Reviews of National Policies for Education

Education in Lithuania

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BETTER POLICIES FOR BETTER LIVES

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Foreword

Lithuania has achieved steady expansion of participation in education, substantially widening access to early childhood education and care and tertiary education, coupling this with nearly universal participation in secondary education. However, its education system faces a number of challenges. Educational achievement among its secondary students trails the OECD average, and gaps in achievement persist between urban and rural students. Swift population decline has placed pressure on its network of higher education institutions. As a consequence, its higher education system has an exceptionally large number of institutions that, taken together, perform well below OECD averages in internationalisation, research activity, and support for innovation. If Lithuania's education system is to help the nation respond effectively to its economic opportunities and demographic challenges, improvements in the performance of its schools and its higher education institutions are needed.

This report has been developed as an input into the process of Lithuania's accession to the OECD. It provides an assessment of Lithuania's policies and practices compared to best policies and practices in education and skills in OECD member countries and other reference countries in Europe. It assesses the whole education system from early childhood education and care to tertiary education using five important principles of well-performing education systems:

- a strong focus on improving learning outcomes
- equity in educational opportunity
- the ability to collect and use data to inform policy
- the effective use of funding to steer reform
- extended multi-stakeholder engagement in policy design and implementation.

The report highlights the many strengths of Lithuania's education system, identifies the main challenges ahead and provides recommendations for improvement.

I hope this report will support Lithuania in its reform efforts to enhance the quality and equity of its education system and strengthen the contribution of education and skills to economic and social growth of the country. The OECD is ready to help Lithuania in this effort.

Andreas Schleicher

Director for Education and Skills and Special Advisor
on Education Policy to the Secretary-General
OECD

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This report is the result of an assessment of Lithuania's policies and practices in the field of education and skills, informed by international experience and best practices from OECD countries. The report draws on various sources, including a background report prepared by the Lithuanian Ministry of Education and Science and two OECD visits in April and September 2016 to identify the main policy issues and interview relevant stakeholders.

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Acronyms and abbreviations

AIKOS	Open Information, Counselling and Guidance System
	Atvira informavimo, konsultavimo ir orientavimo sistema
BA	Bachelor of Arts
CEDEFOP	European Centre for the Development of Vocational Training
CEFER	Centre for Excellence in Finance and Research
CWTS	Centre for Science and Technology Studies
DKK	Danish Krone
EC	European Commission
ECEC	Early Childhood Education and Care
EMIS	Education Management Information System
ESCS	Economic, Social and Cultural Status
ESF	European Social Fund
EU	European Union
FTE	Full-time Equivalent
GDP	Gross Domestic Product
GE	General Education
HEI	Higher Education Institution
ISCED	International Standard Classification of Education
IVET	Initial Vocational Education and Training
LAMA BPO	Association of Lithuanian Higher Education Institutions for Organization of Common Admission
	Lietuvos aukštųjų mokyklų asociacija bendrajam priėmimui organizuoti
LTL	Lithuanian Litas (currency until 1 January 2015)
ME	Ministry of Economy
MoES	Ministry of Education and Science of Lithuania
MOSTA	Research and Higher Education Monitoring and Analysis Centre
	Mokslo ir studijų stebėsenos ir analizės centro
MSSL	Ministry of Social Security and Labour
NASE	National Agency for School Evaluation
	Nacionalinė mokyklų vertinimo agentūra
NEC	National Examination Centre
	Nacionalinis egzaminų centras
NSSA	National Surveys of Student Achievement
	Nacionalinis mokinių pasiekimų patikrinimas
PIAAC	OECD Programme for the International Assessment of Adult Competencies
PIRLS	Progress in International Reading Literacy Study
PISA	OECD Programme for International Student Assessment
PPP	Purchasing Power Parity

PUPP	Basic Education Learning Achievement Test
	Pagrindinio ugdymo pasiekimų patikrinimas
SEN	Special Education Needs
SKVC	Centre for Quality Assessment in Higher Education
	Studiju kokybes vertinimo centras
TALIS	Teaching and Learning International Survey
TIMSS	Trends in International Mathematics and Science Study
VET	Vocational Education and Training

Executive summary

Since the restoration of its independence in 1991, Lithuania has established a reformed and inclusive education system. Policy makers have decentralised to local governments responsibility to organise and supervise schooling, created transparent arrangements for funding schools, and provided school heads and higher education leaders with wide responsibility for the management of their institutions. Participation in schooling is effectively universal to the end of upper secondary education, and the level of participation in tertiary education is well above EU and OECD averages. Lithuania's accomplishments in the past quarter century are considerable. However, improvements in the quality of schooling and higher education are needed to effectively address the nation's demographic challenges and respond to its economic opportunities.

Although participation in primary, secondary, and tertiary education in Lithuania is especially high compared to OECD averages, school-level learning outcomes are not. Relatively few Lithuanian students perform at the highest achievement levels in PISA (OECD Programme for International Student Assessment), and the average performance of its 15-year-olds trails that of its Baltic neighbours. The school-based vocational pathway offered in secondary education is taken up by fewer students than in many other countries. Lithuania's tertiary institutions are too numerous and small to achieve levels of efficiency and quality that the nation needs. The university system has not reached a level of satisfactory performance in research and development, and tertiary institutions have not substantially benefitted from international mobility among students and researchers.

Providing a strong start for learning and life

Lithuania has considerable strengths in early childhood education and care (ECEC), with good support in place for children with special needs; a child-centred approach to ECEC pedagogy with guidelines for curricula in place; and ECEC available from birth. Achievements over the last decade are many, and include the continued emphasis on expanding access and ongoing efforts to ensure integration of ECEC into the education system. However, important challenges remain, including ensuring higher levels of participation among those most in need of care, and ensuring that the ECEC it provides is of consistently high quality. Raising parental demand for early childhood care in rural communities, combined with increased supply of provision in the nation's largest urban centres, should be areas of focus. National policy makers should also give priority to developing a more comprehensive monitoring system that encompasses monitoring of quality, thereby ensuring that Lithuanian children receive consistently high quality early childhood education and care (ECEC), whether through a joint central/municipal system of quality monitoring, or a largely central initiative.

From inclusion to excellence in basic education

Nearly all Lithuanian students complete basic education, and by the age of 15 achieve a level of learning near OECD averages. These results are accomplished by teachers and school leaders who are accorded wide autonomy, and on the basis of comparatively modest levels of spending. However, the nation's 15-year-old students are less successful in using and applying knowledge than are students in the best-performing regional peer countries, and wide and persistent gaps exist between rural and urban students. Improvement can be achieved with particular attention to two key inputs to learning – instructional time, and teacher quality. Lithuania needs a teaching workforce that is compensated at the same levels of high-performing peers, that operates within a modern career structure, and that is trained in programmes that embody a widely shared vision of good teaching. Instruction over a longer duration and targeted support to disadvantaged rural communities can help to raise student achievement to average OECD levels – or, beyond. This should take place within a school network that is rigorously managed, to ensure that resources are available for improvement, and not used to support schools and class sizes that are too small to be efficient and educationally effective.

Rethinking upper secondary education

Upper secondary vocational education, focused at present on increasing its attractiveness to students, will succeed at attraction through raising quality – and being seen to raise quality. Improvements to the vocational and educational training (VET) teaching workforce achieved through changes to training, compensation, and career pathways are important steps to higher-quality programmes, as are VET programmes that provide stronger pathways to tertiary study, and make better use of the nation's sectoral training centres. Information systems that provide evidence of outcomes – of employment and earnings – are needed to change perceptions of quality. General education, which attracts three in four upper secondary students, should focus on providing learning opportunities that are not distorted by the incentives of its examination system, the *matura*. This can be accomplished by adopting moderated grading and permitting it to figure more prominently in tertiary entry, or by realigning the framework and content of the *matura* examinations to reflect the curriculum national authorities wish to have delivered in school.

Tertiary education and its role in a growing economy

Lithuania has achieved an especially high level of participation in tertiary education: in 2014, 41% of 20-24 year-olds were enrolled in tertiary education, a share higher than all but three OECD member countries. This is achieved with modest levels of per pupil spending, and undertaken by institutions that operate with substantial autonomy. However, tertiary education now faces serious challenges. Student numbers have fallen sharply (32% between 2010 and 2014), and many of Lithuania's tertiary institutions are too numerous and small to achieve the levels of efficiency and quality that the nation needs. The university system has not reached a level of satisfactory performance in research and development, and the wider tertiary system has not substantially benefitted from international mobility among students and researchers. Comprehensive institutional consolidation that improves the efficiency and raises the performance of tertiary education is an urgent priority. To strengthen the research and innovation capacity of the country, increased efforts are needed to attract foreign researchers and students. Equity in tertiary education requires much greater scrutiny than at present, and would benefit from policies that strengthen student support.

Steering the system to higher levels of performance

Faced with challenges of episodic economic growth and population decline, the nation's education system can support demographic stabilisation, social cohesion, and economic growth. This can best be done by requiring that schools and higher education institutions perform at higher levels than in the past, develop the language, scientific, and mathematical fluency of its young adults to a high level; train innovative and skilled professionals for working life; and carry out research rooted in European and international engagement, and which meets international standards. This requires, at a strategic level, that Lithuania clarify and raise expectations of performance, align resources in support of raised performance expectations, strengthen performance monitoring and the assurance of quality, and build institutional capacity to achieve high performance. This orientation to improvement should be carried across each sector of its education system.

Assessment and recommendations

Introduction

Since the restoration of independence in 1991, Lithuania has succeeded in establishing a reformed and inclusive education system. Policy makers have decentralised responsibility to local governments to organise and supervise schooling, created distinctively transparent arrangements for funding schools, and provided school heads and higher education leaders with wide responsibility for the management of their institutions. Participation in schooling is effectively universal to the end of upper secondary education, and the level of participation in tertiary education is well above both EU and OECD averages. The nation's education system has emphasised the development of a democratic citizenry fitted for the exercise of self-government and the sustenance of Lithuanian national identity while accommodating ethnic and linguistic diversity. Following Lithuania's accession to EU membership in 2004 this work has been importantly assisted by extensive EU financial assistance.

Lithuania's accomplishments in the past quarter century are considerable. However, its education system has important challenges to address in order to advance the social and economic well-being of the nation. Lithuania's population has undergone a large and sustained decline, leaving it with an aging teaching workforce and network of schools that is too large to function efficiently and well. Though Lithuania has achieved especially high levels of participation in education, there is room for improvement in the educational achievement among all its students, and special need for attention to durable inequalities in rural areas. Lithuania's ability to sustain growing economic productivity and to mitigate its "brain drain" call for improvements in higher education that attract foreign students and researchers, and raise the level and quality of its research and innovation performance. Some capabilities that are needed by education institutions for self-management are not yet fully developed – and, likewise, authorities responsible for steering a decentralised system of education sometimes lack capacities needed to meet their responsibilities. Using EU funding more effectively and ensuring the sustainability of the initiatives as funding becomes less generous in the future will also be a serious challenge in the years ahead.

This review looks at how this can be done, arguing that if Lithuania's education system is to help the nation respond effectively to the challenges it faces, improvements in the performance of its schools and its higher education institutions are needed. Improved performance requires, at a strategic level, that Lithuania clarify and raise expectations of performance, align resources in support of raised performance expectations, strengthen performance monitoring and the assurance of quality, and build institutional capacity to achieve high performance. This orientation to improvement should be carried across each sector of its education system.

- **The early childhood sector should focus on expanding participation in rural communities and assuring the quality of provision throughout the nation.** High quality early childhood education and care can play a vital role in reducing the impact of social disadvantage. Lithuanian policy makers should therefore focus on raising demand for care in rural communities – where participation in ECEC is low and social and educational disadvantage are pronounced. The quality of education and care appears to follow international standards, but monitoring and assurance of quality are inadequate and require improvement. Children with special education needs (SEN) would benefit from improvement in the identification of their needs. All children would benefit from closer connections between health professionals and educators, and from stronger support for the continued professional development of ECEC teachers.
- **In primary and lower secondary education, improving learning outcomes must become the focus of policy and practice.** Improvement requires particular attention to two key inputs to learning – instructional time, and teacher quality. Lithuania needs a teaching workforce that: is compensated at the levels of high-performing peers, operates within a modern career structure, and is trained in programmes embodying a widely shared vision of good teaching practices. Instruction over a longer duration and targeted support to disadvantaged rural communities is also needed to raise student achievement to average OECD levels – or, beyond. This additional instruction must take place within a school network that is rigorously managed, to ensure that resources are effectively used.
- **Upper secondary vocational education would increase its attractiveness to students by raising its quality**. Improvements to the VET teaching workforce by reforming training, compensation, and career pathways are important steps to higher-quality programmes, as are VET programmes that provide stronger pathways to tertiary study and make better use of the nation's sectoral training centres. Information systems that provide evidence of employment and earnings outcomes are needed to change perceptions of quality. Three in four Lithuanian students go on to upper secondary general education which should focuses on providing learning opportunities that are not distorted by the incentives of its examination system, the *matura*. Strategies for accomplishing this include aligning classroom-based assessment with admission to higher education programmes through moderated grading, or realignment of the framework and content of the *matura* examinations to reflect the curriculum taught in schools.
- **Lithuania's tertiary institutions are too numerous and small to achieve the levels of efficiency and quality that the nation needs.** The public university system has not reached a level of satisfactory performance in research and development, and the wider tertiary system has not substantially benefitted from international mobility among students and researchers. Comprehensive consolidation of public higher education is needed to achieve efficiencies in provision, and to raise the quality of research and instruction. In the long run – after addressing the urgent and important question of system scale and organisation – policy makers should turn their attention to overlooked questions such as equity within their tertiary education system.

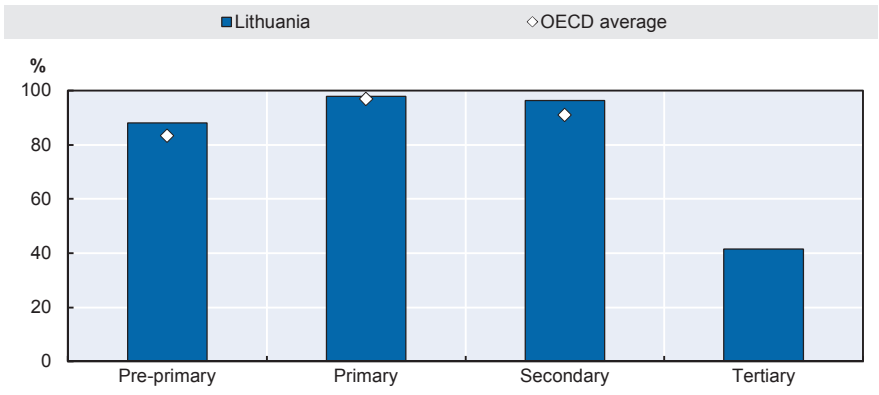
Box 0.1. Lithuania's accession education review

In 2015, the OECD opened discussions on the accession of Lithuania to the OECD Convention. As part of this process, Lithuania must undergo in-depth technical reviews in all relevant areas of the organisation's work, including education and skills. This report is an input to this process. It evaluates national policies and practices in Lithuania in education and skills, compared to OECD member countries and reference countries in the Nordic and Baltic region. It does so according to five principles that are essential to effective education systems: a strong focus on improving learning outcomes; equity in educational opportunity; the ability to collect and use data to inform policy; the effective use of funding to steer reform; and the extent of multi-stakeholder engagement in policy design and implementation. Based on these benchmarks, the review both underlines the many strengths of Lithuania's education system and provides recommendations on how to improve policies and practices so that the country can fully achieve OECD standards of education attainment and outcomes.

Main trends: Wide participation is not yet matched by high performance

Lithuania has made significant progress in the past decade in ensuring wide access to early childhood education and care. Enrolment among children aged 3-6 years increased from 70% in 2005 to 87% in 2015. Enrolment in primary and lower secondary education is universal: in 2015, the net enrolment rate in primary education was 100%, and 98.3% in lower secondary education (Statistics Lithuania, 2016). Lithuania's level of participation in upper secondary education is among the highest in OECD and partner countries: in 2014, 93% of 15-19 year-olds were enrolled in educational institutions, compared with 84% on average across OECD countries (OECD, 2016a). Participation in tertiary education is especially high as well: in 2014, 41% of 20-24 year-olds in Lithuania were enrolled in tertiary education, a share higher than all but three OECD member countries.

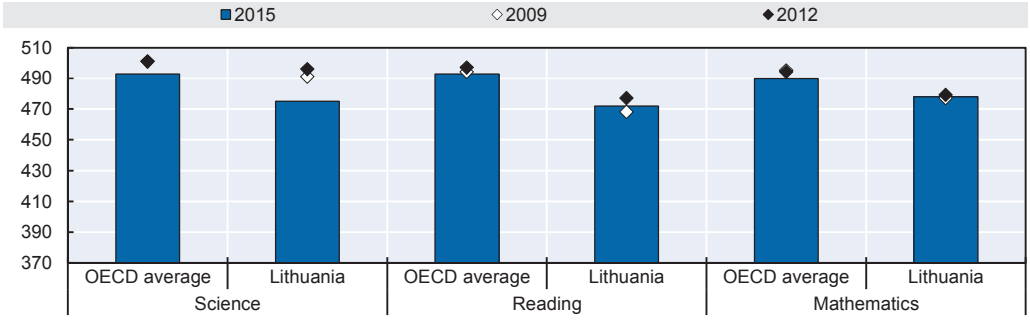
Figure 0.1. Net enrolment in Lithuania and OECD average (2014)



Notes: Data for net enrolment rates for the OECD refer to 2012. Tertiary education for Lithuania refers to bachelor's, master's or equivalent level. Data for tertiary net enrolment rates for the OECD are not available.

Sources: UNESCO Institute for Statistics (2016), "Net enrolment rate by level of education", *UIS.Stat database*, UNESCO-UIS; Statistics Lithuania (2016), Official Statistics Portal, Statistics Lithuania, Vilnius; OECD/CAF/ELAC (2014); *Latin American Economic Outlook 2015: Education, Skills and Innovation for Development*, http://dx.doi.org/10.1787/leo-2015-en.

Figure 0.2. Mean score of Lithuania and OECD average in PISA

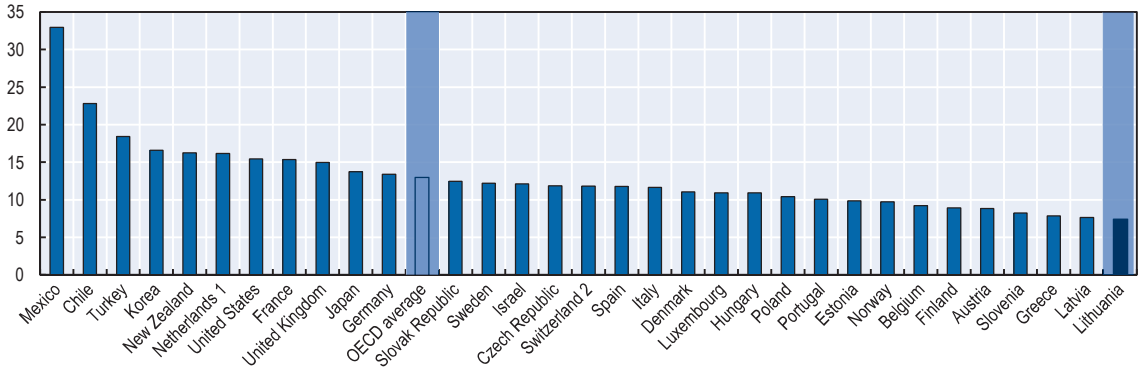


Source: OECD (2016a), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, http://dx.doi.org/10.1787/9789264266490-en.

Although participation in primary, secondary and tertiary education in Lithuania is especially high, the performance levels are not. While rates of grade repetition are low and rates of schooling completion are high, learning outcomes, as measured by PISA, are consistently below OECD averages. Relatively few Lithuanian students perform at the highest achievement levels, and the performance of its 15-year-olds trails that of its Baltic neighbours. The school-based vocational pathway offered in secondary education is not well regarded in Lithuania, and is taken up by fewer students than in many other countries. Efforts to raise esteem and participation are underway, but have not yet shown results.

Swiftly declining school grade age cohorts have placed enormous pressure on Lithuania's network of school and higher education institutions. Between 2010 and 2014 the number of students enrolled in upper secondary education fell by over one quarter, from 108 000 to 79 000. During those same years tertiary enrolments fell by 32%, and four of the nation's 14 public universities are forecast to have no incoming students by 2019. Many municipal officials have worked diligently to consolidate their network of schools, and national authorities have assisted them with this. Nonetheless, the average student/teacher ratio in Lithuania for its primary, lower and upper secondary schools is well below OECD averages (Figure 3).

Figure 0.3. Ratio of students to teaching staff in lower secondary educational institutions (2014)



1. Year of reference 2013.
2. Public institutions only.

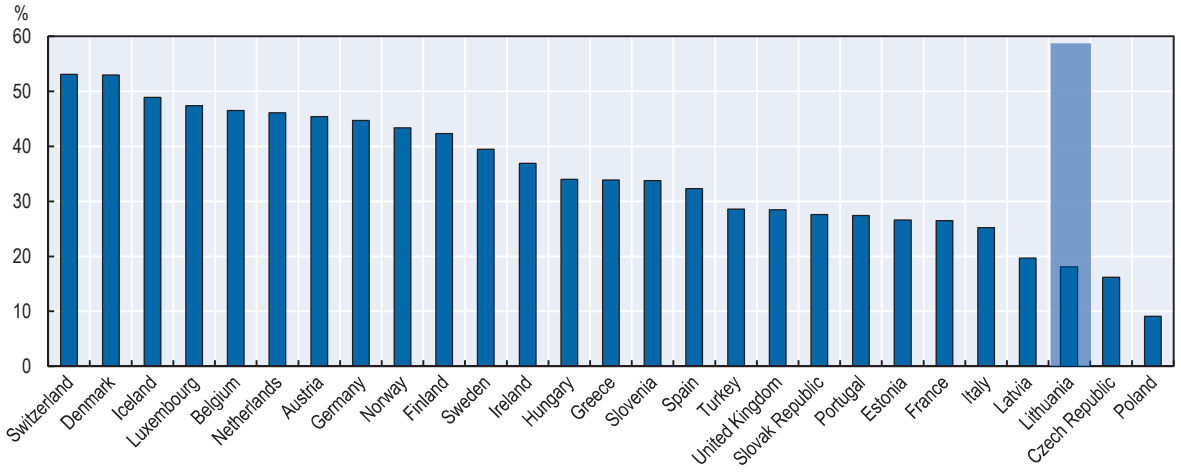
Countries are ranked in descending order of ratio of students to teaching staff in vocational programmes in upper secondary education.

Source: OECD (2016b), *Education at a Glance 2016: OECD Indicators*, http://dx.doi.org/10.1787/eag-2016-en.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

The nation's public universities and colleges have undergone very limited consolidation, and Lithuania continues to maintain a distinctively large number of small public universities – far more per one million inhabitants than many other small European nations. Its higher education sector performs well below OECD averages with respect to research and innovation, and it remains weakly engaged in international research collaboration (Figure 4) and student mobility.

Figure 0.4. Percentage of higher education institution researchers who have worked abroad for more than 3 months in the last 10 years (2012)



Counties are ranked in descending order of the percentage of higher education institutions researchers who have worked abroad for more than 3 months in the last 10 years.

Source: IDEA Consult et al. (2013), "Support for continued data collection and analysis concerning mobility patterns and career paths of researchers", Final Report MORE 2 to the European Commission, https://cdn2.euraxess.org/sites/default/files/policy_library/report_on_survey_of_researchers_in_eu_hei.pdf.

Early childhood education and care: Providing a strong start for learning and life

The importance of early childhood education and care (ECEC) is well recognised in Lithuania. The Lithuanian ECEC professional community shares a tradition of concern with the structural dimensions of ECEC quality – ensuring adequate space, group sizes, staffing, facilities, and hygiene – and it has developed a widely shared understanding of the essential cognitive, emotional and social skills that children need to develop in their early years. Levels of participation in ECEC are high, especially in urban areas. However, participation in ECEC lags in the nation's rural areas, where the incidence of poverty and ill health are highest, and young children might benefit most from access to high quality ECEC.

Policy issue 2.1: Expanding participation in ECEC

Lithuania has made significant progress in the past decade in increasing participation in early childhood education and care. Enrolment among children aged 3-6 years increased from 70% in 2005 to 87% in 2015, while among children aged 1-2 years it rose from 22% in 2000 to 35% in 2015.

Efforts have been made to boost rural participation. Lithuania has opened multi-functional centres in rural areas to boost the supply of ECEC places, it has made dedicated public transportation available to some rural families, and it has made information on the importance of ECEC available to parents through a website intended to encourage parents to enrol their children in ECEC. Initiatives have also been undertaken to widen supply in urban areas. Legislative changes were adopted to relax Soviet-era "hygiene standards", permitting early childhood education and care to be provided in a wider range of accommodations. To stimulate provision, the Lithuanian central government authorised municipalities to use the funding received through the student basket funding methodology to support provision in private ECEC facilities, as well as public facilities. As a consequence of these changes, the number of private kindergartens has been steadily increasing, and in 2016, 25 of the country's 60 municipalities had private kindergartens.

Notwithstanding these initiatives, waiting lists persist in some urban areas, indicating supply has not yet fully met demand, while in rural areas participation in ECEC among children ages 1-6 (33%) lags far behind that in urban areas (83%). ECEC policy must therefore focus on the distinctive circumstances in both areas: raising parental demand in rural communities, and identifying sustainable and equitable models for expanding public supply or subsidising private facilities in urban areas.

Box 0.2. Recommendations to expand participation in ECEC

2.1.1. **Expand participation in rural areas** by focusing on stimulating parent demand for services. Work with hospitals to educate new parents about the benefits of ECEC, and enlist advocates among paediatricians and other health professionals who provide ongoing care to small children. Lithuania should also consider significantly expanding home visiting, ensuring regular visits to rural families to discuss topics related to child health and development.

2.1.2. **Expand access to ECEC in urban areas by creating sustainable and equitable funding models for expanding supply.** One model for expanded provision is to have families make a contribution to ECEC places based upon their ability to pay – which is assessed according to a common methodology. This arrangement would provide additional ECEC funding by obtaining payments from those families with the ability to pay fees that are not doing so under present arrangements.

Policy issue 2.2: Strengthening quality assurance

Lithuanian national authorities have chosen to decentralise responsibility for early childhood education – its funding, provision, curriculum, and oversight of its quality – to schools and municipalities. Lithuanian preschools are responsible for assuring the quality of their provision, and receive guidance from the Ministry of Education and Science (MoES) on how to conduct an internal quality audit. The external assurance of quality for ECEC rests with municipality education departments, who are charged with undertaking a comprehensive inspection at intervals they judge appropriate.

Municipal authorities with whom the review team met indicated that they did not have formal monitoring plans in place, and that they relied upon problems being brought to their attention by parents. Guidance provided by the Ministry does not offer a template that municipal education departments can use to monitor and inspect the quality of ECEC provision on an ongoing basis. Further, apart from a small number of the nation's largest

and most urbanised areas, municipal education departments do not have staff specialised in early childhood education and care.

National policy makers should give priority to developing a more comprehensive monitoring system that encompasses monitoring of quality, thereby ensuring that Lithuanian children receive consistently high quality early childhood education and care. There are two ways that the central government might address this gap in quality monitoring, described below.

Box 0.3. Recommendations for strengthening quality assurance

2.2.1. **Develop comprehensive quality monitoring**.

a. **Municipal education officials could be tasked with monitoring the quality of care** through the implementation of a quality monitoring template developed through consultation among Ministry staff, municipal education officials, providers, and researchers. This template would lay out what are developmentally appropriate activities, suitable learning materials/resources at these stages, effective learning practices, and acceptable ways of assessing early learners. MoES would provide municipal officials guidance – or, requirements – about the frequency of monitoring, and it would take steps to ensure that municipalities across the country have access to staff who are expert in ECEC to assist them in meeting their responsibilities. This could be done, for example, by expanding the ECEC capabilities of the Ministry's regional support centres.

b. Alternatively, national authorities could **locate responsibility for external quality assurance with the National Agency for School Evaluation** – as is done at present for primary and secondary schooling. This option would permit Lithuania take advantage of existing national capabilities, and ensure that municipalities do not experience conflicting interests that arise from being founder, funder, and quality monitor of pre-school institutions.

Policy issue 2.3: Improving provision for children with special needs, and focusing on health and nutrition for all

Lithuania has established a clear statutory basis for the educational integration of children with special needs, it has provided augmented financial support to assist with educational services, and it has developed a national network of specialists to support teachers by providing tools for assessment. However, room for improvement remains. In rural areas, where disadvantaged children and special education needs are greatest, specialists such as psychologists and speech therapists are in short supply, and better options for sharing specialist resources are needed. The process of identifying special education needs children is not consistent from one municipality to the next, increasing the odds that some children are not identified. Preschool and pre-primary teachers do not have sufficient knowledge and skills to detect and understand individual needs and to individualise education content and methods even after receiving diagnoses and recommendations from specialists.

Children who do not have special education needs nonetheless require a healthy environment and proper nutrition. In Lithuania the health care system plays an important role in ECEC, by providing a first point of contact for children with special needs, and in rural areas carrying out the monitoring of ECEC facilities and providing information on ECEC to expecting parents. Focusing on opportunities to improve points of contact – now more limited than they could be – can improve children's well-being.

Box 0.4. Recommendations for improving provision for children with special needs, and focusing on health and nutrition for all

2.3.1. **Standardise the procedure for referring children with special needs by** relying on one scale or set of criteria across municipalities, which will help ensure that children receive the same opportunities for services regardless of where they live.

2.3.2. **Strengthen SEN curriculum** in pre-service training programmes to improve the capacity of the teaching workforce to support SEN students. Given the age and continuity of the teacher workforce, in-service training is needed as well.

2.3.3. **Engage the Ministry of Health** in the creation of a quality monitoring system. Consider the integration of health dimensions into quality monitoring, or a system that integrates both health and ECEC.

2.3.4. **Train paediatricians and other health care professionals** on the basic elements of ECEC, including identification of children with special needs and the importance of ECEC overall.

Policy issue 2.4: Supporting the continuing development needs of the ECEC workforce

Recruiting, training, and supporting care providers and teachers are central to the quality of provision. Lithuanian teachers are required to hold a bachelor's degree and are trained before beginning work in ECEC settings. They receive compensation under the same policies as other teachers in the education system. Teachers in Lithuania can be considered a highly qualified workforce compared to that of many OECD countries, an asset that can be further developed to continue strengthening the ECEC system. Moreover, Lithuania views professional development for teachers as a required part of their ongoing service, on par with other European Union countries that invest in professional development (European Commission/EACEA/Eurydice/Eurostat, 2014).

Despite the official acknowledgement of the importance of professional development in national guidance documents, school heads reported to the review team that professional development funds are insufficient to permit teachers to participate in regular development activities such as learning how to communicate effectively with parents; teaching children with special needs; or administering and using assessment information to ascertain children's development and learning.

Box 0.5. Recommendations for supporting the continuing development needs of the ECEC workforce

2.4.1. **Invest more time in training teachers in classroom settings** as part of initial teacher training, with emphasis on training teachers in interacting with young children and using the curricula and methodological guidelines available.

2.4.2. **Partner with teacher training institutions** to develop coaching and mentoring models for teachers already in classrooms. The strong connections with teacher training institutions for ECEC could be further expanded to include training or mentoring for teachers on site, through observations and feedback on teacher-child interactions and classroom practices.

2.4.3. **Embed professional development into the process of quality monitoring**, creating a system that focuses on measuring quality, reflects on results, and supports teachers in making improvements based upon monitoring. If quality monitoring is integrated with professional development, investments in monitoring will be more likely to lead to changes in quality in classrooms.

Primary and lower secondary education

Lithuania students, on average, leave primary and lower secondary education with a sufficient level of knowledge in science, mathematics, and reading that approaches international standards. Nearly all students continue learning in upper secondary education, beyond compulsory education. All of this is accomplished in a schooling system that provides wide autonomy to school leaders and teachers, and it is achieved on comparatively modest levels of spending.

Nonetheless, there are important challenges ahead for primary and secondary schooling in Lithuania. Continuing declines in the size of the school-age population challenge authorities to efficiently manage the nation's school network. The nation's capacity to replenish its teaching workforce is hampered by unattractive conditions of employment, an unclear vision of what good teaching practices are, and what sort of training can best promote good teaching. Although students acquire curriculum-based content knowledge in mathematics, reading, and science, on par with international levels, their performance in PISA reveals that they are persistently less successful in using and applying knowledge than students in peer countries in the region. While Lithuania has achieved equitable outcomes among its language minority populations, some other populations –especially rural students – lag behind. While Lithuania has developed a framework of external assessments with which to monitor student learning across primary and secondary schooling, it could make fuller use of these assessments in ensuring the quality of schools and linking them to the management of schools and classroom instructional practices.

Policy issue 3.1: Enhancing the capacity of Lithuanian students to use knowledge and skills

The science, mathematics, and reading assessments in PISA show that Lithuania's performance consistently trails the OECD average and its regional peers. Small proportions of Lithuanian students attain the highest proficiency Levels 5 and 6, completing the most challenging tasks in mathematics, reading and science. At the same time, there is a slightly larger share of Lithuanian students as compared to the OECD average among low performers who score below Level 2 in mathematics, reading and science.

The influence of family socio-economic and cultural status on student performance in Lithuania is similar to the OECD average. However, urban/rural differences in socio-economic and cultural status of students are especially wide, and the performance of students from rural areas is persistently lower than that of urban students, and by a wider margin than is typical within the OECD. Gender differences in student performance are wider than the OECD average and regional peers, with Lithuanian boys performing at especially low levels in reading proficiency.

Comprehensive initiatives are needed to raise performance across the board, and these should be joined by targeted measures, especially those supporting rural students. The most promising and easily implemented near-term policy option for comprehensive improvement in learning achievements is to focus on instructional time, which in Lithuania is about one year less than the OECD average. In addition, policies with a focus on rural and male students could reduce existing performance gaps.

Box 0.6. Recommendations to enhance the capacity of Lithuanian students to use knowledge and skills

3.1.1. **Expand in-school instructional time** through a longer instructional year, by starting compulsory schooling at age 6 (rather than age 7), or both.

3.1.2. Improve support for learning in rural schools. Consider **targeted teacher quality initiatives (e.g. wage premiums) and added learning support and enrichment in rural schools**, e.g. before and after school, and during holidays.

3.1.3. The **low performance of boys**, especially in reading, should likewise be the focus of targeted interventions.

Policy issue 3.2: Establishing conditions for a high quality and attractive teaching profession

The teaching workforce of Lithuania is substantially older and more female than either the OECD or EU-22 average. Both the minimum and the maximum basic gross annual statutory salary level of Lithuanian teachers is lower in relation to GDP per capita than that of teachers in all the other EU countries. The quality of entrants to teacher training programmes, the performance of teacher training programmes, and the attractiveness of the teaching profession are matters of concern both to the Ministry of Education and Science, and the wider education community.

Developing a more able and effective teaching workforce is a long-term undertaking, especially in Lithuania, where falling enrolments and a declining number of teachers have limited the turnover in the teaching workforce, and thus the rate at which newly-trained entrants enter the classroom. A shared understanding of good teaching and how to achieve it has not been established, and this has hindered the development of a teacher workforce policy, and this arises in part from the limited capacities of the Ministry to co-ordinate policy and limited development of the education research community.

Box 0.7. Recommendations for establishing conditions for a high quality and attractive teaching profession

3.2.1. **Take forward recent OECD teacher workforce policy recommendations,** including:

- Manage the current oversupply of teachers while making teaching more attractive to the most qualified young people (especially in key areas of shortage) to join the profession. Develop strategies for reallocating, redeploying and retiring teachers who will be affected by school consolidation.
- Secure funding in the short term to help attract and retain new talent into teaching; and raise teacher salaries considerably in the long term to make teaching more attractive for talented young people.
- Create a more coherent teacher career pathway that rewards teaching excellence and allows teachers to diversify their career pathways.
- Ensure that new teachers can work in a well-supported environment and receive frequent feedback and mentoring in early stages of their career, and diversify and clarify the range of roles that should be taken on by teachers at different qualification levels.

3.2.2. **Build consensus about good teaching, and strengthen system capacity to support teacher policy**.

- Expand and consolidate staffing within the Ministry that strengthens its capacity to inform and lead teacher policy discussions.
- Develop an analytic staff that can make use of the data resources available to the Ministry, and serve as a knowledge broker linking it to education research in the international research community.
- Strengthen the policy-informing capacity of the nation's university and NGO-based education research community.

Policy issue 3.3: Improving quality assurance, school management, and classroom practice through improved use of assessments

Lithuania has developed extensive capabilities to implement external large-scale assessments of students in primary and secondary schooling. National external assessment commences at grade 2 and continues through to the end of compulsory schooling. The assessments provide a wealth of information about students' performance in key subjects and school climate that is made available to teachers at the student and class level, and benchmarked against national norms, for instructional purposes. In addition, assessment results are available to school leaders, parents and others. They are reported at the school level, benchmarked against national and municipal averages, and adjusted for student characteristics, for school management and improvement.

Teacher training and school leadership selection policies do not make student assessments and their use a priority. There is wide scope for improvement in the use of Lithuania's well-developed assessment resources, including expanded use by school leaders and teachers for the purpose of improving school management and instructional practices, and by authorities outside of schools who are responsible for external quality assurance.

Box 0.8. Recommendations to improve quality assurance, school management, and classroom practice through improved use of assessments

3.3.1 **Streamline the national assessment framework** that the nation's schools are asked to administer. Lithuania has established effective universal participation in a criterion-referenced national assessment in grades 4, 6, and 8. It should now conclude its use of the National Survey of Student Achievement, incorporating into its assessment system those components of the National Survey, such as teacher and student questionnaires, that provide information judged to be valuable by teachers, school heads, and other stakeholders. This would create a less burdensome and costly assessment framework, while preserving useful information.

3.3.2. **Support the use of assessment results:**

a. Ensure assessment use is part of the nation's teacher competency framework, initial teacher training curriculum, and continuing professional development.

b. Make capacity to use assessments in managing schools part of the school leader profile and selection process.

c. Evaluate whether the lower secondary completion examination (Test of Basic Education Learning Achievements) -- which sets no standards with respect to proficiency and generates no performance incentives -- is an effective use of school resources, and whether options for small performance incentives for test-takers are advisable.

d. Ensure that the National Agency for School Evaluation uses assessment results in school monitoring, and consider the use of performance-based prioritisation for external school quality assurance reviews.

Policy issue 3.4: Increasing the efficiency of the school network

Swiftly declining school-aged cohorts have led to small class sizes and low student-teacher ratios, and put the nation's school network under great pressure for consolidation. Consolidation is important, both to achieve greater efficiency, and to ensure that students are provided with a high quality education. The OECD School Resources Review for Lithuania (Shewbridge et al., 2016) provided a detailed analysis of school funding mechanisms and specific policy recommendations.

Box 0.9. Recommendations to increase the efficiency of the school network

3.4.1. **Follow through on implementation of School Resources Review for Lithuania recommendations.**

a. **Avoid introducing a universal class basket funding scheme.** A universal class basket scheme could help smaller schools, but would weaken the incentives to organise schooling efficiently and to compete for students. This would presumably result in smaller class size on average. This trade-off should be evaluated thoroughly. It will be essential in evaluating the impact of the experimental methodology of the class basket to consider how effectively this addresses the challenges for small, rural schools and, importantly, what the full cost implications would be if this is introduced system-wide.

b. **Consider alternative measures to address funding challenges at the school level**. Fiscal pressure on schools could be relieved by taking into account cost differences due to teacher composition. Cost differences could be smoothly incorporated into the funding formula by assigning different weights for categories of schools with a high, average or low salary cost index.

c. **More effectively address equity within the funding formula.** Inequality of opportunity related to social disadvantage appears to be overlooked in the funding policies. As one part of a more comprehensive approach it can be a useful measure to improve the education of less socio-economically advantaged students as well as students of language minorities. The possibility of assigning larger weights to socio-economically disadvantaged students in the funding formula should be considered.

d. **Regularly evaluate the costs and adequacy of funding.** More reliable and detailed evidence should be gathered on the costs and adequacy of funding in general, and on specific topics, e.g. small schools, national minority schools, the education of students with special needs and equity problems related to social disadvantages.

e. **Promote efficiency in municipal funding of school maintenance**. More attention should be devoted to improving efficiency in the allocation and use of school maintenance costs. Regular evaluation of resource use and the promotion of best practices in allocating municipal funding would be useful. Greater oversight of investments is required to ensure a more efficient and effective use of public funds.

3.4.2. **Evaluate the pilot class basket methodology in depth, and seek better targeted alternatives to it.**

Upper secondary education

Lithuania has achieved an especially high level of participation and attainment in upper secondary education. Projections based on current patterns suggest that more than nine in ten of today's young Lithuanians will complete their upper secondary education over their lifetime, a level well above the OECD average.

Upper secondary general education in Lithuania has been effective in permitting its participants to continue their studies at the nation's tertiary institutions. However, upper secondary vocational education has struggled to increase its attractiveness to learners, and to provide them with an education and training that leads to strong labour market outcomes. While the Ministry of Education and Science and its expert advisory bodies aim to develop a comprehensive and competency-focused upper secondary education, the *matura* examination, a high-stakes school leaving and higher education entry examination, creates incentives for teachers and students to focus principally on tested subjects within the upper secondary general education curriculum, and on the accumulation rather than application of knowledge. Moreover, with a single examination at the end of secondary studies – and none of consequence prior – schools find it challenging to create steady and consistent incentives for learning across the entire course of the secondary studies.

Policy issue 4.1: Improving the quality and attractiveness of vocational education

The Ministry of Education and Science has set national policy targets that call for increased enrolment in upper secondary vocational education – to 33% by 2017, and 35% by 2022 – and expanded work-based learning, including apprenticeships. Comprehensive efforts are underway to increase VET attractiveness, including changes to governance of VET schools that will strengthen community engagement and business collaboration; improvements to the vocational training workforce through continued professional education; large-scale investments in a national network of sectoral practical training centres that provide state-of-the-art facilities for vocational training; improved information about labour market outcomes through a new human resources information system; and efforts to clarify the legal basis of apprenticeships and provide employer subsidies, so employers might create more numerous apprenticeship opportunities. Early evidence suggests little headway in increasing the attractiveness of VET to students or employers.

Box 0.10. Recommendations to improve the quality and attractiveness of vocational education

4.1.1. **Implement the newly authorised human resources monitoring system,** and use it to provide evidence of VET benefits to prospective students.

4.1.2. **Raise school capacity and incentives for apprenticeship training**, and clarify the scope of employer incentives for the creation of apprenticeship contracts. Specifically:

a. Make work experience a prerequisite for entry into vocational teaching, and adopt policies that support ongoing movement between workplace and teaching as the principal means of continuing professional development. Review teacher compensation, advancement, and retirement policies to support career circulation between school and work.

b. Consider a modification of the student basket funding methodology for vocational schools that recognises and rewards work-based instruction of vocational students.

4.1.3. **Ensure that sectoral practical training centres are financially sustainable, and improve the accessibility of the centres** through a system of student support that meets living costs, is easily accessible to all eligible students, and is well-publicised through web resources and school-based advising.

4.1.4. **Improve opportunities for upper secondary vocational students to make full use of the pathway to tertiary education** through focused efforts to raise the quality of general education teaching made available to secondary vocational students.

Policy issue 4.2: Achieving the intended curriculum in upper secondary general education

Matura examinations are the most influential feature of upper secondary education in Lithuania, as they determine the higher education institution and programmes to which students may gain entry, and prospects for publicly funded study. In meetings with the review team, students emphasised its importance – suggesting that the role of upper secondary "is to prepare for *matura*." Students allocate their time and attention to the subjects in which they will take *matura* examination. Families frequently invest in private tutoring to prepare students for *matura* examinations. The *matura* examinations appear to create, in most instances, incentives that are at odds with the stated goal of providing a competency-oriented education. Furthermore, policy makers and educators recognise that *matura* examinations focus the effort, attention, and investment of learners disproportionately at the end of studies, while the preceding years of study – such as grades 9 and 10 in the gymnasium – are weakly incentivised.

Concern with the impact of the *matura* examinations on the upper secondary curriculum has prompted MoES to initiate the *matura* project, an optional assessment that would be included in the secondary school-leaving certificate and count as the equivalent of a school-level *matura* examination. Students would be required to plan, implement, and present a project and to be assessed on this work by their teacher and an independent assessment board of subject professionals. It is hoped that this project-based learning would encourage not only the development of subject knowledge, but wider competencies including creativity, analytical skills, critical thinking and communication skills.

Box 0.11. Recommendations for achieving the intended curriculum in upper secondary general education

4.2.1. **Monitor the *matura* project initiative, and consider alternatives to it, including:**

a. **Moderated marking of classroom-based work** to provide stronger incentives for students to invest earlier and more comprehensively in the secondary curriculum, joining this to *matura* examination results in establishing the student's competitive score assigned for higher education entry.

b. **Use of the 10th grade national student achievement examination** as a component of higher education admission process – in conjunction with the *matura* examinations.

c. **Implementation of teacher-led assessment redesign.** Extend the model followed by foreign language teachers across all subjects examined in the *matura*, with teacher-led assessment redesign that is competency-focused and supported by training in marking, reoriented classroom practices and instructional materials aligned to the newly redesigned assessment. This could be linked to changes in the nation's teacher competency framework, to the reform of teacher training programmes, and to the rejuvenation of the teaching workforce, creating durable changes in teaching and learning.

Tertiary education

Lithuania has achieved an especially high level of participation in tertiary education, and its graduates, on average, experience labour market outcomes typical of OECD member countries. This is accomplished with modest levels of per pupil spending, by institutions that operate with substantial autonomy, and within a system of transparent funding driven by student demand. However, the tertiary sector now faces serious challenges. Lithuania's tertiary institutions are too numerous and small to achieve the levels of efficiency and quality that the nation needs. The university system has not reached a level of satisfactory performance in research and development, and the wider

tertiary system has not substantially benefitted from international mobility among students and researchers. In the long run – after addressing the urgent and important question of system scale and organisation – policy makers should turn their attention to overlooked questions of equity in access, resourcing and attainment within their tertiary system.

Policy issue 5.1: Consolidating tertiary institutions for efficiency and quality

Lithuania's severe demographic pressures create three very serious challenges for its system of tertiary education. Between 2010 and 2014 tertiary enrolments fell by 32%, and forecasts produced by government analysts predict that five of the nation's universities will have no entering students by 2020. Falling student numbers result in declines in educational efficiency as student/teacher ratios fall and facilities are underused. Declining enrolments threaten the quality of student programmes as course offerings and instructor numbers decline. Falling student numbers exacerbate a pre-existing problem of scale facing Lithuanian public university institutions, which are numerous (14) and small. The configuration of public universities and public sector research organisations has made it difficult for Lithuania to achieve the critical mass of researchers, facilities, and research infrastructure needed to effectively perform research at an international level.

The importance of consolidating and scaling tertiary provision has been often discussed in Lithuanian education policy, and it has been the focus of numerous external reviews of the nation's public research system. Owing to the legal independence of public universities from the Ministry of Education and Science, only their founder, the Lithuanian *Seimas*, may merge or close institutions. Or, institutions may choose to voluntarily seek mergers or closure. As a result, achieving consolidation has proven difficult. However, comprehensive consolidation is urgently needed.

Box 0.12. Recommendations to consolidate tertiary institutions for efficiency and quality

5.1.1. **Adopt a flexible, open, and pragmatic approach to consolidation.** Give consideration to the full range of consolidation options available to the nation – not only consolidation among public universities, but also opportunities for consolidation among universities and colleges, universities and research centres, and among all three, as well as changes to the status of higher education institutions, such as conversion of some small universities with a low research profile into colleges.

5.1.2. **Approach institutional consolidation as a first step in a long-term process.**

a. **Help strengthen strategic institutional management, so higher education institutions (HEIs) can take full advantage of the opportunities that consolidation provides.** Strategic management capabilities are required if higher education institutions are to identify redundancies, new opportunities for research and teaching that are made possible by consolidation, and new ways of working with community and commercial partners.

b. **Special attention and support should be given to redeployment, retraining and redundancy options** for those who are affected by consolidation, since merging institutions in a way that achieves long-term cost efficiencies will result in reductions to staffing.

5.1.3. **Support complementary initiatives** to ensure university-based research reaches international levels. Resources should flow to departments and programmes that are performing research at high levels. Responsibility rests with public officials, who should ensure that funding for research is more fully linked to performance, and with higher education institutions, which need to fully exercise the leadership opportunities permitted them by reforms to funding and governance.

Policy issue 5.2: Balancing attractiveness and quality in internationalisation

Lithuania society and government are deeply concerned with population decline in general and "brain drain" in particular. Internationalisation in tertiary education – specifically, attracting foreign researchers and students – holds the promise of mitigating this brain drain, strengthening the research and innovation capacity of the country, and offsetting, in part, falling numbers of Lithuanian students.

Colleges and universities have significantly increased their efforts to increase the enrolment of students from outside Lithuania, both through the development of staff responsible for contacting and recruitment and the creation of study programmes in foreign languages. Foreign student numbers have begun to rise in recent years, and student origins have shown increased diversification. Public universities have also aimed to attract researchers to Lithuania, though with limited success. An estimated 2% of Lithuanian researchers hold foreign citizenship – as compared to 12% in Estonia, and 21-31% in Nordic higher education systems. To ensure that foreign students are provided high quality programmes that are well adapted to their needs, safeguards are needed. And, conversely, to assist universities in achieving greater success in recruiting foreign researchers, further supports from national authorities are needed.

Box 0.13. Recommendations for balancing attractiveness and quality in internationalisation

5.2.1. **Provide foreign students adequate information prior to enrolment, and assurance of quality after enrolment**. Provide prospective students with web-based information about institutional characteristics closely associated with quality, such as graduation rates among the institution's students. The Centre for Quality Assessment in Higher Education should incorporate a focus on the quality of resources for foreign students as part of its quality assurance process by focusing on study programmes that are being offered in a foreign language.

5.2.2. **Align institutional incentives to recruit foreign students with national priorities** for research and innovation. Consider providing formula-based financial support to higher education institutions for the enrolment of foreign students in priority programmes of study.

5.2.3. **Provide a legal and tax framework that helps universities to attract foreign researchers**. Ensure there is a clear legal basis for universities to establish non-profit foundations that can recruit, compensate, and support researchers. Use tax policy or other incentives to encourage business-university collaboration that supports the recruitment of international researchers, and work carried out to international standards, on the model of the Centre for Excellence in Finance and Research.

Policy issue 5.3: Monitoring and supporting equity in tertiary education

Lithuania has achieved an especially high rate of tertiary attainment for its young adults. However, it has not done so equitably. Among households in the lowest income quintile, only 16% have completed tertiary education – while among households in the highest income quintile 80% have done so. Lithuania does not monitor key populations with respect to participation and achievement in tertiary education. It has no policy targets. And it has no policies that focus specifically on mitigating inequalities in tertiary education. Rather, it has policies that risk widening inequities in tertiary education.

If Lithuanian policy makers wish to provide all citizens with equitable opportunities to reap the benefits of tertiary education, they should monitor how key student populations are faring in entering and completing tertiary studies, and in their post-schooling outcomes. Monitoring should be linked to policy targets, and these targets should be backed by policy tools that support students and institutions in achieving more equitable outcomes.

Box 0.14. Recommendations to support equity in tertiary education

5.3.1. **Develop a tertiary education information management system** that has the capacity to monitor the social profile of students taking the state *matura* examination, the profile of students obtaining publicly funded (and self-paid) seats, and the profiles of those commencing and completing first cycle (bachelor) courses.

5.3.2. **Report annually on the higher education continuation rate for secondary vocational students**, identifying the proportion of students who qualify for tertiary entry, the share who begin tertiary studies, and the share who complete. Identify suitable policy targets or benchmarks – using past performance and a peer comparison group of nations that have secondary VET programmes that permit flexible continuation to binary tertiary systems with well-developed colleges or universities of applied science.

5.3.3. **Monitor which students are completing their studies and which are not, and provide the Ministry, the Quality Assurance Agency, and the Research and Higher Education Monitoring and Analysis Centre (MOSTA) with this information**. Compare progression and completion among social scholarship recipients to that of students who are not in receipt of formula-based support, and monitor to assure that they are succeeding in their studies at rates that are broadly comparable to those of other student populations.

5.3.4. **Revise student support to align with equity targets**. Social scholarships are now available to a small proportion (4%) of tertiary students. Widen their scope by linking scholarships more broadly to family income, school characteristics, or community profile.

5.3.5. **Evaluate higher education institutional funding policy** to ensure that students in like programmes receive comparable and appropriate instructional support and monitor differences in instructional spending accordingly.

Steering the system to higher levels of performance

Lithuania's education system has achieved a broad scale of provision delivered by education institutions that are authorised to operate with a broad scope of autonomy. However, to help the nation meet its wider social and economic needs, education policy makers and stakeholders should place special emphasis on raising educational quality. Lithuania would benefit from an education system that performs at higher levels than at present, developing the skills of its young adults to the level of higher-performing peers in other countries; training innovative and skilled professionals for working life; and carrying out research to international standards. Raising performance is best understood not as a separate issue within each sector of education, but a challenge that requires a strategic approach – comprised of four considerations – that is adopted at all levels of education.

As a first step towards improvement, *expectations of performance should be clarified and raised*. Lithuania needs a shared vision of good schools and good teaching, high quality vocational education, and successful college and university institutions – and for this vision to be embedded in guiding policy documents, and rooted in the thinking of

practitioners. Currently, this vision, in some instances, is absent, unclear, or not formulated in ways that can raise performance. As Lithuanian authorities renew their *State Education Strategy* and develop policy and guidance documents – ranging from their "Teacher Competency Framework" to proposals for the consolidation of the nation's higher education system – they should ensure that each articulates a vision of high performance that is widely understood, and provides a basis for guiding policy and practice. This is the foundation on which resources can be aligned in support of improvement, and performance can be monitored to assure quality.

Improving education and training in Lithuania will require that *resources be mobilised in support of improvement*. For example, a shared vision of high quality teaching and how to prepare teachers needs to be joined up to funding. Attracting high quality entrants to teaching programmes and retaining them in the teaching profession requires that salaries continue to be raised. Raising student achievement should be supported through expanded instructional time. In Lithuania mobilising resources for improvements in educational performance will principally require that national authorities exercise leadership in the *reallocation* of resources – especially through the consolidation of existing education institutions. Immediate responsibility for the consolidation of schools and universities rests with municipalities and the Lithuanian parliament, the *Seimas*, respectively, rather than the Ministry of Education and Science (MoES). However, MoES has an essential role to play in supporting their work.

Raising the performance of Lithuania's schools, colleges, and universities should be supported by improvements to the *monitoring of their performance and the assurance of their quality*. There have been important accomplishments in the development of the capabilities in the nation's education system. However, four challenges must be addressed if monitoring and quality assurance are to lead to performance improvements. First, efforts must focus on the use of assessment results by teachers and school leaders who are not fully exploiting the potential of assessments to improve classroom practice and school leadership. Second, monitoring and reporting across the entire education system need to attend more systematically to disadvantaged learners or students at risk of receiving poor provision. Third, quality assurance systems need to be better integrated with pupil assessment and monitoring systems. And, additionally, Lithuanian authorities should ensure that the nation's incipient human resources monitoring system is fully implemented, and then put to use in support of policy.

Lithuania has engaged in large-scale reform of its education and training institutions since the re-establishment of independence. The *Seimas* has adopted legislation decentralising responsibility to local governments for the organisation and supervision of schooling, created transparent enrolment-based models for funding schools and higher education systems, and provided school heads and higher education leaders with responsibility for the management of their institutions. However, the capacity of education institutions for self-management is not yet consistently and fully developed. Municipal and national authorities responsible for supervision and guidance of a decentralised system of education sometimes lack the capacities they need to meet their steering responsibilities. Sustained improvement in the performance of the education and training system will require, therefore, that Lithuania systematically focus on the *capacities of its institutions*, and commit as a matter of policy to ensuring that they have capacities sufficient to meet their responsibilities.

Box 0.15. Recommendations to raise performance across the education system

As a means to comprehensively raise the level of performance for all students, the government and other education stakeholders across the country are encouraged to work towards:

Clarifying and raising expectations of performance – by students, teachers, school leaders, and researchers – across the education system. Productive discussions, those that become embedded in guiding policy documents and the thinking of practitioners, need to identify a shared vision of good schools and good teaching, high quality vocational education, and successful college and university institutions.

