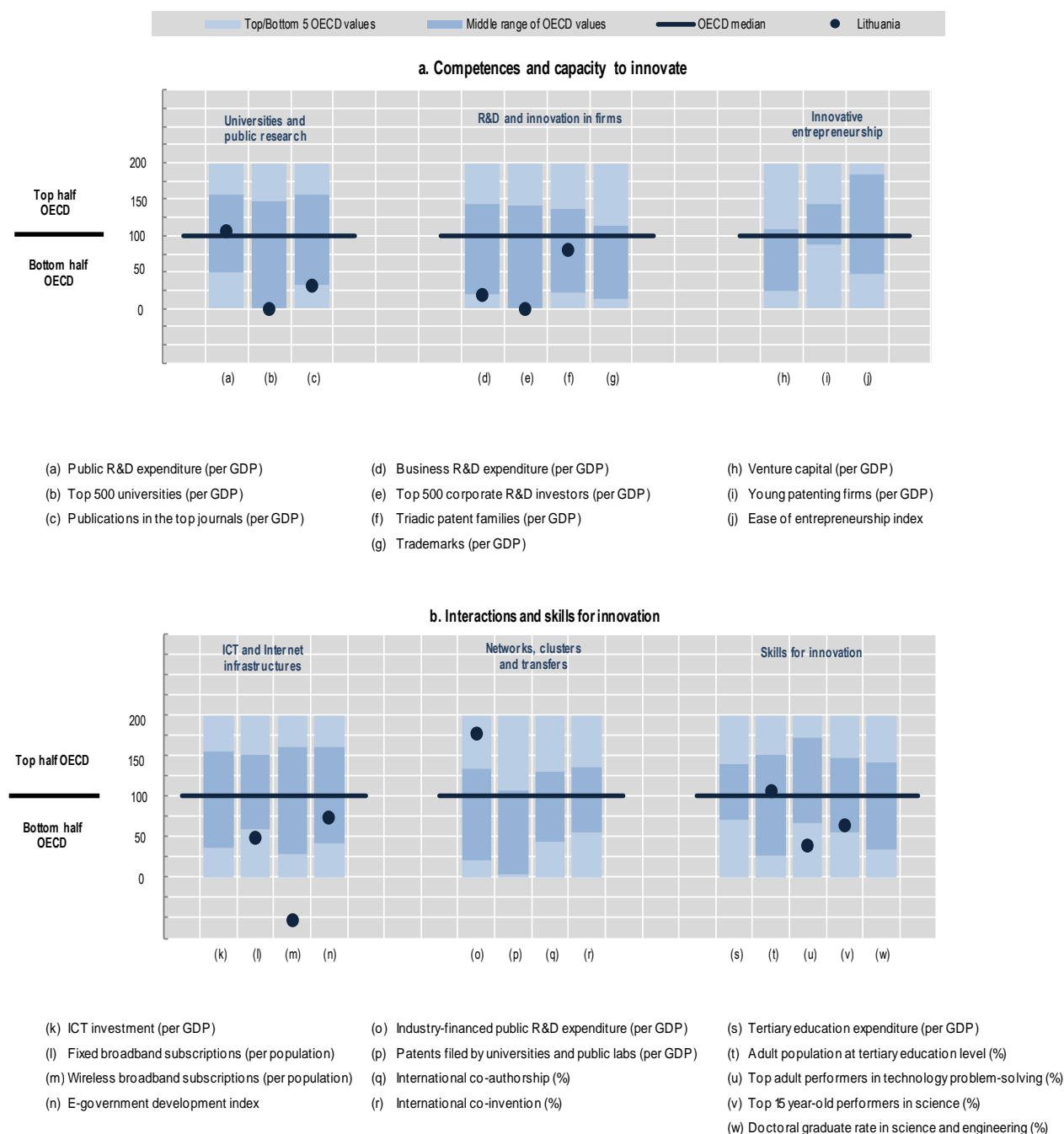
2015 or latest year available



## Benchmarking national STI systems

**Figure 5. Science and Innovation in Lithuania**

Comparative performance of national science and innovation systems, 2016



Note: Normalised index of performance relative to the median values in the OECD area (Index median=100).



