European Commission

Education and Training

MONITOR 2019

Country analysis

Education and Training

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Education and Training Monitor 2019

Country analysis

2019 Directorate-General for Education, Youth, Sport and Culture EN

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The manuscript was completed on 26 August 2019.
Additional contextual data can be found online (ec.europa.eu/education/monitor)

Education and Training Monitor 2019
(Country analysis)

Contents

Introduction

Volume 2 of the Education and Training Monitor 2019 includes twenty-eight individual country reports. It builds on the most up-to-date quantitative and qualitative evidence to present and assess the main recent and ongoing policy measures in each EU Member State. It therefore complements other sources of information which offer descriptions of national education and training systems.

Section 1 presents a statistical overview of the main education and training indicators. Section 2 briefly identifies the main strengths and challenges of the country's education and training system. Section 3 focuses on teachers and challenges of teaching profession. Section 4 looks at investment in education and training. Section 5 deals with policies to modernise early childhood and school education. Section 6 discusses measures to modernise higher education. Finally, section 7 covers vocational education and training, while section 8 covers adult learning.

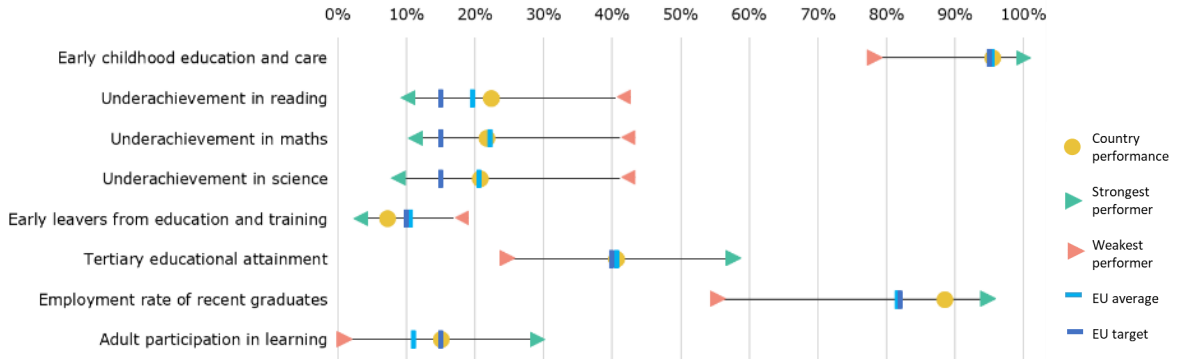
AUSTRIA

1. Key indicators

			Austria		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			8.8%	7.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			23.4%	40.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			91.3%	95.6% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		27.6%	22.5% [15]	19.5%	19.7% [15]
	Maths		23.3%	21.8% [15]	22.3%	22.2% [15]
	Science		20.9%	20.8% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		87.9%	88.6%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		13.9%	15.1%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	5.0% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	9.6% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.1%	4.8% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€6 597 [12]	€7 540 [16]	:	€6 111 [15,d]
		ISCED 1	€7 459 [12]	€8 948 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€10 500 [12]	€11 846 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€10 405 [12]	€11 353 [16]	:	€7 730 [14,d]
		ISCED 5-8	€12 448 [12]	€13 337 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		6.4%	5.5%	13.1%	9.5%
	Foreign-born		22.0%	17.0%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		23.2%	42.3%	33.1%	41.3%
	Foreign-born		24.1%	36.8%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		87.1%	86.8%	72.5%	76.8%
	ISCED 5-8		90.1%	90.1%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by JRC on UOE data. Further information can be found in section 10 and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u = low reliability, : = not available, 12 = 2012, 14 = 2014, 15 = 2015, 17 = 2017. Break in series for tertiary education in Austria in 2014 due to the introduction of the new ISCED 2011 classification.

Figure 1 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015)

2. Highlights

- To avoid teacher shortages, Austria needs to attract enough students into initial teacher education and improve continuing professional development.
- Investment in higher education aims to improve the study environment.
- Improving digital competences is a priority in the education and training system.
- Discontinued recent reforms may weaken efforts to integrate students with migrant backgrounds and to improve education outcomes of students from a socially disadvantaged background.

3. A focus on teachers

Austria has to replace an ageing teaching force. The number of teachers older than 60 more than doubled between 2013 and 2017 (from about 3 100 to 8 000). In secondary education, 47% of teachers are 50 or older (compared to an EU average of 39%). 11% of secondary teachers are 60 years or older in 2017 and will arrive at retirement in the coming years[1]. The age structure is more favourable in primary schools and early childhood education and care (ECEC) [2]. Austria's 2018 National Education Report identifies important replacement needs in the years to come (Oberwimmer, 2018).

Women dominate the teaching force; they are on average younger than male teachers and less likely to become school leaders. As in other Member States, teachers in Austria are predominantly female, particularly in lower educational levels (ECEC: 99%; primary: 92%; secondary: 66%). Female teachers tend to be younger than males[3]. They are less likely to become school leaders although catching up. The share of female school heads (44%) is particularly low in non-academic lower secondary school (NMS) (Oberwimmer, 2018).

As complexity in the classrooms increases, teachers need more support. Particularly in urban areas, classrooms are increasingly heterogeneous and multicultural. While only 15.1% of teachers feel well or very well prepared to teach in multicultural and multilingual settings — 8.7 pps below the EU average —relatively few of them (13.8%, around the EU average) report a particular need for continued training in this area (OECD, 2019)[4]. Segregation between schools on the basis of socio-economic status and migrant background is becoming more widespread (Breit, 2018). Less experienced or untrained[5] teachers tend more often to teach classes with more pupils with migrant backgrounds, particularly in non-academic lower secondary schools. There are indications that schools most exposed to problems (*Brennpunktschulen*) face challenges in recruiting and keeping the best teachers and that their teachers more often lack subject specific knowledge. The plan to increase schools' autonomy risks further concentrating better trained and more experienced teachers in better performing schools with less complex school environments (Oberwimmer, 2018). Austrian teachers have less access to specialist support staff (administrative, pedagogical, psychological or sociological experts) than peers elsewhere — the ratio is 19 teachers to 1 support specialist, compared to an OECD average of 8 to 1. Specialist support for pupils with general learning difficulties exists only in primary schools (European Commission, 2018). National research identifies a clear requirement to better assist the teaching force both through additional support staff and improved continuing professional development (CPD) (Breit, 2018).

1 Eurostat, UOE, [educ_uoe_perp01].
2 6% in primary schools and only 1% at pre-primary level are 60 years old. In tertiary education, only 38% of teachers are 50 or older.
3 42% of female teachers are 50 or older and 12% under 30. 50% of men are over 50 and 6% under 30. 66% of head teachers are men. See Eurostat, UOE, [educ_uoe_perp01].
4 In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.
5 This could be teacher without initial teacher training or teacher lacking specific knowledge for the subject they are asked to teach.

Reform has increased the focus on teachers' CPD but impacts differently on different categories of teacher. The service law from 2013 introduced 15 hours per year of mandatory CPD and came fully into effect for all teachers as of 2019/20. Access to CPD is facilitated by providing teachers with free travel during work time and a replacement teacher is funded (European Commission, 2018). But 52% of teachers believe that there is no relevant CPD offered, compared to a 38.9% EU average (OECD, 2019). The 2018 Austrian National Education Report suggests better integrating initial education and CPD and promoting learning communities. Curricula in initial teacher education stress the need to address multilingualism in general terms but provide little concrete course content focused on migration, particularly for the academic secondary level and for subject teachers. Analysis of initial education curricula shows that about a quarter of courses in 2015/2016 addressed diversity and inclusion. However, specialised training for teachers on how to deal with diversity and intercultural, multilingual and inclusive education remains rather low, with around 4% of course time for each topic. Only 20% of teachers feel well or very well prepared for using information and communications technology (ICT) for teaching. This is the lowest share in the EU and about half of the EU average of 39.4% (OECD, 2019).

Teachers earn less than similarly educated workers; they don't view teaching as a particularly valued profession in society but they are very satisfied with their job. The differences in teachers' salaries compared to other tertiary graduates narrow at higher school levels: while primary school teachers earn only 76% of average tertiary graduates' earnings, lower secondary teachers earn 90% and those in upper secondary 97%. School leaders earn substantially more: in primary school, 29 pps more than the average tertiary graduate; in lower secondary school, 28 pps more: and in upper secondary school, 45 pps more. Salary progression from entry-level to the maximum salary level varies from 81% in primary to 94% in lower secondary and 107% in upper secondary — more than in most other EU countries (European Commission, 2018). A comprehensive reform in 2015 changed the lifetime salary structure, providing for higher initial salaries and flatter increases. Austrian teachers rate job security and income reliability as of less importance in their career choice than other teachers in the EU. They are very satisfied with their jobs (96.4% compared to an 89.5% EU average) and their satisfaction remains comparatively stable over time. A high proportion of Austrian teachers would choose the profession again (84.2%, 6.6 pps above the EU average).The proportion of Austrian teachers who believe that teaching is a valued profession in society is 16.1%, 1.6 pps below the EU average (OECD, 2019).

Teachers' employment is split between the federal and regional levels, which complicates planning and management. While a little over a third of teachers (37%) are employed at federal level, two thirds (63%) are employed by the regions. The Austrian Court of Auditors identifies this as a source of inefficiencies and confusion. The OECD confirms that the distribution of responsibilities between the federal and regional levels is complex and creates rigidities in teacher recruitment and a risk of resource misallocation (OECD, 2016). These are significant where some regions are facing growing pupil numbers, while other face a decline (OECD, 2016). In Vienna, the authorities have employed teachers for academic secondary school (AHS) prior to completing their post-graduate part-time professional practice as well as non-qualified staff on special contracts to compensate for a shortage of graduates in certain subjects. (OECD, 2016). Teacher planning is undertaken at regional and federal level in short and longer term perspectives (1 and 10 years) (European Commission, 2018).

Austria is reviewing the entry requirements for teachers. As of September 2019, all teachers, irrespective of the type and level of school/programme they work in, will need to have a master's degree. Bachelor graduates can be employed provided they commit to completing master studies within 5 years. Part-time study possibilities have been created for this.

4. Investing in education and training

General government expenditure on education as a proportion of GDP remained at 4.8% in 2017, close to the EU average of 4.6%. The share of government expenditure taken by education in 2017 remained stable at 9.9%, a small increase compared to 9.4% in 2014 (EU average: 10.2%). Teachers' pay remains the biggest expenditure category (64.5%), a proportion

slightly above the EU average. The distribution of spending — 30% pre-primary/primary, 44% secondary and 15% higher education[6] — is also largely in line with the EU average.

The population is continuing to grow due to migration and the school population is becoming increasingly heterogeneous. While the fertility rate has improved since 2010 from an all-time low of 1.44, migration from within and outside the EU is the main driver of population growth. According to Eurostat projections, the number of 3-18 year-olds is expected to increase by 7.9% between 2020 and 2030 and by 8.6% by 2040. In 2017, 22% of people in Austria had a migrant background and 15.19% were foreign-born. Half of the foreign-born originate from within the EU27 and about 14% from Germany. First-generation migrants contributed four times more to this increase than second-generation migrants, with Vienna registering growth of double the national average (Oberwimmer, 2018).

Schools with the greatest needs do not receive sufficient funding. The system of resource allocation does not distinguish between the complexities of the school environment, for example whether there are more students from weak socio-economic and/or migrant backgrounds. The OECD also points to an increasing lack of resources in urban areas (OECD, 2016). While the plan to increase schools' autonomy is welcome, safeguards are needed to avoid worsening the existing trend (Oberwimmer, 2018) whereby more experienced teachers are not allocated to the most challenging school environments.

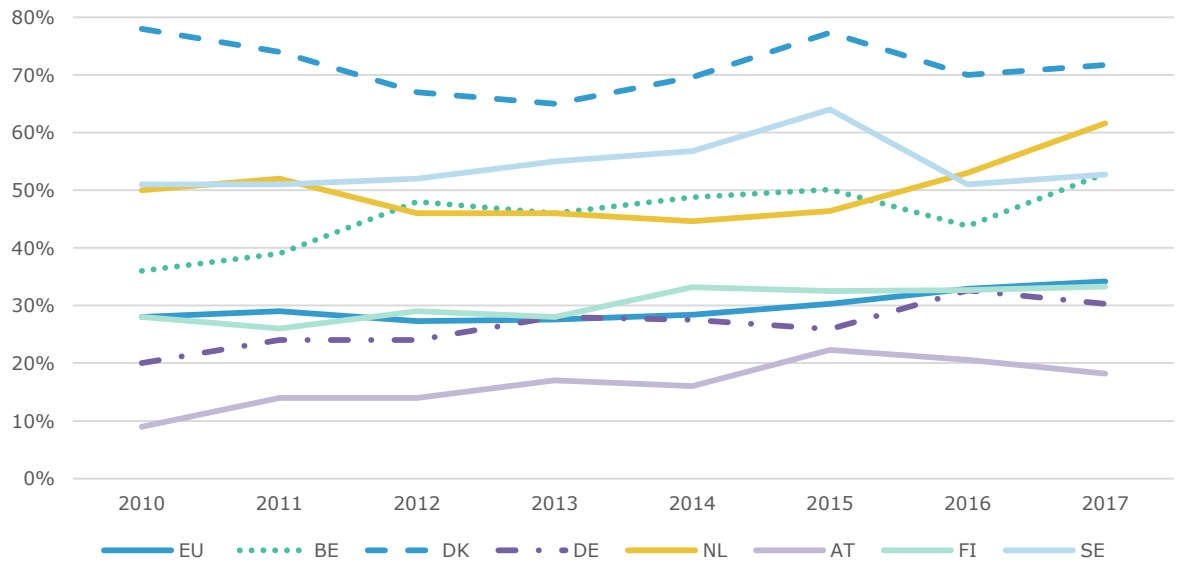
More investment is required in all-day schools and to meet the challenges of a more complex teaching environment; this is made difficult by the division of competences between government levels. The expansion of all-day schools has slowed: the envisaged implementation period for the EUR 750 million investment programme has been doubled to 2032/2033. The Austrian Court of Auditors considers the split of competences between the federal and regional levels as one reason for the slowdown. An agreement between the federal and regional levels determines federal support of EUR 142.5 million to the regions until 2021/2022. However, this is not sufficient to overcome challenges such as increased student numbers and more heterogeneous classrooms or the low levels of administrative, psychological and social support staff identified in the opening section.

5. Modernising early childhood and school education

While participation in early childhood education and care (ECEC) is increasing, its quality may need to be addressed. The share of children under 3 attending ECEC increased from 4% in 2005 to 18.2% in 2017. This remains considerably lower than in comparable countries (Denmark, Germany, the Netherlands, Finland), where participation ranges between 30% and 72%. Participation by children at risk of social exclusion was higher (by 4 pps) than by those not at risk: in most Member States, the opposite is the case. In 2008, 90.3% of children aged 4 to school entry age attended ECEC and this grew to 95.6% in 2017, in line with the EU average. Austria's 2018 National Education Report does not conclude that participation by children from disadvantaged or migrant backgrounds helps them catch up with more advantaged children. Thus ECEC quality may not always be sufficient to assist in this. The European Commission's 2019 European Semester country report on Austria identifies the need for a more long-term development perspective. This was recently partially addressed by a new 'Article 15a agreement' between the federal and provincial governments that established common educational goals encompassing pre-school education including strong competences in German language and a definition of common values. The Council of the EU's 2019 country-specific recommendation to Austria included the following: 'Raise the levels of basic skills for disadvantaged groups, including people with a migrant background;[…] improving childcare services' (Council of the EU, 2019).

[6] 11% are spent for 'other' purposes.

Figure 2 Participation by under 3s in formal childcare , 2010-2017



Source: Eurostat, EU-SILC). Online data code: ilc_caindformal.

The government has presented comprehensive education reform plans. The government has started implementing a comprehensive education reform agenda which will partially reorient previous reforms. There is a strong focus on language learning from an early age. Children from a non-German speaking background attend separate German classes until they master the language. Reforms are introducing more structured and standardised pedagogical approaches, such as a language assessment instrument in preschool and new access criteria for transition to primary school. In lower secondary school (NMS), performance grouping is being reintroduced; team teaching, which was a key innovation of the previous government plans, becomes voluntary.

The early school leaving rate is 7.3% overall, but three times higher for foreign-born than native-born people. While the rate among native-born people has remained relatively stable since 2015 at 5.5% (2018), the rate for foreign-born persons fluctuated widely between 19.0% in 2015 and 14.7% in 2016. At 17% in 2018, it remains three times higher than for native-born people but has fallen by 7.5 pps over the last decade. Migrants born in the EU have an early school leaving rate of 10.6%, half that of those born outside the EU (22.3%). Most of the improvement took place in towns and rural areas, whereas the situation in cities remained unchanged between 2002 and 2018. Early school leaving among women fell by 3.2 pps over the last 10 years, leaving a gender gap of 3.2 pps, in line with the EU average.

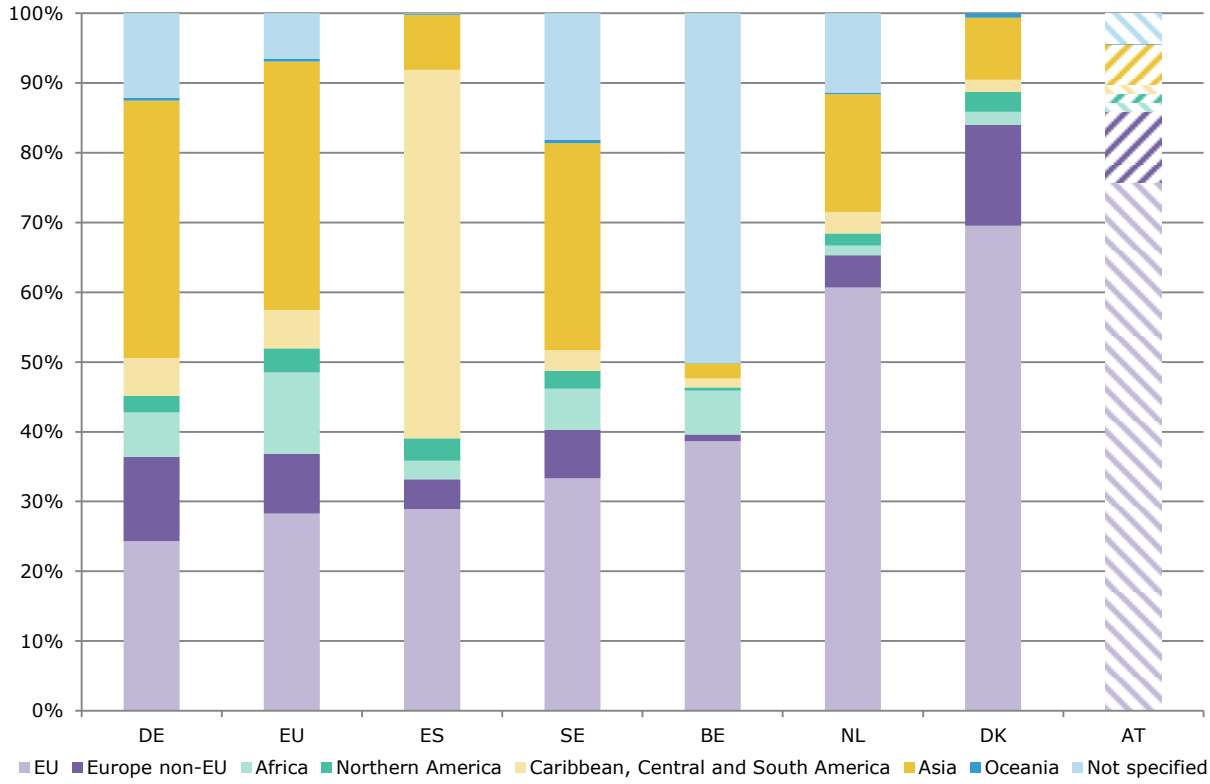
National testing shows some improvement in basic skills. Recent results of the mathematics education standards (*Bildungsstandards*) in fourth grade show an improvement from 2013, with more pupils meeting or exceeding national targets. Both boys and girls have improved, but boys displayed more improvement and continued to perform better than their female peers. Pupils from disadvantaged and migrant backgrounds improved their performance. Vienna followed this trend but with less progress among pupils from disadvantaged or migrant backgrounds.

6. Modernising higher education

Tertiary attainment remained stable compared to the previous year. Tertiary attainment stood at 40.7% in 2018, close to the EU average. The employment rate of recent tertiary graduates is 88.6%, above the EU average of 84.9% in 2018, reflecting strong demand for highly skilled workers. Tertiary graduates also enjoy a significant wage premium over those with an upper secondary degree (46% higher earnings, and up to 74% for doctorate holders) (OECD, 2018). Tertiary attainment is highest in eastern Austria with 43.7%, reflecting Vienna's central role, but south and west Austria have caught up (both at 38.1%). Native-born people are more likely to have tertiary education than foreign-born persons (42.3% v 36.8%) in 2018. Those born outside the EU lag seriously behind with 29.1%.

Austria's higher education remains highly attractive internationally, with 15.1 % of its graduates coming from abroad in 2017. This is the fourth highest share in the EU, behind the United Kingdom, Luxembourg and the Netherlands, and equal to Denmark. Compared to Denmark, Austria attracts more international graduates to bachelor programmes but an equal share to master programmes. At doctorate level Austria's ranking slips to eighth. Most international students come from other EU countries (75.8%). Austria's overall outward graduate mobility, at 14.5%, is above the EU average of 11.6%. Students at doctorate level go abroad most often, with 28.8%. 58% of credit-mobile students benefit from an EU programme, above the EU average of 49%.

Figure 3 Inward degree mobile graduates by country of origin, 2017



Source: Calculations by the European Commission's Joint Research Centre, based on Eurostat, UOE, 2017. Online data code: educ_uoe_mobg02

Measures seek to improve the study environment but could reduce student numbers. A new capacity-based funding model ensures more dynamic and forward-looking financing of higher education. An additional EUR 1.3 billion in funding for 2019-2021 has been agreed and performance agreements with each university allow the hiring of additional staff to improve teacher-student ratios. Access restrictions in particularly popular studies, such as law, languages or educational sciences/pedagogy, might help improve study conditions but also risk reducing student numbers (Austrian Federal Chancellery, 2019). The Austrian university development plan, which steers access policies for the system, has been updated for 2019 and 2020.

Box 1: Future for MINT initiative

This government initiative aims to create 3 000 additional study places in mathematics, information technology, natural sciences and technology (MINT) subjects in tertiary education. While two thirds of the places will be at ISCED level 5, one third will be created in universities of applied sciences. Digital business will also be strengthened. An Austria-wide mapping exercise will identify needs in MINT subjects as well as describe existing education offers to facilitate matching and encouraging more women to participate.

7. Modernising vocational education and training

VET remains an attractive option for Austrian students as it offers excellent employability for graduates. In 2017, around 66 600 new students entered formal VET programmes at upper secondary education level, similar as in 2016 (UOE, 2017). The proportion of students enrolled at upper secondary level attending vocational programmes remains quite stable at 68.6% in 2017 (compared to 70.2% in 2013), and well above the EU average of 47.8% (UOE, 2017). Students enrolled in VET receive work-based learning — almost half of educational programmes provide for some practical elements in the curriculum (UOE, 2017). The employment rate among recent VET graduates in 2018 remained high at 87.3%, well above the EU average of 79.5% (LFS, 2018).

Recent initiatives have focused on adapting VET, including apprenticeships, to the digital shift. In 2019, at the initiative of the Federal Ministry for Digital and Economic Affairs, the two educational research institutes ibw[7] and öibf[8] developed guidelines for the competence-oriented development of apprenticeships. The aim is to create a framework for developing training that will serve as a reference for all those responsible for steering, planning and implementing apprenticeships. The guidelines aim for stronger integration of practitioners from companies in the design of competence-oriented job profiles, training and examination regulations. At the beginning of 2019 the Austrian Public Employment Service launched the New Digital Skills initiative together with leading companies in five economic sectors (production, trade, tourism, construction and office/administration/IT) to drive the adaptation of programmes and curricula in initial and continuing VET.

Box 2: Recognising informally and non-formally acquired vocational skills: 'Du kannst was' – 'You can do something'

This regional project in Land Salzburg, 50% co-financed by the European Social Fund, enables participants to obtain formal recognition for already acquired vocational skills and experience, as well as to obtain vocational qualifications. It targets employees with poorly recognised qualifications who are at high risk of unemployment and fall under the category of 'working poor'. After assessing their skills and needs, participants attend a variety of workshops and training sessions in order to acquire their missing competences and finalise their vocational training.

For more information see: https://www.bfi-sbg.at/uber-uns/bildungsprojekte/du-kannst-was

8. Developing adult learning

While participation in adult learning is above the EU average, there remains a serious need for upskilling. In Austria 14.7% of adults do not have at least an upper-secondary qualification, a proportion below the EU average of 21.9%. 55.3% of low-qualified adults are employed, close to the EU average of 56.8% (LFS, 2018). Participation in adult learning was 15.1%, 4 pps higher than the EU average (LFS, 2018). During 2017, almost 10 000 adults aged 25 or above acquired an upper-secondary qualification (UOE, 2017). However, this represents only 1.4% of the Austrian adults who have only a low level of educational attainment (LFS, 2017). In 2017, there were only 356 000 jobs which require only elementary skills (LFS, 2017) and this number is not likely to increase. The country-specific recommendation referred to in section 5 therefore invites Austria to increase its efforts in upskilling.

In line with the 2016 Council Recommendation on upskilling pathways, Austria is implementing its Adult Education Initiative (*Initiative Erwachsenenbildung*). This aims to improve access to education for socio-economically disadvantaged persons and to increase their level of education. It enables adults who lack basic skills or who never graduated from lower secondary education to continue and finish their education free of charge. In its third programme period (2018-2021), the initiative will reach around 27 000 people. Some 18 000 of these will

[7] Ibw Austria – Research & Development in VET.
[8] Österreichisches Institut für Berufsbildungsforschung .

make use of opportunities in basic education and the remaining 9 000 will catch up on compulsory education certificates.

During 2018 and at the beginning of 2019, several initiatives were taken to address labour market needs linked to digitalisation. The Digital Competence Model was published in 2018, based on the European Commission's 'DigComp' reference framework. DigComp 2.2 AT[9] will support the identification and assessment of personal competencies and identify strengths and possibilities for personal development. Linked to this, the 'fit4internet'[10] initiative was launched in 2019 to allow everyone to assess their digital competence and receive proposals for training as a basis for their further personal development. The Pact for Digital Competence (*Pakt für digitale Kompetenz*) brings together companies, adult education institutions and the public administration to jointly foster the development of digital competences among all target groups.

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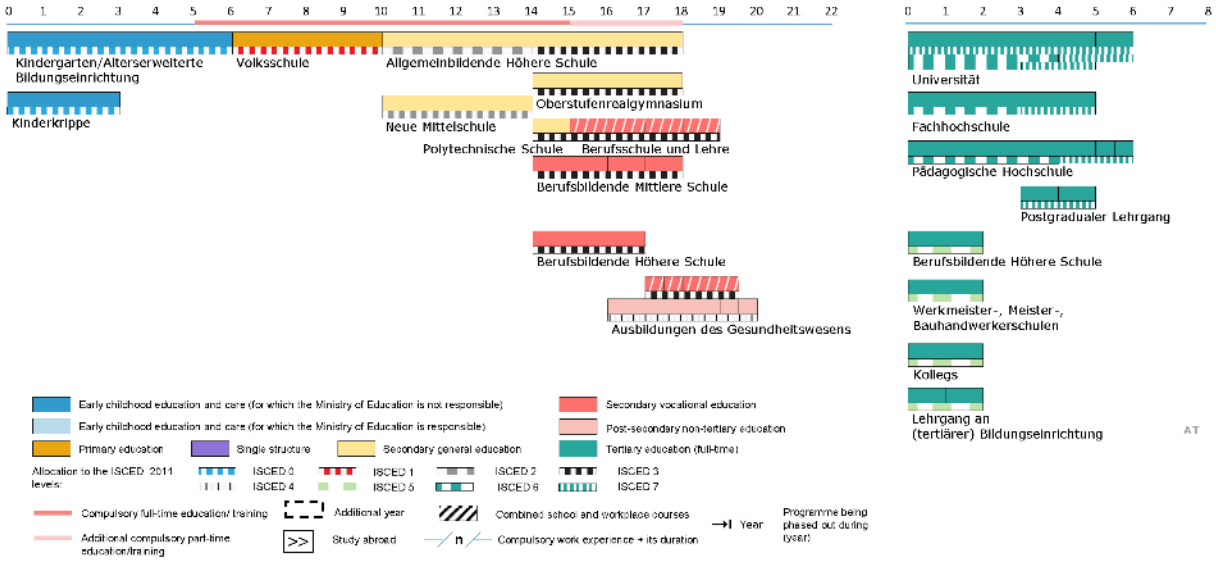
[9] See: https://www.fit4internet.at/digcomp-framework/
[10] Ibid.

Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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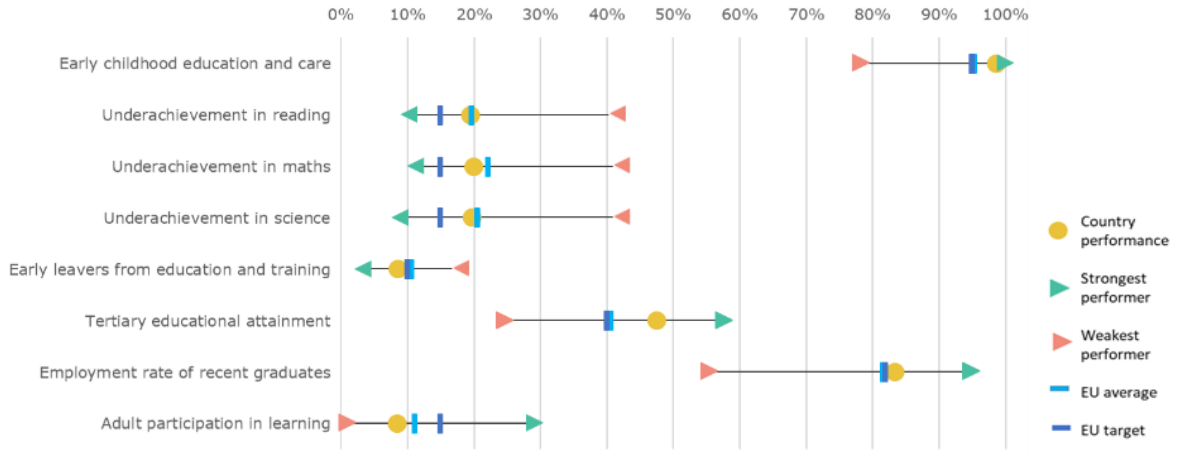
BELGIUM

1. Key indicators

			Belgium		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			11.1%	8.6%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			42.0%	47.6%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			99.3%	98.7% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		17.7%	19.5% [15]	19.5% [EU27]	19.7% [15]
	Maths		19.1%	20.1% [15]	22.3% [EU27]	22.2% [15]
	Science		18.0%	19.8% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		81.0%	83.4%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		7.1%	8.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	3.6% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	6.2% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.0%	6.3% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	:	:	:	€6 111 [15,d]
		ISCED 1	€7 419 [12]	€7 745 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€9 037 [12]	€9 755 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€9 455 [12]	€9 969 [16]	:	€7 730 [14,d]
		ISCED 5-8	€12 054 [12]	€13 218 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		10.0%	7.2%	13.1%	9.5%
	Foreign-born		20.5%	18.7%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		44.0%	49.2%	33.1%	41.3%
	Foreign-born		33.0%	42.6%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		71.9%	70.0%	72.5%	76.8%
	ISCED 5-8		87.8%	90.3%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) on UOE data. Further information can be found in Appendix I and Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, := not available, 12=2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 2 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- The Flemish community (BEfl) will implement reforms at all levels of education, including dual learning, starting in September 2019. The French community (BEfr) will also implement school reforms, starting with changes to governance, then the new extended common curriculum and reforming initial teacher education from September 2020.
- Education spending in Belgium is among the highest in the EU, but educational outcomes are comparatively low, suggesting room for increased efficiency and effectiveness.
- To reduce inequality and improve outcomes, teachers need more support to manage diversity in the classroom.
- Tertiary educational attainment is high but disparities remain between regions and groups.

3. A focus on teachers

The Belgian communities are taking ad hoc measures to address teacher shortages. According to data from the 2018 Teaching and Learning International Survey (TALIS[11]) (OECD, 2019b), the proportion of teachers satisfied with their job is around the EU average (89.2% (84.8% in BEfr, 92.9% in BEfl) v 89.5% at EU level). However, only 16.3% ((5.3%, 25.8%) v 17.7% at EU level) believe that teaching is a valued profession in society. Shortages are increasing, but seem more acute in BEfr. The reasons include the growing pupil population and its increasing diversity, an ageing teacher workforce, fewer enrolments in teacher education, high exit rates among recent teacher recruits, poor conditions for lateral entry, and difficult working conditions. There are particular shortages in specific subjects and geographical areas, including in science, technology, engineering and mathematics (STEM) fields, and in BEfr also for modern languages and specific vocational education and training (VET) courses. Promotion campaigns are being launched to attract higher numbers of and more suitable students. In BEfr, measures include overtime, raising the retirement age, more favourable lateral entry conditions, and simplified recruitment procedures. In BEfl, measures include intensive initial coaching for new teachers, quicker permanent appointments, collaborative platforms giving job security to temporary teachers in primary schools, and an extra salary step for end-of-career teachers.

The communities adopted reforms to improve the quality and relevance of initial teacher education (ITE). They will be rolled out from September 2019 in BEfl and as of 2020 in BEfr. In BEfr, all new teachers will need a four-year academic master's degree (ISCED 7); since pay is directly linked to degree level, this will increase the financial attractiveness of the job. Detailed indicators on how the measure is to be financed in the long term, are awaited. In BEfl, a new first master's degree for upper secondary education teacher training will replace the required additional second master's degree (see Box 1 below).

Box 1: Initial teacher education reforms in the French and Flemish communities

In BEfr, pre-primary, primary and lower-secondary education teachers will require a master's degree in education (ISCED Level 7). More focus will be put on training in digital and innovative technologies, on teaching a diverse and multilingual classroom, and on addressing inequalities and differentiated learning. New teacher trainers will need an additional one-year master's degree.

[11] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

In BEfl, higher education institutions will become the only providers of ITE. Professional bachelor's programmes for pre-primary to lower secondary teachers will focus more on didactics, classroom management, language skills, multilingualism and diversity. 'Dutch as a non-native language' will be a new optional subject in the lower secondary bachelor's degree to support the teaching of students from a migrant background (also in adult education). Teaching practical VET courses will require ITE at ISCED level 5. The programme for upper secondary teachers will involve a bachelor's degree combining subject fields with elective courses in education studies, followed by a master's programme in education. Lateral entry will become possible through a one-year conversion course. Teacher trainers will also take a specific training.

There is scope to strengthen teachers' continuing professional development (CPD) and pedagogical support. Schools enjoy autonomy in CPD policy and planning. CPD is not well developed, not mandatory (BEfl), and not recognised for career development. In BEfr, CPD is limited and its impact is not measured. Belgian teachers took significantly fewer ICT-related CPD courses than teachers elsewhere in the EU (European Commission, 2019a). TALIS data show that teachers attend the more popular courses and seminars (64.4% (36.7%, 88%) v 71.3% at EU level) than the activities they themselves consider more impactful, such as peer learning and coaching (25.4% (15%, 34.4%) v 38.1% at EU level). Studies show that pedagogical support for new teaching methods in pre-primary education would be beneficial to manage the increasing number of non-Dutch mother tongue children (BEfl) (Peleman, 2019). An evaluation of centres for pedagogical support and guidance in BEfl made suggestions for improvement (Commissie Monard, 2019).

The role of school leaders is gaining more recognition. In BEfl, the government increased the budget for administrative support in primary education by more than 20% in 2018/2019. Salaries of school principals were raised and their teaching load cancelled or reduced, to free time for leadership tasks and to boost professionalisation and motivation. In BEfr, measures to improve the pedagogical leadership of school leaders and to increase administrative support will be implemented from September 2019. School principals reported in TALIS that shortage or inadequacy of time for instructional leadership (58.3% (80.1% in BEfr and 44.4% in BEfl) v EU average of 34.9%) and shortage of support staff (43.7% (63.4%, 31.1%) v 38.4%) hinder the quality of teaching in their school.

4. Investing in education and training

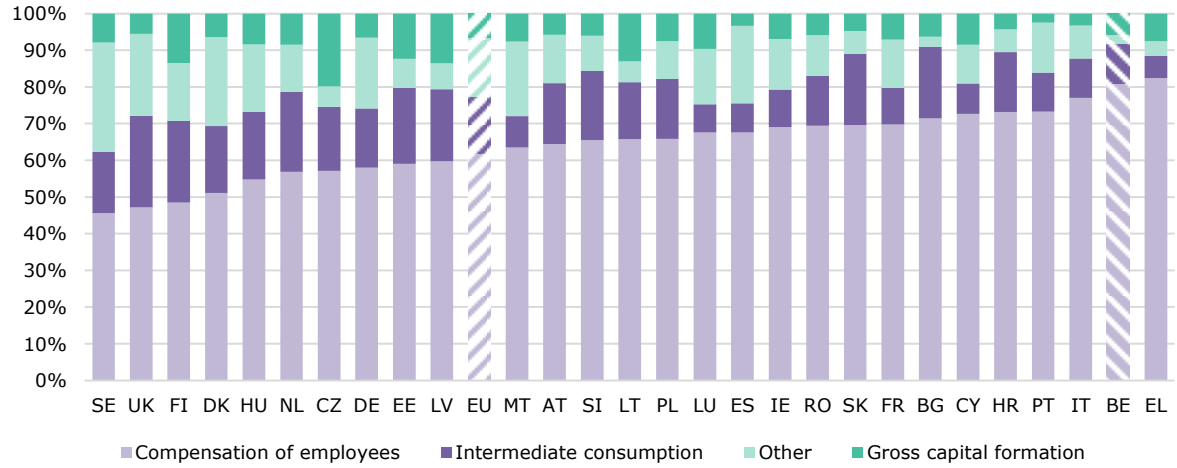
In 2017, Belgian general government expenditure on education as a share of GDP was among the highest in the EU at 6.3%, just behind Sweden and Denmark[12]. Since 2010, expenditure rose from 6.0% to 6.3% (or EUR 27.8 billion). Over the same period, the share of public spending on education also rose from 11.3% to 12.1%. The real-term increase of 11.5% over the same period is well above the EU average of 0.2%. Spending increased most (12.4%) at pre-primary and primary level, thereby reducing the spending gap between elementary and secondary level, but also at secondary (6.2%) and at tertiary level (7.7%). In 2015, the share of private funding in total educational expenditure was relatively low at 6.1%, reaching 14.2% at tertiary level[13]. Comparing Belgium's spending with other 'high spending' countries, and noting that expenditure is set to remain high (see below), better educational outcomes should be possible (European Commission, 2019b). Authorities need to make more data available to underpin educational research and evidence-based policy.

Belgium has the second highest share of spending on employee compensation in the EU. It accounted for 80.9% of public education expenditure[14] in 2017 (EU average 62%), having increased by 12.1% between 2010 and 2017 (EU average 3.4%). This high and growing share reflects the relatively low pupil/teacher ratio in primary and secondary education[15] (10.7 compared with the EU average of 12.9) and higher average salaries at all levels (OECD, 2017). Teacher

12 Eurostat, COFOG, 2017 [gov_10a_exp].
13 Eurostat, UOE, 2015 [educ_uoe_fine01].
14 Eurostat, COFOG, 2017 [gov_10a_exp].
15 Eurostat, UOE, 2017, [educ_uoe_perp04].

salaries are slightly below those of similarly educated workers in BEfl and 4-11 pps lower in BEfr (teacher salaries are on average about 4% higher in BEfl) (OECD, 2018c). Gross capital formation (e.g. buildings, digital infrastructure and equipment) accounted for 5.5% of public expenditure (EU average of 6.4%). This category of expenditure increased by 25.3% between 2010 and 2017 in real terms, strikingly different from the EU average cut (-14.7%). Belgium is set to experience demographic growth, with an expected peak of 6-year-olds by 2021 and 11-year-olds by 2027. Therefore, measures to address infrastructure shortages, particularly in cities, will remain a clear priority. BEfl has invested heavily in new school infrastructure and refurbishment in recent years (EUR 2.48 billion from 2015-2018) (Vlaams Parlement, 2019). In BEfr, EUR 463.9 million was invested from 2012-2014 (OECD, 2016). Nevertheless, recent initiatives to create additional school places in areas with shortages (EUR 20 million/year) are considered insufficient (Court of Auditors, 2019). There is also an acknowledged need for a school infrastructure register (also in BEfl) and more digital equipment (BEfr).

Figure 2 Categories of public education spending, 2017



Source: Eurostat, COFOG. Online data code: gov_10a_exp.

5. Modernising early childhood and school education

In 2016, Belgium reached its national Europe 2020 target for early school leaving (ESL) of 9.5% and maintained the downward trend in 2018. The national ESL rate in 2018 dropped further by 0.3 pps to 8.6%, below the EU average of 10.6%, but with wide variations between groups and regions. The difference between regions has narrowed, with the significant drop to 10.7% in the Brussels region (-2.2 pps) and to 9.9% in Wallonia (-0.6 pps), unchanged in Flanders at 7.3% (+0.1 pps) (Statbel, 2018). The ESL rate continued to fall for women (6.5%), but increased slightly to 10.6% for men, a gender gap close to the EU average. The gap between the rates for non-EU born (19.2%) and native-born (7.2%) students remains high and slightly above the EU average (11.2 pps). A number of measures now being implemented were set out in the 2018 Education and Training Monitor. In BEfr, a comprehensive plan to address ESL, including measures to collect administrative data and set up a support system to combat dropouts (supported by the European Social Fund (ESF)), will be implemented as of 2020/2021. Improved school governance (see below) should also contribute to reducing both grade repetition (46%) and ESL. In BEfl, the rate of grade repetition fell slightly between 2012/2013 and 2017/2018 (at 26.7%, down 2.3 pps).

Belgium lowers the age of starting compulsory education to five, as quality early childhood and care (ECEC) is increasingly recognised as key to later success. Compulsory education in Belgium will start at 5 instead of 6 as of 2020/2021. Regular attendance in ECEC for 5-year-olds is already a prerequisite to access primary education. Although enrolment in ECEC increased further to 98.7% in 2017, attendance is much lower for children with a migrant background or with low-skilled parents in large cities. ECEC institutions and parents do not engage sufficiently with young children in early literacy activities (PIRLS, 2016). Longitudinal research shows that 5-year-old children from socio-economically disadvantaged families already show late

acquisition of learning outcomes, which continues throughout primary school for language, mathematics and some social competences (Groenez, 2016). Different measures have been taken to increase participation in ECEC and boost literacy in BEfl (Education and Training Monitor 2018). From 2019/2020, operating means per child will be increased to the amount at primary level (+ EUR 52 million/year). In BEfr, measures to improve participation include free ECEC as of 2019/2020, a first curriculum of 'initial competences' for ECEC as of 2020/2021, and an increase in the number of teachers and support professionals.

The average competence level of pupils is decreasing; improving both equity and excellence is a challenge. The 2019 European Semester country-specific recommendations to Belgium included a recommendation to 'improve the performance and inclusiveness of the education and training systems and address skills mismatches' (Council of the European Union, 2019). International assessments (PISA, PIRLS, TIMSS) and the 2018 proficiency tests (*'peilingen'*) in primary and secondary education show a decrease in performance in basic skills and in pupils' second language (BEfl). In parallel, nationwide results for digital skills also dropped over 2015-2017: in 2017, the proportion of people aged 16-24 with overall low digital skills[16] (19%) was higher than the EU average (15%). In BEfr, the strategy for digital education in schools aims to close the achievement gap (FWB, 2018). In BEfl, the third strategic literacy plan (*Strategisch Plan Geletterdheid 2017-2024*) addresses literacy and digital skills of various subgroups. In addition, BEfl identified the need to improve systems skills[17], complex problem solving, and reasoning (OECD, 2019a).

The gap in educational outcomes due to socio-economic and migration background is high. TALIS data from 2018 show that diversity in the classroom is higher than the EU average. Teachers work in classes with at least 10% of students being non-native speakers (35.4% (31.7% in BEfr, 38.5% in BEfl) v 19.4% at EU level), having special needs (51.5% (49.3%, 53.4%) v 30.8%), or being migrants or with a migrant background (34.6% (36.9%, 32.5%) v 20.8%). Over 30% of students come from socio-economically disadvantaged homes (19% (24.5%, 14.3%) v 13.6%), and at least 1% of students are refugees (28.0% (25.7%, 30%) v 15.7%). The proportion of teachers who feel well or very well prepared to teach in a multicultural and/or multilingual setting is lower than the EU average (15.7% (14.2%, 17%) v 23.8%). According to principals, more than in other EU countries, shortages of qualified teachers (46.5% (65.6%, 34.2%) v 24.6%) and shortages of teachers competent to teach students with special needs (55.6% (80.9%, 39.4%) v 37.8%) hinder schools' capacity to provide quality instruction. Performance gaps between schools persist: half of students from disadvantaged backgrounds attend schools characterised as disadvantaged[18] (European Commission, 2017, 2019b). The persistent poverty rate among children below 18 years also doubled between 2007 and 2017 (14.4%[19], above the EU average of 13.9%). Pupils from a disadvantaged background and with another mother tongue are more at risk of having a problematic school career (Onderwijs Vlaanderen, 2018). The new decree on enrolment in secondary education (BEfl) will abolish the mandatory social mix of pupils within schools as of 2020/2021. The impact of replacement mechanisms on social segregation remains unclear.

School reforms to improve basic skills, tackle inequalities and improve efficiency and governance will be implemented from 2019/2020 in BEfr. The *'Pact for Excellence in education'*, a systemic and long-term school reform stretching to 2030, aims to improve basic skills, reduce grade repetition, inequity and high dropout rates. Work on the first pillar of the reform (changes to school and system governance) is the most advanced. Central governance is being reinforced, but combined with greater autonomy and accountability for schools. From 2019-2021, all schools must set six-year plans contributing to the objectives of the Pact, including the objectives on performance and inequality, exclusion of disadvantaged groups, differences in individual school performance, early school leaving, grade repetition and collaborative teaching. The second pillar of the reform (a common, multi-disciplinary and poly-technical curriculum) will be rolled out from 2020/2021, first in pre-primary (see above) and then in higher grades, reaching 9th grade in 2028/2029. Two hours per week of individualised child support will be provided from 2019/2020. Benchmarks for this new curriculum still need to be decided. Its successful implementation will depend on political commitment and sustained financing, but also on finding

16 [isoc_sk_dskl_i]
17 Systems analysis, judgment and decision making and systems evaluation.
18 Definition: see page 122 of OECD (2018a).
19 Eurostat, EUSILC, [ilc_li21].

sufficient teachers, giving them stronger pedagogical support, and on the new initial teacher education.

Reforms in secondary education will be implemented in the Flemish community from September 2019. New curricula, based on the EU key competences framework, have been developed by the different school networks focusing on fewer but more ambitious and clearer final attainment levels for first grade: all children will need to meet a baseline literacy level. Pupil guidance will be mandatory and an additional criterion for recognition of schools. Final attainment levels are currently being developed for second and third grades, including for the first time subject-specific attainment targets for Vocational Education and Training (VET). The range of subjects on offer in second and third grades has been streamlined and should result in a better transition to higher education or the labour market. However, early tracking remains a concern (OECD, 2018b).

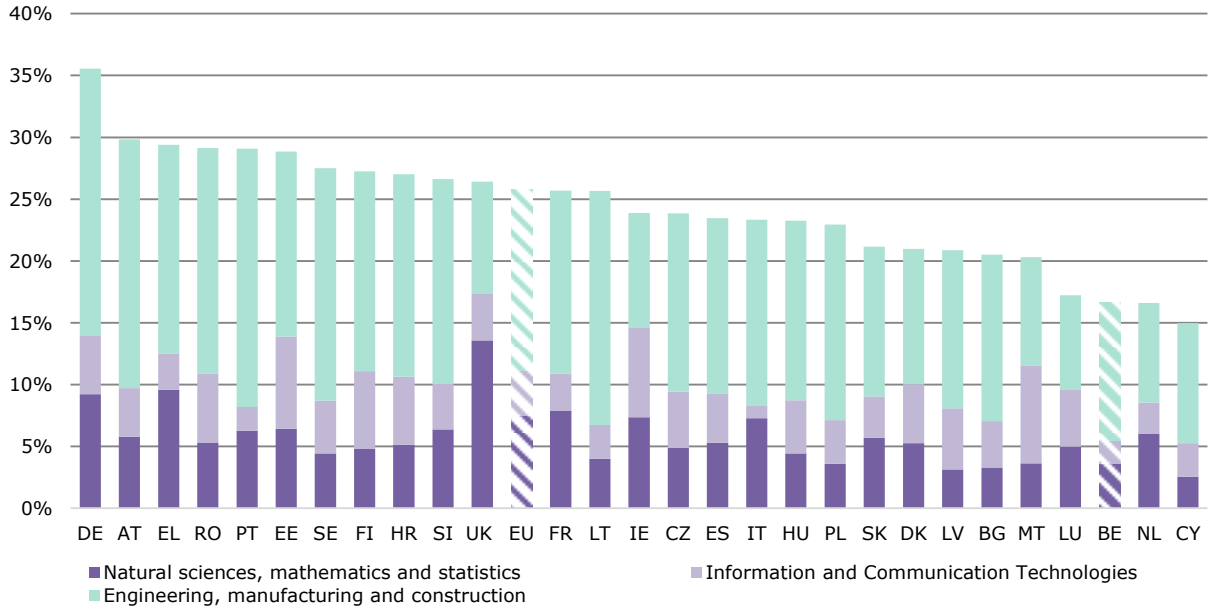
6. Modernising higher education

In 2018, Belgium reached its Europe 2020 national target for tertiary attainment of 47%, but disparities remain between regions and groups. The rate increased from 45.9% in 2017 to 47.6%. The increase of 1.8 pps was higher in Flanders (48.2%) and in the Brussels region (56.2%) than in Wallonia (+ 1.6 pps to 42.5%) (Statbel, 2018). Though the tertiary attainment rate for men fell slightly from 40.8 to 40.6%, it increased for women from 50.9 to 54.5%. There are wide disparities related to socio-economic and migrant background, which can also be linked to grade repetition at school. Although 49.2% of the native-born population aged 30-34 had completed tertiary education, only 35% of the non-EU born population had done so. In 2016, the attainment gap for people with disabilities far exceeded the EU average (25.5 pps against 13.2 pps).

In a context of budgetary constraint and rising student populations, the higher education system is expected to better balance equity, effectiveness and efficiency. Belgium's universities (11 out of 12) in the U-Multirank perform strongest in the research, knowledge transfer, international orientation and regional engagement dimensions, but only average (6 universities) on teaching and learning (U-Multirank, 2019). Higher education institutions (HEI) are increasingly forming clusters with other institutions to improve efficiency, visibility and competitiveness. BEfr has passed legislation in 2019 (*'décret Transparence'*), enforcing private HEI to inform students on the formal value of their degree. From 2019/2020 in BEfl, new short-cycle programmes will provide increased opportunities for vocational education students to access higher education. Teacher education programmes within centres of adult learning will also be incorporated into HEIs. From September 2019, the new quality assurance framework will give HEI more autonomy and responsibility. With the same objective, BEfr has launched in 2019 a large-scale participatory reflection to deliver a new quality assurance framework by end 2021. Nationally, course dropout and year repetition rates are high (De Witte and Hindriks, 2018). Degree completion time has increased, linked to the introduction of flexible education pathways. Though currently every HEI has its own diversity policy, from September 2019, BEfl will start collecting data on disadvantaged/underrepresented groups to develop more strategic policies. In Belgium, adults with tertiary-educated parents are 9 times more likely to complete tertiary education than those with low-educated parents (OECD, 2018a).

The communities are taking action to increase the uptake of STEM studies, but they lack comprehensive strategies to meet labour market demand. The 83.4% employment rate of recent graduates from education in 2018 was above the EU average (81.6%). The employment rate of tertiary education graduates (90.3%) is also above the EU average (85.5%), but below average (70% compared to 76.8) for upper secondary and post-secondary non-tertiary graduates. In 2017, Belgium ranked 26th in the EU for tertiary graduates in STEM (16.7%) and last for female graduates in IT. In BEfr, though a number of initiatives are being launched to promote STEM uptake, an overall strategic plan is lacking. In BEfl, implementation of the STEM action plan for 2012-2020 is progressing well (Onderwijs Vlaanderen, 2019). In the German-speaking community (BEde), measures include promoting science in schools and more cooperation with universities and vocational training centres.

Figure 3 Distribution of tertiary STEM graduates in the EU, as a share of total graduates (ISCED 5-8), 2017



Source: Eurostat, UOE, 2017. Online data code: educ_uoe_grad02.

7. Modernising vocational education and training

The share of upper secondary students in vocational education and training (VET) is slowly but steadily decreasing. In 2017, the share of students in VET (ISCED 3) was 57.8%[20], about 10 pps above the EU average. However, the proportion of students in work-based learning was only 6% (EU 27%) and the employment rate of recent VET graduates[21] was 76.7% (EU 79.5%).

All communities took action to improve dual learning. In BEfl, after a three-year pilot, dual learning will be rolled out from September 2019 as an education pathway in mainstream secondary education. BEfl also adopted a decree to start dual learning in special needs education (Onderwijs Vlaanderen, 2018). In 2018/19, a first pilot to run two courses was set up, to be extended to 30 courses in the next school year. The Walloon government approved a plan to renovate and create IFAPME[22] training centres to become centres of excellence in dual learning both for young people and for adults. In August 2018, an agreement was signed with more than 21 sectoral federations and sector funds to increase awareness of these measures among employers and to develop collaborations with stakeholders (Gouvernement Wallonie, 2018). In the Brussels region, a one-stop shop called the 'Cité des métiers' (City of trades) provides access to all types of lifelong learning, including VET. In BEde, a new training offer called apprenticeship contract '29 Plus' is aimed at persons with a replacement income to improve their chances on the labour market.

8. Developing adult learning

With low participation in adult learning, Belgium is not well prepared to tackle its high exposure to digitalisation. In 2018, participation in adult learning stagnated at 8.5% (EU average of 11.1%). To improve participation, BEfr has reduced enrolment costs for unemployed and disadvantaged groups. BEfl will further reform training incentives for workers. By September 2019, coordinated actions will be put in place to compensate the employer, the employee in training and the cost of training by issuing vouchers. In January 2018, the development of a Flemish skills strategy was launched in cooperation with the OECD (OECD, 2019a). As Belgium is ahead of other countries regarding exposure to digitalisation (OECD, 2019c), public investment in

[20] [educ_uoe_enrs04]
[21] [educ_uoe_perp04]
[22] Institut wallon de Formation en Alternance et des indépendants et Petites et Moyennes Entreprises.

lifelong learning and reskilling to address the digitalisation challenge will be essential. 61% of individuals between 16 and 74 years have only basic digital skills, above the EU average of 57% (European Commission, 2019). The share of adults without an upper-secondary qualification is 21.8%, close to the EU average. However, their employment rate is among the lowest in the EU, highlighting the need for more substantial action on upskilling and reskilling for this target group. Addressing skills mismatches is one of the 2019 country-specific recommendations for Belgium (see section 5).

Socially disadvantaged groups are underrepresented in adult learning. Both Flanders and Wallonia have initiatives to address this, for example, implementing the decree on the financing of formal adult education in BEfl, and an increased budget for adult education schools in BEfr.

Recognition and validation of skills is high on the agenda. In BEfl, the decree on the integrated policy for the recognition of prior learning (Vlaams Ministerie Onderwijs, 2019) will ensure that individuals can have their competences tested in a special test centres in addition to the systems in higher education. A decree on quality control for vocational pathways based on a common framework was also adopted. A pilot project has been funded to assess up to 100 adult skills in bottleneck occupations and to certify them upon successful evaluation. BEfr is implementing the recommendation on upskilling pathways. BEde continues to develop validation of non-formal and informal learning through a working group of education, training and labour market stakeholders (see Box 2)**.**

Box 2: An ESF-funded project makes skills visible and useful in BEde

The *'Zukunftswege gestalten'* project has been put in place to support low-skilled jobseekers, workers and migrants whose foreign qualifications could not be recognised. The project provides for competence assessments and the development of personal competency profiles, guidance and advice on finding training, and recognition of professional skills (Das Bildungsportal, 2019).

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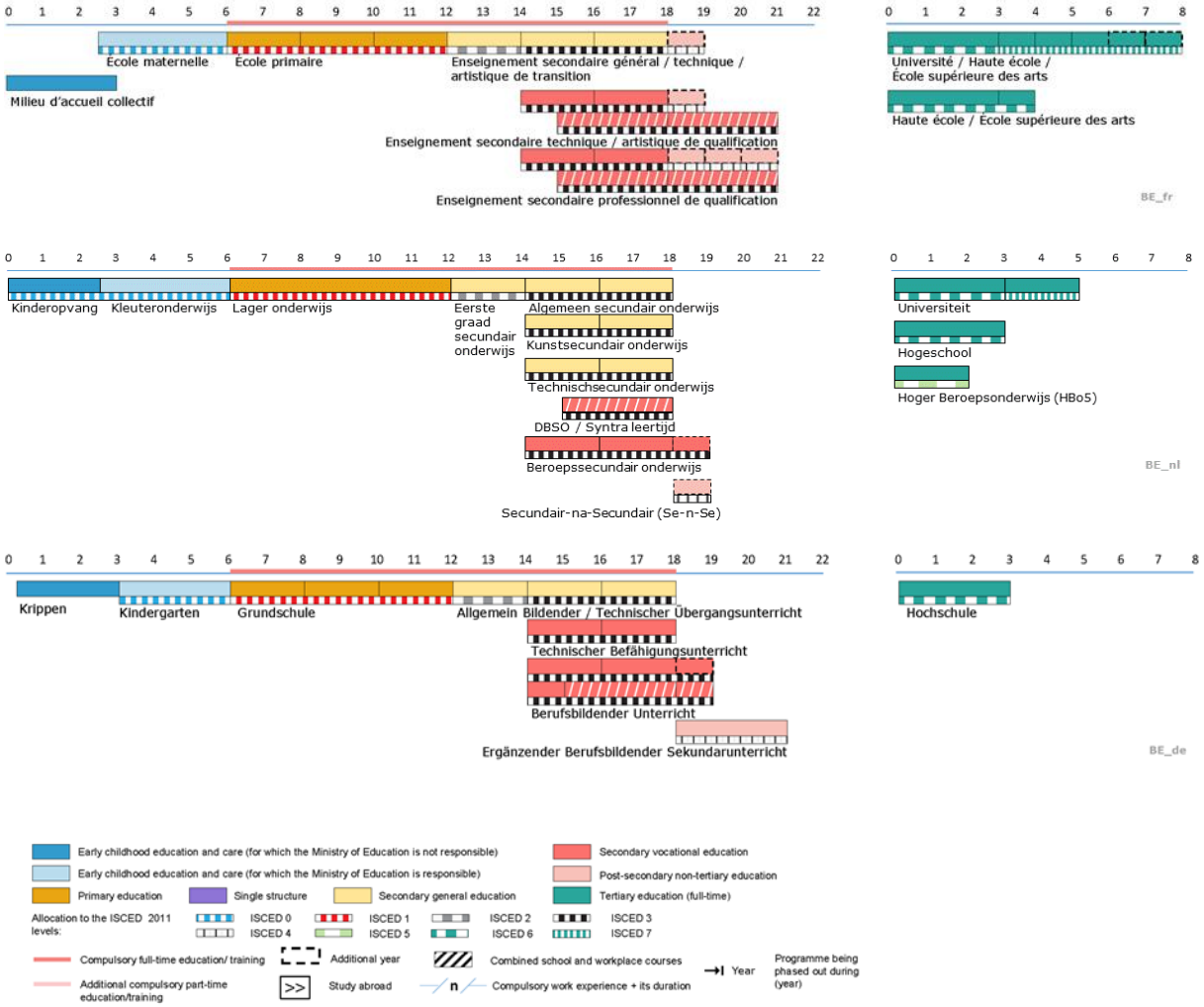
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

Comments and questions on this report are welcome and can be sent by email to:
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European Commission

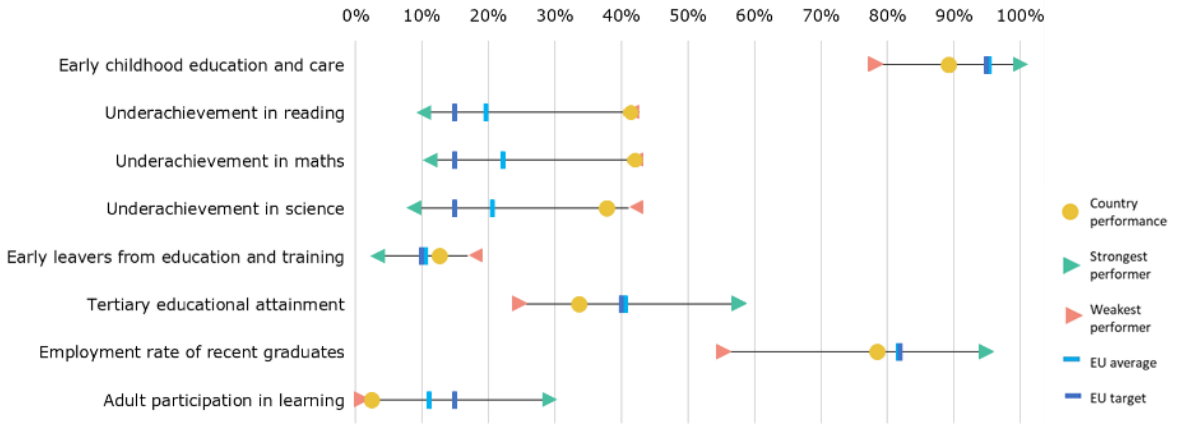
BULGARIA

1. Key indicators

			Bulgaria		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			14.7%	12.7%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			27.9%	33.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			84.2%	83.9% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		41.0%	41.5% [15]	19.5%	19.7% [15]
	Maths		47.1%	42.1% [15]	22.3%	22.2% [15]
	Science		38.8%	37.9% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		73.6%	78.6%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		1.6%	2.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	8.1% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	1.4% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.1%	3.6% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€3 114 [12]	€3 579 [16]	:	€6 111 [15,d]
		ISCED 1	€1 865 [12]	€2 274 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€2 220 [12]	€2 820 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€2 106 [12]	€2 577 [16]	:	€7 730 [14,d]
		ISCED 5-8	€3 818 [12]	€5 197 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		14.8%	12.7%	13.1%	9.5%
	Foreign-born		:	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		27.9%	33.5%	33.1%	41.3%
	Foreign-born		: [u]	: [u]	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		63.7%	67.8%	72.5%	76.8%
	ISCED 5-8		85.2%	84.5%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u= low reliability, : = not available, 12=2012, 14= 2014, 15 = 2015, 16= 2016, 17 = 2017.

Figure 3 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

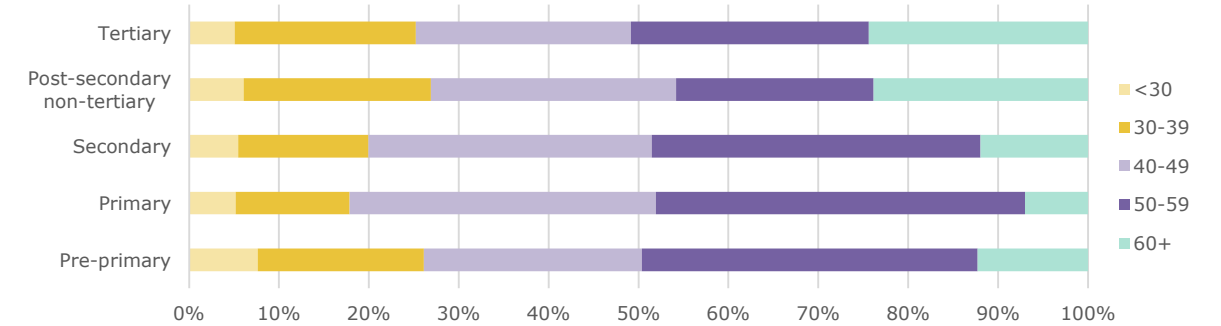
- The modernisation of the education and training system continues while quality, labour market relevance and inclusiveness remain challenging.
- Demographic trends and rising skill shortages suggest that Bulgaria needs to invest better in the skills of its current and future workforce. The need to upskill and reskill the adult population is high while participation in adult learning is low.
- The status of the teaching profession is low and the teacher workforce is ageing. Salaries are being increased as a means to boost the attractiveness of the profession.
- Steps have been taken to increase the labour market relevance of vocational education and training (VET).

3. A focus on teachers

The status of the teaching profession is low. As in many other European countries, teacher training programmes struggle to attract talented young people. Although the percentage of graduates in such programmes is roughly the EU average[23], only 60% of graduates actually enter the profession[24]. Low salaries are a major factor deterring young people from choosing a teaching career (Sofia University, 2017). Other negative factors are unattractive working conditions, for example, reflected in insufficient opportunities for professional development or deteriorating class discipline[25]. A recent survey (AEJ, 2019) shows that negative attitudes towards teachers prevail in the media. Only 17.7% of teachers believe that their profession is valued by society and only 57% believe that the advantages of being a teacher outweigh the disadvantages[26] (OECD, 2019). While generally unpopular with young Bulgarians, the teaching profession is particularly unappealing to men, who make up only 17% of school teachers[27] (EU average: 28%).

Teacher shortages are emerging as the teacher workforce ages. Almost half of all teachers are older than 50 and thus likely to reach retirement age within the next 10 years; 10% are already over 60. Shortages have started to emerge and are expected to worsen. This is particularly the case for kindergarten and primary school teachers, for subject teachers in foreign languages, ICT, mathematics, physics, and for some VET subjects. The exact replacement need by subject and by level of education is not known, as Bulgaria has only recently (with EU support) started setting up a forecasting tool for the teaching profession. Nevertheless, even with declining student numbers[28], it is expected that there will be a great need to replace the large cohorts of retiring teachers. In addition, the number of support specialists (such as resource teachers, school phycologists, speech therapists, etc.) is also insufficient, with unmet demand expected to rise as the inclusive education reform advances.

Figure 2 Teachers' age by level of education, 2017



Source: Eurostat, UOE, 2017. Online data code: educ_uoe_perp01

[23] In 2017, 8% of graduates at Bulgarian universities had followed teacher training programmes (EU-28: 9%).
[24] According to the data from Bulgaria University Rating http://rsvu.mon.bg/rsvu3/?locale=en
[25] For example, 14% of students reported frequent bullying (OECD, 2016).
[26] EU-23: 71%.
[27] ISCED 1-3.
[28] In Bulgaria, the school age population (3-18 year-olds) is projected to fall by 9% by 2030 compared to Eurostat's baseline projections for 2020.

The need to better prepare teachers to cope with classroom challenges is high. Among the 23[29] European countries surveyed in the OECD's Teaching and Learning International Survey (TALIS) (OECD, 2019), Bulgarian teachers reported one of the highest need for continuing professional development in knowledge of their subject field (19%, EU-23: 6%), knowledge of the curriculum (20%, EU-23: 5%), pedagogical competences (17%, EU-23: 8%) and ICT skills (23%, EU-23: 16%). The percentage of teachers reporting a high need of training in student behaviour and classroom management, and in teaching in a multicultural or multilingual environment, is also higher than the average of the 23 EU countries surveyed[30]. There is also an acute need of training to accompany the inclusion of children with special educational needs and disabilities (UNICEF, 2018). However, almost 60% of teachers report that participation in training is restricted by high costs (EU-23: 44%) (OECD, 2019). Although some measures have been taken to strengthen initial teacher training, the need to better prepare new teachers remains high. Considering the large number of teachers that are set to retire, further improving initial teacher education and attracting talented candidates to the profession could potentially have a major positive impact on the Bulgarian education system.

Box 1: Reforming the teaching profession

Teachers were put at the centre of the education reform that started in 2016 with the Pre-school and School Education Act. Since then, a series of steps have been taken to improve the attractiveness of the profession and strengthen support for policies for teachers. Nevertheless, the teaching profession continues to face important challenges.

To avert a possible crisis due to high numbers of retiring teachers, plans are under way to double teacher salaries by 2021 compared with their 2017 level, bringing salaries to 120% of the average salary in Bulgaria. Alternative entry pathways into the profession are also being supported.

Pedagogy was included on the list of priority professions in higher education, and as such receives more funding. In line with a planned amendment of the Higher Education Act, tuition fees for this study track will be eliminated, as for other professions where there are shortages. An induction programme was also introduced to support novice teachers.

An obligation to undertake continuing professional development was introduced for the first time, and was linked to career progression along a five-stage qualification level. A fast-track career development programme was also put in place for teachers in 'innovative schools'. Commuting and accommodation costs for teachers working in remote areas became reimbursable in 2018.

Box 2: EU-funded support for continuing professional development

'Qualification of Pedagogical Specialists' is a project co-financed by the European Social Fund. With a budget of almost EUR 10 million, the project will provide training to 52 900 teachers, with a view to acquiring qualification levels 1-3, and training to 48 000 teachers with a view to acquiring qualification levels 4-5. More broadly, the aim is to improve professional and career development and to upgrade teachers' competences in key fields such as digital skills, modern pedagogy and student evaluation. The project started in October 2018.

4. Investing in education and training

Although public spending on education is increasing, the system remains underfunded. In 2017, Bulgaria's general government expenditure on education rose by 8% in real terms compared to the previous year, reaching the equivalent of 3.6% of GDP. Despite this improvement, public spending on education is still among the lowest in the EU, and significantly below the EU

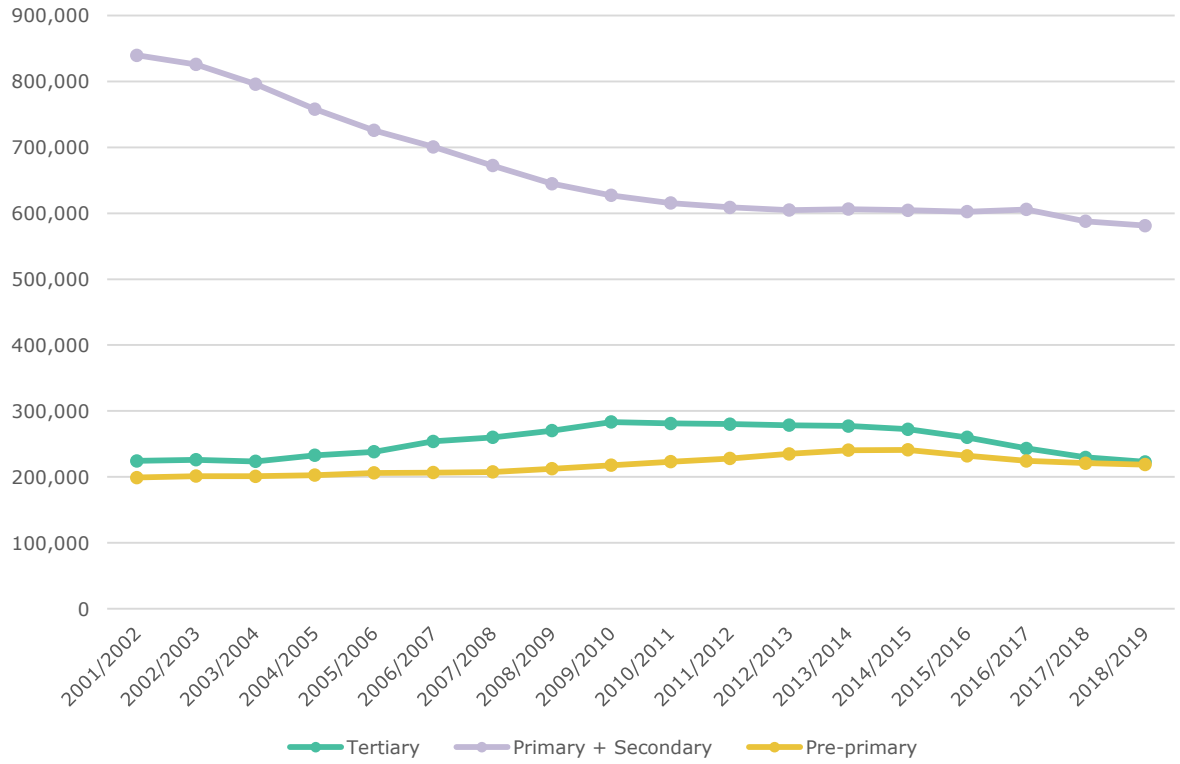
[29] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

[30] 22% compared with EU-23: 12.5% and 21% compared with EU-23: 13%.

average of 4.6%. As confirmed by the 2019 budget, rising teacher salaries will drive expenditure in the next couple of years. This year's budget also funds four additional national programmes[31] that aim to attract and train teachers in subjects for which shortages are expected, introduce innovative teaching methods, support early career orientation and create links between schools and IT companies. A national programme has also been introduced to provide support to municipalities for desegregation actions. It finances transport costs, activities with parents, teaching materials and funding for educational mediators. In addition, starting from 2019, all upper secondary schools will receive additional funding to work with students from disadvantaged backgrounds. A similar provision for primary schools was introduced in 2018.

Educational infrastructure is in great need of modernisation. There are considerable disparities in the quality of school facilities, with poorer municipalities being particularly at disadvantage (UNICEF, 2018). Schools often lack basic facilities or equipment, and have no laboratories or sports facilities. In addition, maintaining adequate heating during winter is a challenge in many schools in poorer municipalities (ibid). Compared with the European average, there are fewer highly digitally equipped and connected schools (European Commission, 2019a). The network of kindergartens and nurseries is also insufficiently developed.

Figure 3 Number of students enrolled by level of education, 2001-2019



Source: National Statistical Institute.

5. Modernising early childhood and school education

Participation in early childhood education and care remains low, hampering the early acquisition of cognitive and socioemotional skills. Good quality early childhood education and care are crucial for the development of key competences. In Bulgaria, the participation rate for children aged 4 to compulsory school age has been declining since 2014. The latest data available indicate an enrolment rate of 83.9%, significantly below the EU average of 95.4%. Disparities in enrolment exist between regions[32] and between districts[33]. Care-related kindergarten fees still limit

[31] Motivation of teachers´, `IT companies in schools and teachers in IT companies´, `Innovation in action´ and `Support for municipalities for educational desegregation´.

[32] Participation rates range from 87.1% to in Yugozapaden to 77.5% in Severoiztochen.

the participation of children from disadvantaged backgrounds and Roma, while a lack of facilities tends to particularly affect large urban areas. To improve enrolment rates, Bulgaria started implementing the EU-funded project 'Active inclusion in pre-school education'. The project provides additional Bulgarian language training for children with a mother tongue other than Bulgarian; it finances the cost of fees for attending the full-time kindergarten programme and supports parental involvement. Enrolment rates are very low for children younger than 3. Only 9.4% of children in this age group were enrolled in formal childcare for a variety of reasons, including the lack of nurseries. The rate is considerably below the EU average of 34.2%.

In spite of ongoing efforts, early school leaving remains problematic. In 2018, the rate of early leavers from education and training (18-24 age group) was 12.7%, still above Bulgaria's national Europe 2020 target of 11% and the EU average of 10.6%. No substantial progress has been made since 2010, with the rate hovering around 12-14% since then. Leaving the education system too early, without proper education and skills, is particularly problematic among the Roma[34] and in rural areas[35], where poverty is higher and the quality of education is typically lower. It is also problematic from the perspective of the labour market, given the increasing need for higher-skilled workers and the decline of the working-age and student populations. Implementation of the inter-institutional mechanism that aims to identify out-of-school children and return them to education continues. The focus is shifting to school retention measures, such as activities aimed at overcoming learning gaps and increasing students' motivation. Dropout rates, including due to temporary or permanent emigration, remain high, however, and show very large regional variations (Institute for Market Economy, 2018). Despite the efforts of past years and the results that have been achieved so far, expanding and stepping up measures to prevent dropout remains particularly important.

Improving quality and inclusiveness in education remains a major challenge. Bulgaria's sharply declining demographic trends means that its economic future will depend to a large extent on how well it can upgrade the skills of its current and future workers (World Bank, 2016). Socio-economic disadvantage is still a key determinant of poor skills and low educational outcomes[36] in a context of important skills mismatches and shortages. Although a series of measures are being rolled out to improve quality and equity[37], existing data shows that there are important gaps in the acquisition of basic and digital skills. PISA 2015 shows that about 40% of teenagers in Bulgaria do not have basic competences in reading, mathematics or science, with underachievement rates above 60% among disadvantaged students (OECD, 2016). Digital skills are low among the young: only 53% of young people aged 16-19 assess their level of digital skills as basic or above basic, compared to an EU average of 83%. Roma children are less likely to attend kindergarten and much more likely to drop out of school. An important continuing challenge is promoting ethnically-mixed schools and desegregation measures. The link between skills forecasting and follow-up in the education and training system is still not comprehensive (European Commission, 2019b), although some measures to improve the matching of supply and demand were recently taken. In this context, the 2019 country-specific recommendations call on Bulgaria to improve the quality, labour market relevance and inclusiveness of education and training, in particular for Roma and other disadvantaged groups (Council of the European Union, 2019).

6. Modernising higher education

Student numbers continue to fall, while participation of students from disadvantaged backgrounds is rather low. The number of students enrolled in universities continues to fall, mainly driven by demographic trends but also by the national policy to decrease the number of students in certain study fields. In 2018, the number of students enrolled was 20% lower at bachelor level and 15% lower at master level than in 2013/2014. Conversely, the number of PhD

[33] The gross enrolment rate for children aged 3-6 ranges from 88.9% in Blagoevgrad to 64.8% in Sliven (National Statistical Institute).
[34] 67% among Roma aged 18-24 (FRA, 2016).
[35] 26.2% in rural areas, 12.2% in towns, 5.9% in cities.
[36] Previous international surveys showed that socio-economic status has a significant impact on students' educational outcomes (European Commission, 2019b).
[37] A continuation of the efforts of Ministry of Education and Science to tackle these issues is the project 'Support for success', co-financed by ESF, which builds on previous projects, including 'Your class'. The project targets 1 500 schools, particularly students with learning gaps or at risk of dropping out. Career guidance is planned for students grades V to VII. The project started in February 2019 and has a budget of EUR 65 million.

students grew by 7% in the same timeframe. The number of international students is increasing but is insufficient to compensate for the large number of Bulgarians studying abroad[38]. Available data suggests that the enrolment of students from disadvantaged backgrounds is low[39]. Tertiary educational attainment among the population aged 30-34 increased slightly to 33.7% in 2018, but is still below Bulgaria's national Europe 2020 target (36%) and the EU average of 40.7%. The gender gap persists, with 40.8% of women in this age group holding a tertiary education degree, compared to 27% of men.

Measures to increase labour market relevance are underway but overall higher education is still insufficiently aligned to the needs of the labour market. In a context of increasing skills mismatches and declining student numbers, the profile of graduates does not correspond to the qualifications demanded on the labour market. Available data shows that Bulgaria continues to have one of the highest percentages of graduates in social sciences, business and law[40], while the number of graduates in science, technology, engineering and mathematics (STEM) remains low[41]. A number of measures have been put in place to address this mismatch, such as linking public funding to quality and relevance for the labour market, eliminating tuition fees in professions where there are shortages on the labour market, additional funding for qualifications in demand on the labour market and limiting the number of places in study fields that are in oversupply. Some positive developments are visible (such as falling numbers in business administration and an increase in the number of students in ICT and medical studies). However, the attractiveness of STEM fields – which are high in demand on the labour market- is still rather low. This situation can be partly explained by the performance gaps in science and mathematics among young people (as measured by PISA), insufficient career guidance and the visible gender imbalance in the participation in higher education, particularly in certain study fields[42]. In addition, employers report that graduates have knowledge and skills deficiencies, including in soft skills and other transversal skills. Nevertheless, when students admitted under the new rules graduate, a more in-depth evaluation of the impact of the higher education reform will be possible.

7. Modernising vocational education and training

Efforts are being made to increase the labour market relevance of vocational education and training (VET). In June 2018, the Bulgarian Council of Ministers adopted a list of professions in shortage of qualified specialists, and the conditions for additional funding to schools that offer these qualifications. Most of these specialties are in the field of machine building, construction and transport. Since February 2019, learners in these fields have been receiving additional scholarships. Available data show a slight decline in total enrolment in upper secondary VET (50.7% in 2017, still above the EU average of 47.8%). The employment rate of recent VET graduates increased significantly in 2018, reaching 66.4%, compared with 59.1% the year before. Nevertheless, in 2018 it remained significantly below the EU average of 79.5%. The main development in relation to dual training was the adoption of the revised VET Act in October 2018. Amendments include the definition of requirements, the development of a database for companies involved in dual training, and the setting up of a labour contract for learners in dual training to provide for social and health insurance. The amended Act also sets rules for the training of in-company trainers, including compulsory training in pedagogy and methodology so that they acquire the competences needed to support dual learners in companies. In addition, an ESF co-financed project that aims to support the dual training system is set to start in the second half of 2019. The concept of 'teacher-methodologist' was introduced under the Bulgarian-Swiss dual VET project (DOMINO). Teacher-methodologists link mentors, (i.e. company employees participating in the

[38] In 2017, 8.1% of upper secondary graduates in Bulgaria had finalised tertiary education abroad.

[39] Less than 2% of students enrolling in a bachelor programme come from families where the parents' level of education is low (European Commission, 2018).

[40] In 2017, 13.2% of all graduates at Bulgarian universities had studied social sciences, journalism and information (EU average: 8%), and 32.9% had studied business, administration or law (EU average: 24%). Together, these two major study fields add up to 46.1%. While this was significantly above the EU average of 33.7%, it does mark a decline compared to previous years (51% in 2014).

[41] The latest available data show that in 2017, 20.5% of tertiary graduates in Bulgaria had studied STEM (EU average: 25.8%). This represents 14.3 graduates in STEM for every 1 000 Bulgarians aged 20-29 and is among the lowest in the EU.

[42] Out of the 31 100 bachelor graduates in 2017, almost 60% were women. 30% had graduated in business administration and law (66% women), 4% had graduated in ICT (36% women), while 14% had graduated in engineering, manufacturing or construction (25% women).

development of curricula for practical training), with VET school teachers. In April, the Ministry of Education and Science introduced a national training programme for in-company trainers.

8. Developing adult learning

The need to upskill and reskill the population is high. In Bulgaria, 17.4% of the working age population aged 25-64 (approx. 677 000 people) is low skilled. Although this percentage is slightly below the EU average (21.9%), it is particularly problematic given that it corresponds to twice the number of jobs available that require only an elementary level of skills (357 000). This clearly highlights the need for substantial up-skilling and re-skilling. However, only 2.5% of adults aged 25-64 in Bulgaria have had a learning experience during the preceding 4 weeks of the Labour Force Survey (EU average: 11.1%).

Bulgaria has taken steps to increase the employability of disadvantaged groups and reduce regional disparities in employment rates among the working age population. In January 2019, the Council of Ministers approved the National employment action plan, which aims to upskill unemployed people from disadvantaged groups through training and subsidised employment, particularly in municipalities with high levels of unemployment. The 'New chance for success' project is specifically aimed at people who have not completed education, as well as those who are unemployed and illiterate. 'Education of adults who have taken literacy courses' provides training for unemployed through apprenticeships and internships.

Bulgaria lacks a comprehensive system for the training and assessment of teachers and training in adult education, and the supply is not sufficient. In many cases, especially in vocational centres and enterprises offering job-related non-formal training, the qualification of adult educators is left entirely to the staff involved and is treated as a personal development issue. Adult educators fall into the same professional category as other teaching staff, but their profession is seen as even less attractive than being a school teacher. Insufficient attention is paid to the need for special qualifications for adult educators working with Roma. Further efforts are needed to improve teaching and teacher training for adult education. For example, a legal definition of the status of adult educators and for inclusion of the profession among teachers and pedagogical specialists is needed, alongside the development of a comprehensive system for adult teaching training.

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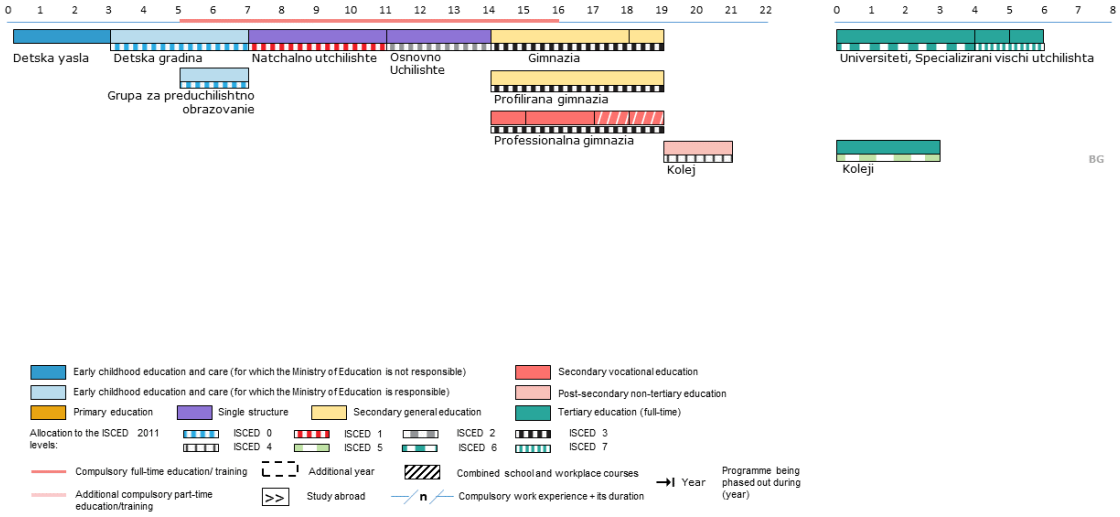
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree mobile graduates - Credit mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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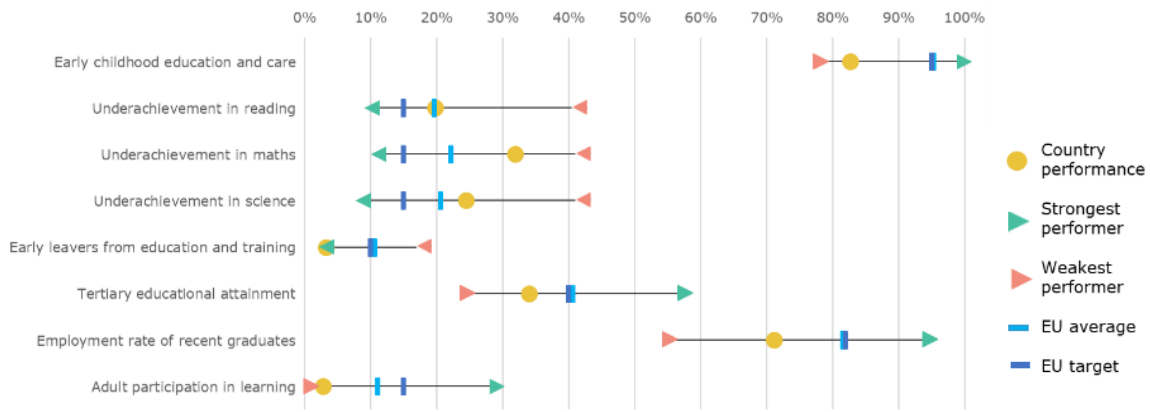
CROATIA

1. Key indicators

			Croatia		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			5.2%	3.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			21.3%	34.1%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			69.2%	82.8% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		22.4%	19.9% [15]	19.5% [EU27]	19.7% [15]
	Maths		33.2%	32.0% [15]	22.3% [EU27]	22.2% [15]
	Science		18.5%	24.6% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		76.3%	71.2%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		3.0%	2.9%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	3.1% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	4.6% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.9%	4.7% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€3 826 [12]	: [16]	:	€6 111 [15,d]
		ISCED 1	€7 507 [12]	: [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	: [12, d]	[16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€3 337 [12,d]	: [15]	:	€7 730 [14,d]
		ISCED 5-8	: [12]	: [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		5.3%	3.3%	13.1%	9.5%
	Foreign-born		3.7% [u]	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		21.4%	34.8%	33.1%	41.3%
	Foreign-born		18.7% [u]	28.0% [u]	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		72.9%	66.3%	72.5%	76.8%
	ISCED 5-8		80.7%	75.2%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) on UOE data. Further information can be found in Section 10 and Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u = low reliability, : = not available, 12=2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 4 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Pilot implementation of curricular reform and ambitious preparations for full implementation are under way.
- Reforms are under way in vocational education and training.
- Participation in early childhood education and care is held back by shortages of teachers and places.
- Plans to expand the very short average instruction time could help to improve low education outcomes.