Aligning resources in support of raised performance expectations. If students are to learn to higher levels, resources must support this – including expanded learning time and a strengthened teacher workforce. University research funding must be still more closely linked to quality. Improvements will often require new or continued consolidation of universities and schools, which are sometimes poorly organised to support efficient resource use or high levels of quality.

Strengthening performance monitoring and ensuring quality. Improvement requires careful attention to performance. Lithuania has established data systems and school assessments, but has not fully used these to improve teaching or leadership, or to assure quality. Linking existing education information systems to labour market information and making better use of assessment information are needed to raise performance, and greater attention to presently overlooked disadvantaged students is needed.

Building institutional capacity to achieve high performance. National education policy makers in Lithuania sometimes lack the organisational and analytical capacity to play the convening and steering role for which they are responsible. Likewise, education institutions sometimes lack the capacity for self-management they need in a system providing wide autonomy. Developing the institutional capacity of each should be a priority of policy.

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Chapter 1

Education in Lithuania: Raising performance for a resilient Lithuania

This chapter introduces the main features and trends in Lithuanian education, and examines the overarching challenges facing the education system. Faced with challenges of episodic economic growth and population decline, the nation's education system can support demographic stabilisation, social cohesion, and economic growth. To do this, the nation's education system – which has achieved wide scope – must place special emphasis on raising educational quality. This will require that its schools and its higher education institutions perform at a higher level than in the past, developing the language, scientific, and mathematical fluency of its young adults to a high level; training innovative and skilled professionals for working life; carrying out research rooted in European and international engagement, and which meets international standards. The chapter concludes by outlining four strategic, systemic steps that policy makers might take to address these challenges.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Context

Since its declaration of independence in March 1990, Lithuania has succeeded in establishing a reformed and inclusive education system. Policy makers have decentralised responsibility to local governments to organise and supervise schooling, created distinctively transparent arrangements for funding schools, and provided school heads and higher education leaders with wide responsibility for the management of their institutions. Participation in schooling is effectively universal to the end of upper secondary education, and the level of participation in tertiary education is well above both EU and OECD averages. The nation's education system has emphasised the development of a democratic citizenry fitted for the exercise of self-government and the sustenance of Lithuanian national identity while accommodating ethnic and linguistic diversity. Following Lithuania's accession to EU membership in 2004 this work has been importantly supported by extensive EU financial assistance.

Lithuania's accomplishments in the past quarter century are considerable. However, its education system has important challenges it must address to advance the social and economic well-being of the nation. Lithuania's population has undergone a large and sustained decline, leaving it with an aging teaching workforce and network of schools that is too large to function efficiently and well. Though Lithuania has achieved especially high levels of participation in education, there is room for improvement in the educational achievement among all its students, and special need for attention to durable inequalities in rural areas. Lithuania's ability to sustain growing economic productivity and to mitigate its "brain drain" call for improvements in higher education that attract foreign students and researchers, and raise the level and quality of its research and innovation performance. Some capabilities that are needed by education institutions for self-management are not yet fully developed – and, likewise, authorities responsible for steering a decentralised system of education sometimes lack capacities needed to meet their responsibilities. Making more effective use of EU funding and ensuring the sustainability of the initiatives as funding becomes less generous in future will also be a serious challenge in the years ahead.

This review looks at how this can be done, arguing that if Lithuania's education system is to help the nation respond effectively to the challenges it faces, improvements in the performance of its schools and its higher education institutions are needed. Continued efforts at consolidating the school network are also needed. Renewal of the teaching workforce and the development of a shared understanding of good teaching are needed to assist in raising learning outcomes, and Lithuanian policy makers need to reassesses their expectations of students, including the duration of instruction they undertake. Comprehensive consolidation of Lithuania's tertiary education system is needed to achieve higher levels of efficiency and performance, especially in research and innovation. Subsequent chapters of this report scrutinise each level of the education sector, focusing on how policies and practices can be improved to support better outcomes, drawing on the experience of OECD countries and published research (see Box 1.1). This chapter introduces the main features and trends in Lithuanian education, and examines the overarching challenges that are central to the success of future reforms.

Box 1.1. Lithuania's Accession Education Review

In 2015, the OECD opened discussions on the accession of Lithuania to the OECD Convention. As part of this process, Lithuania must undergo in-depth technical reviews in all relevant areas of the organisation's work, including education and skills. This report is an input to this process. It evaluates national policies and practices in Lithuania in education and skills, compared to OECD member countries and reference countries in the Nordic and Baltic region. It does so according to five principles that are essential to effective education systems: a strong focus on improving learning outcomes; equity in educational opportunity; the ability to collect and use data to inform policy; the effective use of funding to steer reform; and the extent of multi-stakeholder engagement in policy design and implementation. Based on these benchmarks, the review both underlines the many strengths of Lithuania's education system and provides recommendations on how to improve policies and practices so that the country can fully achieve OECD standards of education attainment and outcomes.

Main features and trends

Lithuania has achieved steady expansion of enrolment in education, most noticeably in early childhood education and care, and in tertiary education – while the learning outcomes of its students at the completion of lower secondary education have been largely unimproved. Educational inequities between urban and rural students begin early in life and persist throughout, and are acknowledged to be a challenge. Social inequities typically receive little focus, whether in information collected by government, or its policy plans. This section will examine these developments, looking successively at issues of *access, learning outcomes* and *equity.*

Access

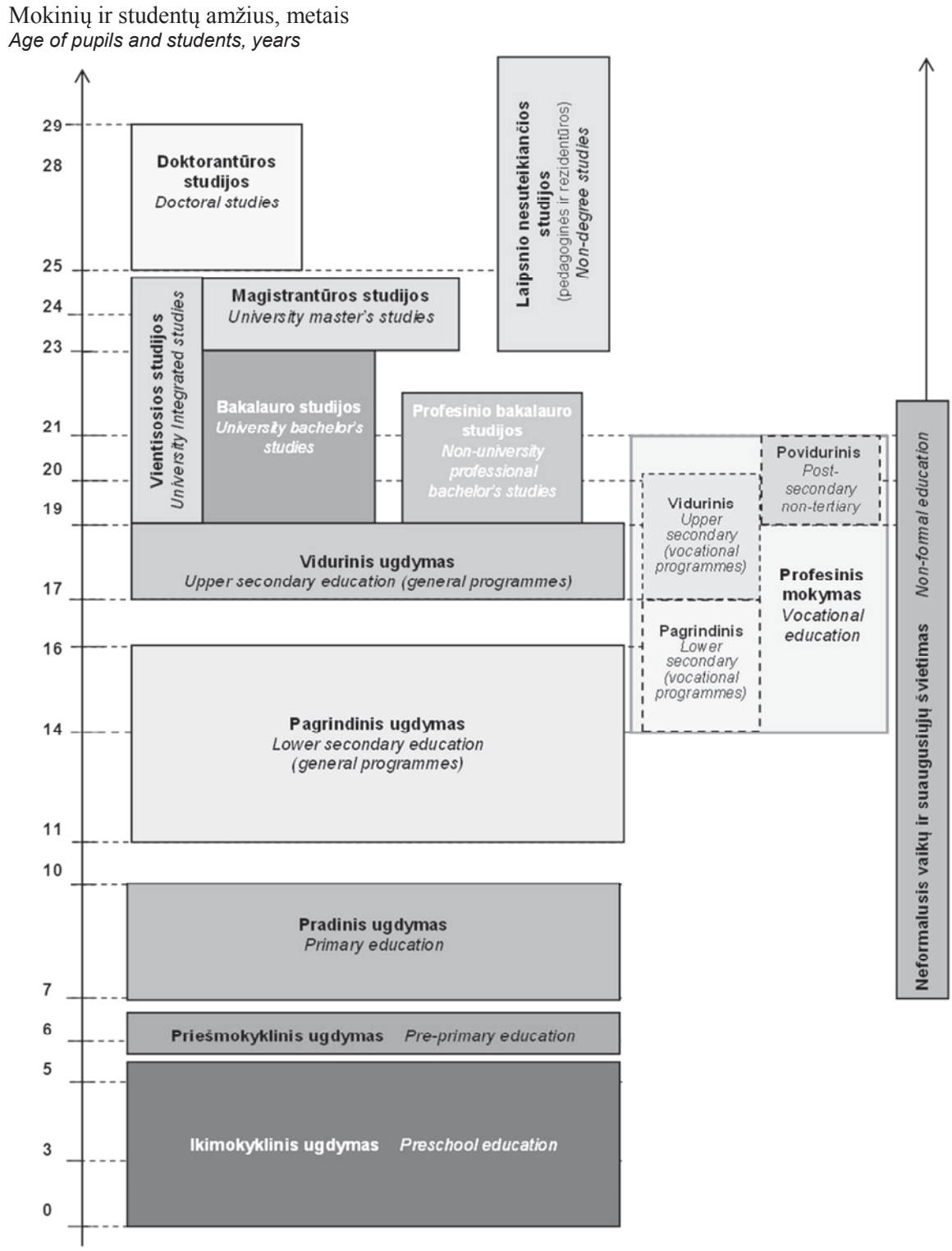
Lithuania's constitution states that the nation's children have the right to education, free of charge, from preschool to the end of upper secondary school. One year of pre-primary education became compulsory in 2016, making school attendance compulsory from the age of 6 through the end of lower secondary education, at the age of 16 (Figure 1.1).

ECEC participation has risen, but important urban-rural gaps persist

Public support for children in Lithuania begins at birth, and is supported through a range of policies, including parental leave policies. Early childhood education and care (ECEC) is organised as "preschool education" for children aged 0-6 years, and as "pre-primary education" for those who are 6-7 years of age. Public early childhood education and care is made available to families free of charge for children. ECEC provision is funded, in large part, by the national government, and implemented by Lithuania's municipalities.

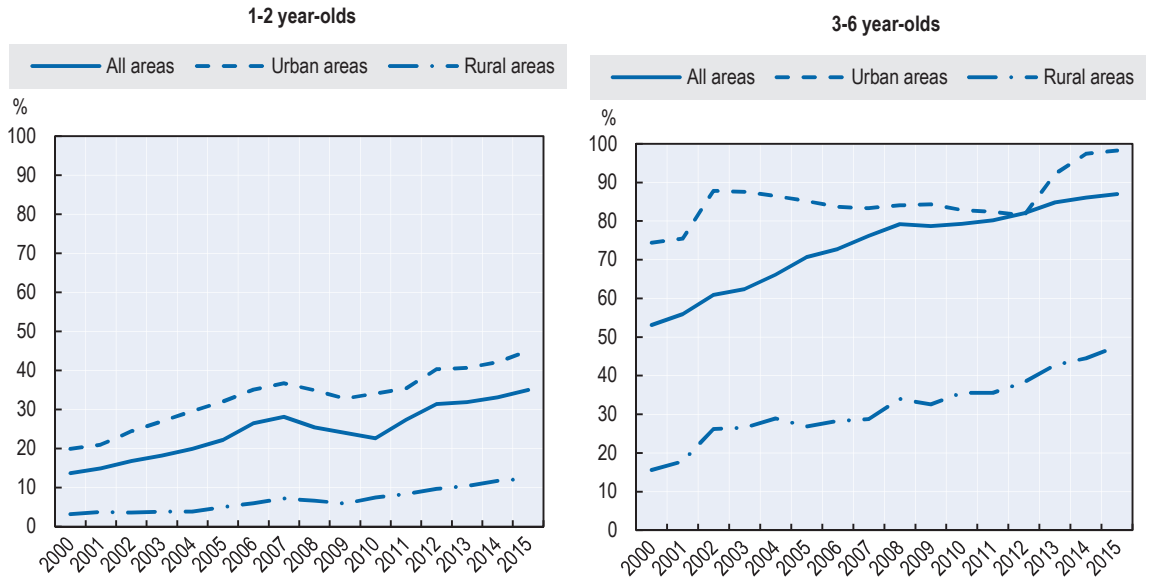
Lithuania has made significant progress in the past decade in ensuring wide access to early childhood education and care. Enrolment among children aged 3-6 years increased from 70% in 2005 to 87% in 2015. ECEC enrolment among children aged 1 and 2 years is among the lowest in OECD countries, though it rose from 22% in 2000 to 35% in 2015. Although the participation of rural children in ECEC has risen, wide gaps in participation between urban and rural children remain (Figure 1.2).

Figure 1.1. Lithuania's education system



Source: Statistics Lithuania (2016a), "Education 2016", Statistics Lithuania, Vilnius, https://osp.stat.gov.lt/statistikos-leidiniu-katalogas?publication=26860.

Figure 1.2. Participation in early childhood education and care, by residence and age



Source: Statistics Lithuania (2016b), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

Lithuania has achieved universal primary and lower secondary education, and nearly universal participation in upper secondary education, as well

In Lithuania, enrolment in primary and lower secondary education is effectively universal: in 2015, the net enrolment rate in primary education was 100%, and 98.3% in lower secondary education (Statistics Lithuania, 2016b). Lithuania's level of participation in upper secondary education is among the highest in OECD and partner countries: in 2014, 93% of 15-19 year-olds were enrolled in educational institutions, as compared to the OECD average of 84% (OECD, 2016a). In 2015 91% of Lithuanians between the ages of 20-24 year-olds had attained at least upper secondary education, and projections based on current patterns suggest that 92% of today's young Lithuanians will complete their upper secondary education over their lifetime, well above the OECD 85% average (OECD, 2016a).

Upper secondary education offers general (or, academic) and vocational tracks with most secondary students (73%) enrolling in general education. School-based vocational programmes are available to lower secondary and upper secondary students, through few students enter vocational programmes until the upper secondary level. Vocational education is held in low esteem (European Commission, 2011). Efforts to raise the attractiveness of vocational programmes are underway, but have had little effect on schooling choices, and the share of upper secondary enrolments in vocational programmes is effectively stable. Those who complete secondary vocational education may continue directly to work, to post-secondary vocational programmes, or to tertiary education. Although the pathway to tertiary education is a possibility for students who take *matura* examinations and complete their secondary general education, this path is not frequently chosen.

Lithuania has especially high rates of participation in tertiary education

In 2014, 41% of 20-24 year-olds were enrolled in tertiary education, a share higher than all but three OECD member countries. Participation in the first cycle of tertiary education (ISCED 6, bachelor level) is provided by a tertiary education system comprised of colleges offering three-year professional bachelor degrees, and universities offering four-year bachelor degrees. Colleges, which enrolled about 38% of bachelor degree students in 2014, are responsible for preparing students for working life and engaging in collaboration with community and commercial partners. Universities remain solely responsible for theory-led bachelor degree programmes of four years, as well as graduate education and research. Lithuania has not provided wide access to tertiary education through the expansion of private institutions. In 2014-15, private, independent higher education institutions enrolled about 10% of students in Lithuania – as compared to 28% in neighbouring Poland, 27% in Latvia, and 10% in Estonia (Statistics Lithuania, 2016b; OECD, 2015).

Lithuania has an especially asymmetric flow of tertiary students across its borders: in 2013 about three times more Lithuanian students opted to study outside Lithuania (11 898) than foreign students chose to enrol in Lithuanian tertiary institutions (3 915). Lithuania's weak attraction to international students extends across tertiary levels, both at the first degree level and PhD levels: in 2013, 2.4% and 3.0% of bachelor and PhD students in tertiary institutions were, respectively, international students (UNESCO Institute for Statistics, 2016a and b). The weak attraction of the tertiary system extends to university researchers as well. An estimated 2% of Lithuanian researchers hold foreign citizenship - as compared to 15% of those in 33 EU and associated countries, 12% in Estonia, and 21-31% in Nordic higher education systems (IDEA Consult et al., 2013).

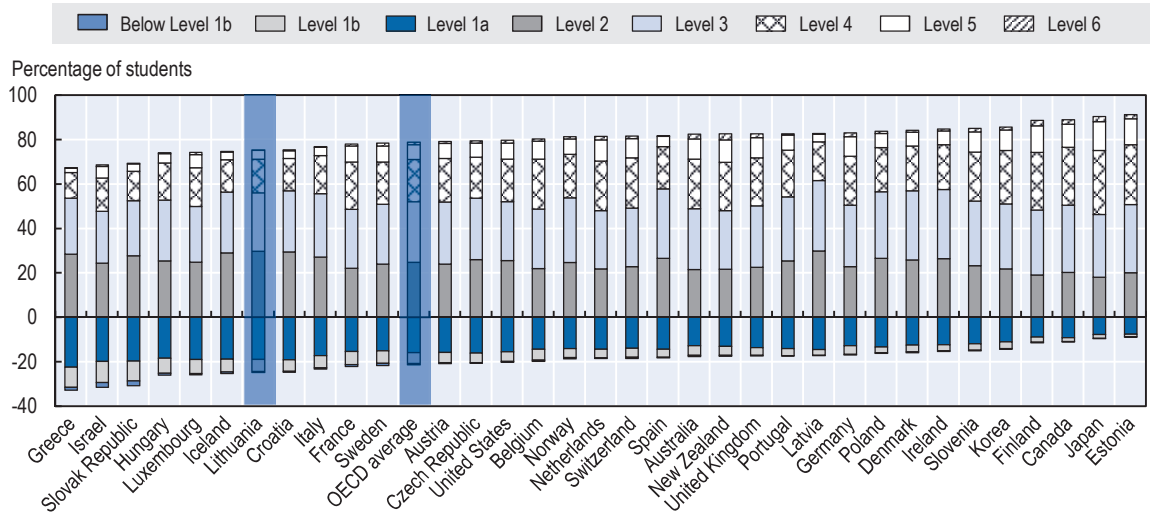
Learning outcomes

Achievement below average, and limited progress in raising learning achievement

In the 2015 OECD Programme of International Student Assessment (PISA), Lithuania's 15-year-olds performed below their OECD peers with an average score of 475 in science, 472 in reading and 478 in mathematics as compared to the OECD average of 493 in science, 493 in reading and 490 in mathematics. Students more often perform at low proficiency levels than on average across the OECD, and fewer perform at the highest proficiency level. In 2015, 15.3% of students failed to reach proficiency Level 2 in science, mathematics and reading – the baseline level of skills required for productive participation in society – as compared to 13% in OECD member countries. Few Lithuanian students – only 9.5% – perform at the top levels in comparison with the OECD average of 15% (Figure 1.3).

Comparison of PISA results for 2009-2015 (Figure 1.4) shows that Lithuania has not experienced significant improvements in the learning achievements of its 15-year-old students in either reading or mathematics, while the performance of its students in science has fallen – albeit modestly. These trends compare unfavourably with Poland and its Baltic neighbours, especially Estonia[1].

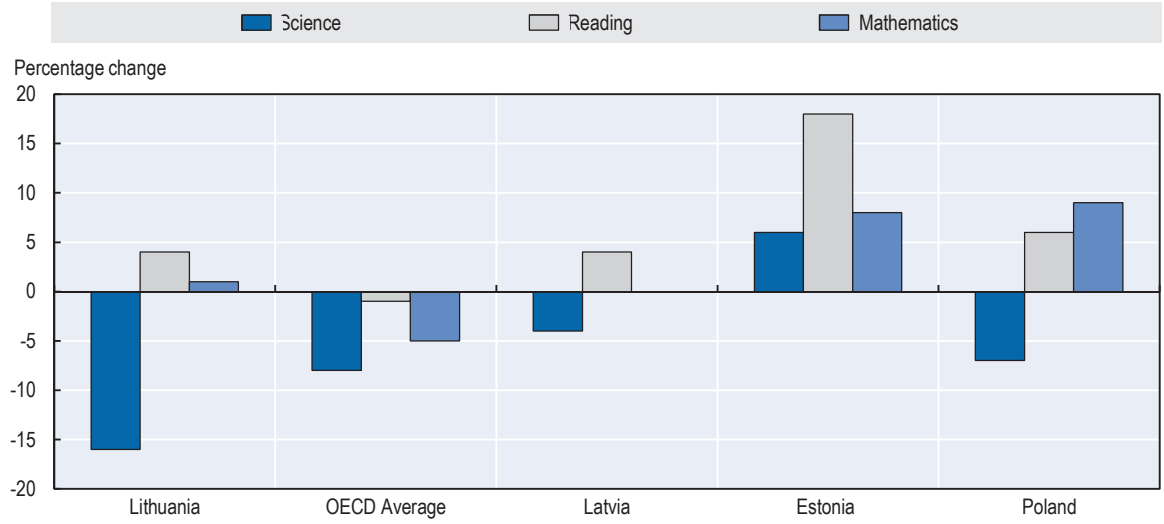
Figure 1.3. Science performance levels in PISA 2015



Countries are ranked in ascending order of the percentage of students who perform at or above Level 2.

Source: OECD (2016b), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Figure I.2.15, http://dx.doi.org/10.1787/9789264266490-en.

Figure 1.4. PISA performance trends (2009-2015)



Source: OECD (2016b), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Tables I.2.4a, I.4.4a and I.5.4a, http://dx.doi.org/10.1787/9789264266490-en,

Returns to qualifications are near to OECD averages

Returns to education in Lithuania are broadly similar to those, on average, across the OECD. Employment rates among adults (25-64) who have bachelor's degrees are substantially higher (89%) than among those whose highest educational qualification is at the upper secondary level (69%) – a difference that is wider than observed in other Baltic nations, or across the OECD as a whole (74% and 82% respectively). At both the

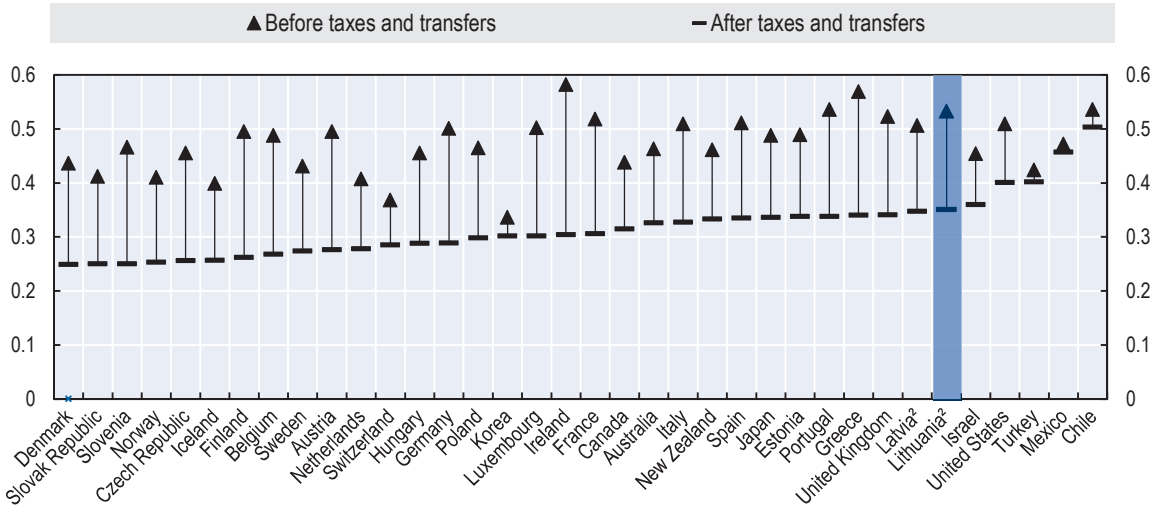
bachelor (149%) and graduate degree level (182%) the wage premium for full-time workers – as compared to that of full-time workers with an upper secondary education – is very near to OECD averages (148% and 191%, respectively) (OECD, 2016a). Although graduates with tertiary qualifications enjoy a wage premium, labour market outcomes for Lithuanian college graduates are weaker than those of university graduates: in 2014 approximately 13% of graduates of public colleges were unemployed, while 4% of public university graduates were unemployed (MoES, 2016).

Equity

Lithuania is marked by high levels of income inequality, both before and after taxes and transfers. Its Gini coefficient before taxes and transfers in 2012 was estimated to be higher than that of all but four OECD countries, and after taxes and transfers it was estimated to be higher than all but five countries (OECD, 2015).

Figure 1.5. Income inequality before and after transfers

Gini coefficient, scale from 0 "perfect equality" to 1 "perfect inequality", 2012[1]



1. 2009 for Japan; 2011 for Canada and Chile; 2013 for Finland, Israel, Korea, the Netherlands and the United States; 2014 for Hungary.

2. OECD Secretariat calculations from EU-SILC – preliminary results.

Countries are ranked in ascending order of the income inequality after taxes and transfers.

Source: OECD Income Distribution database and OECD Secretariat calculations; OECD (2016c), *OECD Economic Surveys: Lithuania 2016: Economic Assessment*, Figure A7, http://dx.doi.org/10.1787/eco_surveys-ltu-2016-en.

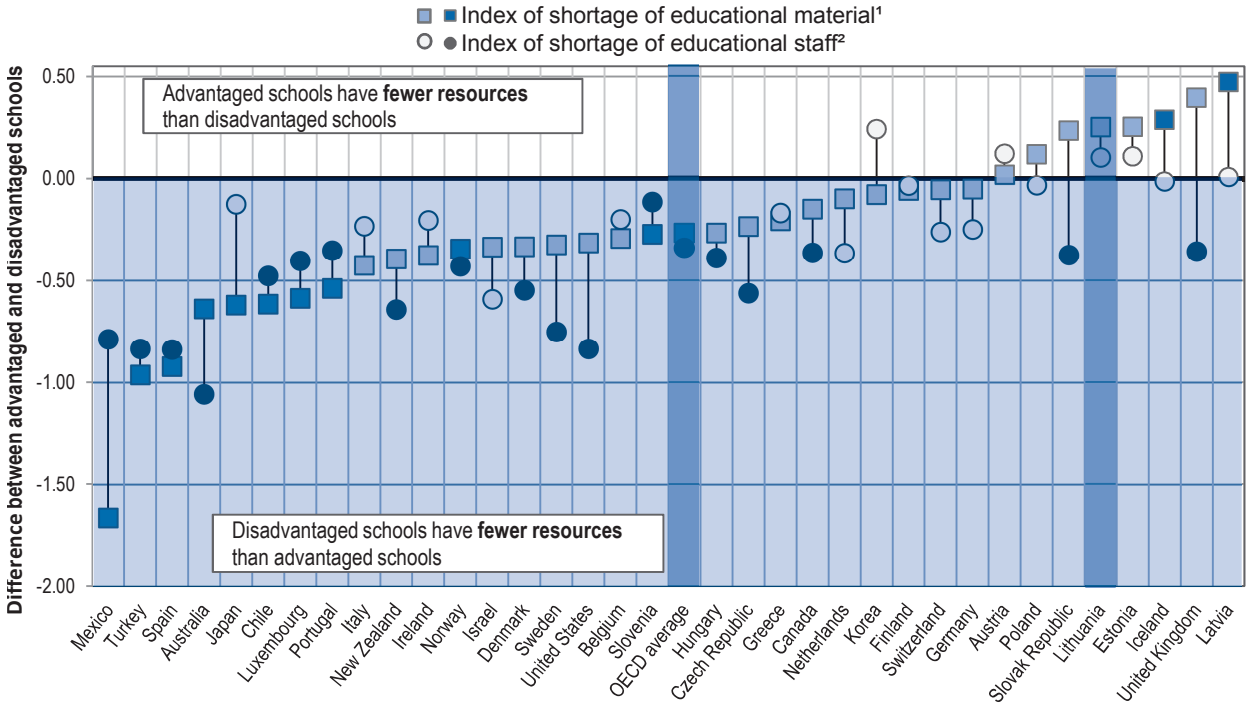
Key dimensions of equity in education

Lithuania's national education data, policy analysis, and policy targets do not focus on socio-economic disadvantage – such as family income or wealth, or parental education. Access to early childhood education and care, performance in primary and secondary school, entry into vocational education, enrolment in higher education, and participation in lifelong learning are not routinely monitored by socio-economic status. In Lithuania's national education policy, the key dimensions of equity that are at the centre of discussion include language and ethnicity, rural disadvantage, gender, and students with special education needs (SEN).

Socio-economic status

Lithuania's school resourcing policies result in an equitable distribution of key learning resources, such as staff and learning materials. In contrast to most countries participating in PISA, Lithuanian school heads serving disadvantaged students *less frequently* reported in 2015 that shortages of qualified staff and instructional materials affected their ability to provide instruction than heads of schools serving advantaged students (Figure 1.6).

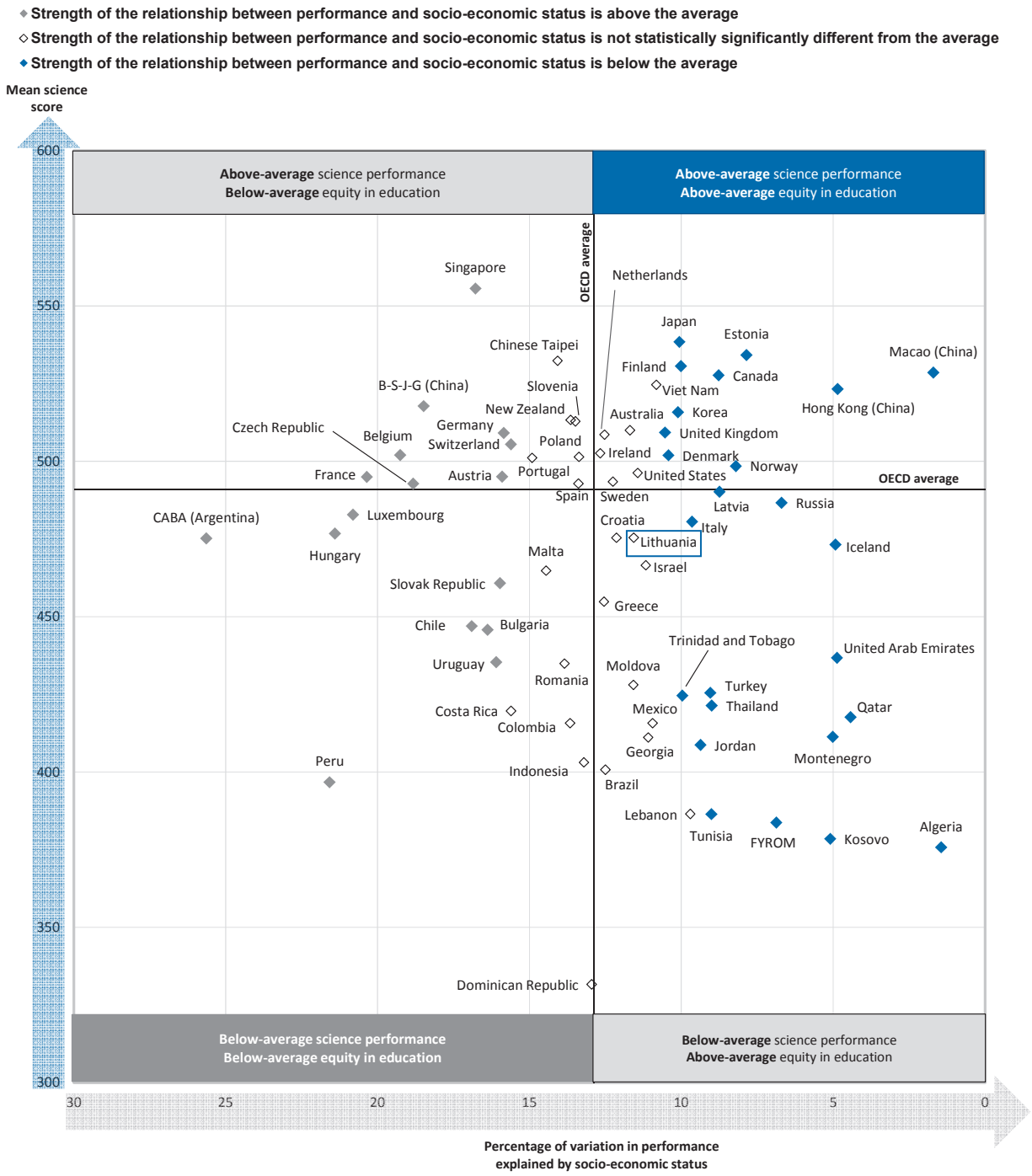
Figure 1.6. Differences in educational resources between advantaged and disadvantaged schools (PISA, 2015)



1. The index of shortage of educational material is measured by an index summarising school principals' agreement with four statements about whether the school's capacity to provide instruction is hindered by a lack of and/or inadequate educational materials, including physical infrastructure.
2. The index of shortage of educational staff is measured by an index summarising school principals' agreement with four statements about whether the school's capacity to provide instruction is hindered by a lack and/or inadequate qualifications of the school staff.
Note: Statistically significant differences between advantaged and disadvantaged schools are marked in a darker tone.
Countries are ranked in ascending order of the difference in index of shortage of educational material between advantaged and disadvantaged schools.
Source: OECD (2016b), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Figure I.6.14, http://dx.doi.org/10.1787/9789264266490-en,

PISA data reveal that socio-economic disparities in learning outcomes among 15-year-olds in Lithuania are comparable to those found, on average, across OECD member countries – a consistent pattern since Lithuania commenced participation in PISA, in 2006. In 2015 the socio-economic background of PISA test-takers, as measured by the economic, social, and cultural status (ESCS) index, accounted for about 13% of variance in performance on the PISA science assessment. Lithuanian students achieved, on average, results that were modestly below average, and that performance was slightly less associated with socio-economic status than average (Figure 1.7).

Figure 1.7. Relationship between performance and socio-economic status in science in PISA 2015



Note: Only countries and economies with available data are shown.

Source: OECD (2016b), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Table I.6.3a, http://dx.doi.org/10.1787/9789264266490-en.

A preliminary analysis of higher education enrolment by household income quintile shows that rates of higher education among those in the highest income quintile (80%) are approximately five times that of those in the lowest quintile (16%) – a pattern that can be found in other OECD member countries (Bailey and Dynarski, 2011).

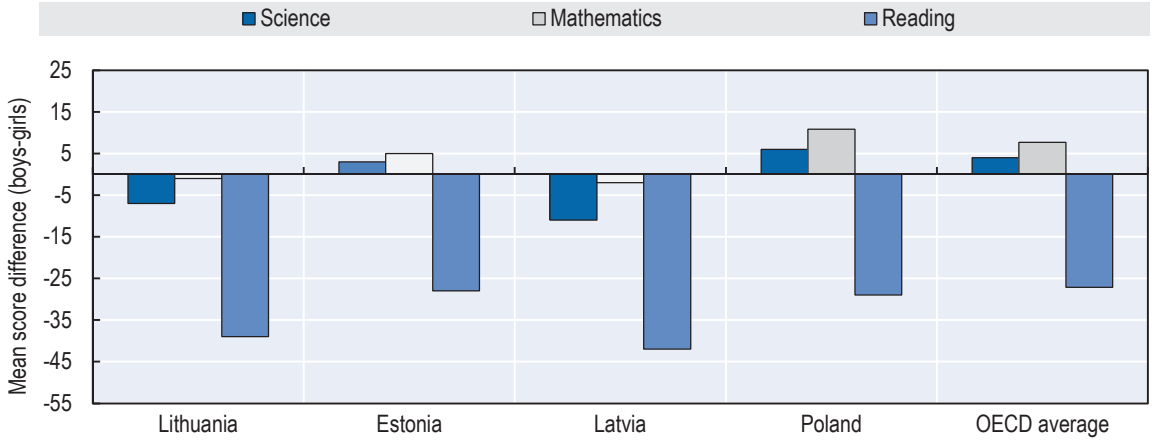
Language

Approximately 15% of Lithuania's population consists of ethnic minorities, principally Poles (6.6%) and Russians (5.8%) (MoES, 2016). In academic year 2015/16, 97 of the nation's 1 153 schools providing general education offered instruction in a language other than Lithuanian. Among students in general education, 3.4% of them studied in Polish, while 4.3% of them studied in Russian (Statistics Lithuania, 2016a). Language minority schools deliver the national curriculum, and are publicly funded through the "student basket" methodology that is used to meet teaching across in all schools (Chapter 3), and the funding methodology awards a 20% premium for students studying in the language of national minority. Since 2013 all upper secondary students in Lithuania have been required to take the Lithuanian language and literature examination to obtain their certificate of upper secondary completion (*matura*). School leavers in ethnic minority schools taking this *matura* examination in 2015 passed it a lower rate (84%) than did those in Lithuanian language schools (90%). Neither labour market outcomes nor tertiary participation are monitored by language status.

Gender

In many important respects – though not all – female students outperform males in Lithuanian education. PISA results indicate that the gap in gender performance across reading, mathematics, and science is greater than that found, on average, across OECD member countries, and wider than that found among regional peers (Figure 1.8). Only Latvia displays a gender gap wider than that of Lithuania – though Latvian boys outperform Lithuanian boys. The largest gap in performance among Lithuanian 15 year-olds is observed in reading, where the mean score of boys was 39 scale score points lower than that of girls, equivalent – roughly – to one year difference in learning gains.

Figure 1.8. Gender differences (boys-girls) in mathematics, science and reading performance in PISA 2015



Note: Score-point differences that are statistically significant are marked in a darker tone.

Source: OECD (2016b), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Tables I.2.8a, I.4.8a and I.5.8a, http://dx.doi.org/10.1787/9789264266490-en.

Women more often complete upper secondary education than men, and they are over-represented among first-time graduates at all levels of tertiary education in Lithuania. In 2014, 62% of graduates from bachelor's programmes, 67% from master's programmes, and 59% from doctoral programmes were women – all higher than the OECD averages of 58%, 57% and 47% respectively.

However, women undertake different areas of study than men, with important consequences for their labour market outcomes. Women who enrol in upper secondary vocational programmes rarely enter construction, engineering, and manufacturing programmes (3%) – a rate significantly lower than in Latvia (9%) or Estonia (17%), or than across the OECD member countries (12%). Women less frequently undertake tertiary programmes of study in science and engineering than do men. In 2014 the ratio of female to male graduates in education (4.1:1) and health and welfare (4.7:1) was opposite that of science and engineering graduates (0.3:1) (OECD, 2016a). These study choices result, in part, in lower earnings: female tertiary graduates who are full-time workers obtain 76% of full-time tertiary-educated male earnings (OECD, 2016a).

Special education needs

The majority of Lithuanian school-age students with special education needs are fully or partially integrated into general education schools, and 35% premium to the "student basket" is allocated to fund education specialists for their instruction. Among students with identified special education needs, 34 569 studied in mixed classes in general education schools, 959 were in partially integrated settings, and another 3 663 (9.3%) studied in special education schools. The State Education Strategy for 2013-2022 established a target of reducing this to 5% in 2022. Neither assessment results nor labour market outcomes of those with special education needs – including labour force participation and earnings – are reported by national education authorities.

Urban-rural disparities

The economic and social context of education in rural Lithuania is disadvantageous. The incidence of poverty in rural Lithuania is higher than that of urban areas (MoES, 2016), and the health experiences of rural residents are worse, as well: rural residents make fewer visits to physicians than those in urban areas, and their life expectancy is three years lower than urban Lithuanians (OECD, 2016c). The literacy, numeracy, and problem-solving skills of the adult population, as measured by the Survey of Adult Skills [a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC)], are significantly weaker in towns and villages than in the nation's capital and its largest urban areas (Table 1.1).

Table 1.1. Mean scores of the Survey of Adult Skills by size of community

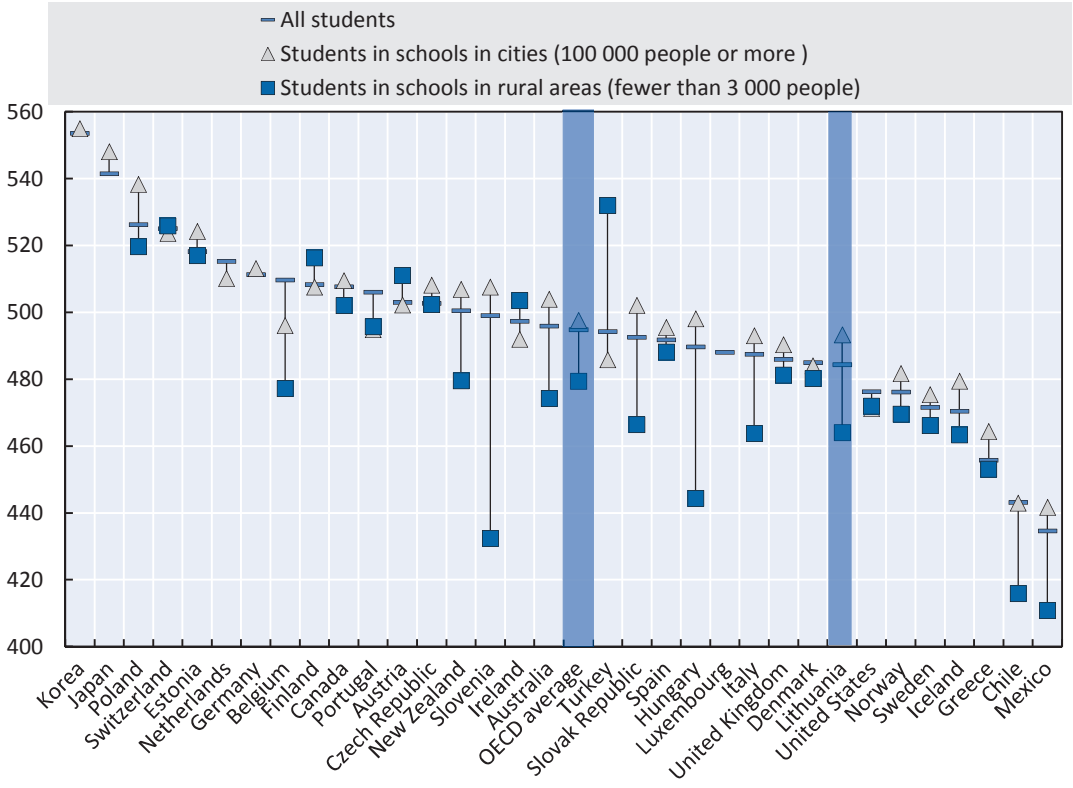
	Literacy	Numeracy	Digital problem solving
Vilnius	**289**	**292**	**285**
Cities (90 000 - 500 000)	**274**	**277**	**264**
Cities (3 000 - 90 000)	**262**	**260**	251
Towns and villages (< 3 000)	255	252	244

Note: Scores that are statistically significantly different to "towns and villages" at 0.05 level are indicated in bold.

Source: OECD, Survey of Adult Skills (PIAAC) (2015); calculations by the Lithuanian Qualifications and Vocational Training Centre.

Urban-rural disparities in educational participation and outcomes begin early in life and continue throughout. Virtually all urban children ages 3-6 (98%) are enrolled in pre-school education, while fewer than half of rural children are (48%) (Statistics Lithuania, 2016a). Rural students are more often early school leavers than are urban students (8.4% vs. 5.9%), and among rural males rates of early school leaving are especially high (12.5%) (MoES, 2016). The performance of rural students on international assessments lags behind that of their urban peers. For example, in PISA 2012 urban students in Lithuania outperformed rural students by 57 points in mathematics, the equivalent of more than one year of schooling – a gap nearly twice that found on average across OECD member countries (31 points) (Figure 1.9) (OECD, 2013). The TIMSS assessment is also administered in Lithuania, and shows comparable urban-rural gaps in achievement (Kryst, Kotok and Bodovski, 2015).

Figure 1.9. Mean mathematics performance PISA 2012 by school location



Countries are ranked in order of mean performance of all students, after accounting for socio-economic status.

Source: OECD (2013), *PISA 2012 Results: Excellence through Equity (Volume II): Giving Every Student the Chance to Succeed*, Figure II.3.3, http://dx.doi.org/10.1787/9789264201132-en.

Rural students in Lithuania perform comparatively poorly on school-leaving examinations taken at the end of upper secondary education, *matura* examinations: 65% of urban students passed three or more state *matura* examinations, while 53% of rural students did so at the end of secondary education. The majority of urban students who enrol in higher education study at Lithuanian universities, while the majority of rural students study in colleges, the graduates of which experience lower earnings and higher rates of unemployment than university graduates (MoES, 2016).

The policy challenge: Raising performance for a resilient Lithuania

Lithuania is a small state of fewer than three million people, and its borders are open to the movement of goods and people. Due in part to its comparatively low wages vis-à-vis the more prosperous nations of the European Union, it has experienced large declines in population, and distinctively high rates of migration, which together shape virtually every aspect of public life – and education policy - in Lithuania.

Migration from Lithuania is unusually high. Between 2000 and 2013 Lithuania's population declined by 17%. Slightly less than one-fourth of this decline in population (3.5%) was the result of a natural decrease in population, while the remaining 13.5% decline in population was the result of net outmigration (Kahanec and Zimmerman, 2016). Emigration is most common among the young: in 2014 nearly 70% of emigrants were less than 35 years of age. With average net wages up to five times higher within the European Unoin, young people have most often migrated to the United Kingdom and to Nordic countries (OECD, 2016c).

The high level of migration has had a significant impact on the nation's economy and wider public life. Migration is estimated to have reduced Lithuania's potential output (GDP per capita) by 8% (Kahanec and Zimmerman, 2016), and it has led to led to keen concern among public figures and scholars about the future of the country. As one Lithuanian scholar (Gudelis, 2016) has noted:

> "Emigration is…perceived as a threat to the identity of the small Lithuanian nation. Children of emigrants often forget the Lithuanian language, and the number who still identify with their country of origin diminishes in each new generation. Some scholars even envision a gloomy scenario of the extinction of Lithuanian language and nation over the next 100 years." (Gudelis, 2016)

Migration – and, more generally, a shrinking population – has shaped democratic debate, national elections, and core policy documents addressing the future of the country, such as Lithuania's *Progress Strategy 2030*.

In light of these circumstances, education and training policy must focus on the challenges created by population decline, and with the ways in which the nation's education system can support demographic stabilisation, social cohesion, and economic growth. To do this, the nation's education system – which has achieved wide scope – must place special emphasis on raising educational quality. This will require that its schools and its higher education institutions perform at a higher level than in the past, developing the language, scientific, and mathematical fluency of its young adults to a high level; training innovative and skilled professionals for working life; and carrying out research rooted in European and international engagement, and which meets international standards. Below we consider strategies for how this might be accomplished, while the chapters that follow give fully developed policy recommendations. The strategies include:

- Clarify and raise performance expectations.
- Align resources in support of raised performance expectations.
- Strengthen performance monitoring and the assurance of quality.
- Build institutional capacity to achieve high performance.

Clarify and raise performance expectations

Improved educational performance requires as a first step that expectations of performance be clarified and raised. Lithuania needs a shared vision of good schools and good teaching, high quality vocational education, and successful college and university institutions – and for this vision to be embedded in guiding policy documents, and rooted in the thinking of practitioners. This vision, in some instances, is absent, unclear, or not formulated in ways that can raise performance.

Policy makers, for example, wish for vocational education to be more attractive than in the past and have set targets for an increased percentage of upper secondary students to be enrolled in VET programmes. This goal is supported by large European Structural Fund (ESF) investments in vocational training centres, by training to improve the pedagogical practices of VET teachers, and by reforms to the governance of VET schools linking them to local stakeholders. What appears to be absent – from policy planning documents, stakeholders meetings, and visits with local providers – is a clear and shared account of what high quality vocational education looks like when provided, or what it achieves for its participants.

In higher education policy there is a widely understood and shared account of high performance, but it is insufficiently comprehensive to guide improvement. Achieving global ranking as a research university is a goal articulated in policy documents and embedded in public discussions, and it provides a focus to orient improvement for one of the nation's public universities, Vilnius University. However, there is not an improvement-oriented vision of performance that is calibrated to the nation's other 13 public universities, to its colleges providing professionally-focusing bachelor degree education, or to the higher education system as a network of institutions.

The Ministry has co-ordinated sustained discussions among education stakeholders of good teaching and good schools, and these have resulted in a document on good schooling (the "Good Schools Concept") and a forthcoming "Teacher Competency Framework". Developing a shared vision of what counts as good teaching is crucial for all countries. Providing a high quality teaching workforce for the nation's schools is a particularly serious challenge in Lithuania, which has a teaching workforce that is much older than the OECD average, and less highly compensated. Policy planning documents set targets for a rejuvenated and more diverse workforce, and steps have been taken to raise low levels of teacher compensation. However, discussions with education stakeholders suggested the absence of a common understanding about good teaching and how to achieve it – how teachers should be trained, who should provide this training, how performance should be evaluated and rewarded. A widely accepted vision of good teaching is needed to underpin teacher policies: initial teacher education programmes, regular teacher appraisal, certification processes, teacher professional development and career advancement. And, these, in turn, are needed if Lithuania is to develop the skills of its population to a higher level than in the past.

As Lithuanian authorities renew their State Education Strategy and develop policy and guidance documents – ranging from their "Teacher Competency Framework" to proposals for the consolidation of the nation's higher education system – they should ensure that each articulates a vision of high performance that is widely understood, and provides a basis for guiding policy and practice. This is the foundation on which resources can be aligned in support of improvement, and performance can be monitored to assure quality.

Mobilising resources for improvement

Improving education and training in Lithuania will require that resources be mobilised in support of improvement. For example, a shared vision of high quality teaching and how to prepare teachers needs to be joined up to funding. Attracting high quality entrants to teaching programmes and retaining them in the teaching profession requires that salaries continue to be raised. Raising student achievement should be supported through expanded instructional time. In Lithuania mobilising resources for improvements in educational performance will principally require that national authorities exercise leadership in the *reallocation* of resources – especially through the consolidation of existing education institutions.

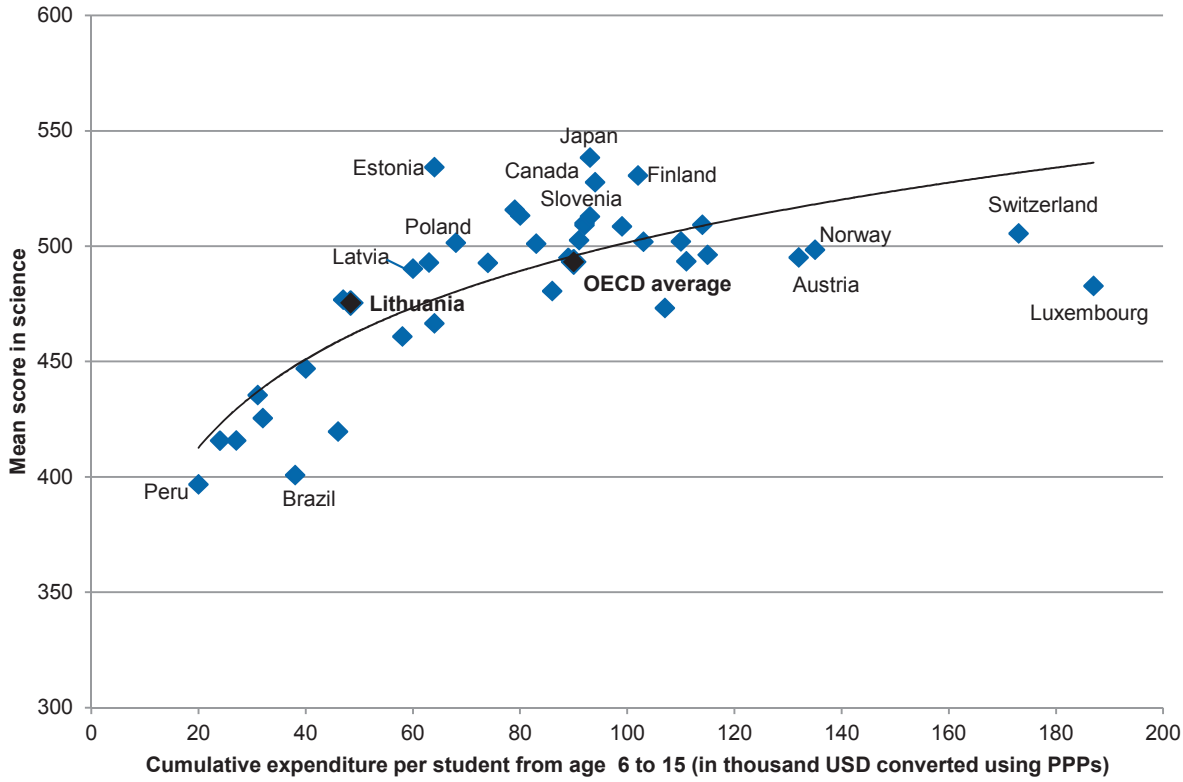
Educational expenditure per student in Lithuania is relatively low. It spends less of its national income on education than do OECD member countries, on average. In 2013 Lithuania spent 4.4 % of its GDP on education, a share smaller than that of its Baltic neighbours Latvia (4.5%) and Estonia (5.2%), and less than the OECD average (5.2%). While Lithuania invests a share of its national income in education comparable to that of Japan or Germany, its GDP per capita is approximately one-third lower than the OECD average. Thus, annual spending per student across primary, secondary and tertiary education in Lithuania in 2013 was USD 6 027 (adjusted for purchasing power parity), as compared to an OECD average of USD 10 493. Neighbouring Poland spent about USD 1 000 more per student, and Estonia an additional USD 2 000 per student (OECD, 2016a).

In principle a higher level of education investment in Lithuania might be justified as a means by which to raise educational performance to levels at or above the OECD average. Data from PISA (Figure 1.10) suggest that low spending per student may be associated with poor learning outcomes, as measured by mean PISA science scores. At USD 48 000 in cumulative educational expenditure across the 6-15 year-old age span, Lithuania may not be at the point at which marginal returns to additional spending would cease.

Although additional spending might hold the promise of improvement in educational performance, the wider fiscal commitments of the Lithuanian government may not easily permit it. The Lithuanian government's 2014 Convergence Programme aimed to reduce public expenditure as a share of GDP, and to maintain (or reduce) the share of GDP devoted to education (Shewbridge et al., 2016). However, even if education spending were to remain a roughly consistent share of GDP, there is wide scope for improvement in schooling and higher education that can be achieved in Lithuania. This can be accomplished, the review suggests, through consolidating school and university networks; focusing on the key inputs of instructional time and teacher quality; and improving the capacities of those who are responsible for managing education institutions and those who steer Lithuania's decentralised system of education.

Swiftly declining school-age cohorts have placed enormous pressure on Lithuania's network of school and higher education institutions. For example, between 2010 and 2014 the number of students enrolled in upper secondary education declined sharply, falling by just over one quarter, from 108 000 to 79 000. In higher education similar trends have occurred. Between 2010 and 2014, tertiary enrolments fell by 32%.

Figure 1.10. Spending per student age 6-15 and average performance in PISA 2015 science



Source: OECD (2016b), *PISA 2015 Results* (*Volume I): Excellence and Equity in Education*, Table I.2.11, http://dx.doi.org/10.1787/9789264266490-en.

Many municipal officials have worked diligently to reform and consolidate their network of schools, and national authorities have introduced initiatives to assist with school consolidation, including transport for students and limited financial support for teachers to transition to retirement (Shewbridge et al., 2016). Nonetheless, the average student/teacher ratio in Lithuania for its primary and lower and upper secondary schools is the third and second lowest, respectively among European countries, and is far below OECD averages (Chapter 3, Table 3.15). The nation's higher education system has likewise experienced declining enrolments, and its higher education institutions – especially its 14 public universities – have found it difficult to balance staffing and student numbers. Lithuania has a distinctively large number of small public universities – far more per one million inhabitants than many other small European nations, such as Ireland, Denmark, or Slovenia (OECD, 2016d). Four of the nation's 14 public universities are forecast to have no entering students by 2019.

Consolidation needs to be undertaken to improve cost effectiveness, but must be balanced against a concern for performance improvement – which is across the nation's education system, from primary through tertiary education. The performance of Lithuanian students in PISA science, mathematics, and reading assessment is below average, and relatively few Lithuanian students perform at the highest levels of achievement. Universities, on average, fall well below international levels in performing research, supporting innovation, and recruiting international students and researchers. Fortunately, increasing the size of schools and universities can importantly assist

improvement. Larger schools can offer a broader curriculum, specialised courses and teachers, especially at the secondary level (Ares Abalde, 2014). Larger universities can offer a range of courses, facilities, and clusters of researchers, and research management infrastructure that small institutions cannot.

Immediate responsibility for the consolidation of schools and universities rests with municipalities and the Lithuanian parliament, the *Seimas*, respectively, rather than the Ministry of Education and Science (MoES). However, MoES has an important role to play in supporting their work, and in the chapters that provide recommendations for doing so are outlined in primary and secondary schooling, and in higher education.

Strengthening performance monitoring and the assurance of quality

Raising the performance of Lithuania's schools, colleges, and universities should be supported by improvements to the monitoring of their performance and the assurance of their quality. There have been important accomplishments in the development of the capabilities in the nation's education system. For example, the National Examination Centre has developed and implemented high quality assessments for students in primary and secondary schools, and carries out analysis and benchmarking of results for the nation's schools. The national government has recently authorised the development of an integrated human resources monitoring system that will link schooling and employment records, providing the basis for monitoring education and training outcomes. Mature systems of quality assurance for schools and higher education are in place.