## Highlights of the Lithuanian STI system

### New sources of growth

In 2013, the Strategic Council for Research, Development and Innovation approved six priority areas: energy and sustainable environment; inclusive and creative society; agro-innovation and food technology; new production processes, materials and technologies; health technology and biotechnology; transport, logistics and ICTs, which were adopted by the Government. The Programme on the Implementation of the Priority Areas of Research and Development and Innovation (Smart Specialisation) was adopted in 2014, with 20 R&D and innovation priorities. According to the Smart Specialization strategy, the Ministry of Economy and the institution commissioned by Ministry of Science and Education – the Research and Higher Education Monitoring and Analysis Center (MOSTA)- will monitor the implementation of the R&D&I Priority Action Plans and organise interim and final evaluations, assess its impact on R&D&I development and economic competitiveness and submit results and conclusions to the Coordination Group

### New challenges

Several national programmes focus on green innovation. These include the Lithuanian National Strategy for Sustainable Development and the Green Industry Innovation Programme (funded by the Norwegian Financial Mechanisms 2009-14). In 2013, the Ministry of Education and Science launched new national research programmes on social challenges: Modernity in Lithuania; Welfare society; Towards future technologies; Healthy ageing; and Sustainability of agro, forest and water ecosystems. In 2015 the Research Council of Lithuania in wide collaboration with the representatives of the governmental sector initiated need-driven research projects, which were designed to finance urgent short-term applied research, based on needs of the state. As a result of the first competitive call for proposals, 9 projects were selected.

### Clusters and regional policies

Two major measures implemented during 2007-13, InnoCluster LT and InnoCluster LT+, focused on the promotion of clusters, which created 30 clusters and invested in R&D infrastructure. Lithuania incorporates a cluster policy in LIDP 2014-2020. A project launched in 2013 aims at fostering the internationalisation of SMEs, clusters and science partnerships and networking activities (Klaster.LT). InnoConnect LT also aims at fostering international partnerships and networking through supporting to participate in international R&D initiatives in the European Union and to create contacts with international partners. The BSR Innovation Express supports the development of the cross-sector activities of clusters.

### Skills for innovation

The percentage of adults who have attained tertiary education is above the OECD average for all age cohorts (25-64 years of age). Approximately 30% of the total population (15-74 years of age) has obtained a higher education degree. On the other hand, in the OECD PISA survey 2012 for 15-year-old students, Lithuanian students scored below the OECD average in all three surveyed areas: mathematics, reading and science. Another issues regarding skills for innovation in Lithuania is the very high number of skilled people leaving the country to be employed abroad. The 2012-16 national priorities include a strong focus on the **development of mathematics and informatics skills and curricula. Various programmes support researchers' career development, promote top-performing international researchers, encourage researcher and student mobility, develop skills training and the hiring of skilled personnel in firms, and disseminate knowledge about science and technology among students.** Several new projects for the promotion of innovative start-ups and spin-offs were implemented by the Agency for Science, Innovation and Technology. They included the new technological entrepreneurship projects Innovative Business Promotion and Technostart, which

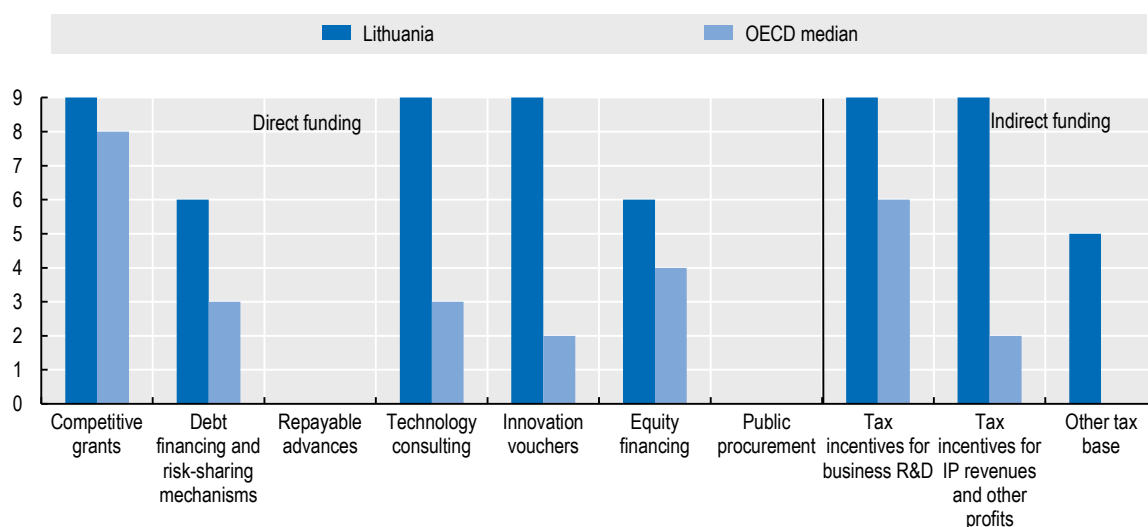


promoted the commercialisation of research results and created opportunities for young researchers to develop their ideas and establish new technological businesses in Lithuania. The projects brought together the largest Lithuanian universities, S&T parks, and other research institutions.