3. A focus on teachers

Teaching is a predominantly female profession. In 2017, there were 84 370 teachers working at various levels in the education system. Early childhood education and care (ECEC) and primary teachers are almost exclusively female (99% and 93% respectively). Women are also in the majority (67%) in upper secondary schools, while there is virtual gender parity in tertiary education[43]. Time spent in contact teaching is below the EU average (OECD, 2016). Many students apply for initial teacher education, so it is possible to be selective. A national study suggests that students' motivation drops in the course of their studies (Šimić Šašić et al., 2013). The proportion of teachers whose first choice of career was teaching (66.7%) is around the EU average, but differs significantly between female (70.6%) and male (53%) teachers (OECD, 2019)[44]. In the OECD's TALIS Survey, teachers reported that the profession is not considered attractive (OECD, 2019). This may be due to low social status[45].

There are teacher shortages in ECEC and certain subjects. For the former, the (already big) shortage (in 2016, Croatia needed 4 217 more ECEC teachers) would nearly double if Barcelona targets were to be reached by 2030 (Dobrotić et al., 2018)[46], in particular in poorer areas where coverage is already low. The number of new entrants to the profession is insufficient to cover the shortfall[47]. In schools, there are shortages in remote areas and for science, technology, engineering and mathematics (STEM subjects), and for information and communications technology (ICT). There are no specific incentives on offer to address these shortages. If there is no teacher with subject–specific qualifications, subjects can be taught by any qualified teacher. About a third of teachers are aged over 50[48].

Teachers' salaries are below average for tertiary graduates. Staff pay (largely teachers' salaries) accounts for 73.2% of government expenditure on education (the EU average is 62.0%)[49]. However, in November 2018 the average net teachers' salary was EUR 895 in primary schools and EUR 975 in secondary schools (CBS 2018a), significantly below the average net salary for tertiary graduates. A 5% pay rise will be introduced in two stages in 2019. Certain categories of teachers (e.g. those working in three or more schools or in special needs education) receive slightly higher salaries. Also, teachers in schools involved in the implementation of the School for Life curricular reform pilot project[50] receive a bonus of up to 15%.

Initial teacher education differs according to the levels of education. For ECEC, a bachelor's degree is needed; from primary onwards, a master's. After studies, teachers must undergo a

43 Eurostat, UOE 2017.
44 In 2018, 23 Member States participated in TALIS survey: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.
45 According to TALIS 2018, 90.8% of teachers feel that the teaching profession is not valued. Croatian research shows that 63.9% of secondary students share this opinion (AZVO, 2018a).
46 In 2017/2018, there were 12 142 ECEC teachers; it is estimated that 9 148 more will be needed by 2030.
47 About 500 students graduate annually as ECEC teachers, a net annual growth of only 200 after taking account of retirees (CBS, 2018b).
48 29% in ECEC, 27% in primary schools, 30% in secondary schools, 34% in tertiary education (all below the EU average).
49 Eurostat, COFOG 2017.
50 See: https://skolazazivot.hr/.

one-year induction and take the state certification examination. The most frequently reported professional development need is in the field of ICT skills (26.2%, compared with an EU average of 16.1%) (OECD, 2019). Continuous professional development (CPD) is obligatory for primary and secondary school teachers and a requirement for career progression. In higher education, there is a tendency to downplay teaching qualifications and teacher training, since they are not a pre-condition for career advancement (Domović et al., 2018).

Measures to improve attractiveness of school principals positions are being taken. School principals are elected by school boards for a renewable five-year period and approved by the Minister of Education. They must have at least five years' teaching experience. While their role is mainly administrative, they used to receive little training in leadership or education management, but new education management training has been introduced this year. Their performance is not evaluated and does not affect their pay. The Strategy for Education, Science and Technology proposed licensing for school principals, which is included in the Education Act.

4. Investing in education and training

Education spending is close to the EU average. In 2017, Croatia spent 4.7% of its GDP on education (the EU average is 4.6%). As a proportion of general government expenditure, education spending (10.5%) is also close to the EU average (10.2%). The share of spending on tertiary education is 21.5%, above the EU average of 15.0%.

The financing of ECEC is almost exclusively the responsibility of local government. Total public expenditure for ECEC rose from 0.46% of GDP to 0.61% (from 8.1% to 10.6% of the total budget of local self-government units). There are big regional differences: spending is considerably less in poorer units[51] (Dobrotić et al., 2018). Structural investments are being made on national level to improve the situation.

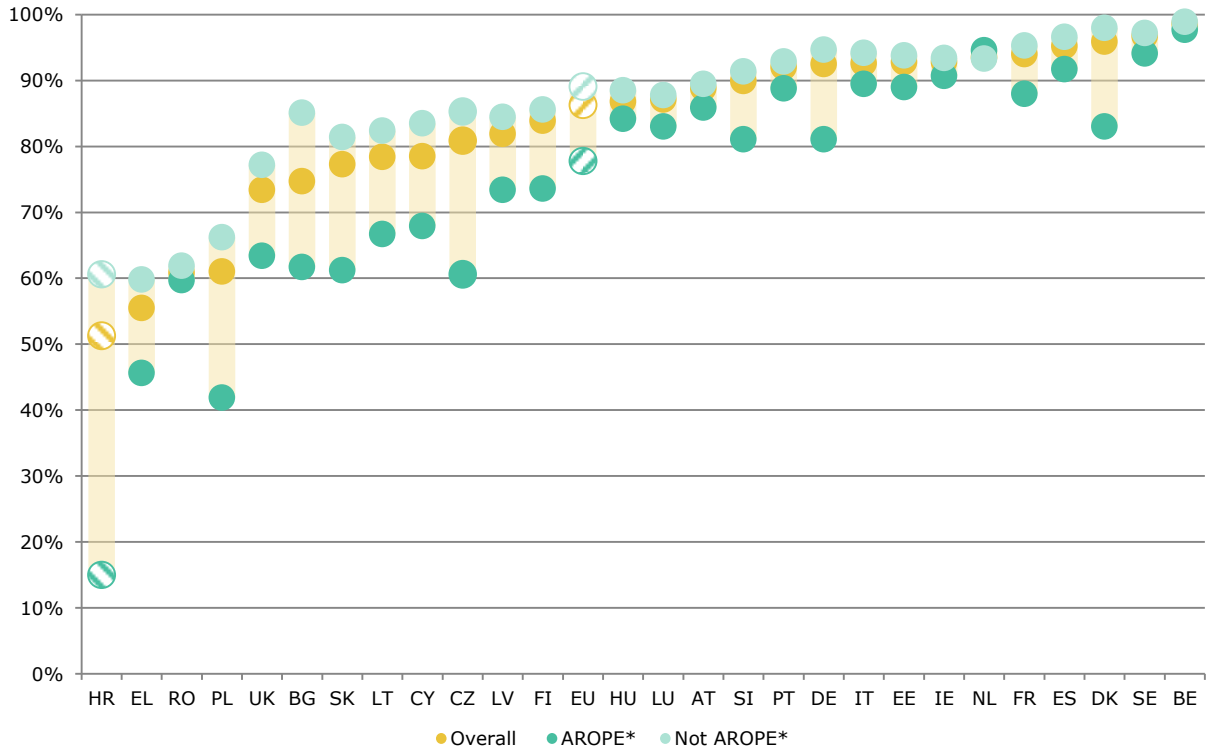
Top-up funding for higher education is being introduced. Performance contracts have been experimentally introduced since 2012; the current (third) cycle covers funding for both research and teaching. In the next 4 years, the contracts will provide higher education institutions with top-up funding of EUR 250 million used for both basic teaching-scientific funding and for top-ups: up to 5% of basic for teaching, up to 20% of basic for science and up to 3% of total funding for a specific institution profile.

5. Modernising early childhood and school education

Low participation in ECEC is hard to remedy, due to decentralised funding and sometimes counterproductive measures. Croatia has one of the lowest ECEC participation rates in the EU for children between the age of 4 and compulsory education (82.8%, well below the 95% benchmark for 2020 and the EU average of 95.4%), although in 2017 it has risen by 7.7 pps since 2016. Compulsory education starts a year before primary school, so almost all children attend at least that year (OECD, 2017, p. 74). There are not enough places to guarantee participation[52]. Priority is given to families where both parents are working, so the children of unemployed parents are at a disadvantage. Other barriers include insufficient teacher numbers and high parental contributions[53]. The poorest levels of provision are to be found in remote and less-developed regions. Some municipalities give financial support to help parents whose children do not attend kindergarten to care for them at home, thus in effect disincentivising their participation in ECEC (City of Zagreb, 2016). Some positive initiatives are being taken, such as longer opening hours to help parents who work early or late shifts. The EU structural funds support the building and renovation of kindergartens.

[51] 5.7% to 14.1% of units' budget in 2015.
[52] 146 municipalities did not have kindergartens in 2014-2016 (Dobrotić et al., 2018).
[53] 80% of children live in municipalities where parents have to pay monthly contributions of EUR 65-93 for kindergarten, equivalent to 10–12% of the average net salary (Dobrotić et al., 2018).

Figure 5: Participation in formal childcare or education of children between 3 and mandatory school age, by socio-economic background, 2016 (%)



Source: JRC calculations using 2016 EU-SILC microdata. Notes: *AROPE = at risk of poverty or social exclusion

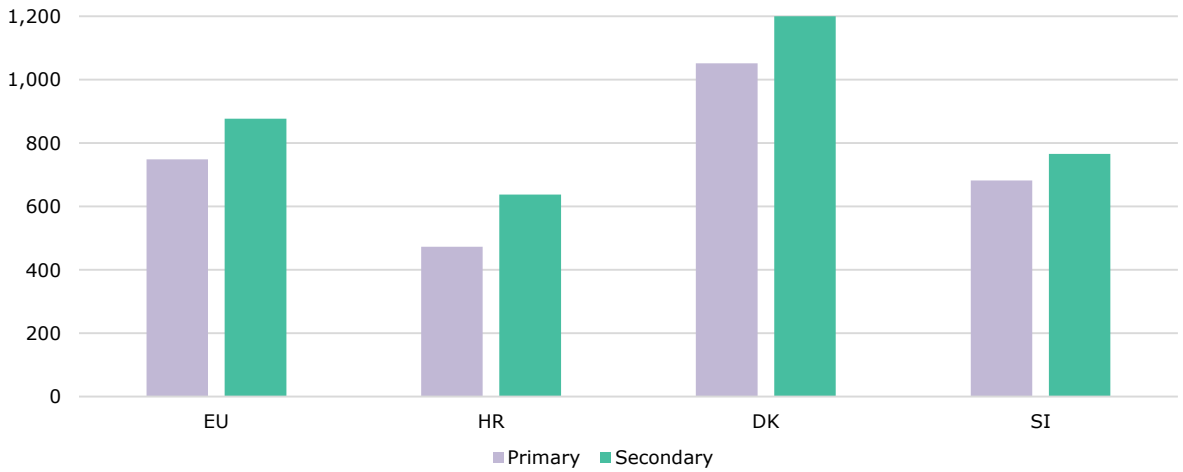
Emigration is reducing the school-age population. The school-age population in Croatia is expected to fall by 23.1% between 2020 and 2040, partly as a result of many young families moving to other countries[54].

The rate of early school leaving is very low, but the overall quality of education remains a challenge. Croatia has the lowest rate of early school leaving in the EU (3.3%, compared with an EU average of 10.6%). Nevertheless, the gap for students with disabilities is one of the largest in the EU (14 pps, as against an EU average of 10 pps) (Grammenos, 2013). Croatia has one of the shortest compulsory primary and lower secondary schooling cycles in the EU – it lasts only 8 years. The Strategy for Education, Science and Technology identified this as an area for change, but there are infrastructure challenges, as many schools work in two or three shifts. There is a project in cooperation with the World Bank that aims to enable change to one-shift teaching and increase the number of teaching hours/lessons. This should help improve the results of Croatian pupils (e.g. OECD's Programme for International Skills Assessment (PISA) test, where pupils perform below the EU average in reading, science and in particular mathematics (OECD, 2016)). A national youth study shows that young people are not very satisfied with the quality of their education (Gvozdanović et al., 2019), while according to World Economic Forum indicators the quality of education in Croatia ranks 112th out of 137 (Schwab, 2017).

Instruction time is low and students have a negative attitude towards school. In primary education, average annual instruction time is 473 hours (EU average: 748). In lower secondary education, it is 637 hours (EU average: 877) (Eurydice, 2019). Nevertheless, students increasingly describe their education as hard and stressful (Gvozdanović et al., 2019); a large percentage do not like going to school at all (42.2% at age 11 and 60.9% at age 14) (Jokić et al., 2019). A positive development is that 86% of pupils surveyed following participation in the School for Life pilot said that their classes were different and more interesting[55].

[54] Own calculations on EUROSTAT population projections data. Online data code: [proj_15npms].
[55] https://skolazazivot.hr/preliminarni-rezultati-zadovoljstva-dionika-reforme-skola-za-zivot/

Figure 3 Recommended minimum instruction time for the compulsory curriculum (in hours, per notional year and by ISCED level), 2017/2018



Source: Eurydice, *Recommended Annual Instruction Time in Full Time Compulsory Education in Europe*.

Curricular reform is progressing. Reformed curricula have been adopted for most subjects and cross-curricular topics and these will be implemented incrementally from 2019/2020 in all primary and secondary schools. Schools are being supplied with all necessary equipment and materials. The reform includes extensive CPD for teachers, mentoring, and learning communities to share practices on teaching methods (see text box 1). Following the e-Schools project, ICT was introduced as a compulsory subject in the fifth and sixth grades of primary and the first grade of general secondary schools from 2018/2019. Croatia received from the Council of the European Union a country specific recommendation to "Deliver on the education reform and improve both access to education and training at all levels and their quality and labour market relevance." (Council of the European Union, 2019).

Digital skills levels are low. In 2017, the percentage of 16-74 year-olds who have reported having basic or above-basic overall digital skills was the second lowest in the EU (41%, as compared with an EU average of 57%)[56]. The proportion of people regularly using the internet is among the lowest in the EU (73%, as compared with the EU average of 83%). The digital skills of young people aged 16-19 are slightly better than EU average, but they dropped significantly between 2016 (70%) and 2017 (59%).

Box 1: Mass training of teachers in preparation for curricular reform

Curricular reform was piloted in 74 schools in 2018/2019, with a view to full implementation the following year. Due to the tight schedule, preparations for full implementation are proceeding alongside, and being informed by, the evaluation of the pilot phase (MZO, 2019a).
There is an extensive programme of face-to-face and online training courses to prepare teachers and support staff to implement the new curriculum. A first round of face-to-face training covered 32 000 teachers, 26 000 in a second round and 29 000 in the third round. Supplementary online training is taking place at the same time (MZO, 2019b).

Training and support materials have been developed to help teachers implement new elements such as learning outcomes, different types of assessment and the teaching of transversal themes and to make best use of the new IT equipment. Virtual classes are offered for each subject, in which teachers should participate for up to 4 hours a week. Participation is not obligatory, but many teachers are taking them. The goal is that all primary and secondary teachers should have completed training by the next school year.

Online training will continue as needed after full implementation in 2019/2020.

[56] Eurostat, DESI 2017.

6. Modernising higher education

Student numbers are high, but completion of studies is low. 81% of grammar school and eligible vocational education and training (VET) students hope to go on to higher education (AZVO, 2018b). 68% of upper secondary students enrol in higher education (AZVO, 2014), including 61% of VET students. In 2018, the tertiary education attainment rate was 34.1%, a steep (5.4 pps) increase from 2017 (28.7%), but still well below the EU average of 40.7%. There is an unusually wide gender difference (41.9% of women against 26.5% of men) and 57% of current students are female (CBS, 2018c).

The number of study programmes is large; the government gives scholarships for STEM studies. There are 1781 study programmes in Croatia of which 727 in STEM (38.9%) (MZO Register, 2019). For STEM programmes funding arrangements are more favourable: the proportion of STEM graduates is among the highest in the EU (27% in 2017, compared with an EU average of 25.8%).[57] Also, 3 400 scholarships for STEM studies annually were introduced from 2017/2018. However, the scholarships do not specifically encourage students to become STEM teachers and there are already teacher shortages, which may have a negative effect on the future supply of STEM students.

The level of student mobility is low. Learning mobility is low (6.9%, well below the EU benchmark of 20% and average of 10.7%). Inward degree mobility is the lowest in the EU (0.4%, compared with an EU average of 8.6%); almost all of it is for doctorates and master's degrees. 90% of foreign students are European (64.3% from non-EU European countries). The government hopes to, among other things, stimulate internationalisation through performance funding.

The government is making efforts to improve equity. The 2018-2021 National Plan for the Enhancing the Social Dimension of Higher Education (adopted in January 2019) highlights 16 categories of students who face challenges in accessing higher education or are at risk of dropout. The plan includes:

- improved data management;
- quantitative indicators;
- instruments for improved access; and
- increased retention, completion and employment rates, to be linked to funding for higher education.

As only about half of the eligible students with lower socio-economic status were receiving the regular state scholarship, in 2017/2018 Croatia started using ESF funds to increase the number of scholarships per year from 5 400 to 10 000, including for students with disabilities. It has also increased transport subsidies for students with disabilities.

7. Modernising vocational education and training

Enrolment in VET has decreased, but employability has improved. The number of new students entering formal VET programmes fell by 7% in 2017 compared to 2016. Total enrolment in upper secondary VET fell slightly (to 69.6%), but is still above the EU average (47.8%). It is reported that until 2017/2018 there were no combined school- and work-based learning programmes in formal VET in Croatia (i.e. the breakdown is reported as not applicable) (UOE, 2017). The employability of VET graduates improved significantly (from 59.4% in 2017 to 68.8% in 2018), but it is still below the EU average (79.5%).

Many VET students go on to higher education. Between 2010/2011 and 2013/2014, around 78% of four-year VET students passed the state *Matura* exams each year and 61% enrolled in higher education programmes (Jokić and Ristić Dedić, 2014).

Croatia is implementing curricular reform in VET. It aims to develop new innovative and flexible sectoral curricula based on labour market needs and to strengthen teacher competences.

[57] Eurostat, UOE, 2017.

Curricula will be developed for each of the VET sectors. VET institutions will be able to adapt 30% of the curricula to local needs. Relevant institutions and social partners are working to develop occupational standards, which will be entered in an online database. A Qualification Framework (CROQF) Register[58] has been created, including units of learning outcomes and qualification standards.

VET regional centres of competence and a dual VET education pilot are complementing the reform. In July 2018, 25 VET schools were designated as regional centres of competence in five sectors to promote VET excellence, including teacher training and lifelong learning. Basic features include innovative learning models, teaching excellence (including mentors), high-quality infrastructure and creative partnerships among relevant stakeholders. The experimental programme "Dual Education in VET" launched in 2018 has been expanded by 13 VET schools for 2019/2020, providing more opportunities for work-based learning. It aims to address inadequacies in practical training and insufficient entrepreneurial competences, and to reduce the skills mismatch (over half of registered unemployed people are VET graduates). An ESF project, 'Modernisation of the system of continuous VET teachers' and trainers' development', supports the training of VET school principals and has involved two VET teachers' days attended by over 1 100 participants.

The VET Act does not provide for VET graduate tracking; data is only collected by schools on a voluntary basis. The Croatian Agency for VET and Adult Education (AVETAE) plans to implement a tracking model as part of a wider project. A separate inter-institutional project aims to monitor people not in employment, education or training.

Box 2: Promotion of student competences and VET through skills competitions and fairs

This project is organised by AVETAE, the partner body for WorldSkills Europe[59] and WorldSkills International. The cost of the project is EUR 5 455 980, of which 85% is covered by the ESF[60]. It started in January 2017 and will last 5 years.

In Croatia, vocational education is considered a less attractive option and this has a negative effect on enrolment. Vocational competitions aim to promote excellence and increase the attractiveness of vocational education. They also provide an opportunity for employers to connect with VET schools[61].

This project aims to modernise vocational competitions and increase participation, thereby motivating students to improve their competences and presentational skills.

In the first two years, the project has supported the participation of more than 1 000 students and 639 teachers in a new type of competition. The national skills competition (the largest in this part of Europe) took place in March 2019 in Zagreb, with around 450 students competing in more than 40 skills, from traditional skills such as hairdressing to interdisciplinary disciplines such as robotics and mechatronics, in front of an audience of almost 10 000[62].

8. Developing adult learning

While there are relatively few low-qualified adults, participation in adult education is minimal. 14.9% of the adult population have not acquired at least an upper secondary qualification (EU average: 21.9%). The proportion of low-qualified adults in employment (37.5%) is also below the EU average (56.8%). However, 367 000 adults (aged 25-64) had a low level of educational attainment in 2017, while there were only 120 000 jobs in elementary occupations, highlighting the need for substantial up-skilling and re-skilling, mostly among older cohorts.

58 See https://hko.srce.hr/registar/.
59 Agency for Vocational Education and Training and Adult Education (ASOO) http://www.asoo.hr/default.aspx?id=1369.
60 ASOO http://www.asoo.hr/default.aspx?id=1173#PUK.
61 *Ibid.*
62 World Skills Croatia http://www.worldskillscroatia.hr/hr/kalendar/drzavno-natjecanje-ucenika-strukovnih-skola-worldskills-croatia-2019/

Participation in adult learning is low (2.9%, EU average: 11.1%). In 2017/2018, no adult aged 25 or above acquired an upper secondary qualification.

The adult education policy framework is outdated and programmes are not properly assessed. A new version of the Adult Education Act has been discussed for a long time, but is not yet adopted. It should ensure full compliance with the Croatian NQF, simplify administrative procedures, improve quality assurance through external evaluation and enable recognition of skills gained through non-formal and informal learning.

The initial and continuing training opportunities for adult education staff are insufficient. Teachers and trainers work as external associates; they are not employed in adult education institutions and their CPD is a personal responsibility, with no institutional funding. National statistics indicated that 692 adult learning educators participated in training in 2017. Future policy action could include:

- updating the CROQF with the skills required for adult education teachers and trainers;
- creating university programmes for specialists;
- new curricula to train teachers and trainers; and
- establishing permanent education and certification systems for them.

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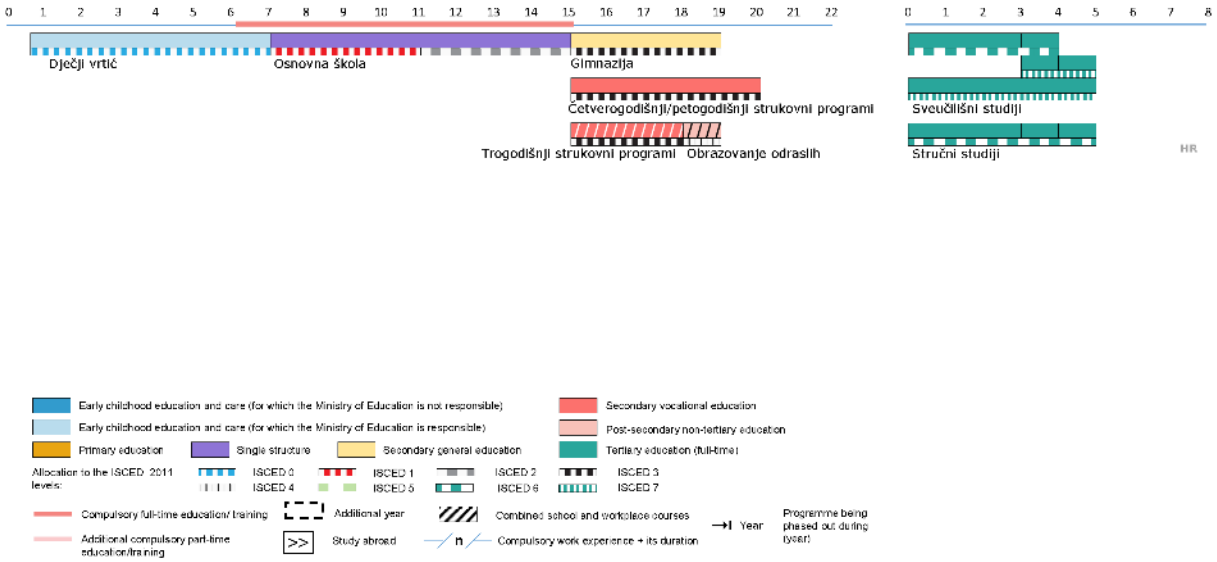
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice (2018), *The Structure of the European Education Systems 2018/2019: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg (Publications Office of the European Union)

Comments and questions on this report are welcome and can be sent by email to:
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European Commission

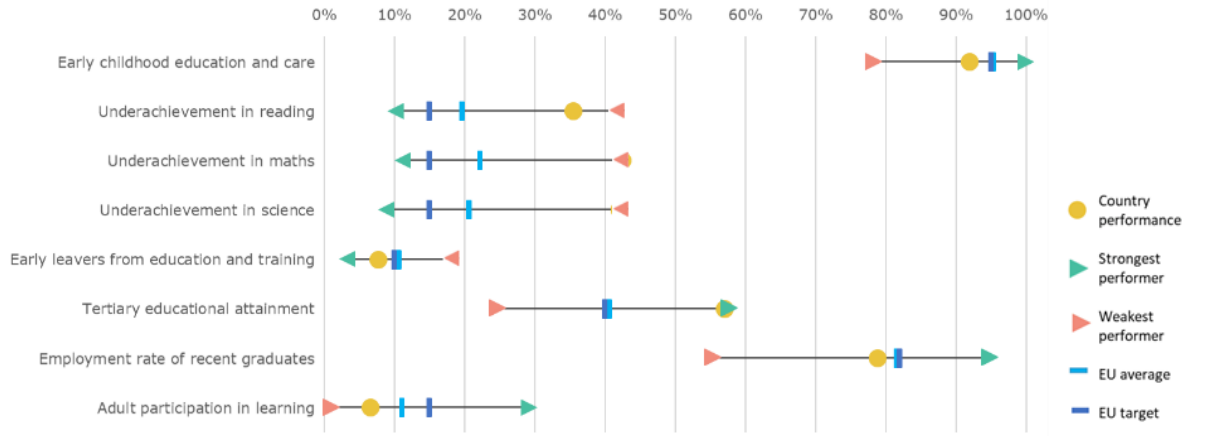
CYPRUS

1. Key indicators

			Cyprus		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			11.7%	7.8%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			45.0%	57.1%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			84.7%	92.0% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		32.8% [12]	35.6% [15]	19.5%	19.7% [15]
	Maths		42.0% [12]	42.6% [15]	22.3%	22.2% [15]
	Science		38.0% [12]	42.1% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		81.1%	78.9%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		8.3%	6.7%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	35.1% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	1.7% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.7%	5.7% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€4 282 [12]	€3 751 [16]	:	€6 111 [15,d]
		ISCED 1	€8 228 [12]	€8 326 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€9 767 [12]	€10 849 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€10 055 [12]	€11 298 [16]	:	€7 730 [14,d]
		ISCED 5-8	€9 866 [12]	€9 164 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		7.8%	6.2%	13.1%	9.5%
	Foreign-born		23.0%	13.9%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		49.4%	64.1%	33.1%	41.3%
	Foreign-born		36.5%	43.8%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		73.8%	68.4%	72.5%	76.8%
	ISCED 5-8		82.9%	81.3%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, , :=not available, 12 = 2012, 14= 2014, 15 = 2015, 16= 2016, 17 = 2017

Figure 6 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- The teaching profession is highly attractive. Reforms to upgrade it are promising but need to be sustained and expanded.
- Reforms are implemented to foster high-quality public early childhood education and care. However, provision is insufficient for the early years.
- Tertiary education attainment has risen further but under-utilisation of skills remains a challenge given the specific features of the Cypriot labour market.
- Measures have been taken to upgrade vocational education and training and adult learning, but the attractiveness of both sectors and participation in them remain low.

3. A focus on teachers

The teaching profession remains attractive and has started to become more competitive. Teaching attracts top university students and working conditions remain attractive despite facing specific challenges. Both aspects are key for high-performing systems (European Commission, 2018). The 2018 OECD Teaching and Learning International Survey (TALIS)[63] shows that the proportion of Cypriot teachers who believe teaching is a profession valued by society is the second highest in the EU (43.5% v 17.7% EU average) (OECD, 2019b). 91.2% of teachers are satisfied with their job (EU average: 89.5%), and they remain so after more than 5 years' working experience (91.3%). Job security is considered moderately or highly important by teachers in their decision to join the profession (80.1% v an EU average of 65.5%).

A combination of factors has led to a large supply of candidate teachers. Good working conditions, limited alternative job opportunities and a hiring system favouring candidates' seniority over merit have resulted in long waiting times for candidate teachers to be recruited[64]. This has also contributed to the gradual ageing of the teaching workforce. In addition, between 2008 and 2018 Cyprus saw a large influx of Greek teachers, with 10 327 secondary and 1 287 primary teachers applying for recognition in Cyprus to practice there[65]. The new recruitment system introduced in 2017 and based on competitive exams led to the hiring of 60 permanent and 278 substitute teachers in 2018. Recruitment from the old system will coexist until 2027. Exams for a next round of competitive hiring are scheduled for November 2019.

Teachers' salaries and working conditions compare favourably to those of European peers. Minimum and maximum statutory salaries are the same for teachers from pre-primary to secondary level. In 2016[66], Cyprus reported actual salaries for teachers in primary and secondary education that were among the highest in the EU (European Commission, 2016). Teachers need fewer years in service than most other EU countries to reach the maximum salary. Working overtime[67] or additional responsibilities such as conducting extra-curricular activities are compensated through a reduction in teaching hours. Statutory teaching hours are in line with or (for primary education) slightly above the average for beginning teachers in EU peer countries. However, they decrease progressively[68] with years of service, thus reducing contact time for more experienced teachers. The student teacher-ratio in secondary education is below the EU average, while in primary education it is in line with the rest of the EU.

[63] In 2018, 23 Member States participated in the TALIS survey: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

[64] In 2018, the waiting list contained 3 266 pre-primary teachers, 4 060 primary teachers, 35 868 secondary (general) teachers and 5 019 secondary (technical/vocational) teachers.

[65] In the same period 7 secondary and 2 primary teachers moved from Cyprus to Greece. Regulated professions database: http://ec.europa.eu/growth/tools-databases/regprof/index.cfm?action=homepage

[66] In PPS. Latest available data as Cyprus did not participate in the 2017 or 2018 data collection.

[67] In primary education, teachers are expected to replace colleagues for 10 teaching periods during a school year and in secondary 7.

[68] From 29 teaching hours in primary education by 2 periods after 14 years and 20 years and from 24 in secondary education by 2 periods after 7, 16 and 20 years.

New teachers currently receive no induction training. Induction training is mandatory but has not been implemented since 2013 due to financial constraints. Previously, mentoring programmes paired new teachers with a senior teacher in their school during the first year of teaching, in addition to afternoon training courses. In view of Cyprus's low performance in basic skills (European Commission, 2017), the absence of induction training seems a lost opportunity given the ample evidence of its impact on the quality of teaching (European Commission, 2018) and student achievements (Ingersoll, 2011).

Continuing professional development (CPD) increasingly responds to the needs of teachers and schools but is insufficiently linked to career development and evaluation. Teachers can opt to attend as many seminars as they wish over the school year which are provided free of charge. One-off training events have limited impact on professional learning and consequently on students' outcomes (European Commission, 2018a). The 'teacher professional learning' framework therefore emphasizes schools-based training and action research methods. Schools select topics based on their assessment of needs, which are then addressed through different school-based training activities. While CPD is taken into consideration in promotions, it is insufficiently linked to career paths and teacher evaluation (see Box 1).

Box 1: A new approach to teacher evaluation

Effective teacher evaluation can positively impact the quality and job satisfaction of teachers as well as their feelings of self-efficacy (European Commission, 2018a). Cyprus's teacher evaluation system has changed little since 1976. In 2019, the Council of the EU addressed for the third time a country-specific recommendation to Cyprus calling on it to 'deliver on the reform of the education and training system, including teacher evaluation' (Council of the European Union, 2019).

The annual reports of school heads on teachers' performance are a largely administrative task. School inspectors, who observe teachers in the classroom, are formally expected to provide both summative and formative evaluation[69]. So far, there is no link of evaluation to school effectiveness. Meta-level analysis of evaluation data with the purpose of informing and reforming the system is also missing.

A new proposal of January 2019 includes: formative assessment of teachers and of school evaluation; support for novice teachers, contract staff and substitutes; evaluation of evaluators; and continuous support for teachers. The proposal also sets out a new horizontal career step for teachers (Senior Teacher), to better profit from experienced teachers in the system. School heads should play a more substantial role in teacher evaluation. Lastly, the proposal provides for meta-evaluation to continuously improve the evaluation criteria and procedures.

While there is no single best model for teacher evaluation (OECD, 2018b), the new framework would provide many valuable measures. These include multiple evaluators, support for professional development, the link to student and school assessment, and evaluation of school heads and inspectors. However, other crucial elements are missing, in particular a clear competence framework for teachers and students. Given that the new system will be implemented by those already involved (inspectors, teachers, school heads), it is important to invest in training evaluators, school heads and teachers to be able to effectively observe and give feedback, and to act on it (European Commission, 2018a). Trust-building measures are also essential, including proper communication, training, pilots and linking teacher evaluation with school improvement (European Commission, 2018a).

4. Investing in education and training

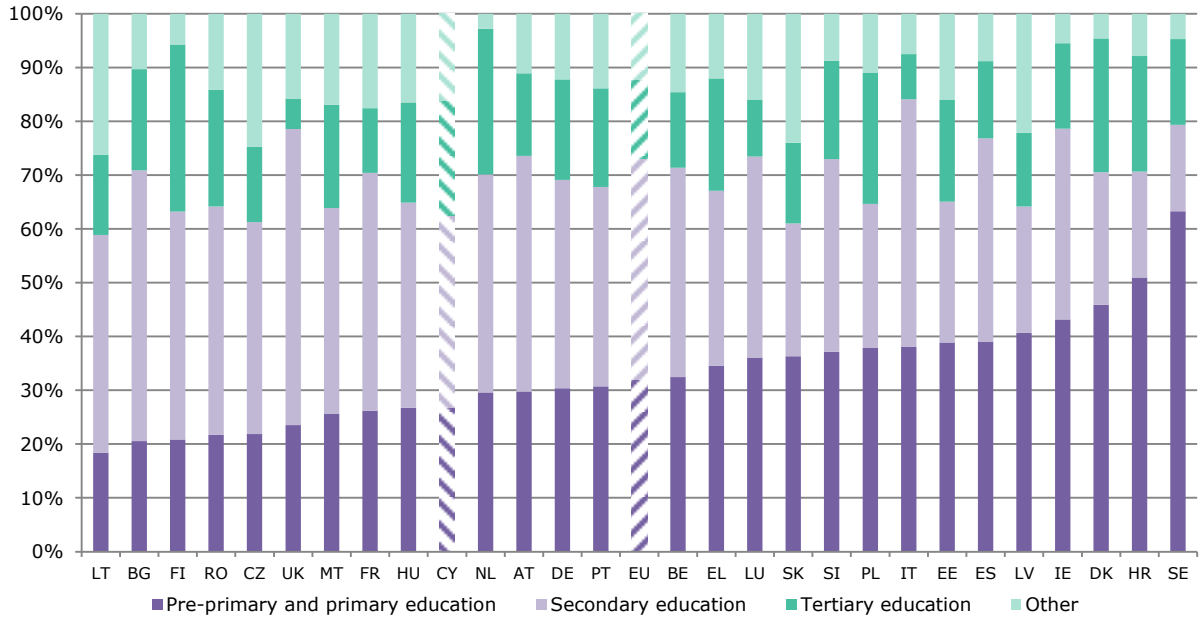
Expenditure cuts during the financial crisis have had most impact on education for the youngest. Compared to the EU average of 4.6%, Cyprus's public education expenditure as a share of GDP was 5.7% in 2017. While this is 0.2 pps smaller than in 2016, absolute expenditure was higher, reflecting increased GDP. Between 2010 and 2017, expenditure fell by 10.7% in real terms.

[69] Since 1 976 no teacher has been deemed unsatisfactory after passing probation, with most teachers scoring between 35 and 37 out of 40 points.

While research has shown that effective investment in early childhood education and care yields high returns in terms of inclusive education outcomes (OECD, 2018a), the biggest decrease (23.8%) occurred in pre-primary and primary education. By contrast, spending in tertiary education rose by 8%. Teachers' pay constitutes 72.7% of total expenditure on education, higher than the EU average (62%).

Private tutoring weighs heavily on parents' education spending. In 2016, private education spending amounted to roughly 26% of overall (public and private) spending on education[70]. While the lion's share of private spending (57%) went on tuition for private education institutions at all levels (ISCED 0-8), a substantial part of it was spent on supplementary tutoring (21%) for pupils. Of this share, 21% was spent for primary education, whereas 47% went to upper secondary students. Socio-economic status is of little relevance: poorer households are almost as likely as high-income families to invest in private tutoring (Lamprianou, 2013). Social mobility in general and high-stakes exams for entry into higher tertiary education in particular are justifications for its prevalence. The ongoing reform of the education system also aims to reduce dependence on private tutoring. However, public tutoring institutions (managed and maintained by the state), which co-exist and compete with private institutions by charging lower fees, appear to validate the phenomenon of private tuition (Lamprianou, 2013).

Figure 2 General government expenditure in education by level of education (2017)



Source: DG EAC, based on Eurostat data and the Classification of the functions of government (COFOG). Online data code: gov_10a-exp

5. Modernising early childhood and school education

Participation in early childhood education and care (ECEC) is moving towards the EU average but public ECEC is underfunded. In 2017, 92% of children aged 4 to 6 were enrolled in ECEC (EU average 95.4%). Many parents depend on private day care; in 2016/2017, 47% of children attending ECEC went to private facilities and 53% to public ones[71]. Especially for under 3s, of which 28.2% attended ECEC in 2017 (EU average: 34.4%), Cyprus relies heavily on informal settings or private institutions (Rentzou, 2018). Of 220 day care centres in 2016/2017, only 6 were public, while 153 were private and 61 subsidised by municipalities. Curriculum reforms that started in 2016 attest to a growing awareness of the importance of ECEC. In-service training for all kindergarten teachers is being implemented. However, better research into and mapping of

[70] DG EAC calculation based on Cystat data.
[71] Cystat.

parents' needs for affordable, high-quality ECEC provision, including for under 3s, is needed (Rentzou, 2018).

Early school leaving is declining again. In 2018, 7.8% of 18-24 year-olds left school early compared to 8.5% in 2017. While the 2018 school dropout rate was 6.2% for native-born people, it was 13.9% for the foreign-born population. The gender gap increased somewhat, with a higher rate among males than in 2017 (9.9% v 9.4%) and a lower rate among females (6% v 7.7%).

The student assessment reform seeks to ease the transition between education levels. A new unified and comprehensive student assessment system from pre-primary to upper-secondary education will be gradually implemented as of September 2019. A shift to formative assessment at all levels is envisaged. A dialogue between the Ministry of Education and Culture and school stakeholders on the proposal has started.

Continuity and equity in schools suffer from frequent teacher changes. In Cyprus's centralised education system, the Ministry allocates teachers to specific schools. With occasional exceptions, no teacher can stay more than 6 years at the same school in primary education and 8 years in secondary. Credits based largely on years of service determine transfers to other schools. As remote and/or disadvantaged schools are the least preferred, the majority of their staff are novice teachers. In general, student outcomes and the school climate both tend to be better at schools with more experienced teachers (OECD, 2018b). Research also shows that countries where schools enjoy more autonomy in selecting teachers have seen greater improvements in student outcomes (OECD, 2018b).

Digital skills need to be further strengthened. In the labour force, i.e. individuals aged 25-64 who are employees, self-employed or family workers, the proportions of those with low digital skills (32%) or only basic digital skills (34%) are higher than the EU average (25% and 30%). By contrast, those reporting above-basic digital skills are fewer in Cyprus (22%) than across the EU (36%). This is of concern given the growing importance of digital technologies and artificial intelligence at the workplace (OECD, 2019a). Moreover, Cyprus has one of the lowest proportions of science, technology, engineering and maths (STEM) graduates in the EU.

Box 2: Digital education – challenge and chance for schools

The proportion of Cypriot schools with a high provision of digital equipment (laptops, desktop computers, cameras, whiteboards) per number of students and a high broadband speed is lower than the EU average at both primary and secondary level. (European Commission, 2019). Comparatively few schools provide strong digital support: 21% at primary, 40% at lower secondary and 59% at upper secondary level compared to 32%, 54% and 84% respectively across the EU.

TALIS shows that the majority of teachers (61.8%) feel well or very well prepared for using information and communications technology (ICT) for teaching (EU average 39.4%). A relatively low proportion of teachers (10.8%) report a high need of professional development in this area (EU average 16.1%) (OECD, 2019b).

Several initiatives are underway to boost digital education at schools. The European Computer Driving Licence certification programme for secondary students has been successfully implemented. In February 2019, an 18-month pilot programme was launched providing 250 tablets to primary and secondary schools for work in the classroom and at home. At primary level, an ICT lesson was introduced and robotics in selected schools. Some 205 robots were acquired for secondary schools to support robotics lessons and organisation of robotics competitions (NRP, 2019).

The reform of special needs education has advanced. New draft legislation has been consulted on with stakeholders with the aim of completing both the law and the new regulations by the end of 2020. The bill provides for transforming special needs schools into resource centres, which will both empower mainstream schools and provide education and support to children with multiple and severe support needs. Teaching special needs students ranks highest among training needs for Cypriot teachers (27%) (OECD, 2019b).

Integrating newly arrived migrants is a long-term mission. In 2018, 7 765 new asylum applications were lodged, significantly more than in 2017 (4 600), among them 1 090 applications by people under 18[72]. For school education, a comprehensive policy on integrating students with migrant backgrounds, including those newly arrived, is in place. However, no such policy guidance exists for providing post-secondary education for young migrant adults, even though the proportion of recently arrived refugees aged 18-34 is especially high at 62%[73]. In school education, initial assessment, teacher allocation and monitoring all pose challenges. In addition, the inclusion of migrants needs to be supported through training for teachers and school heads in particular. TALIS shows that the proportion of teachers (48.5%) who feel well or very well prepared to teach in multicultural and/or multilingual settings is the highest in the EU (EU average 23.8%). However, Cypriot teachers also report a greater need for CPD in this area (19.6%) than the EU average (13.4%) (OECD, 2019b).

6. Modernising higher education

Tertiary educational attainment has risen further. After Lithuania, Cyprus has, at 57.1%, the second-highest tertiary educational attainment rate in the EU (the average is 40.7%). Women, at 64.4%, have a considerably higher attainment rate than men (49.2%). At 20.3 pps, a large attainment gap exists between foreign-born and native-born students. Outward degree mobility is, at 13%, second only to Luxembourg. Short term educational stays abroad are made possible exclusively through EU programmes. The student-teacher ratio is, at 17.7 to 1 in 2016, around that of European peers.

More recent tertiary educated graduates are entering the labour market. In 2018, the employment rate of recent tertiary educated graduates grew by 6.2 pps from 2017 to 81.3% (EU average: 85.4%). However, forecasts suggest that the majority of future jobs will be in low- or medium-skilled occupations (Cedefop, 2019). This means the rising provision of highly-qualified workers poses a long-term risk that such skills will be underutilised.

Monitoring of the higher education system is weak. Systematic data gathering, analysis and use of data to inform policy on the social dimension or to monitor performance is underdeveloped. Of five structural indicators for higher education, Cyprus applies only one: quantitative targets for widening participation[74] (European Commission, 2018). Whereas graduate tracking is implemented for vocational education and training students, it does not exist for tertiary graduates, who constitute the vast majority of graduates in Cyprus.

Quality assurance in higher education has been upgraded. The Cyprus agency of quality assurance and accreditation in higher education, DIPAE, became a full member of the European association for quality assurance in higher education (ENQA) in 2019. Since its establishment in 2015, DIPAE has evaluated nearly 300 study programmes and 6 higher education institutions (HEIs). It expects to evaluate 740 programmes and all 53 HEIs by end 2020 (ENQA, 2019). As the agency develops its capacity it is advised to progressively shift from a control-oriented approach to more quality-improvement support to HEIs (ENQA, 2019).

7. Modernising vocational education and training

Participation in VET remains low. In 2017 only 16.7% of students in upper secondary education were enrolled in VET, well below the EU average of 47.8%. This reflects the strong preference of young Cypriots for tertiary education and the low attractiveness of VET for employers. Students enrolled in VET had limited exposure to work-based learning — none of the VET educational programmes are reported to be combined school and work-based programmes. However, the employment rate among recent VET graduates has risen to 64.3% in 2018 (EU average 77.5%).

[72] Eurostat.
[73] For 2018.
[74] The other indicators refer to monitoring of students' socio-economic background; recognition of informal or non-formal learning in entry to higher education; completion rates as a criterion in external quality assurance; performance-based funding mechanisms with a social dimension focus.

VET reforms continued in 2018. Apprenticeship programmes were linked with evening technical school education to make it easier for apprenticeship graduates to gain formal qualifications. A programme of fast-paced training in practical professions for the unemployed was initiated, with priority given to the young. The construction of new 'technical and vocational schools of education and training' and the expansion and upgrading of some existing ones is underway. VET curricula have been revised in cooperation with industry with the aim to reduce skill mismatches in the labour market. A comprehensive review of the apprenticeship system was completed in 2018. Areas identified for reform include: updating legislation; increasing the role of the Apprenticeship Board; improving guidelines; improving the quality of training in the workplace; and making apprenticeships more attractive to employers.

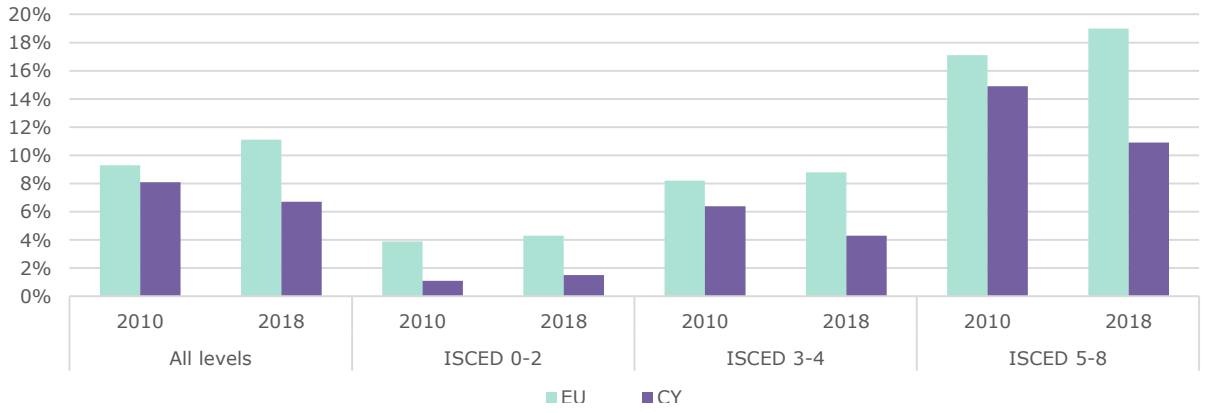
8. Developing adult learning

Participation in adult learning remains low. At 6.7%, adult participation in learning remains below the EU average (11.1%). At 10.9%, it is highest among those with tertiary education (ISCED 5-8), but even for them it is significantly below the EU average of 19%. Upskilling and reskilling opportunities are most crucial for low-skilled adults (ISCED 0-2), who currently take least advantage of adult learning. The proportion of low-qualified adults in employment in Cyprus was 62% in 2018 (EU average: 56.8%) and higher than in 2017. During 2017, only around 50 adults aged 25 or above acquired an upper-secondary qualification, highlighting the need for a more substantial upskilling and reskilling effort. So far, a single legislative framework for adult learning does not exist. The main actions in adult education are being taken under the 2014-2020 national lifelong learning strategy.

A distinct professional identity for adult educators has not been articulated, despite a shortage of qualified people in the sector. The 'Trainer of vocational training' certificate can be obtained after short (14 hours), medium-length or long (around 77 hours) training courses or master's programmes in adult education. Clearly defined qualification requirements for adult educators are lacking as well as training programmes adjusted to the needs of adult educators working in different fields. While demand for adult educators is high at all levels of education, the supply of qualified people remains insufficient.

Selected measures to promote adult learning are ongoing. Additional professional standards were developed and three new 'evening schools of technical and vocational education' were established. The multi-company training scheme for the long-term unemployed was expanded to all registered unemployed. In October 2018 the national action plan to establish validation of non-formal and informal learning was approved, to be fully implemented by 2020. The implementation of the qualification framework is still at an early stage and a comprehensive approach to how different stakeholders will cooperate is needed. The National Qualifications Authority, the competent authority for assessing and validating qualifications acquired through formal, non-formal and informal learning, is now operational. However, its mandate and institutional role need to be expanded and made more concrete.

Figure 3 Participation in adult learning (age 25-64)



Source: Eurostat, Labour Force Survey. Online data code : trng_lfse_03

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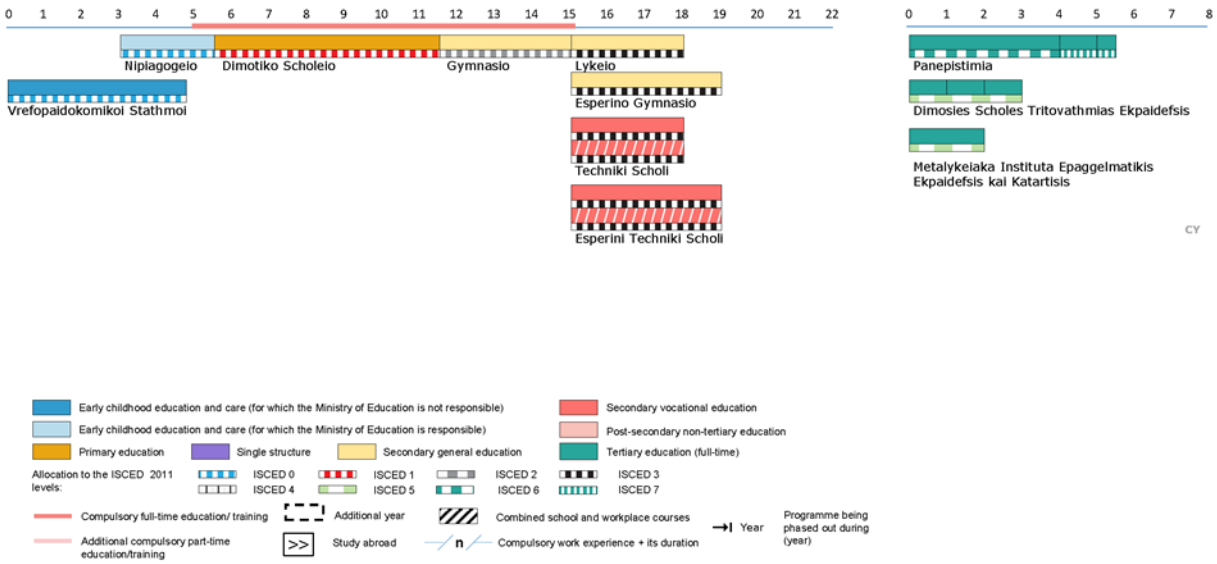
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat/UIS/OECD data.*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

Comments and questions on this report are welcome and can be sent by email to:
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European Commission

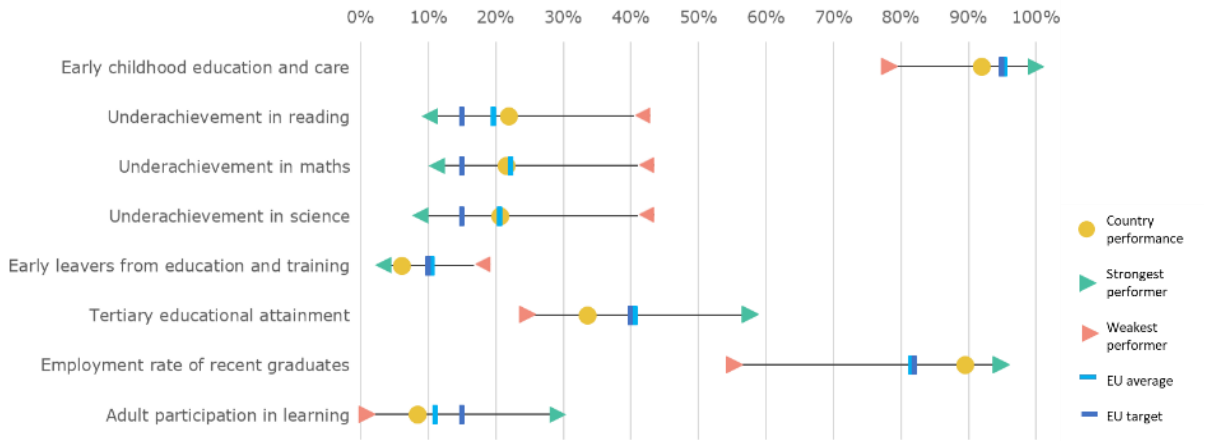
CZECHIA

1. Key indicators

			Czechia		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			5.4%	6.2%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			17.5%	33.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			90.6%	92.0% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		23.1%	22.0% [15]	19.5%	19.7% [15]
	Maths		22.4%	21.7% [15]	22.3%	22.2% [15]
	Science		17.3%	20.7% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		84.5%	89.6%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		7.1%	8.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	3.9% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	8.0% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.1%	4.6% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€3 399 [12]	€3 611 [16]	:	€6 111 [15,d]
		ISCED 1	€3 607 [12]	€3 703 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€5 967 [12]	€6 255 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€5 191 [12]	€5 894 [16]	:	€7 730 [14,d]
		ISCED 5-8	€7 726 [12]	€7 282 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		5.2%	6.2%	13.1%	9.5%
	Foreign-born		15.0% [u]	7.6% [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		17.1%	33.4%	33.1%	41.3%
	Foreign-born		31.5%	40.1%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		81.7%	87.4%	72.5%	76.8%
	ISCED 5-8		89.0%	91.5%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u = low reliability, := not available, 12=2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 7 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Czechia continues to make vocational education and training more relevant to the needs of the jobs market.
- Authorities are making good use of EU funds to support reforms.
- Inclusive education is progressing but measures targeted at Roma remain limited.
- The attractiveness of the teaching profession remains low.

3. A focus on teachers

The teaching profession is facing numerous challenges. The 2019 country-specific recommendation addressed to Czechia by the Council of the EU included the following: 'Increase the quality and inclusiveness of the education and training systems, including by fostering technical and digital skills and promoting the teaching profession.' (Council of the EU, 2019).

There are demographic challenges. The proportion of teachers under 40 is comparatively low in Czechia, while a high proportion is over 50. The ratio of female teachers is among the highest in the EU[75]. There are increasingly attractive alternative career opportunities for women, putting at risk the attractiveness of teaching to women (Münich D., 2017). Pupils in primary education have increased and these higher numbers are moving into lower-secondary education. In 2017, the pupil-teacher ratio in primary education (19.1 to 1, against the EU average of 14.7) and the student-teacher ratio in tertiary education (18.4 to 1 v 15.4) were both comparatively high[76]. The population of (mostly male) school heads is also ageing and there has been only a single applicant for half of all open posts. Often the incumbent applies for his/her own job again at the end of his/her mandate (CSI, 2018a). The Czech and Moravian Trade Union for Workers in Education (CMOS) reports that school heads feel they lack time to provide pedagogical and professional leadership to teachers due to their administrative burdens. They also refer to the lack of sufficient funds to evaluate and reward staff adequately.

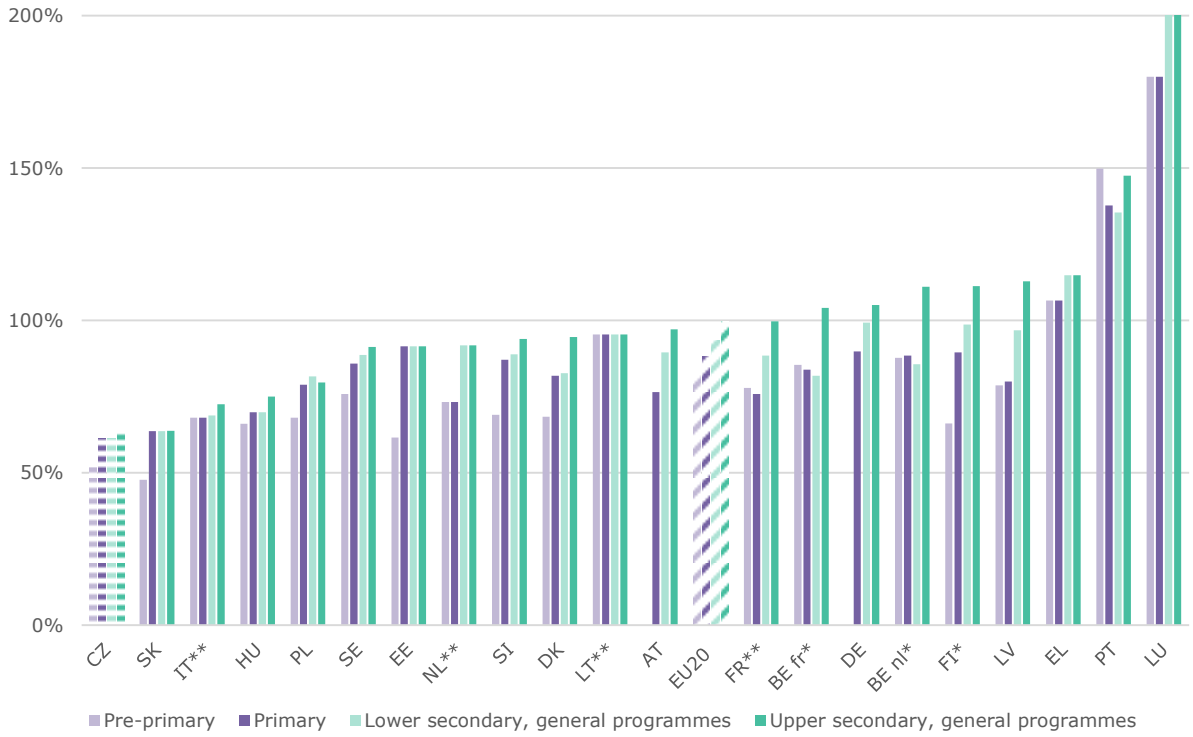
Inspections and surveys among school heads indicate teacher shortages. In the absence of a teacher registry, teacher shortages can only be estimated[77]. Shortages are reported in particular in primary education and to a lesser extent for English, physics, information and communications technology (ICT) and mathematics. Shortages in primary education are partly linked to the current demographic peak in children of that age; as these start entering lower secondary education in the years to come, subject-specific shortages at that level may worsen.

Despite recent pay rises, the salaries of teachers and school heads remain very low, both compared with other tertiary-educated workers and by international standards (see Figure 2 below). In 2016, 85% of 30-49 year-olds with tertiary education had a salary higher than that of primary education teachers of the same age (Münich D., 2017). Salary progression over the career is rather flat (European Commission/EACEA/Eurydice, 2018a). Salaries in the public sector overall increased by more in 2014-2016 than teachers' salaries, weakening the impact of teacher pay rises in making the profession more attractive (Münich D., 2017). Control of pay awards is shared between central and local levels. Excellent teaching performance may lead to a salary supplement. Compensation for specialised tasks requiring continuing professional development (CPD) may reach up to 50 % of the statutory salary. Such tasks include coordinating ICT, contributing to the coordination of school educational programmes, and organising activities related to environmental education.

[75] Eurostat, UOE, 2017. Online data code: educ_uoe_perp01
[76] Eurostat, UOE, 2017. Online data code: educ_uoe_perp04
[77] The data on full-time equivalent teachers in Czechia is gathered at aggregated school level and there is no teacher registry. As a number of teachers teach part-time at more than one school, there is no precise information on the number of teachers.

In 2018, the government has declared that teachers' and non-teaching staff's average salaries in 2021 should be brought up to 150% of their 2017 level. To make teaching more attractive, long-term political commitments are necessary.

Figure 2 Actual salaries of teachers, relative to earnings for full-time, full-year workers (25-64) with tertiary education (ISCED 5-8), 2016



Source: OECD (2018). Note:* Data is from 2015; ** Data is from 2014

Box 1: Attractiveness of the teaching profession and teachers' satisfaction

The attractiveness of the profession to talented young people remains low. There are indications that graduates of initial teacher education programmes who opt to enter the profession may not be among those who perform best (Münich D., 2017). A study shows, among other things, an increase in the proportion of young teachers with lower reading literacy (Krajcova J., Münich D., 2018). This may contribute to a divergence in the quality of the education received in different classes, schools or regions (ibid.). Many talented young teachers leave the profession early, often for financial reasons (Münich D., 2017). This calls for measures to address the general OECD's findings that, to promote teaching as a career for top-performing students, job quality matters at least as much as pay (OECD, 2018a).

At the same time, the 2018 OECD Teaching and Learning International Survey (TALIS) finds that the proportion of teachers satisfied with their job is high, at 89.6% (EU average: 89.5%) (OECD, 2019)[78]. It remains stable in teachers with 5 years of working experience. Overall, 74.0% of teachers say that if they could decide again, they would still choose to become a teacher (EU average: 77.6%). Fewer teachers with more than 5 years of experience (73.3%) feel this way than novice teachers (77.3%) (respective EU averages: 76.4% and 83.7%). TALIS also found that 16.0% of Czech teachers believe that teaching is valued in society (EU average: 17.7%).

[78] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

European Social Fund (ESF) projects are supporting induction programmes for beginning teachers — including training of their mentors — and CPD. In May 2019, the government approved an amendment to the Act on pedagogical staff to introduce a two-year induction period for beginning teachers. This has happened in the absence of a career system for teachers, after one was prepared but then abandoned in 2017. Such strengthened support for beginning teachers could help reduce the high rate of those who drop out in the first few years.

Box 2: Support for the Professional development of teachers and headmasters (SYPO) project

The goal of this project, co-financed by the European Social Fund (ESF), is to design a new system promoting systematic professional development with a view to improving educational outcomes. It aims to be needs-based, practically-oriented and based on the latest scientific findings, and to promote sharing of experience.

SYPO involves the creation of peer networks focusing on didactics of different subjects. They will be piloted at national, regional and local levels. A network of regional ICT methodological workers will be set up too.

The project was launched at the beginning of 2018 and will run until 2022, supported by EUR 13.5 million from the ESF.

In the highly decentralised Czech education system, CPD is essentially governed at school level, where the staff's CPD plan is defined. Participation in CPD is a professional duty. While no minimum number of compulsory hours is laid down, the law provides for up to 12 working days a year for CPD (European Commission/EACEA/Eurydice, 2018b). The Czech School Inspectorate found in 2017-2018 that 78% of basic school teachers inspected had attended CPD. The CPD mainly covered subject-related content (52%), then teaching methods (39%), teaching for key competencies (28%) and implementation of inclusive education (see section 5 below) (24%) (CSI, 2018b). The 2018 OECD Teaching and Learning International Survey (TALIS) found that half of Czech teachers believe that CPD is restricted by schedule conflicts (50.8% v EU average of 52.4%). Overall, compared to the EU average a relatively low proportion of teachers believe that CPD is hindered by barriers. For instance, 22% of Czech teachers consider that the CPD offer is not relevant (EU average: 38.9%) and only 15.1% complain about a lack of employer support (EU average: 26.4%).

4. Investing in education and training

General government expenditure on education as a share of GDP was 4.6% in 2017, similar to the EU average. The increase in real (inflation-adjusted) government expenditure on education over 2010-2017 was comparatively high at 3.4% (EU average: 0.2%)[79]. Spending varied between education levels, largely linked to the demographic changes in intakes by age group, in a system of (mostly) per capita-based funding. This increase happened over a period of particularly strong GPD growth and the share of government expenditure on education did not evolve much, oscillating between 11.3% and 12% in 2013-2017[80]. Government expenditure on education as a share of GDP decreased from 5.1% in 2013 to 4.6% in 2017. The 2019 budget for the reform to make education more inclusive increased from 2018 (see section 5 below).

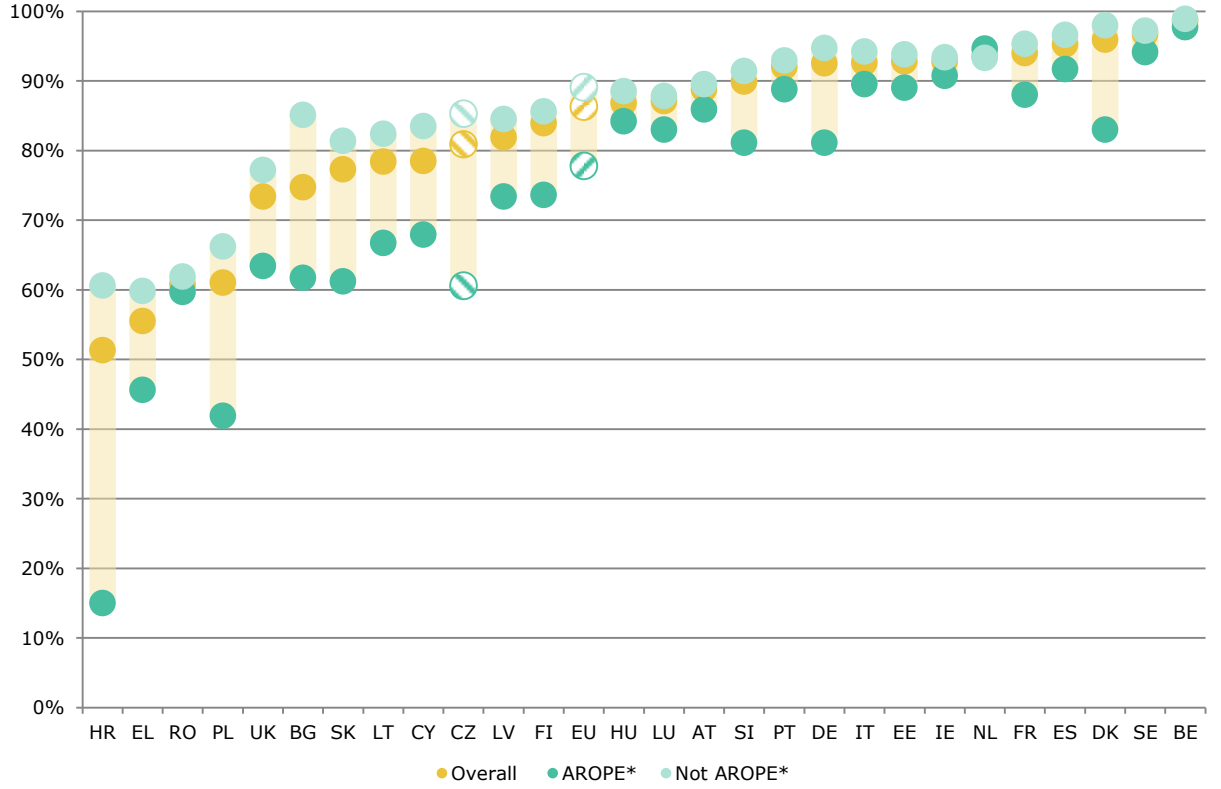
The reform of the funding system for regional education has been delayed again until January 2020 aiming at a better preparedness. The reform aims to switch from per-capita funding to funding based on the number of hours taught, and it increases the possibilities to split classes (European Commission, 2018).

[79] Eurostat, Classification of the functions of government (COFOG).
[80] European Commission, Directorate-General for Education, Youth, Sport and Culture (DG EAC) calculations based on Eurostat, gov_10a_exp and nama_10_gdp

5. Modernising early childhood and school education

Participation in ECEC continues to increase while remaining highly dependent on children's socio-economic background, with large regional disparities. The national participation rate for children aged between 4 and the starting age of compulsory education was 92% in 2017 (EU average: 95.4%), ranging from 85.5% in Severozápad to 96.1% in Střední Morava[81]. It is estimated that only about 34% of Roma from the age of 4 attend ECEC (FRA, 2016). Figure 3 shows the participation rates for children between 3 and 6 in 2016, by socio-economic background. While a right to attend ECEC for all children aged 3 and over in their catchment area was established in 2018, its practical implementation depends on the availability of places. The full support of municipalities is, therefore, vital to ensure this right is implemented and to increase attendance rates. Participation by children under 3 remains, at 6.5% in 2017, far below both the 34.2% EU average and the 33% target set by EU leaders in 2002. This is partly due to insufficient capacity. The previously announced entitlement to a place for children aged 2 from 2020 was abandoned in 2018.

Figure 3 Participation in formal childcare or education of children between 3 and minimum mandatory school age, by socio-economic background (2016) – % over the population aged 3 to minimum mandatory school age



Source: JRC calculations on 2016 EU-SILC. Notes: *AROPE = at risk of poverty or social exclusion.

Czechia has been using support from the European Social Fund (ESF) to substantially increase ECEC places, but major inequalities in provision have emerged. Public kindergartens run by municipalities and so-called children groups and micro-crèches (currently co-funded by the ESF and run by the Ministry of Labour and Social Affairs), which partly target children from similar age groups, operate under very unequal conditions. The children-to-adult ratio is much more favourable in the latter (24 children to 3-4 adults) than in the former (up to 28 to 1). Funding per child in children groups is CZK 90 000 compared to CZK 51 000 in kindergartens (respectively around EUR 3 500 and EUR 2 000). The Czech School Inspectorate argues that classes with up to 28 children per adult do not allow individual needs to be met, especially those of

[81] Eurostat, UOE, 2017. Online data code: educ_uoe_enra17

children with special needs (CSI, 2018b). The *Long Term Policy Objectives of Education and Development of the Education System 2019-2023* plans a gradual decrease in the number of children in kindergartens, to 20 per class. The 2020 funding reform (see section 4) is likely to motivate a reduction in the children-to-adults ratio in ECEC as kindergartens will not be funded on a per capita basis any more, but rather based on the number of hours taught.

The rate of early school leaving declined to 6.2% in 2018, after an increase over previous years. This rate was lower than the 10.6% EU average, while still above the national Europe 2020 target of 5.5%. The rate and its evolution varied widely between regions, the most notable case being Severozápad where the 2017 rate of 13.8% further increased to 15.6% in 2018. A study showed that young people dropping out of school are attracted by the current easy access to paid employment (Bičáková, A. and Kalíšková, K., 2018). However, they often end up in low-paid, low-quality and short-term jobs. Incentives to attract young people back to education, as well as prevention measures, are under discussion. A study supported by the EU's structural reform support programme was launched in 2019 to explore how to reduce regional inequalities in education. It will make recommendations focusing on improving communication between families, schools and other service providers.

The authorities are continuing to take action to reduce inequalities in educational outcomes linked to pupils' socio-economic backgrounds (European Commission, 2018). For pre-primary education, actions include ESF-supported teacher training, extra-curricular activities, promotion of cooperation with parents, and career counselling (Eurypedia, 2019a). In line with the 2016 reform to make education more inclusive, the authorities adopted a second action plan for inclusive education, covering 2019-2020. The plan aims to implement desegregation measures for schools where more than half the pupils are Roma, introduce anti-bullying measures and strengthen monitoring by the School Inspectorate. It will guide the implementation of ESF-supported projects. Tackling regional disparities through tailored measures will be key to its success.

Positive initial results of the inclusive education reform still need to be confirmed, in particular for the education of Roma children. The Ministry of Education, Youth and Sports is focusing on ensuring that compulsory education from age 5 is applied, in particular in deprived areas. The ministry is also working on further harmonising diagnostic tools used in counselling centres across the country. The 2019 budget for inclusive education was increased from CZK 5.4 billion in 2018 to 7.2 billion, a substantial increase which, however, may not be sufficient to cover all requests from schools. The authorised number of assistants per class will decrease.

While more teacher resources are being allocated to high-need schools, there are no measures to allocate experienced teachers to disadvantaged schools. At the same time, the OECD notes a significant positive association between teacher experience and science performance in Czechia (OECD, 2018a).

The National Institute for Education is revising the framework curricula for pre-primary, primary and secondary education (NUV, 2019). One aim is to better focus on skills needed for future jobs. Another is to strengthen the guidelines from central level by defining expected learning outcomes at more educational stages than before. This will strengthen central governance in a still highly decentralised system (Eurypedia, 2019b). Revised curricula will build on the strategy for education 2030 which will define expected competences of pupils after 2030.

The proportion of young people aged 16-19 who report they have above-basic digital skills improved substantially between 2015 (41%) and 2017 (52%), nearly reaching the EU average (57%). An EU-funded call to support implementation of the strategy for digital education II was launched in autumn 2018. It will enable the creation of new resources, the provision of methodological and technical support for the use of digital technologies in education, training of teaching staff and the promotion of innovative teaching methods (Eurypedia, 2019b). The digital education strategy faced delays in equipping schools with digital infrastructure and providing support materials and training for teachers (European Commission, 2019).

6. Modernising higher education

The past decade has seen a rapid rise in the tertiary education rate together with an increase in the dropout rate. In 2018, the proportion of 30-34 year-olds with tertiary education was 33.7% (EU average: 40.7%), above Czechia's 32% national target under Europe 2020. Getting each generation to reach a higher education level is challenging. Only 18% of children whose parents did not attain tertiary education obtain a tertiary degree (OECD, 2018b). The projected increase in population within the age span concerned by higher education will, within a few years, require efforts on funding and capacity if growth is to be continued. 37% of students in bachelor programmes drop out in their first year — although a proportion register in another programme later — and more than one third of students do not complete their studies (MEYS, 2015). The authorities are taking measures to reverse the trend. Among the funding criteria for higher education institutions, in 2018 the Ministry of Education, Youth and Sports introduced a new criterion linked to degree completion (European Commission, 2018). Positively, this is triggering remedial action from such institutions. The employment rate of recent tertiary graduates remains very high at 89.6% in 2018.

The National Accreditation Agency established with the 2016 higher education reform has already granted a number of institutional accreditations. Stronger internal quality assurance is becoming a reality in the institutions concerned. The reform also aimed to broaden the range of programmes offered, including by encouraging the creation of professionally-oriented study programmes. Nearly 15% of programmes newly accredited or in the process of accreditation by end-2018 were such professionally-oriented programmes, showing that there is some demand for them.

7. Modernising vocational education and training

Total enrolment in upper secondary VET declined very slightly to 72.4% in 2017 but was still well above the 47.8% EU average. The employment rate among recent VET graduates in 2018 increased to 87.7%, well above the EU average of 79.5%.

Czechia is continuing to make VET more flexible and more relevant to the needs of the jobs market. The 2018 Amendment of the School Act obliges schools and to cooperate with employers in designing curricula, providing practical training, participating in final examinations and providing placements in companies for teaching staff. The ESF-funded *Modernisation of vocational education and training* project, launched in 2017, has so far introduced 365 modules with the aim of improving transferability between various pathways in initial and continuous VET and with qualifications in the National Register of Qualifications. In 2017/2018 a pilot project including elements of dual training has started in the Moravia-Silesia Region. A revision of the vocational parts of upper secondary curricula is on-going.

In October 2018 the government adopted the *Digital Czechia* strategy. The implementation will build ia on the strategy for digital education 2020. The latter focuses on opening education to new learning methods using new technologies, improving pupil's competences to work with information and digital technologies and improving pupils' computational thinking.

8. Developing adult learning

The likelihood of adults in Czechia frequently updating their knowledge and skills through adult learning is rather low. In 2018, only 8.5% of adults aged 25-64 had had a learning experience in the last 4 weeks (EU average: 11.1%). However, only 6.1% of Czech adults had at most a low qualification (EU average: 21.9%). In 2017 around 5 300 adults aged 25 or above acquired an upper-secondary qualification. This represents less than 0.02% of the nearly 367 000 25-64 year-olds with only a low level of educational attainment. At the same time, there are few job opportunities for low-qualified people — in 2017 there were 287 000 jobs in elementary occupations. The 52.2% of low-qualified adults in employment in 2017 was below the EU average of 58.4%.

A number of projects focus on general upskilling and the digital skills of adults. The project *UpSkilling CZ* (now going through an approval process) will address the implementation of

the 2016 Council Recommendation on upskilling pathways. The project will develop an online tool to assess basic skills and a tool offering relevant learning opportunities. Close cooperation will be ensured between the key players, i.e. the Ministry of Education, Youth and Sports, the Ministry of Labour and Social Affairs and the public employment services. E-learning courses, guidebooks and other methodological materials will be developed. The updated *Digital Czechia* strategy also includes measures for adults. These seek notably to improve adults' digital literacy, digital skills in small and medium-sized businesses and support for teleworking by using digital technologies and addressing digital exclusion. In addition, the strategy defines the goal of 'readiness of citizens for labour market changes, education and development of digital skills, retraining of the workforce, necessity to further educate workers and the creation of new education programmes'.

There are important developments in continuing VET too. People with vocational certificates and 5 years of professional experience will have the option of taking an exam leading to a master craftsman qualification. It is planned to develop about 45 such qualifications. The Chamber of Commerce will have a key role in facilitating cooperation between professional craft associations and vocational schools that will participate in the new system.

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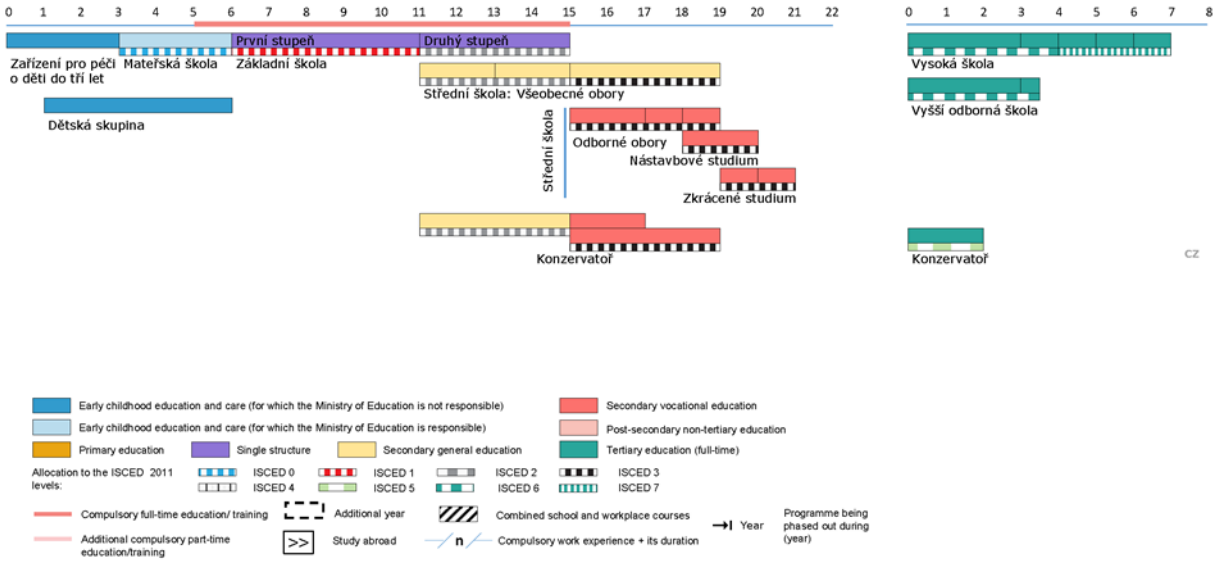
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

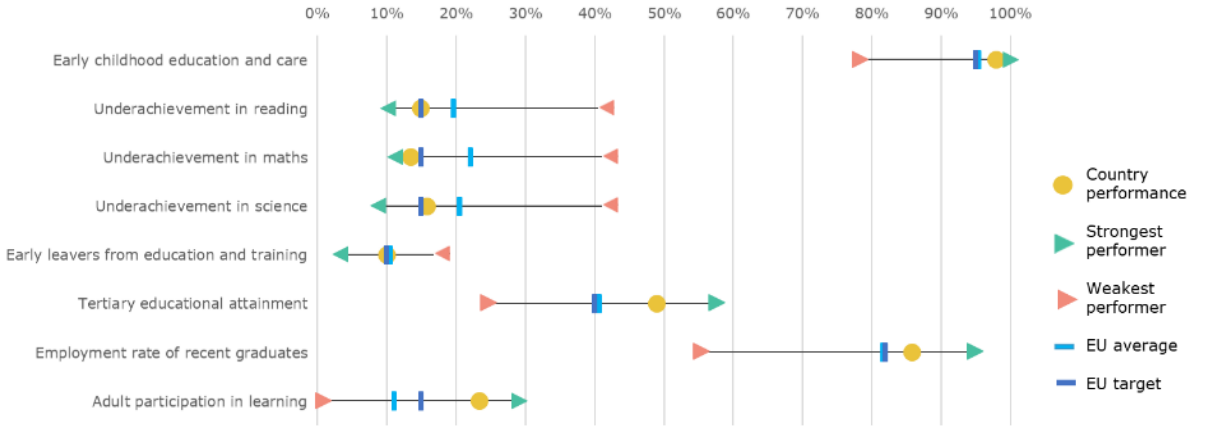
DENMARK

1. Key indicators

			Denmark		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			11.3%	10.2%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			40.7%	49.1%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			91.9%	98.0% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		15.2%	15.0% [15]	19.5% [EU27]	19.7% [15]
	Maths		17.1%	13.6% [15]	22.3% [EU27]	22.2% [15]
	Science		16.6%	15.9% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		87.9%	85.9%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		31.3%	23.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	1.5% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	9.2% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.9%	6.5% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€8 353 [12]	:	:	€6 111 [15,d]
		ISCED 1	€8 385 [12]	:	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€8 773 [12]	:	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€7 624 [12]	:	:	€7 730 [14,d]
		ISCED 5-8	:	:	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		11.0%	10.2%	13.1%	9.5%
	Foreign-born		15.8% [u]	9.9% [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		42.4%	47.9%	33.1%	41.3%
	Foreign-born		27.5%	53.1%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		84.2%	83.4%	72.5%	76.8%
	ISCED 5-8		91.0%	87.8%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u = low reliability, : = not available, 12 = 2012, 14 = 2014, 15 = 2015, 17 = 2017.

Figure 8 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Changes to university education are making it more flexible and labour market friendly, but the need for more STEM graduates remains.
- The number of apprenticeships has been increased and measures are being taken to promote adult learning.
- Reduced education spending is having an impact on schools and universities.
- There is considerable local variation in the education performance of young people from migrant backgrounds.

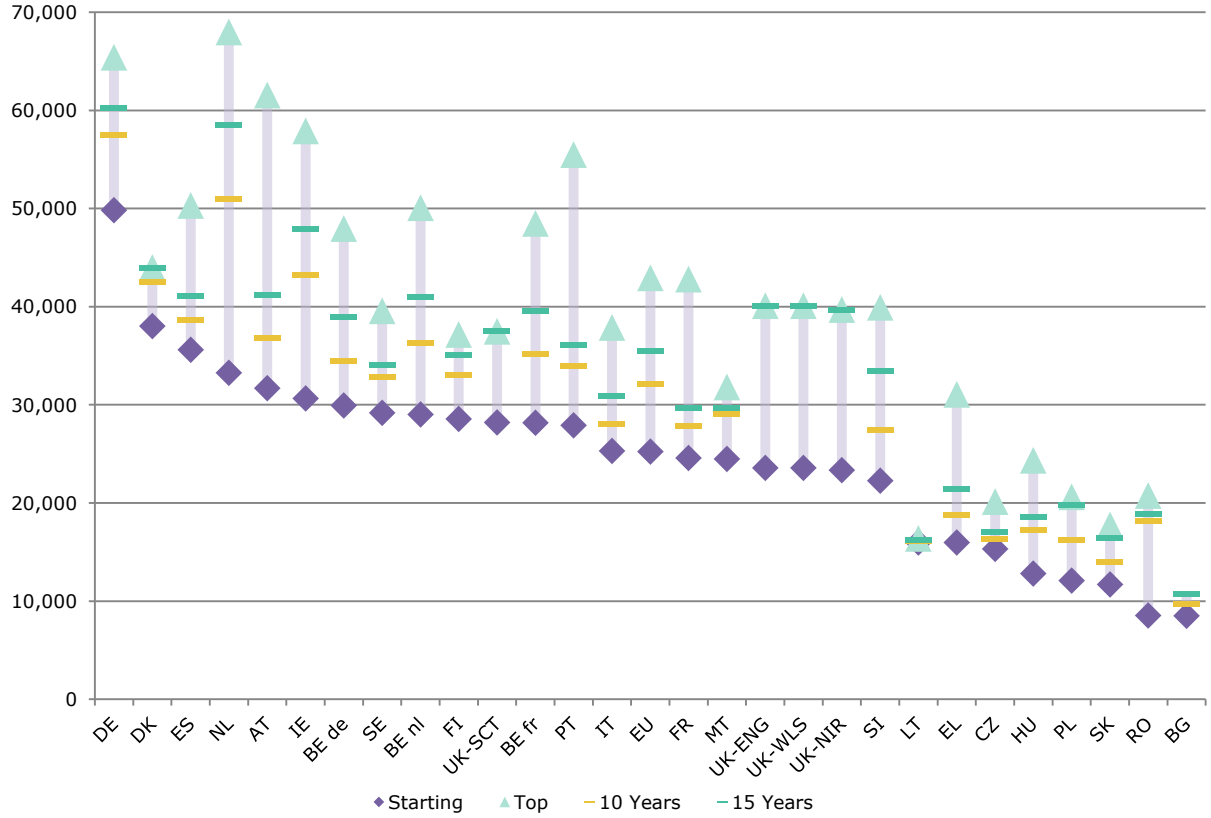
3. A focus on teachers

Denmark is facing teacher shortages and class size increases. 45% of lower secondary teachers are 50 or older, 10 pps above the EU average. Teacher numbers underwent a prolonged reduction between 2009 and 2018, dropping by 11.8%, more sharply than the concurrent decline in pupil numbers of 7% (Danmarks Lærerforening, 2018). The nationwide shortage of teachers is shown by the increase in average class sizes in primary and secondary school between 2005 and 2016 by, respectively, 10% and 9%, to 21 pupils per class (OECD, 2018). The need to attract teachers among other reasons has motivated municipalities to enter into their own agreements with teacher unions. In 2017/2018, 70 out of 98 municipalities had signed agreements regulating working hours, flexible working time, definition of tasks including preparation, in-service training and assessment. Denmark is divided into five different zones allowing for different salary levels. Unions have now agreed that part of the salary can be negotiated with each school, leading to emerging pay differentials between municipalities (Representative, 2019).