Four challenges remain if national authorities are to ensure that monitoring and quality assurance lead to actual improvements in performance. First, efforts must focus on the use of assessment results by teachers and school leaders who are not fully exploiting the potential of assessments to improve classroom practice and school leadership (Chapter 3). Second, monitoring and reporting across the entire education system need to attend more systematically to disadvantaged learners or students at risk of receiving poor provision, whether boys enrolled in rural schools, students with special education needs enrolled in secondary vocational programmes, or foreign students enrolled in university programmes. Third, quality assurance systems need to be better integrated with pupil assessment and monitoring systems. External school evaluations could be prioritised or triggered by assessment results. VET credentials that are well aligned or poorly aligned to labour market needs should be identified by employment and earnings information about programme participants. This will require a fourth challenge to be addressed, which is to ensure that the nation's incipient human resources monitoring system is fully implemented, and then put to use in support of policy.

Build institutional capacity to achieve high performance

Lithuania has engaged in large-scale reform of its education and training institutions since the re-establishment of independence. The *Seimas* has adopted legislation decentralising responsibility to local governments for the organisation and supervision of schooling, created transparent enrolment-based models for funding schools and higher education institutions, and provided school heads and higher education leaders with responsibility for the management of their institutions. The capacity of education institutions for self-management is not yet consistently and fully developed. Higher education institutions typically lack professional management with which to support strategic leadership, and lack the ability to effectively manage the challenges – and opportunities – that consolidation may bring (Chapter 5). Likewise, municipal and national authorities responsible for supervision and guidance of a decentralised system of

education sometimes lack the capacities they need to meet their steering responsibilities. The nation's 60 municipal authorities, for example, often lack the capacity to effectively monitor the quality of provision in early childhood education and care (Chapter 2). The Ministry of Education and Science lacks a dedicated research and analysis capacity that it can use to inform discussion of policy – or exploit assessment and administrative data resources, as other nations of similar scale might possess (Chapter 3).

Sustained improvement in the performance of the education and training system will require, therefore, that Lithuania systematically focus on the capacities of its institutions, and commit as a matter of policy to ensuring that they have capacities sufficient to meet their responsibilities. Where an independent assessment is required to make judgments about fitness for purpose and recommendations for improvement, it might draw upon either international expert bodies, or the Audit Office of Lithuania (Chapter 5).

Conclusion and recommendations

Lithuania's education system has achieved a broad scale of provision delivered by education institutions that are authorised to operate with extensive autonomy. However, to help the nation meet its wider social and economic needs, education and stakeholders should place special emphasis on raising educational quality. Lithuania would benefit from an education system that performs at higher levels than at present, developing the skills of its young adults to the level of higher-performing peers in other countries; training innovative and skilled professionals for working life; and carrying out research to international standards. This chapter has sought to identify the main strategic steps which Lithuania now needs to take to address these challenges.

Box 1.2. Recommendations to raise performance for all students

As a means to comprehensively raise the level of performance for all students, the Government and other education stakeholders across the country are encouraged to work towards:

- *Clarifying and raising expectations of performance* – by students, teachers, school leaders, and researchers – across the education system. Productive discussions, those that become embedded in guiding policy documents and the thinking of practitioners, need to identify a shared vision of good schools and good teaching, high quality vocational education, and successful college and university institutions.
- *Aligning resources in support of raised performance expectations*. If students are to learn to higher levels, resources must support this – including expanded learning time and a strengthened teacher workforce. University research funding must be still more closely linked to quality. Improvements will often require new or continued consolidation of universities and schools, which are sometime poorly organised to support efficient resource use or high levels of quality.
- *Strengthening performance monitoring and ensuring quality.* Improvement requires careful attention to performance. Lithuania has established data systems and school assessments, but has not fully used these to improve teaching or leadership, or to assure quality. Linking existing education information systems to labour market information and making better use of assessment information are needed to raise performance, and greater attention to presently overlooked disadvantaged students is needed.
- *Building institutional capacity to achieve high performance.* National education policy makers in Lithuania sometimes lack the organisational and analytical capacity to play the convening and steering role for which they are responsible. Likewise, education institutions sometimes lack the capacity for self-management they need in a system providing wide autonomy. Developing the institutional capacity of each should be a priority of policy.

Note

1. In 2015 changes were made to the test design, administration, and scaling of PISA. These changes add statistical uncertainty to trend comparisons that should be taken into account when comparing 2015 results to those from prior years. Please see the "Readers' Guide" and Annex A5 of the PISA 2015 Initial Report (Volume I) (OECD, 2016b) for a detailed discussion of these changes.

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Chapter 2

Early childhood education and care in Lithuania

The importance of early childhood education and care (ECEC) is well recognised in Lithuania. Its professional community shares a tradition of concern with the structural dimensions of ECEC quality – ensuring adequate space, group sizes, staffing, facilities, and hygiene – and it has developed a widely shared understanding of the essential cognitive, emotional and social skills that children need to develop in their early years. Levels of participation in ECEC are high, especially in urban areas. However, participation in ECEC lags in the nation's rural areas, where the incidence of poverty and ill health are highest, and young children might benefit most from access to high quality ECEC. Responsibility for monitoring the quality of ECEC rests with municipal education departments, who lack ministerial guidance which would permit them to easily and routinely monitor the quality of ECEC provision. This chapter examines how Lithuania might address gaps in participation, and put in place a comprehensive system of quality monitoring.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

Lithuania has considerable strengths in early childhood education and care, with good support in place for children with special needs; a child-centred approach to ECEC pedagogy with guidelines for curricula in place; and ECEC available from birth. Policy achievements over the last decade are many, and include the continued emphasis on expanding access and ongoing efforts to ensure integration of ECEC into the education system.

Lithuania faces two challenges in taking early childhood education and care forward: ensuring higher levels of participation among those most in need of care, and ensuring that the education and care it provides is of consistently high quality.

Lithuania should focus on continued expansion of ECEC participation in rural areas, and ensuring sufficient supply of provision in urban areas, based upon a financing model that is sustainable, equitable, and efficient. A second priority for attention should be continued attention to quality in provision and its assurance. This can be accomplished through the development of a more regular and systematic approach to monitoring process dimensions of quality; additional attention to the continuing development needs of its teaching workforce; by strengthening connections between ECEC and the health care system, and by strengthening the diagnosis and support of children with special needs.

The state of early childhood education and care

Context, governance, and funding of ECEC

Context

Indicators of public health and family life provide a useful barometer on the state of young children's development in Lithuania. The infant mortality rate, which provides an overall indication of child health, is relatively low in Lithuania, at 3.3 deaths per 1 000 births in 2015 as compared to 9.8 on average in Europe, and has declined dramatically over the last twenty years, from 12.4 deaths per 1 000 live births in 1995 (WHO, 2016). BCG (tuberculosis) immunisation coverage among one-year-olds at 98% in 2014 is higher than the European average of 94% (WHO, 2015), indicating that most children have routine contact with the health care system.

On some measures of family and social life the environment for early childhood education and care in Lithuania compares favourably to that of peer nations. Child poverty among young children has been declining in Lithuania. While 28% of children under age 6 were at risk of poverty or social exclusion in 2010 (i.e. at risk of deprivation, including low levels of stimulation in-home environments, poor nutrition and health care, and exposure to economic stress), the share had decreased to 19% by 2014, below the EU-28 average of 26% (Eurostat, 2016a). The share of children (under age 18) living with a single parent (21% in 2014) is modestly higher than the EU-28 average of 17% (Eurostat, 2016b), and single parent households may provide an environment with low parental support and financial resources.

Lithuania's 0-6 year-old age cohort has experienced a significant decline. Between 2005 and 2015 this age cohort fell from 221 000 to 209 300, and it is forecast to decline further to 134 700 by 2030 (Eurostat, 2014). This demographic development presents challenges of managing the network on early care and education institutions, but provides an opportunity to expand the rate of participation in ECEC.

Governance

Public support for children in Lithuania begins at birth, and is supported through a range of policies, including parental leave policies. Families are provided, among other supports, a year of paid parental leave, leading to low numbers of children in non-parental care in the first year of life. This is comparable to the mid-range of support for new parents within the EU, with lower levels of compensated paternal leave than is available in some countries, such as Norway (European Commission/EACEA/Eurydice/Eurostat, 2014).

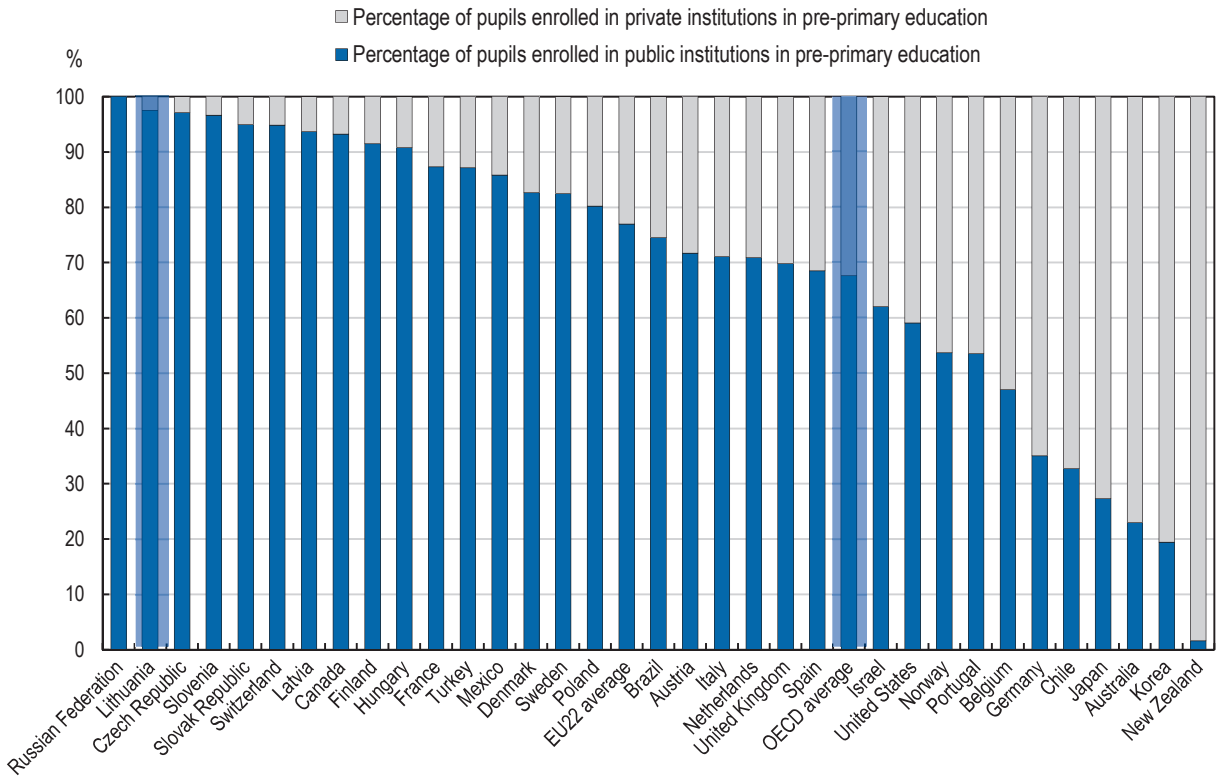
Early childhood education and care is referred to as "preschool education" for children from birth through 6 years of age, and as "pre-primary education" for those who are 6-7 years of age. Compulsory primary schooling begins at age 7, while the starting age is typically 6 in many OECD member countries. Until recently, Lithuania, along with Latvia and Romania, was one of the few European countries that had not established either a legal entitlement to or compulsory enrolment in ECEC (European Commission/EACEA/Eurydice/Eurostat, 2014). However, one year of pre-primary education became compulsory in 2016.

The provision of ECEC in Lithuania is funded jointly from central and municipal budgets, and locally administered by Lithuania's 60 municipalities. Funds for ECEC are allocated by the national government to municipalities through its "student basket" funding methodology (Shewbridge et al., 2016). Base funding for twenty hours per week of education and care for each child is provided by the central government. Municipalities may, if they choose, supplement ECEC funding beyond the twenty hours per week paid for by the central government.

Municipalities design and implement local services, including decisions on prioritisation and procedures for enrolment; fees and discount policies; oversight of curriculum implementation; and monitor and ensure quality.

In total 97% of Lithuanian children receive early childhood education and care in public institutions, a share well above the OECD average (Figure 2.1). Early childhood education and care is provided by a range of institutions, including separate pre-school institutions; preschools placed within general education facilities; and multi-functional centres, which operate in rural areas and provide a range of services at one facility. The specific hours set for pre-school and pre-primary facilities vary, and are left to the municipal governments to determine, within national guidelines and taking into account the parents they serve. Some facilities are open all day, while others operate only on a part-day basis.

Figure 2.1. Percentage of pupils enrolled in public and private ECEC institutions (2014)



Countries are ranked in descending order of the percentage of pupils enrolled in public institutions in pre-primary education.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Figure C2.3, http://dx.doi.org/10.1787/eag-2016-en.

Funding

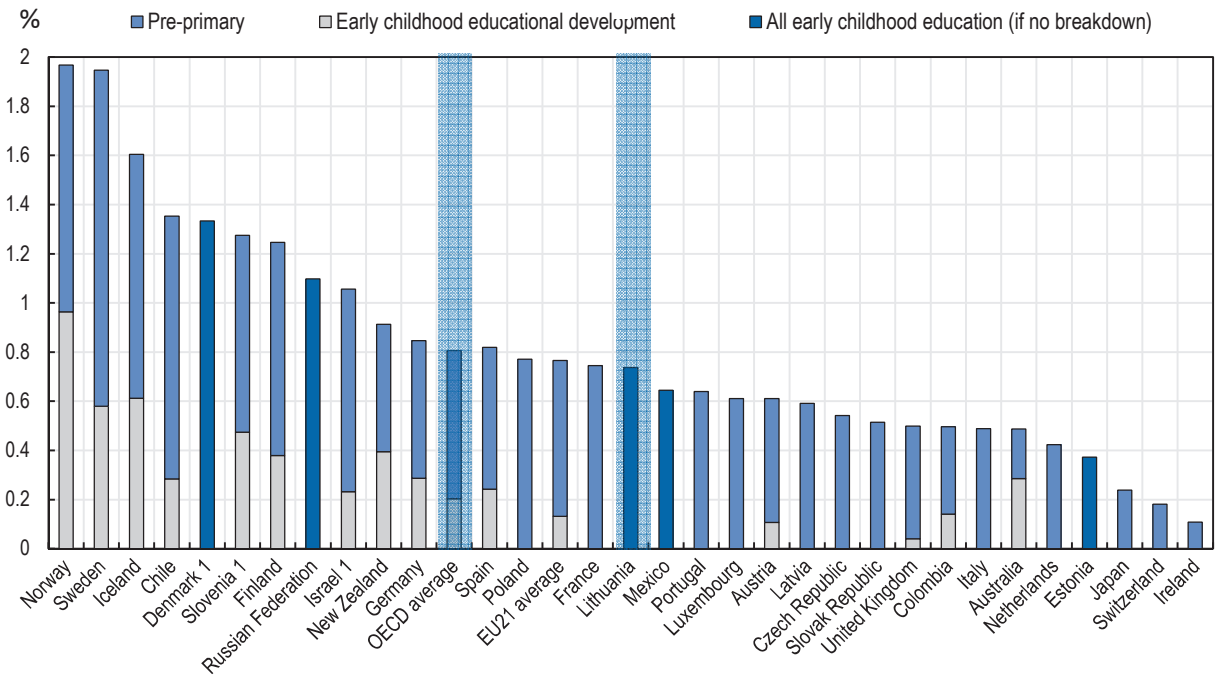
Lithuania spends 0.7% of its GDP on early childhood education and care, which is near the OECD average of 0.8%. This level of investment is higher than that of its Baltic neighbours, Latvia and Estonia, and well below that of its Nordic neighbours, who commit the largest share of the GDP to ECEC across the OECD member countries (Figure 2.2). Because Lithuania's GDP per capita is 31% lower than the OECD average, this level of effort yields per pupil spending on public ECEC that is about half of other OECD countries, at USD 5 043 per pupil vs. the OECD average of USD 9 127 (OECD, 2016a) (Figure 2.3) – though higher than that of its Baltic neighbours Latvia and Estonia.

Early childhood education and care provided by public centres is made available to families free of charge for children from birth, though parents are responsible for the cost of children's meals.[1]

In Lithuania private expenditures on early childhood education and care institutions – for fees and ancillary services such as meals and transport - comprise 15% of the total expenditure on ECEC. This is lower than the OECD average of 19%, and broadly comparable to the EU-22 average of 14% (Figure 2.4), and to some Nordic nations, such as Denmark (OECD, 2016a).

Figure 2.2. Expenditure on early childhood educational institutions (2013)

As a percentage of GDP, by category



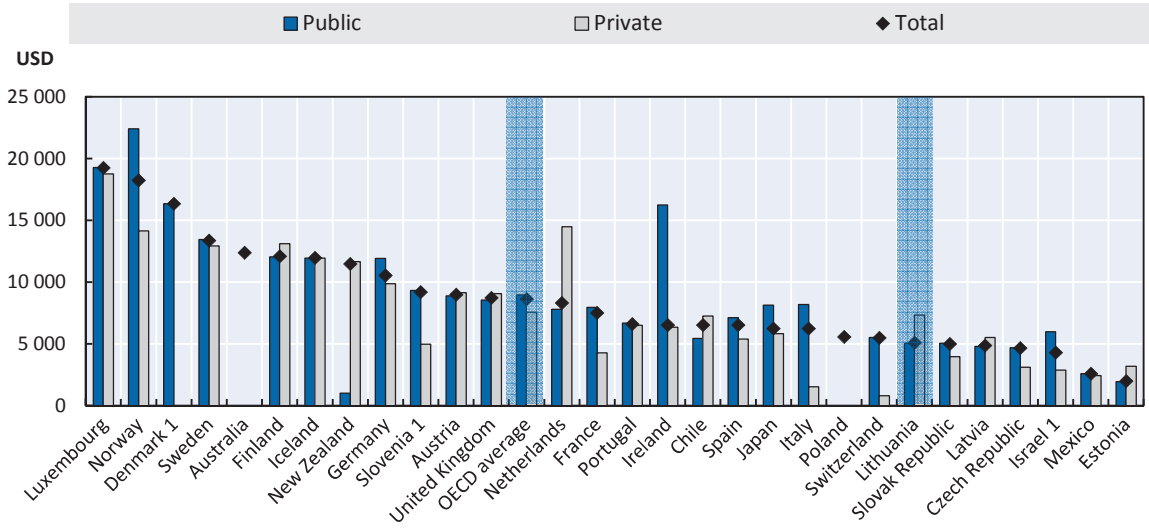
1. Includes some expenditure on childcare.

Countries are ranked in descending order of public and private expenditure on educational institutions.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Chart C2.5, http://dx.doi.org/10.1787/eag-2016-en.

Figure 2.3. Annual expenditure by early childhood educational institutions per student (2013)

In equivalent USD converted using PPPs

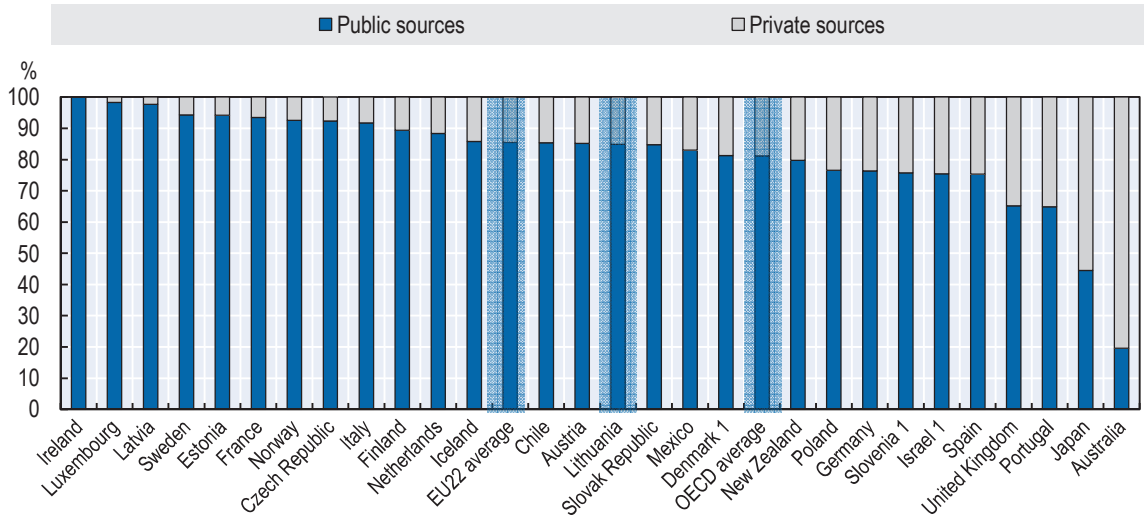


1. Includes some expenditure on childcare.

Countries are ranked in descending order of expenditure on public and private educational institutions per student.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Table C2.3, http://dx.doi.org/10.1787/eag-2016-en.

Figure 2.4. Percentage of total expenditure on early childhood educational institutions from public and private source (2013)



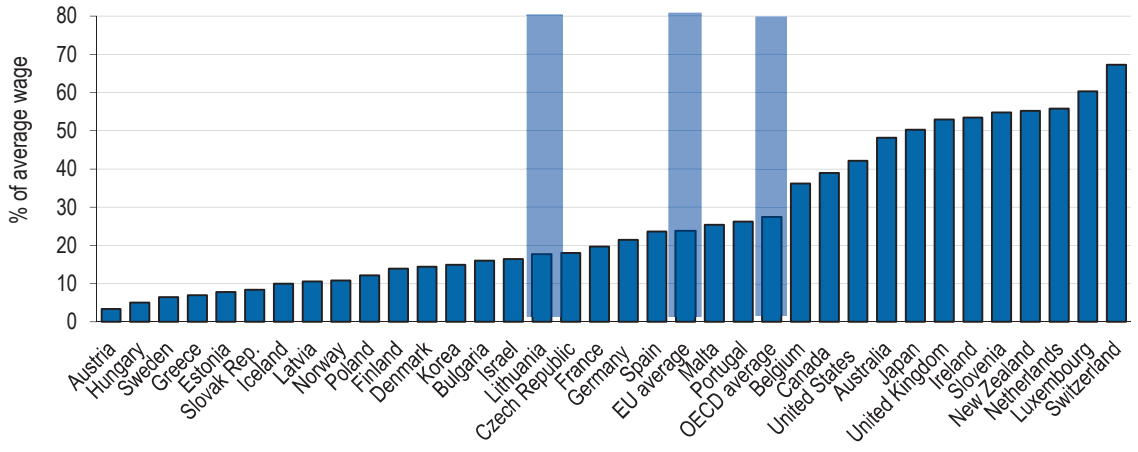
1. Includes some expenditure on childcare.

Countries are ranked in descending order of the percentage of expenditure on early childhood educational institutions from public sources.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Table C2.3, http://dx.doi.org/10.1787/eag-2016-en.

The household burden for childcare in the early years (ages 2 and 3) is below average: gross childcare fees for two children attending typical accredited early-years care and education services in Lithuania comprised 17.7% of the average wage in 2012, well below the OECD average of 27.6%, and broadly comparable to that of the Czech Republic and France (Figure 2.5).

Figure 2.5. Gross childcare fees for two children (aged 2 and 3) attending typical accredited early-years care and education services, 2012



Countries are ranked in ascending order of childcare fees for two children attending accredited early-years care and education services.

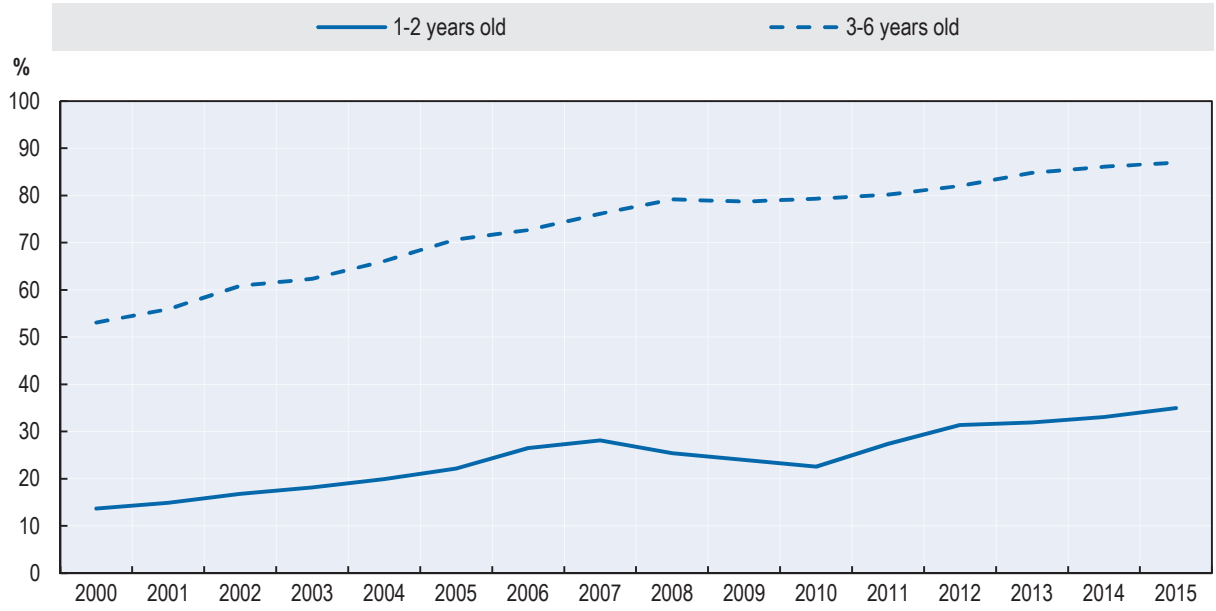
Source: OECD (2014), "PF3.4: Childcare support", *OECD Family Database*, OECD, www.oecd.org/els/family/database.htm.

Performance of ECEC and key trends

Access to ECEC

Lithuania has made significant progress in the past decade in ensuring wide access to early childhood education and care. Enrolment among children aged 3-6 years increased from 70% in 2005 to 87% in 2015, while among children aged 1-2 years it rose from 22% in 2000 to 35% in 2015 (Figure 2.6).

Figure 2.6. Expansion in ECEC enrolment in Lithuania



Source: Statistics Lithuania (2016), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

As Figure 2.7 shows, at the earliest ages (0-2), Lithuania has low rates of participation in childcare and pre-school services outside of the home – among the lowest across OECD member countries. At ages 2 and 3 participation rises, reaching levels above the OECD average (Figure 2.8). However, participation in ECEC trails that of its Nordic neighbours, especially at early ages.

Care has been taken to support the inclusion of children with special needs in the Lithuanian ECEC system, commencing with 1993 legislation that established the principle of inclusion in mainstream education institutions. Support for children with identified special education needs (SEN) is reflected in the central government's "student basket methodology", its enrolment-based funding methodology for schools. The methodology takes account of student characteristics, and provides a funding premium of 33% for SEN children. In total 13% of children in ECEC are identified as having special needs, principally (85%) in the area of speech and language. Children with special needs are provided with services in ECEC starting from birth, with specialised teachers and access to physical therapy and speech therapy. Children are integrated into mainstream classrooms whenever possible. Services are also provided to parents, with emphasis on ensuring good communication and support for parents of children with disabilities (Aidukienė, 2014).

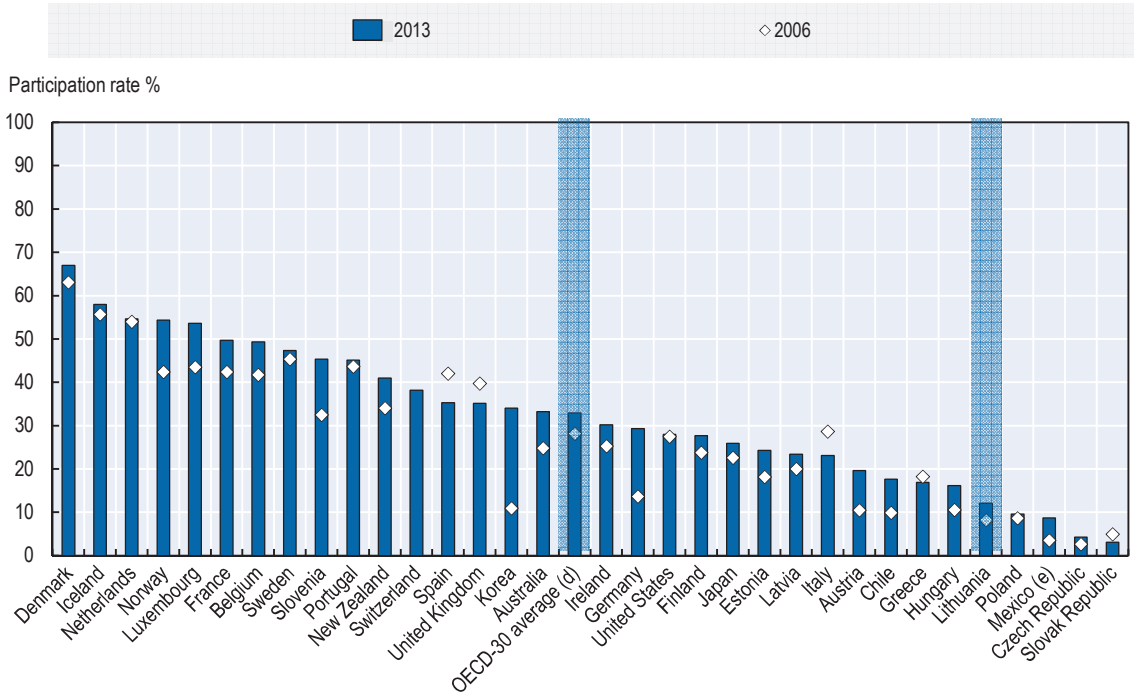
Equity

Urban-rural disparities

There are wide and persistent gaps between urban and rural areas of Lithuania in the participation of children aged 0-6 in pre-school education. While there has been narrowing of this gap in the past decade, as Figure 2.9 indicates, a 50 percentage point gap in the ECEC participation in urban and rural areas persisted in 2014 – 83% vs. 33%.

These differences in participation are viewed by national experts as arising from the limited availability of ECEC in some areas, from difficulties of transportation in rural areas, and from differences in demand for early childhood care (Aidukienė, 2014). Parents in rural Lithuania may attach less importance to early childhood education and care provided outside the home than families in urbanised areas of the country, or they may have wider access to in-home care provided by family and friends which they prefer to public provision.

Figure 2.7. Participation rates for 0-2 year-olds in formal childcare and pre-school services[a], 2006[b] and 2013[c]



a) Data generally include children in centre-based services, organised day care and preschool (both public and private) and those who are cared for by a professional childminder, and exclude informal services provided by relatives, friends or neighbours. Exact definitions may however differ slightly across countries.

b) Data for Australia refer to 2005, and for Bulgaria and Romania to 2007.

c) Data for Japan refer to 2010, and for Australia, Chile, Mexico, and the United States to 2011.

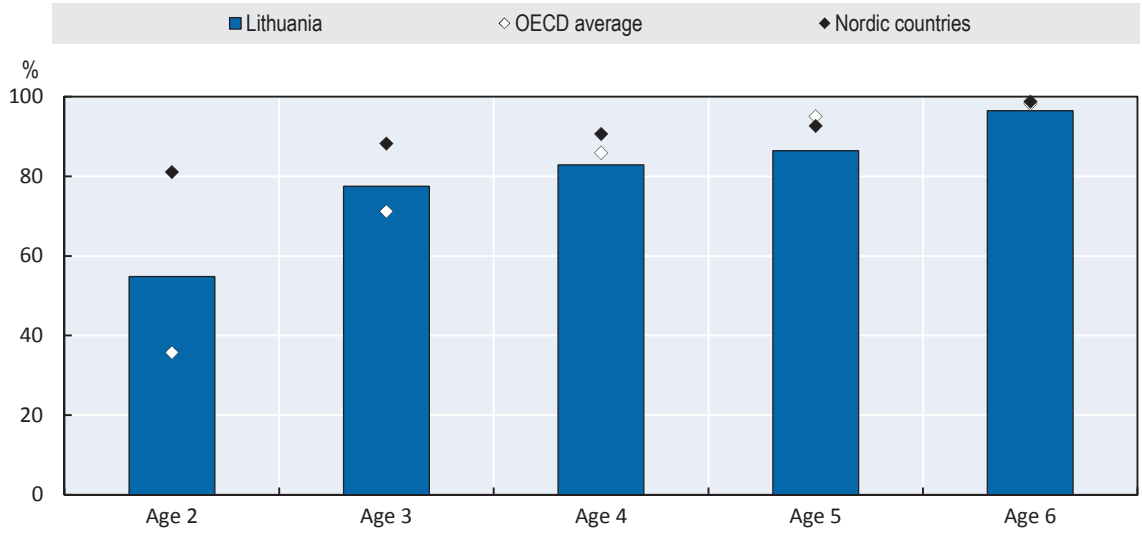
d) Unweighted average for the 30 OECD member countries with data available at both time points.

e) Data for Mexico do not include services provided by the private sector.

Countries are ranked in descending order of the percentage of children under 3 years of age in formal childcare.

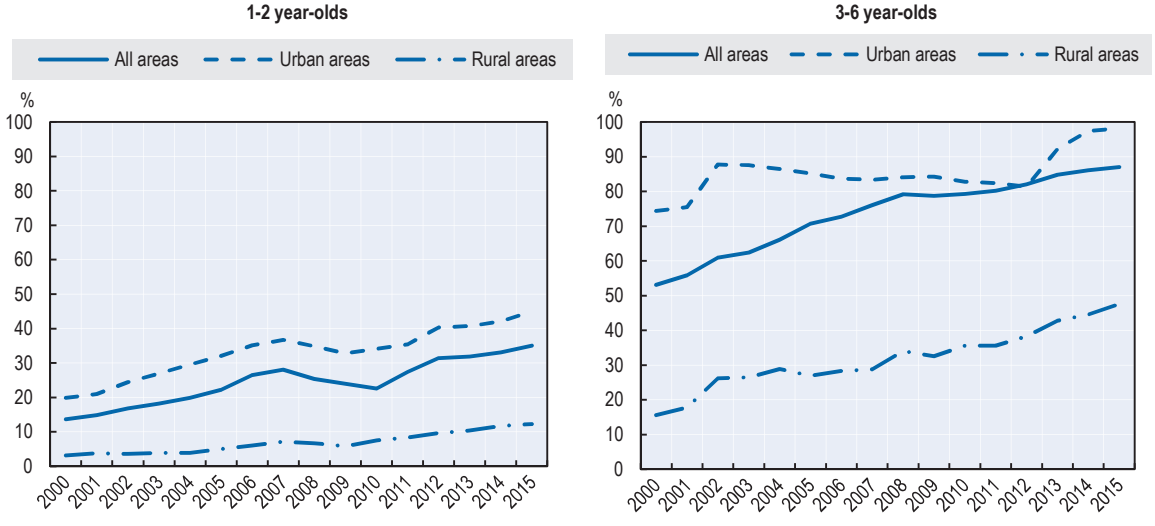
Source: OECD (2016b), "PF3.2: Enrolment in childcare and pre-school", *OECD Family Database*, OECD, www.oecd.org/els/family/database.htm (accessed 2 August 2016).

Figure 2.8. Enrolment rates in early childhood and pre-primary education, by age (2014)



Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Table C2.1, http://dx.doi.org/10.1787/eag-2016-en.

Figure 2.9. Percentage of the population aged 1-6 years participating in pre-school education



Source: Statistics Lithuania (2016), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

The supply of public ECEC is not consistently balanced against demand. There are no official national statistics on the number of children who were unable to obtain pre-school or pre-primary education and care. However, the government does monitor the number of notional "enrolment places" and the actual enrolment in preschool establishments.

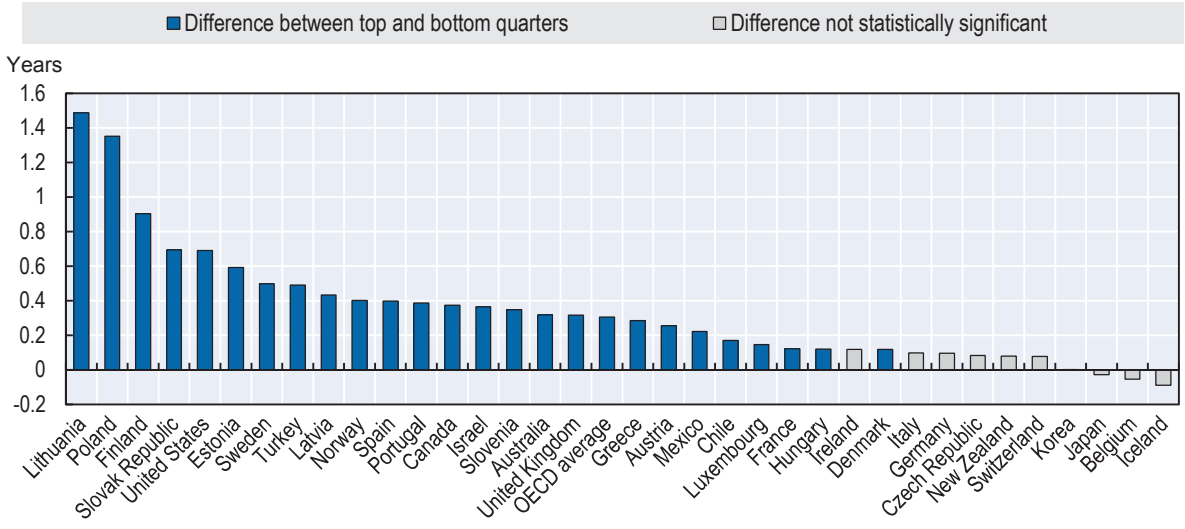
Comparisons show that in rural municipalities supply significantly exceeds demand – in both 2014 and 2015 there were 121 enrolment places per 100 enrolled students – as compared to 97 places per 100 enrolled students in 2010 – signalling, perhaps, the emergence of chronic preschool overcapacity in rural Lithuania.

In the nation's urban areas, on average, there were 103 places per 100 enrolled students in 2015. In few municipalities, principally in few of Lithuania's largest cities, students outnumber formal enrolment places (Statistics Lithuania, 2016). School directors with whom we met reported that a few urban areas may have waiting lists of more than 2 000 children, and that constraints on capacity there were most frequently due to lack of physical space rather than lack of trained teachers or public financing. Shortages of places was alleged to have led to behaviour of questionable integrity on the part of parents and school heads, in which favours, gifts, or payments were given to school heads in return for priority in obtaining places (Jegelevicius, 2012). To improve the allocation and prioritisation of enrolment places, municipalities have implemented co-ordinated "electronic queueing" for places.

Socio-economic differences in access

Lithuania does not monitor the social class status of parents who use ECEC. However, by looking at the self-reported early childhood care and education histories of PISA sample members – 15-year-old school students – one can examine the social status of those who participated in ECEC in years past. Across OECD member countries, those 15-year-olds in socio-economically advantaged schools reported participating in ECEC four months more than those in disadvantaged schools. Among Lithuanian PISA 2015 respondents, the gap in number of years in ECEC was 1.5 years, larger than that of any OECD member country (Figure 2.10) (OECD, 2016c).

Figure 2.10. Difference in the number of years at pre-primary school between 15-year-olds from socio-economically advantaged and disadvantaged schools, PISA 2015



Countries are ranked in descending order of the difference between students in socio-economically advantaged schools (schools in the top quarter of the PISA index of economic, social and cultural status) and in disadvantaged schools (schools in the bottom quarter) in the number of years spent in pre-primary education.

Source: OECD (2016c), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, Table II.6.51, http://dx.doi.org/10.1787/9789264267510-en.

Access policy responses - increasing the supply of places and responding to queuing

In response to a shortage of supply and the problems that it has spurred, national and municipal authorities in Lithuania have undertaken three related initiatives.

First, some municipalities have introduced new procedures for the allocation of places in public early childhood centres, known as "e-queuing". Municipalities faced with shortages of supply and queuing for places took the responsibility of pupil enrolment decisions from individual school heads and created a municipally co-ordinated and digitised process for tracking and managing applications that eliminated duplicate registrations in multiple schools, and reduced backlogs for entry.

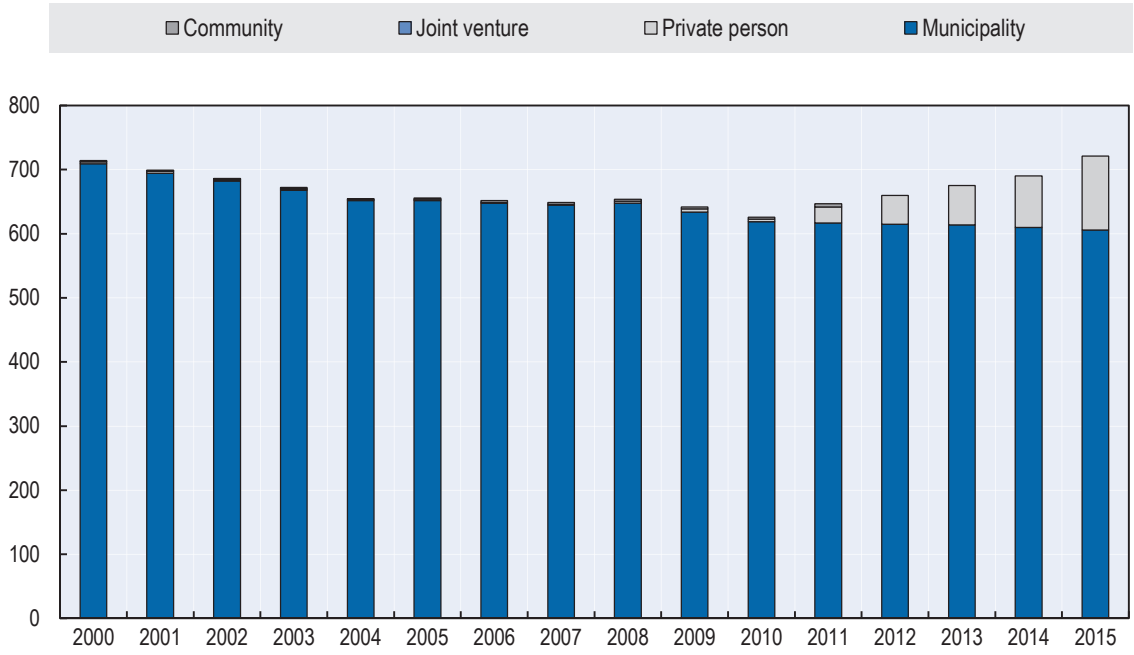
Second, legislative changes were adopted to relax Soviet-era "hygiene standards", permitting early childhood education and care to be provided in a wider range of accommodations – including private homes, multi-story dwellings, and blended facilities offering ECEC and other services, known as multi-functional centres (Aidukienė, 2014).

Another initiative to increase and diversify supply has been permitting public funding to "follow the child" to private providers. In 2011 the Lithuanian central government authorised municipalities to use the funding received through the student basket funding methodology to support provision in private ECEC facilities, as well as public facilities. In addition, municipalities may choose, if they wish, to provide additional support to families who obtain private care from their own local revenue sources.

The portion of privately provided ECEC costs reimbursed through public subsidies varies by municipality, and not all families with children enrolled in a private kindergarten receive a subsidy. For example, in Siauliai, the municipality receives applications from families for subsidies for private kindergartens, and reimburses 100% of families between 32-54% of the actual cost of private provision. In Klaipeda the municipality reimburses about one-third of families obtaining private provision at about 36% of care costs (MoES, 2016).

As a consequence of these changes, the number of private kindergartens has been steadily increasing – from 25 in 2011 to 115 in 2015 (Figure 2.11). By 2016, 25 of the country's 60 municipalities had private kindergartens. Growth in private provision is especially strong in urban areas as parents struggle to find room in public preschools – or, possibly, choose private kindergartens with the expectation of higher quality. For example, Lithuania now has a chain of private preschools operating in six of its larger cities and towns, providing what it describes as high quality care at a pre-subsidy price of EUR 419 per month – just over half of the average month wage of EUR 772 – for all-day care offered five days a week.

Figure 2.11. Number of pre-school educational institutions, by founder



Source: Statistics Lithuania (2016), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

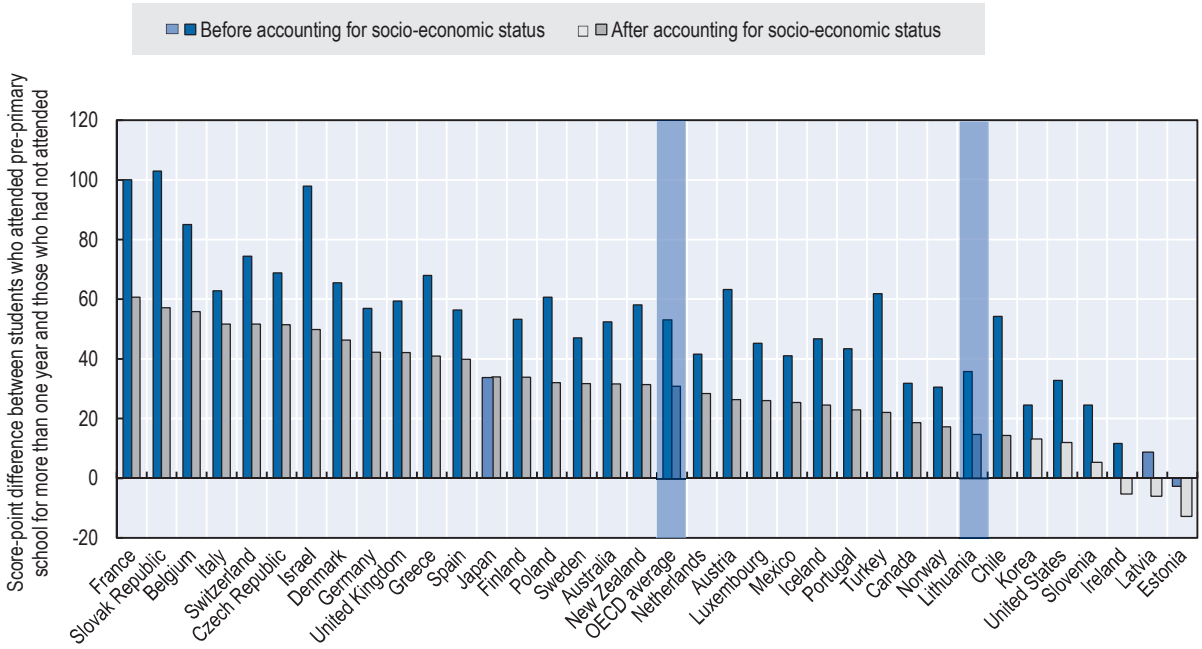
Quality and its assurance

Weak association between pre-primary education and 15-year-olds' mathematics performance

Research in neurosciences has shown that the brain sensitivity of highly important developmental areas, such as emotional control, social skills, language and numeracy peak in the first three years of a child (Gambaro, Stewart and Waldfogel, 2014). These findings indicate that the first years of children's life are crucial for their later development and learning. High quality ECEC is found to be able to stimulate the development of these capabilities, which highlights the importance of early development programmes and their level of quality (OECD, 2006, 2011).

A strong start in education through ECEC may be associated with higher performance in adolescence. PISA results show that 15-year-olds who attended pre-primary education programmes tend to perform better than students who did not attend pre-primary education. The benefit associated with pre-primary education remains even after introducing statistical controls for the socio-economic background of students. In Lithuania, the difference in PISA mathematics scores between 15-year-old students who had attended more than one year of pre-school education and those who had not attended pre-primary education was 12 score points after accounting for socio-economic background. This is significantly below the OECD average. These findings must be treated with caution, since they are not based upon experimental data, but they invite attention to potential problems with the quality of the ECEC provision in Lithuania.

Figure 2.12. Difference in mathematics performance in PISA 2012, by attendance at pre-primary school



Note: Score-point differences that are statistically significant are marked in a darker tone.

Countries and economies are ranked in descending order of the score-point difference in mathematics performance between students who reported that they had attended pre-primary school (ISCED 0) for more than one year and those who had not attended pre-primary school, after accounting for socio-economic status.

Source: OECD (2013), *PISA 2012 Results: Excellence through Equity: Giving Every Student the Chance to Succeed (Volume II)*, Figure II.4.11, http://dx.doi.org/10.1787/9789264201132-en.

Structural and process quality in Lithuanian ECEC

The quality of ECEC matters. Research has shown that if ECEC quality is low, it can have long-lasting detrimental effects on child development, instead of bringing positive effects (OECD, 2011). There are two main dimensions of ECEC quality:

- *Structural quality* refers to characteristics of ECEC provision – group sizes, child/staff ratios, staff educational qualifications with specialisation in ECEC, suitable professional development and on-the-job training and ECEC curriculum framework (OECD, 2011; Slot, 2014) – which indirectly contribute to high process quality of provision.
- *Process quality* concerns the daily social and developmental experiences of children participating in ECEC (Slot, 2014).

There is a growing emphasis throughout OECD member countries on monitoring the quality of interactions between teachers and students which are thought to support social and cognitive development (OECD, 2015). Research evidence suggests that instructional practices such as engaging children in dialogue and providing feedback to children on their learning will lead to greater increases in children's competencies than focusing on a broader range of elements within pre-primary experience (Zaslow et al., 2016). Children who have greater access to materials, some degree of autonomy over the course of the

day, and time for small group activities have also shown greater gains in learning across many countries (Montie, Zongping and Schweinhart, 2006). This has led countries to revise quality standards with a focus on instructional practices and interactions, to implement quality monitoring that uses trained observers and validated scales rather than reliance on national-level indicators, and to invest in measurement[2] that aims to produce useful information about the level of quality within the classroom.

In Lithuania responsibility for the quality of ECEC has been shared among national and municipal authorities, and pre-school institutions. National legislation has mandated standards with respect to three key structural aspects of quality – teacher qualifications, group sizes, and physical facilities requirements. Direct monitoring of ECEC has been the responsibility of municipalities, who partner with local health authorities, and whose evaluations focus on cleanliness, safety and observation of national standards for group sizes. Principal responsibility for monitoring the ongoing quality of provision rests with providers themselves. Since 2005, pre-school institutions have been responsible for the self-evaluation of their activities, and this self-evaluation has been supported by the Ministry of Education, which has developed and offered pre-school educational institutions an instrument for self-evaluation of their activities (Rimkiene and Sabaliauskiene, 2007). School-based self-assessment is to be complemented by external quality assurance undertaken by municipal education authorities, though neither the periodicity nor method by which they assure quality is set in law.

Structural quality in Lithuanian ECEC

With respect to the structural dimensions of quality, Lithuania's system of early childhood care and education has well-developed standards, and the capacity to monitor compliance with them.

Group sizes, child/staff ratios, and space requirements

The child-to-staff ratio is an important indicator of the resources invested in education and childcare, and also of the quality of these services. A low ratio of children to staff impacts staff working conditions, alongside other factors such as reasonable hours or workload and salary levels. These affect job satisfaction and staff retention, and through this, contribute to the quality of early childhood education and care services.

The child-teacher ratio in ECEC is low in Lithuania. In 2014, there were 7 children per contact staff and 10 children per teaching staff, both of which are lower than the OECD average of 11 and 14, respectively (OECD, 2016a).

Maximum group sizes and minimum required space are regulated by the Hygiene Norms and Rules, promulgated by the Health Ministry. Though liberalised by legislative changes in 2011-2012, they remain more stringent than average standards across the OECD member countries. Group sizes in Lithuania are limited to 6 for children less than 1 year old, 10 for children aged 1-1.5 years; 15 for age 1.5-3 years; and 20 for age 3-7 years, as compared to 5 for children less than 1 year old, 16 for age 1-3, and 24 for age 4 years and above in Estonia (European Commission/EACEA/Eurydice/Eurostat, 2014).

The minimum required indoor space in Lithuania is significantly higher than the OECD average: 4.3 m² per child for age 0-3 and 4 m² per child for age 3-7, as compared to the OECD averages of 3.6 m² for childcare (typically for age 0-3) and 2.9 m² for

kindergartens / preschools (typically for age 3 and above). The outdoor space requirement is 6 m² per child in Lithuania, as compared to 8.9 m² for childcare and 7 m² for kindergartens / preschools on average across OECD member countries (OECD, 2011).

Teacher training - duration, level and quality

In OECD member countries, the duration of initial teacher training varies more in pre-primary education than at any other level of education: from two years for basic certification in Korea and Japan to five years in Austria, Chile, France, Iceland and Italy. In Lithuania ECEC teachers are required to complete a bachelor's degree (from either a university or college), acquire teacher's professional qualification before beginning their career, and obligated to participate in continuing professional development during it. We have no systematic evidence about the quality of programmes that prepare ECEC teachers, or their in-service training. The teaching workforce is highly experienced. In 2014 nearly 70% of ECEC pedagogical staff had 15 or more years of service.

Process quality in Lithuanian ECEC

In an effort to develop a framework for quality provision that focuses on interactions rather than inputs, the Ministry of Education and Science has developed guidelines on age-appropriate development, methodological recommendations for pre-school education, and guidance that outlines what age-appropriate activities teachers should engage in to promote learning. This guidance was first offered by the Ministry in Methodological Recommendations for the Preparation of Preschool Educational Programmes/Curricula (MoES, 2006) and updated in Description of Achievements for Preschool Children (MoES, 2014a) and the Methodological Recommendations for Preschool Education (MoES, 2014b). These documents were developed through a process of consultation among Lithuania early childhood experts and reflect an international vision of best practice. These are advisory documents rather than legally binding instruments, and their efficacy in informing school-level practices and supporting effective quality assurance is uncertain.

Policy issues

Lithuania has considerable strengths in early childhood education and care, with good support in place for children with special needs; a child-centred approach to ECEC pedagogy with guidelines for curricula in place; and ECEC available from birth. Policy achievements over the last decade are many, and include the continued emphasis on expanding access and ongoing efforts to ensure integration of ECEC into the education system. However, it faces two challenges in taking early childhood education and care forward: ensuring higher levels of participation among those most in need of care, and ensuring that the ECEC it provides is of consistently high quality.

Policy issue 1: Continuing expansion of participation in ECEC

Lithuania has made notable progress in expanding access with nearly all children in urban areas enrolled, which is a substantial achievement. As efforts are made to further expand access, two issues merit special attention: increasing the demand of parents for ECEC in rural communities, and identifying sustainable and equitable funding models that will permit an increased supply of provision in the nation's largest urban areas.

Policy recommendations

Recommendation 2.1.1: Expand participation in ECEC in rural areas

Well-being in rural Lithuania persistently lags behind that in cities and towns – in employment, in health care and life expectancy, and in educational participation and outcomes (OECD, 2016d). Urban/rural educational inequalities observable in early childhood persist through basic and upper secondary schooling, into higher education, and throughout adult life. It is the most disadvantaged children who benefit most from early childhood education and care ECEC (Cornelissen et al., 2015), and thus it is especially important that much greater progress be made in raising ECEC participation in rural Lithuania beyond its current levels, where disadvantage is most concentrated.

Efforts have been taken to boost rural participation. Lithuania has opened multi-functional centres in rural areas to boost the supply of ECEC places, it has made dedicated public transportation available to some rural families, and it has made information on the importance of ECEC available to parents through a website intended to encourage parents to enrol their children in ECEC.

However, in areas with high rates of social disadvantage, much more consequential efforts will be required to boost demand – to encourage parents to take advantage of ECEC – and, on the supply side, to offer accessible care.

Strategies that are more effective in encouraging families to take up ECEC might include working with hospitals to educate new parents about the benefit of ECEC, and working with paediatricians and other health professionals who provide ongoing care to small children. Lithuania should also consider significantly expanding home visiting, ensuring regular visits to rural families to discuss topics related to child health and development. Extensive reviews of the evidence of home visiting programmes indicates that home visiting is effective in supporting child development and learning through a range of mechanisms, including decreases in child abuse and increases in child cognitive development (Peacock et al., 2013). Home visiting programmes that are designed to teach parents how to better support their children's development have been shown to have long-lasting positive effects on children's development including participation in ECEC in school-based settings.

Recommendation 2.1.2: Expand access in urban areas

Expansion of access in urban areas through widened capacity is a high priority for ECEC. Demand for ECEC from parents appears to be stronger for children aged 3-6 years than at younger ages, but it is also growing for children aged 1-2 years. The growth in private preschools indicates both that families value their children's participation in it and are both willing to invest in ECEC. The continued existence of waiting lists indicates that supply has not yet fully met demand, and that additional funds could be provided to municipalities with waiting lists to renovate existing school spaces or build new facilities to meet demand.