## National STI policy mix

**Figure 6. Most relevant policy instruments of funding for business R&D, 2016**

Country self-assessment, index (9 = high and increasing relevance to 0 = not used)



*Note:* Policy information comes from country responses to the EC/OECD International Survey on STI Policies (STIP) 2016 and 2014. Lithuania's responses are available in the EC/OECD International Database on STI Policies, edition 2016 at [http://qdd.oecd.org/DATA/STIPSurvey/LTU...STIO\\_2016](http://qdd.oecd.org/DATA/STIPSurvey/LTU...STIO_2016).

*Source:* See the reader's guide and methodological annex.

StatLink <http://dx.doi.org/10.1787/888933433936>

## References


### General references

- Dernis H., Dosso M., Hervás F., Millot V., Squicciarini M. and Vezzani A. (2015), World Corporate Top R&D Investors: Innovation and IP bundles, A JRC and OECD common report, Luxembourg, Publications Office of the European Union.
- EC (European Commission) (2015), EU R&D Scoreboard: The 2015 EU Industrial R&D Investment Scoreboard, European Commission, Luxembourg, <http://iri.jrc.ec.europa.eu/scoreboard.html>, accessed 4 October 2016.
- Flanagan, K., E. Uyarra and M. Laranja (2010), "The policy mix for innovation: rethinking innovation policy in a multilevel, multi-actor context", Munich Personal RePEc Archive (MPRA) No. 23567, July.
- IEA (2015), CO<sub>2</sub> Emissions from Fuel Combustion 2015, OECD Publishing, Paris, DOI: [http://dx.doi.org/10.1787/co2\\_fuel-2015-en](http://dx.doi.org/10.1787/co2_fuel-2015-en)



- Kergroach, S. (2010), "Monitoring innovation and policies: developing indicators for analysing the innovation policy mix", internal working document of the Directorate for Science, Technology and Industry (DSTI), OECD, Paris.
- Kergroach, S., J. Chicot, C. Petrolis, J. Pruess, C. van Ooijen, N. Ono, I. Perianez-Forte, T. Watanabe, S. Fraccola and B. Serve, (forthcoming-a), "Mapping the policy mix for innovation: the OECD STI Outlook and the EC/OECD International STIP Database", *OECD Directorate for Science, Technology and Innovation working paper series*.
- Kergroach, S., J. Pruess, S. Fraccola and B. Serve (forthcoming-b), "Measuring some aspects of the policy mix: exploring the EC/OECD International STI Policy Database for policy indicators", *OECD Directorate for Science, Technology and Innovation working paper series*.
- OECD (Organisation for Economic Co-operation and Development) (2016), Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2016-en>.
- OECD (2016), OECD Economic Outlook, Volume 2016 Issue 1, OECD Publishing, Paris, [http://dx.doi.org/10.1787/eco\\_outlook-v2016-1-en](http://dx.doi.org/10.1787/eco_outlook-v2016-1-en).
- OECD (2016), OECD Country Reviews of Innovation Policy, [www.oecd.org/sti/inno/oecdreviewsofinnovationpolicy.htm](http://www.oecd.org/sti/inno/oecdreviewsofinnovationpolicy.htm).
- OECD (2015), Pensions at a Glance 2015: OECD and G20 indicators, OECD Publishing, Paris, [http://dx.doi.org/10.1787/pension\\_glance-2015-en](http://dx.doi.org/10.1787/pension_glance-2015-en).
- OECD (2015), OECD Skills Outlook 2015: Youth, Skills and Employability, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264234178-en>.
- OECD (2015), OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society, OECD Publishing, Paris, [http://dx.doi.org/10.1787/sti\\_scoreboard-2015-en](http://dx.doi.org/10.1787/sti_scoreboard-2015-en).
- OECD (2015), OECD Digital Economy Outlook 2015, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264232440-en>.
- OECD (2015), Entrepreneurship at a Glance 2015, OECD Publishing, Paris, [http://dx.doi.org/10.1787/entrepreneur\\_aag-2015-en](http://dx.doi.org/10.1787/entrepreneur_aag-2015-en).
- OECD (2015), National Accounts at a Glance 2015, OECD Publishing, Paris, [http://dx.doi.org/10.1787/na\\_glance-2015-en](http://dx.doi.org/10.1787/na_glance-2015-en).
- OECD (2015), The Innovation Imperative: Contributing to Productivity, Growth and Well-Being, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264239814-en>.
- OECD (2014), Measuring the Digital Economy: A New Perspective, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264221796-en>.
- OECD (2014), OECD Science, Technology and Industry Outlook 2014, OECD Publishing, Paris, [http://dx.doi.org/10.1787/sti\\_outlook-2014-en](http://dx.doi.org/10.1787/sti_outlook-2014-en).
- OECD (2011), Towards Green Growth: Monitoring Progress: OECD Indicators, OECD Green Growth Studies, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264111356-en>.
- OECD (2010), "The Innovation Policy Mix", in OECD Science, Technology and Industry Outlook 2010, OECD Publishing, Paris, [http://dx.doi.org/10.1787/sti\\_outlook-2010-48-en](http://dx.doi.org/10.1787/sti_outlook-2010-48-en).
- OECD (2010), Measuring Innovation: A New Perspective, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264059474-en>.
- OECD and SCImago Research Group (CSIC), (2014), Compendium of Bibliometric Science Indicators 2014, <http://oe.cd/scientometrics>.