Teachers' starting salaries are generous but progression is flat. A Danish primary or lower secondary teacher starting their career in the 2016/2017 school year received an annual 38 040 in purchasing power standard (PPS), the highest amount in the EU after Luxembourg and Germany (European Commission/EACEA/Eurydice, 2018). However, salary progression is very flat: salaries increase by only 12% after 10 years and 16% after 15 years, so that the maximum salary of 43 980 PPS is only slightly above the EU average (see Figure 2). Pre-primary teachers earn about 10% less than primary and secondary teachers. Compared with the earnings of tertiary-educated workers, Danish teachers earn between 68% in pre-primary and 95% in upper secondary education (OECD, 2018). According to data from the 2018 OECD Teaching and Learning International Survey (TALIS), salary, job security and a steady career are weaker motivating factors for Danes than for teachers elsewhere in the EU; Danish teachers say they are more motivated by making a contribution to society and influencing the development of the young. Their job satisfaction is close to the EU average (89%); as elsewhere, it dips somewhat after 5 years in service. They are less likely than the EU average to report that they would still choose teaching as a career (-5.3 pps for young teachers, and –7.9 pps after 5 years). A lower than average proportion say teaching was their first career choice (OECD, 2019).[82]

[82] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

Figure 2 Annual basic gross statutory salaries in PPS for full-time teachers in lower secondary (ISCED 24) public schools for the school year 2016/2017



Source: Eurydice, 2018. Note: For the sake of clarity of comparison between countries, Luxembourg is not presented here.

After the reform of the *Folkeskole* (general compulsory education), teaching time other than in upper secondary level is among the highest in the EU. A Danish lower secondary teacher taught on average 784 hours a year in 2015, far above the EU average of 665 hours and the second highest after the UK. However, this is reversed at upper secondary level, where an average of 405 hours in 2017 puts Denmark at the bottom of the EU ranking (OECD, 2018).

A 2017 law allows municipalities to exceptionally engage teaching staff without a full teacher qualification. This weakens the quality approach at the centre of the *Folkeskolen* reform (2013) that had set the objective that 95% of teachers teaching a specific subject should be fully qualified. The number of fully qualified teachers employed by municipalities dropped from 89.2% in 2013 to 83.8% in 2016 but recovered to 86.7% in 2018.

Box 1: Teachers obtain a professional bachelor degree from university colleges

A major reform of teacher training took place in 2012. Teacher training was constructed around modules, and university colleges (*Professionshøjskoler*) were given more autonomy to set programmes for different teacher profiles (OECD, 2014).

The first results from an evaluation started in 2017 show school principals are satisfied with the competencies and skills of new teaching graduates. However, graduate teachers are less convinced that they are well prepared to work together with parents and other teachers. Teaching unions propose to shift initial teacher training to a master degree at university level, as in other Nordic countries, as a response to the increasingly complex situation teachers face in school and in society.

Some in the national research community suggests that adopting features of the Finnish model (master level, training 1 year longer and more academic, but also time in practice schools) might further increase motivation and competencies (Andersen, 2017).

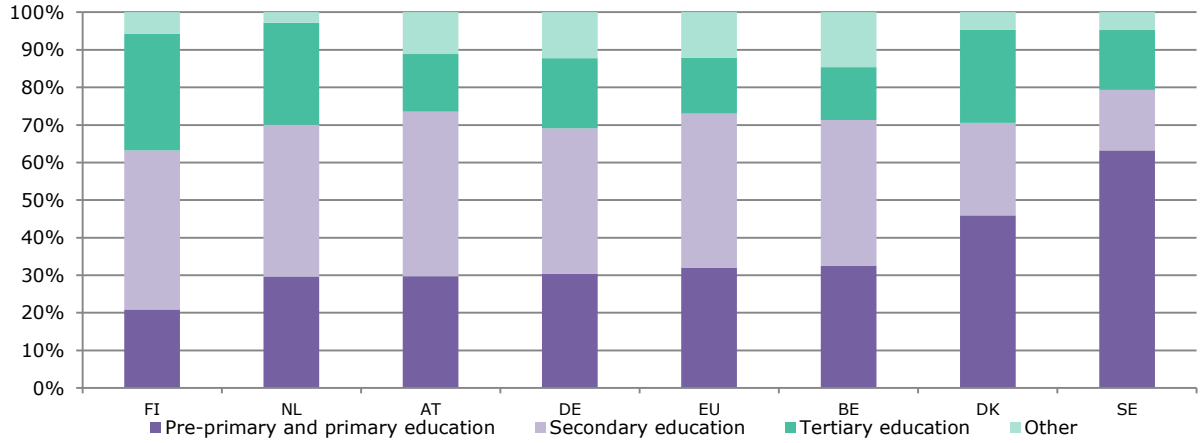
Teachers' continuing professional development (CPD) is devolved to municipalities (European Commission, 2018). The proportion of Danish teachers who feel well or very well prepared for using information and communications technology (ICT) for teaching (39.5%) is around the EU average. TALIS 2018 shows that less than half of teachers report that ICT was covered in their initial training education (46.7%, 6.2 pps under the EU average) while 11.2% report a need for professional development in this area, 4.9 pps below the EU average. Danish teachers feel more prepared to teach in a multicultural and/or multilingual setting than the EU average (26.3% v 23.8%) and also that this issue has been integrated into their training (36.8% v 31.7%). However, 51.2% believe that CPD is too expensive (EU 44%). Over DKK 1 billion (EUR 170 million) has been allocated to strengthening CPD over 2014-2020. Free courses addressing specific needs are offered by municipalities (European Commission, 2019).

The *Folkeskole* Act entrusts responsibility for administrative and pedagogical management to school leaders. This includes the professional development of teachers and teacher appraisal. School leaders have full autonomy to decide if, how and when teachers are to be appraised, without any involvement by top-level authorities (European Commission, 2019). Training school leaders has been a recent priority, with 75% of school leaders now being certified in management. Research underlines the important role of school leaders for the self-esteem and motivation of teachers. Teachers feel that their autonomy was restricted by the *Folkeskolen* reform, but that school leaders have mitigated some of this effect (Andersen, 2015). This led the government to develop with stakeholders a new certificate for school leaders with a focus on pedagogical leadership, to be offered from mid-2019 (Skolelederforengen, 2018).

4. Investing in education and training

General government expenditure on education as a proportion of GDP decreased to 6.5% in 2017 but remains well above the EU average (4.6%). Expressed as a share of total general government expenditure, it remained broadly stable at 12.7% in 2017, again well above the EU average of 10.2%. Teachers' pay, at 51%, absorbs a much smaller proportion of spending than the EU average of 62.0%. Between 2010 and 2017, real (inflation-adjusted) expenditure increased by 33% in tertiary education, but remained broadly unchanged in secondary (-0.1%) and pre-primary/primary education (2.5%) (see Figure 3). There was a real spending fall of 2.7% between 2016 and 2017 affecting all levels other than pre-primary and primary schooling, which is likely to continue. Student-teacher ratios increased in the different education levels by between 9% and 43% between 2015 and 2018.

Figure 3 General government expenditure by level of education, 2017



Source: Eurostat, COFOG. Online data code: gov_10a_exp.

Denmark's school-age population is expected to continue growing. The school age population (3-18 year-olds) is projected by Eurostat to grow by 12% by 2040, in contrast to a decline in most other EU countries. The Council of the EU's 2019 country-specific recommendation to Denmark included the following: 'Focus investment-related economic policy on education and skills' (Council of the EU, 2019).

5. Modernising early childhood and school education

Participation in early childhood education and care (ECEC) is high. ECEC attendance by children between 4 and compulsory primary school age is 98.0% and has remained stable since 2010 (98.1%). Children aged over 26 weeks are legally entitled to full time publicly subsidised ECEC (European Commission, 2019). Participation by under-3s is also stable around 71.7% (2017), very high compared to other EU countries. ECEC institutions are usually open about 50 hours a week and, according to EU-SILC data, the majority of under-3s attend for more than 30 hours a week. There is practically no difference in attendance rates of disadvantaged and advantaged students (OECD, 2019a). Emotional and developmental support is a high priority in preschool, rather than instructional support or classroom organisation. Staff ratios (including assistants) are favourable by international comparison (OECD, 2019a) with some differences between institutions.

The quality of ECEC is somewhat uneven. Municipalities determine the children-to-staff ratios and the qualification mix of the staff employed. Municipalities feel differently the effects of the current climate of public spending cuts. In 2017, just over 60% of staff had pedagogical education (pedagogue or pedagocial assistant (Socialministeriet, 2017). Two recent political agreements investing DKK 2 billion (EUR 268 million) provide for more pedagogical staff in areas with children from vulnerable background and for up-skilling of pedagogical staff (pedagogues, pedagogical assistants, leaders and childminders).

Mechanisms to help children make the transition to primary school after ECEC are important to support children from disadvantaged backgrounds. Children face a significant reduction in direct contact in the transition from ECEC to primary school (OECD, 2019a). In addition, the vacation before moving to primary school is particularly long. According to the OECD, pedagogical and developmental continuity may be lost in this transition. The fact that different bodies are responsible for these levels of education complicates the transition. There is, furthermore, full local autonomy, thus each of the 98 municipalities designs their own approach. The broad goal of facilitating the transition is specified by law and there are common child monitoring methods, including development reports, but differences in approach result in uneven transition quality (OECD, 2019a).

The *Folkeskolen* reform has not managed to improve student well-being or education outcomes as intended. The reform of comprehensive primary education initiated in 2013 and in force since August 2014 is being monitored closely. Neither school well-being nor educational or social well-being have shown improvement since 2014/2015 (VIVE 2019, NRP, 2019). Young people from disadvantaged and/or migrant backgrounds continue to show lower education results. While 55% of first-generation Western immigrants and 75% of Denmark's native-born population achieved good results in reading in the 2017/2018 national tests, only 36% of first generation non-Western immigrants did so. For mathematics the performance gap was similar. Second-generation immigrants do better but are still behind the native population. Other reform objectives, like strengthening physical education, increasing interdisciplinary education and strengthening school leadership, have shown better progress.

Having declined since 2010, the early school leaving rate has risen again from 2016 and stands at 10.2% in 2018. Most of the change is happening in cities, at a rate four times that in towns, while there was no change over 2010-2018 in rural areas. No research is available yet on why the downward trend has been interrupted. There is also a significant gender gap in the rate of 4.7 pps. However the gap between the native and foreign-born population is the smallest in the EU, at 0.3 pps (and only slightly larger for those born outside the EU, at 0.9 pps).

In August 2019, the length of the school day was shortened by three lessons a week. Municipalities are authorised to make further cuts. But the agreement also extends the number of lessons in some subjects, strengthens support teaching and grants more local autonomy. The Danish Association of School Leaders is critical of the reform, stating that it is underfunded.

6. Modernising higher education

The number of people aged 30-34 with tertiary qualifications continuously increased to 49.1% in 2018, with women (56.6%) outnumbering men (41.8%). Tertiary attainment rates vary considerably by region: in Hovedstaden (63.1%) they are nearly twice as high as in Syddanmark (37.7%). While the rates for the native-born (47.9%) and foreign-born populations (53.1%) are relatively close, for people born outside of the EU it drops to 34.7%, the widest such gap in the EU after Slovenia. Ony 21% of tertiary graduates in 2017 graduated in STEM (science, technology, engineering, mathematics) subjects, below the EU average of 25.8% and far below Germany with 35.6%.

The employment rate of recent graduates recovered to 87.8% in 2018. Employment rates generally are high. Upper and post-secondary level graduates from vocational training have better employability than those with general education only (85.6% vs 80%). Higher education (ISCED 5-8) provides only a weak boost to employability of 2.2 pps, one of the smallest advantages in the EU (EU average: 3.8 pps). However, there is a high earnings premium, with average annual income for tertiary-educated workers 65% higher in 2017 than for those with vocational education and training (VET) qualifications.

Danish universities remain attractive for students from abroad. 15.1% of the graduates in Denmark studying for a degree come from abroad. About half do so for doctoral studies, a quarter for master degrees and a fifth in short-cycle studies (7% for a full bachelor degree).[83] While the majority come from Europe, other regions are represented too, in particular Asia. About 10% of Danish graduates studied abroad, most of them for short-term credit mobility (8.4%) and about 1.4% for whole degree studies. Short-term mobility is highest at master level and degree mobility at PhD level with 5%.

The latest reforms make higher education more flexible and link it more closely to labour market needs. An Agreement from December 2018 introduced the possibility to introduce up to 25 one-year full-time professionally oriented master courses; to allow better opportunities for students to combine study and work[84]; and to allow for work experience between degrees. Having graduated with a bachelor degree, students have now up to three years to actually start with their guaranteed master programme. These reforms are welcomed by stakeholders like the Confederation of Industries and the Confederation of Academics. Recent reforms encourage higher education institutions to develop measures to foster talent. The 2015 'Education for the future' (*Uddannelser til fremtiden*) reform introduced the possibility of special talent tracks with extra credits. An evaluation showed that two out of three universities use broadly defined talent measures but also pointed to the need for funding to support further development in this respect[85]. Thus, in 2019, the Danish government allocated DKK 190 million (EUR 25.5 million) to a talent track aimed at supporting 5000 students. Narrowly supporting only talent in this way was critised by the Danish University Association and student representatives, who consider that the 2% overall annual budget reduction since 2015 has eroded the funding of the higher education system.

7. Modernising vocational education and training

In 2017, 2% fewer new students entered formal VET programmes in Denmark. 38.9% of students enrolled in upper secondary education attended vocational programmes in 2017, a small reduction from previous years (and below the EU average of 47.8%). Students in VET had some exposure to work-based learning — most educational programmes provide for some practical elements in the curriculum. The employment rate among recent VET graduates in 2018 increased to 85.6% from 82.8% in 2017, staying above the EU average of 79.5%.

The number of apprenticeship places is increasing and a new action to boost awareness and motivation has been introduced. One major issue has been a shortage of apprenticeship places. With more than 2 800 apprenticeship places created in 2018, the target of 2 100 new

[83] Source: Calculations by the European Commission's Joint Research Centre, based on Eurostat (UOE, 2017).
[84] The accord also set aside funds to establish up to 50 programmes where studens can complete the classic two-year master studies on a part time basis master studies in 50 study areas.
[85] See: https://www.ft.dk/samling/20181/almdel/UFU/bilag/97/2048929/index.htm.

places for 2019 was more than reached (NRP, 2019). A tripartite agreement aimed at attracting young people into VET and increasing completion rates was concluded in August 2017. In November 2018, the Parliament agreed a DKK 2.3 billion (EUR 308 million) action to increase learners' awareness of and motivation for VET programmes from an early age. It involves a stronger focus on practical skills in lower secondary schools, with compulsory VET-related subjects and exams, and a stronger involvement of municipalities in guidance and counselling.

Denmark has also made progress on providing migrants with training, education and jobs. A vocational programme for newly arrived migrants (new basic integration programme, IGU), agreed between the government and the social partners, started in July 2016. Access to the unemployment benefit system is granted on successful completion of the programme. Companies employing and training newly arrived migrants receive financial incentives. By April 2018, 1 440 people were enrolled in the programme, and 70-80 new contracts are being issued each month. By January 2019, the number had increased to 1 890. An evaluation of the programme published in June 2018 shows that municipalities and companies are satisfied with it and that it contributes to the competencies of migrants.

Box 2: 'STEM - the way to business competence and employment' project

Targeted guidance for pupils and parents, practice-oriented teaching and internships are some of the activities in this new project that seeks to get more young people to choose an education in the digital or technical fields. Mercantec, an educational institution in Viborg, is in charge, in partnership with other vocational schools throughout Denmark. The project is receiving DKK 43 million (EUR 5.8 million) from the European Social Fund.

The project creates targeted guidance and practice-based learning communities that will motivate more young people to take a STEM education (technology, IT, engineering, national sciences and mathematics). At the same time, special VET classes and extension courses for talents within the STEM areas are being established. Part of the project focuses on increasing the motivation of female students to acquire STEM competencies. Unemployed adults will also have the opportunity to increase their vocational skills, helping them progress from unskilled to skilled workers.

Among other things, the project is expected to create 800 internships and, through targeted company visits, to establish internship placement guarantees in STEM areas in all regions of Denmark. The project runs from 1 January 2019 to 31 December 2021. Around 7 800 people are expected to participate.

8. Developing adult learning

There is strong participation in adult learning, but a high proportion of low-qualified adults requiring upskilling. A smaller proportion of Danish adults than the EU average (18.7% compared to 21.9%) do not have at least an upper-secondary qualification. 62.5% of low-qualified adults are in employment, 5.7 pps above the EU average (2018). Digital skills levels are high: in 2017, 75% of 16-19 year-olds reported having high-level skills (EU average: 57%). In the wider population aged 16-74, the figure is 71% (EU average: 57%). The participation rate in adult learning, 23.5%, is well above the EU average of 11.1% (2018). However there are still nearly 530 000 people aged 25-64 in Denmark who have only a low level of educational attainment. Therefore, there remains a need for upskilling, in line with the recommendation of the Council of the EU referred to in Section 4.

A national overview of adult learning opportunities has been created and ICT-based approaches to adult learning introduced. In addition to the tripartite agreement, the Ministry of Education has launched a web portal to support adults in upgrading their skills and competencies and finding the right training programme. The portal offers a national overview of adult learning opportunities to people in the labour market as well as to the unemployed. ICT-based approaches are increasingly used to fit education into the everyday life of adults. In university study programmes, changes have been introduced that increase the possibility of part-time study.

Most teachers in adult education in Denmark have formal qualifications and there are no indications of teacher shortages. In adult education, where institutions and curricula are recognised as part of the public education system, teachers face formalised qualification requirements which vary depending on the type of provision. In non-formal adult education, for instance evening schools and part of the activity of folk high schools, qualification requirements are less formalised. However, such teachers are often expected to have or to acquire the basic adult teaching certificate.

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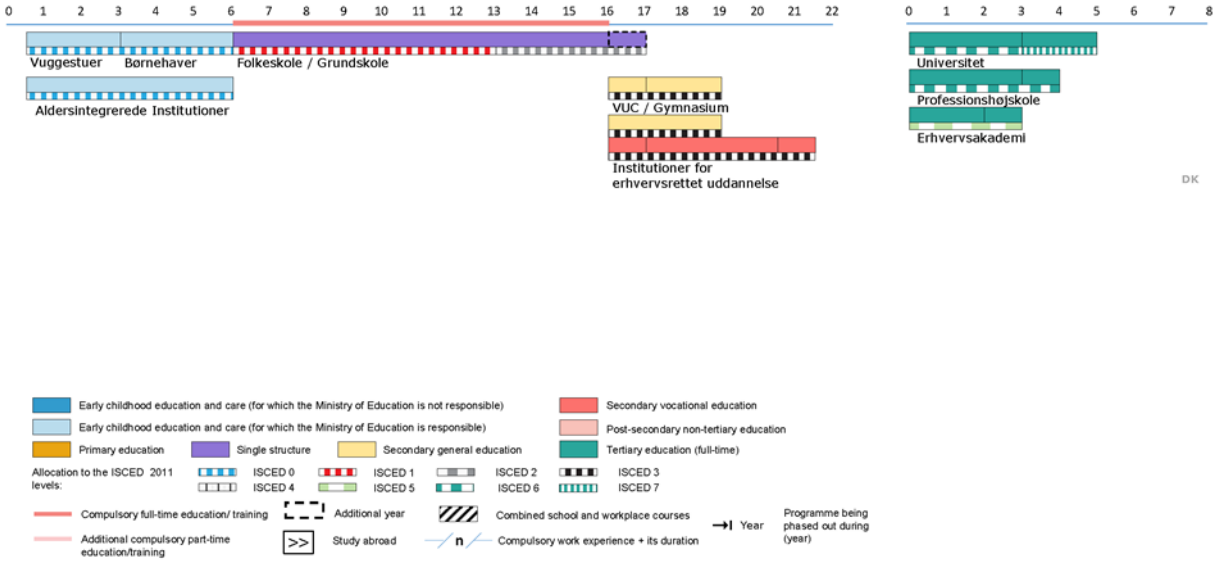
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

Comments and questions on this report are welcome and can be sent by email to:
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European Commission

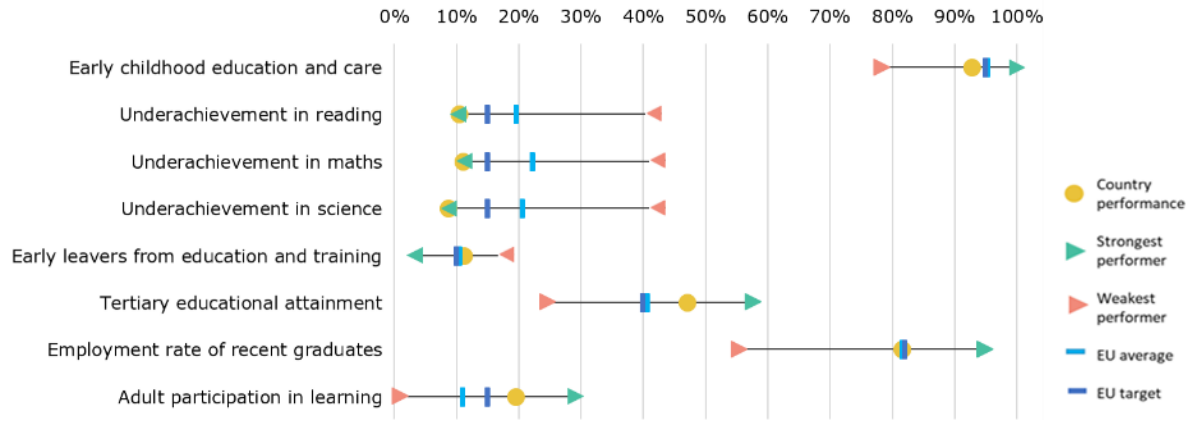
ESTONIA

1. Key indicators

			Estonia		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			13.5%	11.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			36.3%	47.2%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			96.1%	92.9% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		13.3%	10.6% [15]	19.5%	19.7% [15]
	Maths		12.7%	11.2% [15]	22.3%	22.2% [15]
	Science		8.3%	8.8% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		67.7% [b]	81.7%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		10.5%	19.7%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	9.6% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	: [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		7.2%	5.8% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€1 714 [12]	€5 199 [16]	:	€6 111 [15,d]
		ISCED 1	€4 430 [12]	€5 000 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€5 100 [12]	€5 127 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€5 551 [12]	€5 008 [16]	:	€7 730 [14,d]
		ISCED 5-8	€6 414 [12,d]	€9 445 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		13.8%	11.5%	13.1%	9.5%
	Foreign-born		: [u]	:	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		35.9%	45.6%	33.1%	41.3%
	Foreign-born		44.6% [u]	73.8%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		65.2%	74.5%	72.5%	76.8%
	ISCED 5-8		70.5%	89.0%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex 1 and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u = low reliability, := not available, 12= 2012, 14= 2014, 15= 2015, 16= 2016, 17 = 2017.

Figure 9 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sports (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Estonia is developing an education strategy for 2021-2035, aiming to bring gradual changes to the system to respond to changes in the labour market and society.
- Due to demographic trends and the limited responsiveness of the education and training system to labour market needs, aligning skills supply and labour demand remains a challenge.
- The ageing of the teaching population coupled with the low attractiveness of the teaching profession are a long-term challenge for the functioning of the education system.
- Participation in adult learning has reached a record high but the need for upskilling and reskilling remains high.

3. A focus on teachers

The teaching workforce is ageing but the number of students in teacher training programmes is insufficient to meet future demand. In Estonia, every second teacher in primary and secondary education is over 50 years old and almost every fifth is over 60. For the moment there is a degree of oversupply of teachers, reflected in the high number of part-time teachers[86]. This is particularly the case in rural municipalities, where schools have less students and distances between schools are longer. However, many schools report difficulties in hiring teachers in specific subjects, particularly in mathematics, chemistry, physics, geography and biology (OSKA, 2018a), while university programmes to train subject teachers are generally undersubscribed. In parallel, the unmet need for support specialists (e.g. school psychologists, speech therapists, special education teachers, etc.) is high and expected to increase further as the inclusive education reform advances. The number of graduates from programmes preparing these professionals is also insufficient. However, the number of those in pre-school and primary school teacher training programmes is projected to be sufficient to meet future demand (ibid).

The teaching profession remains a low-status profession. Only 26.4% of Estonian teachers believe that their profession is valued in society (OECD, 2019a). Nevertheless, this percentage increased significantly compared to 2013, when it was only 14%. In general, teaching is considered stressful, salaries uncompetitive, and working conditions unattractive. Teachers report a lack of feedback and support from mentors, and insufficient cooperation with other teachers and parents (MoER, 2016). While generally unpopular, teaching is particularly unappealing to men, who account for only 17% of school teachers[87] (EU average: 28%; UOE, 2017). To improve the image of the profession, media campaigns were run and a national educational award was introduced in 2018 giving recognition to teaching. The authorities launched a working group to develop new solutions to tackle teacher shortages. More flexible pathways to the profession were introduced in 2013 to allow teachers to enter the profession with a combination of a pedagogical degree or a non-pedagogical degree at either bachelor or master's level. Nevertheless, the challenges arising from the lack of candidates to become teachers is seen as a risk to the successful functioning of the Estonian education and training system.

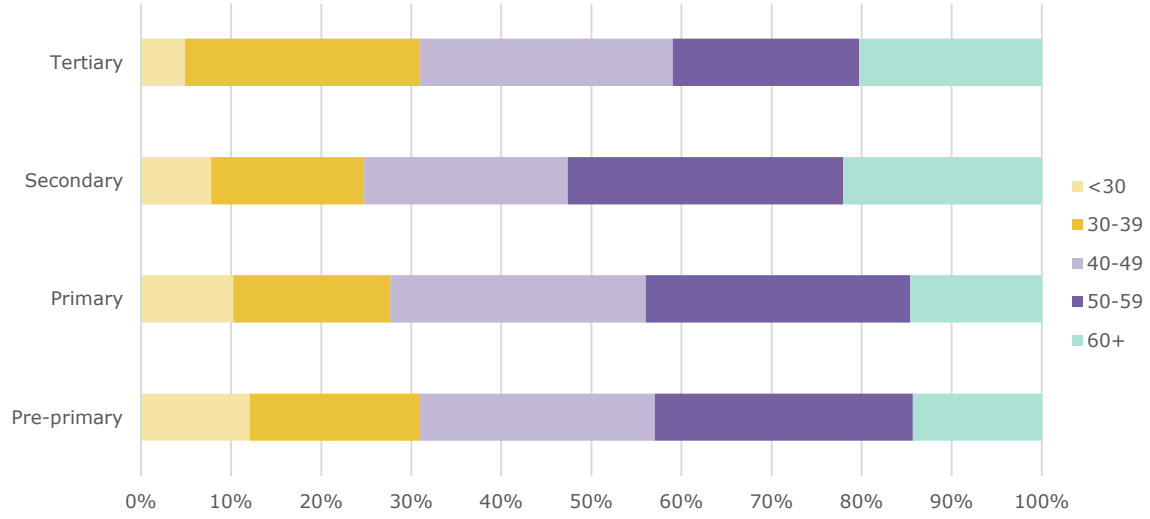
The government is increasing salaries to help make the profession more attractive. Between 2014-2018, teachers' salaries increased by more than 40% (NRP, 2019). On average, a school teacher working full time earns 113% of the average wage in Estonia. The intention is for salaries to reach 120% of the average wage, equivalent to the average pay for employees with a tertiary education degree. The government allocated funds to local administrations to top up the salaries of pre-school teachers, which are lower. In general, career prospects and teacher remuneration over their career are factors affecting the attractiveness of the profession (OECD, 2018a). However, minimum salaries have only been set at national level since 2013. As salaries are defined at school level[88], they vary significantly across municipalities and across the system (state, municipal, private). More competitive salaries could improve gender balance in the

[86] 44% of teachers in general education and 60% in vocational education and training (OSKA, 2018a).
[87] ISCED 1-3.
[88] Typically based on experience, extra qualifications and professional development activities (Santiago et al., 2016).

profession, with evidence suggesting that countries with higher salaries tend to have a better gender balance (OECD, 2018b). Nevertheless, even in countries with higher levels of pay, unattractive working conditions and the low status of the profession are factors that make teaching a less attractive career choice (ibid).

There is a need to improve teacher education programmes. Compared with the average of 23 EU countries[89] surveyed in the 2018 Teaching and Learning International Survey (OECD, 2019a), Estonian teachers report a greater need for additional training in teaching students with special educational needs (26.1%; EU-23: 21%), teaching cross-curricular skills (17.2%; EU-23: 12.1%) and ICT skills for teaching (19.2%; EU-23: 16.1%). As the number of students with special educational needs in mainstream education increases, there is a need to better prepare teachers for this purpose in initial teacher education and continuing professional development (OSKA, 2018a). Teachers also report an insufficient level of digital skills, and that this is a major obstacle to teaching digital skills (Praxis, 2017). They often report difficulties in creating digital content and in problem-solving. Moreover, the Survey of Adult Skills showed that Estonian teachers have average or slightly below-average information processing skills but perform worse in problem-solving in a technology-rich environment (MoER, 2013).

Figure 2 Age of teachers by level of education



Source: DG EAC calculations based on Eurostat and UOE, 2017.

4. Investing in education and training

Spending over the short- and medium-term is likely to be driven by the planned education reform. As a percentage of GDP, Estonia's general government expenditure on education is above the EU average (5.8% in 2017, against 4.9%). Spending on education is also high as a share of total government expenditure (14.8% against 10.2% in the EU), reflecting the importance attached to education and training policies at national level. Work has started on developing an education strategy for 2021-2035, which would also cover the use of EU funds between 2021 and 2027. The strategy is expected to make gradual changes to the system, such as revising the curriculum and introducing a new approach to learning. It seeks to foster more flexible transitions and more permeability between educational levels by stepping up cooperation between educational institutions through the 'Consortium' approach. To ensure a more efficient use of school resources, Estonia plans to further address demographic trends within the student population and the teaching workforce, for example, by giving further incentives to reorganise the school network and addressing the high share of part-time work among teachers.

[89] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

Reorganisation of the general upper secondary school network needs to be finalised but overall investment needs in school infrastructure are expected to fall. Reorganising the school network, partly financed by EU funds, is ongoing and will require further investment in the coming years (European Commission, 2019). However, a large part of the infrastructure plans – building or renovating buildings — has been completed, so investment needs are expected to fall compared to previous years. 15 out of the 24 planned state gymnasiums have already been opened, the network of vocational education schools was modernised and schools received EU funding to update their infrastructure to make them more energy efficient. In addition, the government offers financial support to basic education schools in return for discontinuing the provision of upper secondary education. The pace of reorganisation is uneven across municipalities. In 2018, 160 schools offered upper secondary education (compared with about 200 in 2013), though the reorganisation aimed to reduce this number to 100 by 2020. Out of 532 general education schools, almost a third are small (fewer than 100 students) or very small (fewer than 30 students). The need remains to continue the reorganisation of the network of upper secondary schools, alongside investing in improving the quality of the entire school network (NRP, 2019).

Box 1: The skills challenge in Estonia

Although the level of education is Estonia is high compared with many other EU countries, there are significant imbalances in aligning skills supply to labour demand. Existing data suggests that there is a shortage of cognitive and other transversal skills (OECD, 2019b). Employers expect more general knowledge from graduates of vocational education and training and more practical knowledge from higher education graduates.

There are labour and skills shortages in a number of sectors, including in ICT and construction, and emerging shortages in others (e.g. teachers). According to forecasts, half of those entering the labour market will need a higher education degree and a third will need a vocational education degree; however, the number of graduates in either track will not suffice to meet future needs (OSKA, 2018b).

Although young Estonians have a good level of basic skills, educational outcomes are lower in rural areas and among graduates of Russian-medium schools. Too many young people leave the education and training system too early, particularly young men. An increasing number of young people do not continue their studies after general upper secondary education.

27% of Estonia's workforce has no more than a basic or general upper secondary education and no professional qualifications (either vocational or higher education) (NRP, 2019). Although participation in adult learning is improving, existing skills shortages and mismatches suggest that the need for upskilling and reskilling remains high.

Estonia performs on average in terms of adopting high performance workplace practices and the strength of its innovation system (OECD, 2019b), while the research and innovation (R&I) system does not meet its full potential (European Commission, 2019).

To address these challenges, the 2019 country-specific recommendations call on Estonia to address skills shortages and foster innovation by improving the capacity and labour market relevance of the education and training system (Council of the European Union, 2019).

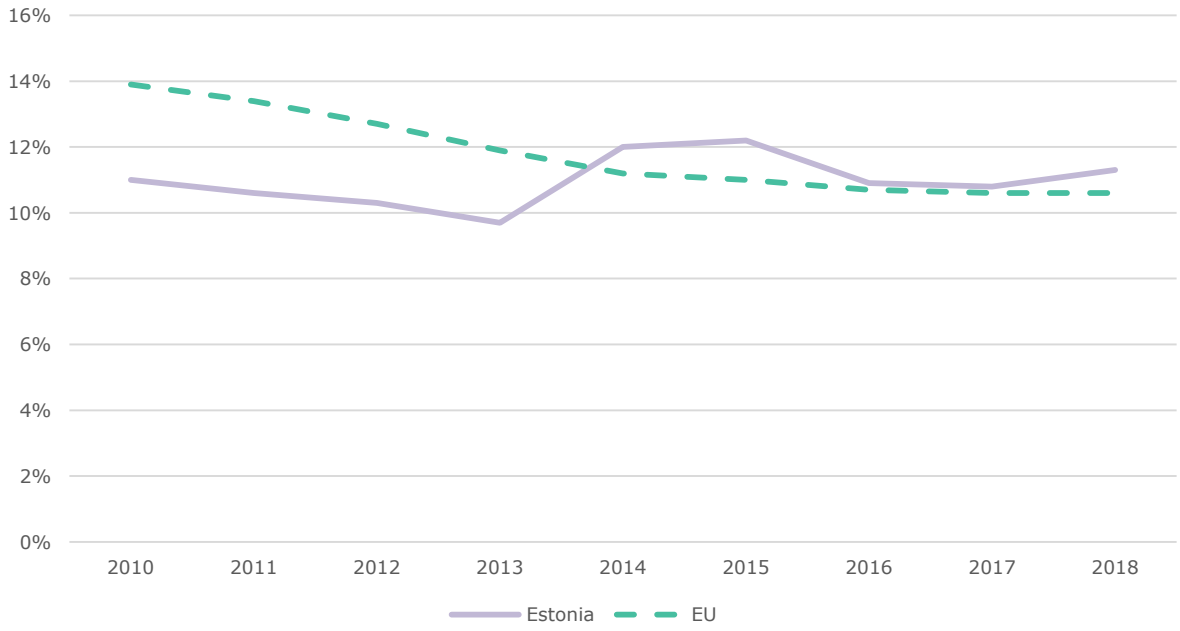
5. Modernising early childhood and school education

Participation in early childhood education and care is improving but is still below the EU average. In 2017, the participation rate for children aged 4 to compulsory education age increased to 93% (EU average: 95.4%). For children aged 0-3, the enrolment rate is 27% (EU average 34%), with parents' educational attainment not seemingly a determining factor (OECD, 2018a). Work has started on harmonising the legal framework and quality requirements for childcare and early childhood education. To support Estonian language learning from an early age, a pilot project providing Estonian speaking teachers in pre-school education groups was launched in the two regions with the highest proportion of Russian speakers. The objective is for children from Russian-

speaking families to speak Estonian at A1 level[90] by the time they go to school, with plans underway to extend the programme, according to the needs in Harjumaa and Ida-Virumaa.

Too many young people leave the education and training system too early. At 11.3% in 2018, the rate of early leavers from education and training (ages 18-24) has not improved in recent years. It is above the EU average (10.6%) and Estonia's Europe 2020 target of 9.5[91]%. Early school leaving is particularly problematic given the economic and demographic context: as the need for higher skills increases but the working-age population decreases, it is becoming increasingly important to ensure that young people acquire adequate skills and attain either vocational or higher education. Men are much more likely to leave the education system early (16.1% compared with 6.4% of women — the highest gender gap in the EU). The main factors affecting completion of upper secondary education are weak learning outcomes in basic education and lack of motivation, suggesting that interventions should be offered before students reach upper secondary education (MoER, 2018).

Figure 3 Early leavers from education and training, 2010-2018



Source: Eurostat, LFS.

Proficiency in Estonian language for students with a different mother tongue remains a challenge. Less than 61.4% of graduates from basic schools where Russian is the language of instruction master Estonian at B1 level, well below the national target of 90%. Overall, 69.2% of all basic school graduates with a different mother tongue than Estonian reach the B1 level. This rises to 86% for students of immersion classes and to 99% for students educated in an Estonian-speaking environment (MoER, 2019). Language competences improve in upper secondary education, where at least 60% of the curriculum is taught in Estonian, with 83% of graduates of Russian-medium schools reaching level B2[92]. Apart from Estonian, having good English skills is perceived as important for competing on the labour market. However, there is a large gap in English-language performance between Estonian and Russian native speakers (MoER, 2018). As of September 2019, all graduates from upper secondary will be able to certify their language skills free of charge by taking an internationally recognised high-level test (Cambridge C1).

[90] A1 corresponds to a basic level of proficiency in the Common European Framework of Reference for Languages.
[91] 9% target under the Lifelong Learning Strategy.
[92] B1 and B2 correspond to an intermediate level of language proficiency.

Box 2: School of the future

The 'School of the future' is a project financed by the European Social Fund. It aims to develop a new approach to learning by strengthening schools' capacity to innovate using evidence and to support teachers in becoming agents of change. Participating schools have the opportunity to analyse their challenges, set sustainable goals and develop plans for the future. Each school is assigned a consultant to work with on a regular basis, which includes online communication and weekly visits. Additional experts can be involved, depending on the schools' need.

In practical terms, teachers receive support to develop innovative solutions and assess their effectiveness based on evidence, analysed jointly with Tallinn University. Monthly seminars are held to reflect on the process of change and to prepare next steps. At the school level, a steering group of 4-6 members comprising teachers and school leaders follow up by developing specific plans to implement the innovative solutions identified.

6. Modernising higher education

The number of new labour market entrants with higher education is insufficient to meet future labour market needs. The number of students entering higher education is falling due to demographic trends and the fact that an increasing proportion of upper secondary graduates do not continue studying, particularly men, Russian speakers, and graduates from schools furthest away from economic and administrative centres (MoER, 2017)[93]. Admission to doctoral programmes is also falling. The number of young people who graduate from higher education does not meet the future labour force demand (OSKA, 2018b). Although the number of foreign students is increasing, reaching 13% of admitted students, it is insufficient to offset labour market shortages as few remain in Estonia after graduation, mainly due to their lack of knowledge of Estonian. Although tertiary educational attainment in the age-group 30-34 is currently above the EU average (47.2% compared with 40.7%), it may worsen if the high dropout rates persist.

Higher education is insufficiently aligned with labour market needs. Employers often report mismatches in terms of transversal skills. These are critical for building a flexible workforce and include a variety of skills like creativity, critical thinking, entrepreneurship, autonomy and capacity for problem-solving. Two thirds of students in Estonia work whilst studying (Praxis, 2018), which enables them to acquire practical experience. However, as many students drop out or interrupt their studies to move into full-time work, this can lead to a situation where their skills do not meet employers' expectations (MoER, 2018). In addition, the actual number of graduates in science, technology, engineering and mathematics (STEM) – who play a key role in R&D investments – is also insufficient to meet labour market needs. This shortage reflects both the demographic trend and the fact that some STEM fields remain unattractive.

More women attain tertiary education than men but men are better paid. In 2018, 38% of men aged 30-34 had a tertiary education degree compared with 57.5% of women in the same age group. This gap has persisted. The employment rate for tertiary educated men who have recently graduated is higher than for women (93.3% vs 85.4%), which may be partly explained by parental leave arrangements. But even when employed, tertiary-educated women earn about 30% less than men. This high gender pay gap has been linked to a number of factors, including insufficient pay transparency, family care responsibilities and gender differences in the field of study (EIGE, 2017).

7. Modernising vocational education and training

The implementation of a new funding model for vocational education and training (VET) has started but is delayed due to funding constraints. The government introduced performance-based funding to promote innovation and better cooperation between schools and companies. However, only EUR 0.5 million were allocated for this purpose in 2019, compared to

[93] In 2017, 56% of upper secondary education graduates continued their studies in the academic year after graduation, 11 percentage point lower than in 2007. 9% of VET graduates continued to higher education, of which three quarters to professional higher education.

the EUR 12 million initially expected. Total enrolment in upper secondary VET[94] in Estonia also increased slightly in 2017 compared with previous years, with 40.7% of students enrolled (UOE, 2017). However, this was still below the EU average of 47.8%. The share of VET students enrolled in programmes with workplace-based learning experience has doubled but, at 5%, it was still very limited.

Estonia promotes entrepreneurial skills in VET and supports teachers and trainers in acquiring these skills. Fourteen VET schools have taken part in the entrepreneurial programme together with general schools and higher education institutions. By 2020, 2 900 teachers and business/industry specialists (including VET teachers and trainers) are expected to attend in-service training in entrepreneurship education. 75 cooperation projects are planned to promote mutual learning between teachers, employers, learners, parents and other institutions. In 2018, 800 teachers followed in-service training in entrepreneurship education and 45 cooperation projects were launched in VET and general education institutions. A network was created for both career and entrepreneurship teachers to share new information and teaching practices. E-materials supporting teachers were compiled and integrated in the training material for pilot schools.

8. Developing adult learning

Estonian adults update their knowledge and skills through learning more often than the EU average but the need for upskilling and reskilling remains high, especially for the low educated. In 2018, 19.7% of adults aged 25-64 had had a learning experience (EU average: 11.1%). As the number of jobs requiring only a low level of education is decreasing, it is important to upgrade the skills of adults with low levels of education, including older workers. Participation in learning schemes has increased, including for the low educated (7.4% in 2018, EU average: 4.3%). However, the participation rate of this group remains considerably lower compared to highly educated workers in Estonia (28.8%, EU average: 19%). To increase the participation in learning amongst adults with a low level of educational attainment, there is a need to focus on attitudes and to provide learning opportunities tailored to learners' needs. The Estonian Quality Agency for Higher and Vocational Education started to develop a quality evaluation system for continuous training aiming to provide information about the quality of training for adult learners and to encourage providers to systematically improve quality.

The Unemployment Insurance Fund rules were revised to incentivise adult learning. Since 1 June 2018, the target group to receive formal education support and training vouchers was extended to cover people on temporary contracts. The income eligibility threshold for support was increased from the national median wage to the average wage (from about EUR 800 to 1 200 per month in 2018). Employers can now apply for support to provide Estonian language training to their employees.

Estonia plans to improve its skills governance system. With support from the European Social Fund, Estonia developed a comprehensive system to anticipate labour market needs and skills (OSKA). Since 2017, the European Centre for the Development of Vocational Education and Training (Cedefop) has provided technical advice with the aim of improving the management and coordination of skills anticipation, improving the take-up of recommendations and forging a close link between skills intelligence and the education and training system. The tool is expected to be further developed with the support of EU funding to improve the methodology and the implementation concept.

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[94] UOE data. The methodology for this indicator is different from the one in the Estonian Lifelong Learning Strategy.

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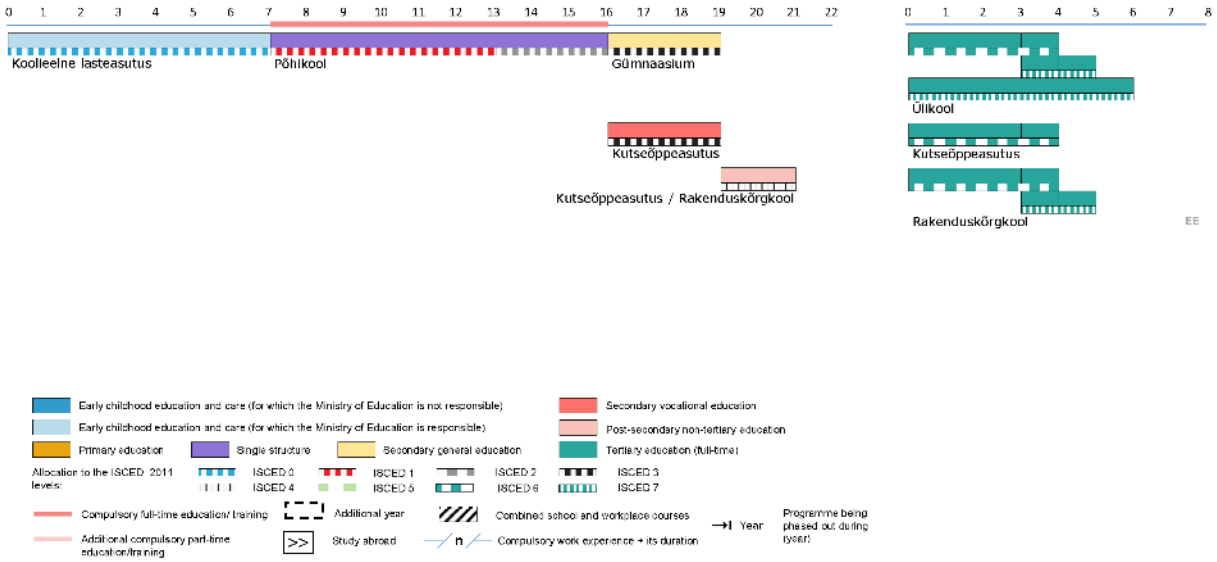
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2019. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

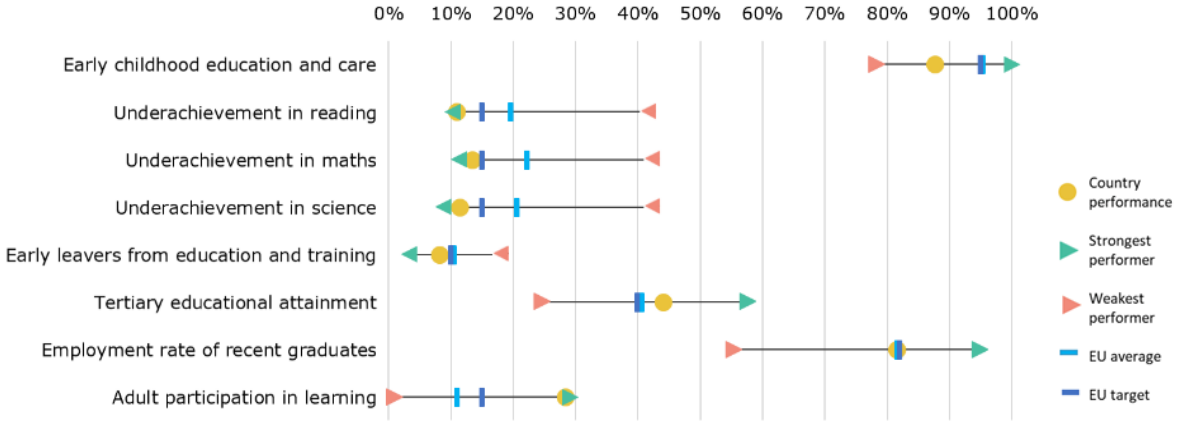
FINLAND

1. Key indicators

			Finland		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			9.9%	8.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			45.9%	44.2%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			71.9%	87.8% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		8.1%	11.1% [15]	19.5%	19.7% [15]
	Maths		7.9%	13.6% [15]	22.3%	22.2% [15]
	Science		6.0%	11.5% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		77.8%	81.7%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		22.1%	28.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	3.8% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	15.2% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.5%	5.7% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€8 822 [12]	€9 326 [16]	:	€6 111 [15,d]
		ISCED 1	€6 347 [12]	€6 873 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€9 853 [12]	€10 943 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€6 563 [12]	€6 451 [15]	:	€7 730 [14,d]
		ISCED 5-8	€13 634 [12]	€12 761 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		9.3%	8.1%	13.1%	9.5%
	Foreign-born		21.8%	12.7% [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		47.2%	46.4%	33.1%	41.3%
	Foreign-born		27.2%	25.9%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		72.9%	76.7%	72.5%	76.8%
	ISCED 5-8		84.1%	88.3%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u = low reliability, := not available, 12= 2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 10 Position in relation to stongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- While teaching is a prestigious and attractive profession, there are teacher shortages for kindergarten and special needs education.
- There has been some growth in education inequalities, and spending on education has fallen.
- New policy measures aim to improve the quality, effectiveness and internationalisation of higher education. Demand for graduates in Information and Communications Technology (ICT) is high and difficult to meet.
- Implementation of vocational education and training reform is ongoing, and reforms are planned to foster adult learning.

3. A focus on teachers

Teaching is an attractive profession. Teachers are considered academic professionals and enjoy public respect (Simola, 2005). According to the OECD Teaching and Learning International Survey (TALIS)[95] (OECD, 2019a), the proportion (58.2%) of Finnish teachers who believe that theirs is a valued profession is the highest in the EU (17.7% at EU level). The proportion who are satisfied with their job is 88%, just below the EU average of 89.5%, but does not drop among teachers with over 5 years of work experience. Overall, 78.9% of teachers say that if they could decide again, they would choose to become a teacher (EU average 77.6 %), with teachers with more than 5 years of working experience slightly lower (78.0%, EU average 76.4%). The proportion reporting that teaching was their first career choice is lower than the EU average (59.3%, EU average 65.7%). This is lower for male teachers (56.8%) than for females (60.3%) (EU average: -11.5 pps). Few teachers leave the career in the early years, and they change career less often than other professionals.

Teachers are predominantly female, and the profession is ageing. As in other EU countries, most teachers are women. At primary level women make up 80% of teachers, at lower secondary 75% and at upper secondary 60% (85%, 68% and 61% respectively, for the EU). At tertiary level, women make up 52% of teaching staff. In vocational education and training (VET), slightly over half of teachers are women. More than a half of school leaders are men. In 2017, school teachers below the age of 30 make up less than 10% of the workforce (similar to the EU average of 9.4%). The proportion of teachers aged over 50 is smaller in primary (32%) and lower secondary education (32%) than upper secondary (48%) and tertiary education (48%)[96]. In VET, more than half of teachers are over 50 (Paronen & Lappi, 2018). Most school leaders are over 50. There are no policies to address the gender imbalance in teaching.

Teacher salaries are broadly equivalent to those of other tertiary graduates, but lower in pre-primary and primary education. Teacher salaries and employment conditions are agreed nationally as part of collective agreements between municipalities and other employers, and teachers' unions. In 2015, average pay of pre-primary and primary teachers was below that of other tertiary-educated staff (73% and 77% respectively), although the pay of lower secondary teachers and upper secondary teachers (84% and 99%, respectively) was higher (OECD, 2018). In 2017, salary progression is one of the lowest in the EU - for primary and secondary level, it is around 30%, but for pre-primary teachers it is only 8% (European Commission/EACEA/Eurydice, 2018a).

There are shortages of special needs and kindergarten teachers. The latest forecast of national demand for qualified teachers in primary, secondary and vocational schools in Finland was undertaken in spring 2018. It points to shortages of special education teachers (2.2% of the total workforce) and career counsellors (6.2%) (Nissinen & Välijärvi, 2018). An increasing need of

[95] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

[96] Eurostat, UOE, 2017.

special needs teachers was also seen in VET. The 2016 Survey of Teachers and Principals in Finland (Kumpulainen, 2017) had previously indicated shortages in these groups and for pre-primary teachers. There is broad agreement that the intake of trainees in these areas has to be stepped up[97]. Over the past seven years, the government has funded 100-200 extra places annually for pre-primary teachers in university programmes. Some municipalities, such as the city of Vantaa, have offered higher pay to attract pre-primary teachers (Helsingin Uutiset, 2018).

There are no fixed teacher evaluation practices. Assessment of teachers' performance is based on self-evaluations and on ongoing dialogue with their school leaders. Similarly, the approach to quality assurance in primary and secondary schools is not based on school inspections or systematic national testing but on self-assessment at school and municipality levels. The evaluation practices aim to support autonomy of teachers (European Commission/EACEA/Eurydice, 2018b).

Participation in continuing professional development (CPD) has improved. CPD is the responsibility of the municipalities, which organise in-service pedagogical courses. Teachers have to train for two days per year. Half of Finnish teachers believe that CPD is restricted by schedule conflicts (52.0%, EU 52.4%) and by lack of incentives (51.9%, EU 51.9%). The Finnish Teacher Education Forum (MEC, 2016) has prepared a Development Programme for Teachers' Pre- and In-service Education. Kumpulainen (2017) reports that Finnish teachers and school leaders participated more actively in CPD over the three preceding years, thanks to increased state funding.

Teachers do not feel sufficiently prepared in ICT or to teach in multicultural and multilingual settings. TALIS (OECD, 2019a) reports that the proportion of Finnish teachers who feel well or very well prepared to use ICT for teaching is the second lowest in the EU (21.5%, EU average 39.4%). 19% say they need professional development in this area (EU average 16.1%). However, more than half report that this is covered in their formal education (55.6%, EU average 52.9%). TALIS also reports that the proportion who feel well or very well prepared to teach in a multicultural and/or multilingual setting is among the lowest in the EU (13.9%, EU 23.8%). The proportion (6.9%) who report a high level of need for CPD in this area is lower than the EU average of 13.4%.

Box 1: Improved continuing professional development for teachers

The 'Development programme for teachers in pre- and in-service education' aims to improve participation in, and quality of, continuing professional development. It responded to the finding in the 2013 TALIS survey which showed low levels of continuing professional development and limited teacher collaboration and networking.

The development programme sets out three strategic competence goals for the pre- and in-service education of teachers. It includes six strategic action guidelines to shape the development of teacher education. 31 pilot projects were started at the end of 2016, costing around EUR 15 million in 2017 and EUR 12 million in 2018.

The Finnish Education Evaluation Centre monitors these pilot projects. They conclude that the reform model prepared at the Teacher Education Forum has several strengths, such as networking and bringing together different experts and stakeholders. The evaluation also noted challenges and further requirements for successful implementation, such as creating a clear plan. The effectiveness of the projects will be fully evaluated on completion in 2023–2024.

4. Investing in education and training

Education spending fell in 2017, and, while above the EU average, is still well below pre-crisis levels. In 2017, public expenditure on education was 5.7% of GDP, less than in 2016 (6.1%) but well above the EU average (4.6%). This is well below pre-crisis levels (between 6.6% in 2010 and 6.4% in 2013). In real terms, general government education expenditure 2010-2017

[97] See: https://yle.fi/uutiset/3-10352591

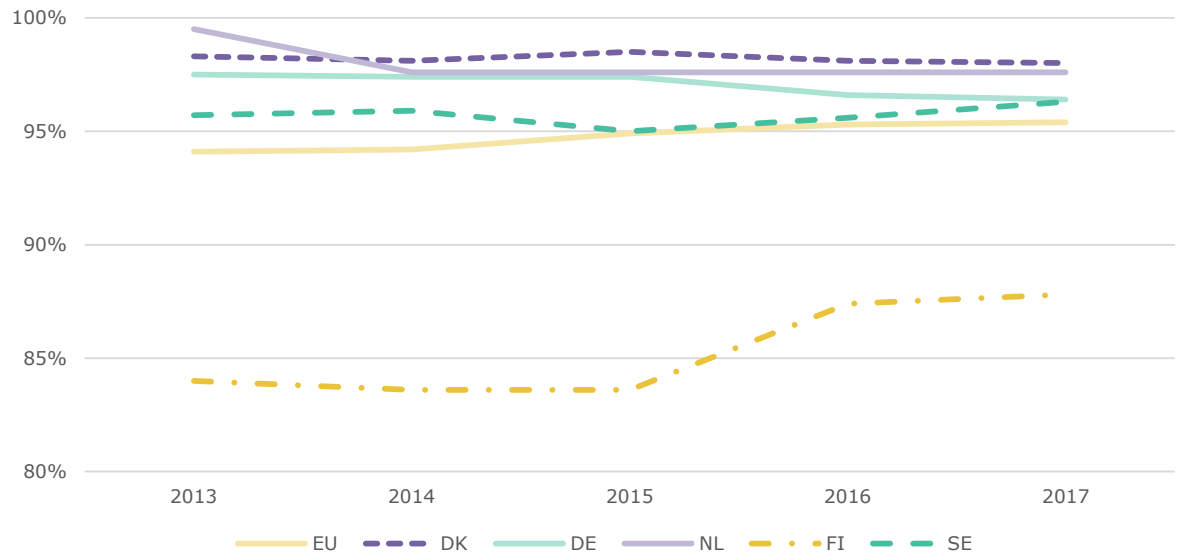
fell by 8% (2.8%[98] in primary, 7.4% in secondary and 10.1% in tertiary education). Public expenditure per pupil/student as a percentage of per capita GDP is below other Nordic countries in primary, upper secondary and tertiary levels**.**

The proportion of private spending on education in Finland is the lowest in the EU. At 1.6% of overall spending, it is well below other EU OECD countries[99].

5. Modernising early childhood and school education

Participation in early childhood education and care (ECEC) keeps growing, but remains low by international comparison. Provisional 2017 data[100] show an increase in participation from 2010 for children under 3 (33.3%, up from 28%, now close to the EU average of 34.2%). Finland remains among the EU countries with the lowest participation rate for children aged between 4 and the starting age of compulsory education (87.8%, EU average 95.4%) in 2017.

Figure 2 Participation in ECEC of children below 4 and the age of starting compulsory ISCED 1, 2013-2017



Source: Eurostat, UOE.

Implementing the Act on ECEC will require increased spending. A new law entered into force in September 2018 simultaneously with the Government Decree on ECEC[101] (FNBE, 2016), aiming to increase quality and participation. Several measures have been implemented since then. Enrolment fees for low-income and middle-income families were reduced. As participation increases, the number of children per classroom has grown. Steps have been taken to increase the number of ECEC teachers with master's degrees[102]. However, local and regional authorities estimate that hiring more such staff will require strong additional investment at municipality level. The Education Minister has proposed additional resources for quality assurance of ECEC (MEC, 2019a).

Implementation of the national core curricula for primary and secondary education faces challenges. National education and teacher fora (MEC 2018 a,b) have identified challenges at student, classroom, school and city level in implementing the national core curriculum for basic (FNBE, 2014) and upper secondary education (FNBE, 2015). To address these challenges, the Basic

98 It does not include the primary education investment incurred by municipalities, which represents around two-third of the total investment. According to the estimates of the municipalities, the overall spending cuts on primary education are equivalent to those of tertiary education.

99 OECD, https://data.oecd.org/eduresource/private-spending-on-education.htm#indicator-chart)

100 Eurostat, EUSILC, ilc_caindformal

101 https://minedu.fi/en/legislation-ecec

102 Finnish universities report that approximately 1 000 new study positions for kindergarten teachers will be created.

Education Forum[103] published a development plan for primary comprehensive schools (MEC, 2018a). For upper secondary level, a new Act on General Upper Secondary Education will enter into force in autumn 2019. It aims to increase the attractiveness of general upper secondary education and make transition to higher education smoother (MEC, 2018b). In 2019, the Finnish National Agency for Education will release an upper secondary framework curriculum for public consultation.

There is evidence that educational inequalities have worsened. Although Finland is acknowledged as one of the most equal societies in educational terms (OECD, 2018b), the PISA surveys (OECD, 2016) showed that inequalities in educational outcomes linked to gender, migration, socio-economic background and area of origin had increased. According to the Finnish Education Evaluation Centre (FINEEC, 2018), parents' socio-economic status and the view of education in a family influence learning outcomes in basic education.

The early school leaving rate remains stable. Despite support measures to students at risk of dropping out, early school leaving in 2018 remained almost unchanged (8.3%, 8.2% in 2017) and higher in males (9.2%) than in females (7.4%). However, according to Statistics Finland, in 2015 about 15% of 20-24 year-olds were neither in education nor in the labour market. In 2018, they report that this rate had fallen to 11.8% (MEC, 2019b).

Teachers' digital competence has markedly improved, but differences persist in the use of digital tools. A national survey on digital learning at school in 2017-2018 indicates positive but slow progress in the use of digital tools in teaching and learning (Tanhua-Piiroinen et al., 2019). Progress may be related to the 2016-2019 Finnish government 'Knowledge and Education' and 'Digitalisation' programmes. In 2017-2018 around EUR 10 million were allocated to municipalities to hire mentor teachers to support use of digital tools[104]. According to trade unions, the temporary nature of this measure raises concerns about its sustainability (OAJ, 2018). There are clear differences in progress towards school digitalisation between and within municipalities.

6. Modernising higher education

Tertiary education attainment is high but has fallen slightly, and there are regional and gender imbalances. The percentage of the population aged 30-34 with a tertiary degree has remained stable since 2017 (44.6% in 2017, 44.2% in 2018), above the EU average of 40.7%. This ranges from 51.9% in Helsinki-Uusimaa to 35.3% in Etelä-Suomi (southern Finland). The gender gap (16.3 pps) was well above the EU average (10.1 pps) in 2018.

While the number of ICT specialists is high, graduate output does not match business demand, and there are large gender imbalances. Finland has the highest percentage of ICT specialists in the labour force in the EU (6.8% of total employment in 2019), but the percentage of enterprises reporting hard-to-fill vacancies for jobs requiring ICT specialist skills is above the EU average (6.95%, EU average 4.64%)[105]. The recent trend in graduation rates will further exacerbate the shortage: in 2017 the share of graduates in ICT fell from 7.1% to 6.3% (EU 3.6%), while those in natural sciences, mathematics and statistics remained low at 4.8% (EU 7.6%). The gender gap (around three times more males than females) is much higher than the EU average[106]. The Ministry of Education aims to boost learning of science, mathematics and technology in schools through the EUR 5 million for the LUMA-SUOMI programme 2013-2019[107].

Box 2: Fostering learning of science, technology, engineering and mathematics (STEM) and improving teachers' skills in these areas

The national LUMA centre Finland, established in 2013, is an umbrella organisation for cooperation between schools, universities and business, coordinated by the University of Helsinki. The objective is to motivate children to study STEM by promoting the latest pedagogical methods. It also supports the life-long learning of teachers and strengths research-based

[103] A stakeholder consultancy group nominated by the Ministry of Education.
[104] National Agency for Education (Opetushallitus – valtionavustukset)
[105] See: https://digital-agenda-data.eu/datasets/digital_agenda_scoreboard_key_indicators/visualizations
[106] Eurostat, UOE, 2017
[107] Luma Suomi – ohjelma: https://suomi.luma.fi/blogi/

teaching. The main activities are continuing professional development for teachers, including an annual LUMA science day, the national LUMA activation week for schools, Mathematics, Science and Technology camps for children, and resource centres for mathematics and science.

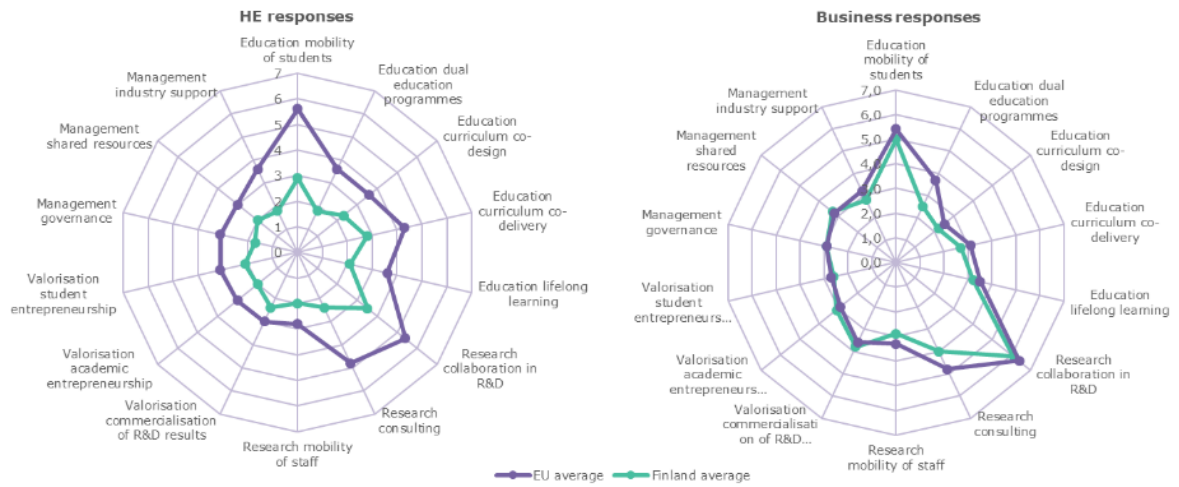
Currently, there are 13 LUMA centres from different Finnish universities and university campuses. See: https://www.luma.fi/en/centre/

A new Higher Education Act aims to increase the quality, effectiveness and internationalisation of teaching, research and innovation. The new Act, published in early 2019, aims to implement the strategic 'vision for higher education and research in Finland 2030' adopted in October 2018[108]. The Act emphasises strengthening continuing learning opportunities in universities and polytechnics, aims to facilitate access to higher education, and seeks better internationalisation of teaching and research (Finnish government, 2018). For this purpose, universities are discussing their strategic profiles and the areas in which they should focus, coordinated by the Association of Finnish Universities (UNIFI) and the Rectors' Conference of Finish Universities of Applied Sciences Arena, with funding support from the Academy of Finland (Finnish Academy, 2018). Some mergers of institutions have taken place (Aalto and Tampere universities, for instance). Another action will make bachelor studies more focused on 'generic competences' and suitable for several careers, while making master studies more oriented towards specific fields.

Finland has strong university-business cooperation, but with room for improvement. According to a recent survey[109], higher education institutions cooperate with business mainly on research and development, student mobility and curriculum co-delivery. Businesses are interested mostly in research-related cooperation, consulting activities and supporting mobility of students. There is low involvement in curriculum co-design, dual education programmes and valorisation and management activities. Less than 50% of academics cooperate with businesses. Academics perceive the limited funding available to be the main barrier, while businesses consider finding appropriate collaboration partners, cultural barriers such as different time horizons and motivations, and the strong focus of universities on scientific outcomes and their lack of business knowledge to be the most difficult aspects. Both academia and business are strongly committed to increasing their cooperation.

Learning mobility is high. The proportion of higher education graduates who obtain a tertiary degree outside Finland (3.6%) is around the EU average (3.1%). In 2016, participation in short-term study periods and/or work placements abroad (15.8%), usually for the purpose of gaining academic credit, is twice the EU average (7.6%) (Flisi, S. & Sánchez-Barrioluengo, 2018).

Figure 3 State of cooperation from the higher education and business viewpoints



Source: DG EAC calculations, based on data from *State of University-Business Cooperation in Europe 2019*. Code: 0: Not at all; 1-4: Low; 5-7: Medium; 8-10: High.

108 Ministry of Education and Culture - Korkeakoulutuksen ja tutkimuksen visio 2030
109 https://ub-cooperation.eu/index/finlandhei

7. Modernising vocational education and training

Vocational education and training (VET) is an attractive learning pathway in Finland, and its effectiveness is gradually improving. In 2017, more than 52 500 new students entered formal VET programmes in Finland, representing 74.4% of all new upper secondary students, similar to 2016[110]. Total enrolment in upper secondary VET in Finland also remained at approximately the same level in 2017, with 70.6 % of students enrolled in VET, well above the EU average of 47.8%. The share of VET students who were enrolled in combined school and work-based programmes was 13%[111]. The employment rate of recent VET graduates in 2018 saw a slight improvement, rising to 78.5% from 77.7% in 2017, but still not reaching the 2018 EU average of 79.5%[112].

Finland continues to implement the 2018 VET reform. The reform[113] covers a wide range of issues, including the abolition of the division between vocational training for youth and adults and a system of continuous admission into VET training. Public funding is allocated based, among other criteria, on employment rate at the end of the studies. The reform restructures vocational qualifications from January 2019, decreasing their number from 351 to 164. This is expected to provide greater flexibility to learners and help them organise their competence development according to their needs and in line with the changing demands in the jobs market. As of 2018, key competences are no longer addressed separately, but are included in all vocational competence and skills requirements and assessment criteria of all vocational qualifications.

Efforts are being made to increase the participation of teachers in CPD. The 2016 CPD program allocates EUR 60 million over 3 years to increase creativity and learner-centred approaches, and to support work in diverse learning environments. The most recent (2016) survey of teachers and school principals indicates that VET teachers' participation rate in CPD has declined. VET teachers participate more frequently in professional development placements in companies, but only 17% of VET teachers had taken part in such placements, although every teacher is encouraged to undertake such placements every 5 years.

8. Developing adult learning

Increased participation in adult learning. Although adult learning policies targeting low-qualified adults have resulted in steadily increased participation by this group, there is a need to continue upskilling and reskilling efforts in order to meet the changing needs of labour market. At 55.4%, the proportion of low-qualified adults in employment in Finland was slightly lower than the EU average of 56.8%. Participation in adult learning was 28.5% (EU average 11.1%). During 2017, almost 36 000 adults aged 25 or more acquired an upper-secondary qualification. This is still a limited proportion, however, of the nearly 330 000 adults (aged 25-64) in Finland who have only a low level of educational attainment. In 2017 there were only 155 000 jobs in elementary occupations, indicating a strong need to ensure upskilling and reskilling for this population group[114]. The 2019 country-specific recommendation to Finland included: 'Improve incentives to accept work and enhance skills and active inclusion, notably through well-integrated services for the unemployed and the inactive' (Council of the EU, 2019).

A working group with dedicated national funding was established in February 2019 to reform lifelong learning into continuous learning. By December 2019, measures will be introduced to encourage the systematic development of work-related skills throughout the entire career, to focus on vulnerable groups and to use skills anticipation forecasts for upskilling and reskilling. The working group consists of all relevant stakeholders, including ministries, labour market organisations, student and teacher unions, and representatives of higher education and VET. In addition, the Ministry of Education and Culture granted EUR 30 million in November 2018 to universities to provide for continuing and lifelong learning. Digital services supporting continuous learning are being developed.

110 Eurostat, UOE, 2017.
111 Eurostat, UOE, 2017.
112 Eurostat, Labour Force Survey, 2018
113 Ministry of Education and Culture - Ammatillisen koulutuksen reformi
114 Eurostat, Labour Force Survey, 2018 and UOE, 2017.

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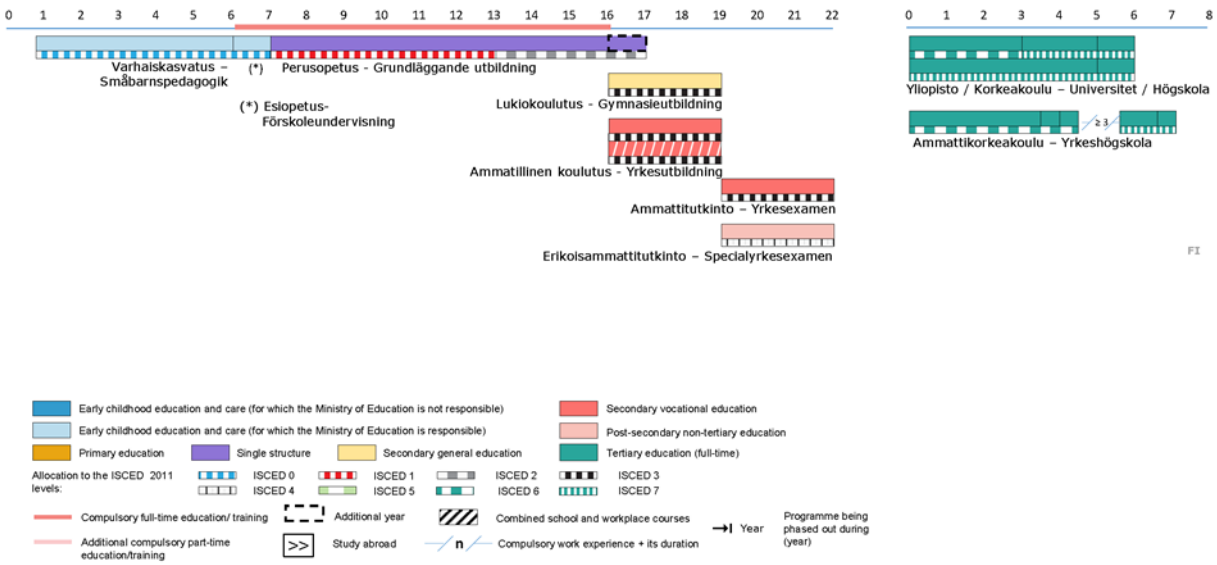
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

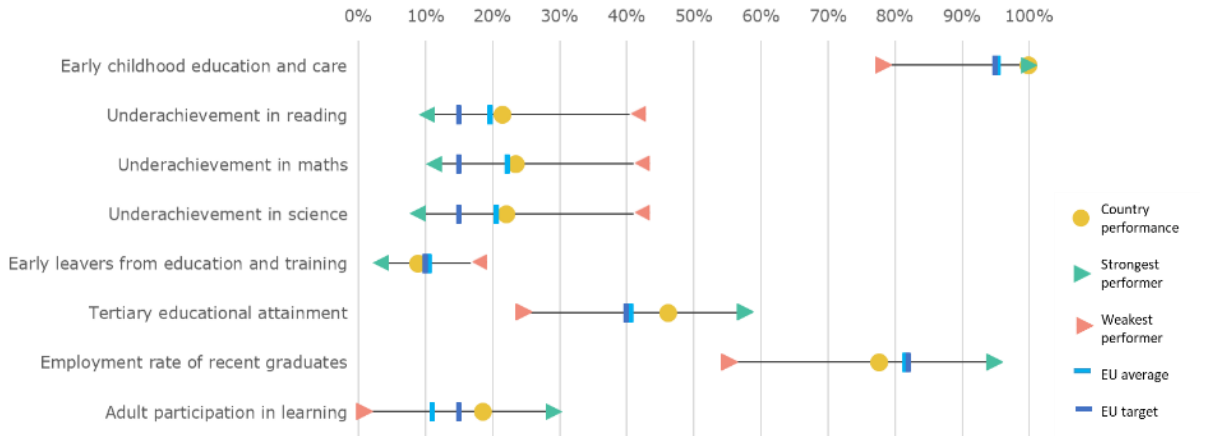
FRANCE

1. Key indicators

			France		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			12.4%	8.9%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			43.0%	46.2%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			100.0%	100.0% [17,p]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		19.8%	21.5% [15]	19.5% [EU27]	19.7% [15]
	Maths		22.5%	23.5% [15]	22.3% [EU27]	22.2% [15]
	Science		19.3%	22.1% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		77.3%	77.7%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		5.7%	18.6%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	3.4% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	14.6% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.7%	5.4% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€5 101 [12]	€5 939 [16]	:	€6 111 [15,d]
		ISCED 1	€5 171 [12]	€5 532 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€7 322 [12]	€7 731 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€9 895 [12,d]	€10 202 [15]	:	€7 730 [14,d]
		ISCED 5-8	€11 556 [12]	€11 771 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		11.6%	8.4%	13.1%	9.5%
	Foreign-born		24.3%	15.0%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		44.3%	47.2%	33.1%	41.3%
	Foreign-born		34.1%	40.4%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		69.0%	68.0%	72.5%	76.8%
	ISCED 5-8		83.4%	84.4%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, : = not available, 12=2012, 14= 2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 11 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Work continues on improving educational outcomes and reducing inequalities, with support for teaching staff and funding measures.
- A new law on education extends the length of compulsory education and training to 3-18.
- Authorities are faced with the challenge of combining the rapid pace of reforms with the need to consult stakeholders to ensure good ownership and optimal impact.
- Implementation of the vocational education and training reform is in full swing.

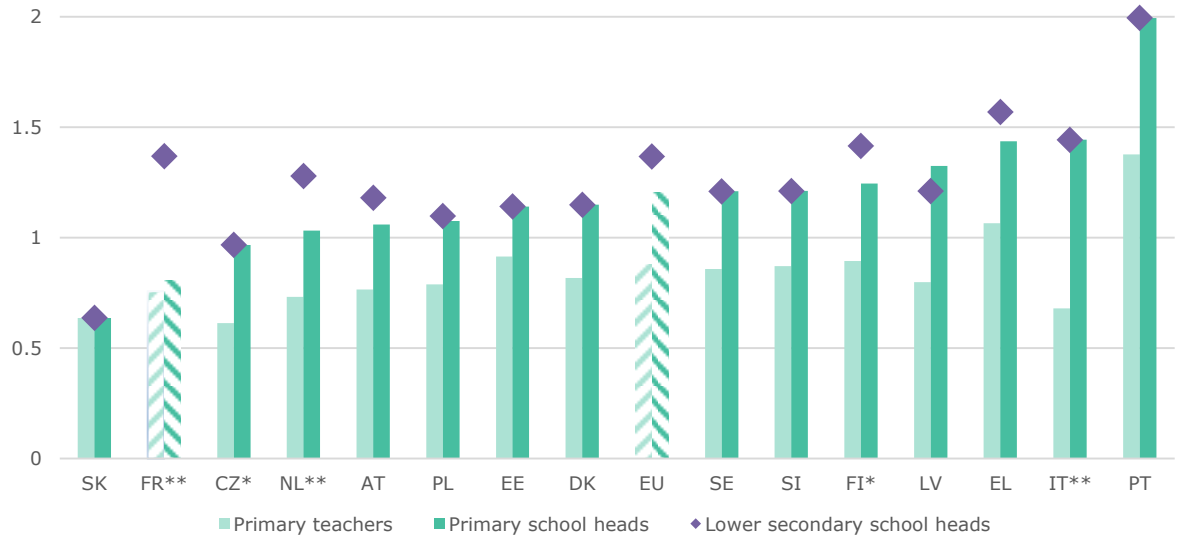
3. A focus on teachers

France has a comparatively young teacher population. The overall gender balance is among the best in the EU and the proportion of women is increasing.

The teaching profession has become less attractive. The applicant-to-job ratio has fallen sharply over the past years (Ministère de l'Economie et des Finances, 2019). Possible explanations are working conditions (including relatively high number of teaching hours and relatively low salaries for primary education teachers) (OECD, 2018a). Teacher shortages affect disadvantaged schools and poorer and remote regions disproportionately. Increasingly, schools are tackling the problem by hiring contractual teachers, possibly at the expense of teaching quality. The share of contractual teachers in public schools increased by 10.2% in 2016/17 compared with the previous year and again by 11.8% in 2017/18 (DEPP, 2018a and 2019a).

The attractiveness of school leadership in primary education is also at risk. The salaries of primary school heads are only 7% higher than teachers' salaries; the OECD average gap is 41% (OECD, 2018a)[115]. In addition, a lower secondary school head earns almost 70% more than a primary school head, the widest gap across all EU countries with available data (see figure 2 below). Furthermore, in this highly centralised system, school leaders' autonomy is comparatively limited.

Figure 12 Primary teachers' and primary and lower secondary school heads' salaries relative to earnings of tertiary-educated workers (ISCED 5-8, 25-64 years old), 2016



Source: OECD (2018). Notes: The unit is the ratio of teachers' and school heads' salaries to average earnings of tertiary-educated workers in the country; *Reference year for tertiary-educated workers earnings is 2015; ** Reference year for tertiary-educated workers earnings is 2014.

[115] It must be noted that primary school heads in France have less responsibilities than in secondary as primary schools do not have autonomy or legal personality.

Science teachers in disadvantaged schools are less qualified than their counterparts in advantaged schools (OECD, 2018b). This qualifications gap was the widest in France, with only 26% of science teachers in schools in the bottom socio-economic profile quarter being fully certified (with a university degree with a major in science), against 94% in the top quarter. A study on teachers in the Ile-de-France region shows that teachers aged under 30 and contractual teachers are three times more numerous in the most disadvantaged schools as compared with the most advantaged schools within the region, and turn-over is nearly twice as high (CNESCO, 2018).

Participation in continuing professional development (CPD) is low. Primary teachers must follow 18 hours of CPD per year, but there is no similar obligation for secondary teachers. In 2016/2017, France was one of the countries that did not give teachers allowances for either further formal qualifications, excellent job performance or completing CPD (Eurydice, 2018). According to a 2017 report by the General Inspectorate for National Education, 73% of primary education teachers surveyed after taking part in CPD stated that they 'did not acquired anything' in terms of improving professional skills, and there is a concern about low relevance of the courses on offer to the needs of teachers (IGEN-IGAENR, 2017). The report identified a top-down approach to defining and implementing CPD, largely focused on reform implementation, whereas participants would favour a less prescriptive approach better adapted to their needs. A lack of replacement teachers for those absent on CPD is a further barrier. Results of a 2019 survey on CPD confirm earlier findings and show that (i) 75% of teachers consider the CPD on offer to be of insufficient quantity and 65% consider the quality is low, (ii) sharing of knowledge gained through CPD with colleagues is rare, and that (iii) 83% of teachers were not consulted in designing the training offer (though 80% would have liked to be consulted) (reported in Eduveille, 2019).

According to the 2018 OECD Teaching and Learning International Survey (TALIS), the proportion of French teachers who believe that teaching is a valued profession is among the lowest in the EU (6.6% v 17.7% at EU level) (OECD, 2019)[116]. The proportion of teachers satisfied with their job (84.7%) is lower than the EU average (89.5%).

Authorities increased annual salaries in the most disadvantaged schools by EUR 1 000 in September 2018 and will do the same again in September 2019 and 2020 (MEN, 2018a). The measure aims to attract teachers to those schools (*Réseaux d'éducation prioritaire renforcés REP+*). At lower secondary level, *REP(+)* schools host 21% of pupils (DEPP, 2018b). This increase is complementary to earlier measures targeted to these schools, including halving the class size (see section 5), strengthened pedagogical support, and CPD for teachers. Schools will be able to make targeted recruitments to better meet local needs and to assign the most experienced teachers to the neediest students.

A 2019 law for a school of trust (*Loi pour une Ecole de la confiance*) reforms initial teacher education (ITE). The aim is to provide the same standard of education and training to all future teachers, drawing on research into the most effective teaching methods (on ITE and CPD, also see European Commission, 2017). Central governance over institutions and courses will be reinforced. To enable 'pre-professionalisation', the law enables some undergraduate students (1590 in 2019/2020) to be recruited as 'education assistants' for 3 years and start an early training in the classroom under the supervision of a tutor from the second year at university (eight hours a week, with front-line exposure increasing gradually afterwards) (MEN, 2019a). Starting practical experience early and starting to earn may increase the attractiveness of ITE programmes.

The *Grand Plan d'Investissement* will allocate EUR 250 million to pilot innovative projects for teacher training. It includes EUR 30 million for projects launched in 2018 to create pilot networks of universities, research institutes and schools to strengthen multi-disciplinary education research, transfer results to teacher education and training institutes, and to support experimentation in pedagogical practices (MESRI, 2018).

[116] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

4. Investing in education and training

Public expenditure on education increased in real terms by 6.9% between 2010 and 2017, compared with a 0.2% average increase in EU member states. Public expenditure on education as a proportion of GDP remained higher than the EU average, at 5.4% in 2017. The increases for pre-primary and primary education (+15.6% against a 3.3% EU average) and for tertiary education (+3.6% against an average EU decrease by 6.9% in the EU) are comparatively high[117]. The increase for (pre-)primary education is in line with the government's policy priority to support improvements in basic skills and lower the compulsory age of starting education from September 2019. The EUR 811 million 2019 budget increase will fund the creation of 2 325 teaching posts for pre-primary and primary education, though the pupil population will fall by 36 300. 2 450 posts will be cut in secondary education (-0.2%), though the number of pupils will increase by 34 400 (+0.73%) (DEPP, 2019b and 2019c). This cut is to be offset by the scope for teachers to work paid overtime. Additional primary education teachers will enable full rollout of the plan to halve class sizes in disadvantaged schools, to reach 300 000 pupils by September 2019; and to improve education in rural areas (MEN, 2019b).

The government will also increase the budget for support measures tackling inequalities. The budget for the support scheme for parents of non-native speaker pupils and students will be doubled. New posts will be created for assistants of pupils with a disability.

5. Modernising early childhood and school education

France has wide socio-economic and regional disparities in educational outcomes and basic skills are low in primary education (European Commission, 2018 and 2019, OECD, 2018a). Inequalities also affect pupils with a migrant background. The proportion of early school leavers remained stable at national level between 2017 and 2018 at 8.9%, below the 10.6% EU average. Measures to improve basic skills in primary education (see below) aim to reduce early school leaving since children who perform poorly in the early years often end up leaving school early. Authorities are seeking to take a comprehensive approach to reducing inequalities, linking educational measures to measures on housing, urban policies and poverty alleviation (Ministère de l'Economie et des Finances, 2019).

The 2019 law for a school of trust lowers the age of starting compulsory education from 6 to 3 and raises the age of ending compulsory education or training from 16 to 18 from September 2019. The aim is to reduce inequalities in educational outcomes. Lowering the age of starting compulsory education mainly targets those territories where pre-primary education lacks the necessary infrastructure and staff and has the aim to boost pupils' skills in reading, writing, maths and respecting others. Language acquisition is a particular focus. In 2017, participation in early childhood education and care for children aged 4 to 6 varied between 89.9% in Guyana, 90.6% in Corsica and 100% in most other French regions[118]. The law also extends compulsory training from 16 to 18 years (either through education, training, apprenticeships, employment, civic service or through a social or professional integration scheme).

The new law extends the opportunities for research and experimentation in schools and strengthens evaluation at pupil, school and system levels (see European Commission, 2018). Encouraging experimentation in schools is intended to encourage improvements in practices in a highly centralised education system. The law also creates the possibility to establish international public schools that provide an education in both French and a foreign language, leading to French and foreign language school diplomas.

[117] Eurostat, COFOG.
[118] Eurostat, UOE, 2017. Online data code: educ_uoe_enra17.