The introduction of subsidies in some municipalities to help finance ECEC for children who are not able to find spaces within the existing public preschools is, in the Lithuanian context, an innovative approach to expanding access in private preschools. However, this system should be viewed carefully in light of the two equity challenges that it poses in a system otherwise committed to equity in education.

A hybrid funding system in which nearly all places (in public care) are provided to families for free, without regard to ability to pay, and in which some (private) places are allocated on a partly subsidised or unsubsidised basis creates problems of horizontal equity and inefficiency. Some households with the same income and family size experience different prices for privately provided care depending upon the municipality in which they live. Most families continue to enrol their children in publicly provided care that is free of charge – and are subsidised regardless of their ability to pay.

Many countries have chosen to adopt financing arrangements in which all families make a contribution to ECEC places based upon their ability to pay – which is assessed according to a common methodology. A system in which *all* ECEC places were made available based upon an assessed ability to pay and linked to a sliding scale of fees would increase horizontal equity, treating similarly situated families (i.e. with similar incomes and assets) equally. And this arrangement would provide additional ECEC funding by obtaining payments from those families with the ability to pay fees that are not doing so under present arrangements.

Box 2.1. Examples of sliding scale fees linked to ability to pay

Many OECD member countries offer reductions or exemptions of ECEC fees depending on certain criteria, such as family income and the number of children in a family.

In Denmark, parental fees for a place in a public day care facility under local authority allocation are capped at 25% of the gross operating costs. The income-related fees subsidy ("aided place subsidy") is linked to a nationally set and progressive scale. In 2016, there was no charge for day care if the personal income was below DKK 166 401, and from DKK 166 401 to DKK 170 088 the payment was 5% of the full rate. From DKK 170 089, the payment was linearly increased until the full price was paid at a personal income of DKK 516 800. There are also special discount rates for single parents and parents with more than one child (European Commission, n.d.)

In Sweden, preschool provided by municipalities for children aged one to five is partially covered by parental fees. Parental fees are calculated according to household income, and families pay 1-3% of their gross income. All municipalities apply the maximum-fee policy that caps fees at SEK 1 287 per month. In addition, municipal subsidy for preschool is provided depending on the child's age and whether the parents work, study, are unemployed or on parental leave for other children. The parental fees cover about 11% of the real cost in preschool (Sweden, 2016).

Sources: European Commission (2017), "Denmark: Child Care", *Employment, Social Affairs, and Inclusion* (webpage), EC official website, http://ec.europa.eu/social/main.jsp?catId=1107&langId=en&intPageId=4486; Sweden (2016), "Play is key in preschool", Official website of Sweden, https://sweden.se/society/play-is-key-in-preschool/.

Policy issue 2: Strengthening quality assurance

Lithuania has a legacy of commitment to structural dimensions of ECEC quality – to space, group sizes, and staffing – but progress is needed in ensuring that process dimensions of quality are achieved.

Most OECD member countries now have an ECEC curriculum describing developmental objectives and explaining what subjects (such as early reading) should be pursued (OECD, 2011, 2015). Curriculum frameworks help promote the comparability of

quality across ECEC institutions (OECD, 2011), and help smooth transition from ECEC to primary education. Further, they can play a pivotal role in ensuring the quality of ECEC services in particular for disadvantaged children. Where a pedagogical framework is weak or absent, infants and toddlers may miss out on opportunities for growth, as many neurological developments take place even prior to age of three or four (OECD, 2006).

Lithuanian national authorities have chosen to decentralise responsibility for early childhood education – its funding, provision, curriculum, and oversight of its quality – to schools and municipalities. In 2007 a national curriculum was replaced by a new system, in which the development of curriculum was made the responsibility of school heads, which were provided support and guidance by the Ministry to meet this responsibility. Responsibility for review of the curriculum rests with municipalities, as part of their wider remit to provide external quality assurance of education and care provided to children, and to approve preschool providers. While ECEC is a key part of the remit of municipal education departments, apart from a small number of the nation's largest and most urbanised areas, such as Vilnius and Kaunas, they do not have staff specialised in early childhood education and care.

The Ministry has outlined for municipalities and schools what elements a preschool provider must include when submitting a curriculum to municipal authorities for review. Beyond this, its role with respect to curriculum has been to support and advise. It has provided school heads with Methodological Recommendations for the Preparation of Preschool Educational Programmes/Curricula, which offered them detailed guidance on the features of a well-designed preschool curriculum, how to develop an educational programme, when and how to update their programme, and how to assess a child's progress and achievements. Nearly one decade later it provided revised guidance, in Description of Achievements for Preschool Children (MoES, 2014a) and Methodological Recommendations for Preschool Education (MoES, 2014b). The former document mapped out descriptive, developmental benchmarks that range across a wide range of developmental dimensions – health, social, language, cognitive, artistic – to provide developmental reference points for use by families, to help them know what to expect from their child and from their pre-school education. The latter offered advice for teachers and school leaders – developed by leading Lithuanian ECEC experts – on how organise an educational program to help children reach these milestones.

Preschools themselves are responsible for assuring the quality of their provision, and have been provided guidance by MoES on how to conduct an internal quality audit (Rimkiene and Sabaliauskiene, 2007). The external assurance of quality for ECEC rests with municipality education departments, who are charged with undertaking a comprehensive inspection at intervals they judge appropriate. Municipal authorities with whom the review team met indicated that they did not have formal monitoring plans in place, and that they relied upon problems being brought to their attention by parents. None of the guidance provided by the Ministry (e.g. in Description of Achievements) provides a template with which municipal education departments can easily monitor and inspect the quality of ECEC provision on an ongoing basis.

The need for more regular and comprehensive quality monitoring has been identified as a priority by the MoES (MoES, 2016), and consultations are underway about options for improvements to quality assurance. The creation of a quality monitoring system should, in principle, flow from work defining elements of quality that are prioritised by all stakeholders. A working, operational definition of quality can be used to inform the design and implementation of a monitoring system. One opportunity to develop a shared

account of quality is through the "*What is a Good School?*" initiative. The Ministry has begun working with education stakeholders to identify characteristics that define a good quality school, and these are to serve as the basis for monitoring school quality. ECEC stakeholders have noted that this process should include a specific opportunity for ECEC settings to define quality that would be aligned with the overarching principles outlined in the good schools initiative while reflecting the unique characteristics of quality in ECEC settings.

Policy recommendations

Recommendation 2.2.1: Develop comprehensive quality monitoring

National policy makers should give priority to developing a more comprehensive monitoring system that encompasses monitoring of quality, thereby ensuring that Lithuanian children receive consistently high quality early childhood education and care. There are two ways to close this gap in quality monitoring: through joint central/municipal system of quality monitoring, or a largely central initiative.

MoES could provide municipal education officials charged with monitoring the quality of education and care with a template that they can use in quality monitoring. This template would lay out what are developmentally appropriate activities, suitable learning materials/resources at these stages, effective learning practices, and acceptable ways of assessing early learners. MoES would provide municipal officials guidance – or requirements – about the frequency of monitoring, and it would take steps to ensure that municipalities across the country have access to staff who are expert in ECEC to assist them in meeting their responsibilities. This could be done, for example, by expanding the ECEC capabilities of the Ministry's regional units.

Experience in OECD member countries suggests that it is helpful to combine internal evaluation to help staff reflect on their practices with external evaluation that occurs on a regular, but less frequent timeline (OECD, 2015). This multi-level approach may work well in Lithuania, and could be effective in engaging the municipalities and school directors in the process of monitoring while also instituting a stronger national function. Moving forward, the following steps could be taken to strengthen the monitoring and evaluation function of the ECEC system:

- Using the curricula and methodological guidelines as a starting point, identify key elements of quality to measure. These areas could include articulating what a good teacher-child interaction looks like; how much time and the range of activities that should be devoted to free play or group activities; the range and type of materials available in each classroom; and daily routines. Recent work in Berlin, Germany provides an example of how the monitoring system was linked to curricula and goals for children's experiences in ECEC (OECD, 2015).
- Develop related tools to promote monitoring: one for self-reflection in schools that in turn can accompany professional development activities; and another tool designed for use at the national level that can provide consistent information on the level of quality in various areas. Berlin also provides an example of how to combine internal evaluation, which is focused on helping teachers and directors reflect on their practices, with external evaluation on a less frequent basis (OECD, 2015).

- Pilot the tools to determine how feasible it is to collect the information, and ideally, make plans for validating the tools to determine if children who attend higher-quality settings also benefit more from ECEC than children who attend lower-quality settings.
- Include parents in monitoring and evaluation. Lithuania is one of a handful of European countries that does not include parent satisfaction as part of the external evaluation system (European Commission/EACEA/Eurydice/Eurostat, 2014).
- Pay special attention to the proliferation of private kindergartens, and reflect on the implications for private provision for quality monitoring and assurance.

Alternatively, national authorities could locate responsibility for external quality assurance with the National Agency for School Evaluation - as is done at present for schooling. This would permit Lithuania take advantage of existing national capabilities, and ensure that municipalities do not experience conflicting interests that arise from being founder, funder, and quality monitor of pre-school institutions.

Policy issue 3: Improving provision for children with special needs, and focusing on health and nutrition for all

Lithuania has established a clear statutory basis for the educational integration of children with special needs, it has provided augmented financial support to assist with educational services, and it has developed a national network of specialists to support teachers by providing tools for assessment. However, room for improvement remains. In rural areas, where disadvantaged children and special education needs are greatest, specialists (psychologists, special needs education teachers, speech therapists) are in short supply, and new options for sharing specialist resources need consideration. The process of identifying children is not consistent from one municipality to the next, increasing the odds that some children are not identified. Pre-school and pre-primary teachers do not have sufficient "knowledge and skills to detect and understand individual needs and to individualise education content and methods" even after receiving diagnoses and recommendations from specialists (Aidukienė, 2014).

Children who do not have special education needs nonetheless need to have proper conditions of health and nutrition. In Lithuania the health care system plays an important role in ECEC, by providing a first point of contact for children with special needs and in rural areas; carrying out the monitoring of ECEC facilities; and by providing information on ECEC to parents before children are born. Focusing on opportunities for improved points of connection – now more limited than they might be – can improve child well-being.

Policy recommendations (2.3.1-2.3.4)

- Standardise the procedure for referring children with special needs, such as reliance on one scale or set of criteria across municipalities, which will help ensure that children receive the same opportunities for services regardless of where they live.
- Strengthen the SEN curriculum in pre-service training programmes to improve the capabilities of new entrants to the teaching workforce. Given the age and continuity of the teacher workforce, in-service training is needed as well (Aidukienė, 2014).

- Engage the Ministry of Health in the creation of a quality monitoring system. Consider the integration of health dimensions into quality monitoring, or a system that integrates both health and ECEC.
- Train paediatricians and other health care professionals on the basic elements of ECEC, including identification of children with special needs and the importance of ECEC overall.

Policy issue 4: Supporting the continuing development needs of the ECEC workforce

Recruiting, training, and supporting care providers and teachers are central to the quality of provision. Lithuanian teachers are trained before beginning work in ECEC settings, with bachelor (or professional bachelor) degrees and teacher professional qualification required, and they receive compensation under the same policies as other teachers in the education system. Teachers in Lithuania can be considered high capacity ECEC workers compared to many OECD member countries, an asset that can be further developed to continue strengthening the ECEC system. Moreover, Lithuania views professional development for teachers as a required part of their ongoing service, placing them in a category of high-performing countries on professional development within the European Union (European Commission/EACEA/Eurydice/Eurostat, 2014).

Despite the official acknowledgement of the importance of professional development in national guidance documents, school heads report that professional development funds are insufficient to permit teachers to participate in regular development activities such as learning how to communicate effectively with parents; teaching children with special needs; or administering and using assessment information on children's development and learning.

Maintaining a highly skilled and motivated workforce necessitates investment in professional development, including mentoring and coaching at each stage of teacher development. At present, the inconsistent and limited funding for professional development impedes the ability of even highly motivated teachers from continuing to develop their skills.

Policy recommendations (2.4.1-2.4.3)

- Invest more time in training teachers in classroom settings as part of initial teacher training, with emphasis on training teachers in interacting with young children and using the curricula and methodological guidelines available.
- Partner with teacher training institutions to develop coaching and mentoring models for teachers already in classrooms. The strong connections with teacher training institutions for ECEC could be further expanded to include training or mentoring for teachers on site, through observations and feedback on teacher-child interactions and classroom practices.
- Embed professional development into the process of quality monitoring, so that a system is created that focuses on measuring quality, reflecting on results, and supporting teachers in making whatever changes may emerge from the findings. By integrating quality monitoring and professional development, investments in monitoring will be more likely to lead to changes in quality in classrooms.

Notes

1. Eurostat calculates and reports expenditures using an artificial common reference currency unit, the purchasing power standard (PPS). Monthly parental expenditures on meals for Lithuanian parents was 94 PPS, as compared to 45 in Latvia and 60 in Romania (European Commission/EACEA/Eurydice/Eurostat, 2014).
2. Measurement of quality refers to reliance on a scale to systematically assess the quality of instruction within classrooms. Monitoring refers to the ongoing process of looking at data that is intended to provide information on quality. Indicators are specific pieces of information or data that are summarised to inform monitoring. Results from measurement can be summarised into indicators, which then are used for monitoring.

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Chapter 3

Primary and lower secondary education in Lithuania

Nearly all Lithuanian students complete basic education, and achieve on average a level of learning by age 15 that is close to international standards. These results are accomplished by teachers and school leaders who are accorded wide autonomy, and on the basis of comparatively modest levels of spending. However, there are important challenges facing primary and lower secondary schooling in Lithuania. A declining school-age population makes it difficult for authorities to efficiently manage the nation's school network. The nation's capacity to renew its teaching workforce is hampered by unattractive conditions of employment, an unsettled vision of what good teaching is, and what sort of education can best prepare good teachers. The nation's 15-year-old students are less successful in using and applying knowledge than are students in the best-performing regional peer countries, and wide and persistent gaps exist between rural and urban students. This chapter examines each of these challenges, and identifies policy options that might be adopted to mitigate inequities and raise performance across the board.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

It is aim of Lithuanian authorities that all students should acquire at the completion of lower secondary education "the basics of moral, sociocultural and civic maturity; general literacy; technological literacy…and national consciousness," and that this schooling will foster in students "an intent and ability to make decisions and choices, and to continue learning" (Seimas of the Republic of Lithuania, 2015).

In important respects, these goals have been achieved. Lithuania has succeeded in providing students with a primary and lower secondary education that, on average, allows them to acquire a level of knowledge in science, mathematics, and reading that approaches international standards. Nearly all students aspire to continue learning beyond the end of compulsory schooling, and nearly all continue learning in upper secondary education. All of this is accomplished in a schooling system that provides wide autonomy to school leaders and teachers, and it is achieved on comparatively modest levels of spending.

Nonetheless, there are important challenges ahead for primary and lower secondary schooling in Lithuania. Continuing declines in the size of the school-age population challenge authorities to efficiently manage the nation's school network. The nation's capacity to replenish its teaching workforce is hampered by unattractive conditions of employment and unsettled vision of what good teaching is, and what sort of training can best support good teaching. Although students acquire curriculum-based content knowledge in mathematics, reading, and science to international levels, their performance on the PISA assessment reveals they are persistently less successful in using and applying knowledge than are students in peer countries, or OECD member countries on average. Although Lithuania has achieved equitable learning outcomes among its language minority populations, others – especially rural students – lag behind. While Lithuania has developed a framework of external assessments with which to monitor student learning across primary and secondary schooling, it could make fuller use of these assessments in assuring the quality of schools and linking them to the management of schools and classroom instructional practices.

In Chapter 3 we note that policy recommendations for the nation's school network and teaching profession first outlined in the OECD School Resources Review for Lithuania (Shewbridge et al., 2016) remain fully appropriate at present. We identify policy recommendations with respect to instruction that offer the possibility of improving learning for all students and mitigate inequities in achievement. Additionally, we point to ways in which external assessments might be better used to improve school management and teaching practice.

The state of primary and lower secondary education

Governance and structure

The governance of schooling in Lithuania is distributed among state, municipal and school-level authorities. While the MoES is responsible for developing strategy, overseeing policy and for the performance of the education system, municipalities and schools are accountable for the quality of schooling and for the outcomes that students achieve (Shewbridge et al., 2016).

State level

The MoES is responsible for the design of education policy and planning, co-ordination, and control of its implementation (Law on Education, art. 56). The MoES is responsible for the development of education policies and strategic plans approved by the government and also co-ordinates municipal education departments in the implementation of the state education policy. It co-ordinates the distribution of school funding from the state budget and the allocation of the EU structural funds. The Ministry is also responsible for quality assurance, the accreditation of the general education curriculum, and school-leaving examinations. Outside of the Ministry a key role is played by the National Audit Office of Lithuania, which regularly conducts financial audits of budget institutions in the field of education, and reviews MoES activities through planned performance audits.

Within MoES three semi-autonomous and specialised subordinate bodies carry out important responsibilities with respect to primary and secondary education: the National Agency for School Evaluation, which co-ordinates the national programme of school internal self-evaluation and external quality assessment, provides data for education monitoring, and conducts education policy analysis; the National Examination Centre, which organises final examinations on the completion of lower and upper secondary education curricula; and the Education Development Centre, which develops general education content and curricula, prepares and implements in-service principal and teacher training, and co-ordinates the expert evaluation of textbooks and other teaching materials.

Municipal level

Municipalities play a central role in providing education to their residents, and education is among the largest responsibilities of municipal governments. Lithuania's sixty municipalities are responsible for the implementation of the state education policy, and set long-term objectives and action plans for the education development. Municipal councils and administrations are the founders of most primary and secondary schools providing general education, and bear responsibility for education-related services such as school transport and catering. The single largest share of municipal budgets is allocated to school funding.

Additionally, municipalities organise stakeholder input into education through local education councils. The local education council advises the municipal government and its education department on regional matters of education policy – such as the consolidation of the school network. In the Alytus region, for example, the review team met with representatives of a local education council that brings together more than 80 members representing teachers, parents and students of all general education institutions, though councils are more often comprised of approximately 15 members.

School level

According to the Law on Education, the school founder (state, municipality or private entity) supervises school activities, and the quality of education is a joint responsibility of the school and the owner. Nearly all schools delivering the primary and lower secondary curriculum are subordinate to municipalities, the main public school founder. The Law on Education sets forth provisions for school self-governance and singles out the school council as the school's highest self-governance body, representing learners, teachers, parents and local community. The school council has decision-making power with regards to school activities and funding and other issues as defined by school statutes.

General education schools are headed by school principals who ensure strategic and operational management of schools. While principals of public schools are selected (and removed) by municipal governments based on an open competition (Honingh and Urbanovic, 2012), there are no regulated selection requirements for private schools. School principals are in charge of the preparation and implementation of the school strategy and action plans. Their responsibilities also cover organisation of classes, appointment and dismissal of teachers, assigning workloads to different teachers, setting the level of teachers' salaries and influencing the promotion of teachers. In international comparison, Lithuanian principals report high levels of autonomy in school resource allocation, management of teachers, assessment and curriculum policies (Tables 3.1, 3.2 and 3.3). PISA results show that between 2009 and 2015 the responsibilities of principals expanded, particularly with regards to teachers' salaries and school budget, as responsibilities were delegated from the state level (OECD, 2016a).

Table 3.1. Distribution across the education system of responsibility for school resources

In percentage, with responsibilities of the five actors summing to 100%

	Principal	Teachers	School board	Local/ regional authority	National authority	Principal + teachers
Czech Republic	84.6	1.0	0.9	5.5	8.0	85.6
Latvia	60.0	5.1	9.9	9.3	15.7	65.1
Estonia	59.8	4.2	8.4	11.2	16.5	64.0
Lithuania	**60.7**	**3.3**	**15.7**	**8.6**	**11.7**	**63.9**
Poland	50.2	1.3	0.9	24.8	22.8	51.5
Finland	45.9	2.0	2.4	32.8	17.0	47.8
OECD average	**39.0**	**2.5**	**12.3**	**23.1**	**23.1**	**41.5**
Turkey	4.5	0.6	21.6	3.4	69.9	5.1

Countries are ranked in descending order of the responsibility held by school principals and teachers.

Source: OECD (2016a), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, Figure II.4.3, http://dx.doi.org/10.1787/9789264267510-en.

Table 3.2. Distribution across the education system of responsibility for the curriculum

In percentage, with responsibilities of the five actors summing to 100%

	Principal	Teachers	School board	Local/ regional authority	National authority	Principal + teachers
Netherlands	36.7	56.9	3.5	0.0	3.0	93.5
Estonia	38.0	43.9	13.7	1.4	3.0	81.9
Finland	26.1	54.8	1.2	9.2	8.7	80.9
Poland	29.0	50.9	5.4	1.7	13.1	79.9
Lithuania	**14.5**	**56.3**	**19.6**	**0.3**	**9.2**	**70.8**
OECD average	**21.6**	**44.1**	**7.6**	**7.0**	**19.6**	**65.8**
Latvia	22.0	40.6	8.8	2.6	26.0	62.6
Greece	0.7	2.8	0.1	0.0	96.5	3.4

Countries are ranked in descending order of the responsibility held by school principals and teachers.

Source: OECD (2016a), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, Figure II.4.4, http://dx.doi.org/10.1787/9789264267510-en.

Table 3.3. Distribution across the education system of responsibility for establishing student assessment policies

In percentage, with responsibilities of the five actors summing to 100%

	Principal	Teachers	School board	Local/ regional authority	National authority	Principal + teachers
Japan	75.4	22.5	0.9	0.5	0.7	98.0
Poland	25.1	61.3	11.5	0.3	1.8	86.4
Finland	29.4	48.6	0.8	10.0	11.3	77.9
Estonia	40.2	35.1	20.0	1.0	3.7	75.3
Latvia	29.9	42.8	14.5	3.1	9.8	72.7
OECD average	**31.5**	**36.3**	**11.0**	**6.7**	**14.5**	**67.9**
Lithuania	**18.7**	**48.2**	**28.3**	**0.6**	**4.2**	**66.9**
Turkey	1.7	3.5	6.5	1.0	87.2	5.2

Countries and economies are ranked in descending order of the responsibility held by school principals and teachers.

Source: OECD (2016a), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, Figure II.4.5, http://dx.doi.org/10.1787/9789264267510-en.

Curriculum

Responsibility for design and implementation of curriculum has been progressively decentralised in the past two decades. A 2002 OECD review of Lithuania's education policies noted that the curriculum policy was centrally defined by the MoES General Education Department (OECD, 2002). One and a half decades later, PISA 2015 results show that Lithuania ranks among the countries with high school autonomy in the curriculum development (Table 3.2). While MoES sets general policy framework and standards, school teachers and principals are largely responsible for the curriculum design and implementation.

The national framework curriculum documents define expected learning outcomes, provide general guidance for organisation of the learning process, and define the scope and the content of subjects at different levels. They broadly regulate the implementation of education curricula in order to ensure consistency, availability and quality of education across the country. As in many EU countries, curriculum framework documents have been revised with the aim of encouraging schools to focus not only on knowledge acquisition, but also to focus on fostering thinking skills, creativity, and socio-emotional skills (Shewbridge et al., 2016). Based on this general curriculum framework, and taking into account students' needs, schools and teachers are responsible for developing school and class-level curriculum (European Commission/EACEA/Eurydice, 2015). Teachers are free in the choice of pedagogical methods, textbooks, learning activities and in the organisation of the learning process.

Assessment of student learning

Assessment of student learning is mainly school-based and teacher-led (Table 3.3), within guiding principles of assessment policy defined in the Curriculum Framework for Primary and Basic Education (MoES, 2008), General Education Plan (MoES, 2015a), and Description of Primary, Lower Secondary and Upper Secondary Education Programmes (MoES, 2015b). Lithuanian primary school students, like primary students in nearby Nordic countries, are not awarded marks. Rather, teachers record in students' primary education diaries a summative assessment of students' attainment level of the intended curriculum. Starting from grade 5 – after an adaptation period – students' learning outcomes are assessed on a 10-point scale or validated with "passed" or "not passed" entries. At the lower secondary level, students undergo a continuous assessment – formative or diagnostic - and a final summative assessment upon completion of a course, module or lower secondary education curriculum (MoES, 2016a). Teacher marking is not subject to external moderation.

External, criterion-referenced assessments developed by the National Examination Centre are used to monitor student progress and school performance. They are administered biennially across basic education – in grades 4, 6 and 8 – and again at the conclusion of compulsory schooling, in grade 10 (Table 3.4). Municipal and/ or school participation in grade 4, 6, and 8 assessments has been voluntary, but their coverage has grown swiftly, from 1.5% students of grades 4 and 8 in 2012 to 90% of grades 2, 4, 6 and 8 in 2016. Since 2011 all students completing lower secondary education (grade 10) must take a compulsory Test of Basic Education Learning Achievements (*Pagrindinio ugdymo pasiekimų patikrinimas*, or PUPP) in mathematics and Lithuanian (or mother tongue for ethnic minority students). Upon completion of the PUPP test, students receive a certificate of basic learning that allows them to continue their studies in upper secondary education.

Criterion-referenced assessments administered to students at the end of grades 2, 4, 6, and 8 are now nearly universally implemented. The aims and procedure of these assessments - called National Surveys of Student Achievement (NSSA) – are defined in the MoES Order of January 2017 (MES Order No. 2017-01-04. V6). NSSA provide a wealth of assessment information about students' performance in key subjects and school climate information. This information is available to teachers for instructional improvement at the student and class level, and benchmarked against national norms. In addition, school-level results are available to school leaders and external stakeholders for school management and improvement purposes, benchmarked against national and municipal averages, and adjusted for student characteristics. Participating schools and municipalities receive individual reports that present main results in comparison to the state/national results, and other schools and municipalities which implemented the assessment.

Schools may also participate in a sample survey administered in grades 4, 6 and 8 that is used to monitor the quality of education. The survey is administered to a representative sample of teachers and students, and contains knowledge tests for students, and student and teacher questionnaires. The survey was conducted in 2003, 2005, 2007, 2008 and 2010-2011 in conjunction with TIMSS national assessment, as well as in 2012, 2014, 2015 and 2016.

Table 3.4. Standardised assessments and national surveys of student achievement in primary and lower secondary education

Level of education	Grade/ students' age	Type of assessment	Compulsory/ optional	Subjects	Test governance
Primary	Grade 2 8 years old	Diagnostic test (NSSA)	Optional	Diagnostic assessment: reading, writing, mathematics	The test content is prepared by the National Examination Centre. The test is administered and marked by schools.
	Grade 4 10 years old	Standardised tests (NSSA)	Optional	Reading, Writing, Mathematics, Science and Social Studies *(since 2015)*	The test content is prepared by the National Examination Centre. The test is administered and marked by schools.
	Grade 4 10 years old	National survey	Representative sample	Reading, Writing, Mathematics, Science and Social Studies	The content is prepared by the National Examination Centre. The survey is administered and assessed by NEC.
Lower secondary	Grade 6 12 years old (*since 2016)*	Standardised tests (NSSA)	Optional	Reading, Writing, Mathematics	The test content is prepared by the National Examination Centre. The test is administered and marked by schools.
	Grade 6 12 years old (*since 2016)*	National survey	Representative sample	Reading, Writing, Mathematics *(since 2016)*	The content is prepared by the National Examination Centre. The survey is administered and assessed by NEC.
	Grade 8 14 years old	Standardised tests (NSSA)	Optional	Reading, Writing, Mathematics, History (until 2014), Science and Social Studies *(since 2015)*	The test content is prepared by the National Examination Centre. The test is administered and marked by schools.
	Grade 8 14 years old	National survey	Representative sample	Reading, Writing, Mathematics, Science and Social Studies	The content is prepared by the National Examination Centre. The survey is administered and assessed by NEC.
	Grade 10 16 years old	PUPP - Achievement Assessment at the end of Basic Education	Compulsory since 2011	Lithuanian (or mother tongue for national minorities), mathematics	The test content is prepared by the National Examination Centre. The test is administered and marked by schools.

Source: Information provided by the National Examination Centre.

Quality assurance

The monitoring and evaluation of schools is central to the continuous improvement of student learning: schools need feedback on their performance to help them identify how to improve their practices, and schools should be accountable for their performance (OECD, 2013a). In Lithuania, quality assurance is undertaken through a combination of school self-evaluation and external evaluation.

School self-evaluation is conducted upon the decision of the school, which chooses focus areas, evaluation methods, and periodicity of evaluation. Schools can use the self-evaluation model approved by the MoES or choose another model. The National Agency

for School Evaluation (NASE) supports self-evaluation by providing an online platform with materials to support the self-evaluation process. National policy establishes an expectation that the results of school self-evaluation will be used to improve management decisions, the provision of education, and teacher professional development (European Commission/EACEA/Eurydice, 2015).

External evaluation is the shared responsibility of the NASE, MoES and the school owner. Schools are evaluated every seven years by teams of external evaluators who are recruited, selected, and trained by NASE, and who follow evaluation policies established by the MoES. Schools are assessed within an evaluation framework covering five domains – school culture, teaching and learning, student achievement, support for students and school management – and linked to 67 performance indicators. The conclusions of the external evaluation are presented to the school in a detailed report that outlines school's strengths and weaknesses and provides recommendations for performance improvement. A brief summary of this report is publicly presented, as well. Schools prepare a plan for improvement based upon this report, and the MoES and NASE are responsible for monitoring the progress in the implementation of the recommendations, the frequency of which depends on the school's performance in the external evaluation (European Commission/EACEA/Eurydice, 2015).

The regularity and coverage of external evaluation by the NASE is insufficient to ensure that all schools are evaluated with a seven year time frame (Shewbridge et al., 2016). While all schools in Lithuania were to have been subject to external evaluation by 2014, in 2016 55% of schools had not undergone external evaluation (NAO, 2016).

Resourcing primary and lower secondary education

Below we briefly examine the resourcing of basic education in Lithuania, reviewing the key inputs of money, staff, and instructional time.

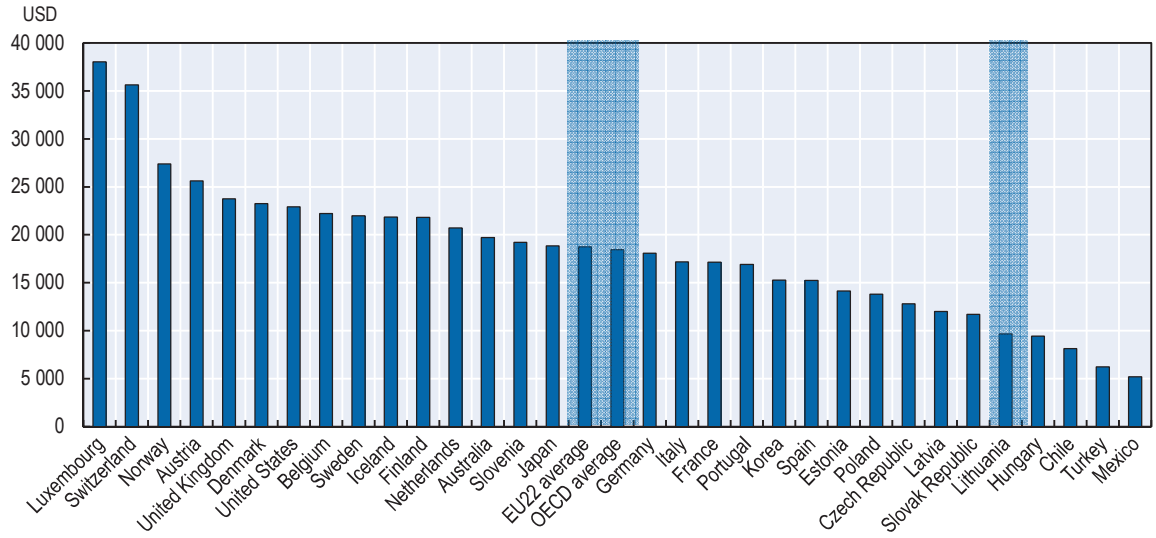
Financing of primary and lower secondary education

Lithuania's expenditure on basic education is below the OECD average. In 2013, Lithuania spent 1.9% of its GDP on basic education, below OECD (2.5%) and EU-22 (2.4%) averages, and below its neighbours Latvia (2.2%), Estonia (2.2%) and Poland (2.4%) (OECD, 2016b). Annual expenditure per student on basic education is also below the OECD average. In 2013 per student expenditure for basic education in Lithuania, USD 9 675 (PPP), was approximately half that of OECD (USD 18 457) and EU-22 (USD 18 755) averages (OECD, 2016b). These differences in expenditure were mainly due to the comparatively low salaries of Lithuanian teachers and school administrators (Shewbridge et al., 2016).

Public funds are the main source of expenditure for primary and general secondary education institutions, accounting for 97% of their total funding, while households and other private entities provide the remaining 3% (Figure 3.2). Centralised school funding was used in the 1990's, and school funding reforms in 2001-2002 introduced a funding scheme that combined centralised formula funding with decentralised allocation of funds to school. Under current arrangements public funding is directed to schools through three channels: central formula-based funding for teaching costs, municipal funding for maintenance costs, and ad-hoc grant funding for school investment (Shewbridge et al., 2016).

Figure 3.1. Annual expenditure per student by educational institutions for all services in primary and lower secondary education (2013)

In equivalent USD converted using PPPs for GDP, by level of education, based on full-time equivalents

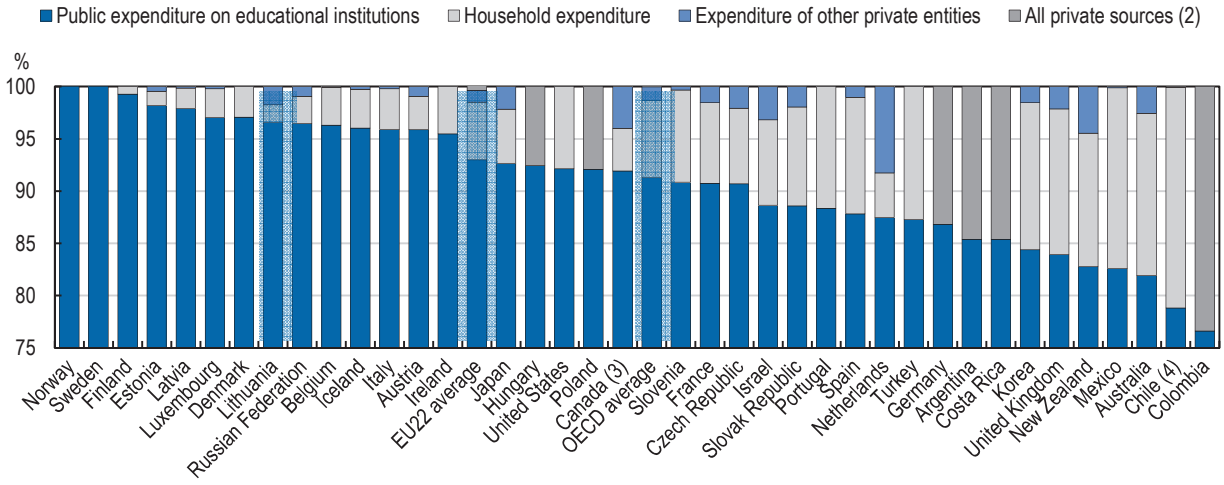


Countries are ranked in descending order of the annual expenditure per student by education institutions for all services in primary and lower secondary education.

Source: OECD (2016b), *Education at a Glance 2016: OECD Indicators*, Table B1.1, http://dx.doi.org/10.1787/eag-2016-en.

Figure 3.2. Distribution of public and private expenditure on educational institutions (2013)

Primary, secondary and post-secondary non-tertiary education[1]



1. Excluding international funds.
2. Including subsidies attributable to payments to educational institutions received from public sources.
3. Year of reference 2012.
4. Year of reference 2014.

Countries are ranked in descending order of the percentage of public expenditure on educational institutions by level of education.

Source: OECD (2016b), *Education at a Glance 2016: OECD Indicators*, Figure B3.2, http://dx.doi.org/10.1787/eag-2016-en.

Teaching costs are covered by the central government "student basket" formula scheme. The student basket grant is calculated for all public and private schools delivering primary and secondary education, and covers all teaching costs, including salaries of teachers, school administration, and key support staff; textbooks and school materials; and teacher in-service training. It takes into account expenses for teacher salaries based on the number of students enrolled, number of teaching hours and class size. The funding formula assigns extra weight for students with special educational needs, migrants and those studying in a minority language, and to upper secondary programmes.

The state formula-based grant is transferred to local governments that distribute the funding to individual schools. Local governments have the obligation to distribute at least 93% (94% for five municipalities) in accordance with the school-by-school calculation; the remaining 7% (6% for five municipalities) can be allocated to other schools or in accordance with local services education needs. A separate student basket formula applies to vocational schools, and it takes into account the cost of practical training in different fields. In addition, all public schools may obtain additional revenues from taxpayers' voluntary donations, and this is supported by the tax code, which permits Lithuanian taxpayers to donate 2% of their income tax to public institutions, including schools.

The maintenance costs of public schools – including maintenance of school facilities and the salaries of maintenance staff – are funded by the school founder. Nearly all schools providing primary and general secondary education are owned by municipalities, and their school maintenance costs are therefore covered from municipal budgets, who take decisions on school maintenance spending without the involvement of central government. Maintenance costs of private schools are covered from tuition fees paid by families.

Instructional time

Basic education in Lithuania starts at the age of 7, and is comprised of primary and lower secondary cycles of 4 and 6 years, respectively. Primary schooling is brief, lasting 4 years rather than 6 years as is typical in OECD member countries (OECD, 2016b). The school year is short as well, lasting 160 days and 558 hours, as compared to 185 days of instruction with 799 hours of instruction, yielding a primary education of 2 234 hours, significantly fewer than in most OECD member countries.

Lower secondary education in Lithuania is delivered over a longer period of time than in most OECD member countries - 6 years as compared to 3. As in primary education, instructional hours per year are much lower than average (Table 3.5). At the end of compulsory schooling Lithuanian students have a slightly higher number of compulsory instructional hours than peers in the Baltic region, and substantially fewer than students in the EU-22 or OECD, on average – equalling about one year less of instructional time (6 577 vs. 7 540).

PISA 2015 results show that Lithuania's brief in-school instruction time is complemented by out of school study time that is slightly higher than the OECD average. Lithuanian students who participated in PISA 2015 assessment report that they spend on average 25 hours each week learning in a classroom and 18 hours for after-school learning activities, including the time dedicated to homework, additional instruction and private study. Their peers in OECD member countries spend on average two more hours each week in regular classes – and one hour less for homework (Figure 3.3). Taken together, the time spent by 15-year-olds in school-based instruction and self-reported instructional time outside of school (43 hours) is slightly lower than the OECD average (44 hours).

Table 3.5. Instruction time in public institutions in primary and lower secondary education

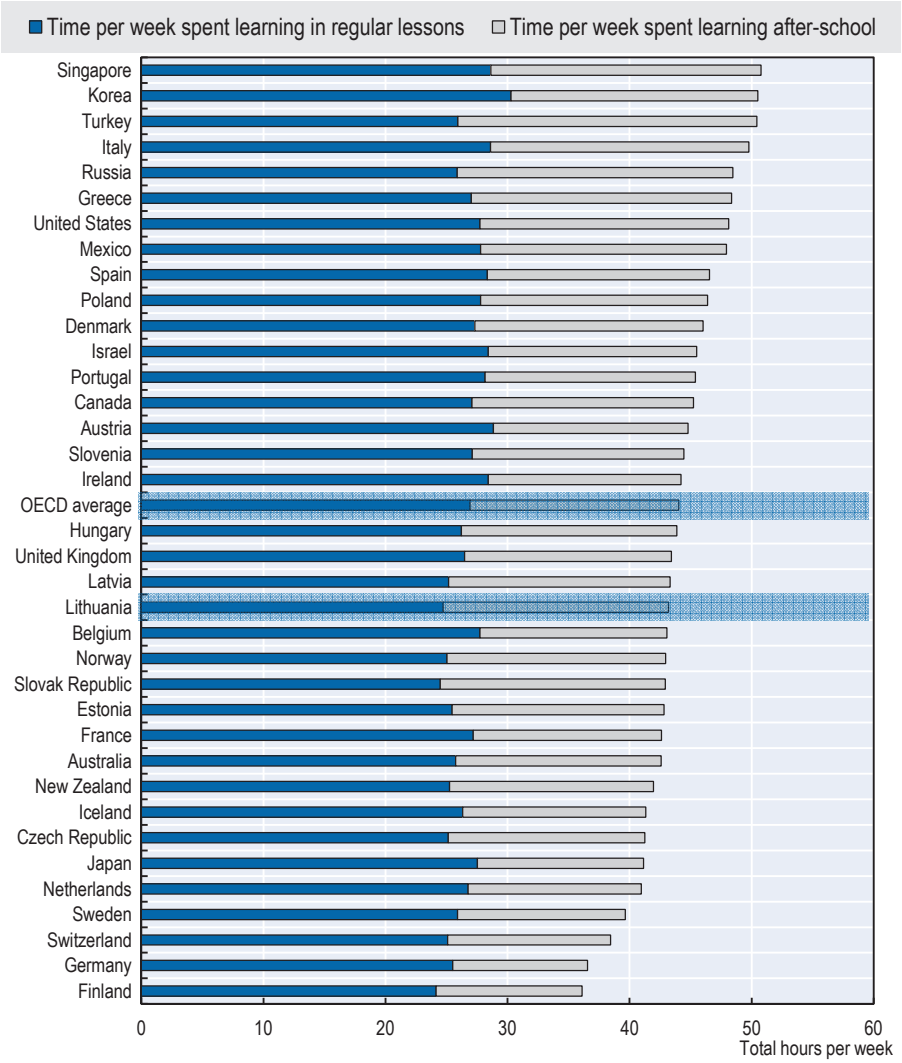
(year of reference 2015)

Country	Primary education					Lower secondary education				Total primary and lower secondary education	
	Theoretical starting age for compulsory schooling	Number of grades	Compulsory instruction time, total number of hours	Compulsory instruction time, average number of hours per year	Average number of instruction days per year	Number of grades	Compulsory instruction time, total number of hours	Compulsory instruction time, average number of hours per year	Average number of instruction days per year	Total number of grades	Compulsory instruction time, total number of hours
Estonia	7	6	3 964	661	175	3	2 468	823	175	9	6 431
Latvia	7	6	3 595	599	169	3	2 381	794	173	9	5 976
Lithuania	**7**	**4**	**2 234**	**558**	**160**	**6**	**4 343**	**724**	**168**	**10**	**6 577**
Poland	7	6	3 807	635	181	3	2 430	810	179	9	6 237
OECD average	6	6	4 621	799	185	3	2 919	915	184	9	7 540
EU-22 average	6	6	4 338	775	182	3	2 919	895	180	9	7 257

Source: OECD (2016b), *Education at a Glance 2016: OECD Indicators*, Table D1.1, http://dx.doi.org/10.1787/eag-2016-en.

Figure 3.3. Learning time of 15-year-olds in OECD member countries

Results based on students' reports



Countries are ranked in descending order of the average learning time of students per week.

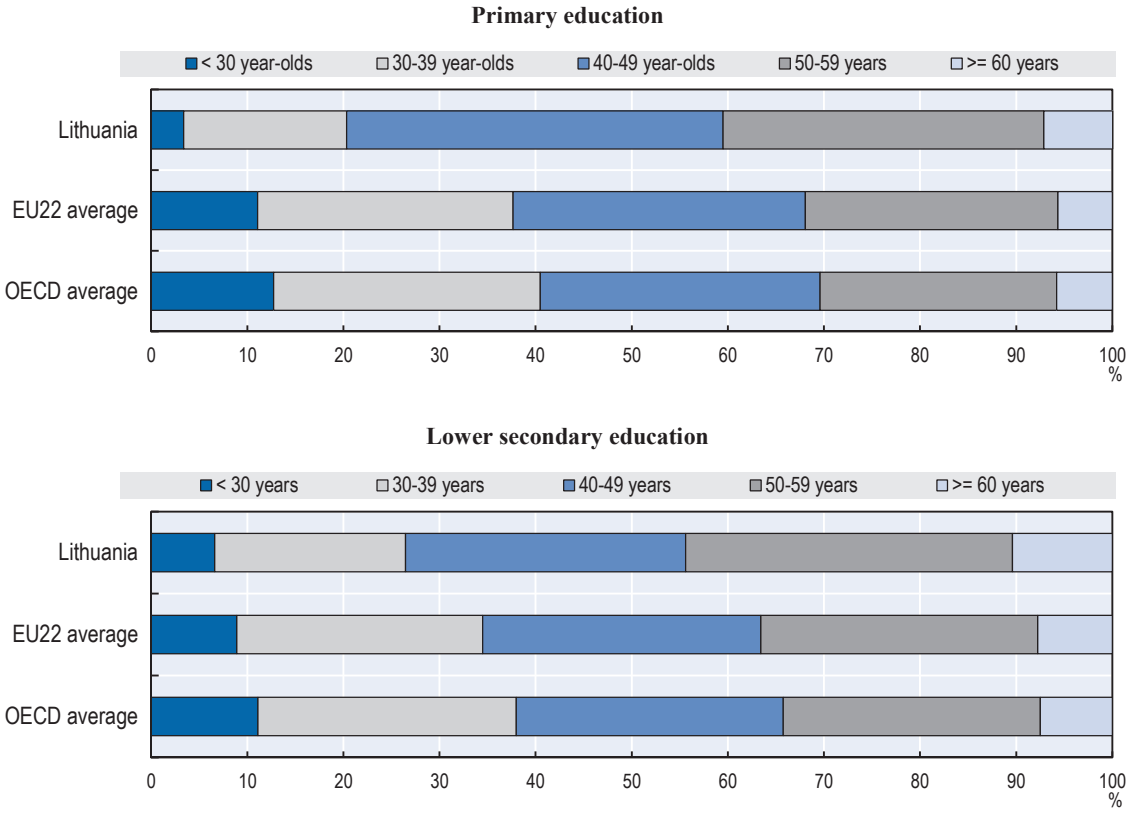
Source: OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en (Figure II.6.18: Time per week spent learning in regular lessons, http://dx.doi.org/10.1787/888933436364, and Figure II.6.20: Time spent learning after school, http://dx.doi.org/10.1787/888933436384).

Teachers

The teaching workforce of Lithuania is substantially older and more female than either the OECD or EU-22 average (Figure 3.4). Men account for 18% of the lower secondary education workforce and only 3% in primary education, both of which are below the OECD and EU average. The average age of teachers is 48.1 years in primary education and 48.9 in secondary education. Some 41% of primary teachers and 44% of lower secondary teachers were 50 years old or older in 2014, which are significantly higher than the OECD averages (30% and 34%, respectively).

Figure 3.4. Age distribution of teachers (2014)

Percentage of teachers in public and private institutions, by level of education and age group, based on head counts



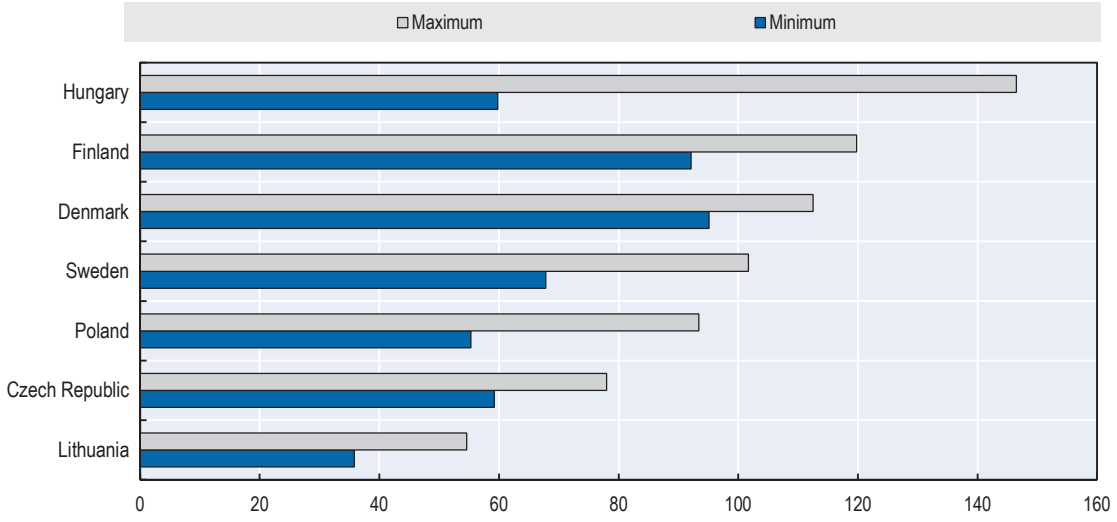
Source: OECD (2016b), *Education at a Glance 2016: OECD Indicators*, Figure D5.1, http://dx.doi.org/10.1787/eag-2016-en.

Lithuanian teachers in primary and secondary education are required to be trained to the bachelor degree level, and a vast majority of general education teachers – 98% – have completed tertiary education. The cognitive skills of the teaching workforce are a significant determinant of international differences in student performance (Hanushek, Piopiunik and Wiederhold, 2016). The teaching workforce of Lithuania, although trained to a bachelor degree level, displays numeracy skills lower than those of other tertiary graduates, and lower than the average level of teachers in OECD member countries participating in the Survey of Adult Skills (Figure 3.5).

While teachers are trained to a bachelor (or higher) degree level, and many hold advanced rank within the nation's teaching career structure, there are concerns about the attractiveness of the teaching profession, the programmes that prepare students to become teachers, and the quality of those entering the teaching workforce.

The minimum and maximum basic gross annual statutory salary level of Lithuanian teachers is lower in relation to GDP per capita than that of teachers in all the other EU nations (European Commission/EACEA/Eurydice, 2016).

Figure 3.5. Minimum and maximum basic gross annual statutory salary of full-time, fully-qualified teachers in general lower secondary education, as a percentage of GDP per capita, 2015/16



Countries are ranked in descending order of maximum annual basic gross statutory salaries for lower secondary teachers as a percentage of GDP.

Source: European Commission/EACEA/Eurydice (2016), *Teachers' and School Heads' Salaries and Allowances in Europe – 2015/16, Eurydice Facts and Figures*, Publications Office of the European Union, Luxembourg.

Teaching programmes offered by the nation's higher education institutions have experienced swiftly declining enrolments, leading to the termination of some instructional programmes. Competitive scores used in higher education admissions, which are based upon *matura* examination scores, show that the minimum score required for entry teacher education programmes is consistently much lower than that required for the most popular and selective field, medicine (Table 3.6). The principal provider of teacher training programmes, the nation's pedagogical university, has received a limited institutional approval from the nation's higher education quality assurance body, and debates are underway about the way in which programmes and institutions can best perform initial teacher education.

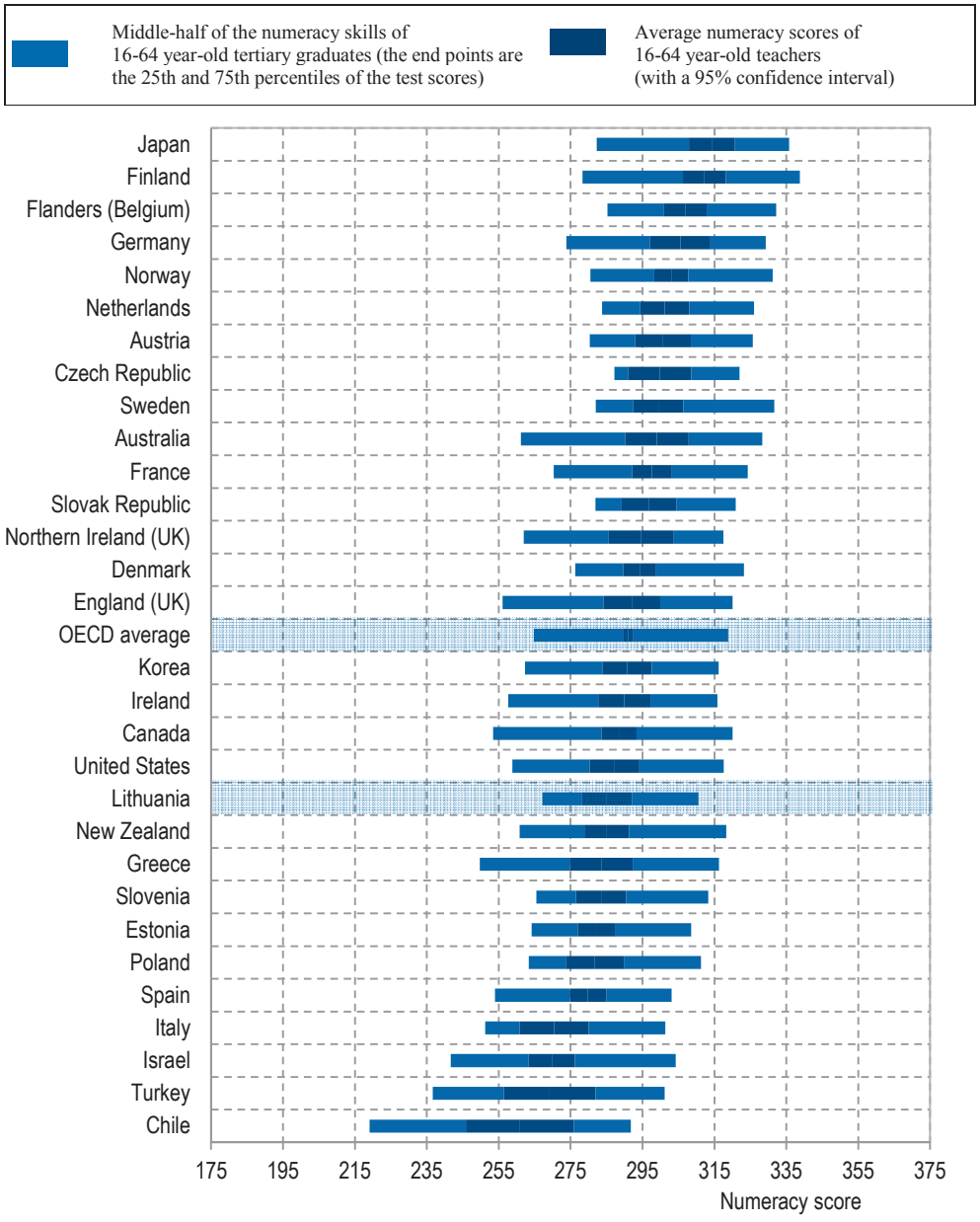
Table 3.6. Range of competitive scores for higher education entrants

Year	2012	2013	2014	2015	2016
Minimum competitive score value	12.48	14.21	2.26	3.76	2.08
Minimum competitive score of students enrolled in university teacher education and programmes	15.62	15.12	5.49	5.14	5.7
Minimum competitive score of students enrolled for the programmes most popular in the relevant year	19.22	19.58	8.74	9.04	8.9
Maximum competitive score value	21.02	19.82	8.78	9.08	8.92

Source: LAMA BPO data, provided by the Ministry of Education and Science of Lithuania.

Figure 3.6. Distribution of numeracy proficiency scores among tertiary graduates and teachers

25th and 75th percentile of numeracy scores of tertiary graduates and the 95th confidence interval for the mean of teachers



Countries are ranked in descending order of the average numeracy proficiency scores among tertiary graduates and teachers.

Source: OECD, Survey of Adult Skills (PIAAC) (2012, 2015).

Performance of primary and lower secondary education and key trends

High-performing education systems in OECD member countries combine high levels of student achievement in assessed learning, and do so inclusively and equitably (OECD, 2012). Inclusive education systems ensure that all students reach at least a basic minimum

of skills, while equitable systems ensure that students can achieve success in their studies regardless of their personal or socio-economic situation (OECD, 2012).

Access, progression, and attainment

Compulsory basic education in Lithuania effectively ensures universal participation throughout its duration, continuation to higher levels of learning among nearly all students, and it accomplishes this with low levels of grade repetition. Enrolment in basic education has been close to universal for many years. In 2015, the net enrolment rate is 100% in primary education and 98.3% in lower secondary education (Statistics Lithuania, 2016). Grade repetition is comparatively low. According to PISA 2015 survey, only 2.5% of Lithuanian students report having repeated a grade as compared to the OECD average of 12%. In Lithuania, while grade repetition is higher than average among disadvantaged students (4.1% for disadvantaged students as compared to the average rate of 2.5%), it is well below the OECD average (18.7% as compared to 12% respectively) (OECD, 2016c). Upon completion of basic education, the vast majority of Lithuanian students – more than nine in ten - continue into non-compulsory upper secondary education (see Chapter 4).