Van Steen, J. (2012), “Modes of public funding of R&D: Towards internationally comparable indicators”, OECD Science, Technology and Industry Working Papers, No. 2012/4, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5k98ssns1qzs-en>.

## Databases and data sources

Academic Ranking of World Universities (2016), “Shanghai ranking academic ranking of World universities”, [www.shanghairanking.com](http://www.shanghairanking.com), accessed 4 October 2016.

Bureau Van Dijk (2011), ORBIS Database, Bureau Van Dijk Electronic Publishing.

EC/OECD (forthcoming), International Database on Science, Technology and Innovation Policies (STIP), edition 2016, [www.innovationpolicyplatform.org/ecoecd-stip-database](http://www.innovationpolicyplatform.org/ecoecd-stip-database).

Elsevier B.V. (2014), Elsevier Research Intelligence, [www.elsevier.com/online-tools/research-intelligence/products-and-services/scival](http://www.elsevier.com/online-tools/research-intelligence/products-and-services/scival), accessed 4 October 2016.

Eurostat (2016), Education and Training Databases, June, <http://ec.europa.eu/eurostat/web/education-and-training/data/database>, accessed 4 October 2016.

Eurostat (2016), Total intramural R&D expenditure (GERD) by sectors of performance and source of funds, April, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd\\_e\\_gerdfund&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_e_gerdfund&lang=en), accessed 4 October 2016.

Graham, S., G. Hancock, A. Marco and A. Myers (2013), “The USPTO Trademark Case Files Dataset: Descriptions, Lessons, and Insights”, SSRN Working Paper, <http://ssrn.com/abstract=2188621>.

IEA (International Energy Agency) (2015), CO2 Emissions from Fuel Combustion Database, [/www.iea.org/publications/freepublications/publication/name\\_43840.en.html](http://www.iea.org/publications/freepublications/publication/name_43840.en.html).

ILO (International Labour Organization) (2016), Key Indicators of the Labour Market database, [www.ilo.org/global/statistics-and-databases/research-and-databases/kilm/lang--en/index.htm](http://www.ilo.org/global/statistics-and-databases/research-and-databases/kilm/lang--en/index.htm), accessed 4 October 2016.

IMF (International Monetary Fund) (2016), World Economic Outlook (WEO) Databases, July, [www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx](http://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx), accessed 4 October 2016.

ITU (International Telecommunication Union) (2016), World Telecommunication/ICT Indicators 2016, [www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx](http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx), accessed 4 October 2016.

OECD (2016), Activity of Multinational Enterprises (AMNE) Database, August, [www.oecd.org/industry/ind/amne.htm](http://www.oecd.org/industry/ind/amne.htm).

OECD (2016), ANBERD Database, July, [www.oecd.org/sti/anberd](http://www.oecd.org/sti/anberd).