Box 1: Halving class sizes

To address the issue of low basic skills in primary education (20% of pupils at the end of primary education) and the link with early school leaving, class sizes were progressively reduced to a maximum of 12 pupils in the first two grades in disadvantaged schools (*REP and REP+*) between 2017 and 2019 (European Commission, 2018). The Ministry of Finance expects to generate over the very long-term a 2% increase in GDP by creating 120 000 new jobs (Ministère de l'Action et des Comptes publics, 2018). Teachers receive specific training support. From September 2019, the measure benefits 300 000 pupils, equivalent to 20% of the population. A first evaluation in the first grade provided very positive results in terms of class climate and pupil attitudes (DEPP, 2019d). The impact on performance is also judged as positive. Nonetheless, the evaluation shows that the reform would require a deep transformation of teaching practices to unlock its full potential. In line with findings in international literature, the Ministry of Finance recommends encouraging the posting of experienced teachers to disadvantaged schools, contrary to current practice where newly-qualified teachers are more often placed there (Ministère de l'Economie et des Finances, 2019)[119]. It also encourages strengthening teacher education and training, including in adapted pedagogical techniques. These could be explored, for example, to reduce stigmatisation of failure, which is strong in France. To have a wider impact, it would be useful to extend measures to the high proportion of disadvantaged students who do not attend *REP(+)* schools (European Commission, 2019). TALIS finds that the proportion of French teachers who feel (very) well prepared in teaching in multicultural/multilingual settings is the lowest in the EU (8.2% v 23.8%). Only 12% report that this was included in their formal education (compared with the 31.7% average). Positively, the proportion increases to 22% for teachers having graduated in the 5 years prior to the survey.

Authorities are taking measures to strengthen digital skills. A new optional digital science course is being created in upper secondary education. The Ministry of Education is running a number of projects to step up ICT-based learning, increase students' and teachers' competencies and to use digital evaluations at different levels (MEN, 2019c). The *Magistère* scheme offers around 400 free training courses to teachers. The *Etincel* platform developed in partnership with industry offers digital resources for professional and technological education to support career guidance and better preparation for the workplace.

6. Modernising higher education

In 2018, 46.2% of 30-34 year-olds had a tertiary education, above the EU average of 40.7%. The employment rate of recent graduates (84.4% in 2018) continued to rise and is catching up with the EU average (85.5%).

The 2018 reform, including the *Parcoursup* registration platform, was fine-tuned to speed up admissions of future students in universities and improve their information (European Commission, 2018). The number of holders of a needs-based grant admitted to higher education increased by 21% in 2018, overall costs for students fell and the offer of student accommodation increased (Gouvernement, 2019a and Gouvernement, 2019b). In line with the Ministry's objectives to reduce inequalities, the share of students with a technological or professional end-of-school qualification in short programmes in higher education increased since 2017 (Gouvernement, 2019b).

To further broaden access to higher education and reduce territorial inequalities, 13 connected campuses were created in cities distant from large universities. (MESRI, 2019a). The campuses offer innovative third spaces where distance learning is provided with tutoring by qualified staff. Local authorities make infrastructure available for the projects and central authorities allocate funding.

[119] International literature also suggests that reducing class size is not the most efficient way to improve pupil performance.

The Ministry launched a new plan to boost entrepreneurship in higher education. Building on earlier schemes, *The spirit of undertaking* aims to give all students experience with entrepreneurship, to increase training in entrepreneurship, to improve the recognition of skills and competences developed by 'student-entrepreneurs'. The plan also aims to support 'student-entrepreneurs' in developing a start-up with individualised support while gaining credits (European Credits Transfer System), to extend the offer of curricula on entrepreneurship, to strengthen the status of 'student-entrepreneur', to further develop training of trainers, to encourage mobility for students-entrepreneurs and to share good practices with other countries willing to know about ia the PEPITE model (MESRI, 2019b).

The government adopted the national strategy for artificial intelligence *AI for Humanity*. The total EUR 1.5 billion budget up to 2022 includes EUR 665 million for the Ministry of Higher education, Research and Innovation. Among measures planned, the strategy will double the number of doctorates in the field and enhance partnerships.

The French authorities launched the *Choose France* strategy in September 2019 to improve the attractiveness of French higher education to foreign students, with the objective to welcome 500 000 students by 2027 (Gouvernement, 2018). The strategy supports French as a foreign language programmes, programmes taught in English, and a quality label *Bienvenue en France* for institutions fulfilling certain requirements. The authorities also increased fees for non-EU students (they remain much lower than in most countries attracting high number of foreign students[120]). In parallel, they increased scholarships and fee exemptions.

The *Grand plan d'investissement* will support participation by French universities in the European universities initiative (EUR 100 million over 10 years). The project aims to promote European values and identity, increase mobility and improve quality, innovation and the international competitiveness of higher education institutions (Permanent Representation of France to the EU, 2019).

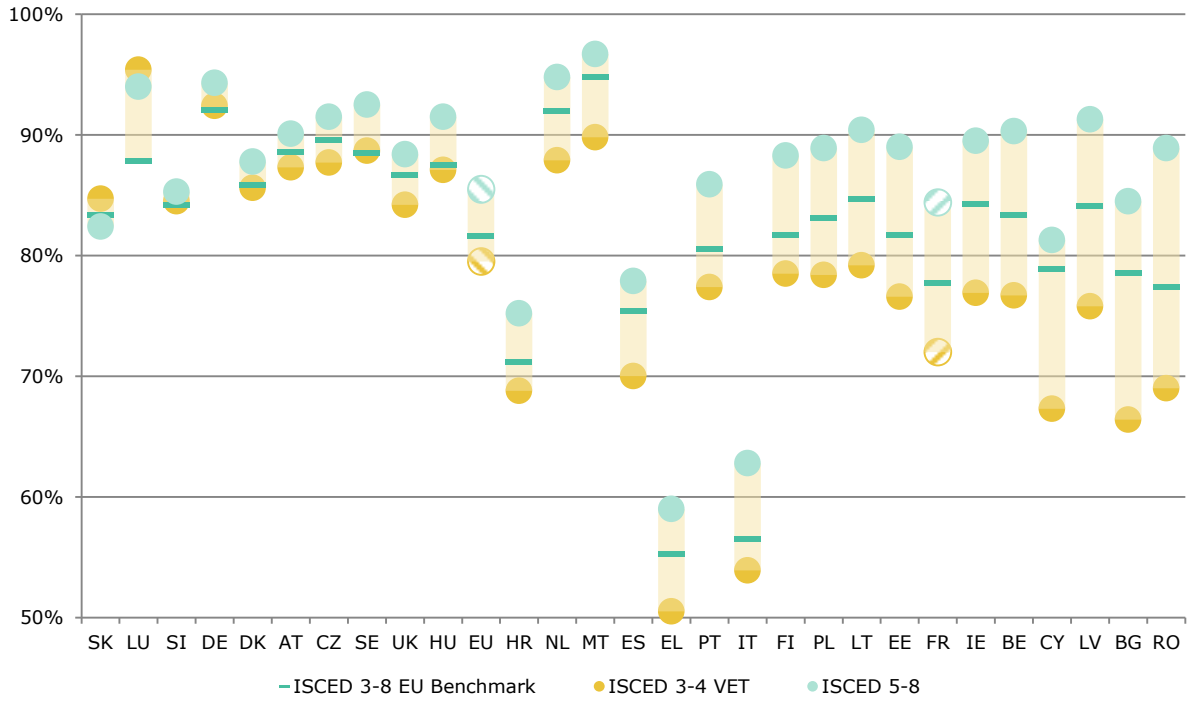
7. Modernising vocational education and training

In 2017, enrolment in upper secondary VET slightly decreased overall in 2017 compared with previous years, to 39.9% of students (the EU average was 47.8%). 24% had some exposure to work-based learning since most educational programmes include practical elements in the curriculum. The level of employability of recent VET graduates in 2018 increased noticeably to 72%, up from 64% in 2017, but still below the EU 2018 average of 79.5% and with a comparatively large gap in the employability of tertiary education graduates (see figure 3 overleaf).

The 2019 European Semester country-specific recommendation to France included the recommendation to '*address skills shortages and mismatches*.' (Council of the EU, 2019).

[120] On 19 November 2018, authorities announced an increase to EUR 2 770 for students at bachelor's level and to 3 770 for those at master's level. The increase at PhD level was abolished.

Figure 3 Employment rate of recent graduates by ISCED level, 2018



Source: Eurostat, LFS, 2018.

Implementation of the 2018 VET reform is in full swing (European Commission, 2018). *France Compétences*, the new National Skills Agency is working on several fronts, such as modernisation of professional certifications (Ministère du Travail, 2019a). In 2019, VET funding bodies are restructured into 11 *Skills Operators* (*Opérateurs de compétences*) in charge of funding apprenticeships, supporting professional branches and employers (especially SMEs) to design certifications, anticipating skills needs and increasing access to training (Ministère du Travail, 2019b). Key features of the reform on apprenticeships involve new incentives for apprentices and companies, the apprenticeship premium for SMEs and first qualification levels, and joint development of vocational courses by the state and professional branches (Gouvernement, 2019c). The law also seeks to improve the attractiveness of VET, notably via a preparatory programme designed to attract low-qualified young people and residents of deprived urban or rural areas.

A systemic transformation of school-based upper secondary VET is ongoing. New reforms planned for 2019 cover innovative pedagogical approaches, better adaptation of sectoral offers to labour market trends and new degrees in priority areas for the economy, better connection between general subjects and vocational material, and bringing in apprenticeships in all professional high schools. A new generation of campuses for careers and qualifications is being developed with support provided under the plan. The aim is to open at least three new campuses in each region by 2022 (MEN, 2019d).

Teacher training is a major challenge under the 2018-2019 social agenda. Redesigning initial and continuing training for VET teaching/training staff and supporting the professionalisation of other training providers are covered in a 2018 report commissioned by the Education Ministry.

Box 2: European Social Fund (ESF) project *Developing the employability of young people in sewing and fashion jobs in Santerre Haute Somme*

In 2017 and 2018, the *Maison pour l'Entreprise, l'Emploi et la Formation Santerre Haute Somme* carried out a comprehensive scheme to support young people aged 16-25 interested in the fashion industry and related jobs. The EUR 200 000 project (EUR 117 000 from the European Social Fund) culminated in December 2018 with an event, *The night of fashion*, co-organised by 70 young people.

8. Developing adult learning

Work on up-skilling and re-skilling could be strengthened. In 2018, a relatively high share of adults (20.6%) did not have at least an upper-secondary qualification, compared with an EU average of 21.9%. The likelihood that adults in France frequently update their knowledge and skills through adult learning was higher than the EU average: 18.6% of adults aged 25-64 have had a recent learning experience during the last 4 weeks, compared with 11.1% for the EU average. In 2017, 71 640 adults aged 25 or above have acquired an upper-secondary qualification, only a small percentage of the 7.2 million adults (aged 25-64) with only a low-level of educational attainment (yet decreasing: 6.9 million in 2018). This is particularly worrying, given the much smaller number of jobs requiring only a low level of education (2.6 million in 2017).

Work is ongoing to update the personal training account in line with the 2018 law. Accounts are now credited in euros instead of hours. Changes in the quality assurance of training courses are also being made to prepare for mandatory certification of training providers (2021) (Cedefop ReferNet, 2018).

Support for career transition is increasing. As from 2020, new providers of free and tailored professional development counselling will be selected in each region (Ministère du Travail, 2019c). The *Pro-A* program allows employees to access a training program through an apprenticeship, while keeping their work contract and salary.

The skills investment plan is financing innovative experimentation. It will support access to training for low-qualified jobseekers and NEETs (Not in Education, Employment or Training) at national and regional levels and scale up the successful pilot *Action on Workplace Learning* (Ministère du Travail, 2018).

Professional development for adult educators is likely to increase with the ongoing reform. *France Compétences* will monitor the sector closely as part of its work on quality assurance.

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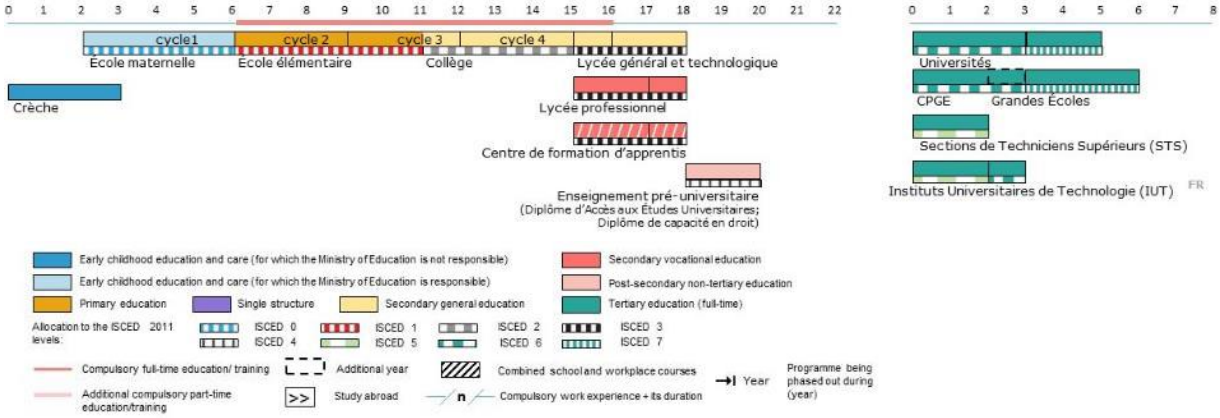
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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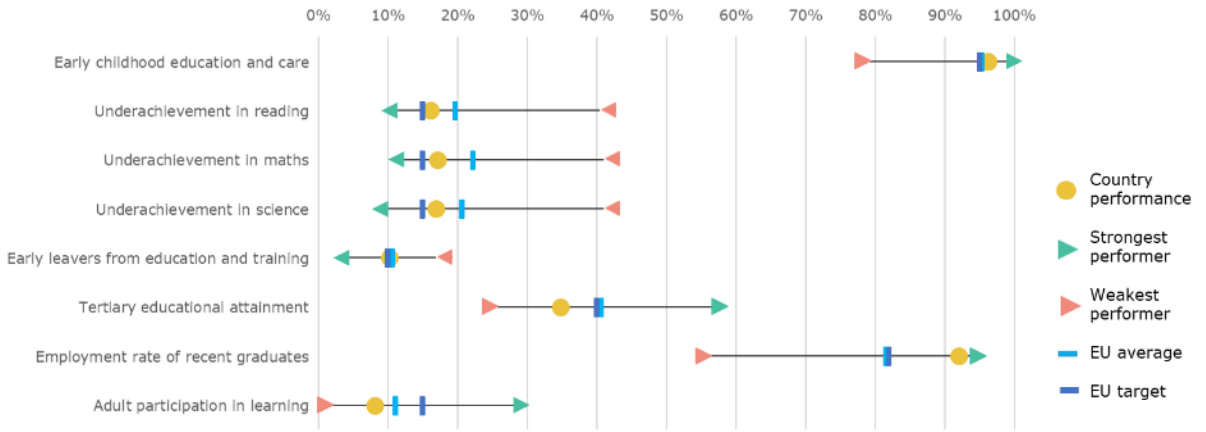
GERMANY

1. Key indicators

			Germany		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			11.1%	10.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			29.4%	34.9%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			96.0%	96.4% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		18.5%	16.2% [15]	19.5% [EU27]	19.7% [15]
	Maths		18.7%	17.2% [15]	22.3% [EU27]	22.2% [15]
	Science		14.8%	17.0% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		85.3%	92.1%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		8.0%	8.2%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	5.1% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	12.8% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.3%	4.1% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€7 371 [12]	€8 529 [16]	:	€6 111 [15,d]
		ISCED 1	€5 843 [12]	€6 519 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€7 177 [12]	€8 118 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€9 058 [12]	€9 799 [16]	:	€7 730 [14,d]
		ISCED 5-8	€12 956 [12]	€12 680 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		9.5%	8.1%	13.1%	9.5%
	Foreign-born		22.0%	24.1%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		31.0%	35.4%	33.1%	41.3%
	Foreign-born		23.9%	33.8%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		81.0%	90.3%	72.5%	76.8%
	ISCED 5-8		92.9%	94.3%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u = low reliability,, : = not available, 12 = 2012, 14 = 2014, 15 = 2015, 17 = 2017.

Figure 13 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

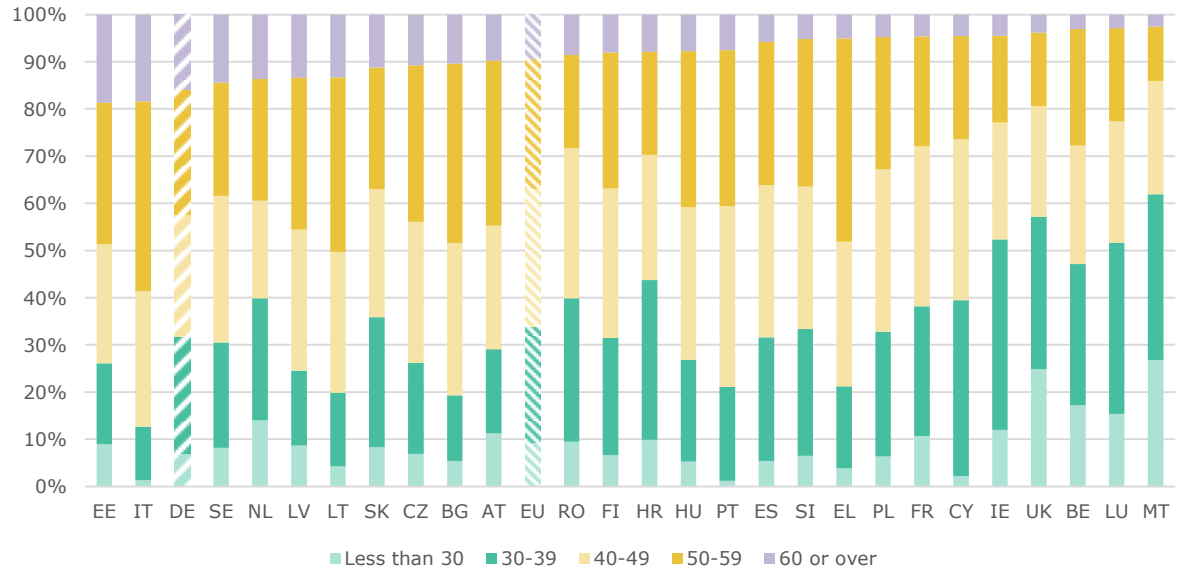
2. Highlights

- Germany has announced significant investment in digitalisation, higher education and research in the decade ahead, but as well in school education.
- Germany is preparing for fundamental change in the skills of its workforce by carrying out digital initiatives and by refocusing the system of adult learning.
- The teaching workforce is aging and Germany faces a challenge to replace a high number of teachers.
- Young people from disadvantaged socio-economic and/or migrant backgrounds continue to lag behind in educational attainment.

3. A focus on teachers

Demand for and supply of teachers varies between regions, in particular between eastern and western Germany. For new teaching vacancies, western Germany has an annual surplus of 3.5%, or 900 teachers, and eastern Germany has a shortfall of 22%, or 1 500 teachers (KMK, 2018). The teaching workforce is comparatively old by EU standards, with 38% in primary and 44% in secondary education aged 50 or older. In early childhood education and care, 30% of teachers are 50 or older. In higher education, Germany has the second youngest academic personnel (after Luxembourg) with only 26% aged 50 or older[121]. School teachers in eastern Germany are generally older: 60% are aged 50 or older (Autorengruppe Bildungsberichterstattung, 2018). The differences between eastern and western regions are influenced by negative demographic trends, in particular outward migration from the East.

Figure 2 School education (ISCED 1-3) teachers and staff by age group, 2017



Source: Eurostat, UOE, 2017. Online data code: educ_uoe_perp01

Germany will have to replace a significant share of its teachers within the next 10 years. At primary level, this is estimated to reach 81 000 full-time equivalents by 2030 (Klemm, 2018). There are teacher shortages, particularly in vocational education and training, in special needs teaching and in primary education. Assessments of primary school teacher shortages vary: the Kultusministerkonferenz identifies a need of 15 000 teachers to 2025, but this could increase to 30 000 if initiatives such as the expansion of all-day schools are factored in (European Commission, 2019). Teacher shortages lead increasingly to the recruitment of other academic

[121] Eurostat, UOE. Online data code: educ_uoe_perp01.

personnel that undergoes pedagogical training after recruitment. The share of teachers in schools without initial teacher training has nearly tripled since 2006 to reach 8.4% in 2016, with peaks of 40.1% in Berlin and 50.6% in Saxony in 2018 (Autorengruppe Bildungsberichterstattung, 2018).

Teachers are predominantly women, as in other EU countries. In 2017, 96% of early childhood education and care (ECEC) staff were women. In primary education, 87% were women and for secondary education, 63%. In tertiary education, 39% of staff in 2017 were women, 3 pps below the EU average. A 2015 study of the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth identified specific measures to encourage male staff to work in ECEC, including an action plan for the federal level and the regions (BMFSJ, 2015).

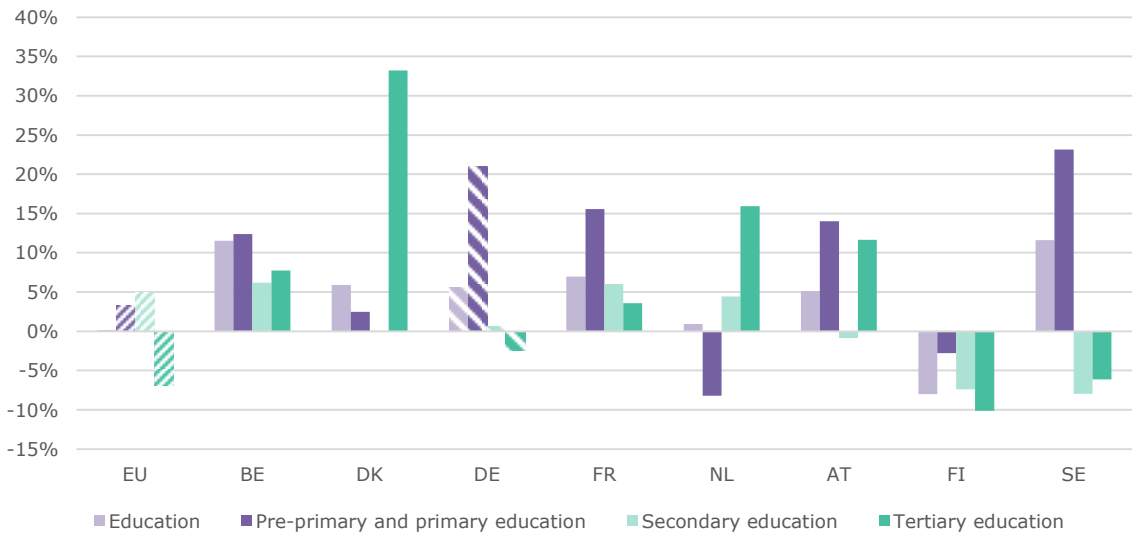
Although teacher salaries are among the highest in the OECD, the profession is not perceived as attractive in Germany. Primary school teachers earn 90% of the average earnings and lower secondary teachers 99% of the average earnings of full-time tertiary educated workers; upper secondary teachers earn 105% (OECD, 2018a). Over their career, German primary school teachers earn about 1.7 times the EU average teacher's career earnings. This mainly reflects high starting salaries, but salaries increase by only 33% over the course of a teacher's career, considerably below the EU average career progression of 61% (European Commission/EACEA/Eurydice, 2018). Continued training is a prerequisite for promotion but it is implemented differently across regions. VET teachers can often attract higher earnings in non-teaching jobs, contributing to a serious shortage in this category. Teaching career prospects have improved due to the teacher shortages, leading to higher salaries and the re-introduction of civil servant status for teachers, particularly in eastern Germany. However, the perception of an unattractive profession and among other reasons an increasingly complex teaching environment has made it difficult to fill vacancies. Several regions have campaigns to encourage young people to choose a career in teaching, notably North Rhine Westphalia (NRW, 2018) and Baden-Württemberg (Ministerium für Wissenschaft, Forschung und Kunst Baden-Württemberg).

Becoming a head teacher is not an attractive career choice either. It is reported that up to 10% of primary schools lack an appointed head teacher but more thorough research is missing so far. Reasons for this may be related to the lack of preparation and support. An ongoing project on skills required for school management indicates that fewer than half of head teachers received compulsory training before taking up their management position or during their service (Forsa, 2018).

4. Investing in education and training

General government expenditure on education as a proportion of GDP remained stable. It was 4.1% in 2017, below the EU average of 4.6%. The share of government expenditure on education in 2017 was 9.3%, 0.9 pps below the EU average. Education expenditure increased between 2016 and 2017, most notably in pre-primary and primary education, with a small reduction in tertiary education. The National Financing Report of Education 2018 reported a 16.8% increase in public funding between 2010 and 2015. ECEC benefited with a 48% increase, compared with a 6.3% increase for schools and 27.3% for tertiary education. German regions contributed EUR 88.5 billion or 71.4% in 2015, with 21.5% coming from local authorities and 7.1% from the federal government. Eurostat figures show a real-term increase between 2010 and 2017 of 5.6% in education spending overall, 21% in pre-primary and primary education, 0.6% in secondary education and a 2.4% cut in expenditure on tertiary education.

Figure 3 Change in real expenditure on education between 2010 and 2017



Source: Eurostat, COFOG. Nominal data were deflated using 2010 values as a basis.

Germany has announced additional investment in several areas, notably in digitalisation in education and in higher education. The federal authorities agreed with the regions in June 2019 to spend more than EUR 2 billion on higher education and research every year. These funds will be allocated to strengthening the quality of studies and of teaching and promoting innovation in higher education. The fourth agreement for research and innovation will mobilise EUR 120 billion between 2021 and 2030. The '*Digitalpakt Schule'* was also finally agreed. It finances digital infrastructure in general and vocational schools and the development of pedagogy and teacher training on digital education. The federal government will invest EUR 5 billion between 2019 and 2024 in digitalisation in education, to be topped up by funding from the regions totalling EUR 555 million.

Demographic trends and expected technological change will require further investment. The share of the population aged 3-18-years old is projected to increase between 2020 and 2030 by 8.0%[122]. The 2018 German Education Report notes a further increase in the birth rate over the last five years. Technological change, including further digitalisation, is expected to have a serious impact on jobs and society, changing the required skills mix. These factors will require continued investment in education, training and adult learning (Deutsche Bank, 2019).

5. Modernising early childhood and school education

96.4% of children between the age of four and the start of compulsory education attend early childhood education and care (ECEC). There are only small differences in participation between the German regions (3.7 pps), smaller than in most EU countries. 30.3% of children under 3 were in ECEC in 2017, a share that rose steadily until 2016, from 18% in 2006 to 32.6% in 2016 before regressing. 28.6% of children from families at risk of poverty were in ECEC (6.9 pps above the EU average), giving a participation gap of 5.4 pps, smaller than in most EU countries.

Progress has been made in expanding the quantity and quality of early childhood education and care but more will be needed. The 2018 German Education Report identifies the need for further expansion and to extend opening hours to meet the needs. 45% of parents want a place for their children below three years old. The report identifies an additional need of 350 000 spaces until 2025. In eastern Germany, three out of four institutions are open for more than 10 hours per day while in western Germany, half the institutions are open for nine hours only. Children from a migrant background still participate a lot less in ECEC, with their share rising only

[122] Calculations from EUROSTAT baseline projections. Online data code: proj_15npms.

slowly between 2007 and 2017 from 25% to 30% for children aged 3 to 5 years. Over the same period, participation of children who do not speak German at home increased by 54% to 563 000.

Fees for ECEC vary widely between regions and municipalities. Hamburg and Mecklenburg provide a free service for all age groups; Berlin as of the age of one. 11 regions provide partial or full fee waivers for certain age groups. In 2015, on average 14% of the cost of childcare was covered by public contributions nationwide, though it varies widely (Rauschenbach et al., 2017).

Since 2015, there is an agreement between the federal and the regional level on ECEC financing and quality standards. However, there are no set minimum or harmonised children/staff ratios. These range, for under-3-year-olds, from 3 in Baden-Württemberg to 5.9 in Saxony (Autorengruppe Bildungsberichterstattung, 2018). According to the German Education Report, 70% of pedagogical staff are qualified as educators, 13% as nannies but only 5% with a tertiary academic education. The report identifies a future lack of staff of up to 309 000 by 2025, based on higher birth rates and improvements in children/staff ratios; this exceeds the current capacity for initial teacher education.

It remains crucial to enable successful transitions between educational levels in order to improve fairness and inclusion. Teachers in ECEC and in primary school know very little about each other's work and pedagogical practices, according to (OECD, 2017). This leaves them unprepared to facilitate the first crucial educational transition (OECD, 2017). 44% of students transferred in 2017 from primary school to an academic secondary education ('Gymnasium'), a 8.5 pps increase compared with 2001. Notwithstanding that some regions have extended the educational offer in vocational education, the share of pupils moving from primary schools to a vocational secondary education (Hauptschule) fell by 20 pps between 2001 and 2017. Socially disadvantaged groups and children from a migrant background continue to choose vocational tracks more often than their German peers (Autorengruppe Bildungsberichterstattung, 2018).

The early school leaving rate remains relatively stable since 2015 at 10.3%. It remains a challenge to achieve Germany's Europe 2020 target of 10%. The gender gap of 2.4 pps is below the EU average of 3.3 pps in 2018. The rate among native-born pupils has remained stable at 8%; among foreign-born pupils it is three times higher (24.1%), marginally higher for non-EU-born pupils than for EU-born pupils. Rates vary regionally between 7.2% in Bavaria and 9.3% in Sachsen-Anhalt. They are high in the metropolitan areas of Berlin and Düsseldorf, both above 13%. Between 2010 and 2018, rates fell by 2.2 pps in cities and by 0.9 pps in rural areas, with no change in towns.

Education outcomes of pupils from a disadvantaged socio-economic background still trail behind. The share of young people from a disadvantaged socio-economic background achieving solid PISA scores rose from 25% in 2006 to 32% in 2015, indicating that resilience has improved. The share of low performers in mathematics PISA tests has fallen since 2000 but remains significant at 17.2% in 2015 (Anger et al., 2018). The socio-economic background of parents continues to have an important influence on education outcomes. Although the number of young people from disadvantaged backgrounds transferring into academic upper secondary education has slightly improved, their education results over time lag behind those of students from better-educated families (Horneber and Weinhart, 2018).

The number of young people from a migrant background is increasing but their education outcomes are not improving appreciably. In 2016, 23% of the overall population had a migration background. Among pupils, the share is about 37% for the under 10s, 34% for 10-15 year olds and 30% for 15-20 year olds. The share has increased in recent years. It also varies between regions: from 42% in western Germany and Berlin to 11% in eastern Germany. One third of pupils with a migrant background are second generation, born in Germany. Children from a migrant background are four times more likely to show multiple risk factors (Autorengruppe Bildungsberichterstattung, 2018). 16 to 30 year olds with a migrant background leave school early more often, participate less intensively in education than native-born pupils, and choose more frequently vocational and non-academic school types. German regions are taking measures to increase inclusion in the education system (BMWi, 2019). There are numerous initiatives at local level that support the integration of refugees, mainly focusing on formal and non-formal education and training.

The 2019 European Semester country-specific recommendation to Germany included the following recommendation: '*Focus investment-related economic policy on education; and improve educational outcomes and skills levels of disadvantaged groups.*' (Council of the EU, 2019).

The recent 'DigitalPakt Schule' between the federal level and the regions aims to improve digital skills. Although better than the EU average, the digital skills of 16 to 19 year-olds did not improve between 2015 and 2017. Skill levels measured among the 16-74 population and the labour force did not improve either. This lack of progress in an area crucial to Germany's economic and social future underscores the need for investment in education and training in this area (European Commission, 2019).

6. Modernising higher education

Tertiary attainment of people aged 30-34 is increasing slowly, at 34.9% in 2018, having increased by 5.5 pps since 2009. Germany has a very low gender gap of 0.9 pps. The number of new entrants to higher education at bachelor's level is broadly unchanged since 2013, (+1.36%). New entrants to master's level programmes increased by 18% and decreased at PhD level by 26%. Tertiary attainment varies considerably between regions, partially linked to the economic situation: 50.7% in Oberbayern and 20.5% in Sachsen-Anhalt. Participation of students from socially disadvantaged backgrounds is increasing but their attainment rate remains unchanged at 33.8%, slightly below the average attainment rate. Over the last decade, the participation of foreign-born students increased by 10 pps to 33.8% in 2018 but it varies between those born within the EU (37.6%) and those born outside (31.6%). Germany has the highest proportion of STEM graduates in the EU with 35.6%: 34.8% at bachelor and 45.7% at PhD level. Tertiary graduates integrate rapidly into the labour market (94.3%), marginally higher than recent VET graduates (ISCED 3-4) at 92.4%[123].

German graduates frequently complete studies abroad and Germany is an attractive study destination. 17.8% of 2017 German graduates have gone abroad during their studies. Most mobility is at master's level, 6.9 pps more than at bachelor's level. The highest share of full degree mobility is at doctorate level, with 8.7%. Regarding incoming mobility to study, Germany attracts graduates from abroad in particular at doctorate (18.5%) and master's levels (11.9%). While a high proportion of foreign graduates come from within the EU (24.3%) or non-EU European countries (12.1%), a significant share comes from Asia (36.9%) and, to a lesser extent, from Africa (6.4%) and the Americas[124].

Box 1: Recent agreements ensure continuity and qualitative improvements in higher education funding.

In June 2019 the federal government and the regions signed the permanent `Zukunftsvertrag Studium und Lehre stärken´. This agreement aims to improve study conditions and the quality of teaching in all publicly financed German higher education institutions. It will ensure as of 2021 additional annual funding of EUR 2 billion. A recent second agreement between these parties mobilises additional annual funding of EUR 150 million to establish new entities in existing institutions entirely dedicated to supporting innovation in higher education. The 2018 German Education Report identified the need to increase staff in higher education as a precondition to improve quality. Germany also has a new law as of January 2019 that seeks to increase access to higher education for socially disadvantaged students by offering higher grants (Bafög). However, the planned increase might not be sufficient to cover real cost increases (Autorengruppe Bildungsberichterstattung, 2018).

[123] Eurostat, Labour Force Survey, edat_lfse_24. Employment rate of recent graduates.
[124] Calculations by the European Commission's Joint Research Centre, based on UOE; 2017.

7. Modernising vocational education and training

Although the employability rate is increasing, fewer students are enrolling in formal VET programmes. In 2017, 450 535 new students started formal VET programmes, a 2.7% drop since 2016. The number of places in VET programmes that did not attract an applicant in 2018 increased to 57 700 in 2018 from 49 000 in 2017. Regional imbalances in qualifications and jobs appears to be increasingly pronounced (BIBB 2019). Total enrolment in upper secondary VET in 2017 fell by 4% since the previous year, with 45.6% of all students at that level attending vocational programmes, just below the EU average of 47.8%. VET students have a high exposure to work-based learning; most educational programmes include solid practical modules in the curriculum. The employability rate of recent VET graduates in 2018 increased to 92.4%, up from 91.3% in 2017, far above the EU average of 79.5%.

Measures to address this mainly focus on modernising and adjusting VET to labour market developments in the field of digitalisation, automation, technology and sustainability. The Federal Ministry of Education and Research (BMBF) announced in 2018 the '*Vocational Training Pact'*, a comprehensive agenda to modernise VET. Regarding higher VET and excellence, in 2019 the Federal Cabinet agreed to update the Vocational Training Act (Berufsbildungsgesetz) introducing three C-VET levels with harmonised terms of C-VET occupations. The changes are expected to come into force on 1 January 2020. In January 2019, a new federal initiative *INNOVET 'Shaping the future Innovation Clusters for VET Excellence*' was launched, initially with a budget of EUR 80 million, to support the development and testing of innovative approaches. Demand for training contracts has risen for the second year in a row. Germany also continued efforts to boost dual VET, including by declaring 2019 as the 'Year of Vocational Training'.

The federal government and the regions are running the second phase of the 2013-23 quality initiative geared to improving teaching and addressing potential skills shortages. It includes 48 projects in 58 establishments (2019-2023)[125] and runs campaigns to attract vocational teachers in subjects such as machine technology, electrical engineering, social pedagogy and health.

Box 2: ESF project — Green up your future

Since 2016, an open exhibition has travelled to 19 places in Germany. The goal is to give young people career advice and encourage them to find green and sustainable jobs. It includes making multimedia stories and a detailed job database available online. The body responsible, 'BIOKON — Bionik-Kompetenznetz', receives EUR 1.6 million in EU funding to run a four-year project.

The exhibits, in the form of outdoor portals and indoor exhibits, aim to be 'door openers' to more attractive professions linked to environmental sustainability. The physical exhibition space uses augmented reality and virtual stories, communicated also through social media, to inform young people about green economy issues and to make the environmental aspect of different occupational profiles part of their career considerations. Young people see how they can become part of a sustainable future.

For more information see: https://green-up-your-future.de/

8. Developing adult learning

In Germany, 13.4% of the adult population have not acquired at least an upper-secondary qualification, compared with an EU average of 21.9% (2018). The share of low-qualified adults in employment, at 61%, is above the EU average of 56.8% (2018). Participation in adult learning, at 8.2%, is well below the EU average of 11.1% (2018). Nearly 6.11 million adults (aged 25-64) in Germany have only a low-level or unknown level of educational attainment, though there are just 3.2 million jobs in elementary occupations (2017). This highlights the need for more widespread up-skilling and re-skilling targeted to adults with low skills.

[125] Bundesministerium für Bildung und Forschung.

Efforts are ongoing to boost adult learning and additional measures aim at upskilling. *The Qualifications Opportunities Act (Qualifizierungschancengesetz)* passed on 1 January 2019 will improve access to and financial support for further education of employees whose occupational activities are at risk of being replaced by new technologies, for employees affected by structural change, or those in jobs with a shortage of skilled workers. A new *National Continuing Training Strategy* presented to the public on 12 June 2019 responds to the digital transformation of the world of work. The adult learning programmes run by federal and state governments, to align them with the needs of employees and companies and to establish a new adult learning culture. Furthermore, the government plans to reform the upgrading training assistance act, with an additional EUR 350 million to be spent in the current legislative term to support individuals attending C-VET courses at higher levels. In addition to ongoing measures linked to the Upskilling Pathways Council Recommendation[126], the BMBF launched a new funding priority in 2018 to focus on strengthening literacy skills and basic education of adults, as part of the National Literacy Decade 2016 – 2026.

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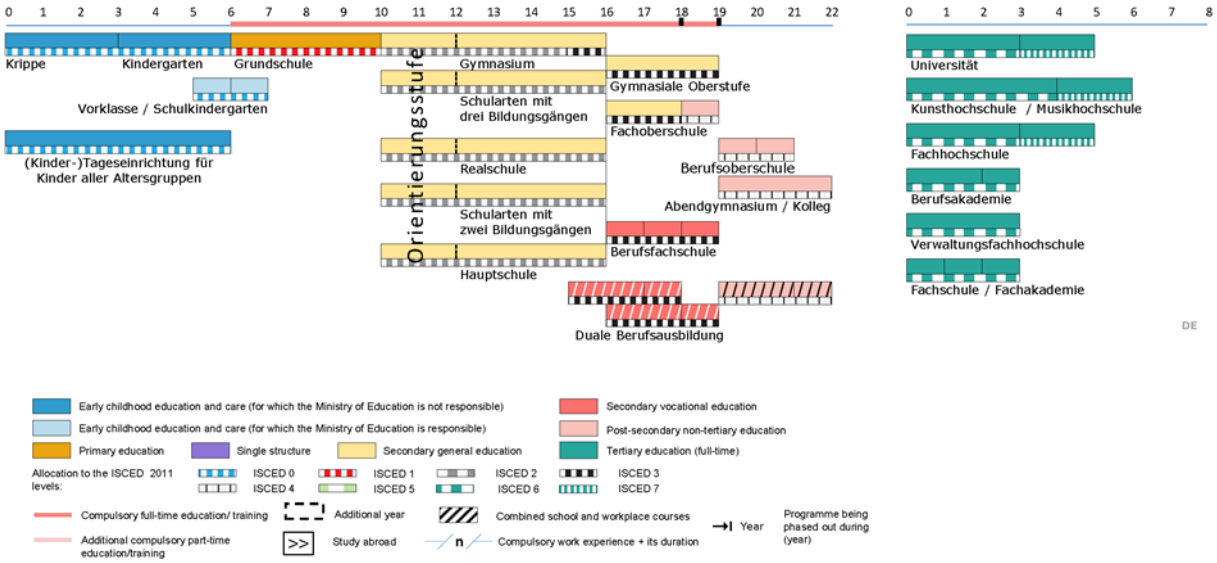
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

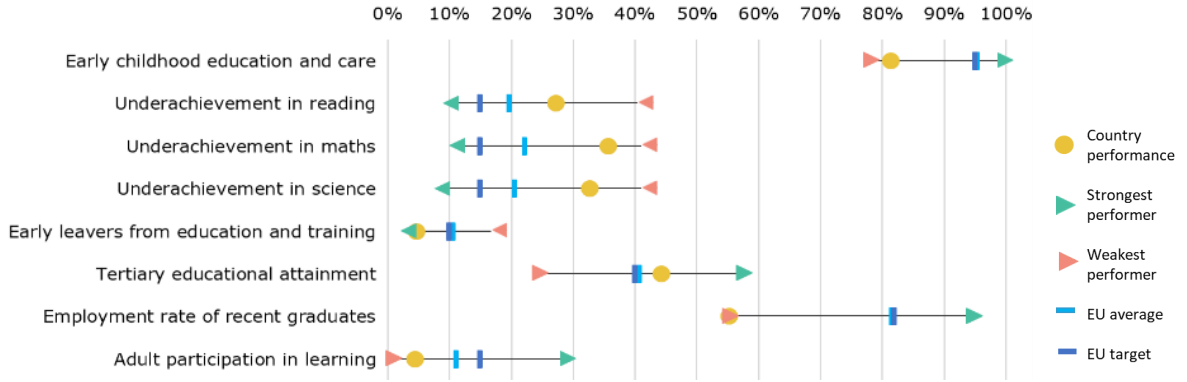
GREECE

1. Key indicators

			Greece		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			14.2%	4.7%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			26.6%	44.3%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			:	81.5% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		21.3%	27.3% [15]	19.5%	19.7% [15]
	Maths		30.4%	35.8% [15]	22.3%	22.2% [15]
	Science		25.3%	32.7% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		65.2% [b]	55.3%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		3.5%	4.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	12.1% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	1.7% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.1%	3.9% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	:	:	:	€6 111 [15,d]
		ISCED 1	€3 794 [12]	€4 281 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€5 005 [12]	€4 956 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	:	:	:	€7 730 [14,d]
		ISCED 5-8	€2 640 [12]	€2 389 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		9.6%	3.9%	13.1%	9.5%
	Foreign-born		43.8%	17.9%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		29.7%	48.1%	33.1%	41.3%
	Foreign-born		10.3%	15.1%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		60.8%	49.1%	72.5%	76.8%
	ISCED 5-8		68.1%	59.0%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, : = not available, 12=2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 14 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015)

2. Highlights

- The teaching profession is highly attractive but opportunities and incentives to improve professionalism are lacking.
- Education expenditure is lower than in most EU countries and largely spent on salaries.
- Early school leaving has been further reduced, particularly in rural areas.
- Finding employment after education remains difficult, including for highly qualified people. Measures to tackle the brain drain of tertiary graduates are being implemented but internationalisation of Greek universities is underdeveloped.

3. A focus on teachers

The teaching profession remains attractive despite setbacks in recent years. Teachers in Greece are public servants. Despite salary and hiring freezes over the past decade of financial crisis, the number of candidate teachers still far outstrips demand. In 2018, over 120 000 applied for 20 000 posts as substitute teachers. The announced hiring of 15 000 permanent teachers over the next 3 years is expected to attract a similarly high number of applicants. This high level of interest coexists with relatively high emigration by teachers. Over 2008-2018 the number of secondary teachers who applied for recognition in another EU country to practice there on a permanent basis[127] rose to 14 869 from just 594 during the preceding 10 years. This is the second highest number in the EU after Spain and the highest for regulated professions in Greece[128]. Salaries for teachers were cut by up to 28% in real (inflation-adjusted) terms between 2009 and 2017 (OECD, 2018a). Nevertheless, since 2016, there have been small annual salary increases, in particular for teachers with master's or PhD degrees, as part of the wider public policy objective of raising the salaries of public servants with higher qualifications. While statutory salaries in 2016/2017 were lower than the EU average, for both starting and maximum salaries (European Commission, 2018c), they are generally higher than in EU countries with a similar GDP per capita[129]. Despite the importance of the profession, data about teachers and monitoring of teaching is scarce. To assess the state of teaching in the country, Greece would benefit from taking part in the future OECD Teaching and Learning International Survey (TALIS)[130].

Teachers have comparatively short teaching time and small classes. Teachers teach 660 hours per year at primary level and 609 hours at lower secondary level, below the EU23 averages of 771 and 665 hours (OECD, 2018a). A new law limits class size to 22 students in primary education. Statutory teaching hours decrease progressively and rather rapidly according to teachers' years of service, resulting in less contact time for more experienced teachers. The practice of rewarding teachers in this way for years of service exists in other EU countries but is usually coupled to a minimum age limit, except in Cyprus.

Teachers are highly educated but lack opportunities to develop their pedagogical competences, especially in secondary education. Since 2010, subject teachers are required to obtain a certificate of pedagogical and teaching competence after their subject-related degree. However, since no permanent teachers have been hired since 2009, this regulation has had no effect. No competence framework for teachers exists to inform and shape initial teacher education. A small-sample study among secondary teachers in Greece and other countries finds that the knowledge profile of Greek participants was especially strong on assessment (evaluating and diagnosing students, data use, research). It was comparatively weak on learning (relating to the cognitive, motivational and emotional dispositions and learning of students) and poorest on instruction (teaching methods, lesson planning and classroom management). Of all participating

127 See the Regulated Professions Database: http://ec.europa.eu/growth/tools-databases/regprof/index.cfm?action=homepage

128 The second is medical doctors (8 690).

129 With the exception of Portugal this is the case for Slovakia, Poland, Hungary, Romania, Estonia, Lithuania, Latvia. GDP per capita measured in PPS, Eurostat, reference year 2016.

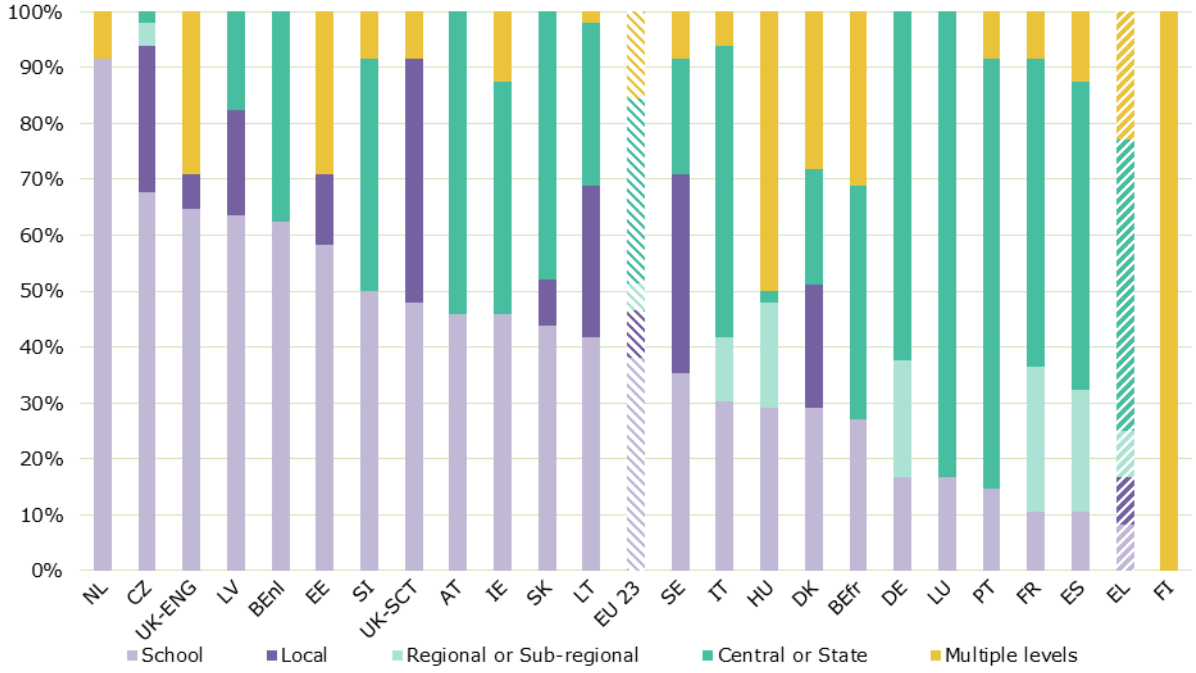
130 In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

countries, Greek secondary teachers and teacher candidates had the fewest opportunities to learn about pedagogical methods (Sonmark et al., 2017).

Teacher evaluation has not yet taken root. Teaching competences, in the absence of in-service appraisal, are not rewarded in the Greek system. Effective teacher evaluation as part of a general supportive framework can improve teacher quality, job satisfaction and feelings of self-efficacy (European Commission, 2018a). However, punitive measures linked to teacher evaluation in the past continue to dominate the argument. An understanding has yet to emerge that teacher evaluation and a democratic school culture are not mutually exclusive (Stamelos, 2012). School self-evaluations, which have been legislated for but not yet implemented, could help build the necessary trust.

School leader posts involve little autonomous decision-making. In recent years, academic knowledge and additional educational qualifications are increasingly valued in the selection of school leaders. However, their tasks and responsibilities remain largely clerical — literally so, as administrative support staff are scarce in schools — which is also due to Greek schools having one of the lowest levels of autonomy within the OECD. While the opinion of the school's teachers is considered when the school leader is being selected, school leaders have no role in hiring teachers as teacher allocation is administered centrally by the ministry.

Figure 2 Decisions taken at different government levels in public lower secondary education, 2017



Source: OECD (2018a), Table D6.1. See Source section for more information and Annex 3 for notes: http://dx.doi.org/10.1787/eag-2018-36-en

Box 1: Changes in the teacher appointment system

Law 4589/2019 changes the conditions for appointing teachers. The new hiring system abolishes the previously obligatory exams on subject and pedagogical knowledge. Instead, it relies solely on a credit-point system based on academic credentials, years of service and social criteria, such as the number of children in the household.

The certified pedagogical and teaching proficiency that was previously mandatory for taking teacher appointment exams can now be acquired up to 2 years after appointment. Credit points for additional and post-graduate degrees in the teaching subject or in pedagogy were provided for in the previous law but never implemented. No specific requirements for recognition of additional degrees are now necessary.

The new law in effect focuses on regularising the situation of substitute teachers[131] rather than on modernising teacher recruitment. A large number of substitute teachers have been serving in the system, sometimes for many years.

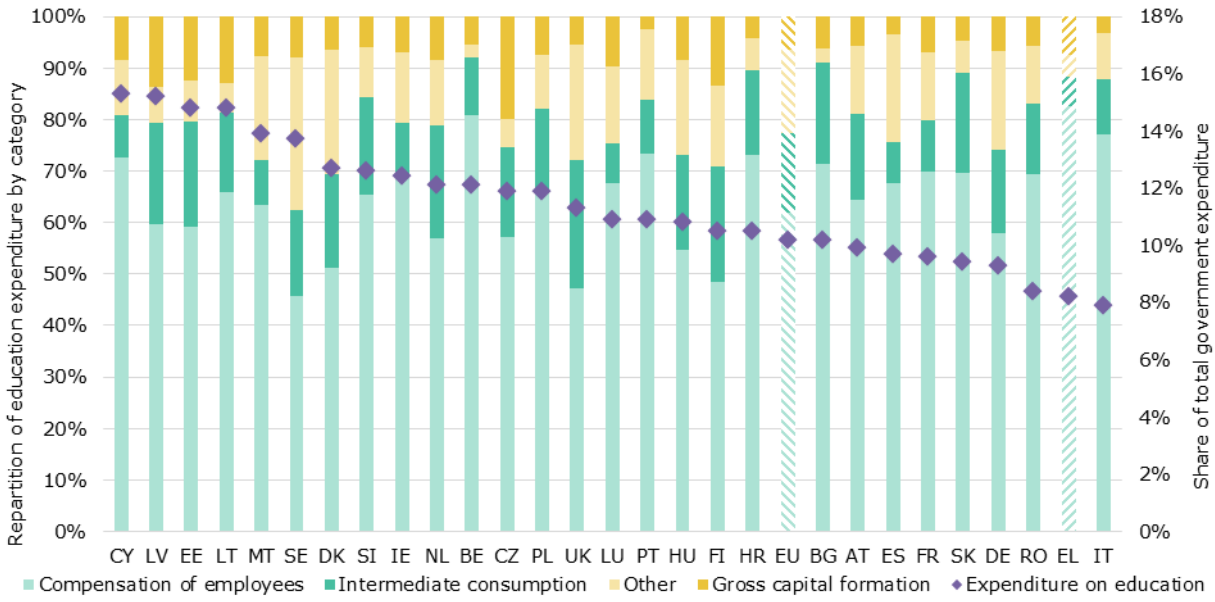
In addition, fundamental equity challenges persist in the central teacher appointment system. Very often, newly appointed and hence less experienced teachers and school leaders serve in the most disadvantaged and therefore least desirable schools and areas. Teacher transfer is based on credit points, with bonuses for serving in remote areas. The combination of centralised appointment and transfer systems undermines the continuity and quality of teaching at disadvantaged schools. Furthermore, the lack of accountability and monitoring has led to the paradox of teachers having almost limitless freedom regarding practice at school level despite strong normative input by the authorities (Stamelos et al., 2012).

4. Investing in education and training

Public expenditure on education is among the lowest in the EU and spent largely on salaries. Public education expenditure as a share of GDP was 3.9% in 2017 (EU average: 4.6%). As a share of total government expenditure, Greece spent 8.2% - less than most other EU countries (EU average: 10.2%). In real (inflation-adjusted) terms, education spending has contracted by 2.1% since 2016 and by a cumulative 14.3% since 2010. The biggest decrease (25.8%) was for 'intermediate consumption', i.e. teaching materials, heating and electricity. This was followed by 'gross capital formation' (-20.4%), e.g. investments in computers, buildings etc. Spending on teachers' pay fell by 12.5%. In 2017, 82.5% was spent on compensation of employees, more than in any other EU member state (EU average: 62%). In 2019, the Council of the EU addressed a country-specific recommendation to Greece calling on it to invest in education and skills (Council of the EU, 2019).

Greece might have almost one fifth fewer school children within 20 years. It is estimated that the proportion of children aged 3-18 will shrink by 12% by 2030 and by almost 20% by 2040[132]. This could provide an opportunity to improve the quality and efficiency of the education system. In addition, Greece will need to invest in providing lifelong learning opportunities to address low skills levels across the population.

Figure 3 Share of total government expenditure dedicated to education and spending by category, 2017



Source: Eurostat, COFOG.

131 For a description of their working conditions see: European Commission (2018b).
132 Eurostat projections.

5. Modernising early childhood and school education

The provision of affordable quality early childhood education and care (ECEC) for under-4s is insufficient. Participation in ECEC by children aged between 4 and school entry age increased from 79.8% in 2016 to 81.5% in 2017, but remains below the EU average (95.4%). In 2017, 20.5% of children up to 3 attended formal childcare facilities — a remarkable rise of 11.6 pps since 2016, yet still below the Barcelona target of 33% set in 2002. Data collection on childcare facilities is scarce but a large gap between demand and supply is apparent (Nikolaidis, 2017). A curriculum and teacher guidance are implemented for kindergartens. For childcare facilities, standards for infrastructure, a framework for goals, staff categories, and responsible monitoring authorities were legislated in 2017. Initial education of childcare staff was extended to 4 years. In 2018, the starting age of pre-primary education was lowered to 4 years with a phase-in until 2021. This shift does not abolish the dichotomy between care-oriented childcare facilities and learning-oriented kindergartens in favor of an integrated approach to ECEC (Rentzou et al, 2018).

Early school leaving has been much reduced in rural areas but remains high among foreign-born people. The proportion of young people aged 18-24 who have left school early is, at 4.7% in 2017, among the lowest in the EU (average: 10.6%). The gender gap was 2.1 pps, with the proportion of men (5.7%) higher than that of women. While early school leaving has declined further since 2016 from 5.4% to 3.9% among native-born people, it has increased among the foreign-born population from 16.9% to 17.9%, thus further widening the gap between the two. Since 2010, Greece has managed to lower early school leaving in rural areas by 12 pps, putting it among the best performers in the EU for that category.

Changes aim to foster a more collaborative school culture, but an integrated approach is lacking. Training has started for staff serving in the educational support centres (PEKES), legislated for in 2018. The 2018 law also provides for the creation of teams of teachers with shared fields of expertise within each school in order to cooperate and exchange ideas and teaching material, and to assess educational outcomes. Initiatives to lessen the high degree of prescriptive centralisation include the thematic week, during which teachers design their own programmes instead of following the central one. Networks across schools have been piloted between nine upper secondary vocational schools, and their extension to general primary and secondary schools is provided for in the 2018 law. However, a comprehensive, research-based approach to teacher professionalisation and school development which allows for monitoring and accountability is still lacking.

The digital school is not yet a reality and digital skills are underdeveloped. An impressive amount of digital educational content has been developed in Greece in recent years and information and communications technology (ICT) features in curricula of all levels. High broadband speed (>100 mbps) exists in 11% of Greek primary schools, 15% of lower secondary and 19% of upper secondary schools[133]. However, infrastructure impediments related to connectivity and up-to-date equipment exist. The share of schools with both strong policy and support in digital education is lower in Greece at all levels compared to the European average (European Commission, 2019a). Thus, digitally trained teachers are still likely to encounter difficulties in using their skills in the classroom. Among the general population, 46% of people aged 16-74 reported to have at least basic digital skills, below the EU average of 57% (European Commission, 2019b). Among the rest, 31% of individual do not have digital skills at all (EU average: 17%). ICT specialists, especially women, and ICT graduates are fewer than on average in the EU[134]. The National Coalition for Digital Skills, launched in June 2018, has set up several initiatives to upgrade digital skills among the public, SMEs and civil servants.

Integration of recently arrived migrants into education has so far primarily focused on schools. In 2018/2019 substantial efforts were made to provide schooling for 12 867 refugee children, 8 290 of them in mainstream classes with parallel educational support and 4 577 in separate afternoon schooling facilities. Some 30 kindergartens exist in refugee camps, including those on islands. 690 teachers received dedicated training. Interpretation was provided to assist the enrolment of refugee children and psychologists recruited to support refugee students, families

[133] National data.
[134] Out of total employment, female employment and total graduates.

and educators. However, integrating refugee children into education remains an uphill struggle, considering that an estimated 28 000 refugee and migrant children reside across Greece (UNICEF, 2019)[135]. Particular challenges relate to: allocating teachers qualified for multilingual and diverse settings; teacher training; and resources and access to education for older children and young adults, including at post-secondary and tertiary levels (Tzoraki, 2019). To assess refugees' higher education qualifications, Greece has been part of the Council of Europe project to create the European Qualifications Passport[136].

6. Modernising higher education

Employment prospects have improved for recent tertiary graduates. At 44.3%, the proportion of 30-34 year olds with tertiary education rose further in 2018 (43.7% in 2017). It is above the EU average (40.7%) and the national target for 2020 (40%). At 51.3%, women's tertiary educational attainment is 13.8 pps higher than men's. Among the native-born population, 48.1% had tertiary education, three times more than for foreign-born people at 15.1%. The employment rate of recent tertiary graduates was 59% in 2018, 10 pps higher than in 2015 but still the lowest in the EU. Nevertheless, having a degree improves employability: the equivalent rate for graduates from upper secondary and post-secondary education was, at 49.1%, considerably lower.

New legislation is reforming access to higher education. Each year, the Ministry of Education assigns first-time students directly to higher education departments based on their performance in national university entrance exams and study preferences. While the system is considered very fair, it produces study mismatches and inefficiencies as quite often neither students nor universities achieve their preferences. In addition, upper secondary education is primarily focused on preparing for university entrance exams. After several measures to upgrade upper secondary education (European Commission, 2018), the new university entrance system, enacted in 2019, allows access to low-demand departments without prior exams. Central allocation based on competitive exams is kept for departments facing high demand.

Graduate mobility is mostly outward. In 2017, outward degree mobility — the proportion of graduates obtaining their degrees abroad — was at 12.1%, more than three times above the EU average (3.6%). For master-level graduates, it was five times higher (25.8% v EU 5%). The proportion of graduates from abroad is, at 1.6%, far below the EU average (10.8%) and largely composed of Cypriots. While Greek universities score comparatively well on research, international orientation is underdeveloped and so are knowledge transfer, teaching and learning, and regional engagement (U-Multirank, 2019). The low provision of English-taught programmes at bachelor level and the lack of a coherent national plan for internationalising higher education, are contributing to the low degree of internationalisation (British Council, 2019).

The restructuring of higher education seems not to reflect projected labour market needs. Legislation passed in spring 2019 provides for upgrading the remaining technical education institutions (TEIs) into universities under the process begun in 2018. New departments and degree-level study places will be created. Prior impact assessment has been largely missing, no study by the higher education quality assurance agency or other independent bodies was commissioned. More than 500 new academic staff positions have been earmarked to smooth the transition, but doubts have been raised over the readiness of former TEIs to provide university-level programmes, facilities and staff, given the speed of the transformation. In addition, labour market projections predict an over-supply of high-qualified workers until 2030 but a shortage of medium-qualified workers (Cedefop, 2018). Therefore, together with the generally low attractiveness of vocational education and training (VET), the restructuring appears to be exacerbating the existing skills mismatch.

[135] In 2018, 21 770 registered asylum applications in Greece 2018 were for children.
[136] See: https://www.coe.int/en/web/education/recognition-of-refugees-qualifications

Box 2: Several initiatives are tackling brain drain in the tertiary sector

Greece has always experienced emigration but it increased during the economic crisis, especially among the highly skilled. The high proportion of small companies in the economy and the related low level of research and innovation, especially in the private sector, have limited the potential to absorb highly educated people (Labrianidis, 2017).

The Hellenic Foundation for Research and Innovation, established in 2016, supports young scientists and seeks to reverse the outflow of leading scientists abroad. The foundation grants scholarships for doctoral and post-doctoral studies; funds high-quality research projects, researchers and faculty members; finances the purchase of research equipment; enables HEIs and other stakeholders to access innovative research programmes; and supports the creation and operation of start-ups which exploit research results. It is estimated that the budget of EUR 240 million for 2017-2019 will create more than 4 000 jobs for young scientists by end-2019.

The 'Research, create, innovate' programme supports the creation of jobs for highly qualified staff in the research and development departments of innovative businesses. It also finances the collaboration of these departments with public universities and research centres. The first phase of the programme, financed with EUR 332 million, created 3 400 full-time jobs. The second phase will be funded with EUR 200 million. Research suggests putting an equal focus on interconnecting permanent expatriates with the Greek economy as on 'return and retain' policies (Labrianidis, 2017).

7. Modernising vocational education and training

Important reforms have been adopted but the attractiveness of the sector is still low. The proportion of upper secondary pupils enrolled in VET was 28.8% in 2017 (EU average: 47.8%) and has been slowly but steadily declining since 2013 while the EU average has been relatively stable around 48%. The employment rate for VET graduates, though still low, has risen from the all-time low of 37.5% in 2015 to 50.5% in 2018 (EU average: 79.5%). The 'New beginning at EPAL' programme has been expanded to all 401 upper secondary vocational schools. The optional fourth apprenticeship year with a strong work-based learning component for upper secondary VET graduates was expanded. Demand for apprentices is increasing but, overall, apprenticeship offers by companies are still low at 48% of all offers.

Training of VET teachers and trainers is a key challenge. The 2017 'Apprenticeship quality framework' stipulates the creation of a register of certified in-company trainers and requires them to attend training programmes designed by the national employment service, chambers and education institutions. The second phase of teacher training on apprenticeships, in May 2019, targeted 1 500 teachers. From September 2019 the certification of teaching competences of VET teachers and adult trainers will become a prerequisite for their enrolment in state-funded non-formal training programmes in initial VET and continuing VET (Law 4485/2017). A partnership for VET, led by the Central Union of Chambers and planned for end-2019, aims to raise awareness and train in-company trainers.

8. Developing adult learning

Regulatory initiatives to build up adult learning are ongoing but implementation is lagging. Participation in adult learning in 2018 remained very low at 4.5% (EU average: 11.1%). During 2017, around 1 000 adults aged 25 or above acquired an upper-secondary qualification out of nearly 1.5 million adults with low educational attainment. Two new laws were passed in 2018 on the definition of key concepts in adult learning and on the validation of programmes offered by municipal lifelong learning centres. The process of selecting adult educators for these centres ended recently after 2 years. Municipalities have launched a public call for interest for course offers in 145 different subjects so that the centres can become operational in 2019. Adult learning will also be available in all prisons.

The process of accrediting adult educators has undergone several changes since 2012. The National Organisation for the Certification of Qualifications and Vocational Guidance (EOPPEP) is responsible for the accreditation of adult educators. It has developed an adult educator occupational profile which serves as the framework for the accreditation process. Since March 2019, the Greek adult educators' community has its own European Platform for Adult Learning.[137]

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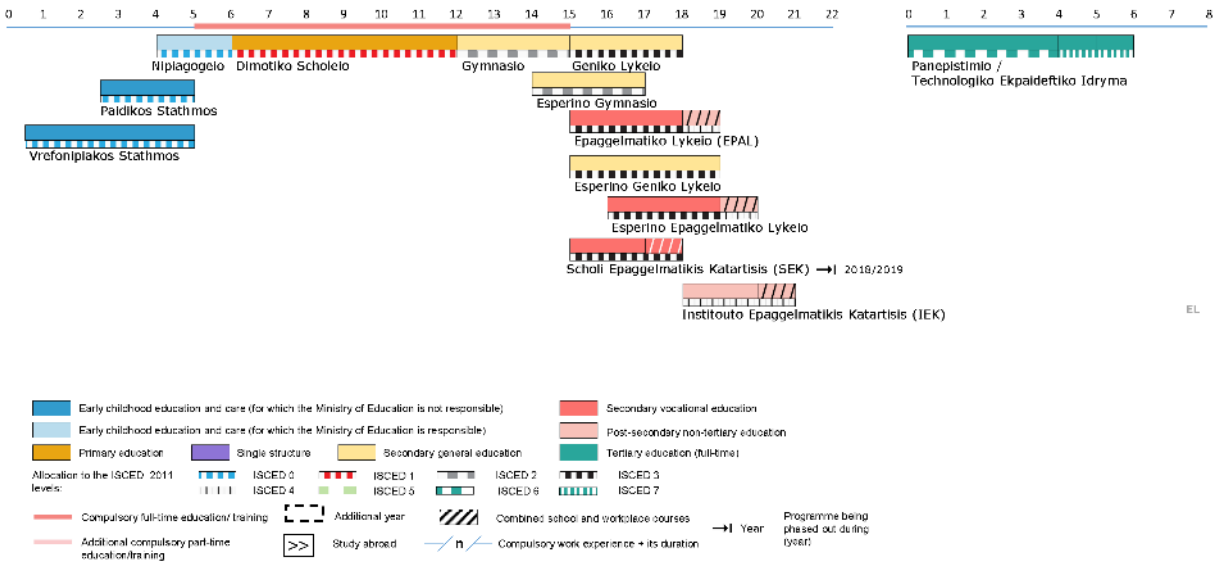
[137] See: www.iky.gr/el/epale

Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat/UIS/OECD data.*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2019. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

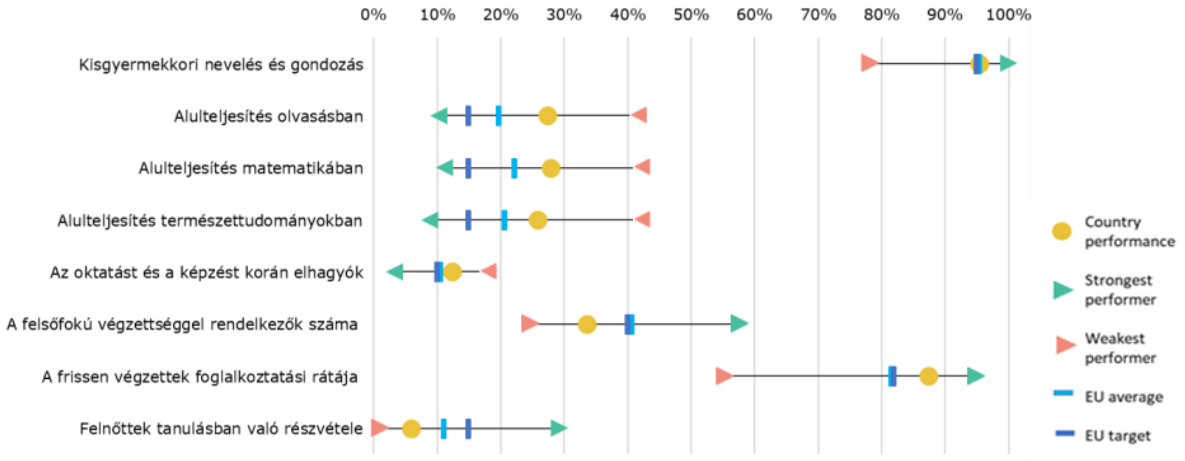
HUNGARY

1. Key indicators

			Hungary		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			11.5%	12.5%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			24.0%	33.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			94.8%	95.6% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		17.6%	27.5% [15]	19.5% [EU27]	19.7% [15]
	Maths		22.3%	28.0% [15]	22.3% [EU27]	22.2% [15]
	Science		14.1%	26.0% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		75.5%	87.5%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		3.0%	6.0%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	4.1% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	3.8% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.4%	5.1% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	: [12]	€5 140 [16]	:	€6 111 [15,d]
		ISCED 1	€3 362 [12]	€3 899 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€3 431 [12]	€4 108 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€3 316 [12]	€6 135 [16]	:	€7 730 [14,d]
		ISCED 5-8	€6 830 [12]	€7 231 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		11.4%	12.6%	13.1%	9.5%
	Foreign-born		: [u]	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		23.6%	33.4%	33.1%	41.3%
	Foreign-born		41.3%	44.9%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		66.4%	84.0%	72.5%	76.8%
	ISCED 5-8		84.8%	91.5%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, := not available, u= low reliability, 12= 2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 15 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Recent measures have raised the qualification levels of staff in early childhood education and care.
- Measures to reduce performance gaps between pupils have been strengthened.
- Admission conditions for entry to higher education have been made more restrictive.
- A new medium-term strategy aims to modernise vocational education and training and adult education.

3. A focus on teachers

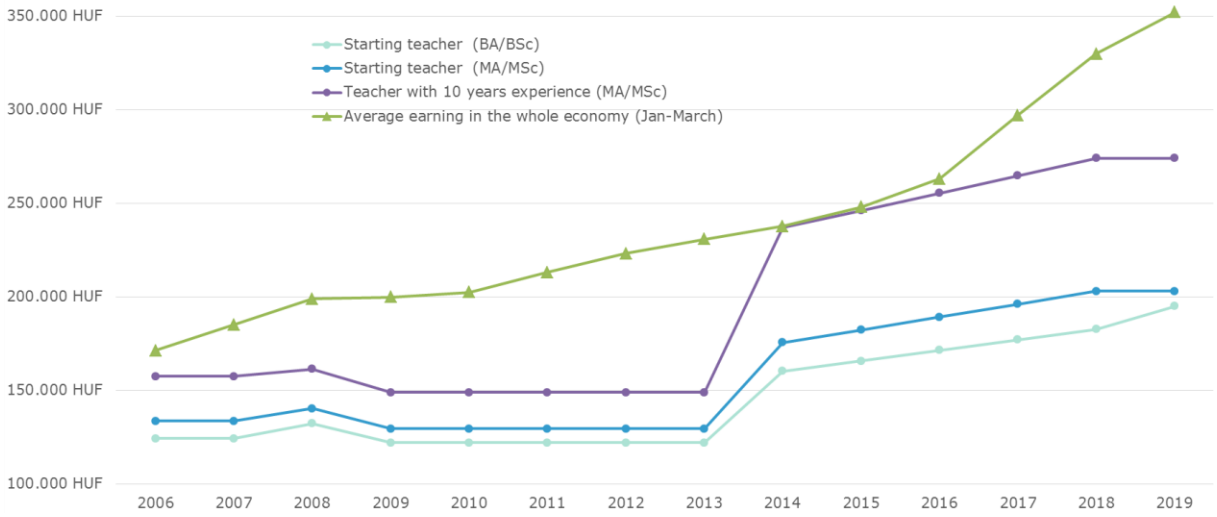
Alongside increased participation in early childhood education and care (ECEC), staff qualification levels have been raised. The 2013 teacher career model and progression path was extended to ECEC staff, who are now required to hold a tertiary degree (similar to other teachers) in pre-school education. This attracted a big increase in applicants: student enrolments grew by more than 50% from 2013 to 2014. In 2016, their qualification requirements were further updated to include competencies in children's rights, teaching through arts, inclusion, and support to disadvantaged children. The increase in graduate numbers, however, has not led to a significant increase in the number of professionals working in ECEC since many of them were working already at the time of starting their studies. Wages for pre-school teachers remain low, especially for entrants, who earn 195 000 HUF/month (EUR 606). 16% of recent graduates do not work in the profession (OH, 2018d).

Teachers' job satisfaction is somewhat below the EU average. According to the 2018 OECD Teaching and Learning International Survey (TALIS), the proportion of teachers satisfied with their job is slightly below the EU average (88.1% v 89.5%). 72.0% say that if they could decide again, they would still choose to become a teacher (EU average: 77.6%); among teachers with more than 5 years' experience this drops to 71.3% (EU average: 76.4%). The proportion of teachers who feel well or very well prepared in using information and communications technology (ICT) is much higher than the EU average (65.7% v 39.4%). However, 20.5% report the need for professional development in ICT skills (EU average: 16.1%). Continuous professional development is obligatory for promotion. 94.5% of lower secondary teachers participated in 2018, which corresponds to the OECD average.

There is an increasing shortage of teachers, especially in poorer regions and for specific subjects. The teacher workforce is ageing: in 2017 the proportion of teachers aged over 50 was at 41% while the share under 30 made out only 6%[138]. The number of applicants for initial teacher training has increased in recent years, but dropout rates are high and fewer than half of graduates actually enter the profession[139]. The shortage is currently worst in poorer, disadvantaged areas; for science subjects and foreign languages; and in vocational education and training. Low salaries are one factor (Figure 2). The statutory salary of a starting teacher in purchasing power standards is one of the lowest in the EU (Eurydice, 2018). The National Chamber of Teachers (NPK, 2019) has called for a more dynamically rising salary scale in the first 10 years of career, and for restoring the ratio between the starting salary and the minimum wage to where it was in 2013. One measure to help retain graduates in the profession is the 'Klebelsberg stipendium'. Students in initial teacher training and special education are entitled to the stipendium on condition that they work for a time at a state school after graduation. In addition, a grant scheme was set up in 2017 to contribute to students' living costs during their teaching practice year.

[138] Source: Eurostat [educ_uoe_perp01]
[139] Source: KIR-STAT database.

Figure 16 The evolution of earnings of teachers and in the whole economy (2006-2019)



Source: Central Statistical Office; 2011 Act CXC on National School Education; Acts on the Central Budget (2006-2019)

Recent legislative changes re-established some previous competences of school principals. Legislative changes in 2011 restricted schools' autonomy on teaching content, textbook choice and management of financial and human resources. The duties of employer and financial management were transferred from school principals to the state. These restrictions do not apply to non-state schools, which thus can offer more attractive conditions to both teachers and pupils. Some principals' powers were restored in 2017: decisions on appointments and dismissals of teachers are taken together with the school district leader. Principals can also manage a certain part of the budget for everyday expenses. The responsibility for school maintenance previously held by municipalities was taken over by the state in 2017, ending their role in the financing, maintenance and management of schools.

4. Investing in education and training

General government expenditure on education as a proportion of GDP was 5.1% in 2017, above the EU average of 4.6%. Compared to 2001, real (inflation-adjusted) expenditure[140] on education increased by 11.5% during the recession (2007-2009) and by 23.5% in 2014-2016. The 2016-2017 spending rise in real terms (4.5%) went mainly to higher education, while spending on secondary and post-secondary non-tertiary education dropped by 2.4%.

The number of schools has not been aligned to the reduced school population, with risks for public spending efficiency. The year-on-year decrease in the school population was 0.8% in 2017/2018 (KSH, 2018); the decline between 1990 and 2016 was 10 times greater than the decrease in the number of primary schools. This reduces efficiency: the proportion of unused school capacity increased sharply to 7% in the elite type 6- and 8-year secondary schools, 26% in traditional grammar schools (*gimnázium*), 46% in vocational grammar schools (*szakgimnázium*) and as high as 64% in vocational training schools (*szakközépiskola*) (OH, 2018a). The pupil-teacher ratio was at 11 to 1 in primary education in 2016, against an OECD average of 15 (OECD, 2018). Maintaining the large number of schools has in effect increased parental choice and the scope for segregating students by socio-economic status (Radó, 2018).

Differences in the regulatory framework for schools based on their status are impacting on equity. In 2001-2016, the proportion of church schools increased from 5% to 15.8% in basic education and from 10.4% to 22.8% in upper-secondary education (MTA, 2018). Church schools are exempt from some legislative restrictions and in particular do not participate in system-level desegregation measures, thereby limiting the measures' impact. There is a growing concentration of disadvantaged and Roma pupils in certain schools: the proportion of basic schools with a Roma

[140] Expressed at constant 2010 prices by using the implicit deflator for final consumption expenditure of the general government.

population of 50% or higher increased from 10% in 2008 to 15% in 2017, partly reflecting the demography of the locality in which the school is located. Pupils' family background, as measured by the composite indicator used in the national competence test, is significantly more favourable in church schools than in state schools[141]. An amendment to the National School Education Act[142] adopted in July 2019 has removed the right of teaching staff, pupils, parents or national minorities to express an opinion on school head appointments at state schools. In its 2019 country-specific recommendation, the Council of the EU recommended that Hungary take measures to improve education outcomes and increase the participation of disadvantaged groups, in particular Roma, in quality mainstream education (Council of the European Union, 2019).

5. Modernising early childhood and school education

Measures to improve access to and the quality of early childhood education and care (ECEC) will help reduce inequalities in educational outcomes. 95.6% of children aged 4-6 participate in ECEC, around the EU average. In 2016 Roma participation was 91%, close to the national average and by far the highest among Member States in the region (FRA, 2016). As performance gaps appear at early ages, lowering the age of compulsory participation in kindergarten from age 5 to 3 from 2015/2016 has been a positive step that is likely to improve children's later performance at school. To ensure participation, the family allowance was made conditional on kindergarten attendance. In 2017, 13.8% of children under 3 attended ECEC (EU average: 34.2%)[143].

Box 1: A springboard for disadvantaged children: the Sure Start programme

The Sure Start Children's Houses (SSCH) programme ensures access to early development and day care for children below 3 in disadvantaged regions, especially in poor villages with a Roma population. Begun in 2006, its main aim is to prepare disadvantaged young children for kindergarten through physical, mental, social and emotional development.

The programme is based on strong cooperation with parents and partners from health, social and early childhood care services. Parents are involved in children's activities, which helps to develop their parenting skills. One of the most recognised added values of the programme is the involvement of Roma in different services (NESET, 2018). Participation empowers Roma parents, allowing them to widen their social network and develop relationships with other parents, institutions and services.

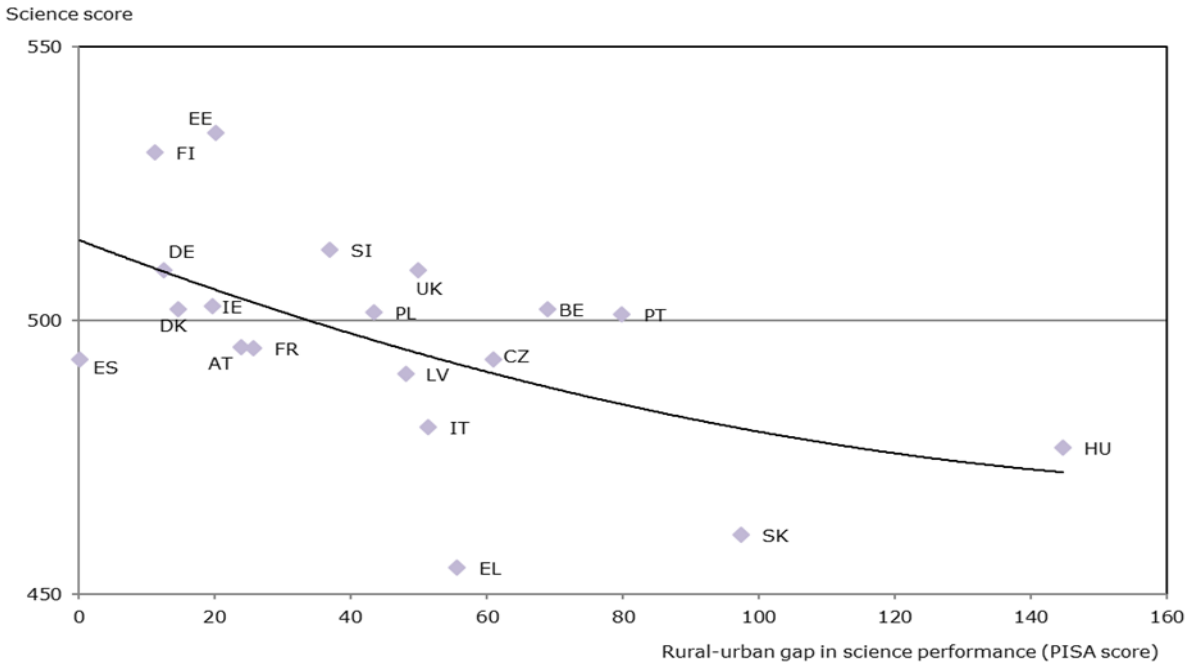
In 2013, the Sure Start programme was integrated into the Child Protection Law as a basic component of child welfare services. Since EU funding ended in 2014, the programme has been funded from the national budget. Currently there are some 135 SSCHs funded across the country and the government plans to increase this to 240 in 2019. A recent evaluation of the programme recommends further developing quality assurance, making the involvement of Roma workers compulsory, and financing the further training of staff as well as the participation of teachers, speech therapists and child psychologists (T-TUDOK, 2018).

The early school leaving rate (ESL) remains high, especially in disadvantaged regions and for vocational training. In 2018, ESL remained at 12.5%, having seen an increase in recent years which goes against the decreasing EU average (now at 10.6%). The rate is particularly high among Roma (65.3%). Participation of 17 and 18 year-olds in secondary education dropped sharply between 2011 and 2016 (from 98% to 85%) after the age of compulsory education was lowered from 18 to 16 in 2012. The distribution of pupils affected varies greatly by school type and region (OH, 2018b). In the three most affected counties[144], more than 15% of pupils are at risk of dropping out. In vocational training, this figure is 19%. ESL correlates strongly with local education outcomes, which are lowest in rural settlements (OH, 2018c). In rural communities the capacity to provide quality education services is more limited and teacher shortages are more pressing.

[141] The 0 value of the index is the average family background status of all pupils tested. In 2017 the average value was minus 0.05 in public schools and 0.18 in church schools in grade 6. Calculations by Kriszta Ercse.
[142] Act LXX of 2019 on National Public Education
[143] Source: EU-SILC [ilc_caindformal]
[144] Borsod-Abaúj-Zemplén, Nógrád and Szabolcs-Szatmár-Bereg

Hungary has the largest urban/rural gap in education outcomes, before accounting for socio-economic status, of all OECD countries (OECD, 2019b) (Figure 3).

Figure 3 The urban-rural gap and average science performance



Source: OECD PISA 2015

The 'tanoda' after-school programme has been strengthened to reduce inequalities. 'Tanoda's are after-school child-welfare services offered to disadvantaged pupils, in particular Roma, as one of the measures to reduce education gaps. Other measures in the package include: free school meals for disadvantaged pupils; free Sure Start childcare services in disadvantaged regions; and the extension of compulsory participation in ECEC. Tanoda supports pupils' school performance and development through personalised support and non-formal and informal ways of learning. The first after-school houses were created in the 1990s as civil initiatives and were financed from the European Social Fund from 2004 onwards. As of 2019 tanoda has been integrated into the Child Protection Law[145] as a basic child welfare service, supported by a national grant system of HUF 2.5 billion (EUR 7.82 million). This allows the financing of around 200 after-school houses for around 15 000 disadvantaged pupils annually. To ensure quality, only organisations that provided tanoda services in the previous year were eligible to apply and all organisations working as tanoda need to acquire accreditation by June 2019.

The number of foreign languages learned in secondary school is below the EU average. In secondary education 49% of pupils learn two or more foreign languages (EU average: 59%).To improve pupils' foreign language skills, in February 2019 the government announced the launch of a grant scheme supporting two-week summer language courses abroad for 9th and 11th graders. Around 140 000 pupils a year are expected to benefit from the scheme with a budget of HUF 90 billion a year (around EUR 280 million), a substantial sum equivalent to 12% of total expenditure on secondary education in 2017. However, the expected impact of the language trips is likely to be limited given the increasing shortages of qualified language teachers.

The choice of textbooks is limited by the decision to create a monopoly for their publication and distribution. In 2013, the right to distribute textbooks was given to the single distributor KELLO (Könyvtárellató Nonprofit Kft.), which barred private distributors from the market. In March 2019 the European Court of Human Rights (ECHR, 2019) ruled that by 'monopolising' the textbook distribution market, the state had violated companies' property rights.

145 40/2018. (XII. 4.) ministerial decree

Schools may only use their textbook budget for orders from a list of licenced textbooks. Most textbooks from independent publishers are expected to disappear by 2019/2020 because their licences were not extended in 2019 by the Educational Authority.

6. Modernising higher education

Tighter conditions for admission to higher education are likely to restrain tertiary attainment rates. The employment rate of recent tertiary graduates in 2018 was 91.5%, well above the EU average of 85.5%, reflecting strong demand for highly skilled workers. Tertiary graduates also enjoy the highest wage premium in the EU (OECD, 2017). However, against the background of demographic decline and outward migration trends[146], current enrolment and completion trends make it harder to respond to this high demand: the tertiary educational attainment rate among 30-34 year-olds stood at 33.7% in 2018, well below the EU average (40.7%). Enrolment numbers dropped by 18% in 2012 when the government announced it was reducing state-financed student places and introducing study contracts. From 2020, a foreign language certificate of proficiency level B2 and an advanced level matura exam will be required to enter all but short-cycle tertiary programmes. This may further reduce the already shrinking pool of applicants, as only 48% of applicants currently hold a B2-level language certificate (MTA, 2018), while the secondary school curriculum targets only B1 level. The Ombudsman found that the proposed language requirement would need to be accompanied by a greater allocation of human and other resources to language teaching to avoid infringing constitutional rights (Ombudsman, 2017).

Student scholarships are being increased in two steps. From February 2019 the per capita financing of higher education institutions has increased from HUF 119 000 (~EUR 380) to HUF 128 520, and in 2020 it will reach HUF 166 600 (~EUR 533). This money is distributed among students in the form of the social grant, basic student support and study scholarship. In 2018/2019, 78% of newly admitted students received a state-financed place; the remaining 22% self-financed their studies. Among students receiving state financing, a maximum of 50% may be entitled to a study scholarship.