Student learning is measured in a variety of ways through international assessments

Lithuania participates in a range of international student assessments to gauge the performance of its schooling system, including the Programme for International Student Assessment (PISA); the Progress in International Reading Literacy Study (PIRLS); and Trends in International Mathematics and Science Study (TIMSS). PISA and 8th grade TIMSS measure student performance in mathematics and science near the end of their compulsory lower secondary schooling. Important differences in their sampling design, in item formats, and their assessment framework and content provide Lithuanian policy makers with very different types of information about schooling. Taken together they highlight important achievements and limitations in Lithuanian basic education.

Differences in sampling designs that are age-based (PISA) and grade-based (TIMSS) – combined with cross-national differences in the start of schooling – result in sampled cohorts that differ in average age and in the amount of schooling they have experienced. These differences result in important variation in student performance across the two assessments. The two assessments also differ in item formats – in their balance of multiple-choice vs. open-ended responses. Most importantly, however, the two assessments differ in their framework and content, that is, in what they are seeking to measure. TIMSS is an assessment that aims to measure the attainment of a school-based curriculum. In contrast, the objective of PISA is to measure the skills and competencies students have acquired and can apply to real-world contexts by age 15. Its focus is the mastery of processes, understanding of concepts, and application of knowledge in various situations within subject matter domains.

Given these differences in approach, assessment content differs as well. In TIMSS mathematics, for example, students are tested for the capacity to master mathematical models and operations, and to find solutions that demonstrate their mastery of formal operations – rather than the application of knowledge in real-world contexts. Thus, for example, the content of the 2007 TIMSS 8th-grade mathematics assessment was oriented towards algebra and number properties and operations (61% of items). In contrast, PISA focuses on "real-world problem solving and application," and the content of its

assessment is comprised of problems eliciting mathematical literacy. Data analysis, probability, and measurement – as opposed to formal operations – comprised the majority (58%) of PISA mathematics items (National Center for Education Statistics, n.d.). Some schooling systems perform at a high level on both assessments, but many fare better on one or another assessment. Many Nordic and English-speaking education systems, with curricula and pedagogy oriented towards the application of knowledge in real-world settings, perform at higher levels on PISA than TIMSS, while education systems strongly oriented towards theoretically-led curriculum and instruction, such as those of Russia and former Soviet states, demonstrate higher levels of performance in TIMSS (Wu, 2010).

Mastery of curriculum as measured by TIMSS and PIRLS

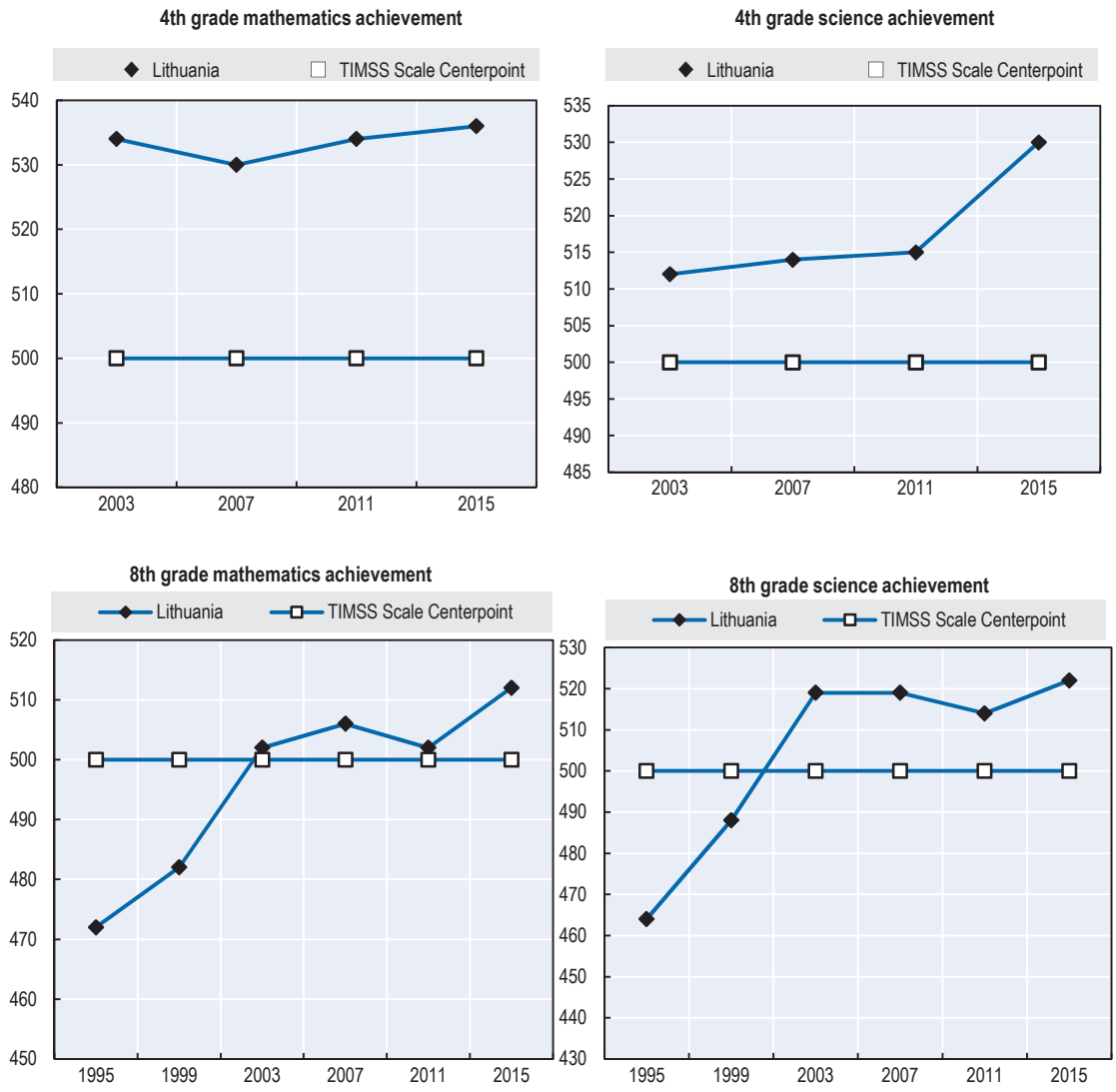
Between 1995 and 2003, Lithuania made statistically and substantively significant improvements its 8th grade TIMSS scores, and its performance has remained comparatively stable since 2003. As shown in Figure 3.7, Lithuanian eighth graders' performance in mathematics and science improved between 1995 and 2003 assessments, with average scale score gains of 40 and 60 points in science and mathematics, respectively. These increases are about one-half of a (100 point) standard deviation improvement, which by statistical convention is regarded as a substantively significant change in performance. As a simple rule of thumb in national and international assessments, a gain of one-third of a standard deviation is roughly comparable to one year of learning (Hanushek, Piopiunik and Wiederhold, 2016); hence the increases of 1995-2003 mark the equivalent of one to two years of learning. Dudaité suggests that this improvement can be best explained by the country's reforms to mathematics study programmes, educational standards, and textbooks, all of which were revised in ways that were much better aligned to TIMSS assessment items (Dudaité, 2007).

In primary education, Lithuanian students demonstrate comparatively strong skills in mathematics and science; the latter significantly improved in the 2015 assessment cycle (Figure 3.7). The reading achievement of students of 4th grade as measured by PIRLS is above the scale centrepoint, though a downward trend has been observed over the past two cycles of 2006 and 2011[1] (Figure 3.8).

PISA and everyday problem solving

At the age of 15, Lithuanian students demonstrate, on average, weaker abilities in putting reading, mathematics, and science knowledge to use in solving everyday problems than their OECD peers. Since Lithuania's first PISA assessment in 2006, its PISA scores have been relatively stable compared to those of 8th grade TIMSS – which is consistent with PISA's independence of national curriculum, and its focus on assessing "skills in use". Lithuania's performance in across its mathematics, science and reading assessments has been consistently below the OECD average (Figure 3.9). While there have been some changes in the average scores in these three domains since PISA was first administered, variations from one administration to the next have been modest, representing about one tenth of a standard deviation or less. The gap in performance between 8th-grade TIMSS (modestly above average) and PISA (modestly below average) may be the result of Lithuania's schools and teachers delivering a *curriculum as delivered* that is more content-led than it is competency-focused.

Figure 3.7. TIMSS 4th and 8th grade trends in mathematics and science achievement



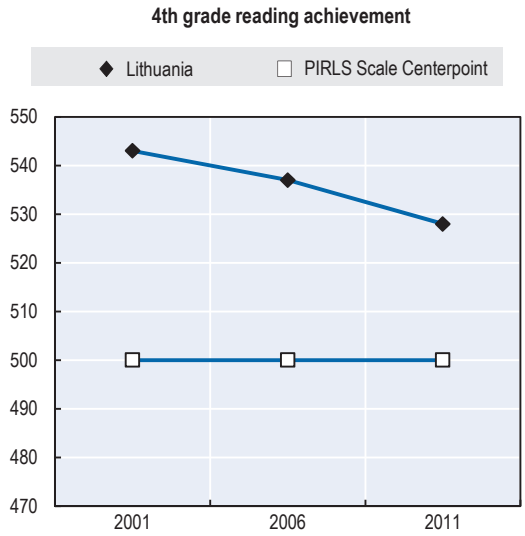
Notes:

2015 trend results for Lithuania do not include students taught in Polish or in Russian.

The TIMSS scale centrepoint is set at 500 points and represents the mean of the overall achievement distribution in 1995. The TIMSS scale is the same in each administration; thus, a value of 500 in 2015 equals 500 in 1995.

Sources: Martin M.O. et al. (2016), *TIMSS 2015 International Results in Science*, TIMSS & PIRLS International Study Center, Boston College, Chestnut Hill, MA, http://timssandpirls.bc.edu/timss2015/international-results/wp-content/uploads/filebase/full%20pdfs/T15-International-Results-in-Science.pdf; Mullis I.V.S. et al. (2016), *TIMSS 2015 International Results in Mathematics*, TIMSS & PIRLS International Study Center, Boston College, Chestnut Hill, MA, http://timssandpirls.bc.edu/timss2015/international-results/wp-content/uploads/filebase/full%20pdfs/T15-International-Results-in-Mathematics.pdf.

Figure 3.8. PIRLS 4th grade trends in reading achievement



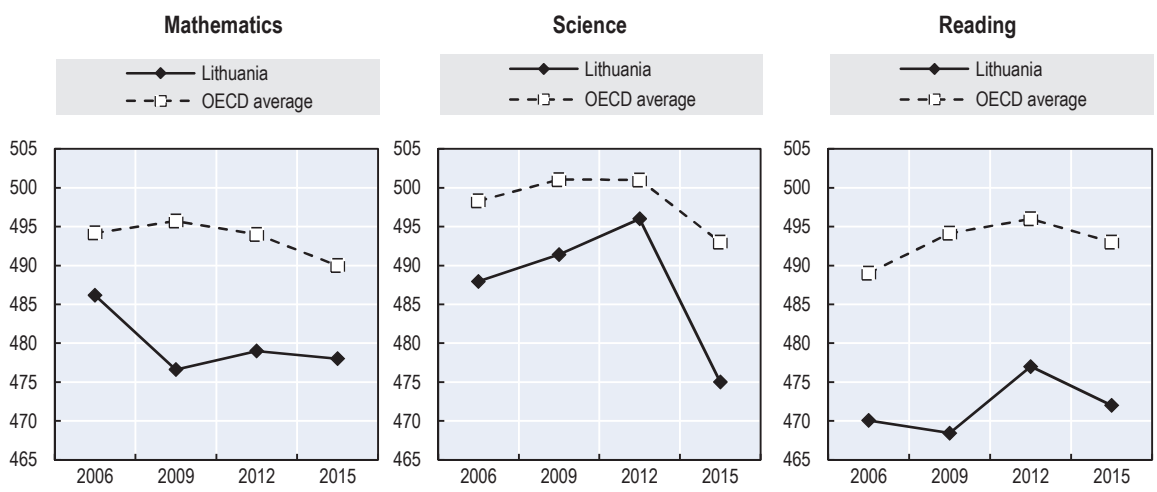
Notes:

2015 trend results for Lithuania do not include students taught in Polish or in Russian.

The PIRLS scale centrepoint is set at 500 points and represents the mean of the overall achievement distribution for each year of administration; thus, a value of 500 in 2015 equals 500 in 1995.

Sources: Mullis, I.V.S. et al. (2003), *PIRLS 2001 International Report IEA's Study of Reading Literacy Achievement in Primary School in 35 Countries,* TIMSS & PIRLS, Boston College, Chestnut Hill, MA, http://timss.bc.edu/pirls2001i/pdf/p1_ir_book.pdf; Mullis, I.V.S. et al. (2007), *PIRLS 2006 International Report: IEA's Progress in International Reading Literacy Study in Primary School in 40 Countries,* TIMSS & PIRLS International Study Center, Boston College, Chestnut Hill, MA; Mullis, I.V.S. et al. (2012), *PIRLS 2011 International Results in Reading,* TIMSS & PIRLS International Study Center, Boston College, Chestnut Hill, MA, http://timssandpirls.bc.edu/pirls2011/downloads/P11_IR_FullBook.pdf.

Figure 3.9. PISA trends in mathematics, science and reading achievement



Source: OECD (2016c), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Tables I.2.4a, I.4.4a and I.5.4a, http://dx.doi.org/10.1787/9789264266490-en.

Policy issues

Policy issue 1: Enhancing the capacity of Lithuanian students to use knowledge and skills

There is a need to improve performance across the board: weaker than average performance is not isolated, but widespread

The results of PISA 2015 assessment – and of earlier PISA assessments – show that in Lithuania the proportion of high performers is well below that of nearly all regional peers, and below the OECD average (Table 3.7). Small proportions of Lithuanian students attain the highest proficiency Levels 5 and 6 and can therefore complete the most challenging tasks in mathematics, reading and science. At the same time, there is a slightly larger share of Lithuanian students as compared to the OECD average among low performers who score below Level 2 in mathematics, reading and science. The largest gap is observed in reading. Only 4.4% of Lithuanian students were able to perform the most challenging reading tasks as compared to the OECD average of 8.3%. At the same time, a quarter of Lithuanian students do not reach proficiency Level 2 in reading in their native language as compared to the OECD average of one fifth. These results show there is a need to improve quality throughout performance distribution.

Table 3.7. Percentage of top and low performers in Lithuania and selected OECD member countries

	Mathematics		Reading		Science	
	Below Level 2 (less than 420.07 score points)	Level 5 or above (above 606.99 score points)	Below Level 2 (less than 407.47 score points)	Level 5 or above (above 625.61 score points)	Below Level 2 (less than 409.54 score points)	Level 5 or above (above 633.33 score points
Lithuania	**25.4**	6.9	**25.1**	4.4	**24.7**	4.2
Estonia	11.2	14.2	10.6	11.0	8.8	13.5
Latvia	21.4	**5.2**	17.7	**4.3**	17.2	**3.8**
Poland	17.2	12.2	14.4	8.2	16.3	7.3
Denmark	13.6	11.7	15.0	6.5	15.9	7.0
Finland	13.6	11.7	11.1	13.7	11.5	14.3
Norway	17.1	10.6	14.9	12.2	18.7	8.0
Sweden	20.8	10.4	18.4	10.0	21.6	8.5
OECD average	23.4	10.7	20.1	8.3	21.2	7.7

Source: OECD (2016c), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Tables I.2.2a, I.4.2a and I.5.2a, http://dx.doi.org/10.1787/9789264266490-en.

The influence of family socio-economic status on student performance is similar to that found, on average, across OECD member countries, and has remained stable

The socio-economic status of families influences student performance, and education systems can either amplify or mitigate the effect of family status (OECD, 2016c). Based on the results of PISA 2015 assessment, in Lithuania 12% of variation in 15-year-old student performance in science can be attributed to differences in family socio-economic status, similar to the average relationship (13%) observed across OECD member countries. A one-unit increase in the PISA index of economic, social, and cultural status (ESCS) - which corresponds to the difference between students with average socio-economic status and disadvantaged students - is associated with an increase of 36 score points in the science assessment, that is slightly below the OECD average of 38 score

points. Lithuanian students from disadvantaged backgrounds are 2.6 times more likely to be low performers than their advantaged peers. Overall, the impact of socio-economic status on performance has remained largely unchanged in the past decade: in 2006, when socio-economic status of the family accounted for 15.2% (3.2 percentage points higher than in 2015) of the variation in student performance in science, while the difference in performance between students who were one unit apart on the ESCS index decreased to 36 score points – a drop of two points.

The performance of students from rural areas lags behind their peers from urban areas, and by a wider measure than most other countries in the region

One-third of Lithuania's population lives in rural areas, and their home environment and pre-school education are different to those of children in the nation's urbanised areas. According to Statistics Lithuania, in 2015, 30.6% of rural population lived at risk of poverty, as compared to 18.1% in urban areas and 13.7% in large cities. Health outcomes in rural Lithuania are substantially worse than those in urbanised Lithuania. Data from the 2015 Survey of Adult Skills (a product of the OECD Programme for the International Assessment of Adult Competencies [PIAAC]) – assessing the skills of the nation's adult population – show that adults in rural and small town households have literacy, numeracy, and problem-solving skills measurably lower than those of their urban peers – which may lead to a less enriched home learning environment. Differences in urban and rural rates of participation in pre-primary education are diminishing, but remain unequal (Chapter 2). Urban-rural differences in the socio-economic and cultural environment of 15-year-old Lithuanians (-0.57) are half again as large as those found, on average, across OECD member countries (-0.35).

Concerns over the disparities of educational outcomes between students from rural and urban areas have been voiced by many stakeholders in Lithuania, and they are corroborated by national and international assessment data. PISA 2015 confirms that a significant performance gap exists between students from urban and rural areas in all core subject areas. This performance disadvantage is much larger than the OECD average, and this gap is wider than observed among Lithuania's regional peers – though broadly similar to that of neighbouring Latvia (Tables 3.8-3.10). The 50-60 point scale score differences across the three assessments are roughly equivalent to a 1.5 year learning gap between rural and urban students.

In Lithuania, the unadjusted performance difference between rural and urban students on the PISA science assessment (-55.32) is far wider than that typically found in OECD member countries (-31.83). However, after taking account of the socio-economic and cultural status of rural families and schools, Lithuania, rural students outperform their urban peers (+28.25) (Table 3.11).

Table 3.8. Science performance average by location (PISA 2015)

	Village	Small town	Town	City	Large city	Difference (village – city)
International Average (OECD)	471	483	493	503	501	-38
Estonia	525	534	530	545	n.a.	-22
Finland	529	519	530	540	n.a.	-21
Latvia	461	487	497	510	n.a.	-54
Poland	483	489	512	527	522	-46
Lithuania	444	462	478	499	n.a.	-63

Source: OECD, PISA 2015 database.

Table 3.9. Mathematics performance average by location (PISA 2015)

	Village	Small town	Town	City	Large city	Difference (village – city)
International Average (OECD)	467	481	489	499	499	-32
Estonia	509	518	516	533	533	-23
Finland	503	501	512	521	521	-18
Latvia	454	485	489	496	496	-42
Poland	489	493	515	525	525	-35
Lithuania	448	466	482	500	500	-53

Source: OECD, PISA 2015 database.

Table 3.10. Reading performance average by location (PISA 2015)

	Village	Small town	Town	City	Large city	Difference (village – city)
International Average (OECD)	466	481	492	504	503	-33
Estonia	509	515	518	531	n.a.	-20
Finland	517	514	527	538	n.a.	-11
Latvia	455	484	494	510	n.a.	-48
Poland	486	490	518	532	532	-44
Lithuania	435	459	476	499	n.a.	-56

Source: OECD, PISA 2015 database.

Table 3.11. Performance disadvantage of students in rural areas on PISA science assessment 2015

	OECD average			Lithuania		
	Rural area	Town	City	Rural area	Town	City
Percentage of students (%)	9%	54%	37%	21%	41%	38%
Average socio-economic and cultural status	-0.35	-0.09	0.13	-0.57	-0.10	0.26
	Rural area compared to city	Town compared to rural area	City compared to town	Rural area compared to city	Town compared to rural area	City compared to town
Unadjusted performance difference	-31.83	-16.65	15.18	-55.32	25.69	29.63
Adjusted performance difference *(student and school ESCS)*	3.96	1.31	-2.65	28.25	22.18	-6.08

Source: OECD, PISA 2015 database.

Gender differences in student performance are wider as compared to the OECD average and regional peers

PISA 2015 results reveal that the performance of Lithuanian boys at age 15 trails that of girls in both science and reading, while in mathematics the performance of boys and girls is, on average, nearly equivalent (Tables 3.12 and 3.14). The largest gap in performance is observed in reading, where mean score of boys was 39 scale score points lower than that of girls, equivalent – roughly – to one year difference in learning gains.

The gap in gender performance across all three areas – reading, mathematics, and science - is greater than found, on average, across OECD member countries, and wider than that found among regional peers (Tables 3.12-3.14). Only Latvian 15-year-olds displayed a gender gap wider than that of Lithuania, though Latvian boys outperform Lithuanian boys. Consistent with a pattern found, on average, across the OECD, the mathematics and science scores of the highest-performing boys (the top decile) exceed that of girls.

Table 3.12. Science performance by gender (PISA 2015 and 2012)

	2015 mean score		2012 mean score		Variation of mean gender difference (boys – girls)	
	Boys	Girls	Boys	Girls	2015	2012
Lithuania	472	479	488	503	**-7**	**-15**
Estonia	536	533	540	543	3	-2
Latvia	485	496	495	510	**-11**	**-15**
Poland	504	498	524	527	**6**	-3
OECD average-35	495	491	502	501	**4**	1

Note: Values that are statistically significant are indicated in bold.

Source: OECD (2016c), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Tables I.2.8a and I.2.8c, http://dx.doi.org/10.1787/9789264266490-en.

Table 3.13. Mathematics performance by gender (PISA 2015 and 2012)

	2015 mean score		2012 mean score		Variation of mean gender difference (boys – girls)	
	Boys	Girls	Boys	Girls	2015	2012
Lithuania	478	479	479	479	-1	0
Estonia	522	517	523	518	5	**5**
Latvia	481	483	489	493	-2	-4
Poland	510	499	520	516	**11**	4
OECD average-35	494	486	499	489	**8**	**10**

Note: Values that are statistically significant are indicated in bold.

Source: OECD (2016c), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Tables I.5.8a and I.5.8c, http://dx.doi.org/10.1787/9789264266490-en.

Table 3.14. Reading performance by gender (PISA 2015 and 2012)

	2015 mean score		2012 mean score		Variation of mean gender difference (boys – girls)	
	Boys	Girls	Boys	Girls	2015	2012
Lithuania	453	492	450	505	**-39**	**-55**
Estonia	505	533	494	538	**-28**	**-44**
Latvia	467	509	462	516	**-42**	**-55**
Poland	491	521	497	539	**-29**	**-42**
OECD average-35	479	506	477	515	**-27**	**-38**

Note: Values that are statistically significant are indicated in bold.

Source: OECD (2016c), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Tables I.4.8a and I.4.8c, http://dx.doi.org/10.1787/9789264266490-en.

Lithuania's education system would benefit from changes in its education policy framework that improve student performance across the board, and narrow differences in student achievement by improving opportunities for learning in rural schools. Policy makers across OECD member countries have employed a range of instruments to improve student achievement – including smaller class sizes, increased school autonomy, changes to teacher training and recruitment, or stringent accountability requirements for teachers, school leaders, or school founders (Hanushek, Piopiunik and Wiederhold, 2016). Given the current state of primary and lower secondary schooling in Lithuania – marked by small classes, wide school autonomy, and the reluctance on the part of educators and families to introduce assessment-based accountability arrangements – the most promising policy options for improvement in learning appear to be the *amount and quality* of instruction time.

The quality of instruction time is shaped by many factors, including teacher aptitudes, assessment practices, and the organisation of learning process, among others. This review recommends actions aimed at improving both instructional quality and amount. We begin by focusing on instructional time, and subsequently focus on opportunities for improvement in instructional quality that can be achieved through changes to the teaching workforce and use of assessments.

Policy recommendations

Recommendation 3.1.1: Increase the amount of instruction time in school

Effective learning depends, in part, upon instruction time, or the total number of allocated classroom hours. Instructional time represents a major part of public spending on school education and it is a key resource that offers opportunity to learn (OECD, 2013b). Research shows that, all else being equal, increasing instructional time leads to better academic performance (Gromada and Shewbridge, 2016). The impact of additional instruction time has been identified by researchers who have used quasi-experimental methods to examine the causal relationship between school days and student achievement. Naturally occurring and exogenous variation in amount of instructional time – due, for example, to school cancellations resulting from bad weather, or teacher absenteeism – has been shown to have a substantial impact on student achievement (Hayes and Gershenson, 2015). For example, Fitzpatrick et al. exploit quasi-random variation in test dates in the US Early Childhood Longitudinal Study-Kindergarten Cohort study to identify the average effect of formal schooling on achievement gains, and find that kindergarten reading scores increase by 1.6 standard deviations during a standard 250 day year (Fitzpatrick, Grissmer and Hastedt, 2011).

Opportunities to significantly expand the quantity and quality of learning time in Lithuania are probably not to be found in expanded or improved after-school learning. Lithuanian 15-year-old students report spending slightly more time doing schoolwork outside of school than peers in other countries (Figure 3.3). Further, PISA 2015 results show that schools in Lithuania provide as much or more support for after-learning than most OECD member countries. Based on school principals' reports, 78.5% of Lithuanian students attend schools that provide students with rooms to do their homework (as compared to the OECD average of 73.5%) and 73.6% can seek support with their homework from staff provided by their school - as compared to the OECD average of 60.3% (OECD, 2016a). Students with whom the review team met confirmed that they experienced adequate support for assignments completed outside of school, and found those assignments to be usefully integrated with their in-school work.

The primary opportunity to expanded learning time is to be found in expanding in-school instructional time in Lithuania. The total school-based instruction time in basic education is shorter than the OECD average (6 577 hours as compared to 7 257) – about one year less by the end of compulsory schooling. In recent years the duration of instruction has been extended with the introduction of compulsory pre-primary education in 2016, the objective of which was to better prepare students for primary schooling. Proposals for other increases to the duration of schooling – including a lengthened school year and an earlier start to compulsory schooling (at age six) have been discussed, but neither has been implemented. Three options – or their combination – could be adopted to extend compulsory instruction time: an increase in the number of instruction days per year, extending the number of years of compulsory schooling, or an increase in the number of instruction hours per day.

Lithuanian policy makers could increase the number of instruction days, while keeping the number of instruction years and hours per day unchanged. For instance, school vacations could be shortened to gain more instruction days a year. Among top PISA 2015 performers, Japan, Korea and Australia have fairly long school years of 190 days or more. This option could be especially attractive for Lithuania for two reasons. First, Lithuania's instruction year (168 days in lower secondary) is among the shortest in comparison to OECD member countries (on average, 184 days) with frequent interruption for breaks, including almost three-month long summer holidays. Research evidence suggests that a long summer break can cause significant "summer learning losses" that can equal one month of continuous instruction (Cooper et al., 1996). Also, learning losses can be higher for students from disadvantaged backgrounds, especially with regards to language skills (Gromada and Shewbridge, 2016). Second, the financial cost of this option would likely be modest. Budget allocations for salaries of teachers, school support and administrative staff cover all the full year, including the months of school breaks, and teachers and school support and administrative staff are contracted to perform their instructional responsibilities for more days than the current instructional year. Thus, an extended school year may not generate additional direct instructional costs. There would be additional public expenditure needed to support a lengthened instructional year, including maintenance, transportation, and other non-instructional costs, and these would be borne principally by municipalities.

A second option would be to extend the years of compulsory schooling by beginning primary schooling at age six, rather than age seven, introducing 13 years of compulsory schooling. Since 96% of six-year-olds are already in state-provided early childhood education and care (Figure 2.8), this option would not adversely affect family life. If this change were to have an educational benefit, it would require that curriculum and instruction change, with the focus of schooling for six-year-olds shifting from informal activities to formal learning.

A third option is to extend instruction hours while keeping the number of instruction days and years unchanged. Additional instruction time through a lengthened school day would translate into marginally higher teaching costs. Research evidence on the comparative learning gains achieved by adding instructional time through a longer school day – versus longer school years or more years of schooling – is not highly conclusive; though for younger learners longer days do not lead to effective learning time (Gromada and Shewbridge, 2016).

These options are not mutually exclusive. Given the low cost and low disruption associated with the first two options, respectively, Lithuanian policy makers may wish to

begin a focus on expanded learning with a lengthened school year, and commencing primary education at an earlier age.

Raising the performance of rural and male students

While a focus on measures broadly applicable to all learners is needed, Lithuanian primary and lower secondary education should also provide targeted attention and support to boost the performance of rural students, and lower-performing male students.

Recommendation 3.1.2: Improve support for learning in rural schools

The academic performance of students in rural communities is an important and enduring policy challenge for Lithuania. This challenge has been recognised by MoES in its policy analysis and planning. School characteristics such as location and school size are taken into account for the calculation of the student basket, thus small schools in rural areas receive higher per pupil funding than their urban counterparts. However, socio-economic disadvantage per se is not an element in the student basket methodology, and the OECD School Resources Review for Lithuania recommended assigning weights in the student basket methodology to socio-economically disadvantaged students (Shewbridge et al., 2016).

Setting to one side questions of school funding – taken up later in this chapter - we note that there are policy options likely to improve learning opportunities for students in rural schools that have not been fully exploited in Lithuania. These include:

- **Targeted teacher quality initiatives**. Attracting highly qualified teachers to small rural schools is a challenge in many OECD member countries. Central policies such as wage premiums, rotation and faster career and professional development tracks can create incentives for teachers to seek employment in rural schools. For example, in South Korea two government policies encourage equal access to quality teaching: teacher rotation and incentives. Teachers are hired and assigned to positions by cities and provinces. Every five years they are required to move and can be reassigned to any school within the city of province. In addition to this, teachers have incentives for working in remote rural areas and regions with disadvantaged population. These incentives include smaller class size, shorter class teaching time, a stipend in addition to the salary, an opportunity to choose the next school of assignment and advantages for the promotion to administrative positions preferred as the final stage of the teaching career (Kang and Hong, 2008).
- **Providing added learning support and enrichment** before and after school, and during holidays to students enrolled in rural schools. PISA reports reveal that time allocated to after-school study, and particularly to homework, is associated with higher academic achievement (OECD, 2016a, 2016c). However, at the same time, it can have unintended consequences widening the gap between students from different socio-economic backgrounds. Particularly, disadvantaged students may not have parental guidance and support to do homework, a quiet place to study at home and time allocated to after-school learning due to family and other responsibilities (OECD, 2014a, 2016a). Schools can therefore work with parents to encourage their involvement with children at home and help parents to better support their children with school work. In addition to this, school-based homework clubs or teacher-supervised study time could help those with insufficient home support. Extensive summer holidays can cause learning losses

and be especially burdensome for disadvantaged families that cannot ensure quality vacation time to their children. Research evidence shows positive effects of organised summer schools offering remedial or enrichment activities. Students' regular attendance, parental involvement and programme design are the key predictive factors of success of such programmes (Gromada and Shewbridge, 2016). The newly-created multi-functional centres in rural areas could be used for this purpose.

Recommendation 3.1.3: Reduce the gender gap in performance

Research shows that gender differences in academic performance do not result from innate differences in ability (OECD, 2015), but rather from social factors, such as influence of family, traditions and opinion leaders. In Lithuania, a co-ordinated effort should be made to encourage boys and girls to realise their full potential. The experience of OECD member countries shows that action can be taken to address the gap in academic performance between girls and boys. The training of school teachers can be strengthened to help them recognise and eliminate potential bias that they can have with regards to gender groups. Such bias can have an impact on student school-based assessment. Boys can improve their performance in core subjects if schools and parents encourage them to read (Box 3.1) and make homework a priority. Teachers and parents can support girls in building their self-confidence, especially in STEM subjects (OECD, 2015).

Box 3.1. Encouraging boys to read: Targeted policies in selected OECD member countries

When students cannot read well, they struggle in other school subjects too. Helping girls and boys to develop the habit of reading for pleasure pays dividends throughout students' school years and far beyond. Yet many boys do not read for enjoyment and are poor readers.

Some countries support specific initiatives to foster better reading habits among students, particularly boys.

The "Lesestart" programme in **Germany** distributes books and reading guides to children aged one to three, in co-operation with paediatricians and local libraries.

Various **Australian** states and territories offer programmes to encourage good reading habits. Some of these initiatives aim to improve reading skills by challenging and encouraging students to read more, while others focus on raising awareness of the benefits of reading among parents and encouraging them to participate in reading activities with their children. The **Australian state of Victoria** funds a programme, specifically targeted at boys, called "Boys, Blokes, Books & Bytes" that promotes learning styles that are appealing to boys, and involves adult men as positive role models and reading partners.

In **Sweden**, the National Agency for Education offers the "Boost for reading and writing development", a programme to increase students' reading comprehension and writing skills by developing and strengthening the quality of teaching. The programme is based on peer learning, as teachers learn from and with each other with the support of a tutor. Once fully developed, the programme will be offered to teachers from pre-school to upper secondary school.

In the **United States**, the White House initiative "My Brother's Keeper" connects boys and young men of colour with mentors at five key stages – one of which is early literacy – on the path to adulthood. New York City's Young Men's Initiative includes reading and math classes for young black and Latino men who are not yet ready to take the General Education Development (high school equivalency) test.

Source: OECD (2015), *The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264229945-en.

Policy issue 2: Establishing conditions for a high quality and attractive teaching profession

The achievement of Lithuanian students depends not only on instructional time, but on teacher quality: on a teaching workforce that is well-trained and knowledgeable, highly motivated, and able to implement effective teaching practices. The impact of teachers on student learning outcomes is among the best-established relationships in education research. Among school-related factors, teachers matter most. Researchers typically estimate that teachers have two to three times the impact of any other school factor – such as services, facilities, and leadership – on student performance in reading and math assessments (RAND, 2012). However, viewed in comparison to other policy challenges, developing a more able and effective teaching workforce is a complex and long-term undertaking, and especially in Lithuania, where falling enrolments and a declining number of teachers have limited turnover in the teaching workforce, and thus the rate at which newly-trained entrants enter the classroom.

The quality of entrants to teacher training programmes, the attractiveness of the profession itself, and the performance of the programmes themselves are matters of concern both to the Ministry of Education and Science, and the wider education community. For example:

- The Ministry's State Education Strategy 2013-2022 established a range of performance targets for the nation's teaching workforce – including boosting the entry scores of students entering teaching programmes, raising the percentage of male teachers in lower and upper secondary education programmes, increasing the share of teachers aged 30-49, and increasing teacher job satisfaction (as measured by TALIS) and participation in long-term training activities.

- Salaries have been increased, and are scheduled to rise further. In 2015 Lithuania increased the salaries of its lowest-earning teachers by 10%, young new teachers by 5%, and all remaining teachers by 3%, and in 2016 the salaries of the lowest-earning teachers increased by an additional 7%.

- The Ministry has encouraged – and some universities are now providing – new avenues of teacher training. For example, at Vilnius University new programmes have been established permitting students to earn a teaching qualification following the completion of a BA programme in a discipline (e.g. biology, history, music).

Policy recommendations

Recommendation 3.2.1: Take forward recent teacher workforce policy recommendations

Notwithstanding these initiatives – and others – the Accession Review Team confirms that the diagnosis and policy recommendations offered by the OECD in its School Resources Review for Lithuania (Shewbridge et al., 2016) continue to merit close attention by national authorities.

Box 3.2. OECD School Resources Review for Lithuania: Teaching workforce policy recommendations

1. **Manage the teacher supply**

Ensure an adequate rate of teacher renewal by managing the current oversupply of teachers while making teaching more attractive to the most qualified young people (especially in key areas of shortage) to join the profession. Develop strategies for reallocating, redeploying and retiring teachers who will be affected by school consolidation.

2. **Secure funding in the short term to help attract and retain new talent into teaching**

Raise teacher salaries considerably in the long term to make teaching more attractive for talented young people. In the short term, salaries for new entrants and teachers in the first years of their career should be increased noticeably and more vacancies should be created to provide more employment opportunities for young teachers.

3. **Create a more coherent teacher career pathway**

- Recognise and reward teaching excellence and allow teachers to diversify their career pathways, creating a career structure that matches the different types and levels of expertise described in the draft "Teacher Competency Framework".
- Ensure that new teachers can work in a well-supported environment and receive frequent feedback and mentoring in early stages of their career.
- Introduce a requirement for teachers to regularly renew their qualification status so that teachers at all career levels could continue to learn and update their practice.
- Diversify and clarify the range of roles that should be taken on by teachers at different qualification levels.

4. **Develop a strategic approach to teacher education and professional learning**

- Make initial teacher education more relevant to today's classrooms and regularly review the design of initial teacher education taking into consideration the views of current school leaders and teachers.
- Introduce a more systematic induction and feedback system for new teachers to support them in the transition from initial education to actual work in schools.
- Establish a requirement for school leaders to implement regular formative teacher appraisal processes to support continuous improvement of teaching practices.
- Linking the provision of teacher professional development to a systematic analysis of needs, both at the school level and at the system level.

Source: Shewbridge, C. et al. (2016), *OECD Reviews of School Resources: Lithuania 2016*, OECD Reviews of School Resources, http://dx.doi.org/10.1787/9789264252547-en.

Recommendation 3.2.2: Build consensus about good teaching, and strengthen system capacity to support teacher policy

Successful and durable policies are based in a common understanding shared among stakeholders, who arrive at agreement through sustained discussions grounded in a well-developed body of evidence. A lasting and effective policy framework for teacher

recruitment, training, and career development likewise requires a shared understanding among stakeholders. With this in mind, the School Resource Review advised the Ministry and the wider education community to complete work on the 2014 draft "Teacher Competency Framework". This framework, it proposed, could serve as a common basis "to guide initial teacher education, regular teacher appraisal, certification processes, teacher professional development and career advancement." However, the review identified the "lack of strategic oversight" provided by the Ministry to this process, and, while noting wide stakeholder consultation, it also pointed to "lack of debate or common understanding across the system regarding what constitutes good teaching" (Shewbridge et al., 2016).

OECD Accession Review team meetings were conducted with university educators of teachers, education researchers, and school teachers, and Ministry staff, and provided an opportunity one and a half years later to discuss with these stakeholders "framework conditions" for the teaching profession, including: "What is a good teacher? How should they be trained? Who should provide this training? How should their performance be evaluated and rewarded?" In accession review stakeholder discussions, as in earlier *Resource Review* discussions, there was a lack of common understanding and meaning about good teaching and how to achieve it.

Discussions with Ministry staff and stakeholders in the education community pointed to two institutional features of education policy-making that limit capacity for evidence-based discussions that lead to consensus. First, the Ministry operates with a small central staff, and relies heavily upon the work of specialised, semi-independent bodies that develop and implement policy, making it difficult for MoES to act in concert and "provide strategic oversight." Teacher policy, for example, has had no single administrative unit to develop policy within the Ministry. Additionally, the nation's education research community lacks the breadth and depth that might be found, for example, in Nordic countries, limiting its capacity to shape and support a national discussion about teacher careers and training. For example, while PhD degrees in education are awarded by the nation's principal pedagogical university, none are offered in experimental and quasi-experimental methods, the economics of education, or psychometrics, fields typically at the core of contemporary education policy analysis.

More generally, the Ministry itself lacks either a dedicated body to conduct research, or a "knowledge broker" capacity that would permit it to routinely bring external research to bear in policy development (European Commission/EACEA/Eurydice, 2017). Large investments have been made in international assessments, in national assessments, and in the development of a large-scale administrative data system, the Education Management Information System (EMIS). None appears to be used to support the development of policy. Across OECD member countries, including the ones of similar scale to Lithuania, it is a sound practice for ministries to have – in-house or externally – an analytical staff who can use this evidence to inform policy, and who can knowledgeably "broker" education research. For example, in the Estonian Ministry of Education and Research a professional staff of nine analysts focuses on providing policy-informing data analysis and research, and in "translating" external research findings to local needs. Their work supports the development of legislation, regulations, strategic plans, and the design of programmes, and the evaluation of existing programmes.

In 2016 the Ministry launched a specialist group among its staff to address teacher policy issues. The teacher competency framework remains pending and is scheduled for release along with new guidelines for teacher training. Together, these may assist it in

achieving wide agreement about good teaching and the teaching profession, upon which decisions about initial teacher education, regular teacher appraisal, certification processes, teacher professional development and career advancement can be based. In the longer run, it would be beneficial to strengthen the foundations of teacher policy-making, both inside the Ministry and beyond. We recommend giving consideration to:

- Expanded and consolidated staffing within the Ministry that strengthens its capacity to inform and lead teacher policy discussions. An organisational comparison with high-performing peers of similar scale and responsibility, such as Estonia, might be especially helpful, especially if undertaken by an independent body, such as the National Audit Office.
- Development of an analytic staff that could make use of the data resources available to the Ministry, and serve as a knowledge broker linking it to education research in the international research community.
- Strengthening the policy-informing capacity of the nation's university and NGO-based education research community. Identifying high-performing regional models could be undertaken as part of a ministerial capacity and resourcing review.

Policy issue 3: Improving quality assurance, school management, and classroom practice through improved use of assessments

Lithuania has developed extensive capabilities to implement external large-scale assessments of students in primary and secondary programmes. It was well underway with the construction of an extensive framework of external assessment for primary and secondary students in 1998, when *Reviews of National Policies for Education: Lithuania* was undertaken. This work has subsequently been taken forward, and has yielded a framework of external assessment that commences with grade 2 and continues through to the end of compulsory schooling (and beyond). Some of the work, such as the Ministry's 2016 publication, *Lithuanian Education in the Country and Its Regions: Student Achievement* (MoES, 2016b) sets an international benchmark for assessment analysis and reporting.

Notwithstanding these achievements in testing development and administration, there are challenges facing Lithuania in putting these assessments to use. As the National Examination Centre itself has noted, the development of a "modern understanding of the processes of teaching, learning and assessment" is underway in Lithuania. Its realisation will require "a revision of the role of a teacher and a change in classroom practice…and schools (will) need support to change assessment culture and to develop teachers' assessment skills" (information provided by the National Examination Centre).

Some steps needed for expanded assessment use have been taken. Lithuanian schools have not routinely transmitted diagnostic and assessment information about students as they transition from one school setting to another, leaving teachers and families without a cumulative record that is beneficial to both. Lithuanian students transitioned across three schools in primary and secondary education, but their assessment history did not often follow. Recently, however, the MoES and National Examination Centre have agreed that each student registered to or taking the grades 2, 4, 6 or 8 tests will have testing results uploaded to a central record system, permitting assessment results to "travel" with the student into another school and be accessible to future teachers.

There is scope for improvement in the use of assessment resources, including expanded use by school leaders and teachers for the purpose of improving school management and instructional practices, and by those outside of schools who are responsible for assuring the quality of education they provide.

In meetings with Ministry officials and schools, the review team inquired whether teachers and school heads used external assessments to improve school management and classroom instructional practices. Some schools and teachers reported making use of assessment information, and others not. This may result, in part, from teacher training and leadership selection policies in which assessment and its use is not a priority. Initial teacher education does not appear to place a priority on training in the use of assessments, and continuing teacher training that is provided by schools does not focus on assessment use for instructional improvement. When candidates are evaluated for their fitness to become school heads – or when they go through reappointment – their ability and willingness to use assessment information is not taken into consideration.

The NASE has not used assessment data as fully as they might. They have been unable to perform external quality assurance reviews at a rate that ensures all schools are reviewed within a seven year cycle. A 2016 audit found that 55% of schools had not undergone external assessment (NAO, 2016). Although the NASE could work with the National Examination Centre to identify poorly performing schools and target or prioritise external quality assurance, they have not done so.

In one instance, Lithuania has invested heavily in a national assessment but, in effect, chosen not to use it. All Lithuanian students who reach the end of their basic education take the Basic Education Learning Achievement test (PUPP) in Lithuanian language and mathematics. Teachers and school heads receive student-level results, and school-level results are published on the NEC website. School heads may obtain an extended analysis of their school results in comparison with other schools in their own municipality and with the results of the population of the whole country. However, there is no passing score in the PUPP assessment tests – students are required only to participate in the PUPP. Students and teachers reported that some who take the examination make very little effort to do well. As a result, lower secondary teachers are reluctant to take the results of the test as a useful feedback about the performance of their programmes, and those in upper secondary education are sceptical of its diagnostic value. As one national expert observed, the test has "little effect on the process of education." The absence of a passing score is a matter of policy: education leaders and public officials wish to provide all students with an opportunity to continue to upper secondary education. And, with sharply declining student numbers, establishing a "cut point" for entry to upper secondary programmes would exacerbate the demographic pressures faced by upper secondary programmes.

Policy recommendations

Recommendation 3.3.1: Streamline Assessment Framework

As Lithuania's new national evaluation system matures, policy makers should give consideration to a range of measures that encourage its use by municipalities, schools, and teachers.

- The Ministry should streamline the national assessment framework that the nation's schools are asked to administer. Lithuania has established effective

universal participation in a criterion-referenced national assessment in grades 4, 6, and 8. It should now conclude its use of the National Survey of Student Achievement, incorporating into its assessment system those components of the National Survey, such as teacher and student questionnaires, that provide information judged to be valuable by teachers, school heads, and other stakeholders. This would create a less burdensome and costly assessment framework, while preserving useful information.

Recommendation 3.3.2: Support the use of assessment results

- Integrate assessment use into initial teacher education curriculum and continuing professional development. The Ministry's new teacher competency framework and guidelines for teacher training provide an excellent opportunity to focus the teaching profession on the use of assessments.
- Ensure that the capacity to make use of assessments in managing schools becomes part of the profile for those who are selected to lead schools, and part of the skills they acquire in preparation for their leadership responsibilities.
- Evaluate whether the PUPP, a basic school completion test which sets no standards with respect to proficiency and generates no performance incentives, is an effective use of school resources, and evaluate whether options for small performance incentives for test-takers, such as counting the result as a small part of competitive score in higher education entry, are advisable.
- Ensure that the NASE uses assessment results in school monitoring, and consider the use of performance-based prioritisation for external school quality assurance reviews.

Policy issue 4: Increasing the efficiency of the school network

As Lithuanian policy makers are keenly aware, swiftly declining school aged cohorts have led to small class sizes and low student-teacher ratios (Table 3.15), and put the nation's school network under great pressure for consolidation. Consolidation is important, both to achieve greater efficiency and to ensure that students are provided a high quality education. The OECD School Resources Review for Lithuania (Shewbridge et al., 2016) provided a detailed analysis of school funding mechanisms (Box 3.3).

Table 3.15. Average class size and student-teacher ratio (2014)

	Average class size		Average student-teacher ratio	
	Primary education	Lower secondary education	Primary education	Lower secondary education
Lithuania	16	19	10	7
OECD average	21	23	15	13
EU-22 average	20	21	14	11

Source: OECD (2016b), *Education at a Glance 2016: OECD Indicators,* Tables D2.1 and D2.2, http://dx.doi.org/10.1787/eag-2016-en.

Policy recommendations

Recommendation 3.4.1: Follow through on recommendations of the OECD School Resources Review for Lithuania

Box 3.3. OECD School Resources Review for Lithuania: Policy recommendations on school resourcing

Avoid introducing a universal class basket funding scheme

A universal class basket scheme could help smaller schools, but would weaken the incentives to organise schooling efficiently and to compete for students. This would presumably result in smaller class size on average. This trade-off should be evaluated thoroughly. It will be essential, in evaluating the impact of the experimental methodology of the class basket, to consider how effectively this addresses the challenges for small, rural schools and, importantly, what the full costing implications will be if this is introduced system-wide.

Consider alternative measures to address funding challenges at the school level

Fiscal pressure on schools could be relieved by taking account of cost differences due to teacher composition. Cost differences could be smoothly incorporated into the funding formula by assigning different weights for categories of schools with a high, average or low salary cost index.

More effectively address equity within the funding formula

Inequality of opportunity related to social disadvantage appears to be overlooked in the funding policies. As one part of a more comprehensive approach it can be a useful measure to improve the education of less socio-economically advantaged students as well as students of language minorities. The possibility of assigning larger weights to socio-economically disadvantaged students in the funding formula should be considered.

Regularly evaluate the costs and adequacy of funding

More reliable and detailed evidence should be gathered on the costs and adequacy of funding in general, and on specific topics, e.g. small schools, national minority schools, the education of students with special needs and equity problems related to social disadvantages.

Promote efficiency in municipal funding of school maintenance

More attention should be devoted to improving efficiency in the allocation and use of school maintenance costs. Regular evaluation of resource use and the promotion of best practices in allocating municipal funding would be useful. Greater oversight of investments is required to ensure a more efficient and effective use of public funds.

Source: Shewbridge, C. et al. (2016), *OECD Reviews of School Resources: Lithuania 2016*, OECD Reviews of School Resources, http://dx.doi.org/10.1787/9789264252547-en.

The funding of small schools has dominated schooling policy debates in Lithuania for almost two decades, in the context of sharply declining school-age population and declining school enrolments. As the School Resource Review notes, the student basket funding methodology has:

> "… indisputably improved the allocation and use of resources in education in many respects: it allocates funds in a very transparent and predictable way; the formula has a simple logic which can be well understood by stakeholders, in spite of the complexity of the exact calculations; it includes weightings to support smaller, rural schools; and it is, in general, accepted by most municipalities and schools as a fair method of allocation." (Shewbridge et al., 2016)

Recent public discussions have focused on replacing the student basket by a class basket. In contrast to the student basket, the class basket allocates funding as a function of the number of classes, rather than a function of student enrolment. In November 2015 the government of Lithuania approved an experimental class basket methodology, currently piloted in five municipalities: Alytus, Jonava, Telšiai, Raseiniai and Šalčininkai. The rationale behind the class basket is to recognise that the centrally funded teaching cost depends on the number of classes more than on the number of students – and that despite advantageous weighting, the student basket mechanism does not fully cover teaching costs of small schools that cannot benefit of economies of scale.

At present each additional student brings a student basket to their school. Under the class basket funding methodology, each marginal student would not bring additional funding – only students at class size thresholds. Schools would have weaker incentives to compete for additional students where the incremental or marginal student cannot form a new class. Additionally, a class basket methodology would create incentives for schools to reduce the size of their classes. To maximise revenue per student, schools would reduce each class to meet the minimum regulated size criteria. This is opposite to the student basket funding mechanism, which creates incentives for schools to maximise their class size. Thus, a universal class basket – applied to all schools – would likely help secure higher funding for smaller schools and be likely to significantly reduce efficiency in the nation's schools through its incentive effects.

Recommendation 3.4.2: Evaluate the pilot class basket methodology in depth, and seek better targeted alternatives to it

The pilot class basket scheme currently implemented in five municipalities should therefore undergo an in-depth analysis and its impact should be thoroughly evaluated before implementation at a larger scale. Further, we invite continued consideration of the Resource Review's recommendation to consider alternative measures to address funding challenges at the school level, particularly:

> "…a separate scheme for small rural schools in the current system (that) could be established as an alternative to the class basket. That would grant exceptional status and higher levels of funding to schools according to criteria like settlement size, population density and the remoteness of the location. A drawback of this approach would be creating harsh differences between similar schools just meeting the criteria for exceptional funding. Fiscal pressure on schools should be relieved by taking into account to some extent cost differences due to teacher composition in terms of experience and qualification in the funding formula. Cost differences could be smoothly incorporated into the formula by assigning different weights for categories of schools with a high, average or low salary cost index." (Shewbridge et al., 2016)

Note

1. PIRLS 2016 results were not available in December 2016 when this review was prepared.

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Chapter 4

Upper secondary education in Lithuania

Lithuania has achieved a very high level of attainment in upper secondary education, with more than nine in ten of today's young Lithuanians forecasted to complete their upper secondary education over their lifetime. Even so, there is scope for improvement. Upper secondary vocational education has struggled to increase its attractiveness to learners, and to provide them strong labour market outcomes. Upper secondary general education has permitted graduates to successfully continue their studies at the tertiary level. However, the matura examination, a high-stakes school leaving and higher education entry examination, creates incentives for teachers and students to focus principally on tested subjects within the upper secondary general education curriculum, and on the accumulation rather than application of knowledge. Moreover, with one high-stakes examination at the end of secondary studies, schools find it challenging to create steady and consistent incentives for learning across the entire course of the secondary studies. This chapter examines these challenges and identifies policy options to boost the attractiveness of the vocational offer and to align the matura examination with the competency-focused intended curriculum.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

In OECD member countries upper secondary education represents today a minimum threshold for a transition to labour market and a pursuit of further education (OECD, 2015). It is the last stage of schooling that enables young people to gain necessary knowledge, skills and qualifications to prepare them for tertiary education, employment or both. Completed upper secondary education is generally associated with better labour market opportunities for individuals as well as higher socio-economic status (OECD, 2015).

A well-functioning system of upper secondary education is characterised by a high level of participation and attainment, and provides its participants with the skills and competences they need for successful transition to higher levels of education, to successful transition to the labour market, or both. Lithuania has achieved an especially high level of participation and attainment in upper secondary education. Projections based on current patterns suggest that more than nine in ten of today's young Lithuanians will complete their upper secondary education over their lifetime, a level well above the OECD average. However, two policy challenges remain.

Upper secondary vocational education has struggled to increase its attractiveness to learners, and to provide them with an education and training that leads to strong labour market outcomes. Much effort and spending has gone into these programmes, but these efforts have yet to show strong and sustained evidence of success.

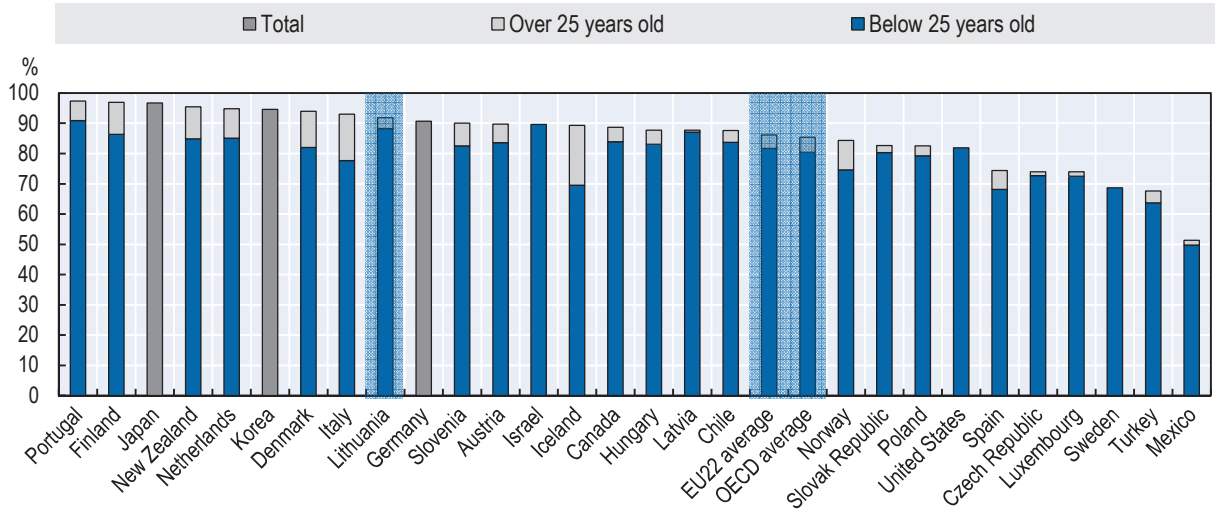
Upper secondary general education in Lithuania has been effective in permitting its participants to continue their studies at the nation's tertiary institutions. However, Lithuanian schools have found it difficult to deliver the full scope of the curriculum that national authorities wish to provide – the intended curriculum – given the powerful influence of the national *matura* examination on the final years of schooling, and its narrowing of engagement and attention. And, with one high-stakes examination at the end of secondary studies and none of consequence prior, schools find it challenging to create steady and consistent incentives for learning across the entire course of secondary studies. Ministry officials and education stakeholders recognise these challenges and have embarked upon an initiative to address them, though its feasibility and efficacy remain to be proven.

The state of upper secondary education in Lithuania

Lithuania's level of participation in upper secondary is among the highest in OECD and partner countries. In 2014, 93% of 15-19 year-olds were enrolled in educational institutions, as compared to the OECD average of 84% (OECD, 2016a). Hence, the proportion of young people in 2015 who were early leavers from education and training was low (5%), and that had significantly decreased from levels 15 years earlier (16.5% in 2000). This share of early leavers from schooling was lower than the 8% threshold set by national policy makers in Lithuania's National Education Strategy 2013-2022; and lower than both the EU policy target of "less than 10%" set in Education and Training 2020, and the EU average of 11% in 2015 (Eurostat, 2016).