OECD (2016), OECD Annual Labour Force Statistics Database, July, [www.oecd.org/employment/labour-stats/](http://www.oecd.org/employment/labour-stats/).

OECD (2016), Broadband Portal, August, [www.oecd.org/sti/broadband/oecdbroadbandportal.htm](http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm).

OECD (2016), OECD Education Databases, September, <http://gpseducation.oecd.org/>

OECD (2016), Entrepreneurship Financing Database.

OECD (2016), Educational Attainment and Labour Force Status Database, <https://data.oecd.org/education.htm>.

OECD (2016), OECD Income Distribution Database, [www.oecd.org/social/income-distribution-database.htm](http://www.oecd.org/social/income-distribution-database.htm).

OECD (2016), Main Science and Technology Indicators (MSTI) Database, June, [www.oecd.org/sti/msti](http://www.oecd.org/sti/msti).

OECD (2016), OECD National Accounts Databases, September, [www.oecd.org/std/na/](http://www.oecd.org/std/na/).



- OECD (2016), OECD/NESTI data collection on R&D tax incentives, July, [www.oecd.org/sti/rd-tax-stats.htm](http://www.oecd.org/sti/rd-tax-stats.htm).
- OECD (2016), Patent Database, June, [www.oecd.org/sti/inno/oecdpatentdatabases.htm](http://www.oecd.org/sti/inno/oecdpatentdatabases.htm).
- OECD (2016), Productivity Database, September. [www.oecd.org/std/productivity-stats](http://www.oecd.org/std/productivity-stats).
- OECD (2016), Programme of International Students Assessment (PISA) Database, OECD Education Statistics, June, [www.pisa.oecd.org](http://www.pisa.oecd.org).
- OECD (2016) Programme for the International Assessment of Adult Competencies (PIAAC) Database, OECD Education Statistics, June [www.oecd.org/skills/piaac/surveyofadultskills.htm](http://www.oecd.org/skills/piaac/surveyofadultskills.htm).
- OECD (2016), Research and Development Statistics (RDS) Database, April, [www.oecd.org/sti/rds](http://www.oecd.org/sti/rds).
- OECD (2016), STI Micro-data Lab: Intellectual Property Database, June, <http://oe.cd/ipstats>.
- OECD (2014), Product Market Regulation (PMR) Database, March, [www.oecd.org/economy/pmr](http://www.oecd.org/economy/pmr).
- OECD (2013), “Modes of public funding of R&D: Interim results from the second round of data collection on GBAORD”, internal working document of the Working Party of National Experts on Science and Technology Indicators (NESTI), OECD, Paris.
- UIS (UNESCO Institute for Statistics) (2016), Education Database, June, [http://data.uis.unesco.org/Index.aspx?DataSetCode=EDULIT\\_DS](http://data.uis.unesco.org/Index.aspx?DataSetCode=EDULIT_DS), accessed 4 October 2016.
- UIS (2016), Science, Technology and Innovation Database, July, [http://data.uis.unesco.org/Index.aspx?DataSetCode=SCN\\_DS](http://data.uis.unesco.org/Index.aspx?DataSetCode=SCN_DS), accessed 4 October 2016.
- UN (United Nations) (2016), UN e-Government Survey, United Nations, NY. <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016> (accessed 4 October 2016).
- World Bank (2016), World Development Indicators (WDI) Databank, <http://wdi.worldbank.org>

© OECD, 2016. This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

<http://oe.cd/STIOutlook> – [STIPolicy.data@oecd.org](mailto:STIPolicy.data@oecd.org) –  @OECDInnovation – <http://oe.cd/stinews>





From:

## OECD Science, Technology and Innovation Outlook 2016

Access the complete publication at:

[https://doi.org/10.1787/sti\\_in\\_outlook-2016-en](https://doi.org/10.1787/sti_in_outlook-2016-en)

### Please cite this chapter as:

OECD (2016), "Lithuania", in *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris.

DOI: [https://doi.org/10.1787/sti\\_in\\_outlook-2016-73-en](https://doi.org/10.1787/sti_in_outlook-2016-73-en)

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to [rights@oecd.org](mailto:rights@oecd.org). Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at [info@copyright.com](mailto:info@copyright.com) or the Centre français d'exploitation du droit de copie (CFC) at [contact@cfcopies.com](mailto:contact@cfcopies.com).