A new financing model is expected to bring more flexibility to the operation of higher education institutions. In autumn 2018, the government transferred supervision and maintaining rights over Corvinus University of Budapest from the Ministry of Human Capacities to the Ministry of Innovation and Technology. In mid-2019, a public foundation named Maecenas Universitatis Corvini was established which holds all the estates of the university, to which the state has allocated extensive assets whose dividends can be used to run the university. The university thereby becomes exempt from the scope of the Budget Law which covers all public institutions. This should give it more flexibility and autonomy in its operation and enable more efficient cooperation with the business sector for innovation. The aim is to introduce more efficient operating models across higher education.

Recent legislative changes are seen as limiting academic freedom. A 2017 legislative amendment stipulates that any foreign institution outside the European Economic Area that grants degrees in Hungary must operate in its country of origin and be governed by a bilateral agreement between the two states. Following lengthy discussions with the authorities, the Central European University, specifically concerned by the amendment, decided to move its U.S. degree programmes to Vienna from September 2019.

[146] Hungary is the only country in the EU where the graduate migration rate is higher than the rate in less-qualified groups (Hárs, 2019).

Box 2: The Graduate Tracking System (Diplomás pályakövetési rendszer, DPR)

European Social Fund (ESF) project: TÁMOP-4.1.3 Systemic development of higher education services

Duration: March 2012–February 2015

Budget: HUF 1.57 billion

Implementing body: Educatio Ltd. in consortium with the Educational Authority

DPR's aim is to inform applicants to degree programmes about career prospects and make it easier to adapt degree programmes to the jobs market.

The system combines data from surveys on graduates' careers and from different administrative registers. The methodology and central elements of the survey module were developed within the ESF project. In addition, several higher education institutions were given funding to develop their own tracking systems, based on a standardised methodology.

Surveys are carried out on graduates' careers 1, 3 and 5 years after graduation. The administrative data integration module links together the Higher Education Information System and the Student Loan Centre with other public registers, such as those for tax, social security health and labour. Research data will be accessible in an open searchable online interface from October 2019.

7. Modernising vocational education and training

A medium-term strategy was adopted in March 2019 to reform VET from 2020-2021. The 'Vocational Education and Training 4.0' strategy aims to make VET more attractive and reduce early school leaving. Vocational grammar schools — the path with a higher element of general education — will be renamed 'technical schools' and lead to a general secondary education degree and a vocational degree. Vocational secondary schools — for less academically inclined pupils — will be renamed 'vocational training schools'. Their first year will be dedicated to sectoral subjects, followed by 2 years of dual training. Pupils completing basic (lower secondary) education with major weaknesses may attend a '0' orienteering year to acquire the basic skills necessary for VET. Half or one-year-long basic skills development programmes will be offered to pupils who are unable to complete basic education.

Further steps were made to bring the worlds of education and work closer together. In 2018 the employment rate of recent VET graduates (ISCED 3 and 4) was 87.1%, well above the EU average of 79.5%. The Ministry for Innovation and Technology established the VET Innovation Council in September 2018 as a forum for dialogue between the government and stakeholders. Its tasks are to determine the direction of future developments and make recommendations for infrastructural developments and the content-related supervision of VET and adult training. From 2019-2020, in-company instructors are required to follow a course organised by the Hungarian Chamber of Commerce and Industry to obtain an instructor qualification.

Chancellors have been introduced in VET centres in line with the higher education model. The status of chancellor as senior manager appointed by the government was created from January 2019. The leadership of the vocational centre remains with the general director, while the chancellor will deal with various economic, financial, legal and labour-related issues and be responsible for overall asset management. The chancellor has the right of consent on all issues regarding the operation, structure and finances of the centre.

8. Developing adult learning

Promoting adult participation in learning remains a challenge, especially among the unemployed. Only 6.0% of adults participated in recent adult learning, well below the EU average of 11.1%. People in employment are about four times more likely to participate in training than unemployed people. In 2017 there were 858 000 adults (aged 25-64) with only a low-level of educational attainment, but only 438 000 corresponding jobs with an elementary skills requirement. 50% of the adult population (aged 16-74) have an insufficient level of digital skills,

against the EU average of 43% (European Commission, 2019). This suggests that a substantial upskilling effort focused on the population with low skills is needed.

Skills shortages are comparatively high in Hungary. The number of registered unfilled positions decreased somewhat in the first quarter of 2019 but remains high at 34% more than at the same time in 2017 (KSH, 2019). In VET, much emphasis has been put in recent years on adapting the curriculum to the immediate needs of companies. Though manufacturing companies report mainly a need for vocational secondary school graduates with practical training experience, they value these employees in all physical occupations less than employees from vocational grammar schools (Köllő, 2018).

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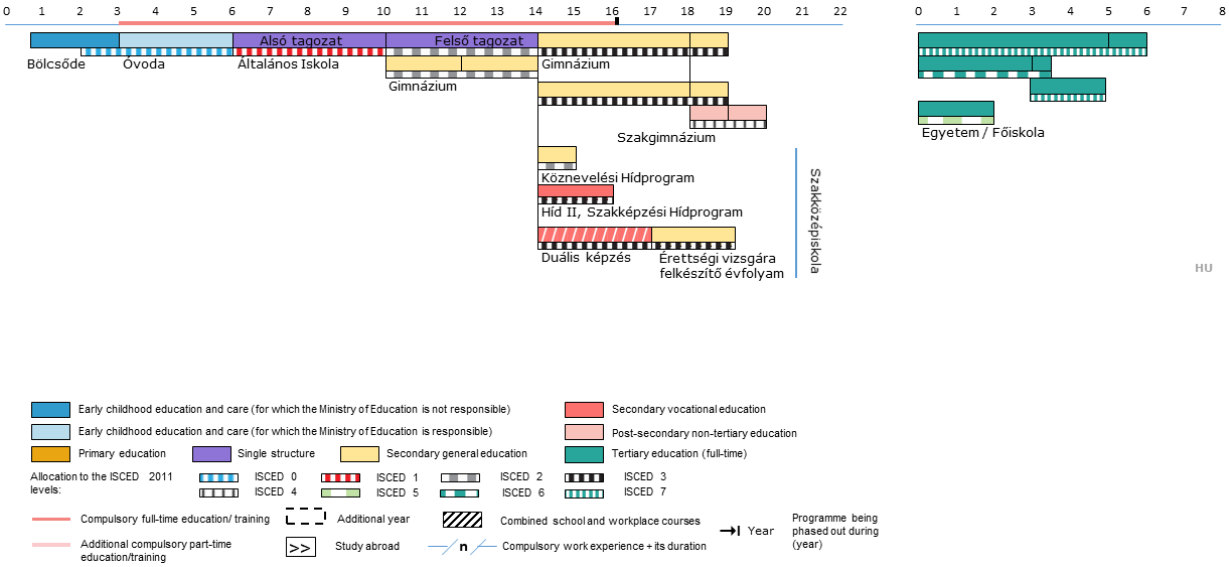
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

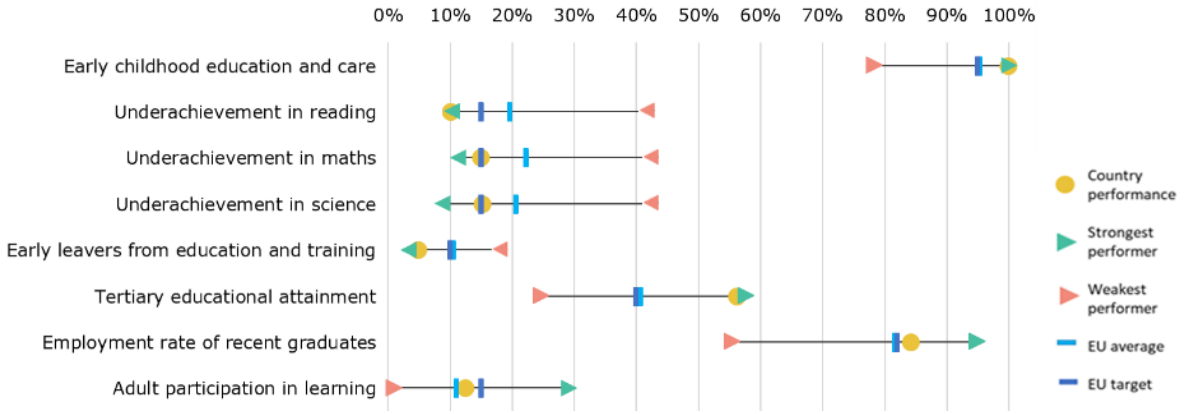
IRELAND

1. Key indicators

			Ireland		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			11.8%	5.0%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			50.4%	56.3%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			73.6%	100.0% [17,d]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		17.2%	10.2% [15]	19.5% [EU27]	19.7% [15]
	Maths		20.9%	15.0% [15]	22.3% [EU27]	22.2% [15]
	Science		15.2%	15.3% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		77.3%	84.3%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		6.6%	12.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	5.7% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	: [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.7%	3.3% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	: [12]	€5 392 [16]	:	€6 111 [15,d]
		ISCED 1	€6 667 [12]	€6 161 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€8 467 [12]	€7 167 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€9 095 [12]	€6 995 [16]	:	€7 730 [14,d]
		ISCED 5-8	€11 500 [12]	€9 996 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		11.2%	5.4%	13.1%	9.5%
	Foreign-born		14.9% [u]	3.4% [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		48.5%	54.4%	33.1%	41.3%
	Foreign-born		56.4%	59.7%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		65.0%	74.4%	72.5%	76.8%
	ISCED 5-8		84.3%	89.5%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in section 10 and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u = low reliability, : = not available, 12 = 2012, 14 = 2014, 15 = 2015, 16 = 2016, 17 = 2017.

Figure 17 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Ireland has a strong framework to ensure highly qualified teachers and further plans to meet emerging needs, including teacher shortages.
- Early school leaving has continued to decline, and participation in early childhood education and care is to be supported by new national schemes.
- Despite increased public spending on education, investment in higher education has not kept up with rising student numbers.
- Ireland is implementing initiatives aimed at upskilling and increasing adult participation in learning and training, but the numbers of low-skilled adults in the population remain sizeable.

3. A focus on teachers

The teaching profession attracts high academic performers, and measures are being taken to increase diversity. National research (Heinz and Keane, 2018) on 2014 entrants to initial teacher education confirmed that primary teaching remained a popular career choice attracting high academic achievers. It also showed that only 18% of the entrants were men, and an absence of non-Irish nationals. This confirms EU-level analysis showing that migrant groups are poorly represented in Ireland's teaching profession (Donlevy et al., 2016). The gender gap has widened: the proportion of women teachers from primary to upper secondary levels increased by 8 pps to 80% over 2005-2016, above the OECD EU-22 average of 77% (OECD, 2018). The proportion of women among university teachers, where they are under-represented, has also increased, by 5 pps to 44%, approaching an equal distribution. Ireland has recently launched several programmes to increase diversity among teachers. The 'Turn to teaching' programme, funded under PATH[147], at Maynooth University aims to support over 100 students from marginalised backgrounds to become teachers, including from the Traveller community, migrants, mature students, lone parents and disadvantaged backgrounds. In September 2019, Dublin City University will launch a teacher education programme for students who are deaf or hard of hearing. Other universities have announced similar initiatives[148].

Measures to address teacher shortages have been reinforced but results are still awaited. There have been concerns about teacher supply in primary and post-primary schools — at primary level for substitute teachers, and at post-primary level for teachers of maths, sciences, Irish, modern languages and home economics. Forward planning has been hampered by data gaps on post-primary teacher supply and demand (European Commission/EACEA/Eurydice, 2018b). The Teacher Supply Action Plan[149] published in November 2018 aims to: increase the numbers of teacher graduates, review school placement guidelines, promote the profession, collect data on the primary and post-primary sectors, and develop a recruitment portal for teachers by 2019/2020. Higher education institutions are to expand the number of places in undergraduate and postgraduate teacher education programmes from 1 650 in 2018 to 1 900 in 2019, and new programmes are proposed in the subject areas affected by shortages. The Action Plan for Education 2019 endorses the teacher supply plan, including baseline data collection and analysis, with a focus on immediate supply gaps. While pay levels for teachers at each stage of the career compare well with the rest of the EU, (European Commission/EACEA/Eurydice, 2018a), there is continued concern as teachers who entered the profession after 2010 are on lower pay scales. Unions argue that teacher recruitment difficulties result, at least partly, from this practice[150]. National surveys in 2018 confirm also low satisfaction among secondary school teachers[151] and school heads[152] caused

147 The Programme for Access to Higher Education Fund

148 See: https://www.irishtimes.com/news/education/teaching-initiative-aims-to-diversify-white-middle-class-profession-1.3464830

149 See: https://www.education.ie/en/Publications/Education-Reports/teacher-supply-action-plan.pdf

150 See: https://www.breakingnews.ie/ireland/minister-to-address-issue-of-pay-for-new-teachers-as-union-warn-of-recruitment-crisis-900082.html

151 2018 survey of members by second-level teacher trade union, the ASTI: https://www.rte.ie/news/education/2018/0327/950431-teachers-asti-survey/ , https://www.asti.ie/news/latest-news/news-article/article/survey-finds-increased-work-demands-impacting-teachers-job-satisfaction-and-wellbeing/

152 See: https://www.irishtimes.com/news/education/leadership-crisis-why-do-so-few-teachers-want-to-be-principals-1.3684293

mainly by heavy workload and stress. On 24 September 2018, an agreement was reached between the government and the public services committee of ICTU on accelerated incremental progression for teachers recruited since 2011.

Ireland continues to improve initial teacher education. All initial teacher education programmes that lead to registration must have professional accreditation from the Teaching Council of Ireland. Both primary and post-primary programmes were extended and reconfigured in accordance with the National Strategy to Improve Literacy and Numeracy among Children and Young People (2011-2020)[153] and the Teaching Council's Policy Paper on the Continuum of Teacher Education and Criteria and Guidelines for Programme Providers (2011). The increased duration allows for substantial periods of school placement. Specific minimum entry requirements for primary initial teacher education in Irish, English and Mathematics have been increased for entrants for Bachelor of Education programmes (2019) and the Professional Master of Education (2021). Since 2016/2017, *Droichead* became the induction route for newly qualified teachers. Its main objective is to support their professional learning through engagement with more experienced colleagues and reflection on professional learning and practice. As teachers have up to 36 months to complete *Droichead,* this induction moves quite seamlessly into continuing professional development (CPD).

CPD is considered both a right and a responsibility of teachers. This is specified in the Policy on the Continuum of Teacher Education[154]. *Cosán*, which is the national framework for teachers' learning since 2016, sets out the values, principles and standards that guide teachers' learning. National evidence shows that teachers engage in personal and professional learning in various ways: formal and informal, school-based and external to the school, individual and collaborative. However, as indicated in *Cosán*, teachers' learning needs to be monitored to ensure that this strong engagement keeps up with emerging needs. The Action Plan for Education 2019 commits to developing programmes to support specific curricular areas at primary and secondary levels and implementation of the junior cycle reform. The plan also commits to implementing the framework for professional development in STEM (science, technology, engineering, mathematics). It will be important to see how effective these supports are in equipping teachers to deliver the subjects concerned.

School heads receive structured support. Since 2016, support for school leaders has been largely provided by the Centre for School Leadership (CSL) through individual mentoring. In 2018/2019, CSL has matched 288 newly appointed principals with mentors. A new postgraduate Diploma in School Leadership jointly awarded by a consortium of third-level institutions was established in September 2018 at the request of the Department of Education and Skills (DES) and CSL. The programme is a part-time (18 months) blended learning professional diploma; it is open to approximately 300 participants annually.

Box 1: Improving initial teacher education

Ireland aims to further improve initial teacher education 'to provide practitioners with the right skills for 21st century teaching, learning and assessment'

The goals of the Action Plan for Education 2019 are ambitious. It states that 'leadership, management, quality frameworks, teaching methods, and initial and continuing training will be supported to operate to the highest standards across the spectrum of education and training provision, with a range of inspection and evaluation models providing transparency and quality assurance'.

Among the key actions planned for 2019 are measures to improve professional qualifications and standards within the early-years sector, in particular the development of a workforce development plan.

A new 'teacher workforce data model' should facilitate better planning of teacher supply and demand, and help to address teacher shortages.

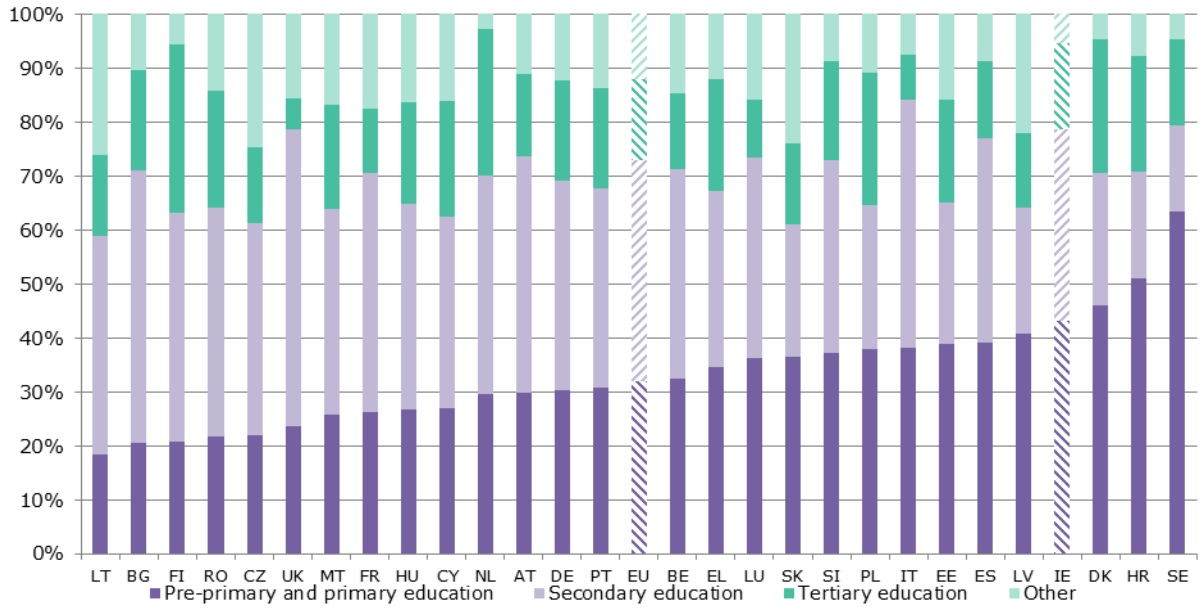
[153] See: https://www.education.ie/en/Publications/Policy-Reports/lit_num_strategy_full.pdf
[154] See: https://www.teachingcouncil.ie/en/Publications/Teacher-Education/Policy-on-the-Continuum-of-Teacher-Education.pdf

4. Investing in education and training

Ireland continues to increase expenditure on education. Public expenditure on education as a proportion of GDP is not a fully reliable indicator, given the specific structure of Irish GDP[155]. Measured as a percentage of the total public budget, Ireland spent 12.4 % on education in 2017, more than in 2016 (12.1%) and above the EU average (10.2%). In real terms, public spending on education increased by 3% between 2016 and 2017. Pre-primary and primary education received half of the new funding; the share devoted to this sector is among the highest in the EU (Figure 2). For 2019, Ireland has dedicated EUR 10.8 billion to education, up 7% from 2018. Preschool, primary and secondary education account for EUR 7.4 billion, up 5%; higher education accounts for EUR 1.6 billion, up 1%. The two largest percentage increases are for skills development, at EUR 436 million (up 16%), funded in part by the national training fund levy on employers, and capital services, at EUR 852 million (up 23 %) (Rogers, M., 2018).

Public expenditure on higher education remains insufficient compared to the rising number of students. While the number of higher education students increased by 15.5% between 2007-2009 and 2014-2016, total real public expenditure decreased by 12.5%[156]. In 2016, spending per third-level student (EUR 9 699.5) was the lowest since 2012, dropping by 16% against 2015 (EUR 11 557).[157] Recent research by the European Universities Association shows that Ireland is one of just two European countries where higher education is considered to be 'in danger' due to a funding shortfall and rising student numbers[158]. In 2018, Ireland decided to reform the funding model for higher education (DES, 2018b), but precise plans to address the need for significant additional spending as recommended by the expert review are still awaited[159] (Ryan J., 2018).

Figure 2 General government expenditure on education by level of education, 2017



Source: Eurostat. General government expenditure by function (COFOG)

Ireland has adopted the Action Plan for Education 2019. In March 2019, the Prime Minister launched *Empowering through Learning,* the Action Plan for Education 2019, which is part of the

155 Using GDP, the figure would be 3.3% in 2017, whereas using the GNI* specifically adapted to Ireland, it would be c. 5.3% (DG EAC own calculations based on Eurostat, UOE, 2017).
156 Eurostat, UOE, 2017. Online data codes: gov_10a_exp, educ_uoe_enra01 and educ_enrl1tl.
157 Eurostat, UOE, 2017. Online data code: educ_uoe_fine09.
158 See: https://www.irishtimes.com/news/education/third-level-system-in-danger-from-underfunding-and-rising-student-numbers-1.3775066.
159 The Action Plan for Education 2019 envisages undertaking, by end-2019, economic analysis of the options included in the Expert Group Report on Future Funding for Higher Education requested by the Joint Oireachtas Committee on Education. The preparation of the report is supported by the European Commission's Structural Reform Support Service.

DES's multiannual framework Strategy Statement 2019-2021 (DES, 2019). For 2019, the Action Plan sets out more than 280 actions, including a strategy for foreign languages[160], strengthening STEM subjects and increasing participation of women in STEM education. Other priorities include: supporting disadvantaged students and improving their access to higher education; the Teacher Supply Action Plan; review of the senior cycle following junior cycle reform; Irish-medium schools; and a renewed focus on apprenticeships and traineeships (Eurydice, 2019).

Early childhood education and care (ECEC) features strongly in the infrastructure investments set out in the National Development Plan (2018-2027)[161]. Public investment in early learning and care and school-age childcare (ELC and SAC)[162] will rise from EUR 486 million in 2018 to EUR 575 million in 2019. Cumulatively, in the last four budgets there has been a spending increase of 117% (Irish Government, 2019). It is planned that investment in ELC and SAC should at least double over the next decade, and a new funding model for sustainable financing is to be developed (Irish Government, 2019).

5. Modernising early childhood and school education

ECEC continues to feature prominently in Irish policy and programmes reform, which aim to improve accessibility, affordability and quality. In 2017, the ECEC participation rate for children 4+ reached 100%[163]. Access to the universal free pre-school programme has been extended to 2 years, while per-pupil subvention increases of 7% for providers in September 2018 are intended to support improvements in the quality of provision (Irish Government, 2019). Two major policy developments in this sector took place in 2018. Firstly, the Childcare Support Act 2018[164] provides for the establishment of the National Childcare Scheme[165], which will offer universal support to all families for children under 3, and an income-based subsidy to families with children aged 2-15. It starts in October 2019. Secondly, a broader 'First 5' strategy (2019-2028) launched in November 2018 aims to provide: a broader range of options for parents to balance working and caring; a new model of parental support; a new funding model for ECEC; and measures to support socio-economically disadvantaged communities (Irish Government, 2018). The strategy has been welcomed for its strong emphasis on addressing educational disadvantage. (The *Growing Up in Ireland* longitudinal study[166] showed wide socio-economic disparities in key school readiness and cognitive measures among 5-year olds.) The Childminding Action Plan due end-2019 will be important in bringing greater regulation of the childminding sector. The impact of these reforms will need to be monitored. In 2019, Ireland received a country-specific recommendation from the Council of the EU to 'Increase access to affordable and quality childcare' (Council of the European Union, 2019).

Ireland continues to perform well on early school leaving rates. The proportion of early school leavers in Ireland continues to decrease, reaching 5% in 2018, substantially below both the 8% Europe 2020 national target and the EU average of 10.6%. Latest research (Smyth et al., 2019) highlights that early school leavers have become more marginalised and will require intensive support to progress to employment and other forms of education and training. The government plans to offer a wider range of post-school options to learners, including by expanding the apprenticeship system to new sectors as set out in the Action Plan to Expand Apprenticeship and Traineeship in Ireland 2016-2020[167]. Apprenticeship registrations have grown by almost 80% over the first 3 years (Irish Government, 2019). Government statistics show that participation by Irish Traveller pupils in education drops off sharply after the junior certificate cycle, indicating that the rate of school dropout remains high for this group (DES, 2017).

Ireland is investing in digital skills, IT infrastructure in schools and online safety. Under the Digital Strategy for Schools 2015-2020 total funding for information and communications

160 Ireland has one of the EU's lowest proportions of pupils in compulsory education learning two or more languages.
161 See: https://www.gov.ie/en/publication/83fec4-national-development-plan/
162 ELC - care and education for children aged 0–6; SAC - non-scholastic, structured programme offerings for school children aged 4–12 years, provided by childminders or in formal settings, outside of normal school hours.
163 ECEC participation includes participation in primary schools as well as ECEC centres.
164 Childcare Support Act 2018, No 11/2018: https://www.oireachtas.ie/en/bills/bill/2017/153/
165 See: https://www.dcya.gov.ie/docs/EN/11-03-2019-National-Childcare-Scheme/5189.htm
166 See: https://www.growingup.ie/
167 See: https://www.education.ie/en/Publications/Policy-Reports/Action-Plan-Expand-Apprenticeship-Traineeship-in-Ireland-2016-2020.pdf

technology (ICT) infrastructure has reached EUR 110 million. This sits alongside other supports, (e.g. the Digital Learning Framework and Digital Learning Planning Resource) to help schools embed digital technologies in their work. One of the key challenges is to teach students digital critical thinking and online safety (Mooney, 2018). As OECD notes, digital technology 'poses a major risk of widening social inequality and blocking opportunities for people without the skills to navigate the online world safely' (OECD, 2019). In July 2018, the government launched the Action Plan for Online Safety and in March 2019 and the Minister for Communications announced plans for an Online Safety Act and the appointment of an Online Safety Commissioner. These measures have been welcomed given the high rates of cyber-bullying and extreme internet use among Irish teenagers (Edwards, E., 2019). The Action Plan for Education 2019 highlights the importance of increasing students' digital abilities. This is to be achieved by developing i) 'Technology Enhanced Learning Plans' in the Education and Training Boards and ii) digitised and online services.

6. Modernising higher education

Ireland is striving for better gender balance in higher education, both among staff and students, particularly in STEM subjects. In 2018, the tertiary attainment rate reached 56.3%, one of the highest in the EU (EU average: 40.7%). The gender gap has been closing recently, dropping to 8.7 pps, which is better than the EU average of 10.1 pps (Figure 3). In November 2018, the government launched a Gender Equality Action Plan for Higher Education Institutions, to be supported by the new Centre of Excellence for Gender Equality. The proportion of STEM graduates in 2017 was 23.9% (EU average: 25.8%). It is estimated that women make up just 25% of people working in STEM-related jobs (DES, 2016). Two national initiatives on improving gender equality among STEM students have been operational since 2015. The 'I Wish' initiative aims to build confidence among women at second level and raise awareness of STEM learning and career opportunities. The second, 'A World of Opportunities', run by Dublin City University, provides a STEM careers guide for parents, teachers and students. Following the Technological Universities Act that came into force in March 2018, the first Technological University has been established, which was welcomed by stakeholders.

Figure 3 Gender gaps in tertiary educational attainment in Ireland and the EU (2009-2018)

Source. Eurostat, Labour Force Survey. Online code: edat_lfse_03

Progress has been made in improving access to higher education for under-represented groups. A progress review of the National Access Plan (DES, 2018a) found progress in improving access to higher education for students with disabilities (from 6% of all new entrants in 2012/2013 to 10% in 2016/2017[168]). The same goes for students from socio-economically disadvantaged groups (proportion of students from the semi/unskilled manual worker group: from 26% in 2012/2013 to 36% in 2016/2017; proportion from the non-manual worker group: from 23% in 2012/2013 to 27% in 2016/2017). This was achieved in the context of a marked increase in overall student numbers (new entrants rose from 41 413 in 2012/2013 to 43 569 in 2016/2017) and with significant additional investment (more than EUR 16 million over 3 years via PATH). However, key challenges remain, including difficulties in meeting targets set for mature students[169] and Irish Travellers[170]. An action plan to increase Traveller participation will be developed as the next phase to the NAP (Irish Government, 2019). A study of mature student participation in higher education will also commence towards the end of 2019.

7. Modernising vocational education and training

Expansion of the apprenticeship system is continuing, increasing the number of programmes and attracting more apprentices. VET is rarely seen as a post-secondary route in Ireland and only 10.3% of upper secondary graduates took VET programmes in 2018. All of them benefited from a period of work experience during their programme and their employment rate rose from 71.9% in 2017 to 76.9% in 2018 (EU average: 79.5%). The action plan to expand apprenticeship and traineeship[171] aims over 2016-2020 to increase apprenticeship places to 31 000 (from 12 000) and apprenticeship programmes to more than 70 (from 27). In 2018, 5 648 new apprentices were registered, against 4 843 in 2017. Currently, 20 new apprenticeship programmes are operational, and a further 36 are in development.

8. Developing adult learning

During 2018, a number of initiatives were introduced to support upskilling[172] **and adult participation in learning and training.** The proportion of low-qualified adults decreased from 17.5% in 2017 to 16.8% in 2018 while the employment rate among this group rose from 51.3% to 52.3%. However, there are still 420 000 low-qualified adults, well in excess of the estimated 190 000 elementary jobs available. Substantial progress was made in overall adult participation in learning, which increased from 9% in 2017 to 12.5% in 2018. The Skills to Advance employee development policy launched in 2018 offers targeted support for vulnerable groups in the workforce, particularly for employees with skills below level 5 on the national framework of qualifications, i.e. European Qualification Framework (EQF) 3. The policy aims to have over 40 000 workers engaged in state supported skills development by 2021. The EXPLORE programme is a pilot developed by the Regional Skills Fora in 2018 to address the lack of transversal and digital skills among people over 35 in manufacturing employment and the key issue of skills obsolescence. Springboard+ continues providing higher education upskilling and reskilling opportunities for those in employment, the unemployed and returners to work. The 'Skills for Growth audit tool' will make it easier for small and medium-sized businesses to identify their existing and future skill needs. Regional Skills Fora are partnering companies with the education and training system to increase the reach of skills audits. Nevertheless, the greatest need for improvement is among older workers in employment and among low-skilled workers, regarding transversal and digital skills. The 2019 country-specific recommendation that Ireland received from the Council of the EU calls on it to 'Provide personalised active integration support and facilitate upskilling, in particular for vulnerable groups and people living in households with low work intensity (Council of the European Union, 2019[173]).

168 In 2017/2018, participation reached 10.5%
169 Above 23 years old
170 Ireland has set a target of 80 students participating in higher education by 2019, which is unlikely to be met (in 2017/2018 there were 61)
171 See: http://www.solas.ie/SolasPdfLibrary/ActionPlanDec16.pdf
172 See: European Council Recommendation on Upskilling Pathways (2016) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AJOC_2016_484_R_0001
173 See: https://ec.europa.eu/info/sites/info/files/file_import/2019-european-semester-country-specific-recommendation-commission-recommendation-ireland_en.pdf

The review of the National Training Fund (NTF) was completed and reforms reflected in the 2019 budget. It provides additional funding to continue expanding apprenticeships and traineeships, upskilling and reskilling opportunities, including Springboard. It also supports Skillnet Ireland in addressing skills gaps. The government has ring-fenced EUR 300 million of the NTF surplus from 2020 to 2024 with a view to transforming the NTF into a strategic, enterprise-focussed response to the skills needs of the economy.

There are 10 Further Education Teacher (FET) qualifications accredited by the Teaching Council of Ireland. These are offered at degree/post-graduate levels (EQF levels 6-7) through universities, Institutes of Technology and Teacher Training Colleges. SOLAS, the FET authority, funds a number of organisations to provide professional development services to the FET sector. The Further Education and Support Service provides national, regional and local professional development workshops. The Waterford Institute of Technology/National Adult Literacy Agency accreditation project designs and delivers nationally recognised programmes.

Developments concerning teachers and trainers are guided by the 2017-2019 FET professional development strategy. Staff at Education and Training Boards are trained to identify training needs within companies. Programmes have also been developed for FET practitioners to improve teachers' technology-enhanced learning[174] practices and tailor approaches to the needs of different types of learners. Workplace supervisors from 31 companies offering traineeship places were trained on how to provide structured work-based learning support to learners.

Box 2: Employment for People from Immigrant Communities (EPIC) programme

The EPIC programme, co-financed by the European Social Fund (ESF), supports business and government to help immigrants find employment and education in Ireland.

The overall objective of the programme, running from 2017 to 2021, is to promote active inclusion, equal opportunities, active participation and to improve the employability and integration of migrants. It supports disadvantaged and vulnerable migrants, including those distant from the labour market, to raise their skills and actively helps them to find employment and training opportunities including work placements and mentoring.
Participants in EPIC are disadvantaged migrants from the European Economic Area and beyond who are legally entitled to work in Ireland.

The ESF contribution is EUR 962 500. See: https://www.bitc.ie/business-action-programmes/business-action-on-employment/are-you-a-jobseeker/

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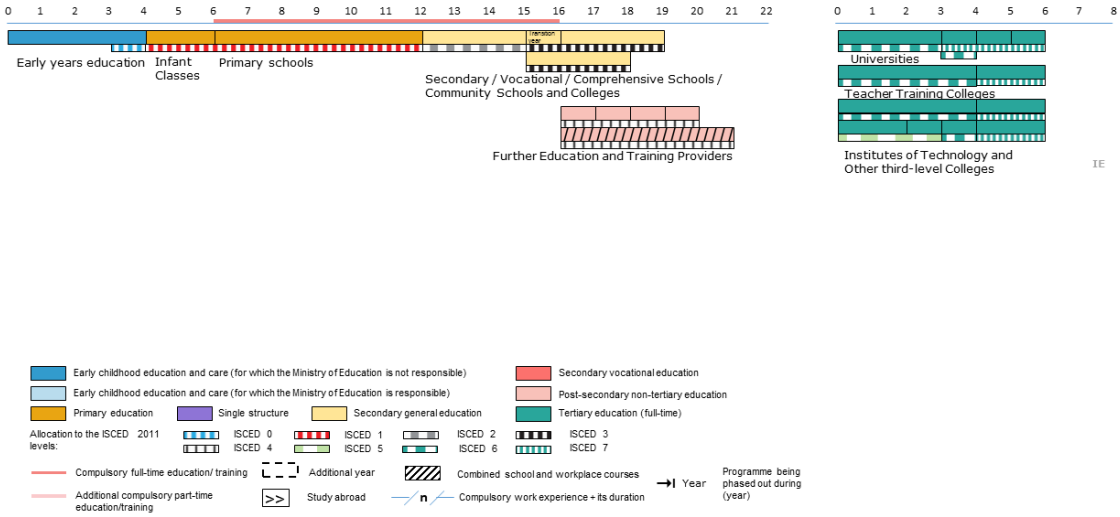
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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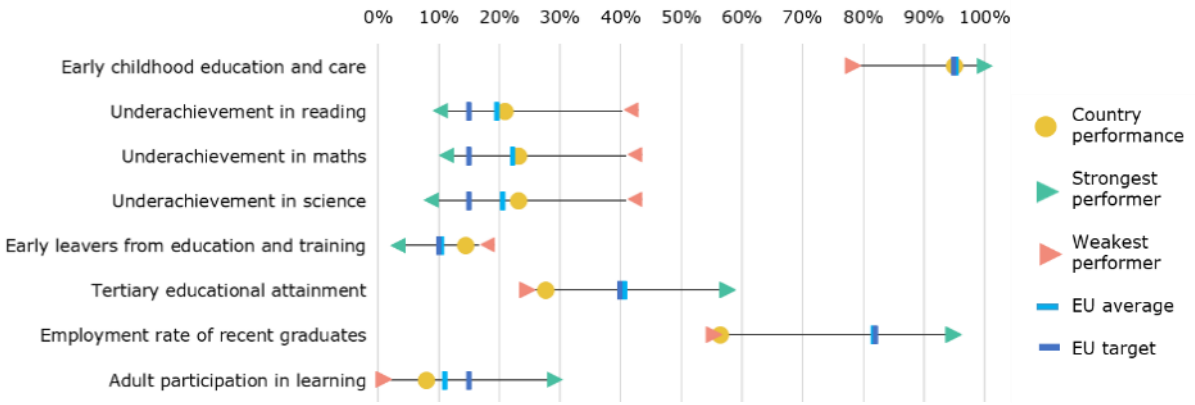
ITALY

1. Key indicators

			Italy		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			19.1%	14.5%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			19.0%	27.8%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			99.8%	95.1% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		21.0%	21.0% [15]	19.5% [EU27]	19.7% [15]
	Maths		25.0%	23.3% [15]	22.3% [EU27]	22.2% [15]
	Science		20.6%	23.2% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		60.6%	56.5%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		6.0%	8.1%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	4.4% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	9.1% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.6%	3.8% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€4 609 [12]	€5 380 [16]	:	€6 111 [15,d]
		ISCED 1	€5 805 [12]	€5 814 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€6 665 [12]	€6 470 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	: [12]	€6 822 [16]	:	€7 730 [14,d]
		ISCED 5-8	€7 771 [12,d]	€8 431 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		16.6%	12.0%	13.1%	9.5%
	Foreign-born		42.1%	35.2%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		20.0%	31.4%	33.1%	41.3%
	Foreign-born		12.9%	14.0%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		55.9%	50.3%	72.5%	76.8%
	ISCED 5-8		66.1%	62.8%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) on UOE data. Further information can be found in Section 10 and Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, : = not available, 12= 2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 18 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Italy invests well below the EU average in education, particularly in higher education.
- The share of teachers satisfied with their jobs is among the highest in the EU, but only a small share believe that theirs is a valued profession.
- Compulsory work-based learning in vocational education and training could help provide more structured training for apprentices and ease the transition from education to work.
- The level of tertiary educational attainment is low, and the transition from education to work remains difficult, even for highly qualified people.

3. A focus on teachers

Italy has the oldest teaching workforce in the EU. As a high share of teachers in Italy are approaching retirement age, renewing the teaching body is a major challenge. In 2017, more than half (58%) of primary and secondary teachers (ISCED 1-3) were over 50 years old (against 37% in the EU), and 17% were over 60 (EU: 9%)[175]. This means that, on average, 3.8% could retire each year for the next 15 years. Italy also has one of the largest proportion of female teachers, though (like in other countries) it decreases with educational level taught: in 2016 it ranged from 99% in pre-primary school to 63% in upper secondary education and 37% in universities.

Procedures for selecting and hiring teachers were repeatedly modified over the last decade, but so far have not succeeded in ensuring a reliable supply of qualified teachers. The massive wave of recruitments in recent years (over 150 000 since 2015) has had little or no impact on teachers' average age, and did not reduce the problem of teachers' allocation in secondary schools due to a lack of candidates with relevant qualifications (most acute in the sciences)[176]. The 2015 school reform introduced a strong initial education and training component (*percorso FIT)* and clear employment prospects, with the aim of cutting long waiting lists and meeting future teacher requirements through forward planning, but the reform was not fully implemented. The 2019 budget law abolished the *FIT* system and reinstated centrally-administered public competitions open to all graduates[177], reducing the training component to a one-year induction period giving access to tenure. The competition will be organised at regional level, and those selected will be required to spend at least five years in the region of appointment to reduce teacher turnover. Its effectiveness in ensuring an adequate supply of teachers will depend on the ability of the Ministry of education, university and research (MIUR) capacity to organise the competitions as planned, every two years.

Limited career prospects, coupled with relatively low salaries compared to those of other highly qualified professions, make it difficult to attract the best-qualified graduates. The teaching career system offers only a single career pathway with fixed salary increases based solely on seniority. In the absence of performance-related incentives, mobility across schools remains the only possibility to improve working conditions. As a result, schools in disadvantaged areas tend to be deprived of the best teachers and staffed with young, inexperienced teachers on temporary contracts. Teachers' statutory salaries are lower than the OECD average at every career stage. The seniority-based career system means that teachers can only reach the maximum salary after 35 years of service; the OECD average is 25 years. Teachers' salaries are also lower than the earnings of other workers with a tertiary education. The wage freeze for public-sector employees, still in place since 2010, continues to have a detrimental impact on teachers' purchasing power. The salaries of teachers entering the profession in 2016/17, in real terms, were around 94% of the salaries in 2009/10 (European Commission/EACEA/Eurydice 2018b). Nevertheless, according to the OECD Teaching and Learning International Survey (TALIS) 2018[178], the proportion of teachers

[175] Source: Eurostat (UOE) 2017. Online data code: educ_uoe_perp01. Unknown age category not included in the calculation.
[176] The majority of appointments (over 85 000) were to regularise long-term temporary teachers, following a ruling by the Court of Justice of the European Union (*Judgment in Joined Cases C-22/13, C-61/13, C-62/13, C-63/13, C-418/13 Raffaella Mascolo and Others v Ministero dell'Istruzione, dell'Università e della Ricerca*).
[177] With a master's degree and 24 credits in pedagogical subjects.
[178] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal,

satisfied with their job is the second highest in the EU, at 96% v 89.5%. Overall, 87% of teachers say that if they could decide again, they would still choose to become a teacher (compared with an EU average of 77.6%), but only 12% believe that teaching is a valued profession in society (OECD 2019). This apparent contradiction can be explained by the attractiveness of the profession in terms of scope to reconcile private and professional life[179], which makes teaching attractive especially to women (Argentin 2018).

There are teacher shortages in some subjects and regions and oversupply in others. Teacher shortages are most acute in disciplines like science and maths, foreign languages and learning support, and in the north of the country. While most teachers (80%) are from the south, most teaching posts are available in schools in the north, and cannot be filled on a permanent basis due to excessive teacher turnover. The government has announced new measures to curb teacher transfers from the next school year. Indirect evidence of persistent teacher shortages is the share of teachers on temporary contracts (*'supplenti'*, or substitute teachers). In the 2018/19 school year, they numbered 164 000, or 18.5% of the total, up from 135 000 the previous year[180]. As the vast majority of temporary teachers has no automatic right to fill the same post the following school year, this corresponds to an expected turnover rate exceeding 20%, factoring in expected retirements[181].

Continuing professional development is defined by law as a 'professional duty' of teachers, but there is no minimum number of compulsory hours. The 2015 school reform introduced the principle of compulsory continuing professional development, allocating earmarked funds to access additional educational resources (books, theatre, exhibitions, ICT, courses etc.). The reform also introduced in-service teacher appraisals, with a view to awarding bonuses worthy teachers in every school type and level (European Commission 2018 ETM). School leaders receive funding of an average of EUR 200 per teacher per year, depending on the type of school and area, with ex-ante criteria covering the award and amount of the bonus. After three years of trialling this initiative, the government is expected to enact formal criteria for awarding the bonus and to make permanent provision to fund the initiative. Only teachers on permanent contracts are subject to (bonus-related) appraisals; teachers on temporary contracts are not evaluated. There are no measures to address insufficient performance

School leaders are relatively well paid. They have a distinct career profile from teachers, and a different statutory salary range. School leaders (*dirigenti scolastici)* are selected and recruited through *ad hoc* public competitions open to teachers with at least 5 years' teaching experience. In 2018, the government aligned the professional status of school leaders to other public administration managers. This is reflected in their remuneration: while school heads' salaries are still lower than those of other public managers, they are now significantly higher than those of teachers (between 50% and 100% higher, depending on seniority). Salaries are defined according to criteria relating to the school district (number of schools and number of foreign students).

4. Investing in education and training

Italy's investment in education is low and unevenly spread across education levels. General government expenditure on education, both as a proportion of GDP (3.8%) and as a proportion of total general government expenditure (7.9%), was among the lowest in the EU in 2017[182]. While the share of GDP allocated to pre-primary, primary and secondary education (ISCED levels 0-3) is broadly in line with EU standards, expenditure on tertiary education is the lowest in the EU, at just 0.3% of GDP in 2017, well below the EU average of 0.7%. The Council of the European Union adopted a country-specific recommendation for Italy under the 2019 European Semester to 'improve educational outcomes, also through adequate and targeted investment, and foster upskilling, including by strengthening digital skills.' (Council of the European Union, 2019). At 77%, the share of government education expenditure for the compensation of employees is among the highest in the EU.

Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

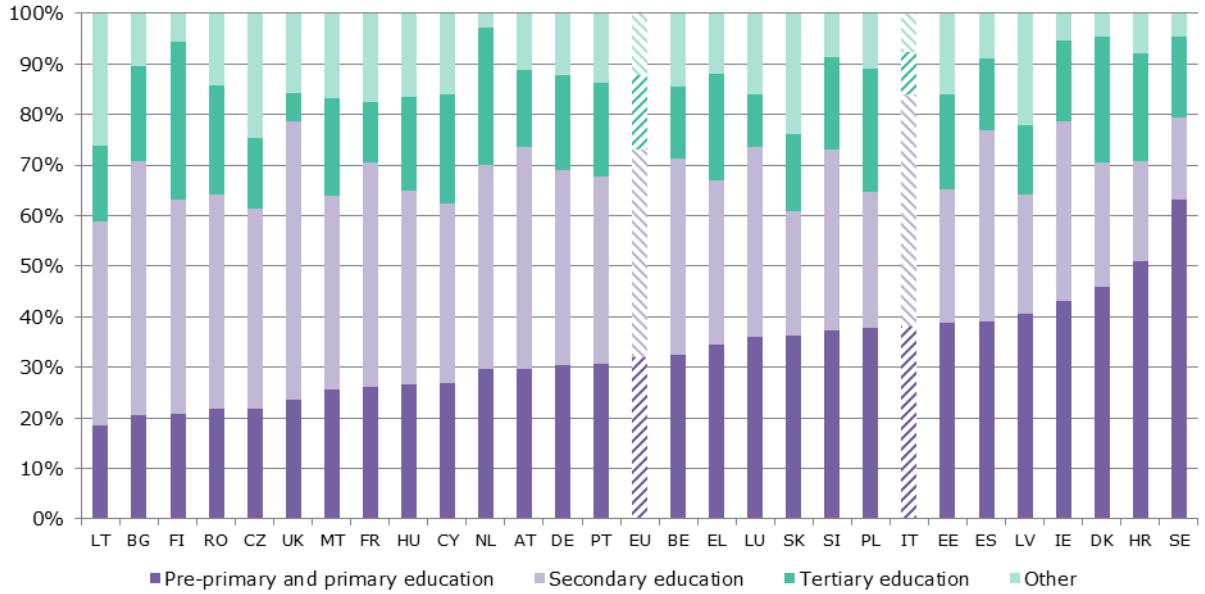
179 Italian teachers report that they spend on average 17 hours per week teaching and 5 hours preparing lessons (TALIS). There are no statutory hours to be spent in school beyond teaching hours.

180 Source: MIUR statistical office.

181 See Eugenio Bruno e Claudio Tucci, *Quota 100, fuga dalla scuola: a settembre serviranno 140mila docenti*, Il Sole 24 Ore, 7 March 2019.

182 Source: Eurostat, General government expenditure by function (COFOG).

Figure 2 Expenditure by education level, 2017



Source: Eurostat, COFOG.

The share of GDP spent on education is projected to fall over the next 15 years according to the government's own forecasts. The Ministry of the economy and finances (MEF) estimates that the share of GDP spent on education will fall from 3.5% in 2019 to 3.1% in 2035, reflecting demographic decline (MEF, 2019). Among the priorities for 2019, the Minister of Education has announced an increase in resources for universities and research centres, through centrally-funded plans for the recruitment of assistant professors (*ricercatore di tipo B*, a tenure-track position of associate professorships) and for attracting Italian academics working abroad back to Italy.

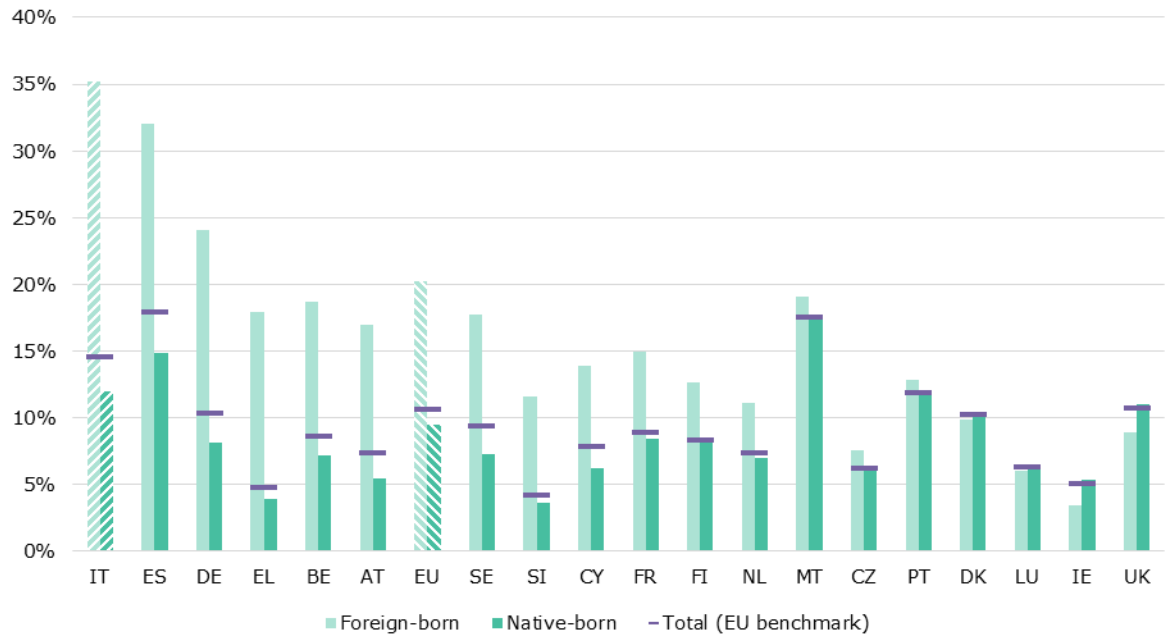
5. Modernising early childhood and school education

Participation in early childhood education and care (ECEC) is almost universal for 4- to 6-year-olds, but access for younger children is low and uneven across the country. At 96%, participation in ECEC for children aged between 4 and 6 in 2017 exceeded both the EU average (95.4%) and the EU benchmark of 95%. For children below three, in 2016/17 there were 13 147 ECEC institutions offering around 354 000 places, just over half of them public. This represents a coverage of 24% of 0-3 year-olds, well below the EU target of 33% coverage. The ECEC offer and average spending by municipalities vary significantly across the country. Coverage ranges from 7.6% of eligible children in Campania to 44.7% in Valle d'Aosta. Spending per child varies from EUR 88 per year in Calabria to EUR 2 209 per year in the autonomous province of Trento. The 2015 school reform signalled a change in perspective on ECEC, shifting the focus from labour market and social policy objectives to education through an `integrated education system from 0 to 6´. The reform is being implemented, with funding of EUR 209 million in 2017, EUR 224 million in 2018 and EUR 239 million in 2019.

After falling steadily for a decade, the early school leaving (ESL) rate rose slightly in 2018, mostly due to a sharp increase among foreign-born people. The total share of early school leavers among 18-24 year-olds in 2018 was 14.5%, up 0.5 pps from 2017. This is below Italy's Europe 2020 target but above the EU average of 10.6%. Although the early school leaving rate for native-born people was unchanged since the previous year (12%), the rate for foreign-born people rose from 30% in 2017 to 35% in 2018, well above the EU average of 20.2%. This is due to the growth of foreign-born students enrolled in the Italian educational system (+1.9%), balancing the decline in native students (-1.2%)[183].

[183] MIUR, *Gli alunni con cittadinanza non italiana A.S. 2017/2018*, July 2019

Figure 3 Early school leaving rate by country of birth, 2018



Source: Eurostat, LFS.

Regional differences are marked. At 19%, the ESL rate in the south and in the islands is significantly higher than in the north (11%). A similar gap can be observed in basic skills proficiency as measured by the 2015 OECD Programme for International Student Assessment (PISA) and the annual standardised student tests by the National Agency for School Evaluation (INVALSI), with the north consistently and significantly outperforming the south (European Commission 2018). Many factors contribute to these gaps, including differences in student socio-economic background and different returns to education between regions.

The government continues to revise the measures introduced by the 2015 Education Act (*la Buona Scuola*). It put in place a revised system of teacher recruitment (see Section 3), reduced work-based learning to sharpen its focus on the competences required by the labour market, and postponed by one year the planned introduction of a final competence test at the completion of grade 13, with participation to remain voluntary (making it unrepresentative and therefore unusable for evaluation purposes). The content of teaching has been enriched by hiring extra music and gym teachers, with the stated aim of reducing early school leaving. More resources (EUR 35 million) have been invested in implementing the National Plan for Digital Schools, to create new digital learning environments (EUR 22 million), additional teacher training (EUR 7.5 million), and funding for problematic areas (EUR 2 million for 60 schools in the most deprived areas). Further measures target the two national agencies for evaluating the school system (Invalsi) and higher education and research (ANVUR), which will be integrated into the MIUR in a move which, by curtailing their independence, risks jeopardising all previous efforts to create an evaluation culture in the education system.

Negotiations are underway between the government and three northern regions on an agreement which would decentralise responsibility for some public services, including education. Lombardy, Veneto and Emilia-Romagna have applied for full responsibility for a number of functions currently coordinated by central government, including education. The applications were made under a provision (*autonomia differenziata*) in the Italian constitution never previously applied. The implications of this are as yet unclear, but there are concerns it might exacerbate the north-south educational divide. A key issue will be funding: autonomous regions would receive a standard student cost per pupil from the central budget multiplied by the relevant population, but a standard budget allocation per pupil has yet to be set. Given economies of scale in more populous areas and the financial support granted to schools by municipalities, there is a concern that pupils in the north would benefit from more resources (e.g. better infrastructure, better-paid teachers) than pupils in the south, compromising the equal right to good quality education enshrined in the constitution.

Box 1: Measuring student competence levels over time with European Social Fund support

INVALSI, Italy's national institute for the evaluation of the education and training system, runs a project on 'Diachronic and longitudinal measurement of students' competence levels'. The aim is to evaluate the competence levels of pupils in Italian and maths. The new feature of this project is its aim to go beyond the standard one-off yearly evaluations that only allow comparisons the yearly average to build a system that evaluates pupils' progress over time, from the start of primary to the completion of upper secondary education. The project will collect data both at a) micro-social level, so that each school can draw information on the effectiveness of their pedagogical and organisational systems, and b) macro-structural level, on the whole education system, to support policy makers by providing them with a solid evidence base.

Number of recipients:

- pupils and students: 50 000
- classes: 3 500
- schools: 1 300
- teachers: 3 500

Funding: EUR 14 760 930 from the National operational programme 'Per la Scuola'
Launch and duration: from 16/12/2015 to 31/12/2023

Website: https://invalsi-pon1420.cineca.it/index.php?get=progetto

6. Modernising higher education

Despite improvements in completion rates and in the average duration of studies[184], Italy's tertiary educational attainment rate continues to lag significantly behind the rest of the EU. In 2018, the share of 30-34 year-olds with tertiary educational attainment was the second-lowest in the EU at 26.9%, well below the EU average of 39.9%. It is particularly low among the foreign-born population, at 14% against the EU average of 37.8%. Family background is a determining factor: 30% of those who graduated in 2018 have at least one tertiary-educated parent, a proportion that rises to 43% for five-year degree courses (e.g. medicine, engineering and law) (AlmaLaurea 2019).

It is difficult for highly qualified people to find employment, resulting in a growing number of university graduates emigrating. The employment rate of recent tertiary graduates[185], which fell sharply during the economic crisis[186], has been slowly recovering since but remains one of the lowest in the EU at 62.8% in 2018, well below the EU average of 85.5%. Italian graduates increasingly seek employment abroad: in 2017, 28 000 university graduates moved abroad, up 3.9% since 2016 (and up 41.8% since 2013)[187].

The relatively high cost of tertiary education coupled with low returns on education discourages many from pursuing higher education studies. University fees in Italy are high by EU standards, and student support is low. About 90% of students pay fees averaging EUR 1 345 per year for first-cycle studies and EUR 1 520 for second-cycle studies. In the academic year 2016/17 the share of students who received grants based on economic need and academic merit was 11.6% of the total. Although publicly-financed study loans are available, take-up is negligible at about 1% (European Commission/EACEA/Eurydice 2018a). To raise tertiary attainment levels, the government is considering widening the fee-exemption system introduced in 2017 for students with an ISEE[188] declaration of up to EUR 13 000. In the same vein, it announced its intention to abolish selective admissions (*numero chiuso)* in several faculties, starting with medicine, and to reorganise arts and musical education (AFAM-*Alta Formazione Artistica e Musicale*), which will require a formal reorganisation of the recruitment system for teachers.

184 The average age at graduation in 2018 was 26, down from 27 in 2008. 54% of graduates completed their studies within the prescribed timeframe (up from 39% in 2008).
185 People aged 20-34 who left education between one and three years before the reference year.
186 From 70.5% in 2008 to 52.9% in 2014 (source: Eurostat).
187 Istat.
188 The Equivalent Economic Condition Indicator to assess a family's economic condition.

The fall in academic staffing levels shows no sign of reversal. With over a fifth of academic staff over the age of 60 (and only 14% under 40)[189], further increases in enrolments in higher education will also depend upon the capacity to renew the teaching body. In 2019 the government has allocated additional funding for 1 500 tenure-track positions for assistant professors (*ricercatore universitario di tipo B*), to be distributed among public universities based on their size and, to a lesser extent, on the quality of their research[190].In addition, turn-over limitations were eased for financially robust universities. Institutions with a salary expenditure below 80% of the budget and with a positive income/salary expenditure ratio can recruit up to 110% of the previous year's retirements. These measures may help, but are too limited in scope to effectively address low teaching staff levels over the longer term. A more substantial reversal may start as of 2020, when the government plans to increase funding to universities by EUR 100 million a year (equivalent to 1 000 new positions a year).

The government is taking steps to expand the non-academic tertiary sector. Extra funding of EUR 23 million has been allocated to expand the course offer of *Istituti Tecnici Superiori* (ITS), tertiary-level vocational institutions that offer better employment prospects (European Commission 2018) but which, with around 13 400 students, remain a *niche* phenomenon. The first vocational university degrees (*lauree professionalizzanti)* were launched in 2018 alongside the ITS (see Box 2).

Box 2: New vocational tertiary degree courses

A new type of vocational tertiary degree (*lauree professionalizzanti)* is being piloted in Italian universities as of 2018/19. Fourteen three-year degree courses were launched in as many universities, evenly distributed across the country, offering 700 places in total. The objective is to train tertiary-educated highly specialised professionals in engineering, construction and the environment, and energy and transport, in close cooperation with professional associations. The courses are modelled on the German *Fachhochschüle.* They consist of two years of academic studies plus one year of work-based learning. Universities can offer from a minimum of three courses to a maximum not exceeding 10% of their total course offer. The number of available places (maximum 50 per course) is set on a local basis. With their strong vocational orientation, the new *lauree professionalizzanti* are a positive step towards creating a non-academic tertiary education sector, which Italy has lacked. Currently, 42% of Italian university students graduate with no practical training or work experience (Almalaurea 2019). By opening new paths into tertiary education, particularly for upper secondary VET graduates, the new degrees could also help lower Italy's early school leaving rate and raise the tertiary educational attainment rate.

7. Modernising vocational education and training

Enrolment in upper secondary VET remained fairly stable in 2017 compared with previous years. 55.3% of upper secondary students were enrolled in vocational programmes, above the EU average of 47.8%[191]. The level of employability of recent VET graduates rose slightly in 2018, to 53.9% vs. 50.8% in 2017 but is still substantially below the EU average of 79.5% in 2018[192]. A first analysis by the regions of the pilot projects for compulsory dual work-based learning in VET shows that participants are mostly final-year students and, to a limited extent, apprentices. While it is too early to draw conclusions, the pilot projects might ease the transition from education to the labour market and provide a more structured training offer for apprentices.

Following the adoption of the Italian Qualifications Framework (QNQ) in January 2018, a new classification of qualifications was developed. The National Repertory of Education and Training Qualifications and Professional Qualifications was created, covering qualifications from general education, higher education and VET qualifications administered at regional level.

Italy is updating its recruitment system of VET teachers. New requirements include knowledge of psychological and pedagogical disciplines, didactic methodologies and technologies, certified by specific university exams. Initial training for VET trainers is not regulated at national

189 Source: Eurostat.
190 Ministerial Decree n. 204/2019.
191 Source: Eurostat, UOE, 2017.
192 Source : Eurostat, Labour Force Survey, 2018.

level and Italy lacks a nationally recognised register of trainers or formal recruitment procedures. The National Collective Labour Contract sets minimum requirements for access to the training profession: a degree or upper-secondary school diploma plus related professional experience in the relevant sector.

8. Developing adult learning

The share of adults without an upper secondary qualification is high, and participation in adult learning is low. In 2018, 38.3% of Italian adults aged 25-64 had at most a lower secondary qualification, compared with the EU average of 21.9%[193], and only 8.1% of adults aged 25-64 had a recent learning experience (in the previous 4 weeks), compared with the EU average of 11.1% (LFS, 2018). The low participation rate of low-qualified adults to training (2%) is a concern given the mismatch between the number of jobs requiring low qualifications (2.5 million in 2017) and the number of low-qualified adults (over 12 million)[194].

Italy is fostering training schemes for the unemployed. The most relevant policy measure for adult learning is the anti-poverty strategy, designed to promote social inclusion[195]. So far around 800 000 people have applied for the scheme (April 2019). Connected to it, the government plans to invest in developing the public employment services (PES). Recipients must follow training activities during the unemployment period. The implementation of this measure involves the recruitment of 10 000 'navigators' (career counsellors); selection procedures for the first navigators are ongoing. In parallel, new policy measures were developed to train adult educators[196], introducing the qualification of 'socio-pedagogical professional educator'. Universities are directly involved in planning and managing the training offer.

Italy lacks a common regulatory framework for adult learning professionals. The adult educators' category comprises a wide range of professions, divided into numerous professional sectors in different fields: education, adult vocational training, continuing training of adults for and in organisations, non-formal educational schemes, and social-sector and public-sector services.

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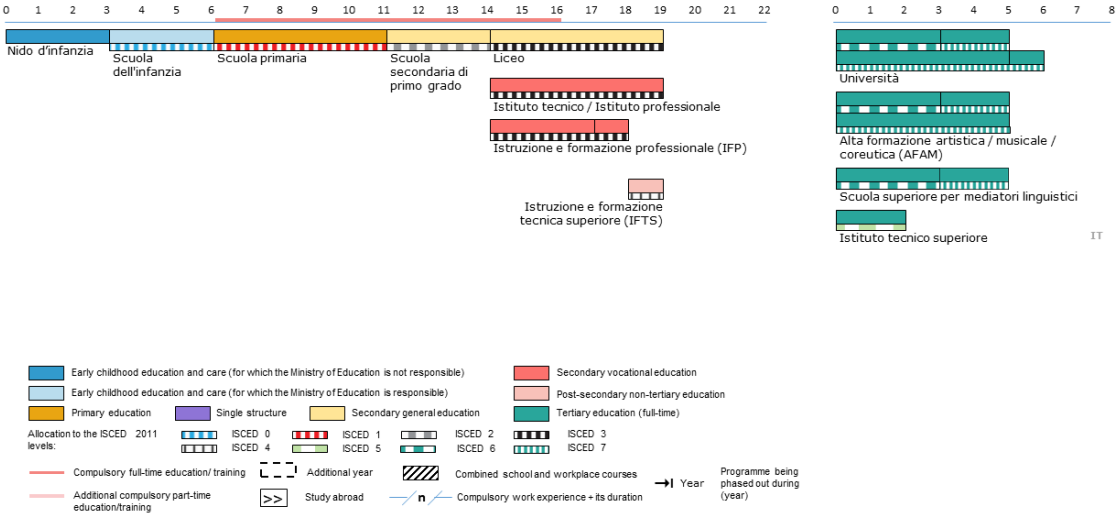
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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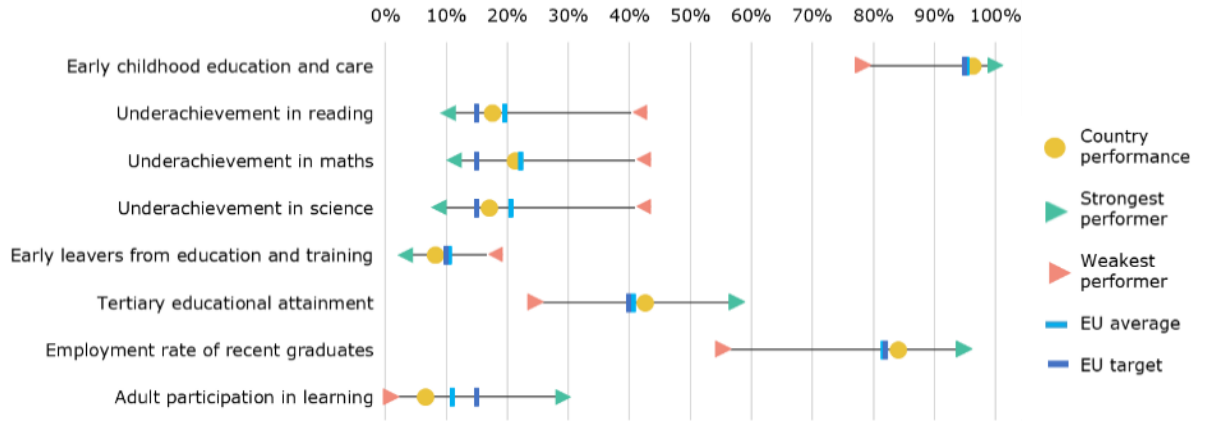
LATVIA

1. Key indicators

			Latvia		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			14.3%	8.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			30.5%	42.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			91.7%	96.3% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		17.6%	17.7% [15]	19.5%	19.7% [15]
	Maths		22.6%	21.4% [15]	22.3%	22.2% [15]
	Science		14.7%	17.2% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		69.7%	84.1%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		5.6%	6.7%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	8.5% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	7.2% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.7%	5.8% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€4 706 [12]	€4 055 [16]	:	€6 111 [15,d]
		ISCED 1	€5 352 [12]	€4 693 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€5 393 [12]	€4 730 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€5 684 [12]	€5 135 [16]	:	€7 730 [14,d]
		ISCED 5-8	€8 072 [12,d]	€5 408 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		14.3%	8.4%	13.1%	9.5%
	Foreign-born		: [u]	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		30.9%	42.4%	33.1%	41.3%
	Foreign-born		: [u]	50.7%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		57.7%	75.0%	72.5%	76.8%
	ISCED 5-8		80.4%	91.3%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) on UOE data. Further information can be found in Section 10 and Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u = low reliability, := not available, 12= 2012, 14, 2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 19 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

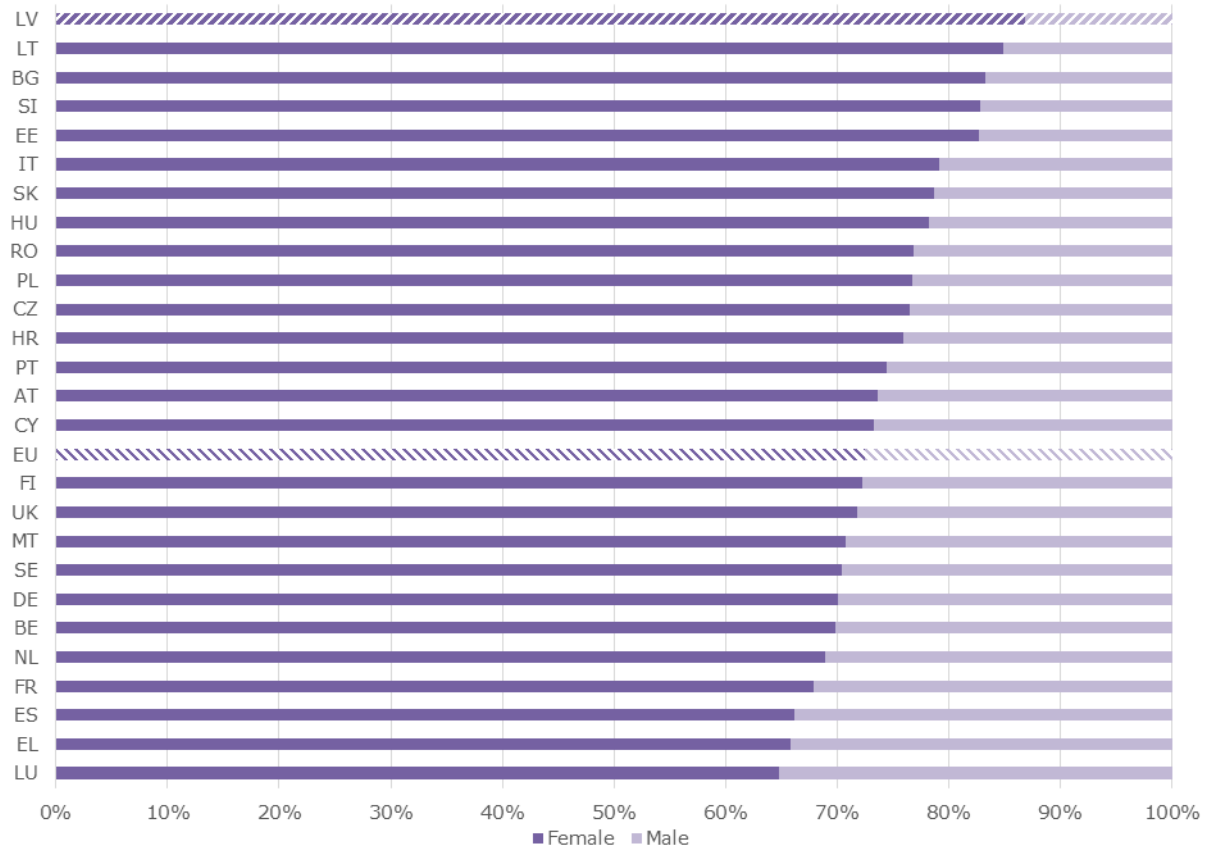
2. Highlights

- Latvia has already met and exceeded its Europe 2020 education targets.
- Latvia should achieve further improvements in learning outcomes through the new competence-based curriculum, a stronger individual approach to students at risk and support for inclusion of students with special educational needs.
- Enrolment in vocational education and training (VET) is increasing and the employment rate of VET graduates is improving, although both remain below the EU average.
- In higher education, a gradual increase in investment and incremental changes in quality assurance are welcome, but the sector remains fragmented and international competitiveness low.

3. A focus on teachers

Latvia's teaching workforce is mostly older and overwhelmingly female. In 2017, women accounted for 87% of primary and secondary teachers, the highest figure in the EU, which has an average of 72%. The percentage of women teachers falls as the level of education rises, a pattern common to all OECD countries: in 2016 the figure ranged from close to 100% in pre-primary education to 80% in upper secondary, and just over 55% in tertiary education (Fig. 2). Women also comprise a significant share of school leaders: 77% of lower secondary schools leaders are women, the highest share across all OECD countries (OECD average: 45%). Latvia's teachers are also among the oldest in the EU. In 2017, almost half (47%) of all school teachers were 50 or over, and only 16% were under 40[197].

Figure 2 Distribution of teachers by sex, primary to upper secondary, 2017



Source: Eurostat, UOE. Online data code: educ_uoe_perp01

[197] Source: Eurostat, UOE, 2017. Online data code: educ_uoe_perp01.

Renewing the teaching workforce is a challenge, as young graduates are not attracted to the profession and teacher shortages are becoming apparent, especially in science and maths. In 2015, less than 1% of 15-year-olds aspired to work as a teacher (only 0.2% among boys) (European Commission, 2018). According to the Ministry of Education and Science, out of approximately 1 000 education graduates per year, currently only about 350-400 actually start working as teachers. To promote the quality and relevance of education programmes, the ministry has updated regulations on the financing of higher education institutions (HEIs), to ensure they receive performance-based funding depending on how many of their education graduates enter the teaching profession. Teacher shortages are increasingly being reported: in September 2018, a survey of 200 school leaders by the Society for Independent Education found that 65% of schools had a shortage of teachers[198]. In 2018, the government decided to temporarily ease requirements for teaching scientific subjects by allowing STEM university students to teach for 1 year in primary and secondary school, under the guidance of a mentor teacher (see Box 1).

School leaders are responsible for recruiting teaching and non-teaching staff. Teachers are recruited based on their qualifications and experience. In PISA 2015, Latvian school leaders reported having much greater freedom in hiring teachers (96.8%) than the OECD average (70.3%). Responsibility for recruiting and dismissing school leaders lies with municipalities, as they are the funders of most schools; 662 schools are funded by municipalities as compared to 59, against 58 funded by private individuals, government or other organisations.

Low statutory salaries and long working hours contribute to making teaching unattractive; reforms have not yet brought about the desired improvements. According to the OECD Teaching and Learning International Survey (TALIS) 2018[199], the proportion of Latvian teachers who believe that teaching is a valued profession in society is higher than the EU average (23.3% v 17.7%). However, only 65.4% of teachers say that if they could decide again, they would still choose to become a teacher (v 77.6% in the EU as a whole). Income reliability and job security appear to be strong influencing factors in choosing teaching as a profession[200]. School teachers in Latvia are trained at tertiary level and can access the profession either through an initial teacher education programme or by combining academic training and in-service training at least 72 hours in pedagogy. Officially, the ratio of teachers' salaries to those of other tertiary graduates in Latvia is comparatively high (OECD), but the relatively large shadow economy means that the actual ratio is probably much lower[201].

In 2016, the government introduced a new teacher remuneration scheme expressly to promote a transparent wage system and make expenditure more efficient. The minimum monthly salary increased by around 17.6% from EUR 405 (for 21 hour) to EUR 680 (for 30 hours) from 1 September 2016. In January 2018 a gradual increase in teachers' salaries from September 2018 to 2022 was approved. The base monthly salary for teachers rose from EUR 680 to EUR 710 on 1 September 2018 and to EUR 750 on 1 September 2019 — still less than half the EU average (European Commission/EACEA/Eurydice, 2018).

While starting salaries are fixed by law, top salaries are not pre-defined, however they cannot exceed the lowest salary rate by more than 50%. School leaders have autonomy in deciding on most allowances and salary supplements such as performance-related bonuses, overtime and extra activities, which can amount to 50% of a teacher's basic pay. As a result, lower secondary teachers teach on average 46% more than the 30 hours a week statutory teaching time, the highest difference among OECD countries for which data is available[202]. Working conditions differ greatly depending on a school's location and size. School size matters — state subsidies for municipal schools are based on student numbers, and bigger schools tend to attract better teachers. In addition, the regulations are insufficiently clear on which tasks are to be included in

198 Izglītība un kultūra (2018) Aptauja: 65% skolu trūkst pedagogu. https://www.izglitiba-kultura.lv/zinas/aptauja-65-skolu-trukst-pedagogu

199 In 2018, 23 Member States participated in TALIS survey: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

200 Income reliability and job stability were considered of high importance by 90% and 93% of TALIS respondents (EU average: 66% and 65.5%).

201 Estimated at 24.2% of GDP in 2018, 43.5% of which consisting of under-the-table salary payments, according to the Shadow Economy Index by the Stockholm School of Economics in Riga.

202 See Education at a Glance 2018 OECD Indicators, http://gpseducation.oecd.org/CountryProfile?primaryCountry=LVA&treshold=10&topic=EO.

the basic salary and which can be considered additional work and thus subject to possible salary supplements to be determined by the school leader (State Audit Office 2018). The need for more transparent and simpler teacher salary regulations was recently highlighted by the State Audit Office[203].

Continuing professional development (CPD) is compulsory for teachers of all levels, and is required for promotion to the level of performance-based additional payment system. Teachers must undergo 36 hours of professional development every 3 years. There are many forms and formats of CPD in use, and their comparative effectiveness has not been measured. The European Social Fund project supporting the development and implementation of a competence-based curriculum (*Skola 2030*) contains a substantial CPD component, preparing teachers to use modern tools and approaches, including digital technologies.

Box 1: Tackling teacher shortages

In September 2018 the government adopted a regulation on the education and qualification requirements for teachers and the development of teachers' professional competences[204]. Among other things, the regulation addresses the shortage of science and maths teachers, by introducing a new path into teaching for STEM graduates who do not possess teaching qualifications. According to the new regulation, a person with degree in a relevant subject can teach for one year in school, provided they are mentored by a qualified teacher. Those who choose to continue teaching in school beyond the one-year term foreseen in the regulation, will have to obtain a full teaching qualification through ITE.

The regulation also eases qualification requirements to teach in the VET system, if the teaching workload is below 360 hours per year. This measure is meant to encourage the involvement of industry professionals in the implementation of vocational education programmes.

4. Investing in education and training

Government expenditure on education is comparatively high at all education levels. Latvia's general government expenditure on education was well above the EU average in 2017, both as a proportion of GDP (5.8% v 4.6%) and as a proportion of total public expenditure (15.2% v 10.2%[205]). Public spending on education increased by 10% between 2016 and 2017 in real terms, the highest rate of increase in the EU, to compensate for the drastic cuts imposed following the 2008 financial crisis. Employee compensation accounted for 59.8% of total government expenditure on education, below the EU average of 62%[206]. Expenditure per student expressed in purchasing power standard (PPS) is comparatively high relative to the country's GDP per capita and has been rising steadily in recent years, but remains below the EU average at all levels of education.

Latvia's population is declining rapidly, driven by negative natural growth and relatively high emigration. The share of the population aged between 3 and 18 is projected to contract by around 20% between 2020 and 2030, as compared to just 2% for the EU as a whole. The average class size in Latvian schools is already the lowest in the OECD: 11 pupils per class in primary and 15 in lower secondary (against OECD averages of 21 and 23 respectively)[207]. The government is pressing for further streamlining to shift investment away from maintenance of the large school network and towards teaching and learning (see Section 5).

203 http://www.lrvk.gov.lv/en/the-teacher-remuneration-system-should-be-simpler-and-easier-to-understand/
204 Cabinet of Ministers (2018) Regulation Nr 569, *Noteikumi par pedagogiem nepieciešamo izglītību un profesionālo kvalifikāciju un pedagogu profesionālās kompetences pilnveides kārtību*
205 Source: Eurostat, General government expenditure by function (COFOG) database.
206 Source: DG EAC, based on Eurostat data and the Classification of the functions of government (COFOG). Online data code: gov_10a-exp
207 Education at a Glance 2018: OECD Indicators

5. Modernising early childhood and school education

Latvia's early school leaving rate is relatively low, but wide disparities persist between genders and between urban and rural areas. In 2018, the percentage of early leavers from education and training (ESL) in the 18-24 age group was 8.3%, well below the EU average of 10.6%. The ESL rate for men improved somewhat in 2018 (11.4% v 12% in 2017), but was still more than twice that for women, which remained unchanged at 5%. In addition, two out of three grade repeaters at lower secondary level are boys, compared to the OECD average of 60%. The ESL rate is more than twice as high in rural areas as in urban areas (15% v 7%) (European Commission 2019). Planned new measures to improve the individualised approach to students at risk of ESL, and to provide support for the inclusion of students with special educational needs[208] should lead to a further reduction in ESL rates. However, success will depend on sufficient investment to support the new regulatory framework.

The new competence-based curriculum includes education guidelines from pre-primary to upper-secondary levels. The guidelines for pre-primary education include language, social and civic competences, cultural understanding and artistic self-expression, natural sciences, mathematics, technology, health and sport. Transversal competences include critical thinking and problem solving, self-guided learning, creativity and entrepreneurship, cooperation and participation. The new guidelines also strengthen the requirements for Latvian language learning in preschool, and emphasise every child's active engagement in learning.

The shortage of qualified staff and the low capacity of pre-primary schools to implement significant reforms are a concern. Participation in early childhood education and care (ECEC) is almost universal for children between the age of 4 and the starting age for compulsory education (6 years old in Latvia) at 96.3% in 2017, slightly above the EU average of 95.4%. However, Latvia lacks national professional standards for ECEC staff. Preschool teachers responsible for children aged between 1 and a half and 4 earn almost 10% less than school teachers (European Commission/EACEA/Eurydice, 2018[209]) and work longer hours. Their remuneration is the exclusive responsibility of municipalities. The Education Ministry is encouraging municipalities to re-consider resource allocation, by diminishing the number of primary and secondary schools and increasing the number of students per class. This will enable municipalities to top up teacher salaries.

The trade-off between an extensive school network with a low student-teacher ratio and low teacher salaries that has long characterised the Latvian system is coming under increasing strain. As the number of schoolchildren decreases, the consolidation of Latvia's large and inefficient school network is a priority for the Education Ministry, and is being linked with changes to teachers' pay and education content reform. New rules setting quality criteria for upper secondary education institutions and the minimum number of students per class in general secondary education institutions were adopted in 2018 by the previous government (European Commission 2018). Municipal administrations were given until March to submit to the Education Ministry their plans for optimising the school network in the context of the foreseen territorial reform.

The Education Ministry is developing a new education quality monitoring system to reflect the competence-based curriculum and other reforms at all levels of education. The aim is to improve and streamline the existing education quality evaluation processes (e.g. accreditation) and develop new education quality evaluation criteria, with support from EU funds[210]. The evaluation methodology will also be improved. In addition, the new monitoring system would include indicators covering the quality of vocational education and training, not just general secondary education as is currently the case. The ministry has hired a consultancy to develop the quality monitoring system and monitoring instruments on its behalf, with results expected by June 2020.

[208] From September 2020, children and learners with learning disabilities, language disorders, physical disabilities and long-term illnesses should be educated in mainstream settings (European Commission 2018).

[209] The annual statutory salary, expressed in PPS, is 11 014 for pre-primary teachers and 12 080 for primary and secondary school teachers.

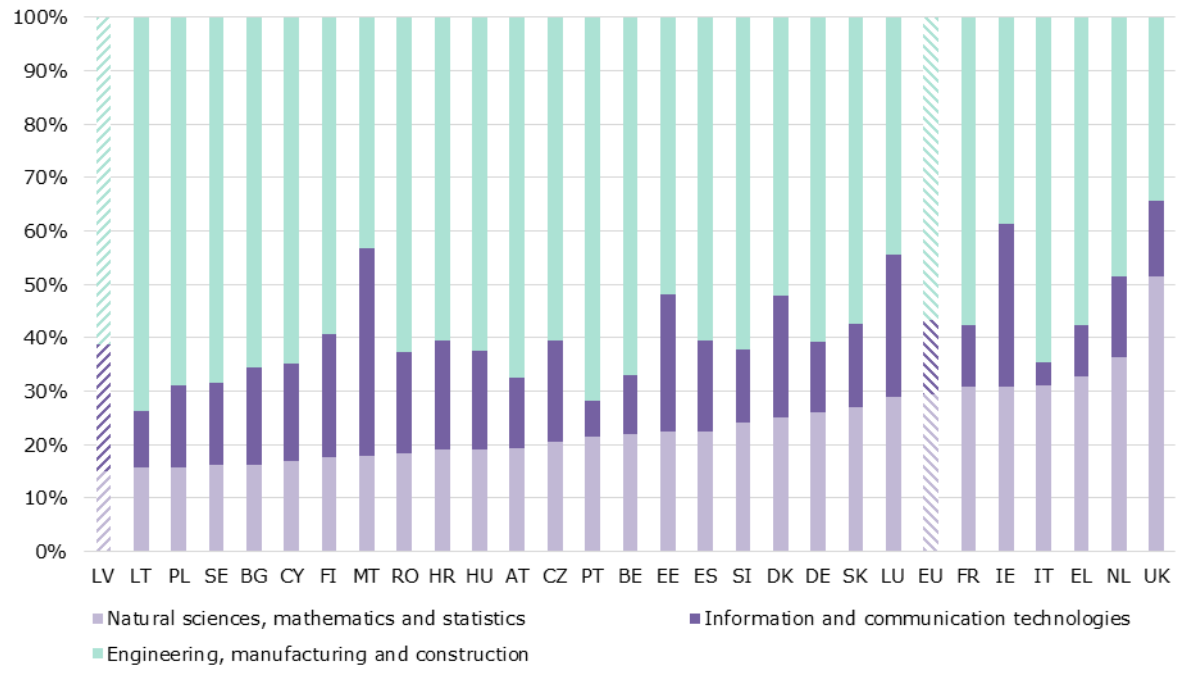
[210] ESF project on the development and implementation of an education quality monitoring system (2018-2021).

The switch to education in Latvian is being implemented. In the 2019/2020 school year, a transition will begin from the five existing minority education models[211] to three new models at the basic education stage. The transition to the new bilingual education model in grades 7-9 will also be initiated, with at least 80% of the curriculum, including foreign languages, taught in Latvian. State examinations in the ninth grade will be taken in Latvian.

6. Modernising higher education

The share of young adults with tertiary education decreased in 2018 compared to the previous year, but remains above the EU average. 42.7% of 30-34 year-olds had a tertiary qualification in 2018, down from 43.8% in 2017. The decrease was more pronounced for men (from 32% to 30.6%), further widening an already significant gender gap (24.6 pps.) STEM graduates represented 21% of all graduates in 2017, well below the EU average of 26%, while the proportion of graduates in natural sciences, mathematics and statistics was the lowest in the EU (3.1%, against an EU average of 7.6% in 2016). On a positive note, the employment rate for graduates in the 20-34 age group rate rose sharply in 2018 (84.1%, up from 78% in 2017) and now exceeds the EU average of 81.6%.

Figure 3 Distribution of STEM graduates by field of study, 2017



Source: Eurostat, UOE. Online data code: educ_uoe_grad02

The new government has pledged to improve the quality and inclusiveness of higher education. This includes stronger support for students in need and a commitment to ensuring financial support to the three-pillar funding model introduced in 2015. Planned measures include digitalisation in higher education, improving international cooperation, revising academic career policies and simplifying recruitment of international teaching staff. The government's programme sets as a benchmark the inclusion of at least one Latvian university among the top 500 universities globally. It also pledges to continue addressing the fragmentation of higher education programmes. The financing priorities submitted by the Education Ministry for government approval for 2019 include an annual funding increase for study programmes and other quality-related investment in state-funded higher education institutions (HEIs). One of the Education Ministry's proposed financing priorities is financing under the second and third pillars of the model, which includes performance-based funding and funding for innovation and development of HEIs.

[211] National minority education models specify the proportion of subjects taught in Latvian, bilingually and/or in a national minority language.

New regulations on the licensing and accreditation of higher education study programmes came into force on 1 January 2019. These allow HEIs to choose the agency evaluating the quality of their 'study directions'[212]. This quality assurance can be provided by the national agency, the Academic Information Centre, or by any other agency included in the European Quality Assurance Register.

New measures to reduce fragmentation of the higher education system and to develop higher quality study programmes are planned, with support from EU funds. While this is a step in the right direction, it remains to be seen whether HEIs can be motivated to reduce the scope and number of programmes as they compete for students. Overall, available research funding in the country is still low, and the amount of performance-based funding for HEIs is limited. The reforms' success will largely depend on more resources for academic research being made available, and on the ability of the government agency responsible for accreditation of study programmes to conduct a rigorous evaluation of the quality offered by HEIs. Several factors will play a key role, including the quality of the new higher education programmes to be developed and the availability of qualified academic staff. Given that research funding is still low, and the amount of performance-based funding for HEIs is limited, additional measures (such as a stricter quality assurance mechanism for the next round of accreditations for HEIs) may be needed to achieve real improvement in the quality of higher education programmes.