Rates of upper secondary attainment among young adults have risen in recent years, and are comparatively high, as well. The upper secondary attainment has been on a positive trend over the past five-year period: the share of 20-24 year-olds who attained at least upper secondary education increased from 87% in 2010 to 91% in 2015, exceeding the target 90% set in the 2013-2022 State Education Strategy. Projections based on current patterns suggest that 92% of today's young Lithuanians will complete their upper secondary education over their lifetime, well above the OECD 85% average (OECD, 2016a).

Figure 4.1. Upper secondary graduation rates (2014)



Note: Solid grey bar indicates the graduation rates when no data by age are available.

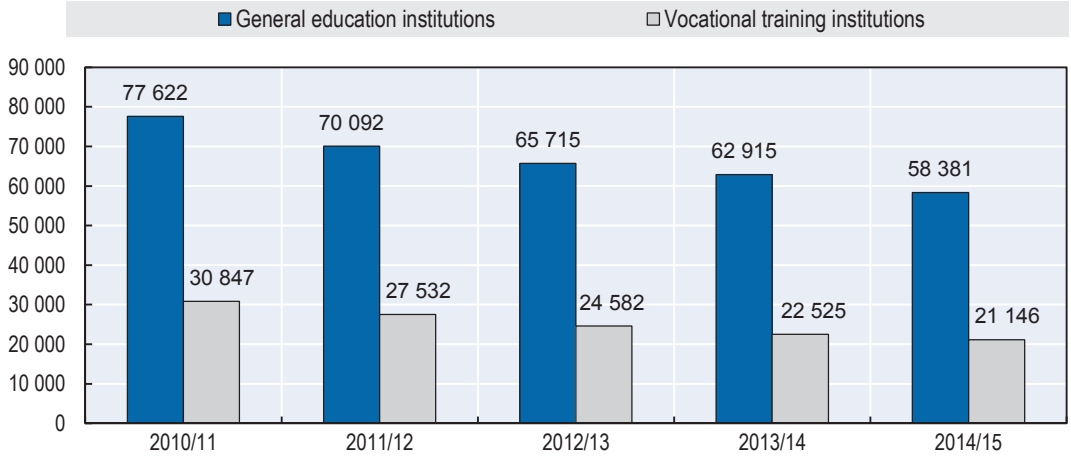
Countries are ranked in descending order of first-time upper secondary graduation rates.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Figure A2.1, http://dx.doi.org/10.1787/eag-2016-en.

While rates of participation are very high, the number of students enrolled in upper secondary education – as in other parts of the nation's education system – has declined sharply, falling by just over one quarter in four years, from 108 000 to 79 000.

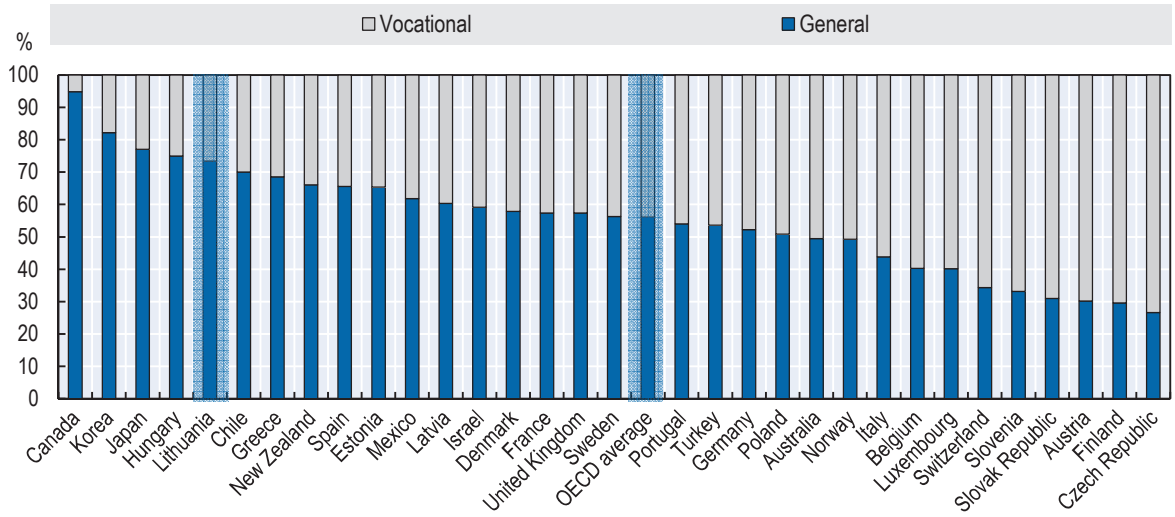
Lithuania provides general and vocational upper secondary pathways, and students who have completed lower secondary education may choose on which path they wish to continue their studies. Students most often choose the general secondary path. In 2014, about 73% of students chose upper secondary general education while the remaining 27% of upper secondary students chose to enrol in vocational education. This share is well below the OECD average of 44%, though broadly similar to that of Baltic neighbours Latvia and Estonia (Figure 4.3). Below we separately examine these two pathways, beginning with Lithuania's provision of vocational education.

Figure 4.2. Students enrolled in upper secondary education in Lithuania



Source: Provided by the Ministry of Education and Science of Lithuania, Education Management Information System (EMIS).

Figure 4.3. Enrolment of students in upper secondary education by programme orientation (2014)



Countries are ranked in descending order of the percentage of upper secondary students enrolled in general programmes.
Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Table C1.3a, http://dx.doi.org/10.1787/eag-2016-en.

The state of upper secondary vocational education

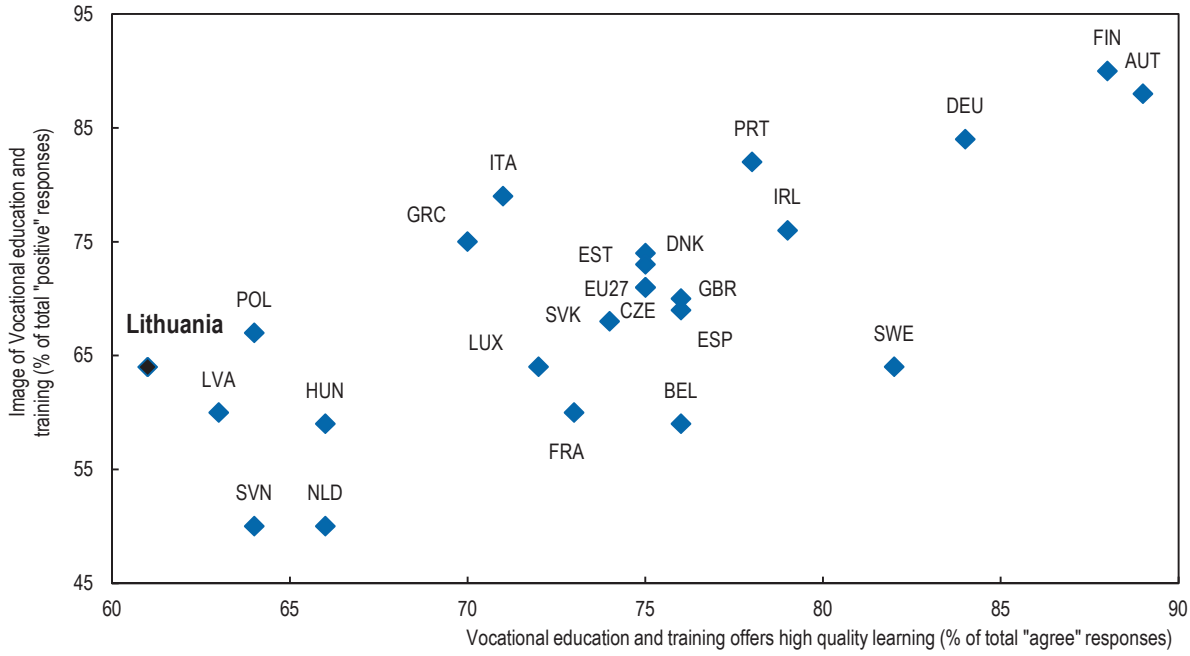
The context of vocational education

The 2002 OECD Review of Education in Lithuania noted that vocational education was grappling with the legacy of a Soviet education and training model, in which:

> "…many academically weaker students entered vocational schools directly following compulsory education to be trained for narrowly defined working places in state-owned enterprises. Only limited general education was included in that training. Other students entered secondary vocational schools to prepare for specialised technical fields that required a broader general education foundation but generally did not prepare students further education at the university level, although some students continued in specialised post-secondary education training. With the collapse of the command economy linked to the Soviet Union, the state enterprises for which vocational schools trained students ceased to exist. A combination of low-prestige and outdated training programmes, equipment and teachers contributed to a precipitous decline in demand for secondary vocational education." (OECD, 2002)

In the decade following the review, vocational education in Lithuania remained an unattractive education pathway. In spite of changes in the vocational education provision in the post-independence period, a 2011 Eurobarometer Survey found that 64% of Lithuanian respondents had a positive image of vocational education and training – among the lowest values in the European Union, and below the EU-27 average of 71% (Figure 4.4). Only 61% of Lithuanian respondents indicated that vocational education offered high quality learning (75% for EU-27) and 43% judged it to provide good career opportunities (72% for EU-27) – both are the lowest values among respondent countries (European Commission, 2011). Like other countries with a relatively poor image of vocational education and training, such as Latvia and Slovenia, negative perceptions of vocational education are closely linked to the view that higher education graduates find it easier to obtain a good job (OECD, 2016b).

Figure 4.4. Perceived vocational education and training image and quality



Source: European Commission (2011), "Attitudes towards vocational education and training", Special Eurobarometer 369, http://ec.europa.eu/public_opinion/archives/ebs/ebs_369_en.pdf.

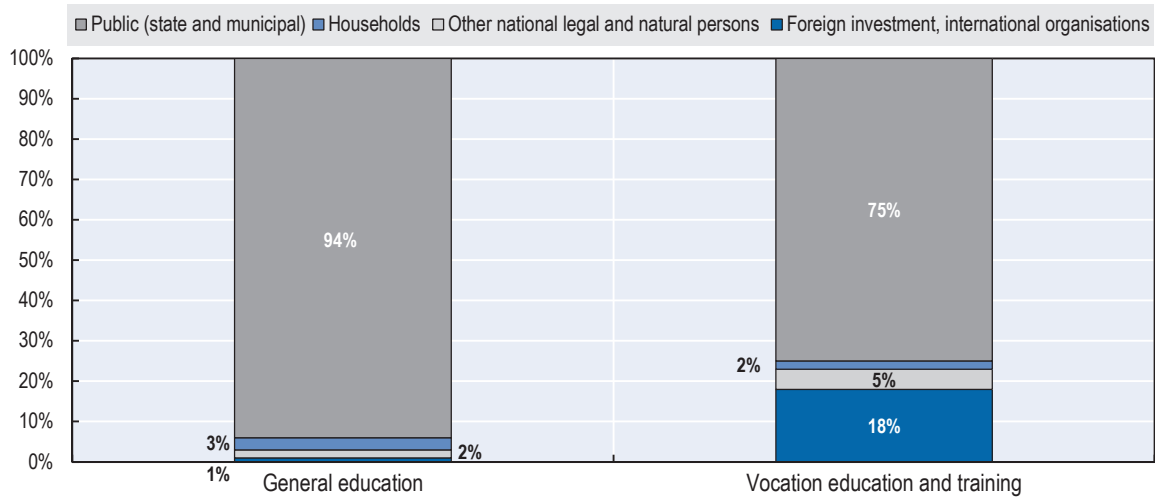
Public attitudes are not the only challenge facing those who wish to improve the attractiveness of VET. Lithuanian firms have a limited capacity to engage with and support VET. Lithuanian firms do not have experience of providing structured training in the workplace that is part of an educational programme, as firms within "dual systems" of vocational training, such as Germany and Switzerland do. Moreover, many employers have the view that they should not provide structured training, but rather that school-based programmes should provide them trained and ready workers.

Governance and funding of vocational education

Responsibility for the development and implementation of VET policies rests with MoES: it prepares the annual plan and procedure for the implementation of VET programmes, plans students' enrolment to state-funded programmes, delivers licences to formal VET providers and accreditations to competence assessment institutions (CEDEFOP, 2014). Responsibility for the development of VET qualification standards and quality assurance rests with the Qualifications and Vocational Education and Training Development Centre. Advice with respect to VET policy is provided by the Vocational Education and Training Council, an advisory body of central and municipal governments, and employer and business associations, while strategic guidance with respect to the nation's qualification system is provided by the Central Professional Committee, an advisory body of nineteen members drawn from government (MoES, Ministry of Economy and Ministry of Agriculture), the Vocational Education and Training Council, the Centre for Quality Assurance in Higher Education, the University Rectors' Conference and College Rectors' Conference, and social partners' representatives (UNESCO, 2014).

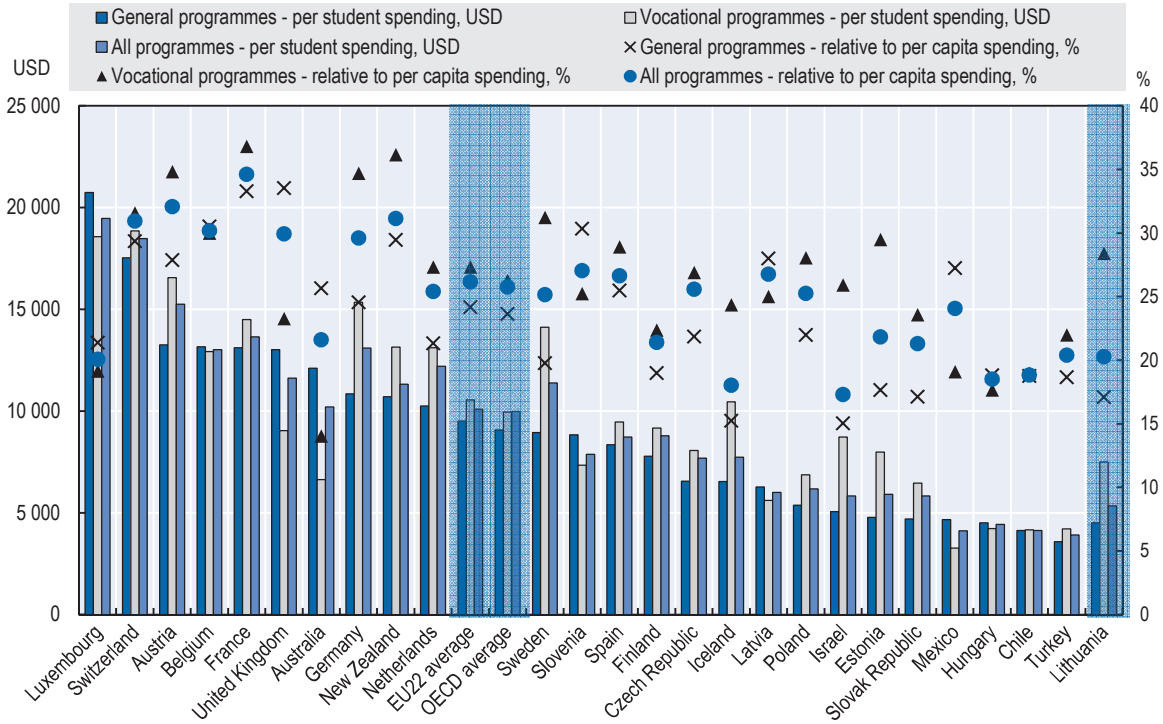
The central government budget is the main source of funding of upper secondary education in Lithuania – providing 94% of revenues for general upper secondary education and 75% for school-based vocational education and training. In 2014 vocational schools obtained funding not only from the central government "student basket" funding scheme, but from EU structural funds (18%), from "other natural and legal persons"- principally, firms (5%), and from households (2%).

Figure 4.5. Education funding by source, percentage (2014)



Source: MoES (2016), "Country Background Report: Lithuania", unpublished, Ministry of Education and Science, Vilnius.

Figure 4.6. Annual expenditure per student by educational institutions for all services (2013)



Counties are ranked in descending order of expenditure per student by educational institutions for general programmes.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Table B1.1, http://dx.doi.org/10.1787/eag-2016-en.

Annual spending per upper secondary vocational education student in Lithuania – at USD 7 493 (PPP adjusted) is higher than that of neighbouring Latvia, and roughly comparable to that of Estonia. Per student spending relative to the nation's per capita GDP (28.6%) – is slightly higher than both EU-28 and OECD averages. Lithuania's spending on vocational education is higher than for general upper secondary education, albeit the gap in spending between upper secondary general and vocational education is comparatively larger than the OECD average. High levels of spending allocated to vocational education are generally due to higher costs of vocational education (infrastructure, teaching and work-based training costs among other).

School-based provision of VET

VET programmes are delivered through school-based programmes that are competency-oriented, combine general and vocational subjects, and are supported by brief spells of practical training. Initial vocational education and training (IVET) at the secondary level is provided through school-based instruction that includes both theoretical and practical components. National policy with respect to the vocational curriculum requires that practical training account for 60-70% of the time allocated to vocational subjects (CEDEFOP, 2014). The major part of this practical training is school-based. Programmes also include 8 to 15 weeks of mandatory work-based training, and this can take place in a company, a Sectoral Practical Training Centre, or a school-based workshop (CEDEFOP, 2014) simulating real working conditions.

The schools that provide initial vocational training for upper secondary students are publicly managed and publicly funded, principally through the central government's student basket funding formula. Very nearly all (96%) schools providing upper secondary vocational education are public institutions, and together they train virtually all (99%) of vocational students.

Prior to 2003 public vocational schools were established and governed solely by MoES. Since 2003 increasing numbers of vocational schools – 26 in 2016 – have become "self-governing organisations": public budget organisations with stakeholders representing both the Ministry as well as those served by schools – including regional and municipal governments, private employers, and industry representatives. This reform was undertaken with two aims. First, it was hoped this would provide wider engagement and shared responsibility for assuring that VET programmes correspond to labour market needs for VET quality, for better practical training conditions in companies, for the professional development of VET teachers and their traineeships, and for a better employability of VET graduates. Additionally, self-governing status aims to provide schools with greater flexibility in the management of finances and property.

Table 4.1. Number of vocational schools, students and teachers

	Number of educational institutions		Number of students		Number of teachers	
	Public	Non-public	Public	Non-public	Public	Non-public
1995/96	106	1	49 045	145	4 652	19
2000/01	83	1	46 963	42	4 914	8
2005/06	74	2	46 283	51	4 860	14
2010/11	75	3	49 406	83	3 933	29
2015/16	73	3	46 269	274	3 487	20

Source: Provided by the Ministry of Education and Science of Lithuania, Education Management Information System (EMIS).

Teaching and advising

Teachers

Initial teacher training and continuing education are regulated by MoES with the aim of ensuring a minimum level of quality in vocational provision. Each module of a vocational training programme specifies requirements for teacher qualifications or duration of practical work experience. To receive a licence for a vocational programme, VET providers must certify that their vocational teachers meet the qualification requirements associated with their programme.

Schools providing vocational education draw upon two types of teachers: teachers of general subjects, who may work in both general and vocational schools, and teachers of vocational subjects, who work exclusively in VET schools. Teachers of general education represented slightly more than 30% of the total IVET workforce in 2015, while vocational teachers comprised the remainder (Vaitkutė, 2016). Teachers of general subjects in VET schools are subject to the same qualification requirements and initial and in-service training arrangements as those who teach general subjects in upper secondary general schools. Vocational teachers are required to hold a tertiary education and a teacher qualification. Alternatively, they may qualify to teach by completing an upper secondary education and vocational qualification, three-year work experience in their occupational area, and a 120-hour course on teaching and psychology delivered by accredited teacher development institutions within the first year of their teaching activity (Shewbridge et al., 2016).

Teachers are required to undertake continuing professional development, and are granted at least five days a year for this purpose. VET schools are responsible for the organisation of in-service training of vocational teachers, and funded from the students' basket for this purpose. VET providers identify training needs of their teachers and contract with accredited teacher qualification development institutions to organise trainings. Commercial presentations by private companies and study visits abroad are also considered as teacher development activities.

Notwithstanding these measures, there are widely acknowledged concerns about the profile, currency and depth of professional experience among VET teachers. Some Lithuanian vocational teachers have no hands-on experience in their occupational area. The results of a recent survey show that almost all vocational teachers in Lithuania have professional qualification in their area of specialisation, however more than 40% have no prior relative work experience (Vaitkutė, 2016), and about 30% of vocational teachers in 2015-16 lacked a pedagogical qualification (MoES, 2016).

Advising

Vocational advice with respect to the choice of vocational study is provided by schools, which do so within a national policy framework and funding. Career guidance – career education, information and counselling services – is provided by general education schools and VET schools, and supplemented by a web-based resource, AIKOS. School guidance is funded by the student basket, and augmented by municipal or private funds. Municipalities are responsible for monitoring career guidance services in general education schools, while the Ministry of Education and Science is responsible for setting national policy with respect to career guidance. Within schools, responsibility for career

guidance is typically shared among staff, including a school psychologist, subject teachers, and other members of staff. A minority of schools have established a separate full-time position of career counsellor or career co-ordinator.

Students and families are provided information about vocational programmes through school-based advising and the website developed for their use, AIKOS (Open Information, Counselling and Guidance System). However, the website does not yet include information about the labour market outcomes of different study programmes or training providers. Employment and earnings information is, likewise, unavailable to those staff in schools who are responsible for advising students on their career opportunities.

Pathways, curriculum and assessment

While available at the lower secondary level, vocational education centres principally on the provision to those who have completed a lower secondary education. Students may enrol in a vocational education programme at the lower secondary level, but this choice is not widely popular with students. About 2-3% of all lower secondary education students choose to enrol in a vocational programme, most often students who are at risk of dropping out of a general education programme, or who have already done so. General education schools are not keen to have students make this choice, as they lose the student basket associated with the student. Of Lithuania's approximately 25 800 secondary VET students in 2015, about one in five (5 321) were lower secondary students.

Table 4.2. Number of students enrolled in initial VET

		2010	2011	2012	2013	2014	2015
Total number of students in IVET		49 489	46 530	44 797	45 635	46 462	46 543
Programmes at lower secondary education level	Total number of students	4 942	4 160	4 282	4 892	4 980	5 321
	Percentage of students, compared to general education students	2.2%	1.9%	2.1%	2.6%	2.7%	3.0%
Programmes at upper secondary education level	Total number of students	30 847	28 196	25 139	23 042	21 579	20 540
	Percentage of students, compared to GE orientation students	28.4%	28.7%	27.6%	26.7%	26.8%	27.2%
Programmes at post-secondary education level	Total number of students	13 700	14 174	15 376	17 701	19 903	20 682

Source: Statistics Lithuania (2016a), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

Students may enter VET institutions without having completed lower secondary education – to complete their lower secondary general education in a VET school setting, to complete both their lower secondary education and a VET programme, or for the sole purpose of completing a VET programme (and qualification) without attaining a lower secondary education. Some of those who complete a VET programme without completing lower secondary education – about one in four - are students with special needs. In 2015/16 approximately 2 000 students completed a lower secondary general education, a vocational programme, or a VET qualification in a VET school setting.

Students who enter an upper secondary vocational pathway after completion of their lower secondary education may choose to take a two-year vocational programme that offers solely vocational studies, and no general education. If successful, they complete their studies with a vocational qualification or, failing that, a "certificate of learning outcomes."

Alternatively, they may choose a three-year vocational programme that provides them both a vocational and a general education curriculum. If successful, they complete their studies with a vocational qualification and school-based *matura* examination certifying their successful completion of general education curriculum – and providing them with an opportunity to seek admission to a higher education institution as a fee-paying student. If students complete national *matura* examinations, they are eligible to apply for a state-funded place in a higher education institution.

Nearly all upper secondary vocational students – 98% – opt for the three-year programme providing them with an opportunity to obtain both a vocational qualification and complete a general upper secondary curriculum. In 2015-16, 96% of those completing a three-year vocational programme obtained a vocational qualification, and more than 80% ended their programme with the completion of one or more *matura* examinations.

The most popular fields among upper secondary vocational students are engineering and personal services, followed by business and administration and architecture and building. In total nearly nine in ten students chose to enrol in one of these four broad areas of training in the academic year 2015/16 (Table 4.3). Students in personal services, for example, train to enter domestic services; hair and beauty services; hotels, restaurants, and catering; and travel, tourism, and leisure. Study fields that may be more closely linked to newer technologies and industries – such as computing and environmental protection – continue to comprise a very small share of VET enrolments.

The vocational skills of students in school-based VET programmes are assessed against standards developed in collaboration with industry, and by members of industry. A vocational qualification is awarded at the end of the vocational programme to students who acquired all competences set forth in the programme, VET standards or sectoral qualification standards in a given occupational area. In IVET the final assessment leading to the vocational qualification is separated from the training process. From 2003 to 2012 the final assessment of VET students was conducted by regional Chambers of Commerce, Industry and Crafts. Since 2012, the assessment of students of different types of vocational programmes has been delegated to accredited institutions that include industry representatives (CEDEFOP, 2014). By 2015, 25 institutions operating in Lithuania were accredited for the assessment of vocational learners, most often chambers (e.g. Kaunas Chamber of Commerce, Industry and Crafts), industry associations (Lithuanian Electricity Association), or public training centres (Panevezys Labour Market Training Centre). VET providers deliver vocational qualification certificates and diplomas based on the results of this external assessment.

Table 4.3. Percentage of students enrolled in upper secondary VET programmes, by field of study

	2009/10	2010/11	2011/12	2012/2013	2013/2014	2014/2015	2015/2016
Architecture and building	17.2	15.1	14.1	14.0	14.1	13.5	13.9
Manufacturing and production	4.5	2.6	2.2	2.2	1.9	1.8	1.6
Engineering	26.2	28.3	29.5	29.4	29.9	31.0	31.3
Computing	0.2	0.3	0.6	0.8	0.9	1.4	2.0
Arts	2.9	3.2	3.5	3.8	3.7	3.8	3.4
Personal services	21.2	23.5	24.9	25.6	25.9	25.6	25.5
Social services	0.4	0.4	0.5	0.5	0.6	0.4	0.4
Transport services	1.6	1.9	2.1	2.4	2.5	2.3	2.0
Business and administration	22.9	21.6	19.4	18.2	17.6	17.3	16.9
Agriculture, forestry and fishery	2.9	3.0	3.1	3.2	3.0	3.0	3.0
Environmental protection	-	0.1	0.2	0.2	0.1	0.04	-

Source: Information provided by the Ministry of Education and Science of Lithuania.

School-based VET and its connections to firms and work

Firms and associations engage as collaborators in supporting school-based vocational education programmes by participating in the boards of newly independent VET schools, by collaborating in the development of qualifications, and by participating in the assessment of VET students. In addition, Lithuanian firms host upper secondary vocational students as they undertake their 8-15 week period of mandatory work-based training. Vocational school heads estimate that 85% or more of students undertake this spell of training in a firm. In contrast to "dual" vocational systems found in countries such as Switzerland or Germany, the duration of the student's firm-based work experience is typically brief, and students are not expected to become fully (or, substantially) productive employees. There is no system for certification of firm-based trainers, however firms are required to appoint a person from its staff as a "practice co-ordinator", and a vocational teacher from the school is responsible for supervising the training in a firm and maintaining contact with employees involved in training organisation and co-ordination.

Upper secondary vocational students often engage in paid work. Among 2013 upper secondary VET graduates, just over 40% were employed six months prior to the completion of their vocational programme (MOSTA, 2015). Students typically find paid work through their own initiative, and this work is not required to be a formally co-ordinated part of their school-based programme. However, students who engage in paid work often use their work site to satisfy their mandatory practical training requirement.

Performance and key trends in upper secondary VET

Access and attainment

Between 2010 and 2015 vocational programmes consistently enrolled just over one-quarter of upper secondary students, and graduated most that enrolled. The overall dropout rate of approximately 16-17% remained stable as well. Dropout rates for students in the 3-year VET programme leading to an upper secondary general education qualification were significantly lower (13%) than rates among students in the 2-year VET programme that did not lead to the completion of upper secondary general education (20%) (European Commission, 2015).

Table 4.4. Enrolment and dropout rates in upper secondary vocational education and training in Lithuania

Academic year	Enrolment rate, %	Dropout rate, %
2010/11	28.4	16.5
2011/12	28.2	16.2
2012/13	27.2	15.3
2013/14	26.4	16.1
2014/15	26.6	17.2
2015/16	27.1	(not available)

Source: Statistics Lithuania (2016b), *Education 2015*, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/services-portlet/pub-edition-file?id=23298.

A pathway exists for vocational learners to enter higher education institutions (HEIs), but few choose to follow this path immediately after completing their schooling. According to the national statistics, in 2015 only 0.5% of vocational students pursued their education in colleges and 0.4% - in universities (Statistics Lithuania, 2016b). In recent years between 1.7% and 2.4% of vocational students who were awarded a *matura* certificate – demonstrating their successful completion of the upper secondary general curriculum – have entered a higher education directly after completing their vocational programme.

Table 4.5. Number of VET students awarded *matura* in Lithuania

Year	Number of VET students awarded *matura*	Number of VET *matura* recipients entering HEIs	Percentage entering HEIs
2011	8 174	195	2.4%
2012	7 196	135	1.9%
2013	5 927	133	2.2%
2014	5 219	90	1.7%
2015	5 083	120	2.4%
2016 (preliminary)	4 719	84	1.8%

Source: MoES (2016), "Country Background Report: Lithuania", unpublished, Ministry of Education and Science, Vilnius.

Graduate employment and earnings for upper secondary VET

Lithuania does not yet routinely analyse and publish employment and earnings outcomes of those who have recently completed education and training programmes. Special analyses have been conducted by MOSTA that link education and employment records for those who have recently completed upper secondary and post-secondary, non-tertiary vocational programmes (MOSTA, 2015), and MoES has approved a set of indicators to be used in future for the reporting of employment outcomes.

On average, the employment rates and average salaries of upper secondary vocational graduates rise following graduation (Tables 4.6 and 4.7). For example, among the 2011 cohort of VET upper secondary graduates, 86% were employed three years after graduation, and their average monthly wage was LTL 1 608 (nominal), equivalent to EUR 465 (MOSTA, 2015). Although employment and wage effects typically vary by

field, analysis of employment outcomes by field of study is not undertaken by Lithuanian authorities. Increasing wages may be the result of skills acquired through upper secondary VET programmes and (or) the signalling value of credentials. Alternatively, wage growth may equally result from increased working hours or returns to growing experience. Causal identification of the effects of VET programmes and their effectiveness requires quasi-experimental designs that have not yet been implemented.

Table 4.6. Percentage of upper secondary VET graduates who are employed

Year of graduation	6 months before graduation	6 months after graduation	12 months after graduation	24 months after graduation	36 months after graduation
2010	23	47	62	76	81
2011	33	60	71	80	86
2012	36	62	73	83	(not available)
2013	41	65	76	(not available)	(not available)

Source: Information provided by the Ministry of Education and Science of Lithuania.

Table 4.7. Average monthly salary of upper secondary VET graduates before and after their graduation (LTL)

Year of graduation	6 months before graduation	At the time of graduation	6 months after graduation	12 months after graduation	24 months after graduation	36 months after graduation
2010	923	961	1 115	1 183	1 317	1 497
2011	928	752	900	1 239	1 468	1 608
2012	695	651	1 228	1 380	1 464	1 312
2013	1 085	1 205	1 335	1 463	1 553	n.a.

Source: Information provided by the Ministry of Education and Science of Lithuania.

The 2015 Survey of Adult Skills (a product of the OECD Programme for the International Assessment of Adult Competencies [PIAAC]), a nationally representative sample of 16-65 year-olds, shows that the average monthly wage of adults who were upper secondary vocational graduates is USD 1 080 (converted using the purchasing power parity), slightly higher than that of adults with a general upper secondary education only (USD 1 071), but significantly lower than that of tertiary graduates with bachelor's degrees (USD 1 546).

Policy issue 1: Improving the quality and attractiveness of vocational education

Recent policy initiatives to improve the quality and attractiveness of VET

Comprehensive efforts are underway to increase the attractiveness of VET, and the Ministry of Education and Science has set national policy targets that call for increased enrolment in upper secondary vocational education – to 33% by 2017, and 35% by 2022 – and expanded work-based learning, including apprenticeships. Key policy initiatives include:

- Changes to governance of VET schools that will strengthen community engagement and business collaboration.
- Improvements to the vocational training workforce through continued professional education.

- Large-scale investments in a national network of Sectoral Practical Training Centres that provide state-of-the art facilities for vocational training.
- Improved information about labour market outcomes through a new human resources information system.
- Efforts to clarify the legal basis of apprenticeships and provide employer subsidies, so employers might create more numerous apprenticeship opportunities.

These initiatives – which follow the lines of EU's vision for education and training, such as the 2015 Riga Declaration – have received extensive support from the European Commission (EC). During the 2007–2013 EC funding cycle, large investments were made in VET physical infrastructure for training, developing the qualifications of VET personnel, and updating educational content. Between 2012 and 2015, 42 sectoral practical training centres were opened, at a cost of 118 million euros, and equipped with the latest practical training equipment. To provide vocational teachers with improved technical competencies, internships in various business enterprises were organised for them. The 2014-2020 Operational Programme for EU Structural Funds aims to support 10 000 apprentices by 2024, and provide work-based learning for 65 000 workers, while the European Centre for the Development of Vocational Training (CEDEFOP) has provided technical assistance and advice in support of apprenticeship development.

Apprenticeship training

Three ministries – Education and Science (MoES), Economy (ME), and Social Security and Labour (MSSL) – are responsible for the support of apprenticeship initiatives in Lithuania: the MoES has overall responsibility for developing VET policies in the country and the participation of VET school in apprenticeship initiatives; the MSSL takes the lead in implementing active labour market policies for the unemployed, including the Youth Guarantees; and the ME takes charge of human resource development and support to enterprises.

Official statistics are not kept on the number of apprenticeship places in Lithuania. A 2015 review conducted for CEDEFOP identified a very limited scope of opportunities that numbered – possibly – in the hundreds. These included:

- One small-scale IVET apprenticeship programme implemented by a private VET school, the craftsmanship school *Sodžiaus Meistrai*. The programme trained carpenters, roofers, confectioners and cookers, and in 2013-14 it had 54 participants.
- Labour market training centres in four cities collaborated to support trainees who participated in alternating learning in companies and in training centres, providing continuing VET in fields ranging from construction to personal and social care services. Training typically lasted six months, with a maximum duration of one year, and 1 300 learners were trained by June 2015.
- Some individual companies implemented their own apprenticeships, most of which are offered in co-operation with, or are branches of international companies from countries with established apprenticeship systems, such as Denmark and Germany.

After a multi-year process of consultation among government ministries, employers, and training providers, the provisions of the Labour Code relevant to apprenticeship training were revised by the *Seimas* in September 2016, and were scheduled to take effect

in July 2017. Changes to the Law on Employment authorised apprenticeship labour contracts as an instrument of training, defined the obligations of employers and vocational education institutions participating in apprenticeships, and established public subsidies to firms offering apprenticeships. Key apprenticeship provisions of the new law include:

- Employers must ensure the acquisition of learning outcomes defined in a training programme, or to create conditions for this learning to be accomplished.
- Total work and learning time may not exceed 48 hours per week.
- Apprentices must be paid a salary no lower than the minimum wage.
- Learning time in VET is not to exceed one-third of the apprenticeship labour contract duration, or to be paid by employers.
- Employers must appoint an in-company trainer, i.e. an employee who is responsible for organisation of apprentices' work and practical training.
- The head of a VET institution collaborating in apprenticeship training must appoint a vocational teacher for overall management of practical training of apprentices at a workplace.

Employers who hire (and train) from unemployment registers in accordance with these apprenticeship labour contract conditions may claim, in return, compensation of equal to 40% of the employee salary (not to exceed the minimum monthly salary) and related social insurance contributions. These costs will be paid by European Structural Funds. The Law on Employment also permits apprenticeship labour contracts to be concluded without a training agreement, in which case public subsidies are not provided to employers, but employer and apprentices may agree to compensation of training expenses (not to exceed 20% of the apprentice monthly salary). If implemented according to schedule and plan, this legal framework may resolve longstanding uncertainty about the rights and obligations of employers and apprentices.

Limited progress in increasing attractiveness of upper secondary school-based VET and in the implementing of apprenticeship-based training

The goals set by Lithuanian policy makers are ambitious, and will be difficult to achieve. Extensive VET investments have not yet yielded changes in the proportion of students undertaking upper secondary VET. The upper secondary VET enrolment target set in the 2013 Strategic Plan – that 33% of upper secondary students would be enrolled in VET by 2017 – appears on recent trends to be unattainable.

Table 4.8. Percentage of students in vocational education among upper secondary students

Academic year	Percentage
2010/11	28.4
2011/12	28.2
2012/13	27.2
2013/14	26.4
2014/15	26.6
2015/16	27.1

Source: Statistics Lithuania (2016a), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

Additionally, apprenticeships have grown slowly. The goal of supporting 10 000 apprenticeships by 2020 has been extended to 2024, and may nonetheless be difficult to achieve.

While many externally-supported large-scale projects in support of vocational education have been initiated, Lithuanian officials have found it difficult to manage their successful implementation and to ensure that projects are put on a sustainable footing beyond the initial funding cycle. This assessment has been reached concerning projects supporting vocational and career advising (NAO, 2014); the development of the vocational teaching workforce (NAO, 2016); and sectoral practical training centres (NAO, 2016). For example, an EU-funded project "Development and implementation of a system for the improvement of technical competences of vocational teachers and lecturers" (2010-2015) was designed to raise the level and relevance of teacher skills. A range of activities were to be implemented within the framework of the project, including a model for the improvement of technical competences, a survey on the training needs of vocational teachers among VET directors and teachers, 100 teacher training programmes in 12 sectors of economy, and a workplace-based teacher training for one-third of vocational teacher workforce. However, as the National Audit Office of Lithuania observed in its 2016 audit:

> "… Once these project activities come to a close, development often comes to a halt. From 2010 to 2015, the Education Development Centre implemented a project during which it organised qualification development events for vocational educators, however, only half of the educators working in the sectoral practical training sectors we audited participated in the training events. From 2013, the responsibility of improving the qualification of vocational educators was handed over to the Qualifications and Vocational Education and Training Development Centre, which did not organise additional training events related to improving technological competencies during the project." (NAO, 2016)

Policy recommendations

Below we identify four policy recommendations that should assist Lithuania in improving the attractiveness of VET to students and employers.

Recommendation 4.1.1: Implement the newly authorised human resources monitoring system, and use it to provide evidence of VET benefits to prospective students

If VET is to gain wider appeal among prospective students and families, VET training providers and policy makers need to provide them with evidence that it "works" – that it leads to earnings and employment success. Existing web-based resources for students, families, and school-based advisors, such as AIKOS, do not do this: they focus on programme requirements and characteristics, but not labour market results. Timely and user-focused evidence about the employment and earnings prospects of learners who complete VET qualifications is missing.

There is an opportunity to address this gap. The *Seimas* has approved the development of an integrated human resources information system linking administrative data from education, training, employment, and tax systems. A list of indicators for the human resources monitoring system has been approved by MoES. It is important that sustained and sufficient support be provided to ensure the full implementation of this monitoring system, and that the fully implemented system be designed with a view to the

information needs of students and families, and those who advise them, e.g. by consulting them in the design and development of web-based information resources.

Recommendation 4.1.2: Raise school capacity and incentives for apprenticeship training, and clarify the scope of employer incentives for the creation of apprenticeship contracts

The adoption of changes to the Labour Code and Law on Employment should resolve legal uncertainties and open a path to the wider provision of apprenticeship training. However, if Lithuanian officials wish to put apprenticeships on a durable foundation of employer-school collaboration, or if they aim for apprenticeships to be provided on a broader basis – beyond an active labour market policy principally targeting unemployed workers – they will need to deal with a range of challenges.

First, employers lack confidence that vocational education institutions have teachers with skills that are sufficiently relevant and up-to-date to provide suitable training for their firms. Second, vocational education institutions, for their part, are incentivised by the design of student basket funding to ensure that training takes place in a school setting, rather than in the workplace (CEDEFOP, 2015). Moreover, long experience of school-based training and the sunk cost infrastructure investments in school-based training – e.g. sectoral practical training centres – also provide incentives for them to prefer school-based to work-centred training. Additionally, Lithuanian firms lack experience and robust capacities for the provision of work-based learning. Finally, apprenticeship schemes will be implemented – in priority - as active labour market policies focused on unemployed people, with a possibility to roll them out to post-secondary non-tertiary learners at a later stage. Incentives for employers participating in apprenticeship schemes are to be funded from the European Structural Funds. The sustainability of the apprenticeship funding scheme may therefore become a challenge in future.

In recognition of these challenges, VET policy makers have launched a number of projects, one focused on developing VET teacher pedagogical competencies through course-based work and traineeships in firms, and another aiming to develop – in collaboration with Finland's Jyvaskyla University of Applied Sciences – a training program for linking VET teachers and the workplace tutors with whom they partner.

Building greater confidence among firms in the fitness of school-based vocational instruction is likely to be a long-run undertaking, in which initial teacher training and career progression for the vocational education workforce are reoriented, making work experience a prerequisite for entry into vocational teaching, and adopting policies that support ongoing movement between workplace and teaching as the principal means of continuing professional development. This would include, for example, reviewing teacher compensation, advancement, and retirement policies to support career circulation between school and work.

Achieving wider engagement among vocational schools in work-based training will likely require a modification of the student basket funding methodology for vocational schools that recognises and rewards work-based instruction of vocational students. Targeted sectors, as well as the chambers that represent them, could be rewarded for collaborating in the further training of vocational teachers in schools and programmes that directly support their skilled workforce needs.

Recommendation 4.1.3: Ensure that sectoral practical training centres are financially sustainable, and improve the accessibility of the centres through a system of student support that puts them within reach of all vocational learners

Lithuania's network of sectoral practical training centres were intended to raise the attractiveness of vocational education and training, to improve the quality of practical training of VET students and teachers, and to generate additional revenue for VET institutions, permitting them to offer paid services provided to local businesses. Created with a large investment of funds from the national budget - and especially of European Structural Funds – they are an important resource that now poses two practical problems for vocational education. First, how can a national network of sectoral training centres be sustained and kept up-to-date? Second, how can learners who are not located near specialised centres gain access to those that are best-suited to their needs?

Vocational authorities in Lithuania have proposed that about one-half of the nation's 42 practical training centres be designed as "competence centres" – training centres that provide paid practical training services to local businesses, with each of the centres supporting a key sector of the Lithuanian economy. Revenues generated through this activity are to be reinvested into the maintenance and modernisation of facilities – and, combined with public funding from the state budget, it is anticipated this will make practical training centres financially sustainable. In principle, augmenting public funds with fee-for-service provision is a prudent solution to sustaining the centres. However, stakeholder meetings conducted during the review and a 2016 National Audit Office study (NAO, 2016) of the centres point to low levels of business use of the training facilities.

Further public audits should be conducted to monitor and assess the performance of these newly designated competence centres. Additionally, we recommend that the future of the centres be reviewed within the wider context of the nation's public education and training infrastructure. A national review of public higher education and training institutions is underway, co-ordinated by MOSTA, the central government's centre for monitoring human resource investments. A review of public universities has been conducted, and review of public colleges and public research centres is planned. To ensure that the *Seimas* has a comprehensive and integrated view of education and training resources available to the nation, and that policy options for ensuring the centres are adapted to national needs and financially sustainable, sectoral practical training, centres should be included within the scope of these reviews.

Sectoral training centres need to be a better co-ordinated national resource that is available to – and used by - more vocational learners than at present. Training centres are serving learners enrolled at the local vocational institutions that host them; however, they are not adequately serving learners who are not. An audit examining 26 of the nation's sectoral practical training centres found that in 15 of 26 "practical training was not being offered to students from other vocational institutions," and that "no systemic solution has been devised for funding and organising the process of training students from other VET institutions at the newly equipped practical training centres, thus not all students are afforded the opportunity of learning with new equipment" (NAO, 2016). In meetings with vocational education providers and stakeholders, the review team was told that vocational learners did not have sufficient support to permit them access to specialised programmes located elsewhere in the country. Students across the country may wish to train for a career in the food service and hospitality industry, but the principal sectoral training centre is located in Klaipeda, 300 kilometres away from learners in Vilnius, Alytus, or Utena.

This mismatch of demand and supply in training opportunities should be addressed through a student support system that meets living costs, is easily accessible to all eligible students, and is well-publicised through web resources (e.g. AIKOS) and school-based advising.

Recommendation 4.1.4: Improve opportunities for upper secondary vocational students to make full use of the pathway to tertiary education

Vocational education systems can be made more attractive and beneficial to students if they provide secondary (and post-secondary non-tertiary) vocational students with an effective pathway to tertiary qualifications, including those offered by universities of applied science and research universities and newly-created higher vocational qualifications (such as degree-level apprenticeships).

Lithuania has established a pathway from upper secondary vocational studies to tertiary education, either provided by colleges or universities. However, few upper secondary graduates follow this pathway, and many students may not be familiar with it, or have given it extended consideration. Only about 1-2% of vocational students awarded a *matura* certificate – demonstrating their successful completion of the upper secondary general curriculum – have entered higher education directly after completing their vocational programme. We examine this further in Chapter 5, and note here that raising the attractiveness of vocational education could be assisted by creating a reliable and well-used pathway to tertiary education for all.

The state of upper secondary general education

Context, governance and funding of upper secondary education

Upper secondary general education in Lithuania is the preferred pathway for most upper secondary students. In the 2014-15 school year, 58 381 of the nation's 79 527 upper secondary students were enrolled in general education, or approximately three out of four students.

General upper secondary education is not offered by schools that are organised solely to provide the final two years of the curriculum. Rather, upper secondary general education is offered by schools that provide instruction in grades 9-12 typically in gymnasia, or in a small number of schools that offer curriculum and instruction for grades 1-12. Schools offering instruction across grades 1-11, known as "secondary schools" were typical of the Soviet educational structure. Government policy has focused on creating schooling that is organised into three four-year cycles of provision – primary, pre-gymnasium, and gymnasium in grades 1-4, 5-8, 9-12, replacing the earlier model of "secondary schools". Schools that transition from secondary to gymnasium status undergo an accreditation process to determine if a school wishing to become gymnasium can meet curriculum requirements in grades 11 and 12. Specific conditions are set with regards to the number of students at upper secondary level and the number of classes in grades 11 and 12 (Shewbridge et al., 2016). Between 2004/05 and 2015/16 the number of gymnasia increased from 90 to 359, while the number of secondary schools fell from 464 to 14, and the government aims to complete this transition by 2020 (Shewbridge et al., 2016).

About 95% of schools providing upper secondary education are public institutions, founded either by Lithuania's municipalities (90%) or its central government (5%), while only about 5% are privately founded - and they enrol only about 5% of upper secondary students.

Table 4.9. Upper secondary general education schools by type of ownership (2015/16 academic year)

School	Number of schools	Number of students
State	20	1 302
Private	22	1 461
Municipal	368	51 438
Total	**410**	**54 201**

Source: MoES (2016), "Country Background Report: Lithuania", unpublished, Ministry of Education and Science, Vilnius.

In 2013, Lithuania's expenditure per student for all services at upper secondary level was USD 5 345, below the OECD, EU-22 average and that of other Baltic states (Figure 4.6). Lithuania's upper secondary education spending relative to per capita GDP was also lower than that of the OECD and EU-22 averages for general upper secondary education (17% as compared to 24% and 24% respectively).

Public funding from the Lithuanian central government and its municipal governments provide most funding of upper secondary education in Lithuania: 94% for general secondary education and 75% for vocational education and training (Figure 4.5). The school funding reform of 2001-2002 introduced a funding scheme that combines centralised formula funding with decentralised allocation of funds to schools. This scheme replaced the centralised resource allocation that was in place in the 1990s. Public funding is directed to schools through three channels: central formula-based funding for "teaching costs", municipal funding for maintenance costs, and ad-hoc grant funding for school investment (Shewbridge et al., 2016, pp. 94-95).

Teaching costs are covered from the central government through a "student basket" formula scheme. Teaching costs include all expenditures for salaries of teachers and school administration, key support staff, textbooks and school materials, teacher in-service training, etc. The student basket grant is calculated for all public and private schools delivering upper secondary education. It takes into account the foreseen expenses for teacher salaries based on the number of students enrolled, number of teaching hours, and class size. The funding formula assigns extra weighting for students with special educational needs, migrants and those studying in a minority language. Higher weighting is also attributed to upper secondary schools as compared to primary or lower secondary schools.

The state formula-based grant is transferred to local governments that distribute the funding to individual schools. Local governments have the obligation to distribute at least 93% (94% for five municipalities) in accordance with the school-by-school calculation; the remaining 7% (6% for five municipalities) can be allocated to other schools or in accordance with local services education needs.

Upper secondary general education curriculum

Upper secondary curriculum is implemented by schools with a framework established by the national government, and provides students with a broad programme of study. The MoES establishes a general framework for the upper secondary curriculum, within which schools may make choices about the educational programme of students. The general curriculum framework identifies compulsory and elective subjects, and establishes minimum hours of instruction. It aims for breadth rather than specialisation, requiring study in Lithuanian language, foreign language, mathematics, social science, natural science, and electives. Beyond the general level required by the curriculum framework (*bendrasis 'B'*), students may choose to take additional instructional hours to study a

subject on an extended basis (*išplėstinis 'A'*). For example, students must take 207 hours a year of mathematics instruction in upper secondary education, but may choose to take 316 hours of instruction, if they wish to study to an extended level.

Students create individual education plans which include compulsory and elective subjects at general or extended programme, and do so based upon their interest, aptitudes and further academic or professional aspirations. In general, students study eight to nine subjects, and those aiming for university will tend to choose between four to five subjects at Level A, and three to four subjects at Level B.

Within this broad framework, curriculum and instruction in schools is also oriented by *matura*, school-leaving examinations, the subject examinations which effectively establish content requirements and performance levels that students must achieve if they are to obtain school-leaving certificates or gain entry to state-funded university places.

Table 4.10. Curriculum subjects and number of hours per week for general upper secondary education (full time)

Education fields/subjects	Minimum number of lessons per week	General course	Extended course
Religious and moral education	2		
Religion		2	-
Ethics		2	-
Languages:			
Lithuanian language and literature (mother tongue)	8	8	10
Lithuanian language and literature (state)*	11	11	13
Mother tongue (Belorussian, Polish, Russian, German)*	8	8	10
Foreign languages		Course oriented towards B1 level	Course oriented towards B2 level
Foreign language (...)	6	6	6
Foreign language (...) *	6	6	6
Social education	4		
History		4	6
Geography		4	6
Integrated course of history and geography		4	
Mathematics	6	6	9
ICT		2	4
Natural sciences	4		
Biology		4	6
Physics		4	7
Chemistry		4	6
Integrated natural sciences course		4	–
Art education and technologies	4		
Selected courses in arts and technologies***		4	6
Physical education	4–6		
General physical education		4/6	8
Selected sports		(4–6)	
Human safety**	0.5	0.5	0.5
Optional subjects / subjects modules			
Project work / thesis			
Learning content, chosen by a pupil		from 26 to 22 *	from 26 to 22*
Minimum number of compulsory lessons per pupil per week	28 lessons per week; 31.5 lessons per week*		
Number of lessons (per week) for the student's educational needs	24 lessons per week for two years		
The maximum number of lessons is typically 51 per week, and at schools with a national minority language 54 lessons per week. The minimum number of lessons is typically 43 lessons per week, and at national minority language schools 46 lessons per week. Higher number of lessons can be allocated depending on the pupil learning needs and within the limits of educational funding.			

Notes: * At schools with language of a national minority; ** Integrated into curricula; *** Student can choose between courses in arts, music, theatre, dance, art education, computer music technologies; graphic design; photography; film-making; tourism and nutrition; construction and woodwork; textiles and clothing; applied arts, crafts and design; business, management and retail trade; mechanics, mechanical repair; other technology trends; integrated arts and technology course. Students also participate in 207-210 hours of non-formal education over a two-year period.

Source: Information provided by the Ministry of Education and Science of Lithuania, based on the general plan of upper secondary education.

Assessment in upper secondary general education

The assessment of course-based work performed by classroom teachers takes place within a common 10-point grading scale. However, assessment policies and practices are decentralised, and there is no external moderation of grading, thus there are opportunities for variation in marking among teachers and schools.

General education ends with a *matura* examination that certifies completion of a secondary education and provides the basis for higher education entry and funding, as well. State-level *matura* exams may be taken in biology, chemistry, physics, geography, information technologies, history, mathematics, and foreign languages (English, French, German, and Russian), while locally-assessed school-level *matura* exams may be taken in minority (native) languages (Belorussian, Polish, Russian and German), musicology, arts, and technology. Lithuanian language and literature exams can be taken either as a state-level, or a school-level exam. Pupils must pass two *matura* examinations to complete their upper secondary general education: a compulsory examination in the Lithuanian Language and Literature and an elective examination. Most school leavers select three examinations, and no more than five examinations may be selected in total. Examinations are criterion-referenced assessment, and centrally administered and organised by the National Examination Centre of the Ministry of Education and Science. In 2015 Lithuanian students chose to take state *matura* examinations in 15 fields, listed below.

Table 4.11. Number of state *matura* examinations taken, by field (2015)

Subjects	Number of students
Lithuanian language	18 421
English	17 189
Mathematics	14 860
History	9 105
Biology	6 012
Geography	2 559
Physics	2 546
Information technology	1 995
Chemistry	1 829
Russian	916
German	148
French	50

Source: National Examination Centre (2016), Final examination results 2016 website, http://nec.lt/591 (accessed 30 January 2017).

The *matura* examination serves two purposes. It certifies successful completion of the upper secondary general education. Additionally, it provides the basis for entry to higher education, and for obtaining a state-funded place in higher education. To apply for a state-funded place in a higher education institution (HEI), students must pass three *matura* examinations: Lithuanian language and literature exam (state *matura* for universities, school-based *matura* for colleges), a foreign language exam, and state *matura* in mathematics.

HEIs operate within a centrally co-ordinated admission process that is managed by the Association of Lithuanian HEIs for Organization of Common Admission. HEIs use the *matura* examinations as a common admission examination. Although HEIs determine the *matura* examination fields used in admission, they implement a common methodology for using these examination results to calculate a "competitive score" for each study field. The competitive score is used, in turn, to rank students and, on the basis of this ranking, admit them to study places – some share of which is state-funded.

For study places that are not state-funded, students apply through the common admission process and submit *matura* examination results, but minimum entry requirements do not apply, thus the fields in which they examine and their level of achievement is determined solely by the higher education institution, which is also free to determine the number of study places it wishes to establish.

The national *matura* examination results are used to establish entry to higher education institutions and programmes, and to determine eligibility for state-funded higher education places, making it the single high-stakes examination that students face during their years at school.

Students and teachers who met with the review team consistently expressed the view that upper secondary general education in Lithuania is oriented around preparation for the *matura* examination. Teachers focus their energy and attention on subjects within the curriculum on which they expect students to be tested. Many university entrants – just over a third – report having received private tutoring in at least one subject. Tutoring is most common among urban students studying in gymnasiums who are seeking entry to fields and institutions where competitive scores are highest (MOSTA, 2014).

Matura examinations are high stakes for school leaders, especially in an environment where public funding – student basket – follows family enrolment decisions. News organisations publicise *matura* results and higher education entry results by gymnasiums. Families pay attention to this information to form judgments about schooling quality, and competition for places in those gymnasiums perceived to be of "high quality" occurs in the nation's urban areas, where schooling options exist. School leaders are keen to achieve good *matura* results, and in towns and cities where a school has more than one teacher in a subject, school heads may take *matura* results into account in allocating workload among teachers.

Given the scrutiny attached to *matura* examination results, one might expect school staff to select students with a view to taking students likeliest to achieve strong examination results; however, demographic pressures and law substantially circumscribe student selection. In most communities the supply of study places outnumbers students, and schools are unable to turn away prospective students. Moreover, publicly supported schools offering upper secondary curriculum are not formally authorised to establish selection procedures for the admission of students. Municipalities have been recently authorised to permit some schools to select students, and small numbers now do. Seven gymnasiums in Vilnius – enrolling about 10% of the city's upper secondary students – have been authorised to select entrants, and a few of the nation's other municipalities are considering similar authorisations for the public schools they oversee. At present, however, fewer than 5% of upper secondary students nationally are enrolled in selective institutions.