7. Modernising vocational education and training

Enrolments in VET are growing, but remain below EU levels. In 2017, nearly 9000 new students entered formal VET programmes in Latvia, an increase of more than 13% on 2016. Total enrolment in upper secondary VET in Latvia also saw a slight increase in 2017, with 38.6% of students enrolled at that level attending vocational programmes. However, the figure is still below the EU average of 47.8%. Students enrolled in VET had exposure to at least some practical work experience – as most educational programmes include some practical elements in the curriculum[213]. The employability of recent VET graduates in 2018 saw a notable increase, reaching 75.8% compared to 69.1.8% in 2017, but was still below the EU average of 79.5% in 2018[214]. The Council of the European Union has adopted a country specific recommendation to Latvia under the 2019 European Semester to 'increase the quality and efficiency of education and training, in particular of low-skilled workers and jobseekers, including by strengthening the participation in vocational education and training and adult learning' (Council of the European Union, 2019).

Several reforms and initiatives are ongoing to strengthen the VET system, including work-based learning and apprenticeships. In April 2018, 15 sectoral qualification frameworks were officially approved under the current reform of the VET system curriculum (2016-21), 15 sectoral qualifications structures were officially approved in April 2018. They2021). These serve as guidelines for developing and implementing VET programmes. Each framework comprises occupations essential for performing activities in particular sectors, specialisations and levels of qualifications. During 2018, Latvia supported implementation of work-based learning and apprenticeships via a number of projects. These included cross-border mobility for apprenticeship students, continuous professional development for VET teachers and in-company trainers, and support to businesses in implementing apprenticeships. Following the decrease of mandatory training for in-company trainers from 72 to 32 hours, the Employers' Confederation provided training programmes in 2017/18 enabling 440 trainers to work with apprentices in companies. Altogether, more than 1000 sectoral specialists have attended in-service training to acquire pedagogical minimum to work with apprentices in companies.

Some measures have been taken to support teachers in VET. In December 2018, the Cabinet of Ministers amended the regulations equalising salaries of heads of vocational schools to those of heads of colleges. A new regulation simplified the pedagogical qualification requirements for vocational teachers to make it easier to involve industry professionals with a higher education degree but no teacher training.

[212] A 'study direction' can include several programmes.
[213] Source: Eurostat, UOE, 2017.
[214] Source: Eurostat, Labour Force Survey, 2018.

Box 2: European Social Fund support for integration of disadvantaged groups through vocational training

The State Social Integration Agency, Latvia's only provider of professional rehabilitation services, have developed completely new training programmes with tailor-made education/training content and hands-on experience for people with severe disabilities (the loss of ability to work is in the amount of 60-100%) and persons with mental (psychosocial, intellectual or cognitive) disabilities depending). The training's content depends on each person's abilities and interests. Five professional training programmes ('Clerk', 'Florist', 'Horticulturist', 'Warehouse employee' and 'Carpenter's assistant') and 35 skills training programmes are now available to the target group. The programmes were developed based on a study which identified tasks that are in demand in the labour market and that employers would be willing to delegate to people with disabilities. All programmes include practical training/practice in the company to assist in to help students' employability. After completing a vocational rehabilitation programme (8-18 months), people with severe disabilities receive a document certifying their professional qualification, while people with mental disabilities who complete a skills training programme (4-12 months) receive a document certifying their skills. The plan is to involve 100 people in the training, with the aim that at least 60 of them will be employed, start a job search or continue education 6 months after completing the training programme. In total, EUR 1.252 million is budgeted for the project, with EUR 1.064 million from the ESF.

8. Developing adult learning

The share of the population with low educational attainment is significantly below the EU average. Only a relatively small share of adults in Latvia (9.3%) have at most a low qualification, against an EU average of 21.9%. In addition, the share of low-qualified adults in employment was, at 58.2%, above the EU average of 56.8%. However, the likelihood that adults in Latvia would frequently update their knowledge and skills through adult learning was lower than the EU average. For example, only 6.7% of adults aged 25-64 in Latvia have had a recent learning experience during the last 4 weeks, compared to EU average of 11.1%[215].

The implementation of the 2016-2020 adult learning governance model provides better opportunities for adults to engage in learning, but there is still significant scope for improvement. The main types of provision of adult education were redefined to encompass: provision to raise attainment of basic skills; provision to attain a recognised qualification during adulthood; provision targeting transition to the labour market; provision of non-formal adult education, and other types of publicly subsided provision for adult learners. . Several new initiatives have been launched since 2018, targeting unemployed persons and young people, fostering employability among the elderly and expanding learning opportunities for adults in general.

Several measures were taken in 2018 to strengthen the professional development of adult educators. New regulations were adopted on the 'necessary academic and professional qualifications of pedagogues and professional competence development procedures for Pedagogues' were adopted in 2018. They set out the requirements to acquire the right to work as an educator. Although these requirements do not apply to non-formal adult education, they affect adult learning policy more broadly by making teacher education more focused on individualisation for personalised learning. Apart from these general requirements for teachers, mandatory pedagogical in-service courses are also required. Furthermore, as part of the national reforms in vocational education and training and adult learning, a methodological guide was drawn up for working with adults in vocational education institutions.

[215] Eurostat, Labour Force Survey, 2018.

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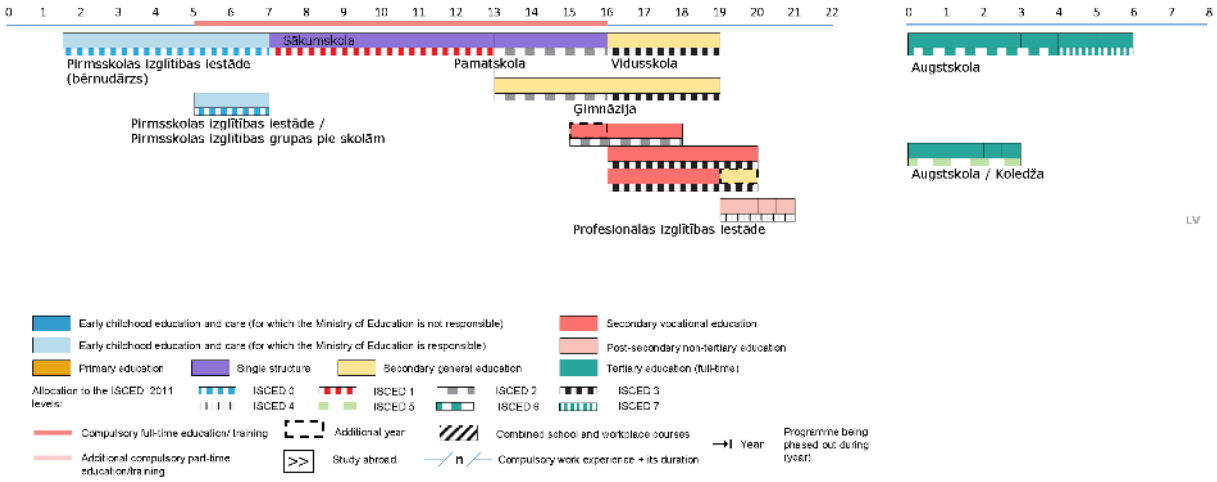
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

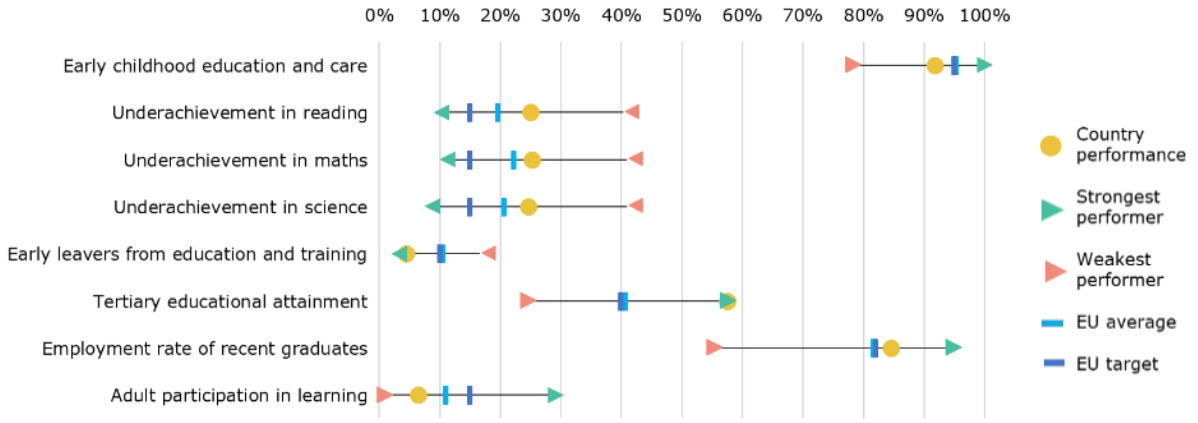
LITHUANIA

1. Key indicators

			Lithuania		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			8.7%	4.6%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			40.4%	57.6%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			84.3%	91.9% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		24.4%	25.1% [15]	19.5%	19.7% [15]
	Maths		26.4%	25.4% [15]	22.3%	22.2% [15]
	Science		17.0%	24.7% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		73.0%	84.7%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		4.6%	6.6%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	8.6% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	6.8% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		7.2%	4.9% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€3 567 [12]	€4 409 [16]	:	€6 111 [15,d]
		ISCED 1	€3 689 [12]	€4 385 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€3 398 [12]	€4 042 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€3 968 [12]	€4 042 [16]	:	€7 730 [14,d]
		ISCED 5-8	€6 542 [12]	€5 357 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		8.6%	4.6%	13.1%	9.5%
	Foreign-born		: [u]	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		40.0%	57.8%	33.1%	41.3%
	Foreign-born		: [u]	47.7% [u]	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		57.8%	77.9%	72.5%	76.8%
	ISCED 5-8		83.9%	90.4%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) on UOE data. Further information can be found in Annex I and Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u= low reliability, : = not available, 12= 2012, 14= 2014, 15 = 2015, 16= 2016, 17 = 2017.

Figure 20 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Current trends in student population and teacher workforce call for a comprehensive strategy to manage teacher supply and demand.
- Improving key competences and relevant skills remains a priority at all levels. Further development of monitoring and evaluation systems may help improve the quality of education and training.
- Measures have been put in place to increase the education system's overall efficiency, but further efforts are needed to ensure their implementation.
- Policy measures to address low participation in adult learning are lacking.

3. A focus on teachers

The teaching workforce is ageing. The proportion of pre-primary and school teachers and academic staff aged 50 or more was 47% in 2017, up 4.9 pps since 2013. Unlike most other EU countries, in Lithuania retirement for teachers[216] is not compulsory on reaching the standard pension age. Approximately 6% of serving teachers were already at retirement age in 2016/2017 and this share is expected to reach 20% in 2021. A revision of the incentive system, which currently pays a lump sum[217] on retirement, may make it a more attractive option than staying on.

Lithuania has taken steps to monitor teacher supply and demand. Despite recent increases in the number of returning emigrants, negative demographic trends in Lithuania are resulting in teacher oversupply. However, future shortages due to the teacher age profile may be further aggravated as less than 15% of graduates from initial teacher education actually enter the profession. To anticipate shortages and oversupply, Lithuania developed in 2018 a pilot tool that provides short and mid-term forecasts of teacher demand (MOSTA, 2018a). Further development of this model and teaching planning practices may help ensure the continued entry of new talent into the profession, while maintaining control over the overall size of the teaching workforce.

Box 1: Forecasting the teaching workforce

Demographic trends in Lithuania are negative and the teaching workforce is ageing rapidly. To address these challenges and anticipate teacher shortages and oversupply, in 2018 Lithuania developed a forecasting pilot tool with support from the European Commission's Structural Reform Support Programme. This provides short-term (one-year) and mid-term (four-year) forecasts of the teaching workforce that accommodate changes in pupil numbers, the ageing teaching population, low graduation and transition-to-employment levels among initial teacher education graduates, and other policy changes such as an earlier start to primary education.

The model forecasted that 3 077 teachers working in 2018 will retire by 2022. Taking into account dropouts and the low numbers of students in initial teacher education actually becoming teachers, the model estimated that only 126 new teachers were likely to enter schools in 2018/2019. Even if all novice teachers found a job, there would be a shortage of over 100 teachers. The highest cumulative four-year shortage was forecast for primary school teachers, amounting to almost 700. If pupil participation in preschool education is to increase in rural areas, the shortage could be even higher.

However, these results are tentative. Lithuania is now planning to allocate more resources to support further model development to ensure the reliability and comparability of the forecasting results.

[216] The retirement age is moving towards age 65 (in 2026) and increases each year by four months for women and two months for men. In 2019, the retirement age for men is 63 years and 10 months, while for women it is 62 years and eight months.

[217] The size of the payment depends on the teacher's work experience in the school from which s/he will retire. The minimum available pay is two average monthly salaries if work experience is less than 36 months. If work experience is higher than 240 months, the maximum is six average monthly salaries.

Unattractive career prospects contribute to the low perception of the teaching profession in society. According to data from the 2018 OECD Teaching and Learning International Survey (TALIS), only 14.1% (v 17.7% at EU level[218]) of teachers believe that teaching is a valued profession in society. This is reflected in the low number of graduates who enter the profession (15%) and the low share of male teachers and early childhood education and care staff (11% v 23% at EU level). This may due to the unattractive opportunities available for career progression. Teachers can voluntarily apply to obtain one of the higher qualification categories, namely senior teacher, teacher methodologist and teacher-expert, enabling them to earn higher salaries and take up different responsibilities. Selection for these categories is mainly based on experience and qualifications. Methodologists and experts are supposed to focus on spreading good practice and developing professional learning communities, but they often take on collaborative tasks at municipal level contributing to other schools or regional events (Shewbridge, C. et al., 2016).

Box 2: Time for Leaders

School principals in Lithuania have demanding and far-ranging responsibilities. This makes finding highly qualified and motivated school leaders crucial to ensuring good management of the teacher workforce and school infrastructure.

Lithuania's European Social Fund-financed `Time for Leaders´ project, launched in 2009, is now at its third stage. The overall aim is to develop an integrated system to develop leadership skills at all education levels. The project also involves staff from municipal authorities, school administrative staff, consultants and NGO members.

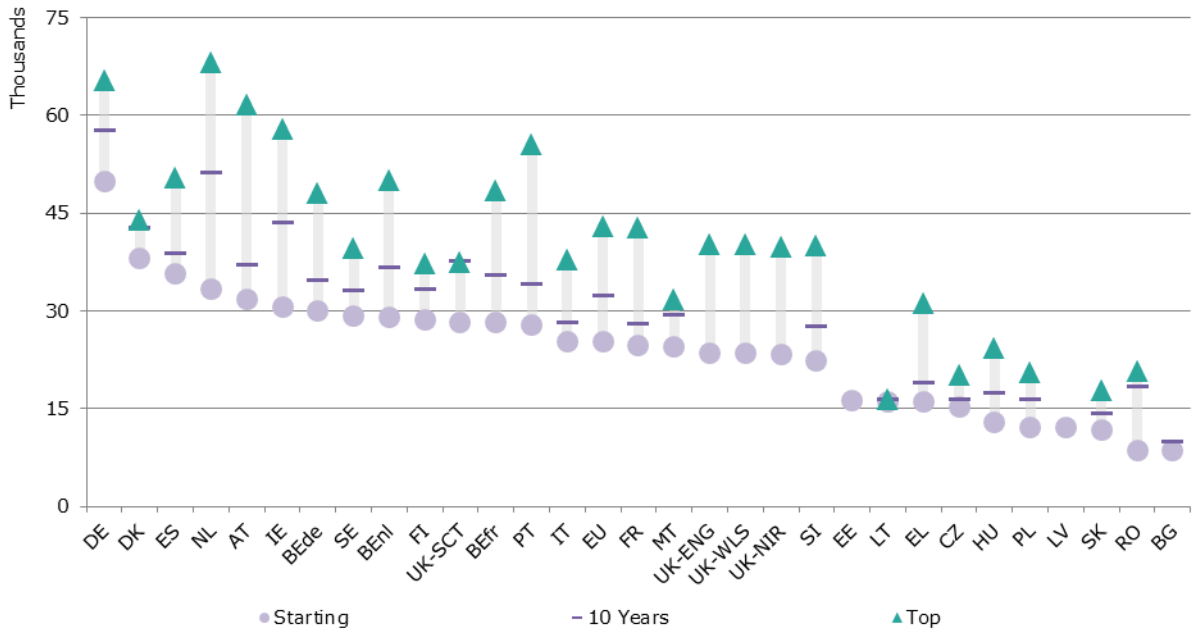
Participants are expected to strengthen their managerial skills by learning from managers at national, regional and school level, and by participating in traineeships and education networks.
http://www.lyderiulaikas.smm.lt/en

Measures have been put in place to improve working conditions and teacher salaries, but challenges remain. TALIS 2018 shows that teachers' motivation is comparatively low and tends to decrease over time. Fewer novice teachers (70.8% v EU average of 83.7%) report that if they could decide again, they would still become a teacher; the share dips further (63.9% v 83.7% at EU level) with more than five years of service. The average starting statutory[219] salary of teachers at the lower general secondary level, expressed in purchasing power standards (PPS), is well below the EU average (PPS 15 981 v PPS 25 946 in 2016/2017). By career end it increases by only 2.6% (v 70% at EU level), the lowest salary progression in the EU (European Commission/EACEA/Eurydice, 2018) (Figure 2). A teacher's salary used to depend only on the number of lessons taught. However, with declining student numbers and school consolidation, many schools responded by lowering the number of contact hours, which resulted in lower salaries and pension rights. In response, teachers in small schools sometimes take on a second job (Shewbridge, C. et al., 2016). To address this issue and increase income stability, teachers are now allowed to teach two subjects, while a fixed monthly salary system was introduced in 2018. The new system allows for teachers to be paid for all work done for the school community. Discussion on further increases in teachers' salary are ongoing between teachers' union and government.

[218] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

[219] Statutory salary is only one component of teachers' compensation. Other benefits, such as regional allowances for teaching in remote areas or family allowances may also form part of teachers' total remuneration. Statutory salaries of teachers can vary according to a number of factors, including the level of education taught, the qualification level of teachers, and the level of experience or the stage of the career of teachers.

Figure 21 Teacher salary progression in lower secondary public school in PPS, 2016/2017



Source: Eurydice, 2018. Note: Annual basic gross statutory salaries (starting salary, salary after 10 years and top of the salary range) for full-time teachers.

Efforts are being made to improve the quality of teacher education. Poor student outcomes in Lithuania could be also explained by outdated teaching practices and the low quality of teaching instruction. TALIS 2018 shows that Lithuanian teachers report the highest level of need in the EU for professional development in ICT skills for teaching (23.6% v 16.1% at EU level). The Teachers Training Regulation, adopted in 2018, sets quality requirements for initial education programmes and for the new induction programme covering the first year at school. The Regulation also specifies possibilities for continuing training and professional development and sets criteria for the new three national teacher training centres. Previously, any higher education institution was permitted to introduce a new programme. This centralisation aims to ensure higher quality in the courses provided.

Teacher professional development appears fragmented and not associated with school development needs. Teachers are entitled to a minimum of five days of continuing professional development (CPD) during a school year. The payment of fees is mainly covered by the school budget and the European Social Fund. However, according to TALIS 2018, 43.0% of teachers (v 38.9% at EU level) consider that the CPD offered is not relevant. Professional development is provided by a range of different public and private providers, and the choice of courses is made by individual teachers. The lack of analysis through effective teacher appraisals and regular school self-evaluation limits the possibility to target CDP activities to individual and collective learning needs and establish a community of learners within schools. (Shewbridge, C. et al., 2016). It also results in inefficient use of public and European resources.

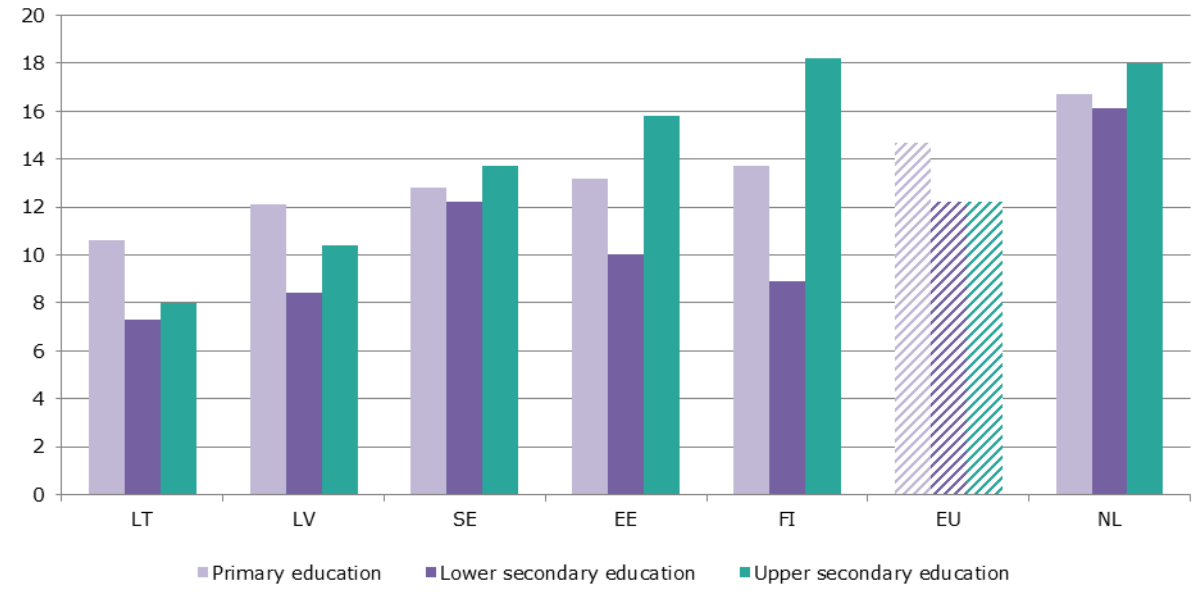
4. Investing in education and training

Spending in education has decreased but is still comparatively high. In 2017, Lithuania spent 4.9% of its GDP on education, down from 6.4% in 2010, but slightly higher than the EU average (4.6%). As a percentage of total public expenditure, at 14.8%, Lithuania has the third highest share spent on education after Cyprus and Latvia (EU average: 10.2% in 2017), but private investment into education is rather very small. In 2017, Lithuania spent only 18.4% of its education expenditure on pre-primary and primary schools, which was the lowest share in the EU (32.0%), while expenditure on secondary (40.4%) and tertiary education (15.0%) were both around the EU averages (41.0% and 14.8% respectively). Moreover, the share of 'other expenditure', which includes items such as school transport and meals, was the highest in the EU (26.2% v 12.2% at EU level). A better allocation of resources among different education levels

could help improve access to early childhood education and care (see Section 5) and reduce the amount spent on maintaining schools with a low number of students.

Lithuania is committed to increasing spending efficiency, but the impact of measures taken is not yet clear. The number of pupils and students in the education system declined by 21.8% over 2010-2017. In 2017, Lithuania posted some of the EU's lowest teacher/student ratios at primary (10.6 v 14.7 at EU level) and secondary level (7.3 v 12.2 at lower secondary and 8.0 v 12.2 at upper secondary levels) (Figure 3). This calls for strategies to preserve and improve quality while ensuring the system's efficiency. In this context, the Council of the European Union addressed a country specific recommendation to Lithuania called on it to 'improve quality and efficiency at all education and training levels', (Council of the European Union, 2019). In 2018, a 'class and quality basket system', under which funds are allocated based on the number of classes in a school and on quality indicators, was introduced to improve school efficiency and reduce disparities between schools. In the new system municipalities must add extra funding for extremely small classes if they want to maintain them, but this was mitigated by setting the minimum number of students per class at 8 at primary and 12 at secondary level. No information is as yet available on this measure's impact. Municipalities are reluctant to close down schools because of the impact on rural communities. Moreover, extra funding to ensure more equitable distribution of resources will target only 180 out of 1 125 schools, with a risk of limited impact and ever increasing disparities between rural and urban areas (MOSTA, 2019). Achieving higher efficiency while ensuring quality will require greater coordination between municipalities — which separately plan their educational budgets and enjoy great autonomy in allocating resources — and government. Similarly, for higher education, efforts to optimise the network of institutions are slow because of the high decentralisation of decision-making (see Section 6).

Figure 22 Teacher-to-student-ratio at primary and secondary level, 2017



Source: Eurostat, UOE, 2017.

5. Modernising early childhood and school education

Despite increasing participation in early childhood education and care (ECEC), ensuring equal access remains a challenge. The participation of children between 4 years old and compulsory school age was 91.9% in 2017, up 8.1 pps since 2010. This remains below the EU average of 95.4%. Participation in formal childcare by children aged less than 3 also improved between 2010 and 2017: by 2017 it had reached 20.3% in 2017 (14% in 2010), still well below the EU average of 34.2%. If we compare the participation of children aged 3 to the mandatory school age from households at risk of poverty and social exclusion with children from a more advantaged background, we find a gap of 15.7 pps. This is above the 11.3 pps EU average gap in 2016[220].

[220] For further details see Education and Training Monitor 2019 — Volume 1, Section 2.

Access to early education is not ensured for all children: in 9 out of 60 municipalities, kindergartens do not have enough places for all wanting to attend. Only 37 municipalities ensure transportation for children in remote rural areas (where children are at a higher risk of poverty and exclusion) (National Audit Office, 2018). The increasing number of private centres is making ECEC service more accessible, but mainly in urban areas. Moreover, the proportion of the costs of privately provided ECEC reimbursed through public subsidies varies by municipality, and not all families receive a subsidy (European Commission, 2019).

While the structural reform programme[221] aims to improve quality and efficiency at school and university, measures to improve ECEC quality are lacking. A recent audit showed that the salary of preschool teachers is on average 36% lower than that of teachers in general education. Coupled with poor working conditions[222], this may contribute to the profession's low attractiveness and fuel the current staff shortage. Moreover, a monitoring system, which could help ensure that children receive high quality pre-education and care, is lacking (National Audit Office, 2018).

Lithuania continues to perform well in preventing early leaving from education and training (ESL). With an ESL rate of 4.7% (EU average: 10.6%), Lithuania was the second-best performer in 2018. The rate has decreased by 3.3 pps since 2010, and in rural areas fell by 5.0 pps from 11.6% in 2010 to 6.6% in 2018.

School curricula and assessment practices are being reformed. To meet the objectives in the structural education reform programme, an updated competency framework was designed in 2018 and negotiated with the stakeholders in the first half of 2019. Nine working groups will develop new syllabuses to be piloted in 100 schools. There are plans to develop a new aligned evaluation and assessment framework, which should ensure a good balance between formative and summative assessment, currently lacking, and collect information to monitor learning outcomes. Enhancing at the same time teacher assessment practices and principals' appraisal will be key challenges of this reform.

6. Modernising higher education

The tertiary attainment rate is still the highest in the EU. In 2018, tertiary attainment among those aged 30-34 was 57.6%, above the EU average of 40.7% and the national EU2020 target (48.7%).

Skills mismatch and over-qualification are widespread among tertiary graduates. Recent tertiary graduates have a high employment rate (90.4% v 85.5% at EU level in 2018), but at the beginning of their career they tend to work in less qualified jobs because they lack job relevant skills (MOSTA, 2018b). Furthermore, among businesses that have recruited or tried to recruit ICT specialists, 40% reported hard-to-fill vacancies (European Commission, 2019). 21.2% of people aged 15-64 had a qualification higher than that required by their job, above the EU average of 14.7% in 2016. To attract highly qualified academic staff, between 2017 and 2018 the average salary of staff working in public universities increased by 18%. The quality of tertiary programmes may benefit from a regular framework for anticipating and monitoring skills demand and from enhanced cooperation between businesses and universities[223].

Optimising the university network has been an objective, but there is a lack of central steering of the process. In 2018, Parliament approved the merger of three universities. Although the initial plan outlined specific aims, guiding criteria and expected results, implementation so far has not complied with these principles. The fact that mergers of two or more institutions into one require the agreement of rectors and university staff is watering down the process. Although one of the plan's principles was to avoid duplicating fields of study in the same city, one recent merger failed to eliminate the duplication of law studies in Vilnius. Furthermore, the reforms of funding and quality assurance systems, which were also included in the comprehensive reform launched in 2017 and planned to be finished in 2020, remain at the planning stage.

221 For more on the structural education reform launched in 2018, see http://lrv.lt/uploads/main/documents/files/LRV%206%20reformos%20spaudai%20sutvarkytas%20(1).pdf

222 Last audit showed that a third of all the audited pre-primary schools breach hygiene norms.

223 According to the Centre for Quality Assessment in Higher Education (SKVC), only 6% of the higher education study programmes evaluated between 2010 and 2015 received the highest evaluation scores.

7. Modernising vocational education and training

In 2017, just over 7 300 new students entered formal VET programmes, a slight increase on 2016. Total enrolment in upper secondary VET was largely unchanged in 2017, with 27.4% of students at that level attending vocational programmes, still well below the EU average of 47.8%. Students enrolled in VET had limited exposure to work-based learning — none of the formal VET educational programmes are reported to combine school and work-based programmes. Several ESF projects provide support for apprenticeships and work-based learning, but this maybe not reported or outside the formal education system and thus not covered by official statistics. The employability of recent VET graduates saw a notable increase in 2018, reaching 79.2% v 71.5% in 2017 and the EU average of 79.5%.

Further implementation of VET reforms continued throughout 2018. New modular programmes were introduced and 300 outdated programmes were terminated. In addition, a new regulation was put in place in October 2018 to organise 18 sectoral professional committees to ensure cooperation between relevant stakeholders in specific sectors of the economy.

In 2018 Lithuania continued to develop continuing professional development for vocational teachers and adult educators. As part of a national project launched in 2016, 150 vocational teachers and school leaders were trained in 2018 on competences related to communication and cooperation, working culture, creativity development, organisation of distance learning, assessment of learning outcomes, digitalisation of curricula and training of learners with special needs.

8. Developing adult learning

Opportunities for adults to participate in learning in Lithuania are limited. Only 6.6% of adults aged 25-64 have had a recent learning experience during the last 4 weeks, against the EU average of 11.1%, with almost no progress over the decade.

Despite the recognition that adult learning is an important challenge in Lithuania, concrete policy initiatives remain scarce. The structural reform of education, adopted in July 2018, includes only one action targeted at adult learning — the training of municipal adult learning coordinators. The mandate of the Non-formal Adult Education Council expired in 2017 and has not been renewed. While some financing is available, including from EU structural funds, lack of impact suggests the need to better leverage such investment, for example through more significant co-financing of learning by employers. Limited availability of information and guidance services for adults is another barrier. In November 2018, a new draft law on non-formal adult education was proposed and formal deliberations on it started in Parliament. The draft law aims to narrow the scope of existing legislation, focusing on basic and transversal skills to avoid overlaps with the existing VET Law.

Some steps have been taken towards establishing the profession of adult teacher, but further development is needed. The Law on non-formal adult education and continuing education established the concept of 'adult teacher' as a person who has acquired state-defined education and competences attesting to his or her ability to teach adults. However, there are very few dedicated university programmes, in part likely due to lack of public co-financing for such programmes. The profession of adult teacher/educator is not included in the Lithuanian Classification of Occupations (a national version of the International Standard Classification of Occupations ISCO-08). Overall, existing arrangements do not ensure that professionals involved in the provision of adult learning possess at least basic pedagogical skills for teaching adults.

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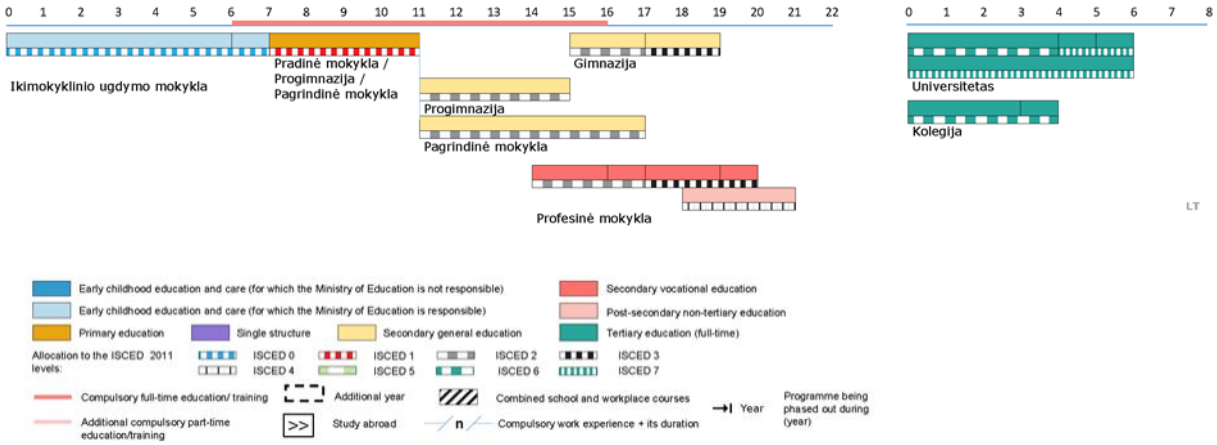
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

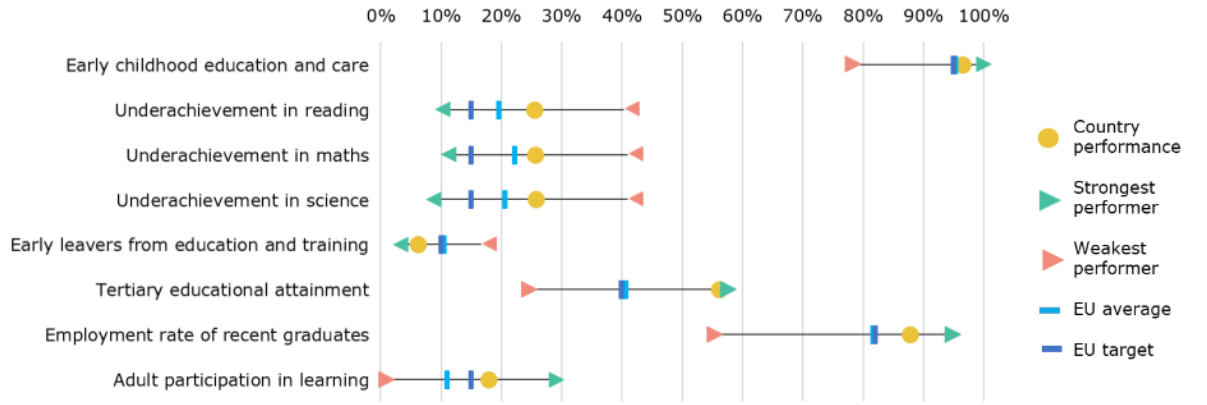
LUXEMBOURG

1. Key indicators

			Luxembourg		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			7.7%	6.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			46.6%	56.2%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			94.6%	96.6% [17,b]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		26.0%	25.6% [15]	19.5% [EU27]	19.7% [15]
	Maths		23.9%	25.8% [15]	22.3% [EU27]	22.2% [15]
	Science		23.7%	25.9% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		85.5% [b]	87.9%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		13.8%	18.0%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	73.6% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	6.9% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.5%	4.7% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€14 760 [12]	€15 610 [15]	:	€6 111 [15,d]
		ISCED 1	€14 986 [12]	€15 907 [15]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€15 156 [12]	€16 004 [15]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€15 169 [12]	€14 460 [15]	:	€7 730 [14,d]
		ISCED 5-8	: [12]	€35 658 [15]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		5.4%	6.5%	13.1%	9.5%
	Foreign-born		13.4%	6.0% [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		36.5%	50.9%	33.1%	41.3%
	Foreign-born		54.4%	58.6%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		79.3%	78.5%	72.5%	76.8%
	ISCED 5-8		90.4%	94.0%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and Volume 1 (ec.europa.eu/education/monitor).
Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u= low reliability, : = not available, 12 = 2012, 14= 2014, 15 = 2015, 17 = 2017.

Figure 23 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sports (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- In 2018, more flexible entry requirements for the recruitment competition for early childhood and primary education teachers attracted more candidates.
- Pupils' performance is clearly influenced by their ability to cope with the trilingual system.
- A reform of the orientation process at the end of primary education may have stopped a trend whereby many pupils were being guided to the lowest track in secondary education.
- Employment rates among recent graduates from all types of education are significantly higher than the EU average.

3. A focus on teachers

High salaries attract more young people and more men into teaching than in other countries. The proportion of teachers under 40 is over 40% in primary and lower secondary education. Teachers' salaries are the highest in the EU at all levels: the statutory starting salary for a lower secondary teacher (in purchasing power standards) is more than double the EU average and salaries increase subsequently in line with years of experience (European Commission, 2018). While a large majority of primary teachers are women, 46% of secondary teachers are men, the second highest proportion in the EU.

In 2018, more flexible entry requirements for the recruitment competition for early childhood and primary education teachers attracted more candidates. Despite the high salaries, Luxembourg faces a shortage of teachers, partly because of the requirement, in the teachers' competition, to demonstrate a command of the three official languages. In 2018, the conditions for applying for the primary education recruitment competition were relaxed and there were more candidates than in 2017. The number of recently graduated candidates more than doubled. New features included the possibility to apply with a qualification for cycle 1 (pre-school) only or for cycles 2-4 (primary education), as well as with a qualification for all cycles (1-4). Also, the amended law on primary education (Government, 2018a) allows for the recruitment in 2018/2019 of candidates with a bachelor's degree in programmes related to primary education as temporary teachers. In 2016/2017, one in four primary and secondary teachers had a temporary contract.

Teachers' initial education and continuing professional development have been strengthened to improve the quality of teaching. As from September 2016, a three-year induction period has been introduced for all new teachers, both in primary education, where a similar traineeship did not exist, and in secondary education, replacing the previous two-year programme. The induction period is organised jointly by the school in which the trainee is based and the Training Institute for National Education (IFEN). Every trainee is mentored by a theoretical advisor from IFEN and a practical advisor from their school. Trainees are exempted from a certain number of teaching hours so that they can attend teaching theory classes and peer exchange sessions organised by IFEN. In 2018, the induction period was reduced from 3 to 2 years for teachers who had undergone a certified practice period of at least 20 weeks in the course of their studies. For appointed teachers, the requirement for continuing professional development was doubled to 48 hours every 3 years (Government, 2018b).

4. Investing in education and training

Public expenditure on education is around the EU average, but expenditure per student is the highest in the EU. Public expenditure on primary to tertiary education per student expressed in purchasing power standard was the highest in the EU in 2015, the last available data, at 16 222 (followed by Sweden with 10 844). Public expenditure on education as a proportion of GDP is not a fully reliable indicator in Luxembourg, given that the cross-border workers and the foreign capital invested in Luxembourg make a significant contribution to the country's GDP. Measured as a percentage of the total public budget, Luxembourg spent 10.9% on education in 2017, against an EU average of 10.2%.

The school population is growing and becoming ever more diverse. According to Eurostat projections, the school-age population (3-18 year-olds) is expected to increase by 16% by 2030

and by 31% by 2040 compared with 2020. Between 2010 and 2017, it increased by 4.7% and pupils with Luxembourgish as their first language became the minority both in primary (36%) and secondary education (47.3%) (MENJE, 2018). In total, only 41% of pupils speak Luxembourgish as their first language.

5. Modernising early childhood and school education

Box 1: For an equal start – enhancing access and quality in early childhood education and care (ECEC)

Compulsory education starts with two years of pre-school from age 4. 96.6% of children participate in ECEC (EU average: 95.4%), which can be supplemented with an optional year from age 3. In the face of rapidly increasing demand, Luxembourg has invested heavily in extending access to ECEC and non-formal education facilities in the last 10 years, nearly tripling the number of places and doubling the availability of parental assistants (Neumann, 2018). At 60.8%, the proportion of children below 3 who participate in ECEC is one of the highest in the EU.

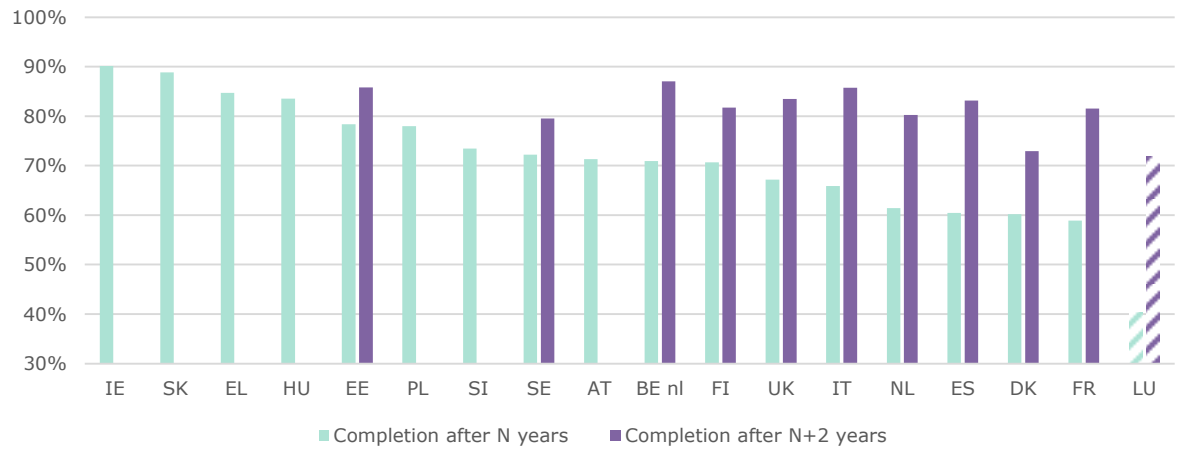
In a second phase of policy intervention, the focus switched from access to quality. In 2016, the Youth Act established national quality standards in ECEC with which all providers had to comply by September 2017 in order to be eligible for the state co-financing scheme (*chèque-service accueil*). This includes activities to familiarise children aged 1-4 with Luxembourgish and French. Every child is entitled to 20 hours per week of free education and care delivered by eligible providers, with additional hours for low-income families. ECEC providers are required to draw up general pedagogical concept that describes how their services are in line with the principles, characteristics and action areas of the national curriculum. They also have to document their professional activities. Regional agents have been appointed to advise on the content and formulation of the plans and visit the providers at least once a year. Compliance with the rules determines access to public subsidies and is required of all ECEC services, including home-based facilities.

Luxembourg's early school leaving rate, as measured by the Labour Force Survey in line with standard EU practice, stood at 6.3% in 2018. This is significantly below the EU average of 10.6%, but the figure should be interpreted with caution because of the limited sample size. National estimates based on the actual number of young people not completing upper secondary education indicate that early school leaving has been on the rise since 2009 and stood at 12.4% in 2016 (MENJE, 2018a). The Education Ministry's Local Action for Youth offices are responsible for identifying early school leavers, contacting them and helping them return to education or find a job. A School Mediation Service was created in 2018 to examine the cases of pupils at risk of drop-out because of the inappropriate use of available resources or flaws in the school system or legislation.

15 year-olds perform significantly worse than the EU average in all three subjects in the OECD programme for international student assessment (PISA) tests (mathematics, reading and science). Luxembourg's average performance, already below the EU average, worsened between 2012 and 2015, especially in science. The impact of socio-economic background on performance is the second strongest in the EU. It outweighs (by 2.7 times) the impact of the language spoken at home (MENJE and the University of Luxembourg, 2016) and even migrant background. When one adjusts for socio-economic status, the performance gap for children both of whose parents were born abroad is reduced by two thirds (OECD, 2017).

Grade repetition is frequent and is strongly linked to early school leaving. About 20% of pupils have repeated a year by the third grade of primary school (MENJE, 2018b); by the end of secondary education, this applies to 60%. Grade repetition is particularly high among pupils in technical secondary education, where 77% of final grade pupils will have repeated a year at least once (MENJE, 2018b). In general secondary education, the proportion is lower, but still significant (33%). Failing two years in the course of one's studies is the clearest predictor of early school leaving (MENJE, 2017a).

Figure 2 Successful completion of upper secondary programmes

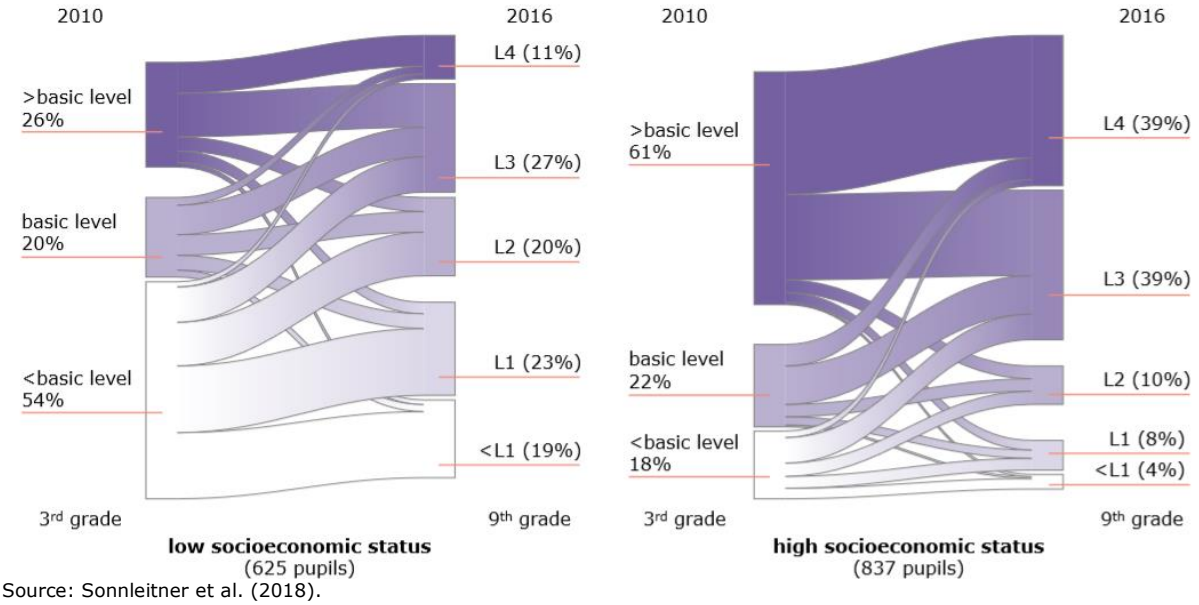


Source: OECD (2014).

The 2017 reform of the orientation process at the end of primary education may have stopped a trend whereby many pupils were being guided to the lowest track in secondary education. Between 2006 and 2016, the proportions of pupils guided to the academic track (*enseignement secondaire classique*) and the technical track (*enseignement secondaire général*) fell steadily, while those going to the lowest, vocational track (*voie préparatoire*) increased from 6% to 15%. Pupils with lower socio-economic status and foreign nationality are the most likely to fall behind in all subjects and to be guided towards the lower tracks. Changing tracks is extremely rare (Klapproth et al., 2013). In 2017, the orientation process was reformed to give parents a say in the decision. Following this, 98.2% of orientation decisions were in line with the parents' wishes, whereas previously this had been the case with 84%. This may explain the trend shift in 2017/2018, when the proportions of pupils in the two higher tracks increased again and the proportion in the vocational track dropped from 15% to 12.2%. Monitoring is needed to determine whether pupils with lower socio-economic status are benefiting equally from this shift.

Pupils' performance is heavily influenced by their ability to cope with the trilingual system. The vernacular language at primary level is Luxembourgish, while pupils learn to read and write in German. All subjects (except for French) are taught in German. While the main teaching language in technical secondary education remains German, in the higher tracks mathematics is taught in French, which is the language of the final exam. Several technical schools offer all courses in French. In general secondary education, the teaching language switches from German to French in grade 7 for mathematics and in grade 10 for other subjects. This system is challenging for all, but especially for the 59% of pupils who speak a language other than Luxembourgish at home. In the national competence tests, nearly half of all grade 3 pupils (45%) fail to show basic reading competence in German, the teaching language in primary education (Martin et al. 2012). Language skills have a major impact on pupils' performance in mathematics, too: when adjusting for pupils' level of reading comprehension in the test language and their socio-economic status, most differences in performance disappear (Martini and Ugen, 2018). Socio-economic status is the factor that has the biggest impact on school performance: more than half the pupils in the bottom quarter of the socio-economic scale perform below the basic level (*niveau socle*) in grade 3 and the proportion of those failing to achieve basic level (level 2, L2) by grade 9 drops much less than among their counterparts in the top quarter, irrespective of their mother tongue (Sonnleitner et al., 2018) (Figure 3).

Figure 3 Pupils' development in German reading skills – comparison of pupils of low socioeconomic status (Q1) with pupils of high socioeconomic status (Q4)[224]



Source: Sonnleitner et al. (2018).

The quality assurance system has been strengthened. Like primary schools, secondary schools are now also obliged to adopt school development plans every 3 years. Since September 2016, they have been assisted in the design and implementation of the plans by the Pedagogical and Technological Research and Innovation Coordination Service (SCRIPT). The 15 regional inspectorate offices created by the law of May 2017 are responsible for the administrative management and pedagogical supervision of primary schools, monitoring implementation of the school development plans and organising support for pupils with special educational needs. This means that the heads of the offices act as directors to the primary schools. The chair of the school management committee is responsible for the school's operation, but does not have employers' rights over the other teachers. Secondary schools have their own heads within the school. In March 2018, a National Observatory on School Quality was created to gather and analyse evidence on the school system and the functioning of primary and secondary schools.

In 2017, secondary education was reformed in line with the needs of an increasingly diverse school population. The main objective of the new law on secondary education is to address learners' needs better by giving schools more autonomy to organise the curriculum, depending on which of the three 'profiles'[225] they opt for. The school development plans will need to reflect the needs of the school population and cover aspects such as guidance, study success, after-school activities, psycho-social assistance and the improvement of digital skills. The number of subjects covered for the upper secondary leaving certificate has been reduced to allow pupils to focus on those that match their further study plans. The OECD and the secondary school teachers' trade union have warned of the risk of reducing educational equity (SEW, 2017) and pupils' increasing segregation because of the fragmentation of school systems (OECD, 2018).

Schools are encouraged to embrace ICT and new technologies. Luxembourg is among the top performers in the EU's digital economy and society index (DESI). It ranks high on human capital, in particular the use of digital skills and the internet. Still, according to the ADEM employment agency, 70% of posts in the ICT, services and financial sectors remain vacant. In 2017/2018, ICT was introduced as a new subject in the classical secondary curriculum. The syllabus includes an introduction to programming, IT security, databases and technical IT.

[224] The chart concerns only pupils who regularly progressed in the national school system from grade 3 to 9, i.e. without repeating a year or switching to private education or a school abroad.

[225] The three possible profiles are:
(i) 'future hubs', with an emphasis on ICT, science and new technologies;
(ii) entrepreneurial schools; and
(iii) schools specialising in sustainable development.

6. Modernising higher education

Luxembourg has set itself the target of raising the tertiary attainment rate among 30-34 year-olds to 66% by 2020. It already has one of the highest rates in the EU (56.2%), partly thanks to the high proportion of graduates in the migrant population (58.6%, as compared with 50.9% of native Luxembourgers). In 2017 Luxembourg had the second largest proportion of international graduates[226] in the EU at master's (43%) and doctoral level (167%). Study programmes are bilingual, trilingual (French, German, English) or entirely in English.

There is virtually full employment of young secondary and tertiary graduates in Luxembourg. In 2018, the employment rate for young (20-34 year-old) tertiary graduates was 94.0%, well above the EU average of 85.5%. The employment rate among those with upper secondary or post-secondary (non-tertiary) education was similarly high (95.4%, against an EU average of 79.5%). Tertiary graduates enjoy a higher wage premium than their counterparts elsewhere in the EU (OECD, 2017).

Luxembourg continues to raise financial support for students to meet the strong demand for highly skilled workers. Following a 2013 European Court of Justice ruling, children of parents who work in Luxembourg but live in a neighbouring country became eligible for state support for their studies. This led to a sharp rise in the number of students who received a grant in 2013/2014 - from just under 15 600 to more than 25 200 - and this growth has continued. The level of support per student has also increased sharply. Financial aid has three components: a basic part, a mobility part and a social part, with a view to making the system more equitable. All students are eligible, regardless of the country in which they study.

Funding for higher education and research has increased by 25% between 2014-2017 and 2018-2021. Luxembourg is spending EUR 1.436 billion on higher education and research in the current financing period (MESR, 2019). The 2018-2021 agreement provides for an overall budget of EUR 766.84 million for the University of Luxembourg and EUR 383 million for the three public research institutes. A further EUR 265.4 million has been earmarked for programmes financed from the national research funds. In higher education, a range of bachelor's and master's programmes are on offer, as well as doctoral studies, mainly at the University of Luxembourg. In addition, some secondary schools run short-cycle programmes leading to advanced technical diplomas. Expenditure on higher education includes public financial aid for students (see above).

New legislation strengthens the organisational and decision-making autonomy of the University of Luxembourg. Organisational autonomy was the only aspect in which the University scored low in 2017, while it ranked high in terms of financial, academic and staffing autonomy, according to the European University Association's autonomy tool[227]**.** A new law (Government, 2018a) aims to increase its autonomy in terms of internal organisation and decision-making and to set clearer rules on its management structures and decision-making procedures. The rector is established as chief executive. The role of the university council has been extended to determining the orientations of study programmes, contributing to study regulations and proposing two members for the university governing board. The law also provides for student participation in decision-making and facilitates collaboration with other research institutes in Luxembourg.

An amendment of the Higher Education Act aims to improve the quality of foreign tertiary education providers. The amendment (Government, 2018b), addresses the organisation, relevance and quality assurance of programmes and introduces a reference to external and independent quality assurance agencies which have to be members of ENQA and registered at EQAR.

7. Modernising vocational education and training

Vocational education and training (VET) graduates enjoy excellent employment prospects. In 2017, the proportion of pupils enrolled in upper secondary VET programmes was 61.6%, against an EU average of 47.8%. The employment rate among recent VET graduates is 95.4%, well above the EU average of 79.5% and even above that for tertiary graduates. However, grade repetition remains a major challenge in technical secondary education (see Section 5).

[226] Inward degree mobility rates are computed as inward degree–mobile graduates as a percentage of graduates originating in the country.

[227] European University Association: https://www.university-autonomy.eu/countries/luxembourg/.

New legislation addresses certain framework conditions in VET. In June 2019, the 2008 VET Reform Act was amended to address a series of technical issues, including:

- extending the length of the training period to improve completion rates;
- introducing a form of training for people already in employment; and
- integrating the contracts for apprenticeships and work placements in the Labour Law in order to improve legal certainty.

Cross-border cooperation has been strengthened to ensure apprenticeship places. In March 2018, Luxembourg signed a bilateral agreement with the German *Land* of Rhineland-Palatinate that was modelled on the 2017 agreement with the Lorraine region in France. Both are based on a 2014 framework agreement aimed at boosting cross-border mobility in VET and thereby strengthening the labour market in the *Grande Région* (i.e. Luxembourg and the bordering regions of Belgium, France and Germany). In September 2018, a total of 150 VET students were involved in apprenticeship mobility across the *Grande Région*.

Box 2: The macro-reform of vocational education and training

European Social Fund project (July 2017 — December 2019)

Budget: EUR 860 200

Implementing body: *Service de coordination de l'innovation et de la recherche pédagogiques*
The project is aimed at creating a coherent and efficient system to analyse and revise VET programmes and to adapt some 120 curricula to the new legislative and regulatory framework. The revision should make it easier to switch between vocational programmes and educational levels (*'Kein Abschluss ohne Anschluss'* – 'no dead-end qualifications').

8. Developing adult learning

Luxembourg has a growing and mixed population, 47.5% of whom are foreign-born (STATEC, 2019a). Between 2009 and 2018, it saw the highest rate of population growth in the EU (+22%). Foreign-born employees are strongly represented at both ends of the employment spectrum, holding both low-qualified and highly qualified positions (OECD, 2017). On average, migrants tend to be highly educated: 58.6% of migrants aged 30-34 have a tertiary degree. As a result, migrants enjoy a significantly higher employment rate (70.8%) than the native-born population (61.2%).

Overall participation in the labour market and adult learning is high, but lower among low-skilled and older workers. Employment rates are higher than the EU average across all levels of education, including for low-skilled workers: in 2018, the proportion of low-qualified adults in employment stood at 60.8%, against an EU average of 56.8%. 18% of adults surveyed had had a learning experience in the previous four weeks, against an EU average of 11.1%. However, participation in adult learning is much less common among low-skilled workers (7.3%), increasing the risk of their skills becoming outdated and of them ending up in early retirement. The employment rate among older workers (55-64 years) remained particularly low (42.3%) in 2018, against a 59.3% EU average, making it especially important to improve their participation in lifelong learning. A July 2017 amendment to the Labour Law created incentives for companies to provide training for their employees and changed the state co-financing arrangements for this. In 2018, the public employment service and the chamber of commerce launched a joint programme to improve job-seekers' employability. The 'Skill you up' programme includes skills assessment, coaching, training and follow-up for those wishing to move to another occupation and/or sector.

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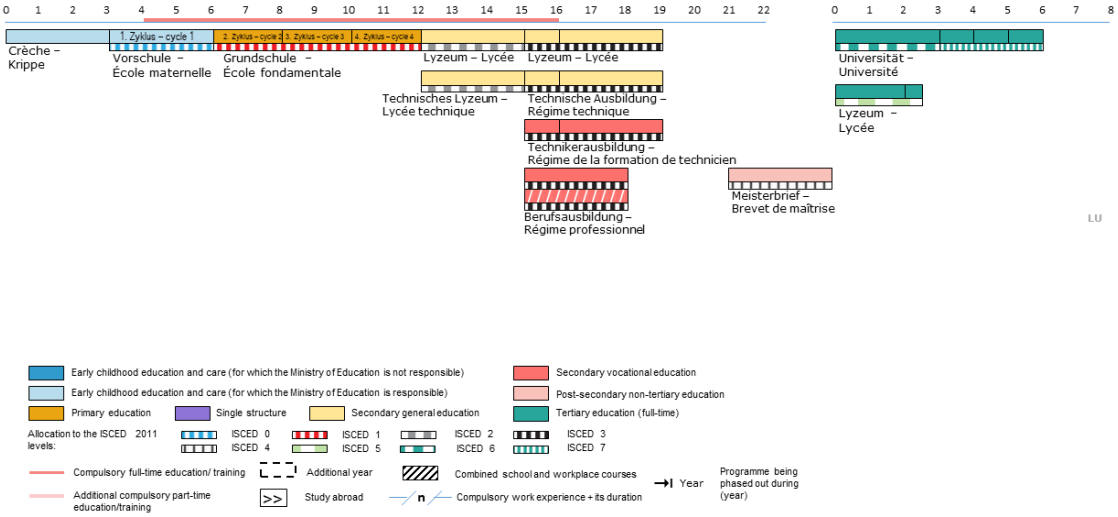
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018, *The structure of the European education systems 2018/19: Schematic diagrams*. Eurydice Facts and Figures. Luxembourg (Publications Office of the European Union).

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European Commission

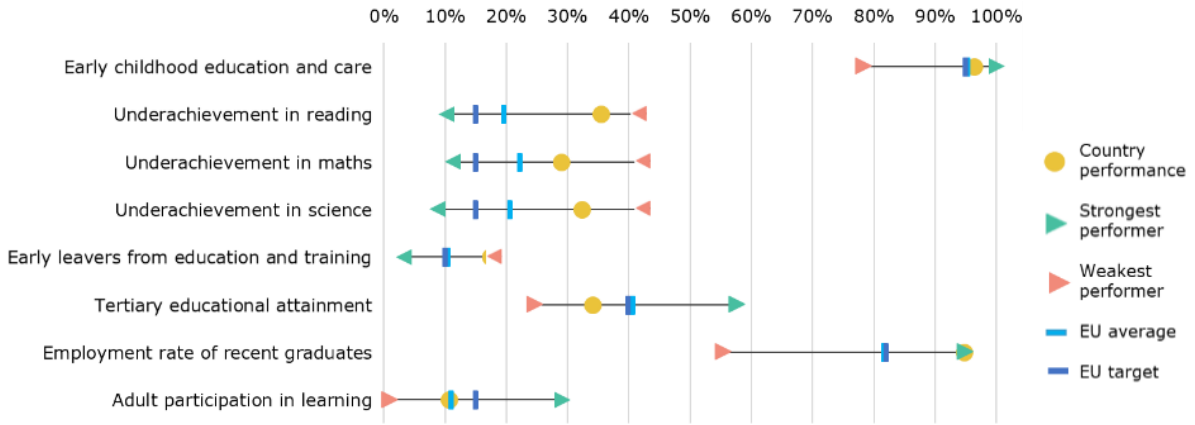
MALTA

1. Key indicators

			Malta		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			25.7%	17.5%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			21.9%	34.2%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			94.6%	96.5% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		36.3%	35.6% [15]	19.5% [EU27]	19.7% [15]
	Maths		33.7%	29.1% [15]	22.3% [EU27]	22.2% [15]
	Science		32.5%	32.5% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		92.9%	94.8%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		6.2%	10.8%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	9.0% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	5.4% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.4%	4.9% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€5 751 [12,p]	€5 813 [15]	:	€6 111 [15,d]
		ISCED 1	€6 563 [12,p]	€5 853 [15]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€9 600 [12,p]	€10 089 [15]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€8 301 [12,p]	€7 316 [15]	:	€7 730 [14,d]
		ISCED 5-8	€10 703 [12,p]	€14 913 [15]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		26.0%	17.4%	13.1%	9.5%
	Foreign-born		: [u]	19.1% [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		21.9%	29.0%	33.1%	41.3%
	Foreign-born		22.1% [u]	48.2%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		88.6%	91.1%	72.5%	76.8%
	ISCED 5-8		97.0%	96.7%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre on UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, p = provisional, u= low reliability, := not available, 12= 2012, 14= 2014, 15 = 2015, 17 = 2017.

Figure 24 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Work is underway to improve the quality of teaching and the attractiveness of the profession.
- Improving the quality of investment in education and enhancing monitoring and assessment are key challenges.
- Increased participation in early childhood education and care and the new secondary system may help reduce the number of early school leavers.
- While participation in tertiary education is increasing, its labour market relevance is still a challenge.

3. A focus on teachers

Teachers do not have a very high status in Malta. Data from the 2018 OECD's Teaching and Learning International Survey (TALIS) shows that only 14.5% of lower secondary teachers believe that their profession is valued in society, compared to an EU average[228] of 17.7%. Teachers are quite often criticised in local media as failing to serve the changing needs of society while benefiting from favourable working conditions (Attard Tonna and Calleja, 2018). This perception has the potential to increase the challenge to recruit and retain good teachers and may further fuel gender imbalances. 99% of teachers in pre-primary education are women and their proportion remains very high at primary (86%) and secondary levels (64%). At tertiary level, the proportion of women falls to 36% (2017 data).

Although teachers' motivation is high at the beginning of their careers, this tends to decrease over time. According to TALIS 2018, 66% of teachers say that if they could decide again, they would still choose to become a teacher, compared with an EU average of 77.6%. Fewer teachers (63.7% v 76.4% at EU level) with more than 5 years of work experience report feeling this way than newly qualified teachers (73.0% v 83.7%). Teachers have opportunities to move into management and other educational roles (European Commission/EACEA/Eurydice, 2018). Those who have not less ten years teaching experience can take on assistant head of school or department head responsibilities – and after that they can apply to become head teachers[229]. Class teachers can also become mentors and/or have pedagogical or methodological roles outside the classroom. Teachers' individual performance is formally assessed only at the end of their induction programme. Appraisals and feedback on teachers' performance could be used to recognise good teaching and thus positively impact on job satisfaction, while challenging teachers to address issues with their performance.

There have been measures to increase salaries, but challenges remain. Limited salary progression throughout the teaching career may make it more difficult to draw people into the profession and to ensure that they remain satisfied and sufficiently motivated. The starting statutory salary for teachers at lower general secondary level is around the EU average (PPS 24 494 vs 25 946) (European Commission/EACEA/Eurydice, 2018). However, salary progression is very limited after 10 years of service and the top salary, reached after an average of 19 years, is 26% lower than the EU average at secondary level. The sectoral agreement signed in 2017 includes an increase in class allowances for teachers, in line with their length of employment and the introduction of new allowances[230].

An expected increase of the school-age population calls for an enhanced system to monitor and address teacher shortages. Even though the proportion of teachers aged over 50 was the second lowest in the EU at primary level (11.5% v 32.8% at EU level) and the lowest at secondary level (15.2% v 39.3% at EU level) in 2017, teacher shortages tend to be a recurrent

[228] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

[229] For further details on teacher career progression, see Ministry for Education and Employment, (2017). Agreement between the Government of Malta and the Malta Union of Teachers, Malta: Ministry for Education and Employment.

[230] For further details, see European Commission, (2018). Education and Training Monitor – Volume 2 – Malta, Box 1: New collective agreement for the teaching sector.

problem. There was a significant teacher shortage in the 2017/2018 school year. In 2018/2019, the situation improved and schools opened with minimal shortages[231]. Shortages happen for several reasons: teachers may find better paid jobs in private schools or outside their sector, or take non-teaching duties or leave due to family responsibilities. Teacher shortages are addressed by either offering temporary contracts to qualified teachers or by employing supply teachers[232]. The resultant high turnover may have adverse effects on teacher collaboration and student outcomes (OECD, 2018). Improvements to monitoring manpower needs and increases to the attractiveness of the profession could be particularly important in future given that the school-age population is expected to grow over the next years, according to Eurostat.

Malta has taken steps to improve teacher education. Initial teacher education has been extended from bachelor's degree to master's level to provide higher teaching quality. The teaching qualification does not fully qualify graduates as teachers, as they need also 2 years of teaching experience. In 2018, the Institute of Education started offering initial teacher education in primary education and some areas of secondary education on a part-time basis to supply teachers, using a blended learning approach. This has been done to support supply teachers who want to improve their qualifications and have the possibility to improve their salary by becoming formally qualified teachers. These courses will also assist those who want to make a career change and obtain the necessary teaching qualification to become teachers and take on a leadership role.

Measures have been put in place to support a professional learning community. TALIS 2018 highlights that a high proportion of teachers (60.7% v 51.9% at EU level) consider that they do not receive sufficient incentives to participate in continuing professional development (CPD). In addition, around half of them report that they are unlikely to participate in CPD because of family responsibilities and schedule conflicts. The sectoral agreement signed by the government and the Malta Union of Teachers in 2017 tried to address these challenges. It widened the concept of CPD to include all types of learning opportunities (within schools, externally designed and based on self-development) and allowed teachers to receive a salary increase in 6 years rather than 8, if they complete 360 hours of CPD. Between October 2018 and February 2019, the Malta College of Arts, Science and Technology (MCAST – a provider of advanced vocational training) provided CPD sessions for teachers, which included workshops with a special focus on innovative teaching techniques and digital literacy (use of social media in classrooms, innovative teaching techniques, using technological tools in the classroom). The agreement requires teachers and school heads to draw up a school development plan to respond to the changing environment in schools and changes in school composition. The number of foreign-born students aged under 15 increased by 67% between 2014 and 2017, with an impact on teachers' working environments, (OECD, 2019). According to TALIS 2018, one in five (20.4%) of teachers report that they need a higher level of CPD in this area and this is above the EU average (13.4%). Measures are being implemented to provide CPD to improve teachers' level of preparedness.

4. Investing in education and training

Comparatively high levels of spending on education are not leading to better educational outcomes for all. In 2017, Malta's general government expenditure on education was at 4.9% of GDP (compared with 4.6% at EU level). As a proportion of total public expenditure, spending is among the highest in the EU (13.9% v 10.2% at EU level). Although positive results have been recorded such as the decline in the rate of early leavers from education and training and increases in tertiary education attainment, educational outcomes and attainment rates are generally lower in EU comparison (see section 5 and 6). This suggests some challenges in efficiency of spending. Spending per student across all education levels (ISCED 02-8) is also among the highest in the EU (PPS 8 261 2015) and particularly high in tertiary education (ISCED 5-8) (PPS 14 913 v 11 413 at EU level). Compensation of employees represents the main budget item (63.5%) and is close to the EU average (62.0%), while nearly 20% of expenditure in the education sector is spent on a variety of transactions, including payments to private schools and subsidies.

[231] In the scholastic year 2017/18, there was a shortage of about 70 teachers; and in the scholastic year 2018/19, there was a shortage of about 3 teachers. Data provided by the Minister of Education and Employment in July 2019.

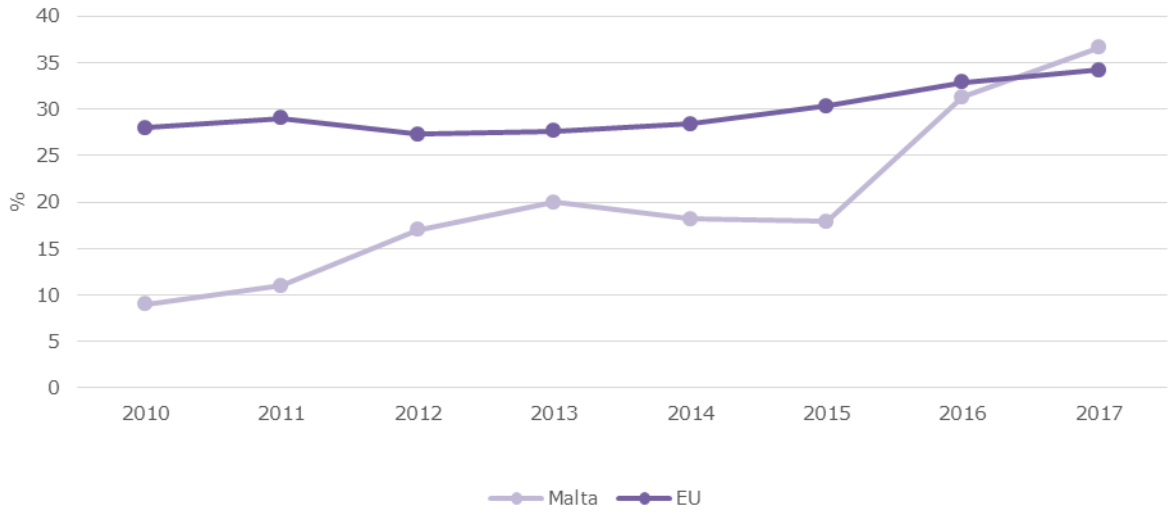
[232] In May 2019 supply teachers represented 6% of total teachers, according to the data provided by the Ministry of Education and Employment.

The expected increase in student numbers is a challenge for school infrastructure. Some new schools have been opened or existing schools extended[233] and pre-fabricated classrooms have been used to make up for a lack of space in the area of St. Paul's Bay, which has seen increasing numbers of migrants arrive. However, the pressure on school infrastructure is expected to persist over the next years due to demographic trends. The primary student population increased by 6.4% between 2013 and 2016 and the student population (5-16 year-olds) is expected to increase by 12.7% between 2019 and 2025, according to Eurostat baseline projections.

5. Modernising early childhood and school education

Participation in early childhood education continues to increase for children under three. The proportion of children below 3 in formal childcare (full or part-time) doubled in 2 years (from 17.9% in 2015 to 36.6% in 2017) and is now above the EU average of 34.2% (Figure 2). The Free Childcare Scheme was launched in 2014 to increase participation in childcare by children aged between 3 months and 3 years of age, with the objective of increasing the number of women working. The scheme offers free childcare services to all parents who are working or studying full or part-time, provided either directly through government services or via registered childcare centres. Although it has decreased by 2.1 pps since 2010, participation in early childhood education and care for 4 year-olds in 2017 is very high (96.5% v EU average 95.4%).

Figure 2 Participation in formal childcare of children aged under 3, 2010-2017



Source: Eurostat, EUSILC, 2017

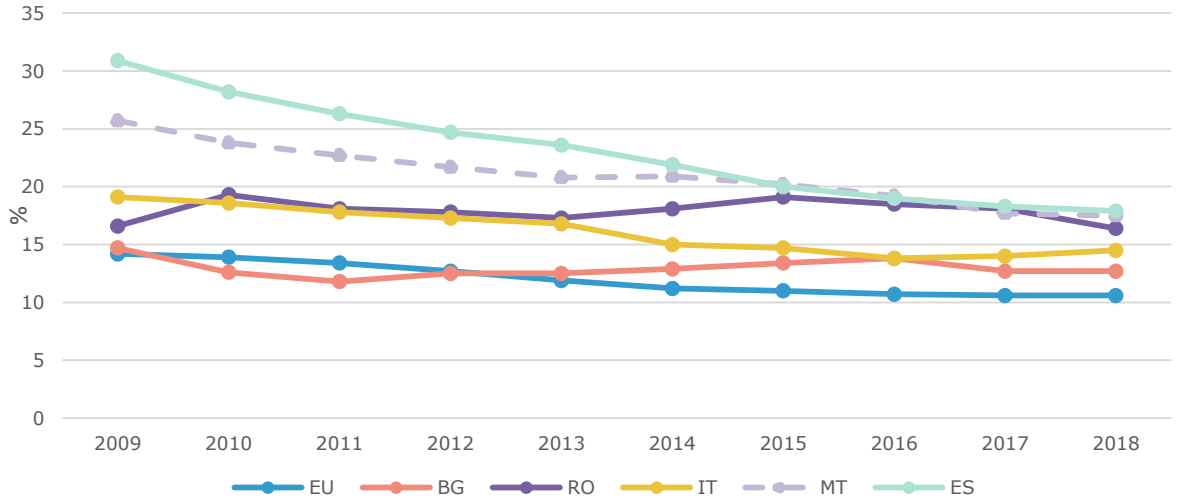
Work is being done to improve quality in early childhood education and care. From 2015/2016, the required qualification level for staff working with 3 and 5 year-olds was raised to bachelor's degree with 4 years of study, or 2 years of study for holders of the MCAST Higher Diploma in Advanced Studies in Early Years. However, this requirement is still being phased in and the target of all groups of children having at least one staff member with a tertiary qualification has not yet been reached. The big increase in participation in childcare for children aged under 3 in recent years has required a new national policy for early childhood education and care and a revision of national standards for the age group 0-3. A public consultation is expected to be launched by the end of the year. High quality early childhood education and care may help prevent later early school leaving**.**

Reducing early school leaving remains a priority. Although it has declined since 2010, the proportion of early leavers from education and training aged 18-24 is still markedly above the EU average (17.5% v 10.6% in 2018) and the national Europe 2020 target of 10% (Figure 3). The decline may be fuelled by a reduction in secondary school absenteeism (from 30.0% in 2012/2013

[233] A new primary school in Qawra, announced in the 2015 budget, will open in 2019/20. In 2018/19 a new primary school in Marsascala was opened and the Pembroke Primary school was extended in 2018. The planning process for two new primary schools and the extension and modernisation of another two primary schools has started (Information provided by the Ministry in July 2019).

to 21.6% in 2016/2017[234]) and improvements in vocational education (see section 7). Despite their low education levels, the employment rate of early school leavers was the highest in the EU in 2017 (71.7% v an EU average of 44.8%), reflecting easy access to employment in industries such as tourism. Since low-qualified people are less likely to participate in adult learning (see section 9), early school leavers nevertheless face a higher risk of future unemployment and social exclusion.

Figure 3 Early leavers from education and training, 2009-2018



Source: Eurostat, LFS.

A new lower secondary school system aims to tackle drop-out rates, focusing on improving employability. As of September 2019, through the 'MyJourney' reform[235], secondary school students are allowed to choose between general, vocational or applied subjects, in addition to the core curriculum. The aim is to respond to different educational needs and give parity of esteem to less academic paths. Following compulsory education, students may opt to continue their studies at the University of Malta, MCAST and Institute of Tourism Studies or another higher education institution of their choice. While welcome, the possibility of choosing a less academic path at the age of 12 may lead to later social exclusion and limited employment opportunities. Students may leave compulsory education not being well equipped with fundamental competences that could allow later reskilling and upskilling. Measures are being taken to establish partnerships with post-secondary and vocational institutions and industry to provide quality education and training to all students. Teachers have being provided with training and professional support to teach the new nine applied subjects. The major challenge that government has faced is to ensure there are enough qualified teachers. The Malta Union of Teachers has raised concerns about this and the insufficient provision of teacher training and has warned about the possibility that students at risk of dropping out with low skills may end up having unqualified teachers (Times of Malta, 2019).

Measures are being implemented to improve student outcomes[236]. Implementation of the learning outcomes framework started in 2018/2019 with the development of new syllabi. Gradual implementation will continue until 2022/2023 when these new learning programmes will be available throughout the compulsory education system. The curriculum reform is accompanied by the introduction of continuous assessment instead of half-yearly examinations in both primary and secondary schools. While these reforms are a further step towards a higher quality of education, their effective implementation may mean teachers need new skills in assessment and more guidance on how to carry out this assessment. Teachers are using the 40 hours of paid CPD to update their skills. In addition, primary students with low literacy skills are being given additional support by support staff who take them out of class during school hours. An evaluation of this new approach has not been carried out yet.

[234] Data provided by the Minister of Education and Employment in March 2019.
[235] This project is co-financed by the European Social Fund. For further details, see https://www.myjourney.edu.mt/ and http://exploremoreproject.eu/en/option-form-en.pdf
[236] For further details on PISA 2015 results, please see European Commission (2017), Education and Training Monitor – Volume 2 - Malta.

Box 1: Towards a more inclusive education

Student performance is strongly influenced by socio-economic status, the type of school - with pupils from 'private schools performing best, followed by church schools and then state schools - and by disability status. The Council of the European Union addressed a country-specific recommendation to Malta in 2019, calling on the country to 'focus investment-related economic policy on […] inclusive education and training' (Council of the European Union, 2019).

A policy on inclusive education in schools[237] and a national inclusive education framework were published at the beginning of April 2019. A public consultation has recently been concluded. A strategic plan has been drawn up to guide schools on implementing the inclusion policy and framework in 2019/2020. The aim is to guide teachers, school heads, and all other stakeholders in implementing equitable opportunities and inclusive practices in public schools. Training sessions have already been delivered to educators and senior management teams on how to do so. This may help put in place a less fragmented approach to tackling social exclusion and early school leaving.

The policy adopts a wide definition of inclusion which covers learners: with special needs; with different sexual orientations; from ethnic minorities and different religions; and high ability learners.

Schools are encouraged to change existing pedagogical approaches and redesign practices, where needed, to ensure that all students have access to quality education. The framework provides school communities with tools to identify areas in need of improvement and to monitor progress.

6. Modernising higher education

The increase in tertiary education student numbers is accelerating. From 2010 to 2017 the number of students in higher education increased by 33.1%. This is due to a combination of demographic factors and measures to ease access introduced in this period. This has contributed to a rise in the proportion of people aged 30-34 with tertiary-level qualifications, which has increased by 12.1 pps since 2010. It remains, nevertheless, below the EU average (34.2% v EU 40.7%) despite reaching the national ET2020 target of 33%. This positive trend may help to address labour market challenges: employment growth is expected to remain strong up to 2030 and the proportion of job openings requiring high-level qualifications is expected to be 36% by 2030, 7 pps below the EU average (Cedefop, 2019).

Skills shortages and mismatches remain a challenge. Despite the highest employment rate in the EU of recent tertiary graduates (96.7% v EU 85.5%), the skills of tertiary education graduates do not sufficiently match the needs of the labour market. When asked to explain the causes of hard-to-fill vacancies, employers indicated that a small number of applicants with the required skills, in particular transversal skills, was the most common cause. This may explain the high reliance on foreigners to fill skills shortages. Only a small proportion of the employers surveyed had been involved in formal cooperation programmes with education providers (Jobsplus, 2017). Improving cooperation between employers, stakeholders and higher education institutions could help ensure that students are better equipped with relevant skills.

A more coordinated and effective approach is needed to map and anticipate skills needs. In 2017, the Maltese government collaborated with the Slovak Academy of Sciences to develop a mid-term skills and occupational forecasting model for Malta. The model is still being set up. In 2018, Malta joined the pilot of the first European graduate tracking survey to collect data on transition to the labour market and monitor the labour market relevance of tertiary education. Initial results will be published by the end of 2019. The National Skills Council announced in 2018 that it was drafting a national skills strategy. The final text will be aligned with the Digital and Artificial Skills Strategy and will identify individual transversal skills to be integrated into education and training. It is expected to be published by the end of 2019.

[237] 'A policy on inclusive education in schools: Route to quality inclusion'.

7. Modernising vocational education and training

Malta continued to implement the 2018 Work-based Learning and Apprenticeship Act. The numbers enrolled in upper secondary vocational education and training (VET) decreased from 28.8% in 2016 to 27.1% in 2017. The MCAST worked with local industry to update its programmes in a large number of sectors. Partnership agreements with companies will provide for work-based learning opportunities in three different forms: apprenticeships, work placements, and internships. Courses are offered at level 3, 4 and 6 of the Maltese Qualification Framework (MQF).

In 2018 MCAST launched an internal audit to review all programmes delivered and assessed by its institutions. The audit will review the educational and operational processes in line with the national quality assurance framework and the way these impact on training. Industry, MCAST staff and students are being consulted to ensure high quality of programmes.

Box 2: Improving attractiveness of vocational education and training

The European Structural Fund project *'Achieving vocational excellence through enhanced work-based learning'* aims to build on MCAST's work-based learning with the aim of making VET more attractive to students, while providing a more competent workforce that can meet current and future industrial requirements.

The project will involve developing and delivering a mentoring training programme for MCAST lecturers and staff. Training and information sessions will also be organised for industry sponsors. MCAST will map the number of apprenticeships per area and the learning outcomes which can be offered by each participating employer. This monitoring will be achieved through the development of a comprehensive competency framework and use of an analysis tool.

It is estimated that around 600 MCAST students who follow an apprenticeship programme will benefit from the project. Implementation began in 2019 and is expected to be completed by 2022.

8. Developing adult learning

In Malta, the proportion of low-qualified adults is still high but there is a gradual improvement. The overall proportion of adults aged 25 to 64 who have low qualifications was down from 48.9% in 2017 to 46.7% in 2018, and their employment rate increased over that year from 58.6% to 60.9%. The case for further upskilling and reskilling is strong, since the 125 800 low-qualified adults largely exceed the 19 100 thousand elementary jobs available. There was a slight increase in adult learning participation, which rose from 10.6% in 2017 to 10.8% in 2018, still 4 pps below the EU 15% benchmark, but close to the EU average of 11.1%. While participation for people with tertiary qualifications has increased by 6.2 pps and is now above the EU average (22.6% v EU 19.0% in 2018), for low-qualified adults who are more in need of upskilling and reskilling, this has only increased by 0.7 pps (from 3.4% to 4.1%) since 2010.

Malta continued its work to implement the Council Recommendation on upskilling pathways. The 'Schools as Community Learning Spaces' programme promotes an informal community learning space which allows adults (including parents and guardians) to gain useful skills. *'Check in, Take off'*, an Erasmus+ policy experimentation project with Ireland and Norway, will develop a skills checker tool that enables individuals to carry out an initial assessment of their literacy, numeracy and digital skills and provide options for flexible learning opportunities as well as a pathway to recognise these skills.

Malta is making efforts to improve the quality of adult learning. In 2016, the University of Malta created the Department of Arts, Open Communities and Adult Education. It has taken responsibility for the Higher Diploma in the Teaching of Adults - a two-year evening diploma course in adult education, training and development, which is now a prerequisite for people engaged by the Ministry in teaching adults (currently 150) as part of its broad adult education programme. In 2018, the department launched the Recognition of Prior Learning programme for holders of qualifications and experience in adult education and training. This year-long programme has been developed for those holding qualifications in adult education or an equivalent who wish to pursue the master's degree course in adult education, which will open in February 2020.

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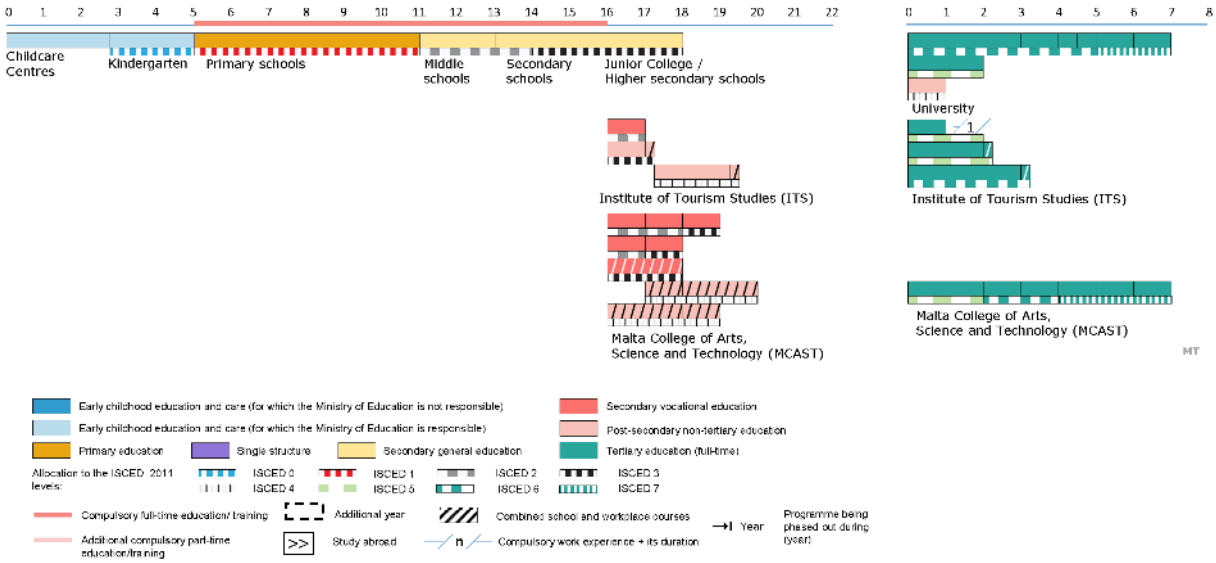
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

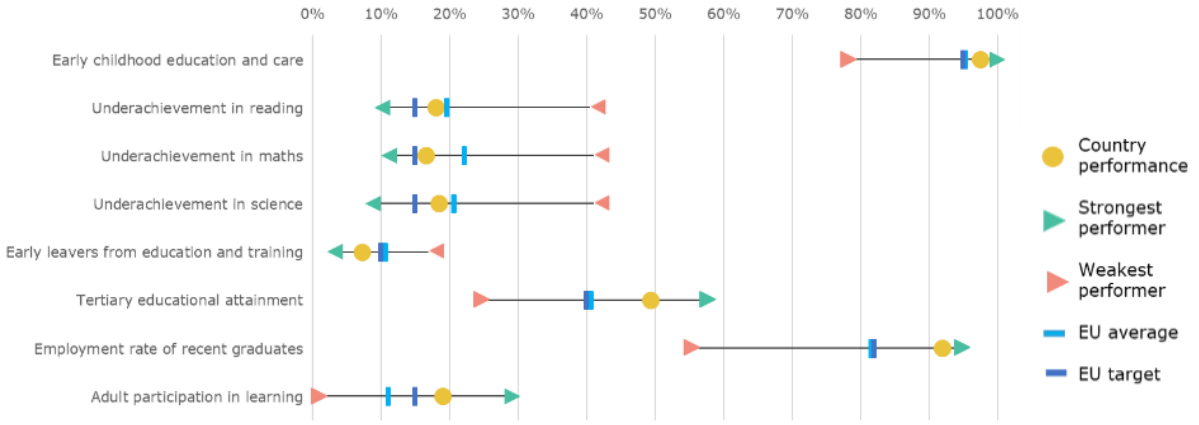
NETHERLANDS

1. Key indicators

			Netherlands		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			11.3%	7.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			38.3%	49.4%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			99.5%	97.6% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		14.3%	18.1% [15]	19.5% [EU27]	19.7% [15]
	Maths		13.4%	16.7% [15]	22.3% [EU27]	22.2% [15]
	Science		13.2%	18.5% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		92.3%	92.0%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		17.1%	19.1%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	2.3% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	22.6% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.6%	5.1% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€6 221 [12]	€6 207 [16]	:	€6 111 [15,d]
		ISCED 1	€6 228 [12]	€6 211 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€9 303 [12]	€9 267 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€9 409 [12]	€9 445 [16]	:	€7 730 [14,d]
		ISCED 5-8	€14 667 [12]	€14 178 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		11.2%	7.0%	13.1%	9.5%
	Foreign-born		13.6%	11.1%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		39.7%	51.9%	33.1%	41.3%
	Foreign-born		30.9%	36.2%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		90.4%	88.1%	72.5%	76.8%
	ISCED 5-8		93.6%	94.8%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, : = not available, 12= 2012, 14= 2014, 15 = 2015, 16= 2016, 17 = 2017.

Figure 25 Position in relation to the strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- The early school leaving rate is below the Europe 2020 national target but has slightly increased.
- The Netherlands faces an increasing shortage of teachers, both in primary and secondary education.
- The 2019-2022 Quality Agreements aim to improve the quality of vocational education and training.
- Dutch tertiary education increasingly attracts foreign students.

3. A focus on teachers

The Netherlands faces an increasing shortage of teachers. The teacher shortage at primary schools is projected on current trends to reach 4 000 full-time equivalents by 2020 and 10 000 by 2025 (Government, 2018a). The number of primary school teachers has decreased by more than 18% since 2007, in step with the decrease in the school population (CBS, 2018a). 35% of all primary teachers are aged 50 or over, and only one in three teachers work full-time. The statutory salary in purchasing power standards (PPS) of a newly-qualified teacher in lower secondary school is more than 30% higher than the EU average. Salaries for teachers with 15 years of service are among the highest in the EU (Eurydice, 2018). In 2019, the government announced a EUR 13 million investment for a regional approach to tackle teacher shortages (OCW, 2019a). This includes incentives to bring back to teaching early-retired teachers and people with a teaching qualification but not yet employed as teachers.

Teaching hours are above the OECD average. Net teaching time in primary school is 930 hours per year, compared with the OECD average of 771 hours. In upper secondary education, teachers spend 750 hours teaching a year, almost 100 hours more than the OECD average (OECD, 2019a). According to a national survey (TNO-CBS, 2018), primary school teachers are among the workers reporting the most work-related stress (together with cooks, doctors, managers and lawyers). In 2018, the trade unions, the Primary Education Council and the government signed the '*work pressure agreement*' to help reduce stress in primary education. In 2018/2019, primary schools received an extra EUR 237 million to tackle excessive work pressure. In 2021/2022, funding for this purpose will increase to EUR 430 million, delivering an additional EUR 35 000 on average per school in 2018/2019, and EUR 65 000 from 2021/2022 onwards.

Recent measures aim to raise teacher qualification levels and attract more candidates to the career. There are two routes to enter the teaching profession: either through initial teacher education or via a two-year practical training for side-entrants. Over the period 2014-2017, the number of primary teachers leaving their job was equal to the number entering via the second route (Education Council, 2018). This is despite the Netherlands having a much higher proportion of teachers who believe that teaching is a valued profession in society than the EU average (31% vs 18%). The number of enrolments for initial teacher education (ITE) fell by more than 50% from 2003 to 2017, though there was a slight increase in 2018. The drop was partly linked to compulsory entrance tests introduced to improve teacher quality in the fields of geography, history, science and technology. The other contributory factor was the new study loan system, which led to a sharp decrease in first-year enrolments in 2015/2016. To counterbalance this, tuition fees for the first two years of primary school ITE were halved as of 2018/2019. The 2016 Act on Primary Education allowed teachers to switch from secondary to primary education, teaching the subject in which they are qualified. Switching between different vocational fields still requires additional certification. In its formal advice of 2018, the Education Council proposed more flexible structures in initial teacher education and working arrangements that support continuing professional development for teachers within schools.

Continuing professional development is optional but encouraged through a range of measures. A voucher programme was launched in 2008 to encourage teachers from primary to tertiary vocational education to take higher or additional qualifications. The voucher covers tuition fees and expenses related to study materials, travel and replacement. Almost 40 000 teachers benefited from the scheme from 2008-2015, though a study found it had limited impact (CPB, 2015). Another measure to increase teacher quality is the *'functiemix'*, or diversification of career

paths, introduced in 2008 (OCW, 2008). This is a financial incentive for schools to distribute teachers across the salary scale, linked to promotion grades. Teachers need to have at least a higher vocational education degree to be eligible for promotion. For school principals, a register was set up where they can record that they have the basic competences required for their profession and to thereby encourage continuous professional development (Government, 2018b). This is in line with the 2017 reformed supervision framework of the Inspectorate, which made school boards directly responsible for the quality of education.

The distribution of qualified teachers varies markedly by region and by composition of the school population. The proportion of teachers who feel well or very well prepared for teaching in multicultural and/or multilingual settings is lower than the EU average (17% vs 24%) (OECD, 2019b). In primary education, teachers with a master's degree teach more often in schools with a high percentage of students with high-educated parents. Teachers from a non-Western migrant background tend to teach in schools with more students from a similar background. Shortages are more acute in schools where the majority is of a non-Western background: in 2017/2018, 13% of schools with 0-25% students from a migrant background were looking for teachers through job sites, compared with 48% of schools with 75-100% of pupils from a migrant background. There are regional differences in the percentage of lessons taught by unqualified teachers: the highest percentage measured is in South Holland (5.14%) and the lowest (2.25%) in Limburg. The percentage of lessons taught by unqualified teachers is also higher in pre-vocational secondary education (VMBO) than in general upper secondary education (HAVO and VWO).

4. Investing in education and training

Public expenditure on education remains stable. In 2017, expenditure on primary to tertiary education accounted for 5.1% of the Netherlands' gross domestic product (GDP), well above the EU average of 4.6%. In real terms, there was an increase of 1.2% in education spending in 2017. The highest shares of spending are allocated to primary and secondary education. Between 2006-2016, total expenditure went up by 31% in secondary education, and by 14% in primary education (CBS, 2019).

The school-age population is becoming smaller and more diverse. In 2017, the Netherlands counted 3.9 million inhabitants from a migrant background (CBS, 2018b), of whom around 2 million from non-Western countries. This represents almost a doubling of non-Western migrants since 1996 (MPI, 2019). In the meantime, the number of pupils has fallen both in primary and secondary education in recent years and this trend is expected to continue (Government, 2019a). Around a quarter of pupils now have a migration background, of whom around 70% have a non-Western migration background. The share of newcomer pupils from a first-generation non-Western migration background increased from 2% in 2013 to 7% in 2017 (Education Inspectorate, 2019).

Demand for high- and medium-skilled workers substantially exceeds labour supply. In 2017, there was a rise in the number of unfilled vacancies and a fall in the number of unemployed people (CBS, 2018). Demand for high-skilled workers is expected to grow by 2.4 million and for medium-skilled workers by 1.3 million until 2025. Supply is expected to grow by only 1 million for highly-skilled people and to fall for medium-skilled workers over the same period (OECD, 2018b). Though the gap in educational attainment between the foreign and the native-born population has been closing at secondary level, it remains significant at tertiary level: 34.6% of foreign-born 30-34 year olds hold a tertiary diploma, against 50.7% of the native-born population. Differences in the labour market participation between people with a non-Dutch background and people with a Dutch background are smallest among those with a high level of education (CBS, 2018).

5. Modernising early childhood and school education

Participation in early childhood education and care (ECEC) is high, but recent legislation has increased the cost of care to families. From age four, 97.6% of children participate in ECEC, compared with an EU average of 95.4%. For 2020, the government made an extra EUR 170 million available to improve ECEC quality (OCW, 2018a). The objectives are to increase the number of participation hours to 960 for children over one and a half years; to raise the qualification level of ECEC staff to tertiary education; and to evaluate educational opportunities and the use of resources. The 2017 Law on innovation of childcare quality decreased the ratio of children/ECEC staff from 4 to 3 children per 1 ECEC professional. This led to an increase in childcare costs,

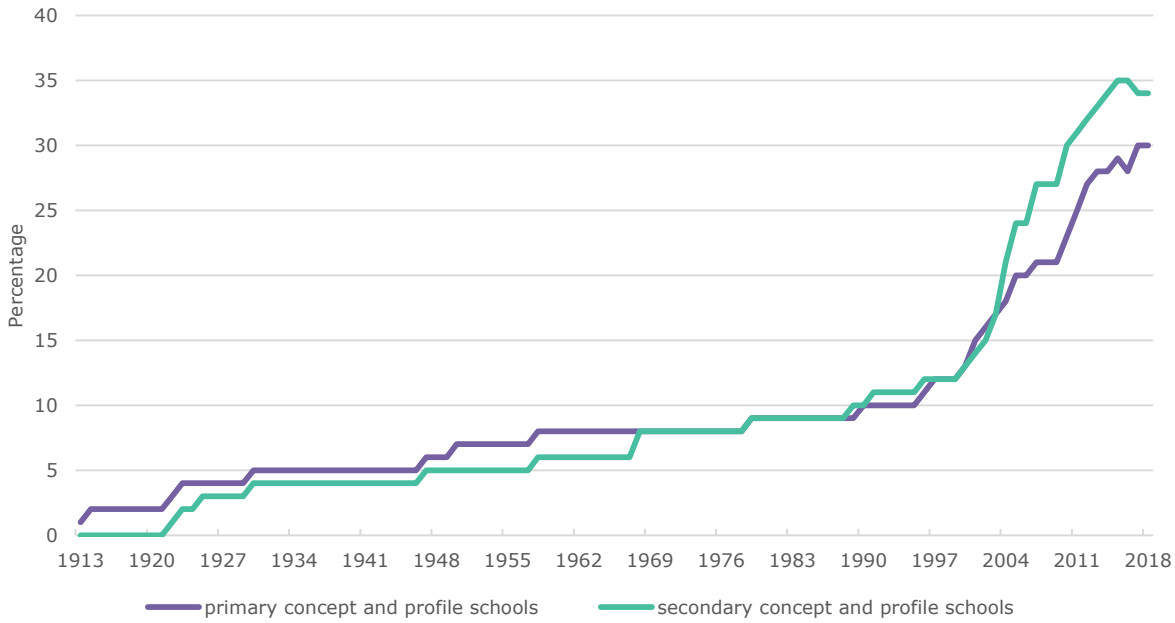
especially for smaller-scale nurseries, as more employees are required now to care for the same number of children.

The rate of early school leaving (ESL) is below the Europe 2020 national target but has increased recently. The Netherlands had set itself the ambition of reducing the rate of early school-leavers to 8% by 2020 and achieved it in 2016. The rate marginally increased in 2018 for the first time since 2013, from 7.1% in 2017 to 7.3% in 2018. Alongside the Europe 2020 target, it also set another national target, defining early school leaving as the number of young people having left education without a basic qualification during the school year: it is referred to as the number of new early-school leavers or dropouts. This number started rising in 2017, reaching 25 574 in 2017-2018. The aim to reduce this figure to a maximum of 20 000 by 2021 is therefore further away than before. Although the dropout rate in (general) secondary education is 0.5%, it rose from 4.7% to 5% in VET. The proportion of early school leavers is highest among young people with a non-Western migrant background. Secondary schools including VET schools receive extra money if they can reduce their dropout rate to below the national rate (Government, 2019b). An amendment to the Act on Education and Vocational Education in June 2018 made cooperation between schools and municipalities to combat ESL compulsory instead of temporary convenants (Government, 2018c). In February 2019, the Education Council published a number of recommendations to prevent school failure (Education Council, 2019). One of these was to integrate the pre-vocational (VMBO) and the vocational (MBO) tracks to reduce the number of transitions, because transitions lead to a high risk of dropping out.

Education autonomy is combined with higher accountability. The Dutch constitution gives a high level of autonomy to school boards in terms of resource allocation, curriculum and assessment and high levels of responsibilities for decision-making at school level (OECD, 2018a). However, the government is responsible for safeguarding good quality education. One of the main tools it uses to evaluate school quality is pupil performance at standardised tests. Since 2014, it is mandatory for all primary schools to conduct a centrally approved test in the last grade of primary education. The Inspectorate may penalise schools that do not meet quality requirements, for example if pupils' final test results in mathematics and reading are below the norm for more than two years. In 2019, 1.7% of primary schools were assessed as being weak or very weak, and as a consequence were supervised more intensively (Education Inspectorate, 2019). The 2017 Act on the teaching profession (Government, 2017a) made teachers responsible for pedagogical processes and teaching content and methods. The law stipulates that teachers must be given sufficient authority on the above three points. The school and the teachers make agreements about how to use this autonomy and record these in a professional statute. The purpose of this arrangement is to stimulate innovative approaches to teaching and learning.

The Netherlands has seen an increase in the number of school concepts and profiles, with a risk to equity. Differences between schools in the Netherlands have the highest impact on pupil performance of all OECD countries (OECD, 2016), and are closely linked to the different educational tracks they offer. This means the achievements of individual pupils is closely linked to the choice of the school they make. Schools may choose a curriculum with a specific profile such as science (*technasia*), culture or media literacy; or a special education concept such as Montessori and Agora education. The number of such special profile schools has increased sharply since 2000, especially in secondary education (Education Inspectorate, 2019) (Figure 2). Profile schools have a different impact on segregation: bilingual schools and *technasia* have the effect of increasing segregation, while profiles such as *Science Orientation Netherlands, Havisten Competent* or *Topsport Talent* schools reduce it. Areas with high shares of profile schools are those with the highest teacher shortages. The Education Council has warned against this increasing fragmentation in the school system, on the basis that it may lead to greater segregation and narrowing of learning paths (Education Council, 2019).

Figure 2 The share of profile and concept schools in primary and secondary education over time



Source: Education Inspectorate, 2019

The Digitalisation Agenda for primary and secondary education fosters the use of new technologies in education. The Agenda was adopted in 2019 (OCW, 2019b) as part of the Dutch Digitalisation Strategy, with the objectives of fostering innovation in education, improving teachers' and pupils' digital skills, ensuring that IT infrastructure is safe and of good quality and raising awareness of the ethics of digitalisation. In addition, there are a number of other related programmes such as the national training programme 'Digital Teacher', which aims to improve the digital skills of primary teachers. The programme 'Pass IT on!' *(Geef IT Door)* allows secondary schools to invite IT professionals to give a guest lecture. The government-funded centre of expertise Mediawijzer.net provides links to over 1 000 media literacy organisations to organise public campaigns, conduct research, and offer educational services.

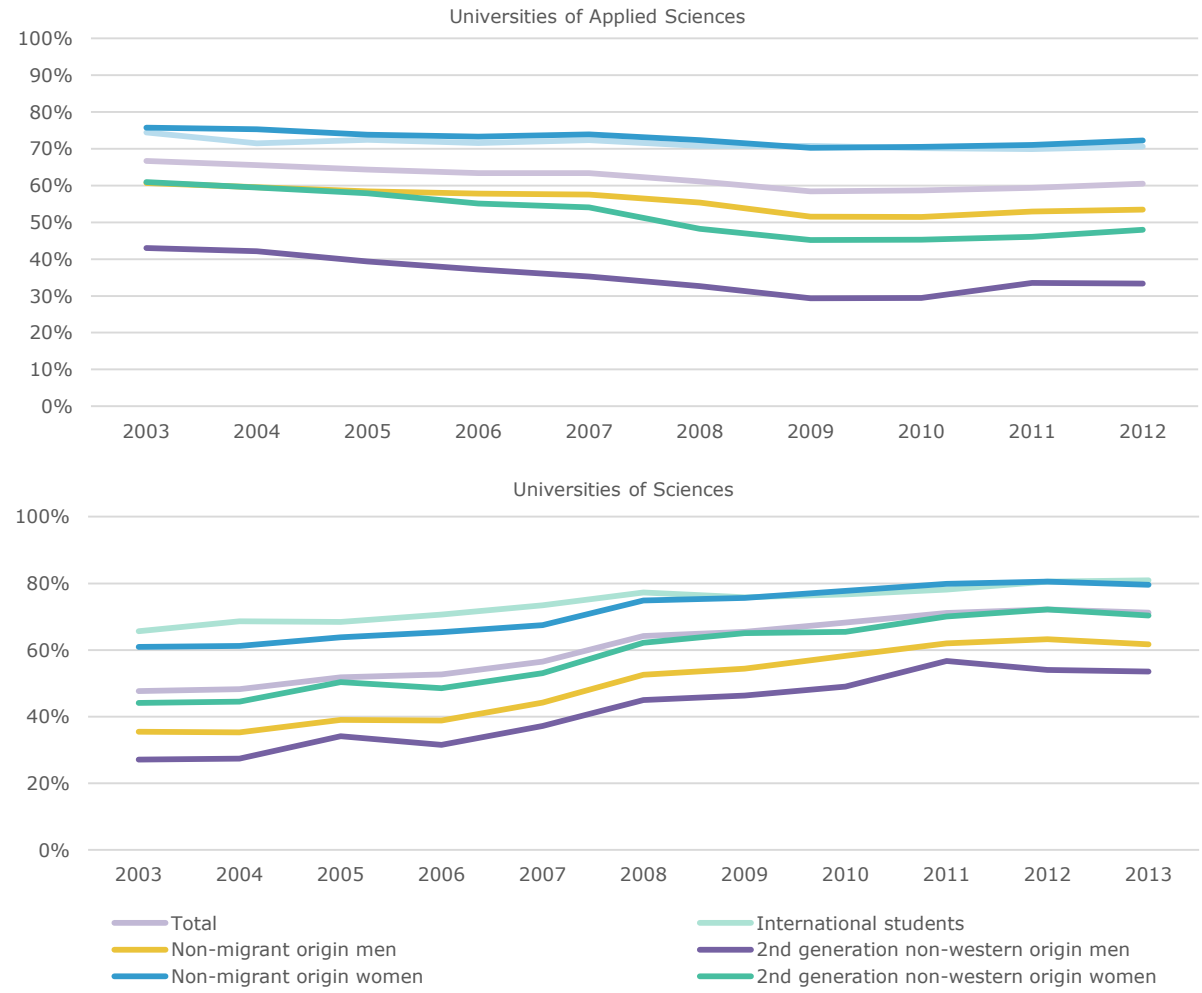
6. Modernising higher education

The tertiary attainment and graduate employment rates are well above the EU average. 49.4% of the population aged 30-34 hold a tertiary degree, against the EU average of 40.7%. There is, however, a large gap in the attainment rates of the native (51.9%) and foreign-born populations (EU-born: 40.2%; non EU-born: 34.5%). The employment rate of recent tertiary graduates was very high: 94.8% in 2018, well above the EU average of 85.5%.

Following the 2017 evaluation of performance agreements with institutions, new agreements to boost quality were signed in 2018. The performance-related budget, representing about 7% of the total tertiary education budget, is linked to each institution achieving its set performance goals. Over the period 2013-2016, higher education institutions could only receive such funding if they had signed a performance agreement. In April 2018, the Minister of Education, Culture and Science signed an agreement with the Association of Research Universities, the Association of Universities of Applied Sciences and student organisations about shaping the quality agreements — successors to the performance agreements — for the period 2019-2024.

Dutch tertiary education increasingly attracts foreign students. With the exception of bachelor's programs at universities of applied sciences, the share of foreign students is growing at all levels in both types of tertiary education (university of sciences (*wo)* and applied sciences (*hbo*)) (Education Inspectorate, 2019). One in five students starting a university bachelor's degree is a non-national. In master's programs, it is almost 30%. The majority of foreign students come from European Economic Area countries. A growing number of degree programmes are offered in English, especially at master's level (three-quarters of programmes). International students tend to complete their course within the nominal study duration plus one year (Figure 3) more frequently than home students.

Figure 3 Completion rates at universities of sciences (wo) and universities of applied sciences (hbo), by gender and migration background



Source: Education Inspectorate, 2019

Box 1: Enhancing teaching quality in higher education: the University Teaching Qualification

In 2008, the Association of Universities created a quality certificate for lecturers, the University Teaching Qualification (UTQ), certifying their didactic competences (EUA, 2018). Universities agreed on common features and content of the teaching qualification, to enable employment without further testing. Since then, the UTQ has become compulsory for all lecturers, university lecturers, senior university lecturers and professors, and it is recognised by all Dutch universities. It standardises both the type of competencies to be acquired, and their assessment. Universities can also complement the UTQ with additional features specific to their institutional profile and study programmes.

UTQ certification begins with an interview of the applicant lecturer, conducted by the faculty's UTQ contact person. Based on the applicant's teaching experience, development goals are set for the applicant to achieve within two years. A personal portfolio tracks the applicant's progress towards meeting the expected learning outcomes, including student evaluations, the supervisor's assessment, self-reflection on teaching skills development, and advice from a mentor.

A peer review conducted by Dutch universities concluded that the introduction of the UTQ in 2008 and the performance agreements in 2012 had contributed to a marked increase in the focus on lecturer professionalisation (VSNU, 2018).

7. Modernising vocational education and training

The share of upper-secondary students participating in vocational education and training (VET) is increasing and graduates fare well on the labour market. 87.9% of recent VET graduates had a job in 2018, against an EU average of 79.5%. In 2017, the share of students enrolled in upper secondary VET was 68.2%, well above the EU average of 47.8% (UOE, 2017). The highest increase was in the share of students in the school-based pathway (bol) (CBS, 2018b).

The 2019-22 quality agreements aim to further improve the quality of VET provision. The Macro-effectiveness Act adopted in 2015 aimed to improve the match between VET programmes and labour market needs (OECD, 2018a). The law encourages schools to cooperate instead of competing with each other to prevent multiple schools in the same area from offering similar tracks. Before starting new educational programmes, schools are required to coordinate their plans. The government also created an investment fund to stimulate public-private partnerships between vocational schools and the labour market. The 2018 quality agreements allow each vocational secondary school (mbo) to frame their own strategy and priorities for 2019-2022, in consultation with regional partners (OCW, 2018b). Funding of approximately EUR 400 million a year has been earmarked for the quality agreements, of which 25% is performance-based. As of 2019, vocational and general secondary schools can apply jointly for a subsidy to tackle shortages of teachers in their region (Government, 2019c). Subsidies may reach EUR 250 000 per region, which can be increased by up to EUR 75 000 if one or more VET-schools are involved.

Box 2: Top Academies

This is a public-private partnership run under the European Social Fund Project 'Career guidance Practical Education and Secondary Special Education Rijnmond 2017-2018'.

Budget: EUR 450 000; ESF-grant: EUR 225 000

Duration: August 2017 — August 2019

Implementing body: Learn2Work, in collaboration with the municipality of Rotterdam

The Top Academies public-private partnership sets up workplaces within companies for pupils from practical education, secondary special education and VET to learn a profession. The curriculum is designed in collaboration with the business sector. Lessons are given at the workplace, both by the subject teacher of the school and an employee of the company. In 2017/2018, the project involved 17 Top Academies, 32 companies, 18 schools and 222 students.

8. Developing adult learning

Overall participation in adult learning is high, though lower among low-skilled people. 19.1% of adults have had a recent learning experience, compared with the EU average of 11.1%. However, low-skilled workers participate in adult learning much less frequently (at 9.9 %), increasing the risk that their skills become outdated. Since the 2016 reform of the accreditation procedure for prior learning (*Erkenning Verworven Competenties*), labour market and education routes have been separated (OECD, 2018b). In the labour market route, candidates can have their prior competences recognised in an 'experience certificate' for a specific job. In the education route, candidates can validate prior competences to complete their VET or tertiary education programmes with exemptions and complementary education structures. The 2017 Coalition Agreement included plans to introduce individual learning accounts to foster investment in skills (Government, 2017b). The advantage of this system is that the learning account is specific to the individual and not to the job, so they take their accounts with them when they change jobs (OECD, 2018b).

In March 2019, the government announced a new approach to address illiteracy. It earmarked EUR 425 million for the programme 'Tel mee met taal' for the period 2020-2024, an increase of EUR 35 million compared with budget for 2015-2019. The aim is to reach out to illiterate Dutch native speakers and to promote digital skills. The Language Accord for Employers, implemented by UWV/ Leerwerkloketten, aims to support employers by improving the basic skills of their employees and to make basic skills part of their HR policy (STVDA, 2019). To date, around 250 employers have joined the Language Agreement and around 10 000 workers have followed a language course.

Dutch adults are well equipped to benefit from digitisation. The Netherlands is in the top tier of countries in terms of digital skills and exposure to digitisation of the economy and society (OECD, 2019c). Dutch workers use ICT intensively on the job and mostly perform non-routine tasks. Alongside Norway and Sweden, more than 80% of people aged 16-64 in the Netherlands perform many and complex activities online, including e-finance or creating websites and blogs.

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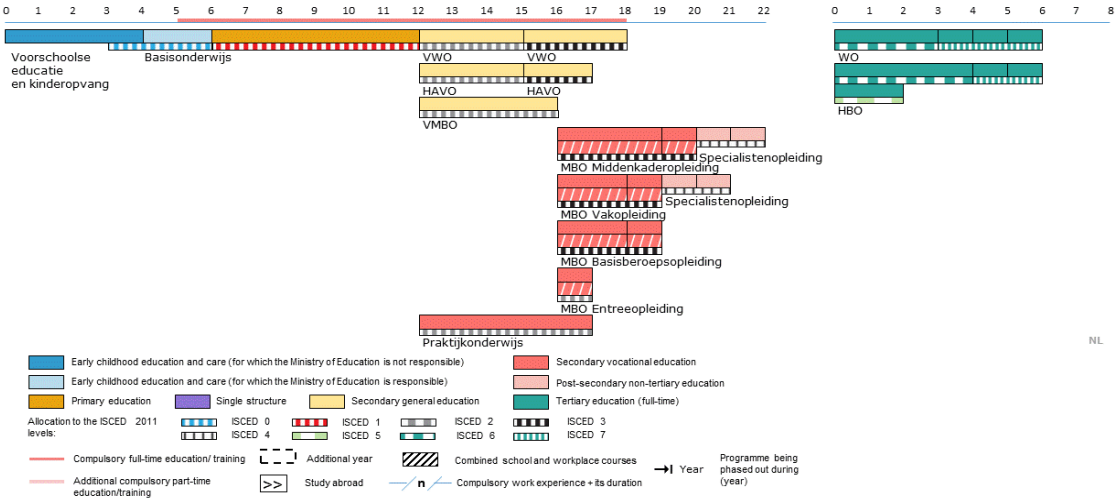
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

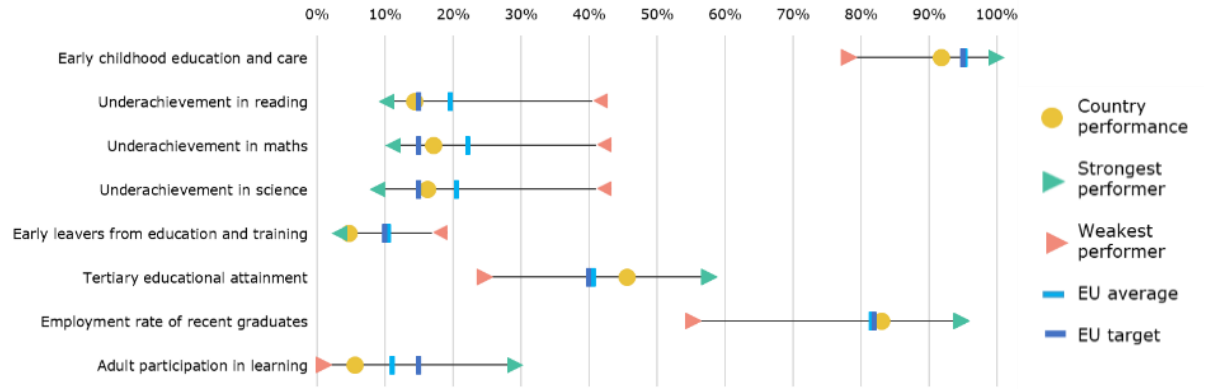
POLAND

1. Key indicators

			Poland		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			5.3%	4.8%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			32.8%	45.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			70.9%	91.9% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		15.0%	14.4% [15]	19.5%	19.7% [15]
	Maths		20.5%	17.2% [15]	22.3%	22.2% [15]
	Science		13.1%	16.3% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		78.4%	83.1%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		4.7%	5.7%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	1.0% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	: [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		5.4%	4.9% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€4 098 [12,d]	€5 080 [16]	:	€6 111 [15,d]
		ISCED 1	€4 974 [12]	€5 034 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€4 885 [12]	€5 136 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€4 519 [12]	€4 544 [16]	:	€7 730 [14,d]
		ISCED 5-8	€6 537 [12]	€7 000 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		5.3%	4.8%	13.1%	9.5%
	Foreign-born		:	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		32.8%	45.5%	33.1%	41.3%
	Foreign-born		: [u]	67.2%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		68.7%	77.1%	72.5%	76.8%
	ISCED 5-8		85.7%	88.9%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u = low reliability, : = not available, 12 = 2012, 14 = 2014, 15 = 2015, 16 = 2016, 17 = 2017.

Figure 26 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Early school leaving continues declining; participation in early childhood education and care among children under 3 remains low.
- The higher education reform has been launched, bringing major changes to the functioning of higher education institutions.
- Implementing the 2017 school system changes is causing organisational, financial and curricular challenges. Further challenges relate to teachers' pay, emerging shortages, and initial and continuing training.
- Participation in adult learning remains low.

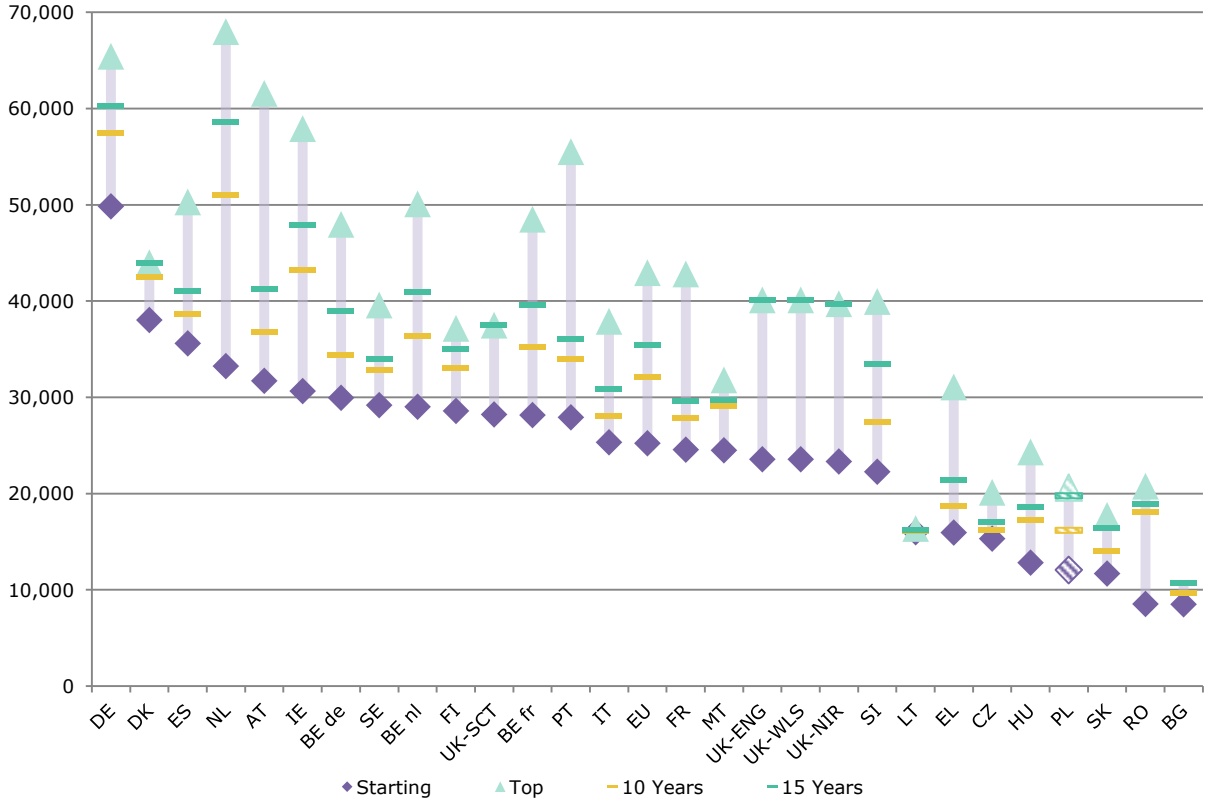
3. A focus on teachers

Low salaries make the teaching profession less attractive. Most teachers hold qualifications above the minimum requirements (European Commission/EACEA/Eurydice, 2018). However, the annual basic salary of a starting teacher in purchasing power standards (PPS) is less than half the EU average — EUR 12 091 v EUR 25 246 — and salary progression over the career is comparatively flat (Figure 2). In 2017, secondary level teachers' average salary was 82% of that of other tertiary-educated employees in Poland (OECD, 2018b). Salaries increased by 5.35% in 2018 and by 5% in January 2019, and an increase by 9.6% is envisaged from September 2019. The proportion of young people interested in becoming teachers dropped by 50% between 2012 and 2015[238]. The Supreme Audit Office found that a high proportion of low-performing secondary school graduates enter teacher education programmes (NIK, 2017) while another recent study shows that fewer than 4% of the best-performing students plan to become teachers. The profession is even less popular among mathematics students (Herbst, 2018). Further evidence that teachers have on average relatively low numeracy skills (compared to other graduate professionals in Poland or to teachers in other countries) is indicated by the PIAAC[239] survey (E. Hanushek, et al., 2018) and a national survey (IBE, 2015). School leaders' salaries are only marginally higher than those of regular teachers, and also low compared to their counterparts in other EU countries. Research shows that salaries and the availability of other jobs are important factors negatively affecting the attractiveness of teaching (OECD, 2018a).

Teacher shortages are emerging for specific subjects and early childhood education and care (ECEC). In 2017[240], around a third of Polish teachers at primary and secondary education levels were over 50. The proportion of teachers under 30 is comparatively low in primary schools (8.2% v 11.9% in the EU) and in secondary schools, where it decreased from 9.1% in 2013 to 5.2% in 2017 (EU average: 8.2%). In pre-primary education, 22.6% teachers are below 30, reflecting the recent expansion of ECEC. Three-quarters of teachers at all ISCED levels are women. While there is no shortage of teachers overall, teacher supply is becoming insufficient for mathematics and English, and in pre-schools, particularly in large cities[241]. Recent changes to the school system, the 2019 teachers' strike outcome, and criticisms in the media, have led to teachers leaving the profession[242]. It may become a challenge to replace retiring or parting teachers.

238 The 2015 PISA survey indicated that only 2.4% of 15-year olds (v 6% 3 years earlier) wanted to become teachers.
239 The Programme for the International Assessment of Adult Competencies
240 Eurostat, UOE, 2017. Online data code: educ_uoe_perp01
241 See: https://edukacja.warszawa.pl/aktualnosci/21678-praca-szuka-nauczyciela
242 See: https://glos.pl/ankieta-glosu-nauczycielu-czy-zegnasz-sie-ze-szkola

Figure 2 Annual basic gross statutory salaries for full-time teachers in lower secondary public schools, in PPS, 2016/2017



Source: Eurydice, 2018. For clarity's sake, Luxembourg is not presented.

Measures are being taken to improve initial teacher education. The quality of training programmes varies, and continuing professional development (CPD) does not sufficiently upgrade teachers' skills (NIK, 2017). Consequently, Poland will introduce new measures[243]:

- from 2019/2020, pre-school and early school education (I-III classes), and special education, will be taught in five-year master's studies only;
- from 2022/2023, only higher education institutions which conduct research and use the latest scientific developments in the field of teacher education will have the right to train teachers.

Initial teacher education standards and teacher qualifications provisions will be revised. New model curricula for initial education will be developed, with stronger emphasis on practical training and on supporting students with special educational needs (Eurydice, 2019). Teachers indicate high cost and lack of relevant courses as main barriers to their participation in CPD (Hernik K., et al, 2015). School heads report weaknesses in preparing for managerial posts mainly due to lack of appropriate training and high costs. Their main development needs are managerial competences and legal knowledge, and how to obtain additional financial resources for the school.

Tensions between government and teachers continue. Unsatisfactory negotiations between the government and the Polish Teachers' Union over salaries[244], and 2018 changes to the Teachers' Charter[245] led to a nationwide strike launched on 8 April 2019. The strike was suspended until September to allow for final secondary school exams[246]. Changes to the Charter regarding assessment and career progression were partially reversed by new modifications in June 2019[247]. The most urgent challenges relate to salary negotiations and to problems linked to the phase-out of

243 See: https://konstytucjadlanauki.gov.pl/ksztalcenie#studia
244 On 7 April 2019, the government and Solidarność Trade Union agreed on an overall 15% statutory salary increase in 2019, and other measures. The agreement was not signed by the Polish Teachers' Union.
245 See: http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20180001574/O/D20181574.pdf
246 See: https://znp.edu.pl/konczymy-pierwszy-etap-protestu-i-zaczynamy-drugi/
247 See: http://dziennikustaw.gov.pl/du/2019/1287/1

lower-secondary schools[248]. In the longer term, there is a need to improve the profession's prestige, initial education and CPD.

Box 1: Teacher education and training programmes supported by the European Social Fund (ESF)

To improve teachers' skills, Poland developed a model of training schools under the Operational Programme - Knowledge Education Development (OP KED). The pilot project ran from July 2016 to October 2018, with a budget of PLN 4 258 339 (EUR 1 013 890).

The project's aim is to develop training schools for teachers and students in teacher training programmes using advanced and innovative teaching methods. Training schools should provide a real-work environment and bolster the skills to work with students more effectively. New materials and tools for teachers are to be developed. In 2018, the 'Supporting the creation of training schools' project was launched with a budget of PLN 43 127 908.80 (EUR 10 268 550) to create 32 training schools.

In January 2019, under the 'Teacher education programmes' national call within OP KED, Poland awarded PLN 47 million (EUR 11.2 million) to 23 projects for higher education institutions to develop teacher education programmes. The projects, aimed at improving future teachers' competences, will last between 24 and 36 months.

See: https://www.ore.edu.pl/2017/10/o-projekcie/;
https://www.ncbr.gov.pl/programy/fundusze-europejskie/power/konkursy/konkurs-pkn18/

4. Investing in education and training

Poland continues to invest heavily in education. Poland spent 4.9% of its GDP on education in 2017 (EU average: 4.6%). Education represented 11.9% of the total general government expenditure (EU average: 10.2%). Against the background of continued economic growth over the last decade, education spending has grown significantly: in 2010-2017, public expenditure on education increased in real terms by 8%. The government plans to gradually increase spending on higher education as part of the reform launched in 2018. According to the state budget, in 2019 spending will be almost PLN 18 billion (EUR 4.1 billion), compared to PLN 15.8 billion (EUR 3.6 billion) in 2018. A further PLN 9.8 billion (EUR 2.2 billion) will be spent on science[249].

Despite increases in recent years, spending per student is low. In 2016, annual public spending per student in Poland for all ISCED levels remained below the EU average (in PPS): EUR 4 777.7 v the EU average of EUR 6 733[250]. The gap is narrow for primary education but significant for secondary and tertiary levels despite a 25% increase in expenditure per full-time tertiary student in 2010-2015 (OECD, 2018b).

Poland is investing in information and communications technology infrastructure and digital competences. The Polish Educational Network project (OSE[251]) envisages the creation of an internet network connecting all Polish schools (about 30 500) by 2020. Schools will be centrally provided with internet access and security services, and free educational content for teachers and students. The capital costs are estimated at PLN 320 million (EUR 76.2 million), which will come from the European Regional Development Fund[252]; the network's annual maintenance cost estimated at PLN 164 million (EUR 40 million) will come from the state budget.

248 See: https://glos.pl/nauczyciele-nie-chca-pracowac-w-zawodzie-w-warszawie-zabraknie-35-tys-pedagogow, https://znp.edu.pl/stanowisko-zg-znp/
249 See: Dz.U. z dn. 1.02.2019r. poz. 198, http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20190000198/O/D20190198.pdf
250 Eurostat, UOE, 2017. Online data code: educ_uoe_fine09 (for the EU average, data is provisional)
251 See: https://ose.gov.pl/
252 See: 'Digital Poland': https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/poland/2014pl16rfop002

5. Modernising early childhood and school education

Participation in early childhood education and care (ECEC) among children over 3 declined slightly in 2017, breaking a long-term trend. In 2017, the participation rate of children aged 4+ in pre-school education in Poland was 91.9%, 1.2 pps lower than in 2016. The drop is likely linked to the obligatory pre-school age rising from 5 to 6 from in 2016/2017. The introduction of a legal entitlement to pre-school education for children between 3 and 5 was completed in 2017/2018. Attendance of 3 year-olds increased from 53% in 2013 to 70% in 2016, before declining to 67% in 2017[253]. In 2019, the total state budget subvention for pre-school education increased to PLN 3.1 billion (EUR 756 million) from almost PLN 3 billion (EUR 707 million) in 2018.

Enrolment of children under 3 is increasing slowly and is linked to socio-economic and parental background. Between 2010 and 2017, the ECEC enrolment rate for children under 3 increased by 9.6 pps to 11.6% in 2017 (EU average: 34.2%). Children under 3 are more likely to be enrolled if they come from relatively advantaged socio-economic backgrounds: the enrolment rate is 21% for children with tertiary-educated mothers, but only 3% among those with less well-educated mothers (OECD, 2018b)[254]. The Ministry of Family, Labour and Social Policy supports expanding places for children under 3 with a 2019 budget of PLN 450 million (EUR 110 million) under the 'Toddler+' programme, launched in 2011 (Eurydice, 2019).

The early school leaving rate is low but regional disparities exist. In 2018, the rate was 4.8%, one of the lowest in the EU (10.6%). Between 2010 and 2018, it decreased overall by 0.6 pps, falling in rural areas by 1.8 pps while increasing by 1.4 pps in towns and suburbs to 5.4%. Regional variations persist: the highest rates are in Warmińsko-Mazurskie, Lubuskie, and Zachodniopomorskie (9.1%-10.7%), and the lowest in Southern Macroregion (below 3%)[255].

Implementing the school system reform[256] is currently the main challenge consuming substantial resources. The change to the two-level school system required the transformation or phasing-out of lower secondary schools: 11.4% of the 665 schools disappeared from the official register in 2017-2018 (NIK, 2019a). During 2019/2020, an additional cohort of students will enter upper secondary schools. This additional cohort is estimated at 370 000 students. Although the Ministry of Education[257] says there are around 100 000 more places in secondary schools available nationally, there is a mismatch between students' preferences and the school type or location. In January 2019, there was a deficit of 14 873 places for students across eight voivodships (NIK, 2019a). Large cities are experiencing shortages in comprehensive secondary schools[258]. The transformation consumes significant resources which could be used to address other educational challenges (European Commission, 2018). Local governments claim that the actual costs incurred in implementing the reform will be double the allocated ministerial subvention. Primary and secondary schools are reorganising their staff numbers and premises, often operating in shifts. The proportion of teachers working in more than one school increased by almost 55% during 2016-2018, which limited their availability to students and affected class planning (NIK, 2019a). It will be crucial to reach a consensus following two separate consultations on the Polish education system launched by the teaching community[259] and the government[260].

There will be a need to monitor the impact of the new core curriculum on students' competences and well-being. From 2016/2017, the compulsory primary school and pre-school entry age was increased to 7 and 6 respectively. Consequently, the common general education period was reduced from 9 to 8 years, which may affect children from disadvantaged backgrounds and rural areas. The Children's Ombudsman concluded that the new core curriculum is too advanced and may be beyond students' learning capabilities. This is affecting particularly students in the seventh grade (RPD, 2018). In January 2019, the Ombudsman concluded that homework burdens on pupils were excessive (RPO, 2019). The Supreme Audit Office's report of 22 May 2019

253 Eurostat, UOE, 2017. Online data code: educ_uoe_enra20
254 The impact of the parental leave extension introduced in 2016 was not considered.
255 Eurostat, Labour Force Survey, 2018. Online data code: edat_lfse_16
256 The reform of lower and upper secondary education was introduced by the Law on School Education in December 2016 for implementation between 1 September 2017 and the school year 2022/23.
257 See: https://www.gov.pl/web/edukacja/ponad-100-tys-wiecej-miejsc-w-szkolach-srednich
258 See: https://www.prawo.pl/samorzad/brak-miejsc-dla-chetnych-do-szkol-srednich-z-powodu-podwojnego,443961.html
259 See: https://www.naradaobywatelska.pl/
260 See: https://www.gov.pl/web/edukacja/okragly-stol-edukacyjny

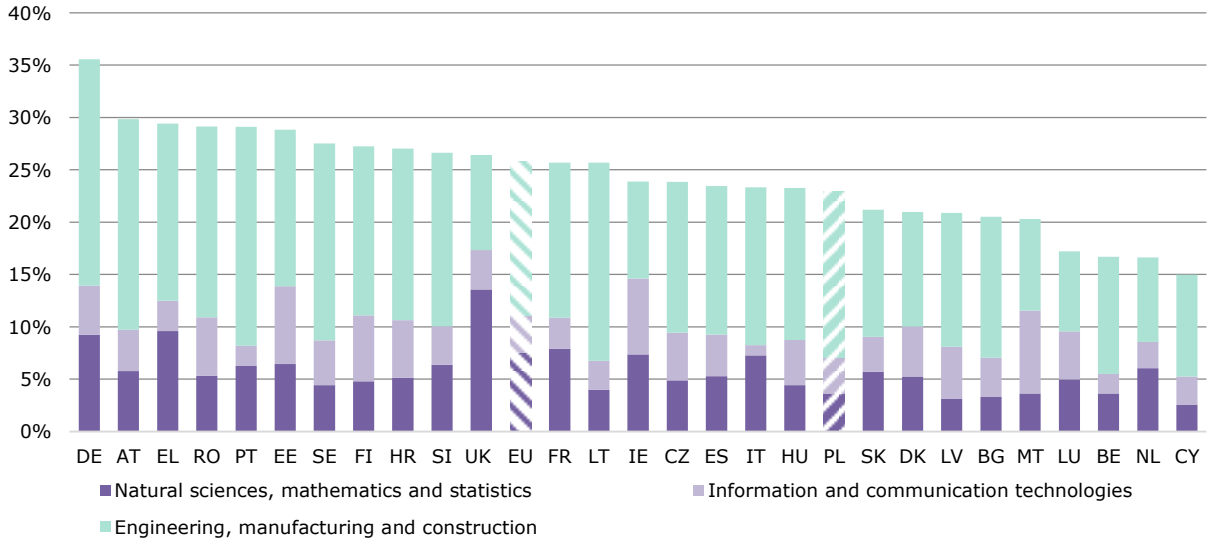
indicated deficiencies in preparing and implementing the reform, including inconsistencies between specific core curricula (NIK, 2019a). According to recent monitoring controls, learning conditions in 56% of schools have not improved while in 34% of schools they have worsened (e.g. insufficient classroom availability and equipment, poor school infrastructure, overloaded class schedule)[261].

Preparatory activities to improve inclusive education are being continued. With the assistance of the European Commission's Structural Reform Support Service, the Ministry of Education is seeking to improve the quality of inclusive education. The European Agency for Special Needs and Inclusive Education will assist the Ministry with recommendations to support new legislation in 2020. During 2019-2021, the ministry will implement projects to improve inclusive education supported by the ESF. Implementation of the 2017 framework on individualised teaching for students with special educational needs still raises doubts among stakeholders. They claim that in practice it reduces the level of integration of such children: they must fully participate in all classes or otherwise follow home-schooling[262].

6. Modernising higher education

Poland maintains a high rate of tertiary educational attainment, but the proportion of science, technology, engineering and mathematics (STEM) graduates is low. In 2018, the higher educational attainment rate was 45.7%, the same as in 2017, exceeding Europe 2020 national target of 45% for Poland. The gender gap at 19.2 pps in favour of women is one of the highest in the EU (EU average: 10.1 pps). The number of students has been decreasing steadily, by 36% over the past 10 years, reflecting demographic trends. Numbers declined by 4.8% between 2017/2018 and 2018/2019 (Statistics Poland, 2019). The proportion of graduates in STEM fields is 22.9%. It is particularly low in natural sciences, mathematics and statistics, at 3.6% — one of the lowest in the EU (Figure 3). Poland's graduate tracking system (ELA[263]) shows the good relative employment position of recent tertiary graduates. Graduates in 2017 earned on average 77% of the average wage (related to the district of living). They also spent around three quarters of their first 12 months after graduation working; 64% of that was spent under regular labour code employment contracts.

Figure 3 Distribution of tertiary graduates by STEM fields in 2017, as a proportion of total graduates



Source: Eurostat, UOE, 2017. Online data code: educ_uoe_grad02

261 In 2018, the regulation of the Minister of National Education and Sport of December 31, 2002 was amended to strengthen safety and hygienic conditions in schools.
262 Krytyka Polityczna, 4.03.2019: https://krytykapolityczna.pl/kraj/w-szkole-nie-ma-dla-ciebie-miejsca/
263 See: http://ela.nauka.gov.pl

Higher education institutions (HEI) are preparing to implement the reform[264]. The main aim of the reform is to improve i) the quality of education, ii) scientific achievements and iii) internationalisation. This involves changing the evaluation, management and financing models. HEIs are currently preparing new statutes, which will enter into force from 1 October 2019. To prepare implementation of the reform, there is regular consultation with academia, including through a series of debates ('NKN Forum'). In February 2019, a task force was established to monitor its implementation. The main changes include the following.

- HEI management will be more centralised at the institutional level and more matters regulated by the HEI statute. The Rector gains capacity to shape policy, and responsibility for financial management and personnel policy.
- Funding to boost teaching and research will be allocated to HEIs at institution level, no longer to faculties.
- Evaluation principles will focus on disciplines and not faculties. Only HEIs, Polish Academy of Science units, or research institutes with a high evaluation can confer doctoral or post-doctoral degrees.
- HEIs will be clearly classified into academic and vocational HEIs. Different kinds of institutions can establish federations.

7. Modernising vocational education and training

The employability of VET graduates is increasing, yet work-based learning is limited. In 2017, nearly 178 000 new students entered VET programmes in Poland, a decrease of 0.7% since 2016, continuing the declining trend since 2013, caused mainly by demographic decline. The proportion of students enrolled in upper secondary VET continued to increase reaching 51.7% in 2017 (EU average: 47.8%). Initial VET students had limited exposure to work-based learning — only 15% of students in VET were enrolled in combined school and work-based programmes in 2017/2018. Practical elements have been strengthened in the new core curriculum. In line with a favourable labour market situation, the employment rate among recent initial VET graduates increased in 2018 to 78.4% (EU average: 79.5%) from 75.2% in 2017.

The VET reform is progressing, focusing mostly on initial VET. Amendments to the Educational Law from November 2018 ensure that local governments receive an increased educational subsidy for students working in targeted jobs. Ministers competent for specific professions will be able to set up and run vocational schools and institutions. From 1 September 2019, the education system will include new vocational education centres in non-school form, based on existing 'practical training centres' (CKP) or 'centres of vocational training' (ODZ). All VET schools will be obliged to cooperate with employers in relevant sectors.

Measures to support the professional development of teachers in vocational schools are ongoing. Mobility projects for teachers, which are being implemented with support from the ESF and Erasmus+, include work placements in companies, job shadowing and practical training in other countries. A new regulation from February 2019 defines more flexible requirements regarding work experience and pedagogical training for vocational training instructors.

Box 2: Integrated skills strategy for 2030

In January 2019, the government adopted the 'Integrated Skills Strategy 2030 – general part'. A cooperation project with the OECD was then launched, supported by Erasmus+. The project focuses on:

- supporting greater participation of adults in learning;
- reducing skills mismatch in the labour market;
- strengthening the use of skills in the labour market and workplace;
- strengthening coordination and skills management structures.

[264] The Law 2.0 (*Ustawa 2.0*) of 20 July 2018 came into force on 1 October 2018, replacing all previous legislation in this area.

Challenges, opportunities and recommendations will be defined by area and included in the *OECD Report on Skills Strategy: Poland*, scheduled for December 2019. On this basis, Poland is to develop a detailed implementation plan building on the Integrated Skills Strategy covering general, vocational and higher education, and adult learning.

See: https://bip.kprm.gov.pl/kpr/bip-rady-ministrow/prace-legislacyjne-rm-i/prace-legislacyjne-rady/wykaz-prac-legislacyjny/r876903221,Zintegrowana-Strategia-Umiejetnosci.html

8. Developing adult learning

Participation in adult learning is slightly increasing. Only 7.6% of adults in Poland have not acquired an upper-secondary qualification (EU average: 21.9%). The proportion of low-qualified adults in employment is 43.1% (EU average: 56.8%). However, in 2018, only 5.7% of adults aged 25-64 had had a learning experience in the last 4 weeks (EU average: 11.1%), a slight increase compared to 4% in 2017. During 2017, around 16 000 adults over 25 acquired an upper-secondary qualification. Adult learning reaches only a small proportion of the nearly 1.5 million 25-64 year-olds who have a low educational attainment level (including nearly 1 million aged 45-64). In January 2019, the government adopted the general part of the *Integrated Skills Strategy*: the implementation plan will be developed based on the cooperation with OECD (See Box 2). Implementation of the National Qualification Framework is progressing: additional qualifications have been added to the registry and validation and certification institutions have been selected, but the process faces delays. Policy coordination at national level is improving (the Act on the Integrated Qualification System is implemented in cooperation with different ministries and sectoral skills councils), but not at regional level. In 2019, Poland received a country-specific recommendation from the Council of the EU to 'Foster quality education and skills relevant to the labour market, especially through adult learning' (Council of the EU, 2019).

Formal adult education has limited effectiveness, but educators are considered its strength. Formal adult education was heavily criticised by the Supreme Audit Office in 2016 for its limited effectiveness. However, there were only minor concerns about educators' qualifications in the schools audited, and both learners and the report favourably assessed their competence level.

The quality of training offered to adults needs careful monitoring. The majority of non-formal education in Poland is delivered by private providers functioning as businesses without any specific sectoral regulation or coordination. Additionally, adult educators in the non-formal system are not considered teachers and thus not subject to any qualifications requirements. Some initiatives aim to provide accreditation for training institutions and to verify educators' competences (e.g. the Database of Development Services[265], supported by the ESF).

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[265] See: https://uslugirozwojowe.parp.gov.pl/

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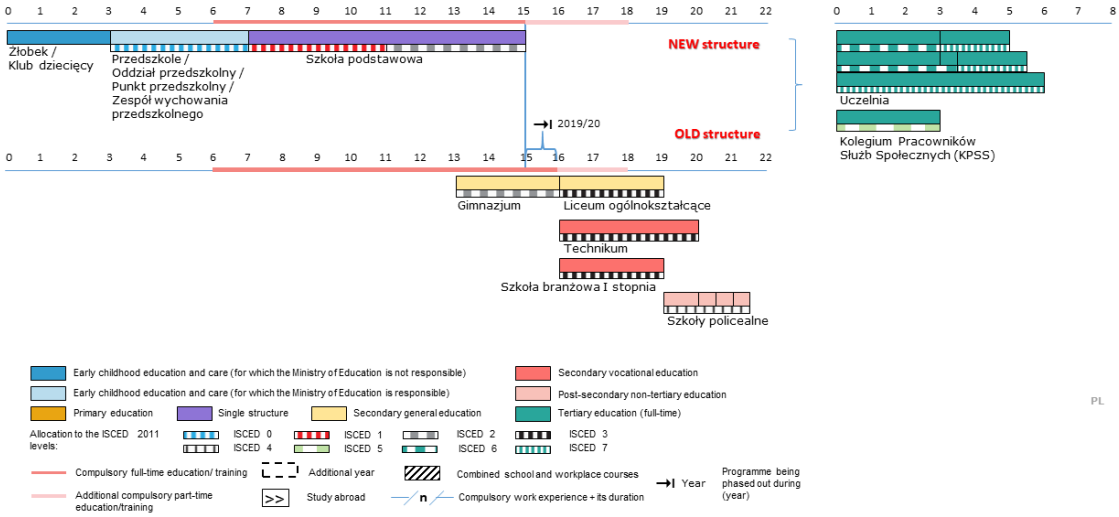
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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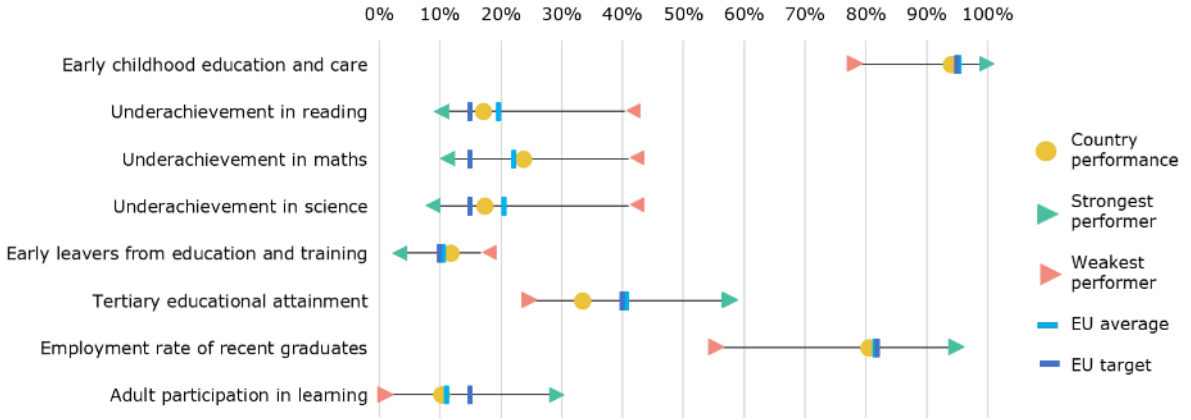
PORTUGAL

1. Key indicators

			Portugal		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			30.9%	11.8%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			21.3%	33.5%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			90.1%	94.2% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		17.6%	17.2% [15]	19.5%	19.7% [15]
	Maths		23.8%	23.8% [15]	22.3%	22.2% [15]
	Science		16.5%	17.4% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		82.4%	80.6%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		6.4%	10.3%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	3.6% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	7.5% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		7.0%	5.0% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€4 862 [12]	€4 646 [15]	:	€6 111 [15,d]
		ISCED 1	€4 685 [12]	€4 738 [15]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€6 171 [12]	€6 212 [15]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€6 907 [12,d]	€6 609 [15]	:	€7 730 [14,d]
		ISCED 5-8	€7 403 [12,d]	€8 885 [15,d]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		31.0%	11.7%	13.1%	9.5%
	Foreign-born		29.6%	12.8%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		21.1%	33.1%	33.1%	41.3%
	Foreign-born		22.6%	36.8%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		79.7%	75.0%	72.5%	76.8%
	ISCED 5-8		84.0%	85.9%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) from UOE data. Further information can be found in Appendix I and Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, : = not available, 12=2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017.

Figure 27 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Teachers are satisfied with their jobs, but the ageing teacher population, the high proportion of non-permanent staff and weaknesses in induction and continuing professional development remain challenging.
- Investment to upgrade infrastructure is insufficient, particularly for early childhood education and care in metropolitan areas.
- Regional disparities in education outcomes, grade repetition and early school leaving rates are improving. Tertiary educational attainment has grown but business demand for ICT specialists exceeds supply.
- There is a significant proportion of low qualified adults while participation in adult learning remains low.

3. A focus on teachers

Teachers are satisfied in their jobs but feel poorly valued in society. TALIS 2018 (OECD, 2019a) reports that a higher proportion of teachers are satisfied with their job than the EU average[266] (92.1% v 89.5%), and only slightly less after 5 years of work (91.9%). Overall, 64.8% of teachers say that if they had to decide again, they would still choose teaching (EU average: 77.6 %). The proportion who report that teaching was their first career choice is the highest in the EU (84.2% v 65.7%), but somewhat lower for male teachers (78.8%). However, many teachers believe that teaching is not a valued profession in society (only 9.1% consider it is valued, against 17.7% at EU level).

Initial teacher training is being modernised but the changes are not yet implemented. Teacher training is undertaken in higher education institutions: universities prepare teachers mainly for secondary level, and polytechnics for pre-primary and primary levels. Training culminates in teaching practice of several weeks in 'host schools' under the supervision of a teacher and a professor. Pedagogical training for special education needs has been recently introduced, but is not yet present in all programmes (CNE, 2018; Liebowitz et al., 2018). For higher education, the minimum requirement to start an academic career in both polytechnics and universities is a doctoral degree (National Assembly, 2009a, 2009b). However, a significant but declining proportion of polytechnics professors have only lower degrees.

There are some barriers to continuing professional development (CPD). In TALIS 2018 (OECD, 2019a), 40% of teachers report having participated in some kind of formal or informal induction when they joined their current school. 14% of novice teachers (with up to 5 years of experience) have an assigned mentor. Regarding CPD, 88% of teachers report have taken part in some kind of in-service training in the last 12 months, and 82% of them acknowledged that it had a positive impact on their teaching practice. TALIS also shows that the proportion of teachers who feel well or very well prepared to teach in a multicultural or multilingual setting is below the EU average (18.9% v 23.8%). 21.6% of teachers report a high need for CPD in this area (EU average: 13.4%). A high proportion of teachers report that their employers do not support their participation in CPD sufficiently (89.1% v 26.7% EU average) and that there are not enough incentives to participate (84.6% v 52.9% EU average). 77.2% report that their participation is restricted by schedule conflicts (52.4% EU average).

Teachers feel quite confident in using information and communications technology (ICT). According to TALIS (OECD, 2019a), the proportion of teachers who feel well or very well prepared in using ICT is just above the EU average (40.2% v 39.4%). The proportion reporting a high need for CPD in ICT is below the EU average (12.0% v 16.1%). However, fewer than half of teachers say this element was covered in their formal education (46.9% v EU average of 52.9%).

[266] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

Box 1: EU-supported programme for CPD of teachers

The 'Continuous training for teachers and other members of the education and training system' (*Formação contínua de docentes e outros agentes do sistema de educação e formação*) programme aims to improve the quality of teaching by upskilling teachers, school administrators and other education and training staff.

The programme (total budget EUR 6.8 billion) is supported by the European Social Fund. Over 2016-2018, 40 636 teachers and other professionals participated in training.
The main results are:

- more than 90% of teachers completed their professional development activities, with a strong positive assessment;
- participants agreed on the positive impact of this training on: changing how they work (74%); their performance (72%) in the classroom; updating their curricular knowledge (76.3%); promoting collaborative working (84.4%); and promoting change and innovation (61.4%);
- a lesser degree of agreement that the training would improve learning outcomes (40.2%); autonomy (30.3%) and overall performance of the school (42.5%).

See: https://www.dgae.mec.pt/gestrechumanos/pessoal-docente/formacao/formacao-continua/

Despite recent measures, there are many non-permanent teachers. The proportion of teachers on temporary contracts increased between 2015-2016 and 2016-2017, to 18.2% in primary education and 21.7% in secondary (DGEEC, 2017, 2018). In 2017-2018 the proportion was 16.9% in primary education and 21.4% in secondary (DGEEC, 2019a). In 2015/2016 the 'stop-rule' (*norma-travão*) became effective, which allowed all teachers with five successive annual contracts to obtain a permanent contract, benefiting 1 400 temporary teachers in the first year. The "stop-rule" was extended to those with 4 annual contracts in 2017 and to those with 3 annual contracts in 2018. New permanent positions were created, enabling 3 260 teachers with temporary contracts to become permanent in 2017-2018, and 3 319 in 2018-2019.

The teacher population is ageing and predominantly female. Teachers below the age of 30 account for a very small proportion of the workforce in ISCED 1-3 (0.9% v 9.4% at EU level in 2017)[267]. The proportion aged 50 or older is 43.8% (EU average: 36%)[268]. Only 3.9% of tertiary-level staff were under 30 while 43% were 50 or older. More than two-thirds of teachers and academic staff across all levels of education are women, with the highest concentrations in the earlier years: at pre-primary level women make up 99% of the teaching staff, at primary level 81% and at secondary level around 70%. At tertiary level this drops to 44%.

A large gender gap also exists in schools and university managerial positions. There are more men than women in school leadership positions. In lower secondary education, fewer than 40% of principals are women (OECD, 2014a). Sample data from 2016 shows that only 36.9% of third-level faculty heads and only 28.6% of rectors were women (DGES, 2016). More than 70% of school principals are aged over 50 (OECD, 2014a, 2014b).

4. Investing in education and training

Education spending increased in 2017 and is above the EU average, but still below its pre-crisis level. In 2017 public expenditure on education was 5.0% of GDP, slightly more than in 2016 (4.8%) and above the EU average (4.6%)[269]. This is still far below its pre-crisis level (7.1% in 2010 and 5.9% in 2013). Public education expenditure between 2010-2017 fell by 23% in real (inflation-adjusted) terms (12-15% in primary and tertiary education and 25% in secondary)[270]. Annual expenditure per student at primary, secondary and tertiary levels is below the OECD average (OECD, 2019b)**.**

[267] Eurostat, UOE, 2017.
[268] In 2017, 41.0% of secondary teachers and 39.8% of primary teachers were 50 or older. The percentage of teachers under 30 was 1.1% for secondary teachers and 1.1% for primary education.
[269] Eurostat, COFOG, 2017.
[270] 2010 was an outlier regarding annual public education expenditure, with higher levels of investment than in previous and subsequent years. A significant part invested in a large adult education programme.

Investment in school infrastructure is insufficient. Portugal allocates less than 2% of the education budget to building or upgrading school infrastructure (Liebowitz et al., 2018)[271]. In 2007-2016, an ambitious investment plan was set out for pre-primary, primary and secondary school infrastructure. However, budget cuts delayed the planned investment in around two-third of secondary schools, and school buildings currently show levels of disrepair that result in difficult learning conditions (European Commission, 2019). The Ministry of Education plans, under the state budget for 2019, improvements in 200 secondary schools and 300 pre-schools and primary schools (National Assembly, 2019a). The 2016-2020 requalification plan envisage an investment of EUR 744 million, benefiting 785 schools across the country.

Private spending on education is among the highest in the EU. The proportion of expenditure on education (from primary to tertiary) from private sources (20.8%) is among the highest in EU OECD countries. Between 2012 and 2015 private expenditure as a proportion of GDP decreased from 1.18% to 0.86%[272].

5. Modernising early childhood and school education

Universal participation in early childhood education and care (ECEC) will be possible only with further public investment. The government aims to provide pre-primary education for all 3 year-olds by 2020 (in 2017, the participation rate was 83.4%). Participation in ECEC for children aged between 4 and the start of compulsory primary school was 94.2% in 2017, up from 92.5% in 2016 and almost at the EU average of 95.4%. There is a lack of places, in urban areas in particular (European Commission, 2019). In 2017, in the Lisbon area only 88.8% of children were enrolled[273]. The government plans to open more than 5 000 pre-primary school places in urban areas by 2019[274].

High grade repetition is a major problem. Official data (DGEEC, 2019b) show that grade repetition happens to a significant number of students (7%) from the second year of primary education, and to decreasing numbers in fourth and fifth grades (respectively, 2% and 6% of students each year). Because of this, a growing number of students are older than the expected school age at each level; pupils tend to accumulate multiple repetitions (CNE, 2018). Leibowitz et al. (2018) recommended exploring alternative strategies to respond to students' difficulties, for example, an early-warning system to identify students at risk of failure and provision of timely and effective educational support. The national programme for school success, supported by the European Social Fund, follows such a preventive approach and supports tailor-made local solutions, linked to school autonomy policies. The National Education Council (CNE, 2018) has advocated a reorganisation of primary education by merging the first and second cycles into one. This would smooth the sudden transition from being taught by a single teacher to having around 10 teachers, learning more subjects and changing school premises and peers. While this idea has gathered some support, policymakers also point out that it would be complex to deliver, requiring an overhaul of teaching and physical infrastructure. Portugal is among the countries where the proportion of pupils in compulsory education learning two or more languages is the lowest.

Early school leaving is now close to the EU average, although large differences persist. The percentage of early leavers from education and training has decreased again from 12.6% in 2017 to 11.8% in 2018, approaching the EU average (10.6%). Large gender disparities persist (14.7% for males against 8.7% for females in 2018). There are also very significant regional differences (28.3% in the autonomous region of Azores v 11.2% in the continental area, in 2018).

The curricular autonomy and flexibility programme for secondary studies has been extended to all schools. After a pilot phase, all schools can now benefit from a degree of flexibility in curriculum management (from 0% to 25% of weekly teaching workload) (National Assembly, 2018). There is no official data yet on its impact.

271 It does not include the infrastructure investment incurred by municipalities in pre-school and primary schools facilities, which are neither included in the national education budget nor recorded at education statistics.
272 OECD, Private spending on education. doi: 10.1787/6e70bede-en
273 Taxa bruta de pré-escolarização (%) por Localização geográfica (NUTS - 2013) e Sexo; Anual - Direção-Geral de Estatísticas da Educação e Ciência. http://www.ine.pt
274 Resoluçao do Conselho de Ministros n. 61/2018 in Diário da Republica n. 97/2018, Serie I de 2018-05-21.

Box 2: The profile - a national key competences framework

The profile of students at the end of compulsory education (*Perfil dos Alunos à Saída da Escolaridade Obrigatória)*, adopted in 2017, outlines what individuals should know, understand and be able to do at the end of secondary education (broadly, age 18). The profile draws on input by key stakeholders such as teachers' unions, students and parents associations, education researchers, schools councils and the National Education Council. The Ministry of Education developed tools that show how this profile is being implemented at local level (using some schools as case studies). The Ministry has also made the '*Curriculum Autonomy and Flexibility'* website available as a space for reflection and sharing of practices. It compiles innovative practices on topics like collaborative and pedagogical practices; projects developed with and for the community; education for citizenship; and learning assessment.

A monthly bulletin[275] addresses issues such as: interconnection of knowledge from different disciplines; the importance of continuous and systematic evaluation; and the active involvement of students in learning and in the daily life of the school.

This key competences framework in the profile is based on the *European Qualifications Framework* (EQF) and complemented by guidance documents (*Aprendizagens Essenciais* - AE) on essential learning for each education level. These list the knowledge, skills and attitudes to be developed by students for each year and subject.

One third of teenagers do not like school and over half of them are not self-confident about their level of performance. A recent survey of students in upper primary and lower secondary studies[276] shows that 30% of them do not like school. Only 4.2% of respondents consider themselves 'very good' students, while 52% see themselves as students 'with little or no academic success'. The main difficulties with school identified are: very extensive programmes (87.2%), boring programmes (84.9%), very hard subjects (82%) and stress related to assessment (77%).

6. Modernising higher education

Measures aim to ease access to higher education. The government took measures to widen higher education enrolment in less densely populated regions and increased the offer of two-year short-cycle higher education professional courses (*Cursos Técnicos Superiores Profissionais*) and master programmes. Other measures due to start in 2019-2020 strengthen funding and social support to students. They include a reduction in tuition fees and more grants and housing for low-income students[277] (National Assembly, 2019b,c). Only 24% of students currently benefit from grants for first-cycle studies (EC/EACEA/Eurydice, 2018) and families contribute 70% of total spending. Other measures include the extension of the term to pay tuition fees and capped fees or free tuition for students receiving social grants. Although tertiary education attainment for people aged 30-34 almost doubled in 10 years (from 18.3% in 2006 to 34.6% in 2016), the national goal of reaching 40% in 2020 seems unattainable.

The learning mobility of Portuguese graduates is close to the EU average. The proportion of secondary graduates who obtain a tertiary degree outside Portugal (3.6%) was equal to the EU average in 2017; the proportion who participate in short-term study periods and/or work placements abroad (7.5%) is close to it (8.0%).

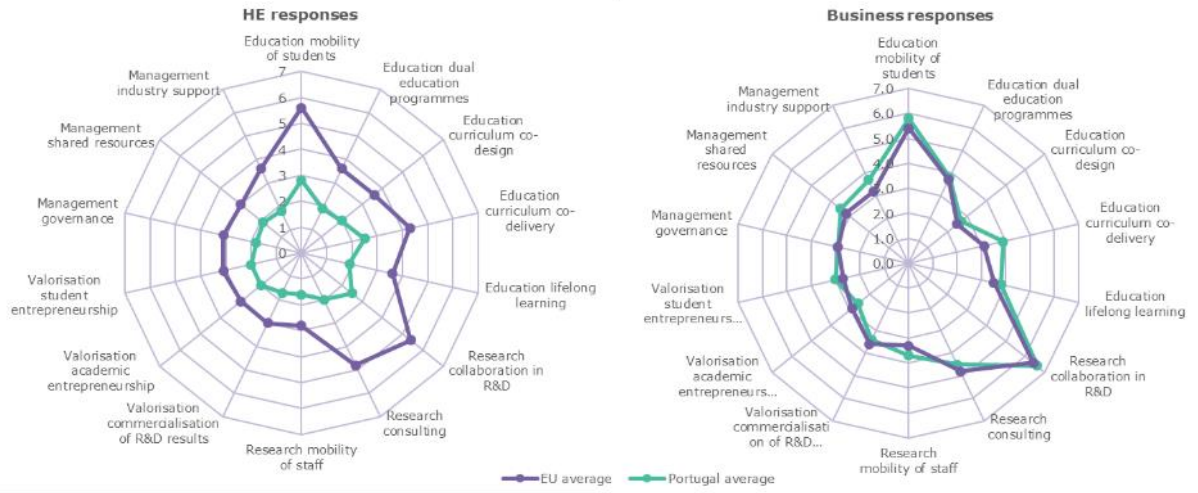
A gradual abolition of tuition fees at bachelor level is being debated[278]. Higher education institutions consider that eliminating tuition fees would hurt the financial sustainability of universities, which already face difficulties due to insufficient public funding, without fully alleviating students' economic difficulties.

[275] http://afc.dge.mec.pt/pt/recursos/publicacoes
[276] See: http://aventurasocial.com/publicacoes/publicacao_1545534554.pdf
[277] A ten-year national programme will increase accommodation in student residences. The programme aim is to provide accommodation to 25% of students.
[278] Conclusions of the national Convention of Higher Education available here.

Companies have difficulties finding ICT specialists. In 2018, 34.6% of companies report hard-to-fill vacancies requiring ICT skills[279]. In 2017, the proportion of ICT specialists in the total workforce was 2.2%, one of the lowest in the EU and well below the average (3.8%). Almost half of these have tertiary education[280] (below the EU average of 62.3%), and only 14.4% are female (EU average: 17.2%). In 2017, there was 30% growth in students graduating from upper secondary vocational ICT studies (around 1 000), and 73% growth (over 600) in graduates from tertiary ICT studies[281]. The number of university students enrolled in ICT also grew in 2017 (by 11%), but only represents 2.6% of total students and the gender gap remains wide (only 17% female)[282]. The Council of the EU's 2019 country-specific recommendation to Portugal included: 'Increase the number of higher education graduates, particularly in science and information technology' (Council of the EU, 2019).

Both the academic and business sectors desire further cooperation. A recent survey[283] shows that higher education institutions tend to cooperate with small and micro-sized companies in their region, focusing on students' mobility, joint research and curriculum co-delivery. Over 60% of academics do not undertake cooperation with businesses. Academics perceive the lack of funding and insufficient work time as the main barriers to further cooperation. 77% of business respondents cooperate to a medium-high extent with universities in joint R&D, around 60% in valorisation and management activities and 50% in consulting[284]. More than two thirds are involved in mobility of students, fewer in mobility of staff. Cooperation is above the EU average in mobility of students, dual education programmes, curriculum co-design and co-delivery and lifelong learning. Cultural differences, different time horizons, a lack of business knowledge within universities and their focus on producing scientific outcomes are the main barriers to further cooperation identified by business. Both academics and businesses show a strong commitment to increasing or maintaining cooperation (99% of the survey's respondents).

Figure 2 State of cooperation from the higher education and business viewpoints



Source: DG EAC calculations, based on data from *State of University-Business Cooperation in Europe 2019*. Code: 0: Not at all; 1-4: Low; 5-7: Medium; 8-10: High.

7. Modernising vocational education and training

Although nearly 40 000 new students entered formal VET in 2017, this was a decline of almost 4% from 2016. Total enrolment in upper secondary VET (40.7% of all students at that education level) also saw a slight decline in 2017 and is below the EU average of 47.8%[285]. The employment rate among recent VET graduates declined to 77.4% in 2018 from 78.9% in 2017, marginally below the EU average of 79.5%.

279 See: https://digital-agenda-data.eu/datasets/digital_agenda_scoreboard_key_indicators/visualizations
280 Eurostat, Labour Force Survey, 2018.
281 Eurostat, UOE, 2017.
282 Insituto Nacional de Estatistica Portugal: Alunas/os inscritas/os no ensino superior (N.º) por Localização geográfica (NUTS - 2013), Sexo e Área de educação e formação (CITE-F 2013); Anual - Direção-Geral de Estatísticas da Educação e Ciência
283 State of University-Business Cooperation Portugal: University Perspective. https://ub-cooperation.eu/index/portugalhei
284 State of University-Business Cooperation Portugal: Business Perspective https://ub-cooperation.eu/index/portugalbus
285 Eurostat, UOE 2017

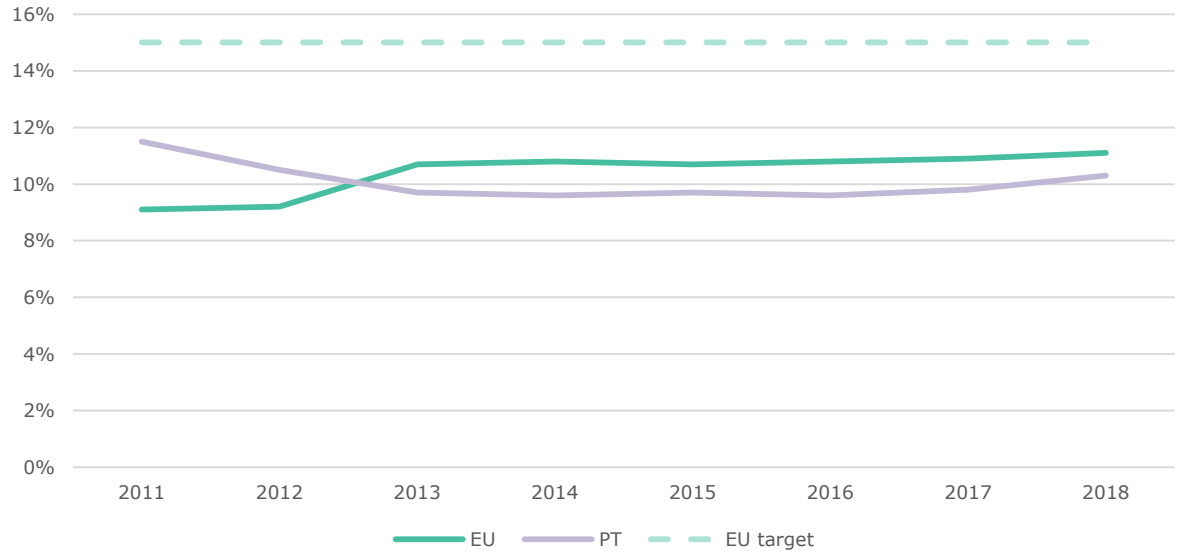
Portugal needs to better align the VET offer to labour market needs. Upskilling has become an economic imperative due to deep changes in the nature of work. VET has been a national political priority for some time and the provision of training opportunities has improved considerably over the past decade. Nevertheless, a significant structural deficit persists in the qualifications of the labour force. More systematic collection and dissemination of data on VET is necessary to keep improving access to programmes as well as their quality and their labour market relevance. The OECD National Skills Strategy reports also acknowledges important improvements on this area, especially through the guidance to adjust VET offer through the System of Anticipation of Qualification Needs, involving different public and private stakeholders on the identification of skills needs.

Important steps were taken regarding curricula and training of VET teachers and trainers. In 2018, new principles for upper secondary curricula, including VET programmes, gave more autonomy to training providers. Schools can now adapt curricula to local needs and deliver them in a more flexible way. With the adoption of three pedagogical training standards, Portugal aims to increase the quality of CPD for VET teachers and trainers. Such standards also concern the continuous training of in-company trainers and e-trainers[286].

8. Developing adult learning

Adult participation in lifelong learning is growing but still far from the EU benchmark. In 2018, the participation rate of adults in education and training (10.3%) was close to the EU average (11.1%), but still well short of the EU benchmark (15%). The rate is higher than the EU average for those with primary to lower secondary education (4.7% v 4.3%), for upper secondary and post-secondary non-tertiary graduates (11.2% v 8.8%), and for tertiary graduates (20.7% v 19.0%). The 2019 country-specific recommendation to Portugal included: 'Improve the skills level of the population, in particular their digital literacy, including by making adult learning more relevant to the needs of the labour market' (Council of the EU, 2019).

Figure 3 Adult participation in learning in Portugal and in the EU, 2011-2018



Source: Eurostat, Labour Force Survey. Notes: Participation rate in education and training (last 4 weeks), as % of the 25-64 year-old population

Developing a coherent strategy remains a major challenge. The action phase of the national skills strategy, with a particular focus on strengthening adult-learning, is currently ongoing. Its successful implementation will be crucial to 'help the country recover fully from the last recession and meet the challenges of an increasingly global and digital economy' (OECD, 2018). The start of the 'Qualifica' programme in 2017 was an important milestone. Adult learning funding increased, as did hiring and training of staff for the 294 Qualifica centres, which will be monitored by regional

[286] Referencial de Formação Pedagógica Contínua de Formadores – Formador de Tutores, Referencial de Formação Pedagógica Contínua do Formador a Distância – (e-Formador), Referencial de Formação Pedagógica Contínua de Formadores – Formador de Unidades de Formação de Curta Duração-UFCD à Distância (Formato Híbrido).

teams. Promotion of Qualifica among businesses and to create local qualification networks is also underway. The launch of the 'READ+Qualifica' *(LER+Qualifica)* programme took place in October 2018, alongside the National Reading Plan 2027*;* a national adult literacy plan is under development. The new national information campaign also targets groups most in need in order to raise awareness of the value of skills development. Digital skills are a particular focus because, in spite of efforts under the 'Portugal INCoDe.2030' programme, ICT skills gaps continue to grow significantly. The effectiveness of all these measures requires both thorough monitoring and the support of qualified teachers and trainers. However, the career of 'adult educator' still needs to become a recognised, attractive and long-term option, supported by specialised courses and academic degrees for teaching/training of adult educators.

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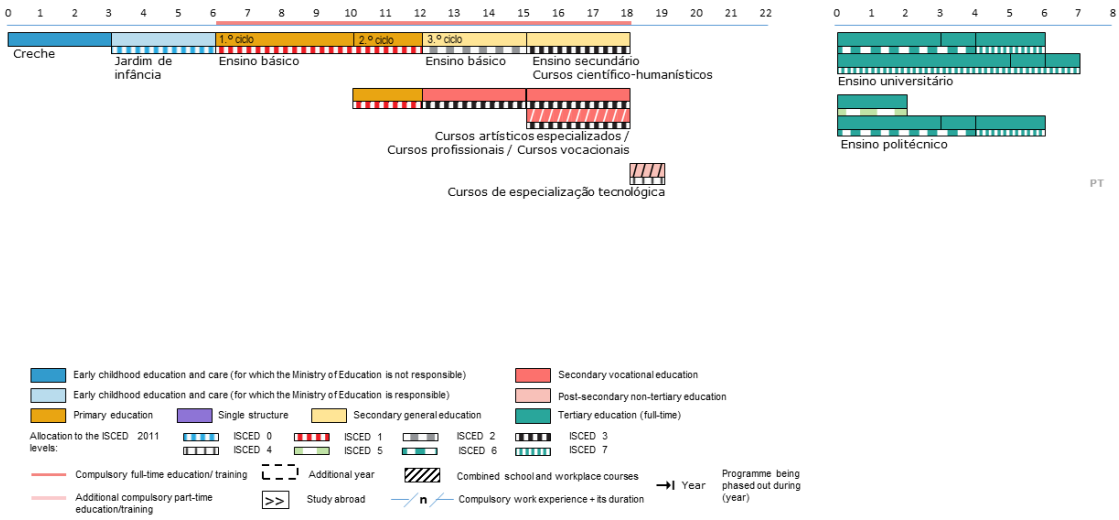
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

Comments and questions on this report are welcome and can be sent by email to:
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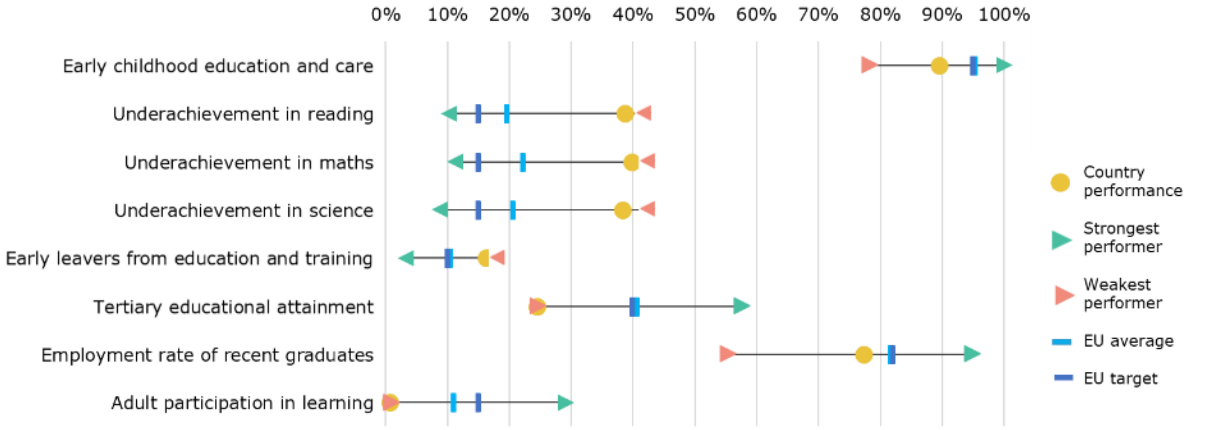
ROMANIA

1. Key indicators

			Romania		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			16.6%	16.4%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			16.8%	24.6%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			88.0%	89.6% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		40.4%	38.7% [15]	19.5% [EU27]	19.7% [15]
	Maths		47.0%	39.9% [15]	22.3% [EU27]	22.2% [15]
	Science		41.4%	38.5% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		77.6%	77.4%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		1.8%	0.9%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	5.8% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	1.8% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		3.8%	2.8% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	: [12]	€2 094 [16]	:	€6 111 [15,d]
		ISCED 1	€1 600 [12]	€1 368 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€1 740 [12]	€2 614 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€1 769 [12]	€2 466 [16]	:	€7 730 [14,d]
		ISCED 5-8	€4 035 [12]	€4 688 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		16.7%	16.4%	13.1%	9.5%
	Foreign-born		: [u]	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		16.7%	24.6%	33.1%	41.3%
	Foreign-born		: [u]	: [c]	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		69.1%	67.7%	72.5%	76.8%
	ISCED 5-8		85.7%	88.9%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre (JRC) on UOE data. Further information can be found in Annex I and Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; c= confidential, d = definition differs, u = low reliability,: = not available, 12= 2012, 14=2014, 15 = 2015, 16= 2016, 17 = 2017.