Resourcing upper secondary general education

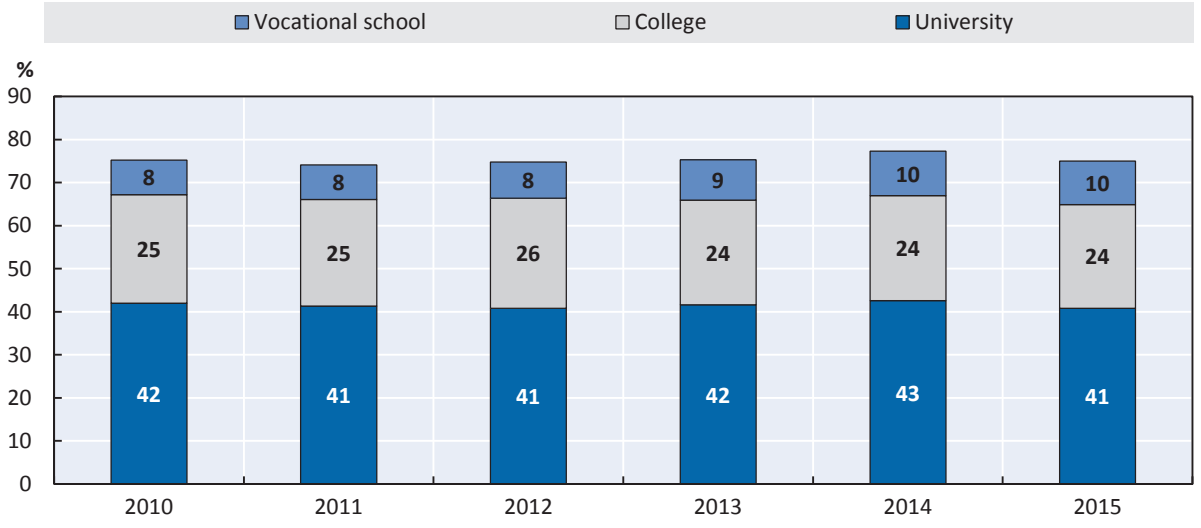
Upper secondary general education is provided in schools that provide other parts of the school curriculum as well, typically lower secondary education (or, in some instances, primary schooling as well). The funding of upper secondary education follows patterns described in Chapter 3, as does its staffing. Upper secondary general education is the most prestigious aspect of Lithuanian schooling, and the teaching workforce it attracts is slightly older, more male, and higher-ranking (e.g. "teacher expert") than the overall teaching workforce (MoES, 2016).

Performance of upper secondary general education

Access and attainment

Very high rates of entry into upper secondary education are matched by high rates of completion among its entrants, and, among those who complete, high rates of entry to higher education. Among 2014-15 entrants to upper secondary general education, 85.9% completed their programme. In 2015, 75% of school graduates continued their education in the same year (see Figure 4.7). The plurality (41%) chose university studies, while a slightly smaller proportion (24%) chose colleges, and the smallest proportion (10%) chose post-secondary training in a vocational school. Still others enter higher education outside of Lithuania, though this number is not reported in official national statistics. Approximately 12 000 students currently study outside of Lithuania, often in the United Kingdom and Denmark. School heads and university officials report that there is keen competition from foreign universities for high-performing students, including those who study at the small number of exclusive institutions (Mitchell, 2015).

Figure 4.7. Percentage of general upper secondary graduates pursuing education after graduation (2010-15)



Source: Statistics Lithuania (2016a), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

Graduate employment and earnings

National authorities do not undertake analysis of employment outcomes for students who complete upper secondary general education and transition to work, rather than higher education.

Policy issue 2: Achieving the intended curriculum in upper secondary general education

Upper secondary general education in Lithuania has been effective in permitting its participants to continue their studies at the nation's tertiary institutions. However, while the Ministry of Education and Science and its expert advisory bodies aim to develop a comprehensive and competency-focused upper secondary education, the *matura*

examination, a high-stakes school leaving and higher education entry examination, creates incentives for teachers and students to focus principally on tested subjects within the upper secondary general education curriculum, and on the accumulation rather than application of knowledge. Moreover, with one examination at the end of secondary studies – and none of consequence prior - schools find it challenging to create steady and consistent incentives for learning across the entire course of secondary studies.

The current *matura* examination, introduced in 1998, was an important innovation, creating a simpler unified higher education entry process to replace institution-based entry examinations, while helping to achieve consistency in assessment and protect against favouritism in higher education admissions. *Matura* examinations are currently the most influential feature of upper secondary education in Lithuania, as they determine the higher education institution and programmes to which students may gain entry, and prospects for publicly funded study. In meetings with the review team, students emphasised its importance – suggesting that the role of upper secondary "is to prepare for *matura*." Students allocate their time and attention to the subjects in which they will take *matura* examination. Families frequently invest in private tutoring to prepare students for *matura* examinations.

Ministry pronouncements and national curriculum documents articulate a vision of schooling that aims to be competency-focused, encouraging students to acquire not only subject-oriented content knowledge, but also complementary skills and attitudes that permit them to put this knowledge to use in a variety of settings. Examinations in some parts of the upper secondary curriculum appear to support this competency orientation. For example, *matura* foreign language assessments were revised to require the demonstration of competence through performance-based assessment of oral skills. This required that the language teaching community develop criteria and methods for assessing oral performance, re-train teachers for the scoring of performance, and reorient their classroom instructional practices.

Notwithstanding these efforts, in many other areas of the upper secondary curriculum *matura* examinations appear to create incentives that are at odds with the stated goal of providing a competency-oriented education. Further, there is recognition among policy makers and educators that *matura* examinations focus the effort, attention, and investment of learners disproportionately at the end of studies, while the preceding years of study – such as grades 9 and 10 in the gymnasium – are weakly incentivised.

Concern with the impact of the *matura* examinations has prompted MoES to initiate the *matura* project, an initiative that is scheduled to be implemented in July 2017. The project plans to establish an optional assessment, the results of which would be included in the secondary school-leaving certificate, and would count as the equivalent of a school-level *matura* examination. Students would be required to plan, implement, and present a project – in any subject that is part of the upper secondary curriculum – and to be assessed on this work by their teacher and an independent assessment board of subject professionals, who could be teachers or university faculty. To ensure the reliability and integrity of results, texts produced as a part of a student project are to be checked by anti-plagiarism software, and some projects are to be reassessed by a national board. As presently planned, it would award extra points on admission to higher education institutions to those applicants who complete *matura* project with distinction. It is hoped that this project-based learning would encourage not only the development of subject knowledge, but wider competencies including creativity, analytical skills, critical thinking, and communication skills.

Durable and successful reforms that align assessment and curriculum must meet the needs of students, teachers and higher education institutions. Higher education institutions need reliable information about student abilities that is efficiently obtained, permitting them to identify who is suited to their study programmes, and providing them a consistent and predictable basis for admission decisions. Teachers, for their part, seek an assessment that aligns to the curriculum they deliver in the classroom setting. Students are concerned, understandably, that assessments permit them a predictable and effective pathway to higher education.

A voluntary, optional, and portfolio-based approach to assessment may not be sufficiently attractive to students, teachers, or higher education institutions to achieve much take-up. Teachers may find the project-based activities to be unfamiliar and burdensome. Some students may find a project-based assessment preferable to an examination – in fine or performing arts, for example. Those aiming to study outside Lithuania, or to enter science and technology fields, may not. Academics in some higher education fields may encourage project-based assessment, but many will find the efficiency and reliability of examination-based assessment to be preferable. And, if take-up is limited to small numbers of students, the *matura* project will do little to better align the stated (competency-oriented) and delivered curriculum.

Policy recommendations

Recommendation 4.2.1: Monitor the matura *project initiative, and consider alternatives to it*

Lithuanian educators and policy makers who wish to better align school leaving and higher education entry examinations with school curriculum should monitor closely the take-up of the project option, and keep under consideration other means by which assessment can better support the upper secondary curriculum.

To provide stronger incentives for students to invest earlier and more comprehensively in the secondary curriculum, class-based marking of student assignments could be used along with *matura* examination results in establishing the student's competitive score assigned for higher education entry. Course-based marks – from across the curriculum, and from prior years – need to be reliable and comparable if they are to be used for higher education entry. This could be accomplished through the use of externally moderated grading practices. Moderation is a practice with which some countries have wide experience, and it has important benefits for teacher professional development as well as student marking.

Alternatively, Lithuanian educators could consider using the 10th grade national student achievement examination as a component of higher education admission process – in conjunction with the *matura* examinations. Administered at the end of grade 10, the examination would hold students responsible for learning prior to their final two years of upper secondary study, and it would be externally validated and criterion-referenced, providing the efficiency and reliability that higher education institutions seek.

A long-term approach to creating an examination system that supports a competency-oriented curriculum is to implement teacher-led assessment redesign. This would draw upon and extend the model of curriculum redesign used for foreign language assessment, applying it across all study fields that are examined in the *matura*. With the support of the Ministry, respected teachers from across the upper secondary curriculum – from physics to geography – could collaborate in the redesign of the *matura* assessment, as was done

with foreign language assessment. This would be accompanied by retraining teachers in marking, and by assisting teachers in reorienting classroom practices and instructional materials to align to the newly redesigned assessment. This assessment reform could be linked to changes in the nation's teacher competency framework, to the reform of teacher training programmes, and to the rejuvenation of the teaching workforce, creating durable changes in teaching and learning.

Box 4.1. Consistent and reliable marking through moderation

A key way to increase the reliability of assessment and marking is to systematically implement moderation procedures that aim to ensure the quality and comparability of assessment judgement. This may involve teachers cross-marking each other's assessments or discussing student performance in groups, or a competent external organisation systematically checking school-based marking. While in many settings moderation occurs informally within and between schools and may not be documented, some education systems have introduced systematic arrangements for moderation. This is particularly the case in education systems where centrally developed examinations with high stakes for students are corrected and marked locally by teachers.

- **France:** teachers examine their own students through continuous classroom assessment, while teachers from another school are responsible for marking written examinations leading to diplomas or certification.
- **Denmark:** centrally appointed external examiners correct examination papers and are assisted through national guidance materials such as performance criteria, exemplars, rubrics and keys. There is also moderation of marking by external examiners who attend oral examinations.
- **Netherlands:** examinations are corrected by the students' own teacher and moderated by a teacher from another school using a central scoring protocol. The school boards are responsible for the proper handling of the procedures. In case of disagreement, external moderation by a competent body is provided.
- **Queensland, Australia:** The examination system is school-determined and based, but achievement standards and scoring are externally moderated. Moderation processes for the Senior Certificate (Year 12) involve subject-based panels of expert teachers providing advice to schools on the quality of their assessment programme and their judgements of quality of student performance based on sample portfolios. The system involves follow-up with schools where panels identify issues regarding assessment and standards. There is negotiation of the final results to be recorded on the Senior Certificate (Sebba and Maxwell, 2005 in Santiago et al., 2011). Similarly, procedures adopted by educational jurisdictions and particular schools for moderating internal summative teacher judgements (so-called A-E ratings) also facilitate common understanding of year level proficiency standards and foster the development of professional learning communities that can provide crucial support for improving opportunities for student learning and building teacher capacity.
- **New Zealand:** an external moderation system is also in place to ensure the dependability of internal assessments in Years 11-13. The New Zealand Qualifications Authority directly checks the quality of internal assessment through a sampling approach. Schools are required to submit 10% of internally assessed student work for NZQA moderation to make sure the assessment is appropriately aligned with standards. The moderation process does not affect the marks assigned to assessment samples by teachers, but is intended to provide feedback to teachers and to inform future assessment policy development at the system level.

Sources: Adapted from OECD (2013), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, http://dx.doi.org/10.1787/9789264190658-en; Santiago, P. et al. (2011), *OECD Reviews of Evaluation and Assessment in Education: Australia*, www.oecd.org/edu/evaluationpolicy; Nusche, D. et al. (2012), *OECD Reviews of Evaluation and Assessment in Education: New Zealand*, www.oecd.org/edu/evaluationpolicy.

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Chapter 5

Tertiary education in Lithuania

Lithuania has achieved an especially high level of participation in tertiary education, and its graduates, on average, experience labour market outcomes typical of OECD member countries. This is accomplished with modest levels of per pupil spending, by institutions that operate with substantial autonomy, and within a system of transparent funding driven by student demand. However, the tertiary sector now faces serious challenges. Lithuania's tertiary institutions are too numerous and small to achieve the levels of efficiency and quality that the nation needs. The university system has not reached a level of satisfactory performance in research and development, and the wider tertiary system has not substantially benefitted from international mobility among students and researchers. This chapter examines these challenges, and provides policy options with respect to urgent questions of system scale and organisation – and longer term challenges of internationalisation and equity facing the tertiary system.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

Since the re-establishment of Lithuanian independence, the nation's system of tertiary education has undergone comprehensive and fundamental changes in its organisation and structure. Higher education institutions operate with a broad scope of autonomy, and are supported by an innovative and transparent public funding scheme. These changes have permitted it to perform, in some important respects, at a high level. Lithuania has achieved an especially high level of participation in tertiary education. The labour market outcomes of its tertiary graduates are similar to those, on average, observed across the OECD member countries. Tertiary education is delivered by institutions that offer both occupationally focused programmes and opportunities for theoretically focused studies, and within a system that has robust quality assurance underpinning it. All of this is accomplished on comparatively modest levels of per pupil spending.

Notwithstanding these important accomplishments, serious challenges now face the nation's system of tertiary education. Faced with rapidly declining numbers of students entering tertiary education, Lithuania has a network of tertiary institutions that are too numerous and too small to achieve the levels of efficiency and quality that it needs. Lithuania has not achieved a record of satisfactory performance in research and development among its higher education institutions, nor has it benefitted as fully as it might from international mobility among students and researchers. And, while political leaders and educators have grappled with pressing questions of system scale and organisation, they have largely overlooked questions of equity in access, resourcing and attainment within their tertiary system.

Consolidating the nation's tertiary education system – its public universities, colleges, and research centres – is urgent and important. This will permit increased efficiency in the use of public resources, and to strengthen the system's capacity to carry out research and teaching at international levels – a necessary advance if it is to more successfully compete for international funding, researchers, and students. Further improvements to the performance of its tertiary institutions will require that resources flow to departments and programmes that are performing at high levels. Here responsibility rests with public officials, who can ensure that funding for research is more fully linked to performance, and with higher education institutions, which need to fully exercise the leadership opportunities permitted them by reforms to funding and governance. In the longer run, after addressing immediate questions of system scale and organisation, policy makers should turn their attention to overlooked questions of equity in access, resourcing and attainment within their tertiary system.

The state of tertiary education

At the time of its independence, Lithuania inherited a system of tertiary education shaped by its Soviet past and distinguished by centralised and extensive state control over the curriculum and budgets of higher education institutions; a unitary system of university institutions and a separate non-tertiary system of vocational training; the separation of universities and public research institutes; and by the absence of private higher education institutions. Since that time tertiary education in Lithuania has undergone fundamental changes – in structure, scope, governance, funding, and quality assurance – permitting it to perform, in some key dimensions, at high levels.

Governance and structure of tertiary education

One legacy of the Soviet era for an independent Lithuanian education system was a network of public vocational training institutions that awarded post-secondary, non-tertiary qualifications (*specialusis vidurinis išsilavinimas*). In 1991 those institutions were reorganised into advanced vocational schools. In 1999, there were 70 State and 18 private advanced vocational schools providing post-secondary professional training programmes (*aukštesnysis išsilavinimas*). Following the adoption of the Law of Higher Education in 2000, the government committed itself to development of a binary higher education system consistent with the emerging Bologna Process, and to creating a higher education sector in which higher professional education was delivered by bachelor degree-awarding institutions. To accomplish this it created an EC-supported process that resulted in the identification and consolidation of the sector's institutions and programmes into BA-awarding institutions (OECD, 2002). In Vilnius, for example, three separate post-secondary advanced vocational schools – of Electronics, Business, and Economics – were merged into a single entity, the Vilnius College. In 2007 colleges/universities of applied science were authorised to award professional bachelor degrees, establishing a formally binary system of tertiary education, in which universities are authorised to award bachelor's, master's and doctoral degrees, and where colleges are authorised to offer award professional bachelor's degrees (Leisyte, Zelvys and Zenkiene, 2015). By 2015-16 Lithuania's college sector consisted of 23 tertiary institutions (11 private and 12 public) that contained about 30% of all higher education enrolments.

While the autonomy of higher education institutions is established in the Lithuanian constitution, universities and colleges operate on legally distinct foundations, and with different missions. Universities are established by *Seimas*, operate under its statutory guidance, and are awarded a budget line separate from that of the Ministry. Colleges function under the regulatory authority of the Ministry of Education and Science, and are financed from budget allocations designated to the Ministry.

University and college missions also differ. Colleges are charged with preparing students for working life and engaging in collaboration with community and commercial collaborators, while universities remain solely responsible, in principle, for graduate education and research. This binary differentiation of tertiary institutions provides Lithuania with a structure of tertiary institutions similar in important respects to many of its Nordic and Northern European peers, such as the Netherlands, Germany, and Finland. Nonetheless, important differences remain between Lithuanian colleges and universities of applied science elsewhere in Europe – such as Finland, Germany, Switzerland, and the Netherlands (de Weert and Soo, 2009). Lithuanian colleges offer a professional bachelor degree that is shorter in duration than the Lithuanian university bachelor degree – three years, rather than four; colleges do not have a statutory mandate or dedicated national government funding stream in support of applied research or technology transfer; and they are not authorised to offer degrees beyond the professional bachelor level. The last of the limitations with respect to their mission is a source of frustration to some within the college sector, and has prompted calls from them to authorise colleges to award professional masters' degrees.

Private higher education institutions were authorised to award degrees in 1999. Their establishment was relatively late compared to other post-communist countries, and after an initial period of growth, enrolments in private institutions have remained a modest share of the wider higher education system. In the college sector enrolment in private institutions fell very slightly from 2005-06 to 2014-15 (from 20% to 19%), while in the university sector during the same period a modest increase occurred (from 4% to 6%). Private, independent higher education institutions 2014-15 enrolled about 10% of

students in Lithuania – as compared to 28% in neighbouring Poland, and 27% in Latvia, and 10% in Estonia (Statistics Lithuania, 2016a; OECD, 2015).

The share of enrolments in private institutions has been shaped by Lithuania's regulatory and funding environment. Stringent requirements for accreditation of private institutions and programmes have constrained growth (Pachuashvili, 2011). Private higher education institutions have also had limited access to public funding. They were initially authorised in 2009 to obtain public funding through the newly-adopted student voucher; however, the Constitutional Court of Lithuania subsequently ruled that only programmes unavailable in public institutions would be eligible for student voucher funding in private institutions (and scholarships provided directly to students) (Švaikauskienė and Mikulskiene, 2016).

Post-independence higher education funding and governance reforms in Lithuania have together aimed to strengthen the capacity of institutions to become self-managing and responsive institutions that exercise a widened scope of autonomy.

Funding for higher education has been strongly oriented to student demand through the introduction of a student voucher funding system. Following the adoption of a student voucher funding methodology for secondary schools (in 2002) and vocational schools (in 2004), the principle of voucher funding was extended to higher education in 2009. Under the voucher funding system, the Ministry of Education and Science makes initial resource allocation decisions about the number of vouchers it wishes to offer, their allocation among college and university sectors of higher education and study fields, and the value of vouchers – or "student baskets". In 2016 student basket amounts for bachelor degree programmes offered by universities ranged from EUR 1 271 (humanities) to EUR 11 610 (aircraft pilot training), while college professional bachelor programmes were reimbursed between EUR 1 076 (humanities) and EUR 4 359 (music).

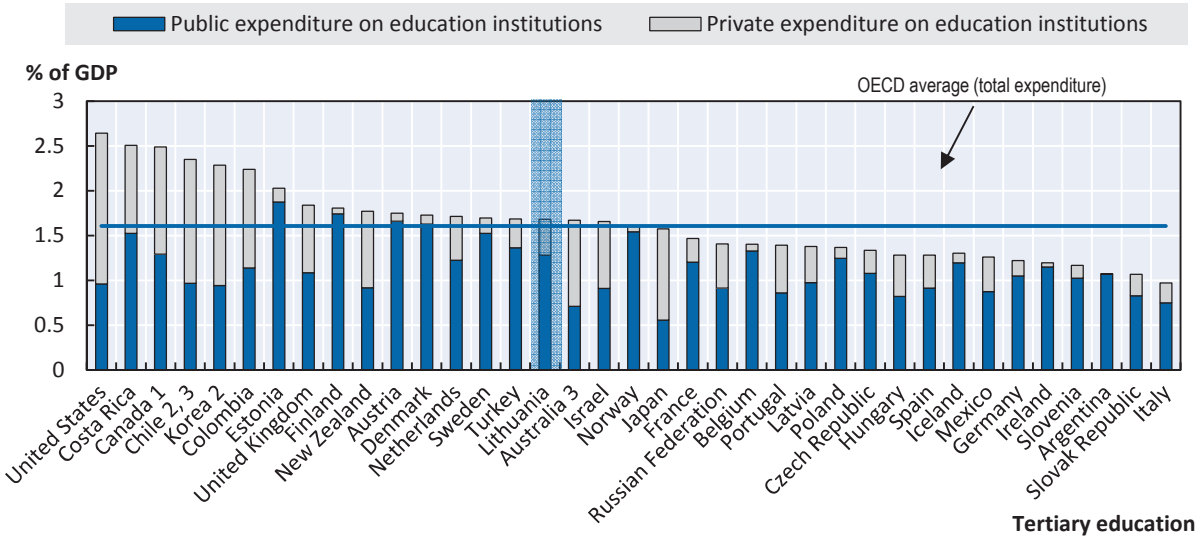
Students compete for publicly funded study places under rules established by the Ministry, and within the framework of centrally administered national examinations for higher education entry, *matura* examinations. The Ministry establishes minimum requirements that students must satisfy to obtain a study voucher - including the *matura* fields of study in which students must examine, and it provides a nationally co-ordinated clearance process. Students identify their preferences with respect to study programme(s) and institution(s), and obtain a voucher - a publicly funded seat - based upon the demand for places in the programme and institution of choice. While roughly half of all seats are publicly funded, prospects of funding vary widely by field and institution. Though this public voucher framework – and student payments for privately-funded study places – instructional funding is linked to student demand. Institutional leaders, for their part, are provided a public funding stream that is driven by student demand, but which arrives not as a line item, but a lump sum (or "block grant") that can be flexibly allocated within their institution according to local priorities and needs.

Flexibility in the use of public funding has been complemented by reforms to university governance that have aimed to strengthen the management capacities of university rectors and their staff – while making them responsive to stakeholders beyond their institutions. Changes to the Law on Higher Education and Research in 2009 and 2016 have shifted university governance from one in which faculty senates governed universities to one in which university boards, comprised jointly of faculty members and external stakeholders, exercise strategic decision-making and appoint rectors. At the same time, the scope and depth of Ministry regulation governing universities has been narrowed, including regulation of personnel policies, financial management, fee-setting authority, and capacity to introduce new study programs (Martinaitis, Gaušas and Paliokaitė, 2016).

The expansion of university autonomy through funding and governance reforms was accompanied by the introduction of an external process for higher education quality assurance. The policy guidelines and methodology of external quality assurance are established by the Ministry, and implemented by Centre for Quality Assessment in Higher Education (*Studijų kokybės vertinimo centras, SKVC*). Established in 1995 as an independent and expert state agency located within the Ministry, the SKVC commenced programme evaluations in 1998, exercising both *ex ante* and *ex post* review of all study programmes offered by higher education institutions. Lithuania's arrangements for quality assurance have been modified with time and experience, shifting towards greater institutional responsibility and initiative: higher education institutions were given responsibility for establishing internal quality assurance processes (in 2009), and the *ex ante* review of programmes by the centre was scaled back to a desk-based review of new programme applications (in 2011). Although programme-level review was simplified, the SKVC was also tasked with the review of higher education institutions, and made responsible for examining their institutional leadership and management capabilities. Throughout its existence the centre has consistently made wide use of international experts, reflecting both a need for external and disinterested participants, as well as a commitment to draw widely upon international experience.

Taken together, 25 years of reforms to tertiary education in Lithuania succeeded in creating and refocusing tertiary education institutions in ways that are broadly aligned to the nation's goals, and in establishing a tertiary policy framework aligned to international norms of good practice and integrated to the European Higher Education Area. These changes have helped the system to perform well in some important respects, which are examined below.

Figure 5.1. Public and private expenditure on education institutions as a percentage of GDP by level of education (2013)



1. Year of reference 2012.
2. Public does not include international sources.
3. Year of reference 2014.

Countries are ranked in descending order of expenditure from both public and private sources on tertiary educational institutions.

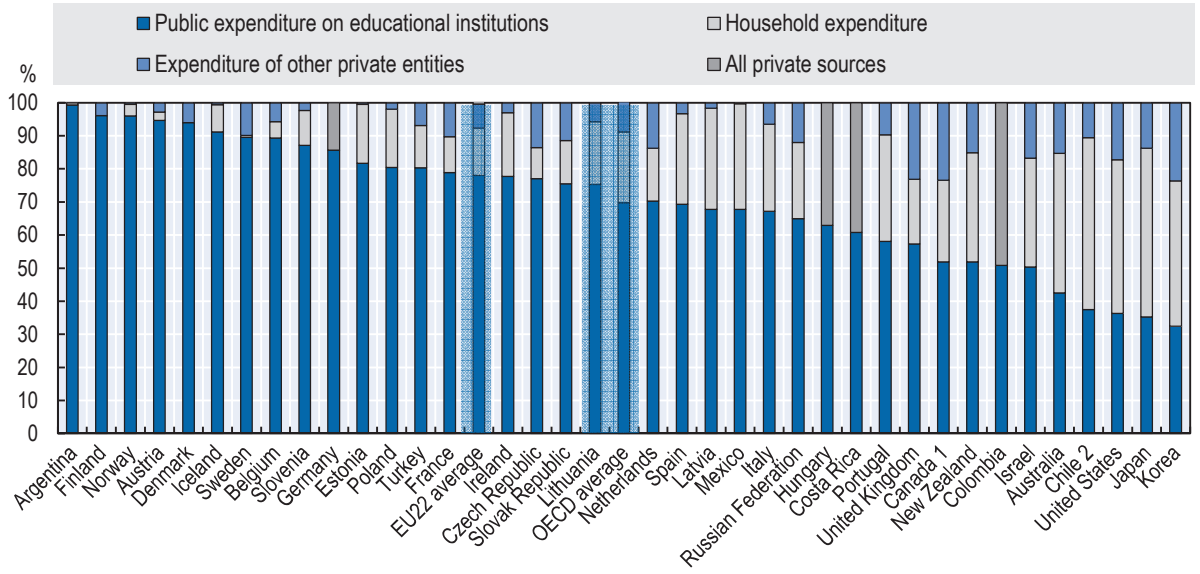
Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Figure B2.2, http://dx.doi.org/10.1787/eag-2016-en.

Funding higher education

The share of national income – public and private - spent on tertiary education institutions in Lithuania is close to international benchmarks, with 1.7% of GDP spent on tertiary education. While this level of commitment is greater than that of Latvia, it is noticeably lower than that of Estonia, a tertiary system that many higher education stakeholders in Lithuania identify as an aspirational peer.

The mix of public and private spending on tertiary education institutions is now near to OECD-wide figures, and levels of private spending are higher than that of Estonia and its Nordic neighbours. Household expenditures, in particular, are higher in Lithuania (19%) than in these countries, arising from both the role of private institutions, and reliance of private payments to fund approximately one-half of seats in public college and university institutions (Figure 5.2). Tuition fees are set by higher education institutions, and vary by study field. For citizens of Lithuania or other EU member countries, 2015-16 student fees for full-time studies range from EUR 1 000 to 5 300 per year for bachelor studies, from EUR 2 200 to 6 500 per year for master studies and from EUR 7 100 to 8 500 per year for postgraduate studies.

Figure 5.2. Distribution of public and private expenditure on tertiary educational institutions (2013)



1. Year of reference 2012.
2. Year of reference 2014.

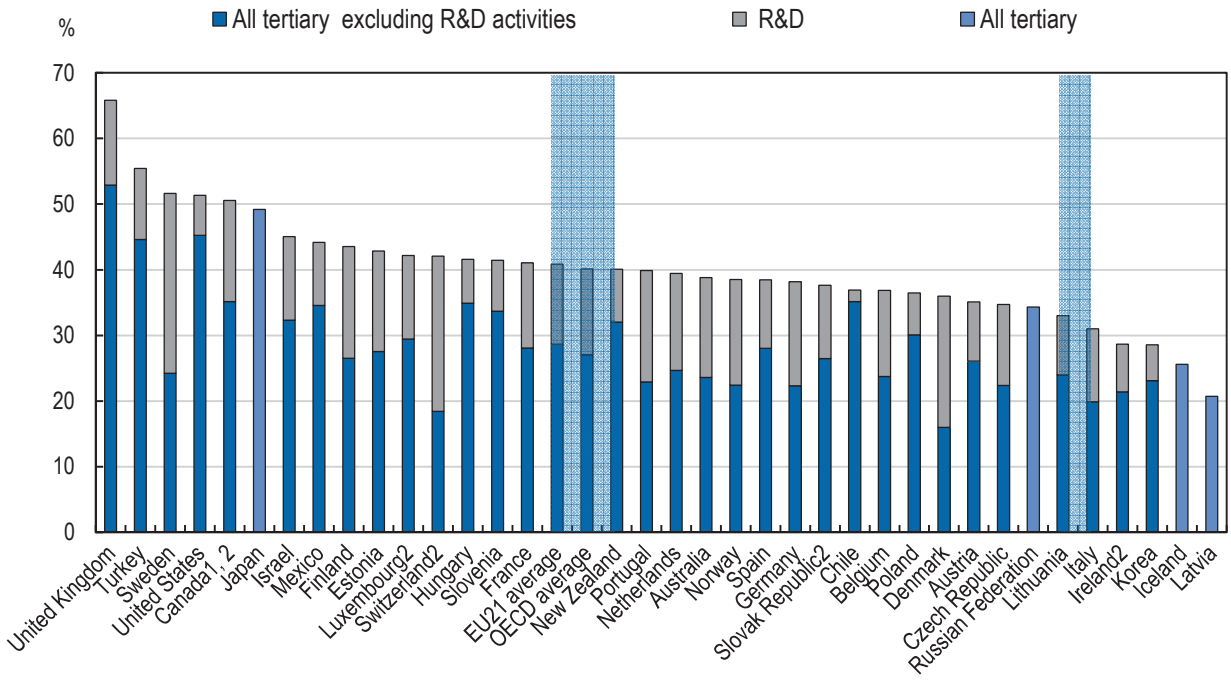
Note: "All private sources" include subsidies attributable to payments to educational institutions received from public sources.

Countries are ranked in descending order of the percentage of public expenditure on educational institutions by level of education.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Figure B3.2, http://dx.doi.org/10.1787/eag-2016-en.

While the share of national income committed to tertiary institutions in Lithuania is comparable to the OECD average (Figure 5.3), Lithuania had a GDP per capita nearly one-third lower than that of the OECD average in 2014 (31%). As a result, total spending per student by tertiary institutions – USD 8 700 vs. 15 800 (PPP) – is 55% of the OECD average and well below that of Nordic neighbours – though broadly comparable to annual expenditure per student in Poland, Latvia and Russia.

Figure 5.3. Annual expenditure per student by tertiary educational institutions for all services, relative to per capita GDP (2013)



1. Year of reference 2012.

2. Public institutions only.

Countries are ranked in descending order of total expenditure per student by tertiary educational institutions relative to per capita GDP.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Table B1.4, http://dx.doi.org/10.1787/eag-2016-en.

Performance of tertiary education

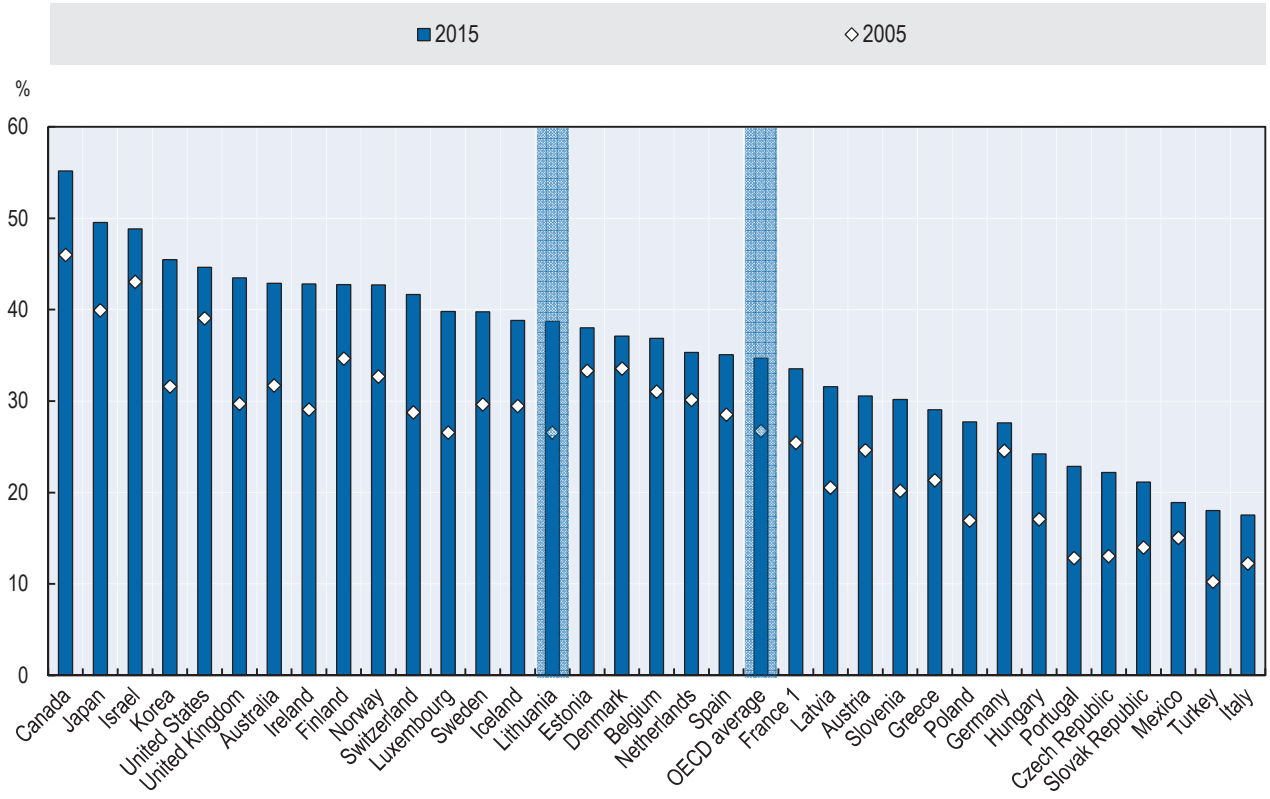
Access and attainment

The scope of participation in tertiary education has substantially widened, and rates of entry and attainment now exceed OECD and European averages. Lithuania has achieved especially wide access to tertiary education, particularly at the bachelor's degree level. Tertiary attainment among adults in Lithuania now exceeds the OECD average and EU policy targets, and is nearly equal to that of Nordic peers, such as Sweden and Norway – and higher than that of Baltic neighbours Latvia and Estonia.

In 2014, 41% of 20-24 year-olds were enrolled in tertiary education, a share roughly equal to that of neighbouring Poland, and higher than in 32 OECD member countries.

In 2015, 39% of Lithuanian 25-64 year-olds were tertiary-educated, as compared to an OECD average of 36%, and among 25-34 year-olds the rate of tertiary attainment was 55%, well above the OECD average of 42% - a rate exceeded only by Japan, Korea and Canada (Figure 5.4).

Figure 5.4. Trends in tertiary educational attainment among 25-64 year-olds, 2005 and 2015



1. Year of reference 2014.

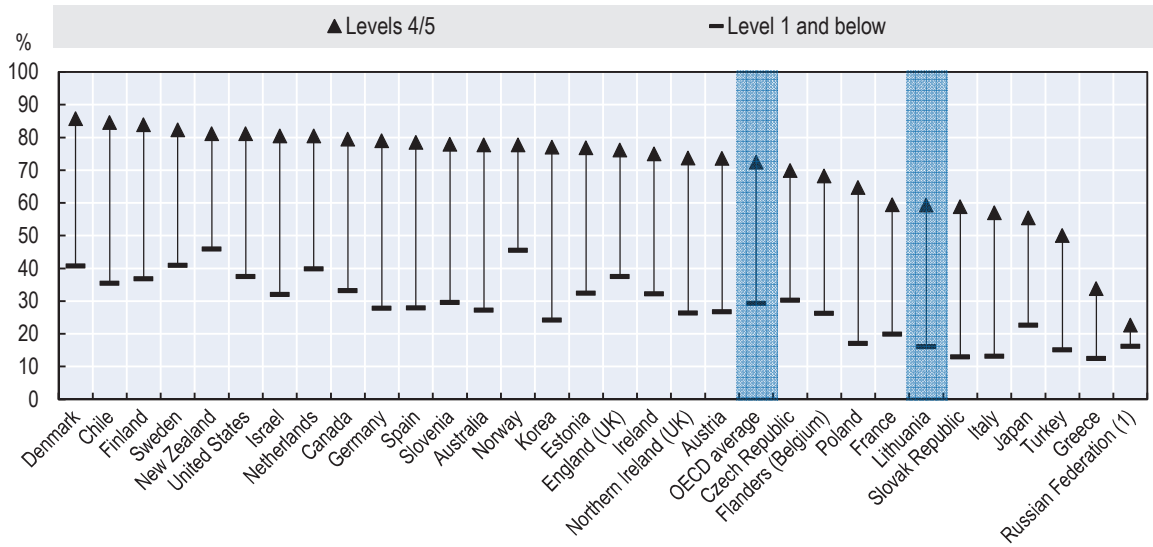
Countries are ranked in descending order of the percentage of 25-64 year-olds with tertiary education, regardless of the level of tertiary attainment.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Table A1.3, http://dx.doi.org/10.1787/eag-2016-en.

Although tertiary participation and attainment are quite high in Lithuania, levels of participation among adults in work-related education and training are quite low – well below that of OECD member countries participating in the Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), though similar to other post-socialist economies (Slovak Republic, Russian Federation, Estonia, Poland) (Figure 5.5). Levels of participation are highest among those with high-level skills, and lowest among those with low skills, as is the pattern elsewhere. Most adults who participate in lifelong learning do so through education institutions, and only rarely (10%) is education and training provided by their employer (Figure 5.6).

Lithuania has established a policy target with respect to lifelong learning among its 25-64 year-old population (MoES, 2016). It remains to be seen whether participation in job-related adult learning will generate economic rewards (increased probability of employment, or increased wages) sufficient to encourage wider participation.

Figure 5.5. Participation in job-related education and training, by literacy level (adults aged 25-65 years), Survey of Adult Skills



1. The sample for the Russian Federation does not include the population of the Moscow metropolitan area.

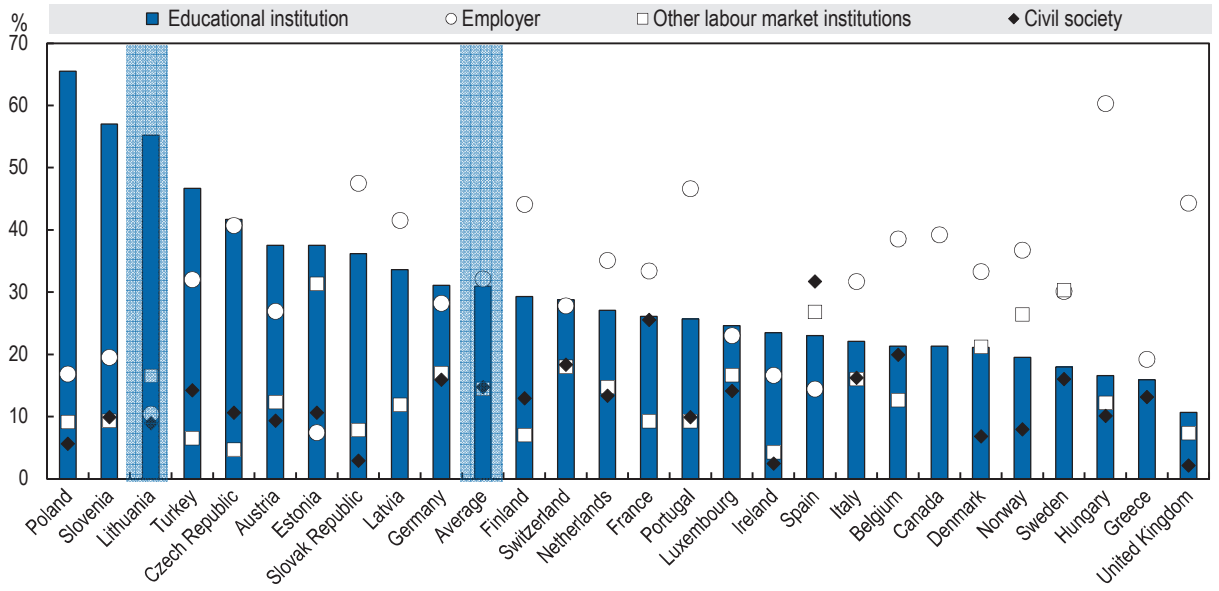
Note: Chile, Greece, Israel, Lithuania, New Zealand, Slovenia and Turkey: Year of reference 2015. All other countries: Year of reference 2012.

Countries and subnational entities are ranked in descending order of the percentage of 25-64 year-olds scoring Level 4 or 5 who participate in job-related education and training.

Source: OECD, Survey of Adult Skills (PIAAC) (2012, 2015).

Figure 5.6. Distribution of non-formal education and training activities, by provider (2011)

Adult Education survey, 25-64 year-olds



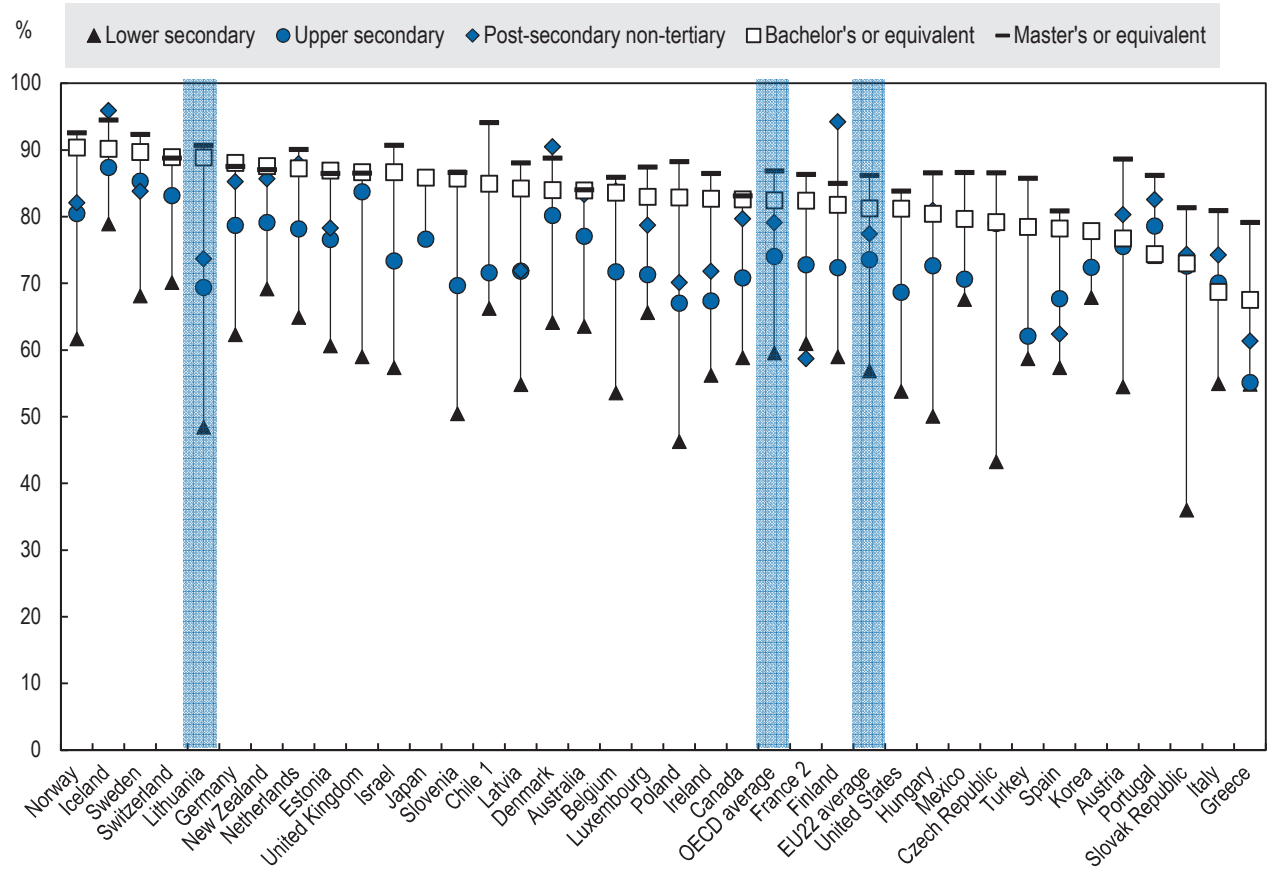
Countries are ranked in descending order of the percentage of non-formal education provided by educational institution (as reported by 25-64 year-olds who participated in such programme in the 12 months prior to the survey).

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Figure C6.b, http://dx.doi.org/10.1787/eag-2016-en.

Graduate employment and earning

Labour market outcomes in Lithuania for those who participate in tertiary education are comparable to patterns found, on average, across OECD member countries. Employment rates among adults (25-64) who have bachelor's degrees are substantially higher (89%) than among those whose highest educational qualification is at the upper secondary level (69%) – a difference that is wider than observed in other Baltic nations, or across OECD member countries as a whole (82% and 74% respectively) (Figure 5.7) (OECD, 2016a).

Figure 5.7. Employment rates among 25-64 year-olds by educational attainment (2015)



1. Year of reference 2013.

2. Year of reference 2014.

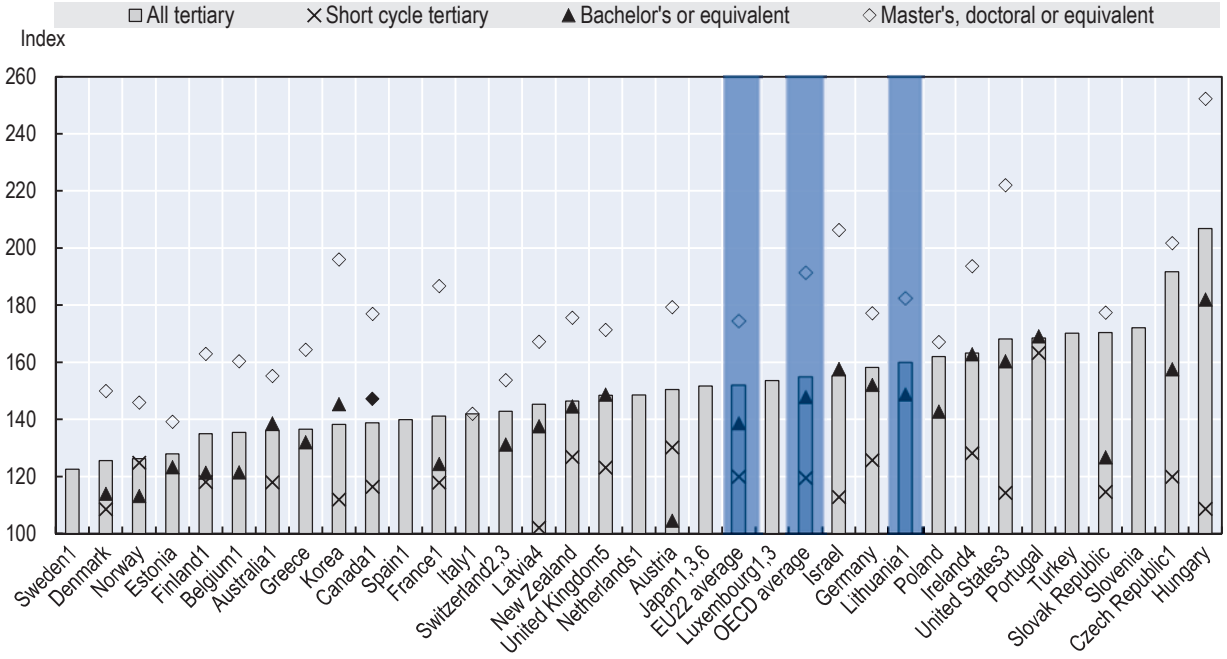
Countries are ranked in descending order of the employment rate of adults with bachelor's or equivalent degrees.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Figure A5.1, http://dx.doi.org/10.1787/eag-2016-en.

At both the bachelor (149%) and graduate degree level (182%) the wage premium for full-time workers – as compared to that of full-time workers with an upper secondary education – is broadly similar to OECD averages (148%, 191%), and modestly higher than of nations in the region, including Latvia (138%, 167%) and Poland (143%, 167%).

Figure 5.8. Relative earnings of adults working full time, by educational attainment (2014)

25-64 year-olds with income from employment; upper secondary education = 100



Note: Tertiary education includes short cycle tertiary, bachelor's, master's, doctoral or equivalent degrees.

1. Year of reference differs from 2014.

2. Some levels of education are included with others.

3. Index 100 refers to the combined ISCED levels 3 and 4 of the educational attainment levels in the ISCED 2011 or ISCED-97 classification.

4. Earnings net of income tax.

5. Data for upper secondary attainment includes completion of a sufficient volume and standard of programmes that would be classified individually as completion of intermediate upper secondary programmes (18% of the adults are under this group).

6. Data refer to all earners.

Countries are ranked in ascending order of the relative earnings of 25-64 year-olds with tertiary education.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Chart A6.1, http://dx.doi.org/10.1787/eag-2016-en.

Research and innovation

While Lithuania has wide participation in tertiary education, and makes a commitment to funding that is comparable to the OECD average, the performance of the Lithuanian higher education system with respect to research and innovation is significantly below international standards.

The limited research and innovation outputs of Lithuanian higher education institutions are reflected in the modest international rankings of the nation's higher education institutions. In the Webometrics Ranking of World Universities, Vilnius University is the highest ranking Lithuanian university, ranking 305th out of 6 050 European universities. Seven others follow in ranks 490 to 992nd, while the remaining institutions do not rank in the top 1 000. One Lithuanian university, Vilnius University, appears in the Times Higher Education World University Rankings (in the 600-800 range) and U-multirank platform. None of its universities are represented in the CWTS Leiden Ranking 2015 of university scientific performance (OECD, 2016b, pp. 108-109).

National indicators of innovation performance reflect, in important part, the limited innovation activities of the Lithuania's business sector, including its weak interest in, investment in, and take-up of innovation (OECD, 2016b, p. 82). Nonetheless, measures of innovation output drawn from bibliometric, patent, trademark, and design data also provide evidence of the limited capacity of Lithuanian higher education to engage in research and innovation at international levels.

Scientific publications per million of population, while higher than Latvia and on par with Poland, are below those of Estonia and the Czech Republic, and far below – by a factor of 3.0 or 3.5 – those of innovation intensive countries such as Sweden and Denmark. Highly cited scientific publications comprise 6% of scientific publications. Here, too, Lithuania outperforms Latvia and Poland, but lags behind Estonia and Sweden and Denmark.

Lithuania's performance with respect to scientific publications published with international co-authors – important for a small country that has difficulty achieving critical mass – follows the same pattern as high-citation publications. Approximately 40% of scientific publications have international collaborators, a share smaller than that of Estonia and Nordic high performers, and modestly higher than that of Latvia and Poland. A second form of collaboration, co-publications between public and private authors, is also quite low, reflecting weakly developed industry-academia scientific collaboration in Lithuania. Patenting, trademarking, and registration of industrial designs – which measure the potential economic value of innovation – are likewise modest (OECD, 2016b, pp. 77-78).

Table 5.1 Innovation performance of select European countries (2015)

	Scientific publications per million population	International scientific co-publications per million population	Public-private co-publications per million population	PCT patents applications per billion GDP (in PPS€)
Lithuania	1 022	355.3	1.7	0.60
Estonia	1 997	907.7	6.8	1.00
Latvia	760	221.0	0.5	0.82
Poland	981	251.2	3.7	0.51
Denmark	4 066	2 066.7	143.5	6.24
Sweden	3 576	1 774.1	107.8	7.99
EU-28 average	-	459.2	33.9	3.53

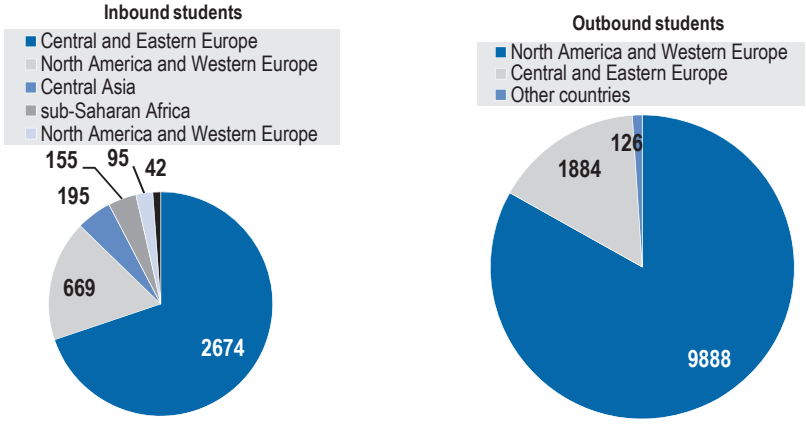
Sources: SCImago (2016), Scimago Journal & Country Rank, http://scimagojr.com/index.php (accessed 3 August 2016); European Commission (2016), European Innovation Scoreboard, http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/.

International engagement

Lithuanian policy makers have committing themselves to the internationalisation of their tertiary system, and they and higher education stakeholders recognise that wider internationalisation is critical to the well-being of their higher education system, and to the future of their nation. They have set policy targets for international student mobility and for the internationalisation of research. The internationalisation of research is to be achieved through researcher collaboration and researcher mobility, including the attraction of international researchers to Lithuania. For example, in 2009 "Higher Education and Research Reform in Lithuania" set a target of 10% of international students at higher education institutions of Lithuania by 2020 (MoES, 2011). A series of policy documents have outlined plans to increase the number of foreign academics working in Lithuanian higher education institutions, although no specific policy targets have been set (Yudkevich, Altbach and Rumbley, 2016).

International student flows have been limited and asymmetric, and below national policy targets. In 2013 about three times more Lithuanian students opted to study outside Lithuania (11 898) than foreign students chose to enrol in Lithuanian tertiary institutions (3 915). Most Lithuanian students chose to study in Northern Europe – two thirds chose to study in the United Kingdom, Denmark, the Netherlands, or Germany. Conversely, most foreign students – two-thirds of them – arrived in Lithuania largely from former Soviet Republics, or from neighbouring states (UNESCO Institute for Statistics, 2016a and b). Lithuania's weak attraction to international students extends across tertiary levels, both at the first degree level and PhD levels: in 2013, 2.4 and 3.0% of bachelor and PhD students in tertiary institutions were, respectively, were international students (OECD, 2016a).

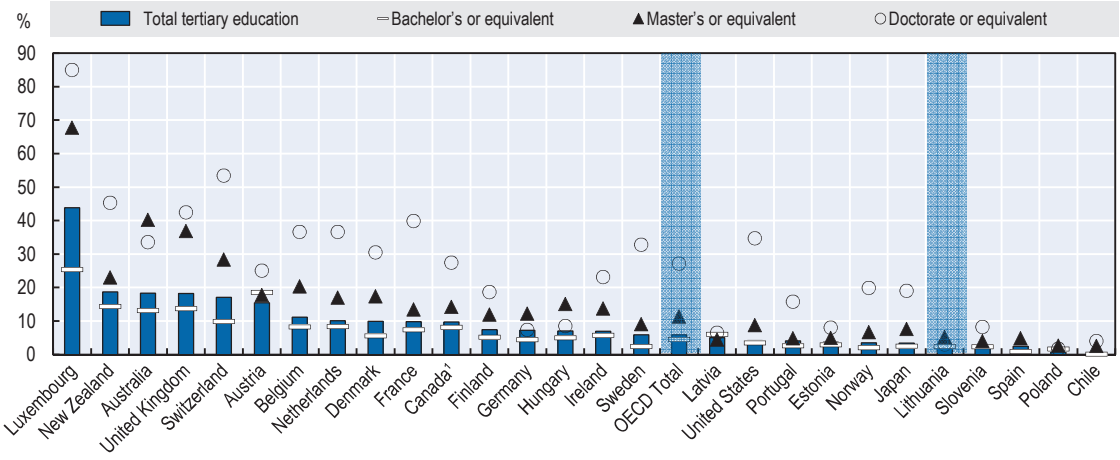
Figure 5.9. Internationally mobile students in Lithuania and Lithuanian students studying abroad, by region (2013)



Sources: UNESCO Institute for Statistics (2016a), "Inbound internationally mobile students by region of origin", *UIS.Stat database*, UNESCO-UIS, http://data.uis.unesco.org/index.aspx?queryid=170 (accessed 3 August 2016); UNESCO Institute for Statistics (2016b), "Outbound internationally mobile students by host region", *UIS.Stat database*, UNESCO-UIS, http://data.uis.unesco.org/index.aspx?queryid=172 (accessed 3 August 2016).

Figure 5.10. Student mobility in tertiary education, by ISCED level (2014)

International student enrolment as a percentage of total tertiary education



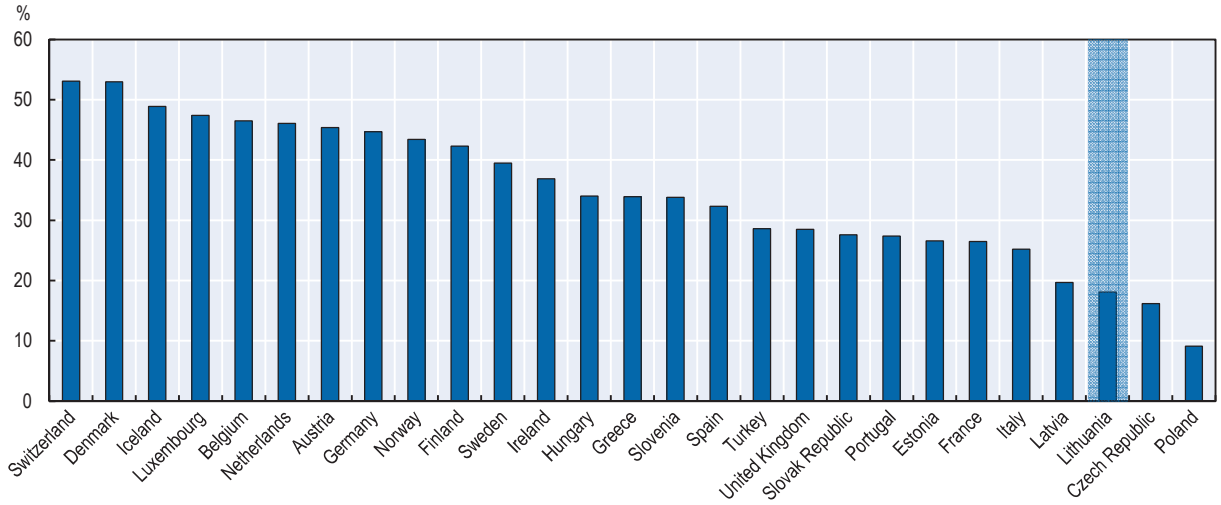
1. Year of reference 2013.

Countries are ranked in descending order of the percentage of international students in total tertiary education.

Source: OECD (2016a), *Education at a Glance 2016: OECD Indicators*, Chart C4.1, hhttp://dx.doi.org/10.1787/eag-2016-en.

International mobility and collaboration among Lithuania's researchers remain at modest levels – and below policy targets. International collaboration in scientific publications (Table 5.1) is at one about one-third the level of Estonia. The proportion of higher researchers working outside of Lithuania in international settings is well below that of Estonia and other high-performing countries in Central and Eastern Europe, such as Hungary (Figure 5.11).

Figure 5.11. Percentage of higher education institution researchers who have worked abroad for more than 3 months in the last 10 years (2012)



Countries are ranked in descending order of the percentage of higher education institution researchers who have worked abroad for more than 3 months in the last 10 years.

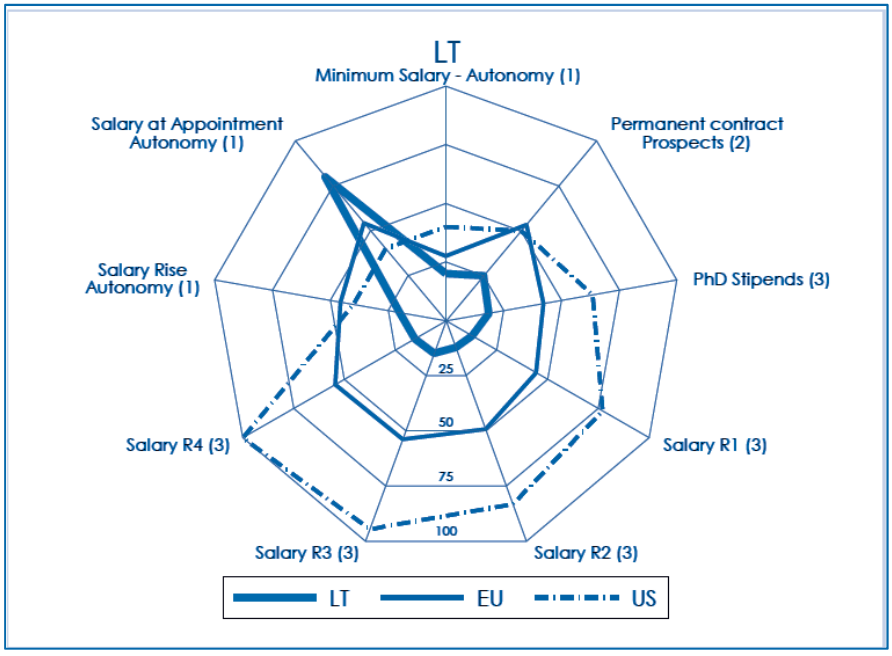
Source: IDEA Consult et al. (2013a), "Support for continued data collection and analysis concerning mobility patterns and career paths of researchers: Deliverable 5 - Higher Education Sector Report (Indicator report)", Final Report MORE 2 to the European Commission, https://cdn2.euraxess.org/sites/default/files/policy_library/report_on_survey_of_researchers_in_eu_hei.pdf.

Lithuania's higher education system finds it difficult to retain Lithuanians who wish to study for a PhD, and struggles to attract researchers from abroad who have taken their degrees outside of Lithuania. The ratio of Lithuanians completing a PhD abroad to foreign PhD students in Lithuania is 10 to 1 (OECD, 2016b). An estimated 2% of Lithuanian researchers hold foreign citizenship - as compared to 15% of those in 33 EU and associated countries, 12% in Estonia, and 21-31% in Nordic higher education systems (IDEA Consult et al., 2013a, Table 8). Most foreign researchers in Lithuania hold citizenship of European countries that are not members of the EU.

Although Lithuanian researchers reported average levels of satisfaction with many aspects of their current academic position, about 30% of Lithuanian survey respondents (29.6%) reported satisfaction with their salaries – well below the EU average (53%), and ahead of only four others countries among the 33 surveyed. Base salaries of early career researchers are especially low by European standards, making Lithuanian higher education institutions comparatively unattractive – both for Lithuanian and foreign researchers. In 2012 Lithuanian higher education institutions provided PhD stipends and researcher salaries that were far below EU averages, and about 15% that of maximum researcher salaries (Figure 5.12). Annual gross salaries for junior researchers, for example, ranged from a statutory minimum of EUR 5 068 to EUR 6 690 (PPP adjusted),

while that of chief researchers ranged from EUR 6 690 to EUR 14 039 (IDEA Consult et al., 2013b). While base salaries of Lithuanian universities are low by international standards, universities can pay performance-based bonuses up to 100 of the base salary, and faculty may supplement their salaries with external funds, permitting university faculty to earn up to two to three times their base salary (Yudkevich, Altbach and Rumbley, 2016).

Figure 5.12. Higher Education Researcher Salaries: Lithuania, the European Union and the United States (2012)



Source: IDEA Consult et al. (2013b), "Support for continued data collection and analysis concerning mobility patterns and career paths of researchers: Remuneration - Cross-Country Report (WP4)", MORE2 - Remuneration Cross-Country Report, https://cdn2.euraxess.org/sites/default/files/policy_library/report_on_case_study_of_researchers_remuneration.pdf.

Policy issues

Policy issue 1: Consolidating tertiary institutions for efficiency and quality

Lithuania's severe demographic pressures create three serious challenges for its system of tertiary education. Falling student numbers risk declines in educational *efficiency* as student/teacher ratios fall and facilities are underused. Declining enrolments may pose a threat to the *quality* of student programmes, as course offerings and instructor numbers decline. Additionally, falling student numbers exacerbate a pre-existing problem of *scale* facing Lithuanian public university institutions, which presently number fourteen in total. Five Lithuania public universities enrol fewer than 5 000 students, and none enrol 20 000 students. Additionally, Lithuania has 13 separate public research institutes, a number reduced sharply in recent years through mergers and amalgamation into universities. With this configuration of public universities and public sector research organisations, Lithuania finds it difficult to achieve the critical mass of researchers, facilities, and research infrastructure needed to effectively perform research at an international level.

Highly regarded tertiary systems in Europe – such as those in Finland, the Netherlands, Denmark, Switzerland, and Ireland – have grappled with questions of institutional scale and system design in recent years, reducing the number and increasing the scale of their higher education institutions. National authorities in some of these systems, such as Finland and the Netherlands, are concerned that they have not yet achieved an optimal number and scale of higher education institutions (Finland Ministry of Education and Culture, 2015). However, all of these systems have far fewer higher education institutions relative to the number of students and inhabitants than Lithuania. In 2012 Finland maintained 6.9 institutions per million inhabitants, and 1.2 institutions per 10 000 students – compared to Lithuania's 14.7 institutions per million inhabitants, and 2.9 institutions per 10 000 students.

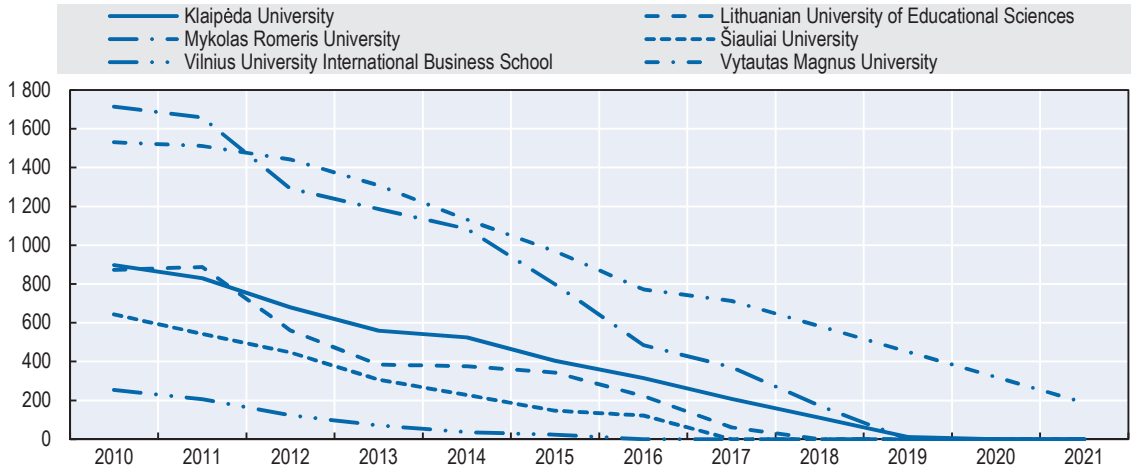
Table 5.2. Number of higher education institutions per inhabitant and student (2012)

	Number. of universities	Number. of polytechnics	Number. of inhabitants (in million)	Number. of HEI students (in thousands, 2012)	Number of HEIs per million inhabitants	Number of HEIs per 10 000 students
Lithuania	**23**	**24**	**3.2**	**159.5**	**14.7**	**2.9**
Finland	14	24	5.5	308.9	6.9	1.2
Denmark	8	16	5.7	275.0	4.2	0.9
Ireland	7	14	4.6	192.6	4.6	1.1
Netherlands	14	37	16.9	793.7	3.0	0.6
Switzerland	12	9	8.2	269.6	2.6	0.8

Sources: Ministry of Education and Culture Finland (2015), "Towards a future proof system for higher education and research in Finland", Ministry of Education and Culture Finland, www.minedu.fi/export/sites/default/OPM/Julkaisut/2015/liitteet/okm11.pdf?lang=en; Statistics Lithuania (2016a), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

In recent years Lithuania's tertiary system has faced enrolment declines of 5-7% per year. Between 2010 and 2014 tertiary enrolments fell by 32%, and continued declines in the size of the 18-25 year-old age cohort are forecast in the years ahead. The gravity of the problem facing the nation's higher education system is revealed in forecasts produced by the nation's monitoring body for science and higher education, MOSTA. As Figure 5.13 below shows, five of the nation's universities are forecast to have no entering students by 2020.

Figure 5.13. Forecast number of entrants, 2016-2020, selected universities



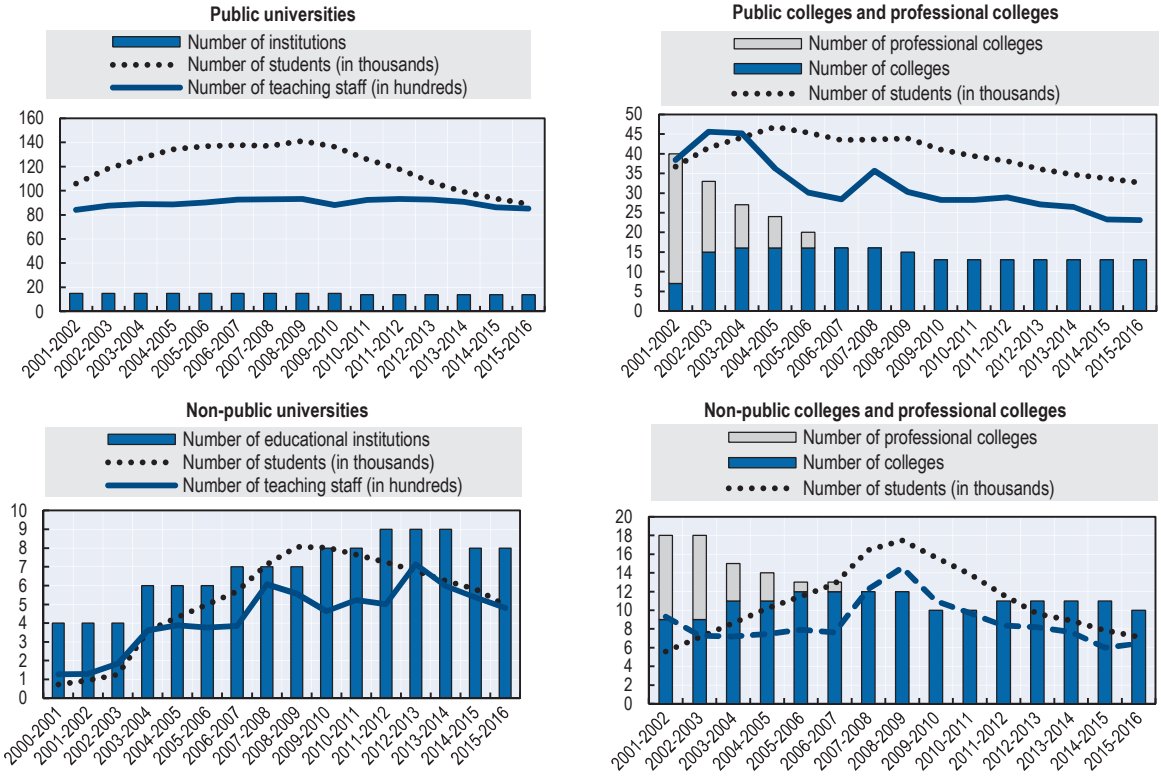
Source: Forecast provided by MOSTA (Research and Higher Education Monitoring and Analysis Centre, Lithuania).

The importance of consolidating and scaling tertiary provision has often been discussed in Lithuanian education policy, and has been the focus of external reviews of the nation's public research system (OECD, 2016b). The adoption of the student basket funding scheme in 2009 was motivated, in part, by hope that the new funding methodology would lead to competition that spurred improvement in quality, and also lead higher education institutions to consolidate their operations. Since 2009 discussions about the network of tertiary institutions have intensified, and proposals for the consolidation of the system have been developed. The government invested public funds to achieve the voluntary consolidation of separate veterinary and medical universities into a single health sciences university 2010, and in 2016 the *Seimas* asked MOSTA to provide it with options for higher education consolidation. Owing to the legal independence of public universities from the Ministry of Education and Science, only their founder, the Lithuanian *Seimas*, may merge or close institutions. Or, institutions may choose to voluntarily seek mergers or closure. As a result, achieving consolidation has proven difficult, and further consolidation is needed.

Declining efficiency in instruction at public universities

One conventional way to measure the efficiency of tertiary institutions in fulfilling their teaching mission is to track the ratio of students to teachers. Rather than focusing on the average student to teacher ratio across all tertiary institutions in Lithuania, it is most informative to examine how these ratios have changed in the four sectors of Lithuanian tertiary education – public universities, public colleges, private universities, and private colleges.

Figure 5.14. Trends in the number of tertiary education institutions, teaching staff and students in tertiary education in Lithuania



Source: Statistics Lithuania (2016a), Official Statistics Portal, Statistics Lithuania, Vilnius, http://osp.stat.gov.lt/en/rodikliai25 (accessed 3 August 2016).

In public colleges and private higher education institutions – colleges and universities alike – the programmes on offer and staffing levels are especially sensitive to student demand, whether from fee-paying students or students whose seats are paid for by state vouchers – the "student basket." At Vilnius College, for example, 87% of 2010 funding was enrolment dependent: 61% of revenues were derived from student basket funding and another 21% from student fees (Vilnius College, 2012). As student numbers and the state and private tuition fee revenue they generate fall, programmes are discontinued and staffing levels decline. At private universities, as student numbers have declined staffing numbers have declined, as well. At public universities, in contrast, falling numbers have had a far more modest effect on staffing levels, and student to faculty ratios have fallen.

The revenue structure of Lithuanian public universities is different to that of colleges and private institutions. Public universities derive funding not only from fee-paying students and student baskets, but from other funding streams – most importantly, research funding, either from the state budget, or the European Commission. Thus, as Figure 5.14 shows, their staffing levels have declined modestly in response to falling student numbers. For example, Klaipeda University had a 42% fall in enrolments between 2010 and 2015 (from 7 412 to 4 370), while the number of researchers declined 14% (from 548 to 470), and the number of teaching staff declined by 25% (from 471 to 351). A rising budget for research, quadrupling from annual EUR 4.48 million to EUR 17.16 million in four years, permitted the total budget of the institution to rise, nearly doubling between 2010 and 2015. The award of EU funding for the "Integrated Science, Studies, and Business Centre (Valley) for the Development of the Lithuanian Maritime Sector" resulted in EU structural funding of EUR 22.4 million for the period 2007-2013, and an additional EUR 10.9 million is planned for the 2014-2020 funding cycle. Setting to one side the research and innovation accomplishments of the university, it became less efficient in its *instructional* mission between 2010 and 2014, with the ratio of students to teaching staff declining from 15.73 to 12.45.

Table 5.3. Klaipeda University research performance, spending and staffing (2010-16)

	2010	2011	2102	2013	2014	2015	2016*
Total budget (million EUR)	14.52	20.83	22.62	23.91	27.19	26.98	
Budget for research (million EUR)	4.48	10.48	11.97	13.65	17.16		
Total number of students	7 412	6 894	6 294	5 417	4 897	4 370	3 877
Total number of researchers	546	555	548	441	470		
Teaching staff (professors, docents, lecturers and assistants, FTE)	471	473	434	373	349	351	
Students/teaching staff ratio	15.73	14.57	14.50	14.52	14.03	12.45	
Researchers (FTE)	53	54	144	56	71	64	
Total staff (research and teaching)	524	527	578	429	420	415	
Number of national patents	0	0	0	0	1	0	
Number of publications (Clarivate Analytics, InCites)	69	91	90	96	107	111	72
Number of publications with foreign co-author (Clarivate Analytics, InCites)	17	32	34	31	52	64	45

Note: (*) indicates preliminary data.

Source: MOSTA (Research and Higher Education Monitoring and Analysis Centre, Lithuania)..

Table 5.4. Research performance, spending and staffing, all higher education institutions

	2010	2011	2102	2013	2014	2015	2016*
Total budget (million EUR)	433.0	502.0	511.5	531.2	550.9	570.0	
Budget for research (million EUR)	117	153	160	182	196	216.4	
Total number of students	180 421	172 167	160 685	148 128	140 076	133 046	125 178
Teaching staff (professors, docents, lecturers and assistants in FTE)	10 318	9 788	9 677	9 014	7 866	7 735	
Researchers (research staff in FTE)	1 427	1 307	1 413	1 472	1 660	1 265	
Number of national patents	2	3.05	1.5				
Number of publications	2 451	2 552	2 595	2 636	2 813	2 842	1 835
Number of publications with foreign co-author(s)	553	658	726	811	965	1 074	833

Note: (*) indicates preliminary data.

Source: MOSTA (Research and Higher Education Monitoring and Analysis Centre, Lithuania)..

Falling numbers and risks to minimum levels of quality

Falling numbers have not only reduced the instructional efficiency of Lithuania's public universities; they have also posed risks to the quality that higher education institutions provide. Students in higher education institutions need a sufficient number of peers to form a community of learners, a sufficient number of instructors to be exposed to varying approaches to their discipline or profession, and a suitably wide range of course offerings to prepare them fully for work and continued learning. Falling student numbers can reduce the breadth and depth of programmes on offer, and lead programmes to admit students who may be ill-prepared to succeed in their course of study. Higher education stakeholders who met with the review team expressed concern that falling student numbers and enrolment-driven financing were placing strong pressures on institutions to accept applicants without regard to their prospects of success, and limiting the capacity of HEIs to focus on quality.

Lithuania's Centre for Quality Assessment in Higher Education (*Studijų kokybės vertinimo centras, SKVC*) has responded to quality challenges as it is authorised to do: on a programme-by-programme and institution-by-institution basis. Programme review teams have focused on programme size and its impact on learning – noting the consequences of low enrolments for the quality of group discussions, team projects, and student presentations and peer learning activities. At one public college – where enrolments declined sharply – two in three students studied on a part-time and distance basis, dropouts rose beyond one in three students, and employment outcomes for a majority of programmes were below national averages. These developments prompted the centre to propose to MoES that it withdraw the institution's authorisation to offer study programmes, and the college's remaining students have transferred to nearby higher education institutions (SKVC, 2016). In other reviews, such as the 2012 assessment of the Lithuanian University of Education Sciences, the SKVC has chosen to accredit higher education institutions for three rather than six years, providing more frequent monitoring of institutional performance.

Responsibility for a policy-based approach to systemic issues of quality rests with members of the *Seimas* and Ministry officials, and they have recognised that additional measures are needed. In 2015 higher education institutions were required to establish

minimum *matura* scores for publicly funded seats in universities and colleges, and in January 2017 minimum competitive entry scores[1] were established for universities and colleges. Higher education institutions have been invited (though not required) to establish minimum entry requirements for privately-funded study places. Additional measures are under development, though not yet clearly and publicly defined, to "tighten" quality assurance principles by "setting individual indicators for university and college studies to be used as the basis for evaluating the quality of studies" (MoES correspondence, December 2016).

Given current institutional funding policies and forecast demographic trends, student numbers will continue to decline more swiftly than the enrolment capacity of higher education institutions, and this will create strong incentives in the near-term future for institutions to enrol and retain all students. The risks to quality posed by these pressures are best addressed by systemic initiatives to reduce enrolment capacity, discussed below.

Effectiveness in conducting research and supporting innovation

While all higher education institutions are responsible for providing quality instruction with efficiency, universities in Lithuania bear an additional responsibility for functioning as effective research organisations, and using public investment to good effect, generating new ideas that yield social and commercial innovation and improve the quality of life in Lithuania.

There have been large investments to boost the research and innovation capacities of public universities and research centres in the past decade, much of this the supported by EU structural funds. One of the principal vehicles for this investment was the "Valley" initiative, through which capacities in research, studies and knowledge-intensive business were to be concentrated in one area with a common infrastructure and focus, and to stimulate the development of knowledge-intensive economic activity and economic competitiveness. Five Valleys were initiated, with funding ranging from EUR 55 million to EUR 95 million, including the Maritime Valley initiative, which aimed to spur the development of the nation's maritime sector.

Immediate conclusions about the long-term effects of large-scale spending projects on the performance of higher education institutions must be tentative, because the impact of funding on research performance and innovation takes time to be fully realised, and indicators such as publications and patents lag behind investment. This is especially the case for investment in physical infrastructure, which comprised an estimated 40-45% of investment Lithuania's "Maritime Valley" Initiative. Nonetheless, there are grounds for concern about the efficacy of this investment. In the Maritime Valley project, for example, patenting performance at the public university project initiator, Klaipeda University, has remained unchanged. The publication output, after initial gains, may be returning to earlier levels (Table 5.3). The technology park that was to provide a platform for collaboration and innovation, the Klaipeda Science and Technology Park, has not secured the participation of its planned participants. Study programmes offered by the region's higher education institutions are not co-ordinated with one another, and the level of engagement between researchers and firms has not expanded beyond pre-investment levels.

Effective use of large-scale research funding appears to require, among other things, further consolidation of the nation's public research institutions. This is the conclusion of a wide range of external evaluations of the public research sector, including the European Science Foundation (2014) and the OECD Directorate for Science, Technology, and

Innovation (OECD, 2016b). This assessment is shared by national advisory bodies as well, most recently by the nation's monitoring body for higher education and research, which in 2016 advised the *Seimas* that "Various means to increase the quality of (university-based) science and studies can be attempted, but all will have a limited impact if the network (of higher education institutions) is fragmented, duplicated and uses scarce resources inefficiently" (MOSTA, 2016).

Policy recommendations

Lithuanian authorities know best how to reconfigure their tertiary system to adapt its capabilities to meet national needs, and they have embarked upon analysis and consultation in support of its consolidation. As this work proceeds, some considerations might usefully be kept in mind.

Recommendation 5.1.1: Adopt a flexible, open, and pragmatic approach to consolidation

Lawmakers and advisors should give consideration to the full range of consolidation options available to the nation – not only consolidation among public universities, but also opportunities for consolidation among universities and colleges, universities and research institutes, and among all three, as well as changes to the status of higher education institutions, such as conversion of some small universities with a low research profile into colleges. Lithuania has carefully developed a binary system of tertiary education. However, maintaining a strictly binary system removes potentially beneficial options for the consolidation of tertiary institutions. Given the small size of Lithuania, removing merger options that can achieve higher quality and efficiency in its tertiary would be unwise.

When confronted with the need for consolidation many OECD member countries have chosen to think comprehensively – about their entire tertiary system – and to make choices that create new institutional configurations where those are beneficial. In Germany, which has a well-established binary policy, regional officials (in Lower Saxony) authorised the merger of applied science and research universities to create a new hybrid institution. New Zealand, too, has authorised university-polytechnic mergers, and in Ireland higher education institutions have collaborated across the binary line, and appear to be moving from collaboration to merger (Gerritsen, 2010). Nordic countries have wide experience in tertiary consolidation in recent years, and have likewise taken a system-wide approach to tertiary consolidation (Pinheiro, Geschwind and Aarrevaara, 2016).

Recommendation 5.1.2: Approach institutional consolidation as a first step in a long-term process

The experience of university consolidation throughout Europe indicates that institutional consolidation alone will not be sufficient to boost the efficiency, instructional quality, or research performance (Pruvot, Estermann and Mason, 2015). Consolidation is a necessary but not sufficient condition for Lithuania to achieve these goals. Strategic institutional management is required to take full advantage of the opportunities that consolidation provides – to identify redundancies, new opportunities for research and teaching made possible by consolidation, and new ways of working with community and commercial partners.

Two decades of legal reforms to university governance and funding in Lithuania have provided an opportunity for public universities to exercise strategic leadership; however, not all have developed the capacity to do this. The professionalisation of institutional management is a recent development in Lithuania. At the Vilnius University, a central staff responsible for taking an institutional-wide and strategic view of staffing, a Human Resources Development Unit, was established for the first time in 2015 (Yudkevich, Altbach and Rumbley, 2016). This new capacity has been joined to wider initiatives, including a strategic planning process that has yielded a clear plan for the university's future – at strategic, tactical, and operational levels (Vilnius University, 2016). However, this is not consistently the case in the nation's public university sector. Meetings undertaken during the review, evaluations undertaken by external consultants (Arnold and Angelis, 2016), and reviews of higher education institutional management by the SKVC suggest that Lithuania's tertiary system is one in which the strategic management of higher education institutions is under development, and uneven.

To assist higher education institutions in capitalising on the opportunities afforded by consolidation, Ministry officials should support the development of strategic management capabilities in the nation's universities. Supporting peer-to-peer learning among Lithuanian universities is one option to consider. Alternatively, public universities might benefit from ongoing support provided by veteran university leaders from Denmark or Finland who have carried out consolidation initiatives.

Support will be needed as well to deal with consequences of consolidation. Discussions in Lithuania have centred on the number of merged university institutions that the country needs – typically identified as 3 or 4 public universities. Because salaries and benefits comprise a large share of operating costs in higher education institutions, merging institutions cannot achieve greater long-term cost efficiencies without reductions to staffing, and special attention will need to be given to redeployment, retraining, and redundancy options for those who are affected by consolidation.

Consolidation of the tertiary network offers long-term benefits, but presents near-terms costs. When the EU structural fund 2020 funding cycle commences, funding will become less advantageous to Lithuania, shifting from a 95/5 to a 60/40 cost-sharing arrangement. Bearing the costs of change sooner when they potentially could be more heavily subsidised with external funding should be given careful consideration.

Recommendation 5.1.3: Support complementary initiatives to improve research performance of Lithuanian universities

Consolidation within the tertiary sector should be complemented by other, focused initiatives if the quality of university-based research is to reach international levels. Further improvements to the performance of its tertiary institutions will require that resources flow to departments and programmes that are performing at high levels. Here responsibility rests with public officials, who can ensure that funding for research is more fully linked to performance, and with higher education institutions, which need to exercise the leadership opportunities permitted them by reforms to funding and governance.

National authorities can link national research funding more clearly to excellence than in the past. Lithuania has gradually increased the share of national research funding awarded on a "competitive basis," from 30 to 50 % in 2011 (OECD, 2016b). However, this allocation process is only as effective as the methodology underpinning it. External reviews of Lithuania's research assessment funding policies indicate that its research

funding methodology is insufficiently weighted towards quality, and that steering funding towards research quality would be aided by a research assessment process that is international, rather than national in scope (Arnold and Angelis, 2016).

Additionally, MoES officials and their colleagues elsewhere in government should examine how to ensure that funding allocated to universities through EU structural funds are aligned to a newly consolidated and focused tertiary sector, rather than working at cross-purposes with it. Initiatives undertaken with EU support – such as the Valleys Initiative and the Sectoral Practical Training Centres – appear to have supported a network of institutions that is more extensive than policy makers and analysts judge to be efficient.

Final responsibility for ensuring that resources are linked to quality rests with Lithuanian research institutions. However, decisions taken within institutions – such as establishing new faculty positions, or awarding salary increases or bonuses – do not appear to be consistently linked to performance. A 2014-15 Research Assessment Exercise noted that research institutions "lacked a general strategic approach to setting research priorities" and demonstrated an inability to "identify their comparative strengths" (OECD, 2016b, p. 104). Publications by university researchers, the review team was told, often lack scientific merit, and are produced to satisfy attestation requirements. While responsibility rests with university leaders and faculty to establish appropriate scientific standards, Ministry officials might usefully partner with the Lithuanian Research Council and leading university researchers to consider how performance funding criteria can be adapted to incentivise research quality and impact.

Policy issue 2: Balancing attractiveness and quality in internationalisation

The wider landscape within which the internationalisation of Lithuanian tertiary education has been pursued is challenging. Graduate wages in Lithuania are substantially lower than in many other countries in the EU, providing strong incentives for ambitious and highly prepared secondary students to study outside of Lithuania. Low stipends and salaries and a lack of critical mass among research groups make Lithuania less attractive to PhD students and to post-doctoral researchers than other European destinations. Lithuania's population is relatively homogenous compared to that of competitors in the higher education marketplace, creating challenges of adaptation and integration for foreign students and researchers.

Notwithstanding these challenges, Lithuania has embraced the internationalisation of tertiary education in national policy and in institutional practice. The Ministry of Education and Science was an early and active participant in the European Higher Education Area. It has recognised the strategic importance of internationalisation in a range of national policy documents, including the "Brain Gain and Retain Strategy" (2008-2013), and a 2013-2016 Action Plan for Internationalisation. The latter commits to the development of joint study programmes and study programmes offered in foreign languages, improving the recognition of qualifications, widening support for foreign researchers and students, and reducing entry and residence barriers for foreign nationals.

The Lithuanian Centre for Quality Assessment in Higher Education has embraced European guidelines with respect to quality assurance and recognition of qualifications, made extensive use of international participants in quality assurance reviews, and worked to simplify procedures for recognition of foreign qualifications. At the outset of 2017 the

SKVC was participating in wide range of international projects that aim to strengthen the system's capacity to efficiently recognise a wide range of qualifications, including foreign qualifications (SKVC, n.d.). The Lithuanian Research Council has likewise supported wider internationalisation, through funding to support foreign collaboration in Lithuanian research, and engaging international reviewers in its peer review process.

Lithuania society and government are deeply concerned with population decline in general and "brain drain" in particular, thus support for internationalisation in tertiary education is a priority across government. Migration policy changes adopted in 2015 aim to attract selected highly skilled migrants to Lithuania. International students who have completed their studies or training in Lithuania are no longer required to provide evidence of work experience to take up employment in their field of study, and former students can change their status by applying for a highly skilled residence permit without leaving Lithuania (OECD, 2016c).

Higher education institutions are keen to reap the benefits of wider internationalisation, especially increased student numbers, and they have made concerted efforts to boost international enrolments. Colleges and universities have significantly increased their efforts to increase the enrolment of students from outside Lithuania, both through the development of staff responsible for international student recruitment and the creation of study programmes in foreign languages. Vilnius University, which offered its first programme in English in 2005, now offers about 10% of its programmes in foreign languages, of which 17 are in English. Vilnius College, for example, now offers 7 of its 45 programmes in English. Foreign student numbers have risen in recent years, climbing from 3 915 in 2013 to 4 975 in 2015 (Eurostat, 2017), and student origins have shown increased diversification. While Lithuania draws the majority of its foreign students from former Soviet states, it has begun to recruit more widely, and student numbers from India, for example, have risen from 57 in 2012 to 357 in 2014 (Mitchell, 2015).

Public universities have also aimed to attract researchers as well as students to Lithuania, but with limited success. The higher education system of Lithuania began from a very modest base: at the time of EU accession 0.3% of academic staff in higher education were foreign nationals. By 2012 the proportion rose to 2.5%, a level about one-quarter that of Estonia, and modestly lower than that of Latvia. Nearly two-thirds of foreign researchers (64%) were attracted from non-EU European countries, such as Ukraine and Belarus, as compared to 25% in Estonia. Though supported by national initiatives, such as Research Council of Lithuania's Postdoctoral Fellows Programme, Lithuania's low salaries are widely perceived to pose a serious obstacle for expanded recruitment of international researchers. As one faculty member noted when discussing the return of Lithuanian researchers working abroad:

> "There is a reason why nobody wants to come here from abroad anymore: Salary. Knowing what he or she could earn in academia abroad, who would want to come to such a cheap labour country as Lithuania? Nobody would do this for pride and glory alone." (Yudkevich, Altbach and Rumbley, 2016)

A variety of non-monetary conditions may be unattractive to foreign researchers as well, including substantial teaching loads, and the necessity of submitting research funding applications in the national language, Lithuanian.

Policy recommendations

In light of these challenges, national policy makers might usefully consider policy options that focus on protecting incoming students, aligning institutional incentives to national goals, and assisting universities in providing wider and more flexible support for the recruitment of foreign researchers.

Recommendation 5.2.1: Protecting students

As higher education institutions focus on recruiting foreign nationals to study in Lithuania, it is important to ensure that the quality of programmes in which they are enrolled is sufficient, and adapted to their needs. The Centre for Quality Assessment in Higher Education (SKVC) has been attentive to these developments, and has supported training for Lithuanian higher education institutions focusing attention on the quality risks associated with internationalisation. To complement these efforts, measures should be taken to ensure that foreign students have adequate information prior to enrolment, and assurance of quality after enrolment.

- Information. As Lithuania further develops its higher education student information system, it should provide prospective students with web-based information about institutional characteristics closely associated with quality, including persistence and graduation rates, and employment outcomes among the institution's students.
- Quality Assurance. Quality assurance at the programme and institutional level does not contain a specific focus on the quality of provision for foreign students (SKVC, 2010). The Centre for Quality Assessment in Higher Education should consider how to incorporate a focus on the quality of provision for foreign students as part of its quality assurance process. This could be done by introducing a special focus on study programmes that are being offered in a foreign language.

Recommendation 5.2.2: Aligning incentives

Institutional success in recruiting students is driven by institutional capacities and priorities, and may not be linked to wider national priorities. For example, the largest share of foreign students who enrol in the Lithuanian higher education institutions choose to study medicine and business, while only 3% enter technical science subjects such as laser science (International Organization for Migration and European Migration Network, 2012), though these have been identified as areas of excellence in research assessment reviews, and the focus of national investments, such as the Valleys Initiative. Policy makers might consider aligning institutional incentives and national priorities more closely by providing formula-based financial support to higher education institutions for the enrolment of foreign students in priority programmes of study.

Recommendation 5.2.3: Researcher recruitment

The recruitment of foreign researchers poses a serious problem for higher education institutions, which lack the budgetary capacity to compete in an international market. They also lack the flexibility to consistently differentiate salaries: for example, salaries for foreign researchers are pegged to those of Lithuanian nationals, even when funded by external sources such as the European Union (Petrauskas, 2013). Primary responsibility for increasing researcher salary levels and achieving greater salary differentiation rests

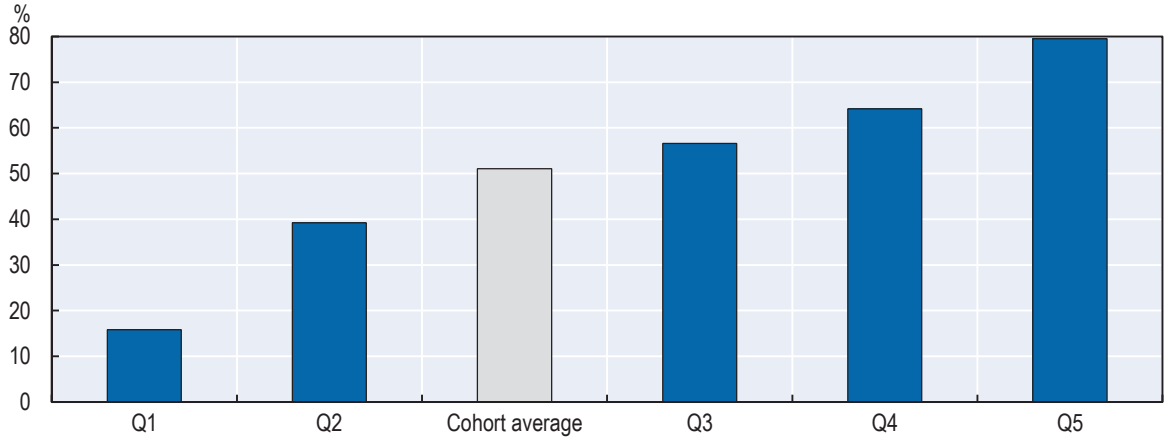
with universities, which operate with a funding and governance framework that provides them wide latitude in hiring and compensation. Nonetheless, policy makers may offer two forms of support outside of the student basket and research funding streams.

- Not-for-profit foundations are often used by university institutions to achieve greater flexibility in the use of resources, and could be used as a vehicle by which to support additional compensation, reduced teaching, and other career enhancements. Policy makers can ensure that a clear legal basis exists for their adoption, and could consider, for example, an initial matching of foundation resources to encourage their creation and early success.
- The recently established Centre for Excellence in Finance and Research (CEFER) is a collaborative initiative of Vilnius University and the Bank of Lithuania that supports an international research team and a high level of scholarship. It provides an effective model of firm-university collaboration with a strongly international orientation that might be replicated more widely. Those in government could consider the use of tax policy or other incentives to encourage firm participation in similar partnerships, or use the government's capacity to publicise and alert firms to the benefits of similar collaborations.

Policy issue 3: Monitoring and supporting equity in tertiary education

Lithuania has achieved an especially high rate of tertiary attainment for its young adults. However, it has not done so equitably. Among households in the lowest income quintile, only 16% have completed tertiary education – while among households in the highest income quintile 80% have done so (Figure 5.15). Lithuania is not alone in having wide variation in educational attainment by household income (Bailey and Dynarksi, 2011). However, if Lithuanian policy makers wish to provide all citizens with equitable opportunities to reap the benefits of tertiary education, they should develop a policy framework that permits them to monitor how key student populations are faring in entering and completing tertiary studies, and in their post-schooling outcomes. Monitoring should be linked to policy targets, and these targets should be backed by policy tools that support students and institutions in achieving more equitable outcomes.

Figure 5.15. Percentage of 25-34 year-olds with tertiary attainment, by household income quintile (2014)



Sources: Provided by the Ministry of Education and Science of Lithuania; calculations based upon data from Statistics Lithuania.

Lithuania does not monitor key populations with respect to participation and achievement in tertiary education. It has no policy targets. And it has no policies that focus specifically on mitigating inequalities in tertiary education. Rather, it has policies that risk widening inequities in tertiary education.

Student funding for higher education places is linked – principally – to national *matura* examination results, with publicly funded seats awarded to those who have the state *matura* scores for the programmes and institutions to which they are seeking entry. This pattern of "merit-based" rather than either universal or need-based student assistance is adopted most often in Central and Eastern Europe, including in neighbouring Latvia (European Commission/EACEA/Eurydice, 2015).

Lithuania does not track performance on state *matura* examinations by student background characteristics, thus precise conclusions about the impact of student social background on higher education access are not possible. In meetings with education stakeholders it was acknowledged that students from the most advantaged family backgrounds and those who studied at the highest-performing secondary schools are likely to achieve the highest state *matura* scores. As MoES has noted, "it is evident that state *matura* examination results are much better at gymnasiums than secondary schools, urban schools do better than rural schools, and large schools do better than small ones" (MoES, 2016).

In 2009 financial support for the most disadvantaged tertiary students was introduced through social scholarships to those whose family receives social benefits, who are themselves single parents, who have a single parent that does not hold a job, or those with a disability. A small proportion of students hold social scholarships: of the 160 000 students enrolled in Lithuanian tertiary institutions in 2013, about 4% received a social scholarship, the average monthly amount of which was EUR 123.5 per month (State Studies Foundation, 2017).

Institutional funding policies in Lithuania's binary system of education result in fewer financial resources being invested in the education of college students who, on average, have studied in weaker secondary institutions, who have poorer state *matura* results, and whose family circumstances are less advantageous than those of students in Lithuania's principal public universities.

Students who study in the highest-performing secondary schools – urban gymnasiums – most often enrol in university study programmes, while students from lower-performing schools in less prosperous rural communities more often study in the nation's colleges. Lithuania's student basket funding model does not fund programmes offered at universities and colleges at the same level. In 2016 one bachelor degree enrolment in a music programme at university, for example, generated a EUR 5 313 student basket payment, while at a college a bachelor degree music enrolment yielded a student basket of EUR 4 359. These different "normative study costs" reflect the costing of research activities provided to universities that are not included in the student basket funding model for colleges.

Research funding streams, including EU and national sources, augment student basket support and tuition fee revenues to create still wider revenue differences between public colleges and universities. To the extent that research funding generates "spill-over" benefits that support higher-quality bachelor-level instruction – such as providing better facilities for student instruction, or more numerous and more highly trained teaching staff – institutional funding policies result in tertiary learning environments for students who have had the advantage of the best secondary schooling opportunities.

Pathways from vocational secondary programmes – serving large numbers of disadvantaged students – are weakly developed, and few secondary vocational graduates progress to higher education programmes. Students enrolled in upper secondary vocational programmes may in principle complete the general upper secondary education programme, take the state *matura* examinations, and progress to higher education, including professionally-oriented college programmes. However, their rate of continuation to university and college, as Chapter 4 indicated, is modest. About 1-2% of all secondary vocational school graduates continued *directly* to tertiary education in 2015, while 65% of general secondary school graduates did so (Statistics Lithuania, 2016b). These rates of continuation are substantially lower than the highest-performing vocational systems, such as the Netherlands (Cedefop, 2016) and Finland (Statistics Finland, 2014). In Finland and the Netherlands, for example, approximately 17% and 20% of recent secondary graduates, respectively, continued their schooling at the tertiary level (Statistics Finland, 2014; Cedefop, 2016).

Policy recommendations

Four co-ordinated and sequenced steps can provide Lithuanian officials with a policy framework that supports a more equitable tertiary system. To start, policy makers should develop the capacity to monitor how key populations are faring in entering and completing tertiary studies, and in their post-schooling outcomes. Monitoring should be linked to policy targets, and these targets should be backed by policy tools that support students and institutions.

Recommendation 5.3.1: Develop an equity monitoring capacity

To monitor and improve equity, and more generally to improve policy steering by the Ministry of Education and Science, the Ministry should develop a tertiary education information management system – like its Education Management Information System (EMIS) – that has the capacity to monitor the social profile of students taking the state *matura* examination and their performance on this examination; the profile of students obtaining publicly funded (and self-paid) seats, and the profiles of those commencing and completing first cycle (bachelor) courses.

Recommendation 5.3.2: Monitor pathways from secondary vocational programmes to higher education, and ensure adequate preparation provides pathways for vocational students

Report annually on the higher education continuation rate for secondary vocational students, identifying the proportion of students who qualify for tertiary entry (by taking state *matura* examinations) and the share of those who qualify and begin tertiary studies. Identify suitable policy targets or benchmarks – using past performance and a peer comparisons group of nations in the Baltic, Nordic, and Northern European areas that have secondary VET programmes that permit flexible continuation to binary tertiary systems with well-developed colleges or "universities of applied science" (e.g. Finland). Where rates of continuation fall or are well below comparators and state *matura* results indicate that general education preparation is inadequate, focused efforts to improve instruction should be made to improve the quality of general education teaching available to secondary vocational students.

Recommendation 5.3.3: Monitor the profile of higher education students who are successful in completing their studies – and who are not, and use this information to both inform both institutional practice and public policy

Lithuanian higher education institutions should monitor which students are completing their studies and which are not – and to provide the Ministry, the Quality Assurance Agency, and MOSTA with this information. For example, progression and completion among social scholarship recipients could be compared to that of students who are not in receipt of formula-based support, and monitored to assure that they are succeeding in their studies at rates that are broadly comparable to those of other student populations.

Recommendation 5.3.4: Link monitoring to policy targets and extant policy instruments, such as social grants

Lithuania has undertaken sweeping changes in its tertiary system over the preceding 15-20 years. Therefore, it may wish to modify its existing student admission and support system in an incremental way, rather than considering models of universal student grants, selective grant assistance awarded on the basis of needs assessment, or a system of income-contingent lending (that is maladapted to high rates of migration). Within the framework of its present "merit-based" policy of student funding there are opportunities to make incremental but valuable equity enhancements using existing policy tools.

In current student funding policy, students completing vocational programmes with honours and work experience are awarded an additional point to their entrance competition score when competing for state-funded places in higher education. This principle could be extended to encompass dimensions of social disadvantage, e.g. students who have studied at small rural schools.

Alternatively, policy makers could consider modifications to social grants. Social scholarships are now available to a small proportion (4%) of tertiary students. Public loans, while available to higher education students, are rarely taken up: only 5% of students borrow to meet schooling costs (European Higher Education Area, 2012). Use of these instruments, especially social scholarships, could be increased. Eligibility social grants could be expanded by linking awarding grants based upon additional factors, such as family income, school characteristics, or community profile, and the level of award could be increased. With declining numbers of students and social scholarship recipients – the number of scholarship recipients declined from 5 238 to 3 149 in three semesters in 2015-2016 – it may be possible to accomplish this at no additional cost to the budget.

Recommendation 5.3.5: Evaluate student basket assumptions to ensure that students in like programmes receive comparable and appropriate instructional support and monitor differences in instructional spending accordingly

State funding for study programmes in colleges and universities provided through the student basket is higher for university than college programmes, on the grounds that instructors teaching in university programmes must hold more advanced qualifications (e.g. PhD training), and the state funding methodology should reflect differentials in the cost of instruction across the two sectors. Discussions in Higher Education Council or Lithuanian Education Council could fruitfully focus on whether the student basket should continue solely to take account of the characteristics instructional workforce, or whether in addition it might reflect the characteristics of students served by higher education

institutions. The student basket funding methodology is flexible, and could easily accommodate funding for colleges and universities that takes account of differences in the backgrounds of students they serve or the student's place of origin – as the English "postcode premium" has done (Harrison and McCaig, 2015). With these concerns in mind, as Lithuania further develops the capabilities of the Ministry's Education Management Information System (EMIS), it should do so with the aim of collecting expenditure data from higher education institutions that permit it to monitor instructional spending across college and university programmes, paying particular attention to like spending across programmes - in music or teaching, for example.

Note

1. A competitive entry score is an index comprised in part of *matura* scores that is used as an admission criterion by higher education institutions.

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Annex A. Composition of the review team

Kateryna Obvintseva is a Policy Analyst in the Policy Advice and Implementation Division of the OECD Education and Skills Directorate. Before joining the Directorate she served as a policy analyst with the OECD Eurasia Competitiveness Programme (GRS). In that capacity she supported the government of Ukraine in designing reforms to strengthen the country's competitiveness. Before joining the OECD, Kateryna worked with Ernst & Young, Saint-Gobain, the EU Border Assistance Mission to Moldova and Ukraine, and the Canada-Ukraine Parliamentary Programme.

Abbie Raikes is an Assistant Professor and Director of Global Early Childhood Development at the University of Nebraska Medical Center. Her career path has focused on applying the science of child development and public health to national and global issues facing young children. She has population-based early childhood data experience emphasising globally-comparable measurements, with application as a United Nations staff member, leading a UNICEF, UNESCO, Brookings Institute and World Bank initiative on child development in low and middle-income countries. Dr. Raikes has developed expertise in public policy, implementation of innovative early learning projects and quantifying those impacts on children, their families and childcare providers.

Thomas Weko is a Senior Analyst in Policy Advice and Implementation in the Education and Skills Directorate of the OECD. In 2005-6 he worked on the OECD review of tertiary education (*Tertiary Education for the Knowledge Society*), and from 2007 to 2013 he served in the US Department of Education, first as Associate Commissioner for Postsecondary, Adult, and Career Education at the National Center for Education Statistics, and subsequently as Director of the Policy and Program Studies Service in the Office of Planning, Evaluation, and Policy Development. He previously served as a policy analyst at the Washington State Higher Education Coordinating Board and the US Government Accountability Office, and as professor in the Department of Politics and Government at the University of Puget Sound.

Annex B. Review visit programmes

First review visit, 25-29 April 2016

Monday 25 April 2016, Vilnius

09:00 - 17:15 Meetings with leadership and key officials within the Ministry of Education and Science (MoES)

Tuesday 26 April 2016, Vilnius

8:30 - 9:30 Visit to Pranas Mašiotas Primary School, Vilnius

10:00 - 11:00 Visit to Lazdynėlis Kindergarten, Vilnius

11:30 - 12:15 Meeting with representatives of the Ministry of Social Security and Labour

13:45 - 15:15 Meeting with representatives of teacher training institutions:
- *Lithuanian University of Educational Sciences*
- *Vilnius College*
- *Vilnius Academy of Arts*

15:30 - 17:00 Meeting with representatives of the institutions under the MoES:
- *Education Development Centre*
- *National Agency for School Evaluation*
- *Lithuanian Centre for Non-formal Youth Education*
- *National Centre for Special Needs Education and Psychology*
- *National Examination Centre*
- *Centre of Information Technologies in Education*

Wednesday 27 April 2016, Utena

9:00 - 9:45 Visit to Gandrelis Kindergarten, Utena

10:00 - 11:30 Visit to Krašuona Progymnasium, Utena
- *Leadership of the School*
- *Teachers' representatives*
- *Students' representatives*
- *School board representatives*

13:45 - 15:15 Meeting at the Utena Education Centre
- *Representative of Education Department of Utena District Municipality*
- *Representative of the Utena Education Centre*
- *Representative of school*
- *Representative of the Child Welfare Commission*

Thursday 28 April 2016, Vilnius

9:00 - 10:00 Meeting with representatives of the Association of Local Authorities in Lithuania

10:15 - 11:15 Meeting with representatives of teachers' associations

11:20 - 12:20 Meeting with representatives of the school heads' associations

13:50 - 14:40 Meeting with representatives of parents' associations

Friday 29 April 2016, Vilnius

8:15 - 9:30 Visit to Jonas Paulius II Progymnasium, Vilnius

10:00 - 12:00 Planning meeting with MoES staff

Second review visit, 12-16 September 2016

Monday 12 September 2016, Vilnius

8:10 - 12:00	Meeting on upper secondary education - *Representatives of the MoES* - *National Examination Centre* - *National Agency for School Evaluation* - *Education Development Centre*
13:30 - 14:50	Meeting on vocational education and training (VET) - *Representatives of the MoES* - *Qualifications and Vocational Education and Training Development Centre*
15:00 - 16:30	Meeting on tertiary education (including research funding issues) - *Representatives of the MoES*
16:30 – 17:20	Meeting with representatives of the Research Council of Lithuania

Tuesday 13 September 2016, Vilnius

8:00 - 9:00	Visit to Vilnius Senvage Gymnasium, Vilnius
9:20 - 10:20	Visit to Vilnius Lyceum, Vilnius
10:50 - 11:50	Visit to Vilnius Public Utilities School, Vilnius
13:30 - 14:30	Visit to Lithuanian University of Educational Sciences, Vilnius
14:50 - 15:50	Meeting with representatives of the Ministry of Finance
15:55 - 17:30	Meeting with representatives of tertiary education institutions - *Representatives of the Lithuanian University Rectors' Conference* - *Representatives of Rectors' Conference of Lithuanian University Colleges* - *Faculty members* - *Representatives of student associations*

Wednesday 14 September 2016, Alytus

9:00 - 10:00	Visit to Alytus Vocational Education Centre, Alytus
10:30 - 11:30	Visit to Alytus College, Alytus
13:30 - 14:30	Meeting with upper secondary students
14:30 - 16:30	Meeting with Alytus regional stakeholders - *Representative of Education Department of Alytus* - *Representatives of Gymnasiums* - *Representatives of VET and tertiary education institutions* - *Representatives of employers*

Thursday 15 September 2016, Vilnius

8:00 - 9:00	Meeting with representatives of the Centre for Quality Assessment in Higher Education
9:05 - 10:05	Meeting with representatives of the Research and Higher Education Monitoring and Analysis Centre
10:10 - 11:10	Meeting with representatives of the Association of Lithuanian Higher Education Institutions for Organization of Common Admission (LAMA BPO)
11:20 - 12:20	Meeting with representatives of non-governmental organisations active in the field of education and researchers - *School Improvement Centre* - *Modern Didactics Centre*

Friday 16 September 2016, Vilnius

8:30 - 9:30	Visit to Vilnius College, Vilnius
10:00 - 11:30	Visit to Vilnius University, Vilnius
13:20 - 14:20	Meeting with representatives of employers
14:25 - 15:30	Concluding meeting with MoES

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Reviews of National Policies for Education

Education in Lithuania

Reviews of National Policies for Education offer customised, in-depth analysis and advice to assist policy makers in developing and implementing education policy. Individual reviews can focus on a specific policy area, a particular level of education or a country's entire education system. These reviews are conducted at the request of the country concerned.

Lithuania has achieved steady expansion of participation in education, substantially widening access to early childhood education and care and tertiary education, coupling this with nearly universal participation in secondary education. However, if Lithuania's education system is to help the nation respond effectively to economic opportunities and demographic challenges, improvements in the performance of its schools and its higher education institutions are needed. Improved performance requires that Lithuania clarify and raise expectations of performance, align resources in support of raised performance expectations, strengthen performance monitoring and the assurance of quality, and build institutional capacity to achieve high performance. This orientation to improvement should be carried across each sector of its education system.

This report assesses Lithuania's policies and practices against best practice in education from across the OECD and other countries in the region. It analyses its education system's major strengths and the challenges it faces, from early childhood education and care to tertiary education. It offers recommendations on how Lithuania can improve quality and equity to support strong, sustainable and inclusive growth. This report will be of interest in Lithuania and other countries looking to raise the quality, equity and efficiency of their education systems.

Consult this publication on line at ***http://dx.doi.org/10.1787/9789264281486-en***.

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