Figure 28 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Concrete ideas have been presented for major reform of the education and training system. Clear steps need to be taken for the implementation of the reform.
- Public spending on education is low in EU comparison, while the sector's investment needs are high. Any major reform is likely to require additional funding linked to stronger equity and efficiency mechanisms.
- Better support for teachers — in particular by redesigning initial teacher education and strengthening continuing professional development — can help improve quality and equity.
- Efforts were made to expand dual education. Participation in adult learning remains low despite the high need for upskilling and reskilling.

3. A focus on teachers

The attractiveness of the teaching profession is rather low. 40.9% of Romanian teachers believe that their profession is valued by society, according to the OECD's Teaching and Learning International Survey (OECD, 2019a). This percentage is significantly above the average of the 23 EU countries surveyed[287] (17.7%) and the third highest after Finland (58.2%) and Cyprus (43.5%). In spite of this positive perception by teachers, a number of factors have affected the attractiveness of the profession, including low entry requirements for teacher education programmes and traditionally low salaries (OECD, 2017). Since 2017, teachers' salaries have been increasing following a new salary grid for public sector employees[288]. The grid also reduced from 40 to 25 years the time needed to reach maximum pay and introduced higher bonuses for certain staff categories, including teachers and school leaders in isolated localities. According to the initial 2019 budget, the amount allocated for salaries and other teachers' expenses[289] increased by almost 31%.

The shortage of staff with proper qualifications in rural areas and the availability of support specialists remains a challenge. Shortages are reported for qualified primary school teachers and for lower secondary school teachers in ICT, sciences, foreign languages and the arts. The number of candidates in the national competition for teaching positions (i.e. titularizare) would normally be sufficient to fill vacancies, but less than 50% of candidates obtain the required mark. In addition, the relatively high number of positions filled by staff without proper qualifications remains a challenge, particularly in schools in rural and remote areas. The number of support specialists (e.g. special education teachers, school counsellors, Roma mediators, etc.) is often insufficient. For example, a school counsellor is expected to work with 800 students, but in practice the student/counsellor ratio is 2.5 times higher.

Teachers' career policies face significant challenges. Initial teacher education offers very little preparation and practical training, particularly in modern teaching techniques or inclusive pedagogy; in practice, the certification exam and the tenure exam are used as the main method to screen candidates entering the profession (OECD, 2017). However, this has proved to be less effective than having high entry standards and comprehensive initial teacher education; in itself, the certification exam tends to assess theoretical knowledge without being an authentic measure of on-the-job competence (ibid). Merit-based allowance tends to encourage teachers to focus narrowly on preparing pupils for tests and academic competitions, rather than encouraging them to improve the outcomes of low achieving students or those from disadvantaged backgrounds.

Strengthening continuing professional development gives an opportunity to improve teaching quality. Unlike many European countries, which will see a significant proportion of their teachers retire within the next 10 years, in Romania less than 30% of school teachers[290] are older than 50 (EU average:37%). Therefore, raising teaching quality involves working primarily with existing teachers; moreover, as the overall number of teachers is expected to decline in line with the student population, any reform of recruitment or initial teacher education will only affect a

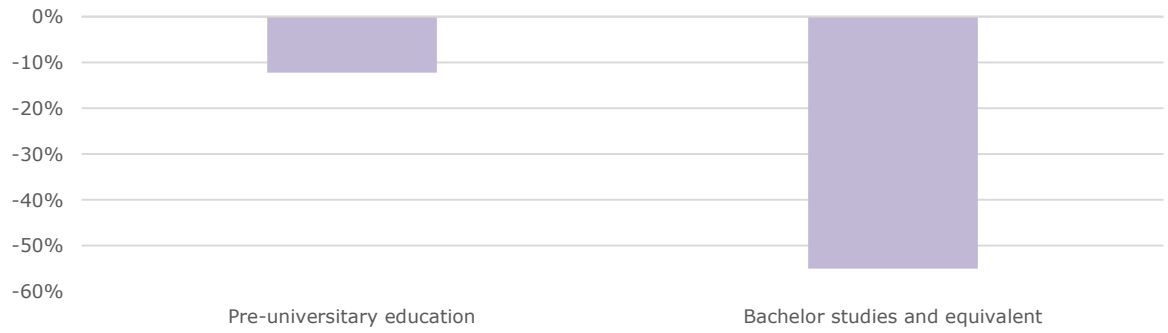
[287] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.
[288] Full implementation by 2022.
[289] e.g. food vouchers, holiday vouchers, retrospective recognition of salary rights (Law 85/2016).
[290] ISCED 1-3.

minority of the profession in the next few decades (OECD, 2019b). A high percentage of Romanian teachers report taking part in professional development, although the content and delivery of courses is not perceived as sufficiently adapted to their needs (IŞE, 2018; OECD 2019b). 70% of teachers report that participation in continuing professional development is restricted by high costs (EU-23 average: 44%). In particular, Romanian teachers reported a high development need in ICT skills for teaching (21.2%), approaches to individualised learning (21.5%), teaching students with special educational needs (35.1%) and cross-curricular skills (22.8%)[291] (OECD, 2019a).

4. Investing in education and training

Investment in education remains low in EU comparison, and funding mechanisms to support equity are weak. In 2017, general government spending on education was equivalent to only 2.8% of GDP, significantly below the EU average of 4.6% and the lowest percentage in the EU. This low level of funding reflects both the underfunding of education policies at national and local levels and Romania's strong GDP growth in 2017. Traditionally, underinvestment is particularly felt in pre-university education[292]. Basic funding and existing correction coefficients are insufficient to meet schools' needs. As a result, excessive enrolment leading to overcrowding is often used as a solution by schools in rich urban areas to hire top teachers. Because schools in small cities and in rural areas tend to have less students and smaller classes, they are not able to attract highly qualified teachers even if they receive more funding per student. In any case, the attractiveness of schools in rural and disadvantaged areas for highly qualified staff is usually limited. The system of complementary funding by local authorities tends to favour schools in richer municipalities, thus reinforcing inequalities in the system (World Bank, 2018). Nevertheless, it should be said that the initial 2019 state budget envisaged a significant increase for education and training policies compared to 2018.

Figure 2 Percentage change in the number of students in 2017 compared to 2007



Source: National Institute for Statistics

The school network is lagging behind demographic trends, and the need for modernisation is high. Since 2010, the number of students in pre-university education fell by a quarter. Faced with demographic decline, between 2000 and 2016 Romania closed down 25%[293] of its schools with legal personality and 17% of satellite schools[294] (World Bank, 2018). However, 58% of schools, providing education for 34% of students, still have a surplus of building space given the number of students enrolled (MEN, 2018). The situation is particularly striking in rural areas, but some urban areas also face similar challenges. In contrast, 22% of students study in overcrowded schools (which account for 10% of total). The need to improve sanitary conditions[295] and provide students with modern learning spaces (e.g. science laboratories, gym halls, libraries) is also high (ibid.). With declining demographic trends likely to persist[296], and given the poor state of physical learning environments in many schools[297], redesigning the school network could help

[291] Training on these topics are provided by the County Teacher Training Centres.
[292] In 2016, about 57% of expenditure went to pre-university education (approx. 3 million students), while 41% of spending went to universities, i.e. for a number of students that was about 6 times lower (World Bank, 2018).
[293] The figures cover pre-school up to post-high schools, except special education schools.
[294] These account for two thirds of the network.
[295] EUR 65 million (approx. EUR 13.7 million) were allocated in the initial 2019 budget to improve sanitary conditions in 1 489 schools.
[296] In Romania, the school age population (3-18 year-olds) is projected to fall by 10% by 2030 compared to Eurostat's baseline projections for 2020.
[297] National programmes to modernise educational infrastructure (crèches, kindergartens, schools) include PRET (Proiectul

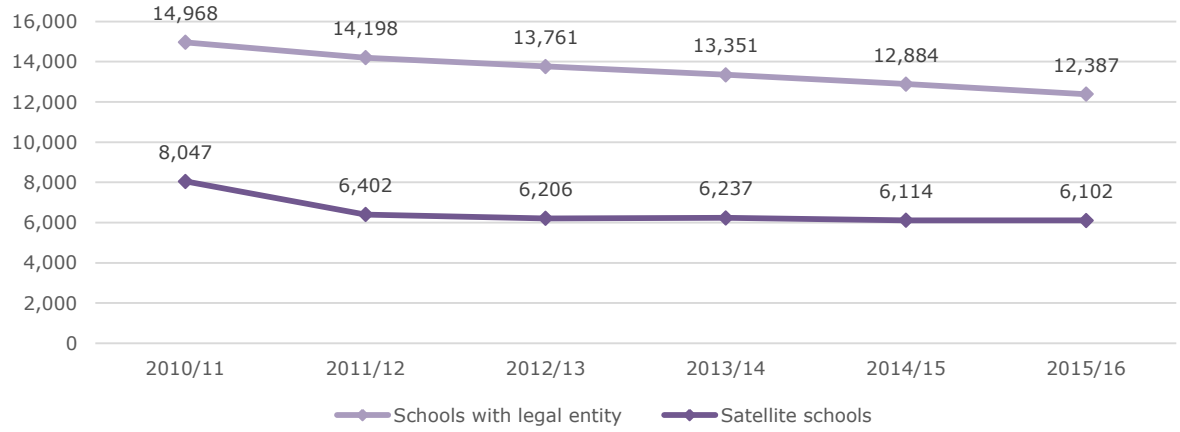
improve efficiency and free up resources for quality improvements. However, any plans to reorganise the school network need to take account of the already high equity challenges. These are echoed in low enrolment rates in early education and care for children from lower socio-economic groups, high early school leaving and large gaps in educational outcomes between schools with legal personality and satellite schools. Already, long walking distances to kindergartens in rural areas and commuting costs are barriers to accessing quality education, while school transportation services are insufficient, particularly in rural areas.

Box 1: EU funds support the modernisation of educational infrastructure

Some EUR 350 million were earmarked in 2014-2020 under the European Regional Development Fund for investments in educational infrastructure in Romania. Priority is given to areas where enrolment rates in pre-school education are low and early school leaving is high. Investments in vocational education and training and higher education are also financed.

In general, funding is available for the modernisation of existing infrastructure, the construction of new buildings and purchase of equipment. The funding scheme was based on the Strategy on the Modernisation of Educational Infrastructure 2017-2023 and has raised a lot of interest among local and central government authorities and public universities. By the third quarter of 2018, 814 projects had been submitted totalling a non-reimbursable value of EUR 1.3 billion.

Figure 3 Optimisation of the school network, 2010-2016



Source: World Bank (2018).

5. Modernising early childhood and school education

Participation rates in early childhood education and care are improving but there are still challenges linked to access and quality. Good quality early childhood education and care is crucial for the development of key competences. The participation rate for children aged 4 to compulsory school age has been increasing and reached 89.2% in 2017, but is still below the EU average (95.4%). Disparities between regions[298] and between rural and urban areas[299] persist. To improve quality, a new curriculum for children aged 0-3 and 4-6 years was developed and aligned with the new school curriculum. A standard cost for nurseries was developed and awaits approval. Its implementation could pave the way for expanding services for children under 3, for whom enrolment rates are particularly low (16% in 2017, about half the EU average), with negative consequences for women's labour market participation. This is due to a combination of factors, including lack of nurseries and other formal care arrangements. A project[300] co-funded by ESF was launched in April 2019 aiming to increase participation rates in ante-preschool education.

privind Reforma Educaţiei Timpurii), PNDL (Programul National de Dezvoltare Locală), PRIS (Proiectul privind Reabilitarea Infrastructurii Şcolare).

298 Participation rates range from 94.4% in the North-West region to 77.5% in the Bucharest capital region.

299 Gross enrollment rates in kindergarten (ages 3-6) were almost universal in urban areas (97.4%) compared to 85% in rural areas (National Institute for Statistics).

300 'Development of ante-preschool services' has a budget of EUR 168 million (approx. EUR 35.7 million) and aims to support

Early school leaving is high, with repercussions for the labour market and the economy. In 2018, the rate of early leavers from education and training (age group 18-24) decreased for the second consecutive year to 16.4%. Although well below its peak of 19.1% in 2016, the rate remains one of the highest in the EU (EU average: 10.6%). Therefore, reaching the national target of 11.3% by 2020 is unlikely. Early school leaving persists due to a combination of factors, including socio-economic aspects and gaps in the provision of quality education. In rural areas — where poverty is highest and the quality of education tends to be lower — one in four people aged 18-24 has left school too early. By contrast, the rate is 15% in towns and only 4.2% in cities. Authorities are currently developing an early warning mechanism that could help improve data collection and strengthen coordination between schools, inspectorates and other relevant institutions (social assistance, NGOs, the police, the church, etc.). Through the ESF calls recently launched, the availability of second chance programmes is improving. However, the need remains to adapt programmes to the needs of adult learners.

The acquisition of basic and digital skills is still problematic. PISA 2015 shows that about 40% of Romanian 15 year-olds lack basic competences in either reading, mathematics or sciences (OECD, 2016). Implementation of the new school curriculum continues alongside the retraining of teachers[301]. However, individualised approaches for students remain insufficiently developed. The percentage of young people (ages 16-19) who assess their digital skills as basic or above basic is below the EU average (52% compared to 83% in 2017). There are substantially fewer highly digitally equipped and connected schools in Romania than the EU average (European Commission, 2019b).

Improving equity in education remains a major challenge, alongside raising quality. An analysis of 2015 PISA scores shows that most of the gap in performance between Romania and high performing EU countries is explained by the clustering of students in schools with students of similar socioeconomic background; poorer students are not only socially segregated together, but they also attend lower quality schools (World Bank, 2018). Apart from socioeconomic background, equity challenges disproportionally affect Roma and students from rural areas, who tend to have lower educational outcomes. The percentage of Roma children attending kindergarten is less than half the national average; young Roma are more likely to drop out early from education (FRA, 2016). The monitoring methodology to tackle school segregation is delayed but expected to be piloted in the school year 2019/2020. Taking account of these challenges, the 2019 European Semester country-specific recommendations call on Romania to 'improve the quality and inclusiveness of education, in particular for Roma and other disadvantaged groups' (Council of the European Union, 2019).

Box 2: Plans to overhaul the education and training system

The Ministry of Education and the Presidential Administration have both put forward their own visions for comprehensive reform of the education and training system.

Education unites us: Among the proposals of the Education Ministry is an overhaul of initial teacher education and a revision of teacher policies. Compulsory education would start at age 3 and end at 18/19, following five distinct stages (preschool, lower primary, upper primary, lower secondary, upper secondary). The focus would be on building cognitive and socio-emotional skills and knowledge in different subjects and on overcoming learning gaps through personalised learning. Four types of baccalaureate are envisaged: A1 and A2 for sciences and humanities, V for vocational education and T for the professional track — the latter giving access only to non-tertiary education.

Educated Romania: Following a two-year consultation process, the Presidential Administration put forward two scenarios to revise the school structure. Teachers would play a key role in the reform, whose overarching aims are to improve quality and equity in education. Modernisation proposals are made around seven key topics: the teaching profession, equity, school leadership, vocational education and training, higher education, early education and care, and student evaluation. The Presidential Administration aims to gain political support for the reform.

access to ante-preschool services for 14 000 children.

301 Through the project 'Relevant curriculum, open education for all (CRED)'.

6. Modernising higher education

Participation in higher education is generally low. In 2018, tertiary attainment for the 30-34 age group — measured as a European benchmark— declined to 24.6% from 26.3% in 2017. This is significantly below the EU average of 40.7% and below Romania's national Europe 2020 target of 26.7%. Gross enrolment rates have not only remained low but have been decreasing since 2009 (European Commission, 2018). The number of students entering higher education is limited by factors including demographics, the persistence of early school leaving and a low, though improving, pass rate for the baccalaureate exam. The Romania Upper Secondary Project (ROSE), which aims to reduce dropouts and improve the transition to higher education by giving grants to low performing high schools, has continued, yielding some positive results in targeted high schools. Data shows that less than 5% of students enrolling in a bachelor programme come from families where their parents' level of education is low (European Commission, 2018). To improve access, dedicated places for students from rural areas have been introduced[302], scholarships have increased and dedicated places for Roma students are financed.

Ensuring that graduates possess high-quality labour market-relevant skills remains a challenge. The ICT sector is expected to continue to grow in the coming years but will face labour shortages; skills shortages also exist in the health sector, in skilled trades, engineering, transport and distribution (Manpower Group, 2015; Cedefop 2017; Cedefop 2018). Although the percentage of graduates in science, technology, engineering and mathematics (STEM) as a total of higher education graduates is among the highest in the EU, the actual number of graduates is low. Employers report that graduates often lack soft skills but possess good, though overly theoretical knowledge (World Bank, 2018b). Work on developing the methodology for external evaluation of PhD programmes has continued, although reaccreditation of doctoral schools is still pending. The employment rate of recent tertiary education graduates is high and increasing (89% in 2018, EU average: 85.5%). Nevertheless, these figures should be seen in the context of the low number of graduates and high economic growth. The authorities have developed a methodology to track whether graduates occupy jobs requiring a higher education degree in their field of study, but as yet no graduate tracking system is in place. For the moment, there is no global or sectoral assessment of skills needs (European Commission, 2019b). Therefore, the 2019 country-specific recommendations also call on Romania to 'improve skills, including digital, notably by increasing the labour market relevance of vocational education and training and higher education' (Council of the European Union, 2019).

7. Modernising vocational education and training

Efforts to expand dual vocational education and training continue but the labour market relevance of VET remains limited. The total enrolment in upper secondary VET in Romania was stable at 56.2% in 2017 and above the EU average of 47.8[303]%. Students enrolled in VET had limited exposure to work-based learning, with only 10% of them enrolled in combined school and work-based programmes. Recent VET graduates' employability saw a slight increase in 2018 to 69.0% (67.2% in 2017), but remains below the EU average (79.5%). To increase the attractiveness of professional education, students following this path can obtain scholarships. Out of the VET students enrolled in upper secondary education in 2017/2018, 1.5% chose the dual VET pathway, which is currently only provided at European Qualification Framework (EQF) level 3. Despite strong interest from businesses, dual education is rather unattractive for students. Moreover, retaining students in these companies is difficult and the required financial investment by companies is high. ESF supports partnerships between VET schools and businesses and is expected to fund the VET reform. The recruitment rules for VET school teachers are being improved and simplified. Some efforts were made to upgrade teacher competences and develop the initial and continuing training of in-company trainers.

8. Developing adult learning

Recent developments represent a step forward in promoting adult learning. The national programme *'Invest in yourself'* offers financial support to access education, training and culture through a state-guaranteed loan. The governmental and presidential policy documents offering a long-term vision for education include references to lifelong learning, although not in a consistent

[302] 2 000 places, equivalent to 3.2% of the total number of publicly funded study places.
[303] VET enrolment figures given as a percentage of total student enrolment figures at the upper secondary level.

way and not specifically to adult learning. To facilitate access to upskilling for low-qualified adults, the level of qualification 1 was introduced in the national qualifications framework. The classification 'unqualified workers' was renamed 'elementary occupations' and a list of such occupations was developed. Government Ordinance 96/2018 introduced the possibility of a six-month apprenticeship programme at EQF level 1. However, this programme is not yet available. With the support of ESF, the Ministry of Labour is in the process of establishing occupational standards for EQF level 1 and an appropriate training offer.

The need for upskilling is high. Nearly 2.4 million adults (or 21.5% of adults aged 25-64) had only a low level of educational attainment in 2017. The share of low-qualified adults in employment (55.6%) was also close to the EU average of 56.8%. However, the likelihood that adults update their knowledge and skills through adult learning is low: in 2018, only 0.9% of adults aged 25-64 have had a recent learning experience during the 4 weeks preceding the Labour Force Survey (EU average: 11.1%). This is particularly worrying given the much smaller number of jobs which require only a low level of education. With only 824 000 such jobs deemed 'elementary occupations' in 2017, this clearly highlights the need for substantial upskilling and reskilling.

Further efforts are needed to increase participation in adult learning. Community centres for adult education are still to be extended, while quality assurance mechanisms have not yet been developed. A system for continuing professional development of adult learning professionals is not yet in place. The system of adult learning might also benefit from a more reliable and comprehensive data collection system, clearer institutional arrangements and the establishment of a coordination body.

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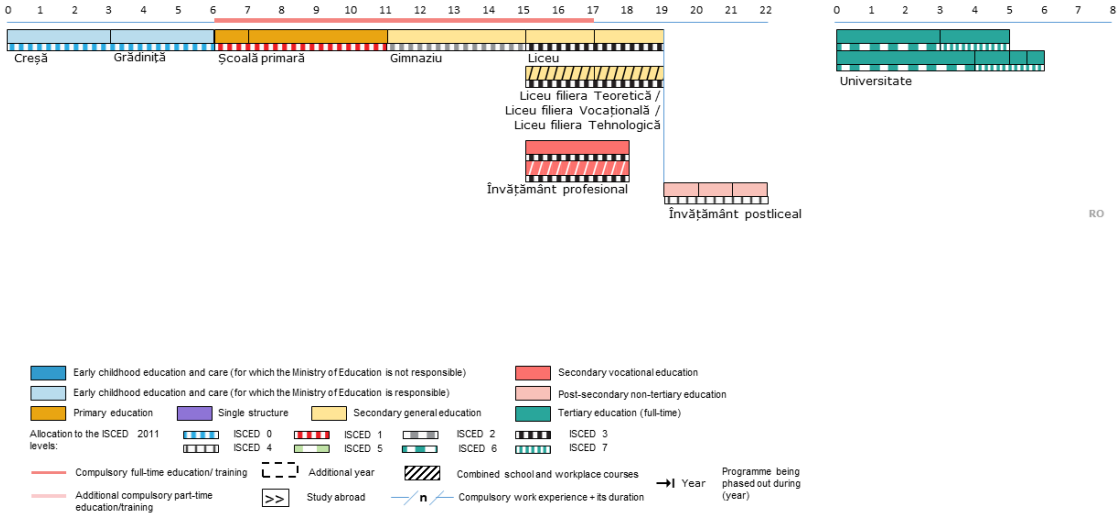
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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European Commission

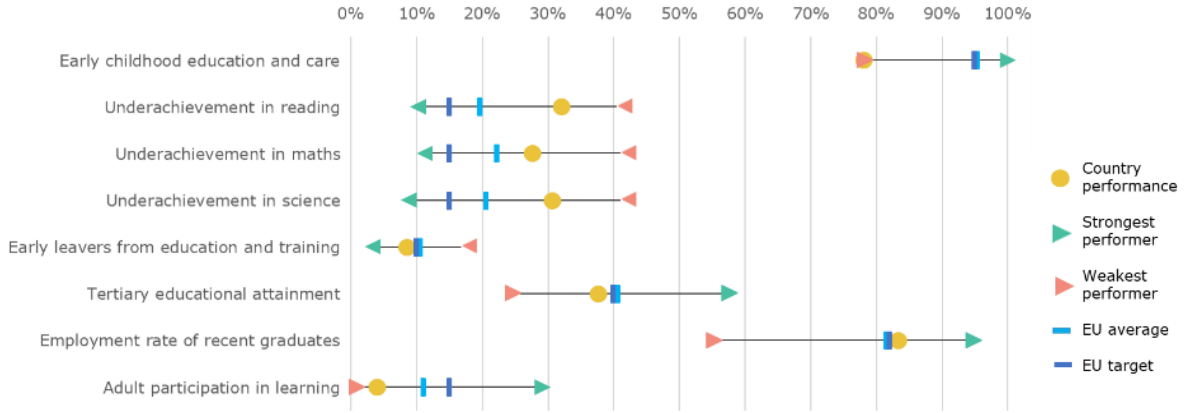
SLOVAKIA

1. Key indicators

			Slovakia		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			4.9%	8.6%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			17.6%	37.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			77.4%	78.2% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		22.2%	32.1% [15]	19.5%	19.7% [15]
	Maths		21.0%	27.7% [15]	22.3%	22.2% [15]
	Science		19.3%	30.7% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		74.4%	83.4%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		3.1%	4.0%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	13.0% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	0.0% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.2%	3.8% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€3 648 [12]	€4 388 [15]	:	€6 111 [15,d]
		ISCED 1	€4 208 [12]	€5 193 [15]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	: [12]	€4 744 [15]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€3 907 [12,d]	€5 379 [15]	:	€7 730 [14,d]
		ISCED 5-8	: [12,d]	€11 987 [15]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		4.9%	8.5%	13.1%	9.5%
	Foreign-born		: [u]	: [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		17.5%	37.6%	33.1%	41.3%
	Foreign-born		: [u]	: [u]	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		67.9%	84.6%	72.5%	76.8%
	ISCED 5-8		83.5%	82.4%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in section 10 and in Volume 1 (ec.europa.eu/education/monitor). Notes: EU averages of 2009 PISA do not cover Cyprus; d = definition differs, u = low reliability, := not available, 12 = 2012, 14 = 2014, 15 = 2015, 17 = 2017.

Figure 29 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Slovakia is improving early childhood education and care, which is particularly positive for children from deprived families.
- Slovakia is taking a more strategic approach to lifelong learning, upskilling and reskilling.
- The early school leaving rate has continued increasing since 2010, approaching 14% in Eastern Slovakia.
- Investment in education and training is insufficient, and this is reflected in teachers' still low salaries despite recent increases.

3. A focus on teachers

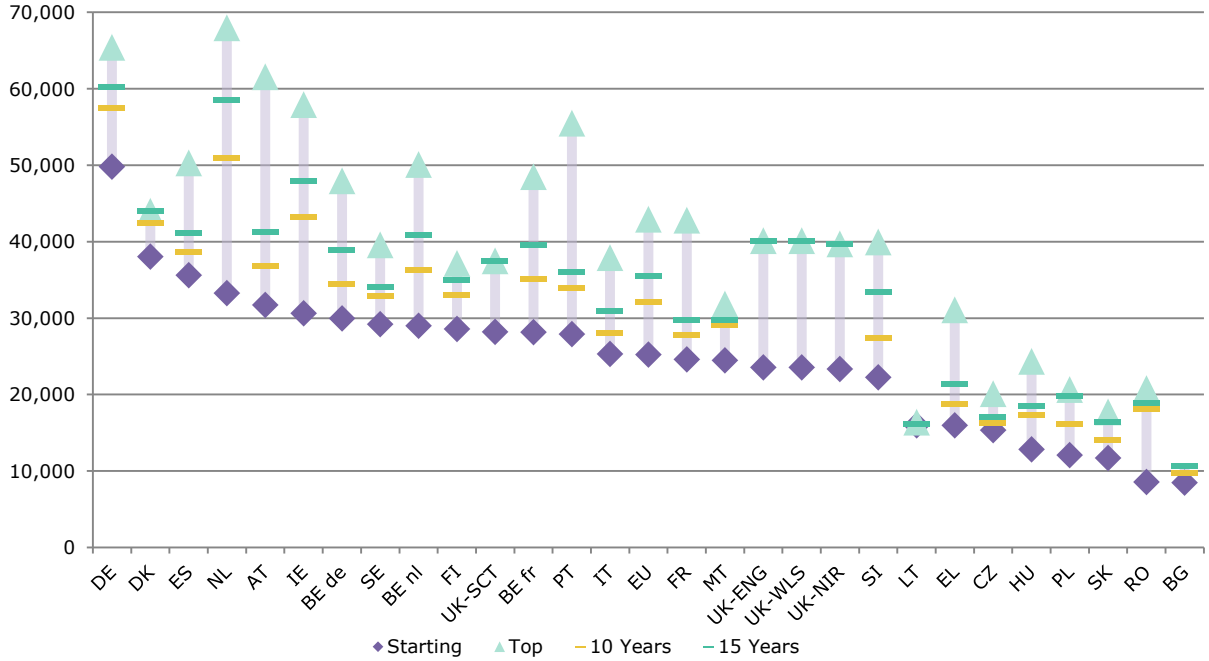
The teaching profession remains unattractive in Slovakia. According to the 2018 OECD Teaching and Learning International Survey (TALIS)[304], the proportion of Slovak teachers who think that the teaching profession is valued in society is the lowest in the EU — 4.5% v 17.7% at EU level (OECD, 2019b). While overall there is no shortage of teachers, teacher supply problems emerge in the Bratislava region, where living costs are high, as well as for vocational education trainers and teachers of science, technology, engineering, mathematics (STEM), physics and English[305]. Average teachers' salaries lag far behind comparable workers — following planned pay increases in 2019-2020, upper secondary teachers in public institutions will earn only 68% of the average salary of a full-time full-wage employee with tertiary education (Ministry of Finance (MoF), 2019). The statutory salaries of Slovak teachers with 15 years of experience are among the lowest in the EU, with one of the smallest differentials between minimum and maximum salary (Figure 2). School heads receive a management allowance, which can be 12-50% higher than the maximums for teachers depending on the municipality size[306]. Since most municipalities are small, the 38% ceiling applies mainly. Overall, head positions are not perceived an attractive career goal, including the financial aspect (Santiago, P. et al., 2016). The 2018-2027 National Programme for the Development of Education (NPDE) envisages further increasing teachers' salaries to reach, in 2027, 85% of the salary of tertiary-educated employees, modifying the career system, the initial training and continuing professional development (CPD) of teachers (Ministry of Education (MoE), 2018a). Whether this will be enough to attract talented young teachers, for example in STEM subjects, remains unclear. A new study on the attractiveness of the profession in Slovakia will be published in 2019.

[304] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower-secondary teachers and school leaders in mainstream public and private schools.

[305] See: https://spectator.sme.sk/c/20902676/lack-teachers-primary-schools-jobs.html https://spravy.pravda.sk/domace/clanok/481433-na-slovensku-chybaju-stovky-ucitelov-najviac-v-hlavnom-meste/ https://skolskyportal.sk/prevadzka-skoly/skolam-chybaju-stovky-ucitelov

[306] See: https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2003/553/20190101#prilohy.priloha-priloha_c_6_k_zakonu_c_553_2003_z_z.oznacenie

Figure 2 Annual basic gross statutory salaries for full-time teachers in lower secondary (ISCED 24) public schools in PPS for the school year 2016/2017



Source: Eurydice, 2018. Note: For the sake of clarity of comparison between countries, Luxembourg is not presented here.

The teacher population is ageing. In 2017, 30% of primary teachers and 39.6 % of secondary teachers were aged over 50; only 7% of primary teachers and 8.8% of secondary school teachers were under 30[307]. The profession in Slovakia is dominated by women: they are represented most strongly in pre-primary (99.5%) and primary education (90%), but still over 70% in secondary education. The ratio is reversed at tertiary level where women constitute 45.8% of teachers.

Initial teacher education and CPD are weak. There is some evidence that many applicants for initial teacher training may use it as an easy access route to higher education. This is borne out by the large proportion of graduates from initial teacher training who do not enter the profession (Santiago, P. et al, 2016). Although, according to national data, 73% of students in such programmes declare becoming a teacher, the proportion of graduates from initial teacher training working as teachers is much lower[308]. Initial teacher training lacks sufficient quantity and quality of practice, preparation for teaching students with special needs and applying an individualized approach (Santiago, P. et al, 2016). Slovakia plans a comparative analysis of initial teacher training systems in different countries to provide the basis for modernising its system (MoF, 2019). Slovak teachers indicate that their participation in CPD is hindered by its high cost (42.9%), lack of incentives (42.8%), and its low relevance (40.3%). 20.8% of teachers feel well prepared for teaching in a multicultural setting (EU average: 23.8%), and 9.3% declared a high need for related training. 16.6% of teachers identified information and communications technology (ICT) skills as their main training need (OECD, 2019b).

Parliament passed a new law on pedagogical staff. The new act on pedagogical and professional staff was approved on 2 April 2019[309]. It changes the teacher attestation process, introduces a new category of career counsellor, a new code of ethics, and reduces the workload of some categories of education employees (Eurydice, 2019). However, the bill was criticised by the teacher community as not bringing the systemic change necessary to improve the attractiveness of the profession and teachers' professional development[310].

307 Eurostat, UOE, 2017. Online data code: educ_uoe_perp01
308 See: https://www.minedu.sk/data/att/14502.pdf
309 See: https://www.nrsr.sk/web/Default.aspx?sid=zakony/zakon&MasterID=7111
310 See: http://sku.sk/vyzva-poslancom-nr-sr-k-hlasovaniu-o-zakone-o-pedagogoch/ https://www.skolskyportal.sk/legislativa/ucitelia-vyjadrili-nespokojnost

4. Investing in education and training

Investment in education and training remains low. As in previous years, in 2017, general government expenditure on education as a proportion of GDP remained well under the EU average: 3.8% against 4.6%. Education constituted 9.4% of the public budget, also below the EU average (10.2%). Slovakia spends a comparatively higher proportion of its education budget on pre-primary and primary education (36.4% v EU average of 32%) than on secondary education (24.6% v EU average of 41%). Annual public spending per student in purchasing power standards remains low: in 2016[311], for primary and lower-secondary students it was EUR 4 541 (EU average: EUR 6 139), for upper and post-secondary non-tertiary students EUR 4 736 (EU average: EUR 7 029). Given pupils' worsening results in international tests[312], the continued strong impact of socio-economic background, regional disparities, and rising early school leaving (ESL) rates, a new focus on investing might be considered to improve educational outcomes, teachers' skills and the attractiveness of teaching, as well as greater inclusion of disadvantaged groups in education and training, in particular Roma. Support for specialists and inclusive teams to facilitate inclusive education, including for Roma children, is being provided by the ESF (Eurydice, 2019); in future the necessary national resources will need to sustain such support.

Slovakia is making efforts to rationalise its public expenditure on education in a complex administrative set-up. Public education spending is managed by: (i) the Education Ministry, responsible for 35.7% of the total; (ii) the Ministry of Interior, responsible for 30.5%; and (iii) the self-governing bodies (regions and municipalities), managing the remaining 33.8% (Eurydice, 2019). Besides funding, the Ministry of Interior and its regional offices lay down regulations on school life and administer secondary and special schools. As Slovakia has the highest proportion in the EU of pupils in special schools (EASNIE, 2018), better coordination of educational policies at national level is necessary. Positively, reflecting the recommendations of the 2017 spending review carried out with the support of the European Commission's Structural Reform Support Service and the International Monetary Fund, the budget allocation for individual schools has been made more precise from 2019 onwards as it takes into account each teacher's years of service (MoF, 2019).

In 2018, Slovakia launched the 2018-2027 NPDE to address current challenges in education and training. The total cumulative budget of planned measures is EUR 15.6 billion. High-impact measures of the first action plan (2018-2019) include the introduction of compulsory education from age 5 initially planned for 2020, and a legal entitlement to pre-primary education for 4 and 3 year-olds planned for 2021 and 2022 (MoE, 2018b). The European Structural and Investment Funds (ESIF) are also supporting the implementation of these measures. By end of 2019, the government plans to update measures for the following years.

5. Modernising early childhood and school education

Provision of kindergarten facilities is making good progress, yet enrolment rates remain low. In 2017, the participation rate of Slovak children over 4 in early childhood education and care (ECEC) was 78.2%, the lowest in the EU. The weakest participation was in Eastern Slovakia at 65.3%. The government expanded free kindergarten places to all children (regardless of age) from socio-economically deprived families from September 2018[313]. In June 2019, Parliament approved lowering the compulsory school age to 5 starting in January 2021[314]. The ESIF are supporting the provision of kindergartens: 11 147 places are to be created over 2014-2020 to enable enrolment of 5 year-olds to rise to a projected 96.4% in 2020. Around 2 100 more places will be needed to ensure full enrolment. The management of supply and demand for places is ineffective: 12 502 child admission requests were not met in 2018/2019 for capacity reasons, predominantly in developing municipalities and those with a high share of Roma, despite there being 12 000 spare places nationwide (Hellebrandt, T. et al. 2019).

Measures are planned to further facilitate participation in ECEC and to review teaching requirements. In 2017/2018 only 43% of children aged 3-5 from families receiving the 'benefit in material need'[315], and 31.7% of children in that age group from marginalised Roma communities,

311 Eurostat, UOE, 2017. Online data code: educ_uoe_fine09.
312 2015 Programme for International Student Assessment (PISA).
313 See: https://www.minedu.sk/prispevok-na-vychovu-a-vzdelavanie-pre-ms/
314 See: https://www.nrsr.sk/web/Dynamic/DocumentPreview.aspx?DocID=468868
315 See: https://ec.europa.eu/social/main.jsp?catId=1127&langId=en&intPageId=4769

were enrolled in kindergartens (Hellebrandt, T. et al., 2019). To increase the enrolment of children from low-income families, the NPDE envisages free transport starting 2020. The qualification requirements for kindergarten staff are to be reassessed in 2020. Ensuring the quality and inclusiveness of educational provision is crucial as poor-quality ECEC can eliminate the potential benefits or even have detrimental effects on children's development and learning (OECD, 2018).

Box 1: ESF-funded project to support inclusive ECEC

In July 2018, a national project called 'Support for pre-primary education of children from marginalised Roma communities' (*PRojekt Inklúzie v Materských školách - PRIM*) was launched with ESF funding.

The main objective is to increase kindergarten attendance by children from marginalised Roma communities by creating an inclusive environment (establishing inclusive teams involving additional teachers and professional staff) and working with families whose children are not yet attending kindergartens.

The project is open to 150 municipalities until 31 October 2020. It is implemented by the Office of the Plenipotentiary of the Slovak Government for Roma Communities.

See more: http://www.minv.sk/?narodny-projekt-prim-projekt-inkluzie-v-materskych-skolach

Equity in education and the quality of educational outcomes are weak. The 2015 PISA[316] survey found that the proportion of underachievers in Slovakia's secondary schools is significantly higher than the EU average in reading, mathematics and science, and has increased over the years (OECD, 2016). The 2018 national tests run by the Ministry of Education among primary students (Testing 5[317]) confirm large differences in educational outcomes between districts[318] and regions[319]. Students from socially disadvantaged families achieved an average success rate of 22.9% in mathematics in these tests, against 60.9% among students without a social disadvantage[320]. The grade repetition rate is 15 times higher among pupils from socially disadvantaged environments and marginalised Roma communities simultaneously — 14.9%, against 1% among other pupils (Hellebrandt, T. et al., 2019). Teachers in Slovakia rarely employ a differentiated and individualised approach that takes into account diverse educational needs (SSI, 2016). Investment in teachers' competencies and attracting best teachers to disadvantaged areas could help address pupils' learning difficulties.

The ESL rate has risen since 2010. Slovakia's ESL rate has strongly deteriorated to 8.6% in 2018 (EU average: 10.6%) from 4.7% in 2010 (EU average: 13.9%). At 13.9%, Eastern Slovakia has the highest rate. Moreover, in 2017/2018, 7.8% of 16 year-olds had not entered the final class of lower secondary education, putting them at risk of dropping out of school (Hellebrandt, T. et al. 2019)[321]. The rates were particularly high for pupils from families receiving the 'benefit in material need' (32.6%) and marginalised Roma communities (37.2%). Poor educational outcomes in secondary education translate into the deteriorating trend in ESL, which is reflected in long-term unemployment among the low-skilled. 60% of the low-skilled long-term unemployed in Slovakia are aged under 29 (European Commission, 2019a).

The education system is not sufficiently inclusive. In October 2018, the Plenipotentiary for Roma communities and three other Slovak officials involved in school education and rights protection pleaded for urgent measures to desegregate Roma pupils in primary schools[322]. Roma children have low attainment rates and only a few manage to reach tertiary education (OECD, 2019a). It is estimated that 62% of Roma children attend a school where all or most other children are also Roma (FRA, 2016); no real progress on desegregation has been observed over the recent past (Amnesty International, 2016). In January 2019, the government approved an updated action plan for Roma integration up to 2020 aimed at raising the Roma population's education level to the

316 OECD 2015 Programme for International Student Assessment.
317 See: https://www.minedu.sk/testovanie-5-2018-vysledky-celoslovenskeho-testovania-piatakov/
318 See: Results of all 79 districts in 2018 Testing 5: https://www.nucem.sk/dl/4046/Pr%C3%ADloha4.pdf
319 See: Results of 8 regions in 2018 Testing 5: https://www.nucem.sk/dl/4045/Pr%C3%ADloha1.pdf
320 2 041 pupils from socially disadvantaged families were tested in 69 districts; there were no such students in 16 districts.
321 In Slovakia schooling is obligatory till age 16.
322 See: https://www.minv.sk/swift_data/source/mvsr/dokumenty/desegregracia-vzdelavanie-spolocne-vyhlasenie-romovia.pdf

national average[323]. The budget totals EUR 55.72 million for 2019-2020 (Eurydice, 2019). A European Commission infringement procedure against Slovakia over the segregation of Roma children in education is ongoing. In 2019, Slovakia received a country-specific recommendation from the Council of the EU to 'Improve the quality and inclusiveness of education at all levels and foster skills. Enhance access to affordable and quality childcare and long-term care.' (Council of the EU, 2019[324]).

Slovakia is making progress on digital skills. In 2017, 59% of Slovaks aged 16-74 had at least basic levels of digital skills, 4 pps more than in 2016 and above the EU average (57%). Slovakia ranks 20th in the EU's 2018 Digital Economy and Society Index (European Commission, 2019b). The NPDE highlights the need to extend ICT use in classrooms. It envisages the establishment of a central digital educational content repository including the content developed under ESF projects[325], which will be available to pedagogical staff.

Box 2: 'IT Fitness test'

'IT Fitness test' is an online self-testing instrument developed by Comenius University (content), the Technical University of Košice (maintaining the portal) and the IT Association of Slovakia (promotion and certification).

The tool enables self-assessment of IT skills in office productivity software, internet security, collaboration tools and social networks, and comprehensive tasks. Two versions are available: (i) for primary school pupils to verify their readiness for upper secondary school, and (ii) for any individual to test their employability in terms of meeting employers' IT requirements.

Between 2010 and 2018, 180 000 individuals self-tested. Following analysis of the results, the test authors suggest paying more attention to building critical thinking, analysing and assessing information, and to projects interlinking IT with other school subjects. The results also point to a strong need to improve students' and teachers' competencies concerning security. (Vantuch, J., Jelinkova, D., 2019).

See www.itfitnesstest.sk

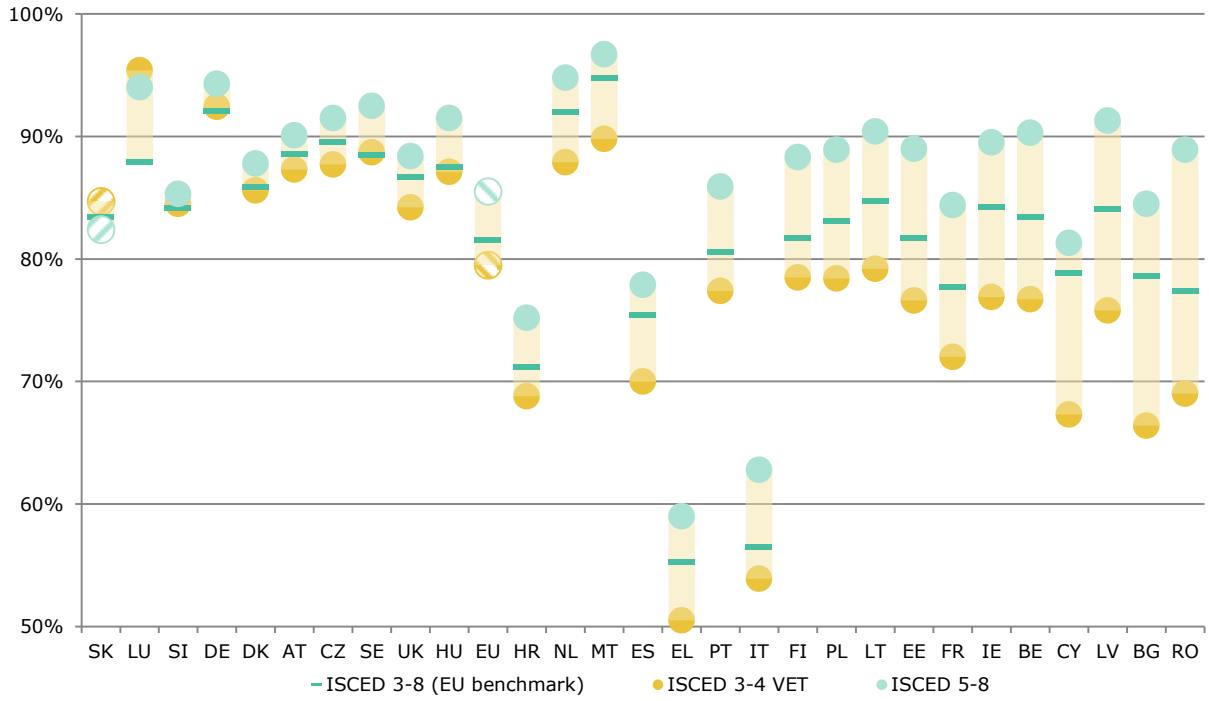
6. Modernising higher education

The level of tertiary attainment is steadily growing but disparities exist. In 2018, the national tertiary attainment rate was 37.7% (EU average: 40.7%). The gap with the EU average has been narrowing over time, from 11.7 pps in 2010 to only 3.0 pps in 2018. The gender gap in favour of women is 13.5 pps (EU average: 10.1 pps). High regional disparities persist: in the Bratislava region 59.9% of the adult population have a tertiary degree, almost double the rate in other regions, where it ranges between 33.4% and 35.2%.

The employment rate of recent tertiary graduates is lower than that of upper secondary vocational education and training (VET) graduates. Contrary to the situation in other Member States (except Luxembourg), the employment rate of recent tertiary graduates (aged 20-34) is lower than for upper secondary VET graduates**:** 82.4% v 84.7%. The rate is also lower than the EU average of 85.5% (Figure 3). The proportion of STEM graduates, at 21.2%, is below the EU average of 25.8%[326]. Outward migration is high among people under 30, including tertiary graduates, in particular in the medical and technical fields, where 22% of graduates leave the country. This poses a challenge to growth. The corresponding loss of investment is estimated at EUR 45 million (MoF, 2017). In 2017, 13% of Slovak graduates graduated abroad (EU average: 3.6%).

323 See: https://rokovania.gov.sk/RVL/Material/23492/2
324 See: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019DC0525&from=EN
325 See: https://predmety.iedu.sk, http://rsov.iedu.sk, https://vychovy.iedu.sk, https://anglictina.iedu.sk.
326 Eurostat, UOE, 2017. Online data code: educ_uoe_grad02

Figure 3 Employment rate of recent graduates (age 20-34) by ISCED level, 2018



Source: Eurostat, Labour Force Survey, 2018.

Slovakia is implementing the new law on quality assurance in higher education. A new legal framework for quality assurance in higher education (Act no 269/2018)[327] and the amendment to the act on higher education institutions (Act no 270/2018) came into force on 1 November 2018. The main changes concern the new system of accreditation and the increased importance of quality assurance processes. A new Slovak Accreditation Agency for Higher Education (SAAHE) is being created. The amendment simplifies the process of creating study programmes and introduces interdisciplinary studies (Eurydice, 2019).

Professionally-oriented bachelor's programmes are to be developed, as advocated by stakeholders. In December 2018, a call for projects under the ESF was launched to develop a professionally oriented bachelor's studies, with a budget of EUR 15 million[328]. The projects had been strongly advocated for by employers and educational practitioners. Another call will follow to implement the programmes. It is important that SAAHE develops accreditation and assessment criteria for this type of programme as well.

7. Modernising vocational education and training

Measures are being introduced to increase the responsiveness of VET to labour market needs and to address skills shortages. In 2017, total enrolment in upper secondary VET in Slovakia was 68.9 % (EU average: 47.8%). VET students had some exposure to work-based learning (12% in 2017 v 11% in 2016) — most programmes include practical elements in the curriculum (UOE, 2017). The employment rate among recent VET graduates increased from 81.6% in 2017 to 84.7% in 2018 (EU average: 79.5%). The NPDE focuses on linking education and training with the labour market, notably through funding for employers' organisations involved in dual VET (an annual estimated budget of EUR 987 062 for 2018-2027) and by increasing financing for VET schools (estimated EUR 76 902 604 over the same period). Post-secondary VET programmes are to be expanded and dual VET is to be promoted in tertiary education. EUR 18 008 185 for 2019-2027 will be earmarked for new career counsellors positions at education counselling centres. The 'entrance quotas' for learners in VET programmes introduced by the 2018 amendment of the VET Act have been softened by the Ministry of Education in reaction to the dissatisfaction of VET schools and families. A revision of quotas is envisaged based on the results of

[327] See: https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2018/269/20180926
[328] See: http://www.minedu.sk/27122018-vyzva-na-predkladanie-ziadosti-o-nenavratny-financny-prispevok-na-podporu-prepojenia-vysokoskolskeho-vzdelavania-s-potrebami-praxe-vysoka-skola-pre-prax-oplz-po12018dop131-02/

the Skills Governance project run by Slovakia and Cedefop. The NPDE has planned EUR 20 000 for adjusting professional standards for pedagogical staff and experts in regional schools in 2020/2021.

8. Developing adult learning

A more strategic approach is being developed to improve upskilling, reskilling and adult participation in learning. Only 8.3% of adults have not acquired at least an upper-secondary qualification (EU average: 21.9%) (Eurostat, 2018). , However, only 4.0% of adults aged 25-64 had had a learning experience in the last 4 weeks in 2018 (EU average: 11.1%) (Eurostat, 2018). In 2017, around 1 500 adults aged over 25 acquired an upper-secondary qualification, which is a small proportion of the nearly 272 000 adults with a low level of educational attainment (Eurostat, 2017). Consequently, only 37.9% of low-qualified adults were employed (EU average: 56.8%) (Eurostat, 2018). This highlights the need for substantial upskilling and reskilling. In 2019, the Ministry of Education in cooperation with OECD has launched a project on the national skills strategy aimed at improving adult learning, skills levels, systems of qualifications, participation in learning, financing, and career guidance. An Act on lifelong learning will follow. The NPDE implementation plan contains three tasks concerning adult learning:
(i) completion of the system of qualifications by increasing their flexibility (introduction of professional qualifications) and validation of non-formal and informal learning;
(ii) participation in the second cycle of PIAAC[329];
(iii) an analysis of adult participation in learning, a pilot scheme and subsequently a roll-out of individual learning accounts (set at EUR 200 combined with 25% tax-base deductions for employers on training expenses, with total funding of EUR 15.64 million over 2020-2027).

Efforts are being made to improve adult learning at regional level. As part of guidelines for programmes for underdeveloped regions there is a special focus on upskilling and reskilling. Priorities include: support for low-skilled workers, young people and marginalised Roma to acquire labour-market relevant skills; establishing a training centre focused on IT and electrical engineering to attract young learners and retrain jobseekers in Bardejov; and establishing a regional VET campus in Kežmarok offering initial and continuing training, and career guidance.

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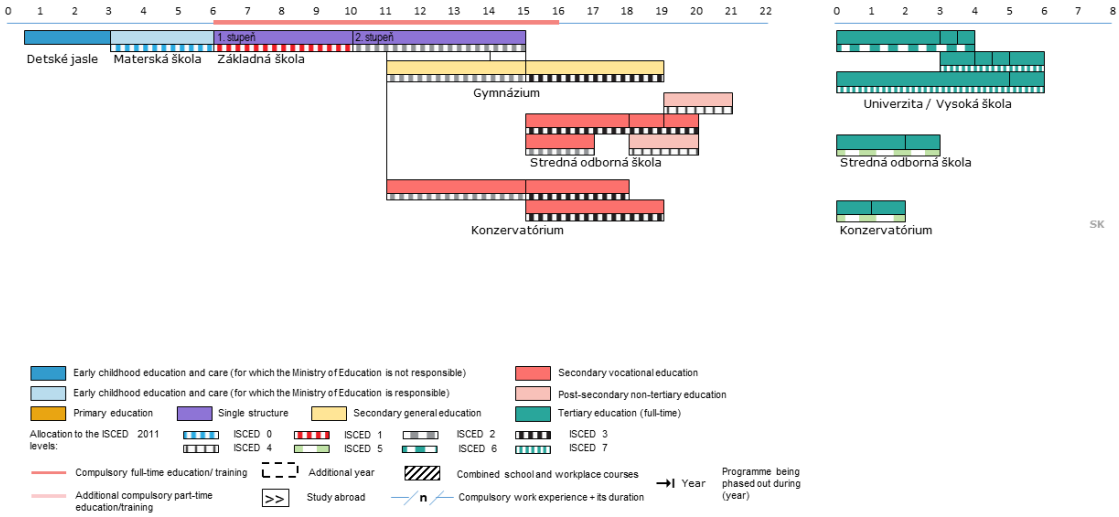
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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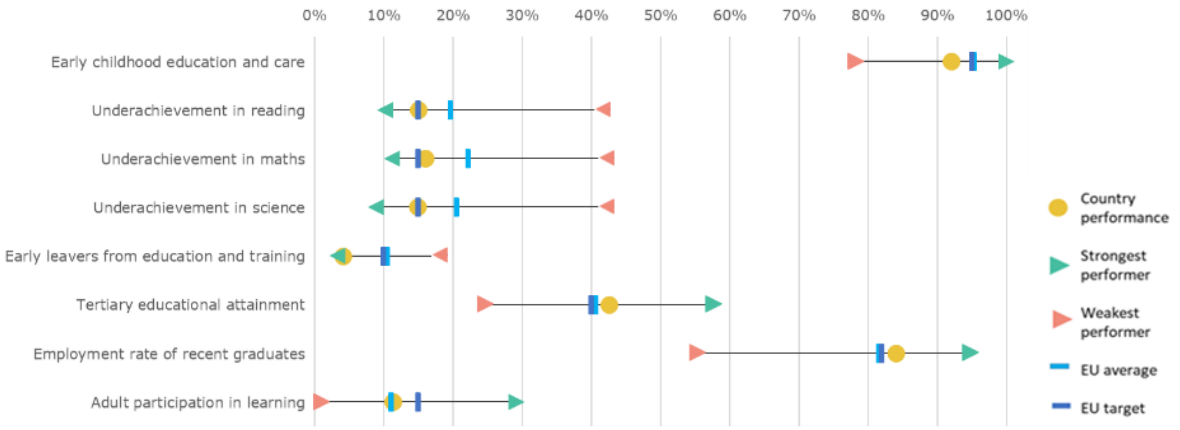
SLOVENIA

1. Key indicators

			Slovenia		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			5.3%	4.2%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			31.6%	42.7%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			87.7%	92.1% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		21.2%	15.1% [15]	19.5% [EU27]	19.7% [15]
	Maths		20.4%	16.1% [15]	22.3% [EU27]	22.2% [15]
	Science		14.8%	15.0% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		82.3%	84.2%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		14.8%	11.4%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	3.6% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	2.8% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.6%	5.4% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€6 968 [12]	€6 157 [16]	:	€6 111 [15,d]
		ISCED 1	€7 014 [12]	€7 496 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€7 597 [12]	€9 113 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€5 353 [12]	€5 343 [16]	:	€7 730 [14,d]
		ISCED 5-8	€8 359 [12]	€8 839 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		5.0%	3.6%	13.1%	9.5%
	Foreign-born		13.0% [u]	11.6% [u]	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		32.2%	45.3%	33.1%	41.3%
	Foreign-born		21.0% [u]	22.1% [u]	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		73.3%	82.4%	72.5%	76.8%
	ISCED 5-8		88.7%	85.3%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u = low reliability, :=not available, 12=2012, 14=2014,15 = 2015, 16=2016, 17 = 2017.

Figure 30 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Enrolment in early childhood education and care is approaching the EU benchmark.
- The proportion of Slovenian upper secondary students enrolled in vocational education and training is one of the highest in the EU, and the employment rate of such graduates is high.
- There are enough new entrant teachers but large numbers are approaching retirement and shortages already exist in certain categories.
- Tertiary educational attainment is high, but the differences between men and women and the native-born and foreign-born population are large.

3. A focus on teachers

The teaching profession is predominantly female. Slovenia has 42 166 teachers across the different educational levels[330]. The profession is overwhelmingly female: 97% of teachers in early childhood education and care (ECEC), 88% of primary and lower secondary school teachers and 67% of upper secondary school teachers are women. These percentages are slightly higher than the EU average in ECEC and primary schools, but significantly higher for secondary schools (the EU average for lower secondary school is 68% and for upper is 61%). Men are in a majority only in tertiary education (57%)[331]. There are no policies to address this imbalance.

Teachers' required qualifications vary between educational levels; continuous professional development (CPD) is needed for career progression. Primary and secondary teachers need to have at least a master's degree, ECEC teachers at least a bachelor's degree and ECEC teaching assistant's at least upper secondary education (ZOFI, 2018). CPD takes place at various public institutions and at private providers. Participation in CPD is a requirement for career advancement. Career progression is possible to three higher grades, after 5, 10 and 15 years of experience. The proportion of teachers who feel well or very well prepared in using information and communications technology (ICT) for teaching (67%) is much higher than the EU average (39.4%) (OECD, 2019)[332].

Teachers' salaries are relatively low, but on the rise. Funding cuts in education led to reductions in and later a freezing of teachers' salaries (ZUJF, 2012), which are still considerably lower than those of other workers with tertiary education (ranging from 69% for ECEC teachers to 94% for upper secondary school teachers) (OECD, 2018). They are also significantly lower than the average salaries of EU teachers covered by OECD data. Teacher dissatisfaction led to strikes in 2018. The new government agreed a three-step increase in salaries in the public sector over the next 2 years, by 4% each time. The differential between starting and maximum salaries over the career is higher than the EU average: for lower secondary teachers, pay rises by 79.6% over the career compared to the EU average of 64% (Eurydice, 2018).

Currently there are enough new entrant teachers, but the teaching workforce is ageing and shortages exist in certain categories. More than 50% of tertiary education teachers are over 50 years old. The proportion of teachers over 50 is lower for secondary and primary school and ECEC teachers, at 38 %, 34% and 24%, respectively[333]. There are shortages, particularly in rural areas, of special education experts, support teachers, art teachers, primary education class teachers and teachers of STEM subjects (science, technology, engineering, mathematics) (Primate, 2018/2019; Prosta delovna mesta, 2019). While the profession is well regarded, and teachers are trusted (Tso, 2004, 2016), it seems that teaching is less attractive to men: 75.4% of male teachers report that teaching was their first choice as career, compared to 83.4% of female teachers. The percentage of teachers who believe that teaching is a valued profession in society

330 Eurostat, UOE, 2017.
331 Ibid.
332 In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.
333 Ibid.

(5.6%) is the second lowest in the EU (EU average: 17.7%) (OECD, 2019). Teachers are highly unionised and very concentrated in one union, which covers teachers from all levels of education.

There are enough applicants for the school principal positions available. Principals attend a one-year programme in the National School for Leadership in Education covering instructional leadership and managerial tasks, and take annual skills upgrading programmes. They also participate in annual meetings with the Minister of Education.

Box 1: 'The first job in education' project

This project (Slovenian: *Prva zaposlitev na področju vzgoje in izobraževanja*) helps graduates who are finishing their teacher education to find their first jobs. They are provided with practical training in competencies for independent educational work that enables them to pass a professional examination and become fully qualified teachers. This project is important because it provides young people with practical in-school training and enables their early activation.

Persons wishing to participate cannot apply to the scheme directly. Institutions (schools, kindergartens or other educational institutions) apply[334] to train and temporarily employ beginner teachers and must confirm an offer of further employment after they finish the project.

The project is financed by the European Social Fund (ESF) and the Ministry of Education, Science and Sport under the EU's Operational Programme for 2014-2020 and the Youth Guarantee. This is the fourth year of implementation, at a total cost so far of just over EUR 8 million. Between 2016 and 2019, 658 beginner teachers and teaching assistants were trained. Funding for 2019 amounts to EUR 1.5 million (EUR 1.2 million of it from the ESF)[335].

4. Investing in education and training

Slovenia invests more in education and training than the EU average, even though spending was cut sharply during the economic downturn. In 2017, Slovenia spent 5.4% of its GDP on education, compared to the EU average of 4.6%; the share of total general government expenditure spent on education (12.6%) is also above the EU average (10.2%). Nevertheless, before the crisis, education accounted for 6.5% of GDP. Education sector suffered the largest public spending cuts, from which it has still not recovered, with decreases falling most heavily on the secondary and tertiary education sectors[336], though tertiary education spending has started to recover in the last 3 years. The new government has promised to restore the share of GDP allocated to education to 6% (Collective Agreement, 2018) and increases are planned in the 2019 Budget (Proračun, 2019).

Decision of the Constitutional Court on the issue of public funding for private primary schools upheld by the Parliament. In 2015, the Constitutional Court decided that all private primary school programmes should be fully funded by the government, not 85%-funded as now. This decision caused extensive debate, as opponents argue that spending more on private schools will reduce spending on the public network. A draft bill in response to the judgement was submitted to the Parliament. Parliament vetoed changes that would cut state funding for private primary schools, arguing that it would be in opposition to the Constitutional Court decision.

5. Modernising early childhood and school education

Participation in early childhood education and care has grown rapidly; a new programme offers free ECEC in the last year before compulsory school. From 2007/2008 to 2018/2019, the number of children enrolled in ECEC (aged 1-5) increased by more than 41% (from 61 359 to 89 600 children) (SORS 2018, MZŠŠ 2018, 2019). ECEC attendance by children under 3 is high, at 44.8% in 2017 (EU average: 34.2 %)[337]. Participation between age 4 and the beginning of

[334] See: http://www.mizs.gov.si/si/javne_objave_in_razpisi/okroznice/arhiv_okroznic/okroznice_razpisi_in_javna_narocila/javni_razpisi/?tx_t3javnirazpis_pi1%5Bshow_single%5D=1653

[335] See: http://www.eu-skladi.si/sl/aktualno/novice/evropska-sredstva-za-prvo-zaposlitev-na-podrocju-vzgoje-in-izobrazevanja-3

[336] Eurostat, COFOG, 2017

[337] Eurostat, DESI, 2017

compulsory education stood at 92.1% in 2017, still below the EU benchmark for 2020 of 95% and the EU average of 95.4%. However, it has improved by 2.3 pps since 2013. Participation is low among children from low socio-economic background and from migrant families, exactly those who could benefit the most from it, as it would help their socioeconomic and cultural integration and provide them with long-term educational benefits[338]. Since autumn 2018 kindergartens can apply for state funds to offer children who have not participated in ECEC before free attendance of short programmes of 240 hours per year in the last year before primary education. However, applications are currently very low.

Educational performance in Slovenian schools is comparatively good. Slovenia's early school leaving rate of only 4.2% is significantly better than both the EU average of 10.6% and its Europe 2020 national target of 5%. PISA results show good average skills in maths, reading and science among Slovenian 15 year-olds. The share of low achievers in all three fields is close to the Education and Training 2020 benchmark of less than 15% (only mathematics is slightly higher at 16.1%). There are concerns over the big gender gap in performance, with boys performing significantly worse in reading (OECD, 2016).

Two pilot projects are exploring further improvement to primary education. Experimental re-introduction of external examination after the third year of primary school is taking place in 20 schools. The aim is to help teachers plan their future teaching and improve its quality. Another pilot project involves the introduction of an obligatory second foreign language in 7th grade, and teaching of the first foreign language from 1st grade in 20 schools.

Digital skills are below the EU average. The digital skills of employed people aged 25-64 are slightly below the EU average, as are the percentages of individuals aged 16-74 who regularly use the internet (79% compared to 83%) or have basic or above-basic digital skills[339]. In the last International Computer and Information Literacy Study (ICILS) survey Slovenian students recorded good overall results. However, a high proportion, 36%, did not achieve the second difficulty level (i.e. they have low digital skills) and 8% did not reach the first level (i.e. they have very low digital skills) (IEA, 2014).

Box 2: 'Only (with) others are we'

The 'Only (with) others are we'[340] project (in Slovenian *Le z drugimi smo*) aims to train 10 000 expert workers and leaders at all levels in social and civic intercultural competencies in order to boost the integration of migrants and the acceptance of diversity, to support faster identification of potential conflict situations and to develop intercultural relations and conflict resolution. The participants are taught how to include this approach in any lesson to help the integration of migrant students and to help students adopt the attitude that diversity is enriching.

The project is part of a larger project to strengthen the social and civic competencies of education staff that is funded by the Slovenian Ministry of Education, Science and Sport and the European Social Fund (ESF). The budget is EUR 1 million, of which EUR 800 000 is from the ESF. 'Only (with) others are we' is running from 2016/2017 to 2020/21. The Slovenian Migration Institute and the Educational Research Institute carry out, with external help, five free 16-hour professional training courses with the following titles:

1) Living the Diversity: Immigrant Inclusion and Slovene Language;

2) Zero tolerance for violence: Challenges and Issues;

3) Respectful communication and Conflict Management;

4) The Challenges of modern Society in Education;

5) Intercultural Relations and Integration in Education Practice.

Seminars cover both theoretical information about appropriate pedagogical approaches and strategies, and active learning through discussions, workshops, role-play, problem solving and case studies.

338 Education and Training Monitor Volume I.
339 Eurostat, DESI, 2017.
340 See: https://isim.zrc-sazu.si/en/programi-in-projekti/only-with-others-are-we and https://lezdrugimismo.si/sl/predstavitev-projekta-katalog-zgibanka

Training is being carried out at three levels:

1) regional training in all 12 regions – carried out once a year per region, for two days (Friday and Saturday);

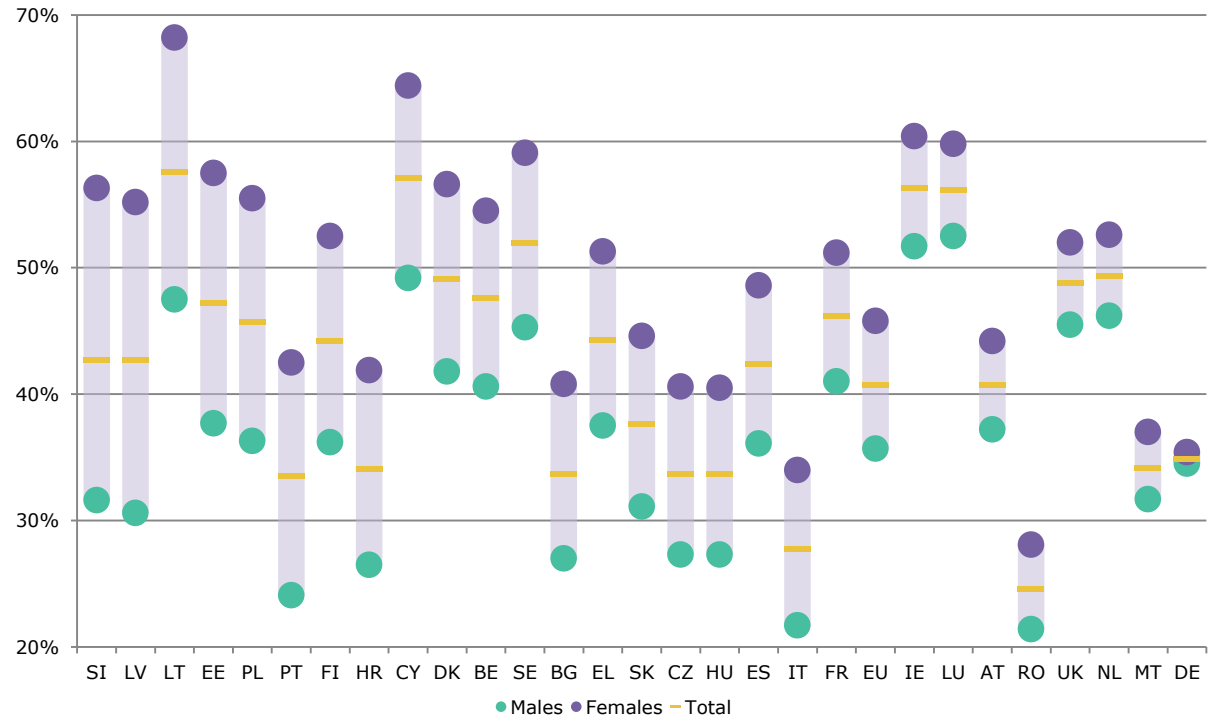
2) national training at the premises of the Scientific Research Centre of the Slovenian Academy of Sciences and Arts, twice a year;

3) training for all preschool/primary/secondary school teaching staff in individual schools, which is then adapted to their needs and carried out in 2, 3 or 4 days, at their request.

6. Modernising higher education

Tertiary attainment is high and the targets have been achieved, but a sharp decline in the last year and the big differences between men and women and between native-born and foreign-born raise concerns. Slovenia already achieved its national target of 40% tertiary educational attainment in 2013. The percentage of people with tertiary qualifications continued to grow until 2017, when at 46.4% it was significantly above the EU average (39.9%). In 2018, however, there was a sharp drop to 42.7%. While this fall occurred among both men and women, it is more pronounced in men, from 34.7% in 2017 to 31.6% in 2018. This drop might be partially due to all the older graduates who had to complete the pre-Bologna programmes by 2016. The difference between the tertiary attainment of women and men is the largest in the EU (56.3% as compared to 31.6%)[341]. There is also a very big difference between the native-born (45.3%) and foreign-born population (22.1%), and even more so for foreign-born people from non-EU countries (only 12.9%).

Figure 31 Tertiary educational attainment by gender, 2018



Source: Eurostat, LFS.

Big decrease in the number of students enrolling in tertiary education in the recent years is slowing down. While the total decline in student numbers in the last 5 years amounts to 18 159 students, this decline has significantly decreased in the last year (it was 4 818 students less from 2015 to 2016 and 1 251 students from 2016 to 2017)[342]. In addition to demographic trends, one of the reasons for the drop in the number of enrolments is the introduction, in 2012, of measures to prevent fictitious enrolment. One possible factor might be that the employment rate of

[341] This gender difference seems set to continue. Almost two thirds of students in Slovenia in 2017 were female (61.3%, compared to 38.7% of males).

[342] Eurostat, UOE, 2017.

recent higher education graduates (85.3%) is only slightly higher than for graduates from vocational secondary schools (84.5%), the smallest difference between them in the EU. The employment rate of all recent graduates (ISCED 3-8) in Slovenia (84.2%) is above both the EU benchmark for 2020 (82%) and the EU average (81.6%) in 2018. It declined from 2010 (80.7%) to 2014 (70.1%), but since then it has been rising and is currently at its highest point since 2010.

Figure 3 Employment rate of recent graduates by ISCED level, 2018

Source: Eurostat, Labour Force Survey.

Slovenia has developed a graduate tracking mechanism. This has been developed as an additional module to the existing e-VŠ electronic student data registry. It should allow for the career monitoring of students graduating from higher education institutions (MIZS, 2019b) and provide positive input on the labour market's needs for tertiary graduates. It should thus help inform policy makers, universities and students about the employability of graduates from different studies.

Slovenia continues to refine its financing mechanisms for higher education. Having introduced performance-based funding of higher education institutions in 2016, Slovenia in 2018 analysed its implementation and identified issues for improvement in the next round of negotiations of performance agreements. In spring 2019 it invited the European Commission and peers from six countries who had previously advised on the creation of the new system to a follow-up event to review its initial implementation. The event was attended by national stakeholders and addressed how to improve the negotiation of performance agreements, allocation mechanisms, the definitions of priorities and indicators, and monitoring of implementation.

7. Modernising vocational education and training

Both the proportion of upper secondary students in VET and the employment rate of VET graduates are very high. In 2017, 21 378 new students entered formal VET programmes in Slovenia, a decline of almost 9% from 2016 due to demographic reasons. However, total enrolment in upper secondary VET saw a slight increase in 2017 from previous years, with 70.9% of students at the upper secondary level attending vocational programmes; this is among the highest shares in the EU and well above the EU average (47.8%). Students enrolled in VET had limited exposure to work-based learning — none of the VET educational programmes are reported to combine school and work-based programmes (however, see the pilot action described below), but all VET programmes include practical lessons at school. The employment rate among recent VET graduates

in 2018 saw a notable increase, to 84.5% from 62.4% in 2015 and well above the EU average of 79.5% in 2018.

Amendments to the Vocational Education Act entered into force in September 2018. They focus on: quality evaluation of learning at the workplace; establishing a register of learning places at national level; and introducing a certificate providing detailed, uniform and internationally comparable information to employers on vocational qualifications, in line with the Europass Certificate Supplement. Other amendments aim to ease the integration of migrants into secondary education by giving those without proof of former education the possibility of enrolling in upper secondary education by taking an examination, and by having schools provide intensive Slovenian courses during their first year. There is currently no legal obligation to track vocational graduates, but it is part of the national quality assurance indicators.

Following the adoption of the Apprenticeship Act in 2017, Slovenia has continued strengthening apprenticeships and considerably increased the number of apprentices in 2018-2019. The ESF-funded 'Reform of vocational upper secondary education' project started in 2017 in four vocational programmes. In 2018/2019 it was extended with four additional programmes (glassmaker, papermaker, painter-letterhead, machine mechanic); four more will be added in 2019-2020, to be offered in 21 upper secondary schools. In 2018, the VET Institute (CPI) conducted the first evaluation of the pilot phase, showcasing positive feedback from apprentices and companies and identifying some areas for improvement related to support mechanisms for companies and the status of the apprentice. As a result, the CPI drafted the 'Framework model of further development of modern apprenticeship' and will prepare practical guidelines on planning, implementation, monitoring and evaluation of apprenticeships and on training of in-company trainers.

Several initiatives support the professional development of VET teachers and trainers. A three-year ESF project called 'Strengthening the competences of education staff in the field of managing an innovative educational institute' was completed in 2018 (an upgrade of ESF project has recently been launched). Activities included the development of quality assurance in vocational schools, the promotion of entrepreneurship, innovative methods of teaching and further development of teachers' pedagogical skills. In addition, CPI analysed VET teachers' knowledge, attitudes and use of ICT in designing and implementing digital competences in VET programmes. The results fed into the training of about 70 teachers in 12 vocational schools in 2018-2019, helping them to develop learners' digital competencies.

8. Developing adult learning

The proportion of low-qualified adults is small while participation in adult education is just above the EU average. A relatively small percentage of adults (11.9%) have at most a lower secondary qualification, compared to an EU average of 21.9%. The share of low-qualified adults in employment (51.3%) is below the EU average (56.8%). 11.4% of adults aged 25-64 in Slovenia have had a learning experience during the last 4 weeks (EU average: 11.1%). However, this participation rate has dropped significantly since 2010, when it was 16.4%. Only 70 000 jobs are categorised as belonging to elementary occupations which can be filled by those with only low skills; this highlights the need for a more substantial upskilling and reskilling effort, given that the total number of low-qualified adults is around 140 000 and only around 1 000 adults are acquiring an upper-secondary qualification each year. In 2019, Slovenia received from the Council of the EU a country-specific recommendation to 'Increase the employability of low-skilled and older workers by improving labour market relevance of education and training, lifelong learning and activation measures, including through better digital literacy.' (Council of the EU, 2019).

Support for building up skills frameworks and for skills development, including for the low-skilled, is continuing. Slovenia has finished the second phase of its National Skills Strategy in co-operation with OECD and got 8 recommendations to improve governance in adult learning. Regarding the recommendations Slovenia started the process of the new Master Plan for Adult Education (2021-2030). Over 2018-2022 several projects are supporting the upskilling of low-skilled adults and helping to increase their employability (Munera, Panup and Atena projects).

The new Adult Education Act defines the provision of adult education programmes and supporting activities that will be provided as a public service. The most important current activity is the design of the new National Master Plan for Adult Education which will define the national policy for adult education, form the basis for concrete planning and supplement the Adult Education Act. The target groups are lacking key competences, life skills and job-specific skills. The implementation will require additional staff with different profiles.

Currently, the supply of adult educators is barely in balance with the demand, while sufficiently qualified trainers and educators for CVET are lacking. It is expected that more adult educators with different profiles will be needed in the future. Adult educators either follow a university programme at the Faculty of Arts at the University of Ljubljana or graduate from other university programmes in social or human sciences and then enrol in the special one-year programme of pedagogic andragogic training. The Slovenian Institute for Adult Education supports the implementation and provision of literacy courses for different target groups of adults, quality assurance, guidance for adult learners, self-directed learning, promotional activities and evaluation studies.

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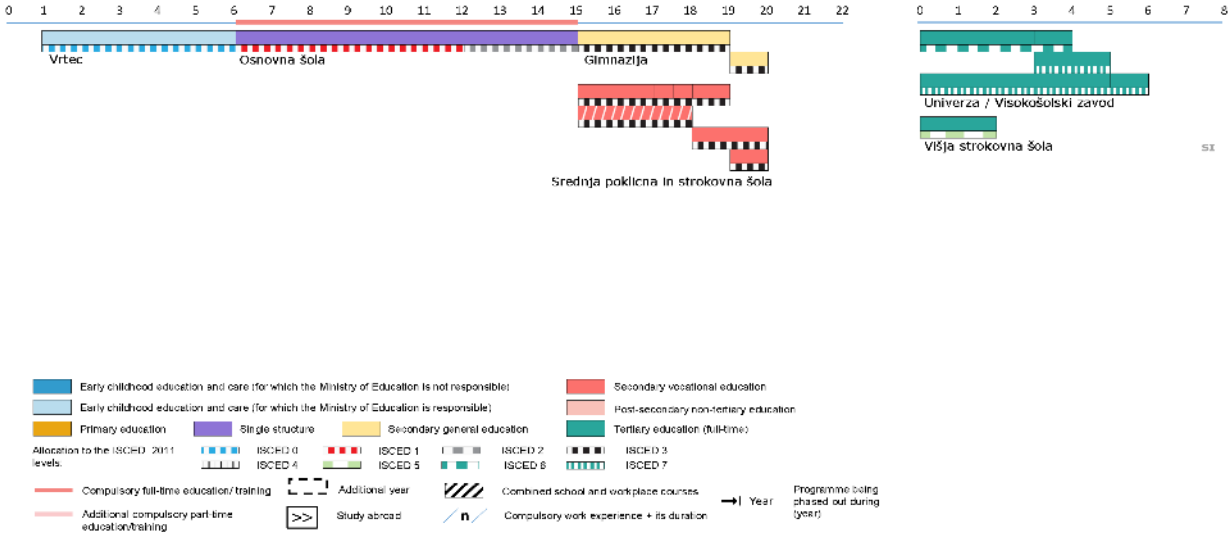
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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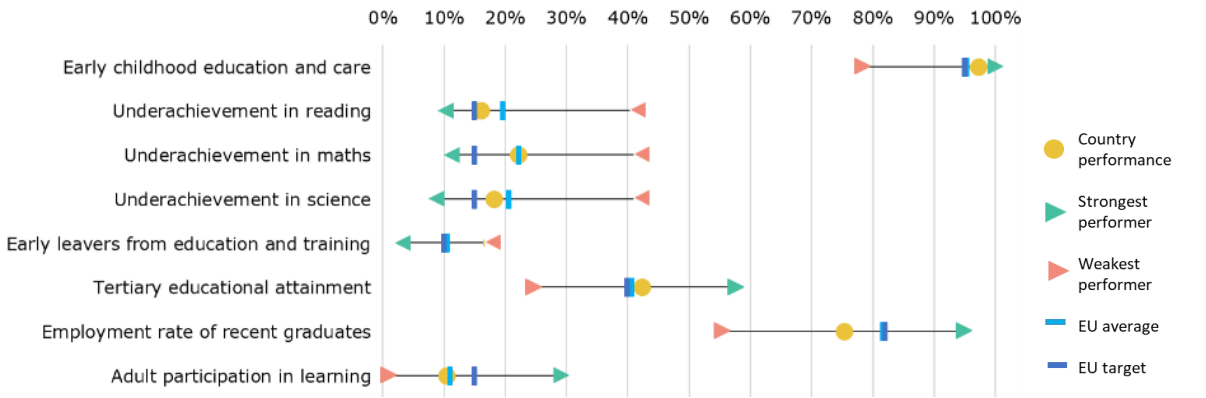
SPAIN

1. Key indicators

			Spain		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			30.9%	17.9%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			40.7%	42.4%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			98.4%	97.4% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		19.6%	16.2% [15]	19.5% [EU27]	19.7% [15]
	Maths		23.8%	22.2% [15]	22.3% [EU27]	22.2% [15]
	Science		18.2%	18.3% [15]	17.7% [EU27]	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		73.0%	75.4%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		10.8%	10.5%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	1.9% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	7.7% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.6%	4.0% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€4 881 [12]	€5 251 [16]	:	€6 111 [15,d]
		ISCED 1	€5 269 [12]	€5 532 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€6 770 [12]	€6 618 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€6 775 [12]	€7 179 [16]	:	€7 730 [14,d]
		ISCED 5-8	€9 155 [12]	€9 116 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		27.7%	14.9%	13.1%	9.5%
	Foreign-born		45.2%	32.0%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		45.8%	46.3%	33.1%	41.3%
	Foreign-born		23.9%	29.3%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		63.9%	68.2%	72.5%	76.8%
	ISCED 5-8		76.5%	77.9%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, : = not available, 12=2012, 14=2014, 15 = 2015, 16=2016, 17 = 2017

Figure 1 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015.

2. Highlights

- The teaching profession is attractive, but working conditions differ among regions and between public and private education systems.
- Private spending in education is significant, while public spending is static compared to GDP.
- Planned reforms, reflecting political uncertainties, have been slowed down.
- The process to modernise vocational education and training is ongoing. Adult participation in education is slowly rising.

3. A focus on teachers

Teaching is an attractive profession in Spain, particularly in the public sector. School teachers' salaries are higher than the average for tertiary educated workers in Spain and among the highest in Europe (OECD, 2018). Salaries in public schools vary significantly across the Autonomous Communities[343], and are higher than those in private schools. Currently (MECD, 2019a), 504 569 teachers work in public schools and 207 612 in private schools. 33% of schools in general education are private (MECD, 2017), educating 32% of pupils (School Council, 2018), well above the EU average of 19%. Institutions linked to the Catholic Church own around 57% of these schools[344]. The relative share varies between regions, from around 50% of students in private schools in Madrid and the Basque country to around 20% in Castilla-La Mancha and Extremadura (MECD, 2019a). According to TALIS (OECD, 2019)[345], the proportion of teachers satisfied with their job is higher than the EU average (95.7% v 89.5%), but decreases among teachers with more than 5 years' experience (97.3% for novice teachers vs 95.4% for teachers with more than 5 years of experience). Overall, 89.3% of teachers say that if they had to decide again, they would still choose to become a teacher (EU average: 77.6%); teachers with more than 5 years' experience, slightly less (88.3%; EU average: 76.4%). The proportion of teachers reporting that teaching was their first career choice is below the EU average (61.8% v 65.7%); lower for men (53.9%) than for women (66.7%) (EU average: 11.5 pp lower).

Many teachers are on interim contracts. To become a civil servant, teachers must pass an open competition assessing their knowledge in the teaching subject and evaluating work experience. These competitions have always attracted high numbers of applications. During the financial crisis, they were scarce[346], with needs covered through short-term contracts, 'interim teachers' (*profesores interinos*). Around 25% of teachers are interim, with strong regional differences (from 41% in the Balearic Islands; to 13% in Galicia)[347]. The high share of interim teachers (who are assigned to a different school each year) makes it difficult to build stable and cohesive teams in schools. In 2018, a competition for teachers in upper secondary level (including vocational education and training, VET) took place, with 23 689 jobs available. The results of this competition were lower than expected, particularly in certain subjects[348], which meant that many of the offered positions could not be covered by civil servants in certain regions.

The teacher population is ageing and predominantly female. In 2016/2017, 7.3% of school teachers (pre-primary to secondary education) were under 30 years old, 28.5% were 30-40, 30% were 40-50, and 34.2% were over 50 years old (School Council, 2018), close to the EU average[349].

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343 For example, a secondary teacher may earn 28% more in the Basque country than in Asturias. Analysis by the teachers' union FES-UGT at http://www.fespugt.es/images/PDF/ensenanza/GAB-retribuciones-publica-ccaa-2015.pdf.

344 See: Survey on Financing and Expenditure of Private Education 2014-2015, National Institute of Statistic (INE).

345 In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

346 See: http://stecyl.net/mas-alumnado-mucho-menos-docentes-congelacion-de-ofertas-de-empleo-publico-y-mas-en-situacion-de-interinidad/.

347 See the June 2019 Trade Union Comisiones Obreras (CCOO) Teaching Federation report at http://www.fe.ccoo.es/6724a0c909e00066e50bb71cba0dc52b000063.pdf.

348 Ranging from 12% to 30% in different regions. See: https://www.elmundo.es/espana/2018/09/06/5b903bea22601d12758b464d.html. According to the trade union Unión General de Trabajadores (UGT) almost one[348] Eurostat, UOE 2017.

348 Ibid 7.

349 Eurostat, UOE 2017.

In higher education, in 2017 44% of teachers were over 50 and only 3.6% under 30[350]. It is clear that over the next decade, a substantive renewal of the workforce will be needed. 94.5% of ECEC teachers are women; 66.2% in primary and secondary schools. In higher education, 43.4% of teachers and researchers are women and make up 52.7% of the academic staff under 35 and 37.2% of the over-50 group. There are no programmes to address the gender imbalance.

Teacher qualification requirements are set centrally[351]. Pre-primary and primary school teachers need a university degree in early or primary education. Secondary school teachers need a university degree. Teachers' induction in public schools consists of an internship (from three months to one school year), varying by region but broadly similar in content. Both central and regional administrations provide professional development courses. In 2018, almost 10 000 teachers followed online courses managed by the National Institute for Educational Technologies and Teachers' Training (INTEF) and 34 000 teachers followed self-paced online courses. Spanish teachers report in TALIS (OECD 2019) that a lack of incentives is the main barrier to participation in continuous professional development (76.3% v 51.9% at EU level). The survey also showed that once they finish their formal education, the proportion of teachers who feel well or very well prepared to use information and communication technologies (ICT) for teaching is below the EU average (36.2% v 39.4%). 38% of teachers reported that ICT was included in their formal education (EU average: 52.9%). However, the percentage increases considerably, to 85.8% for those who have been teaching up to five years.

Teachers are generally not attracted to the career of a school leader. School leaders must simultaneously be teachers, school directors, pedagogical leaders and administrators. They are elected through a process involving the school board (representatives of parents, students, teachers and the educational administration). They must have a minimum of five years' teaching experience and have passed a preparatory training course. Their mandate is for four years, with the possibility to renew once only. Vacancies for school leader positions attract few candidates. This reflects the: 1) temporary nature of the job, after which they usually return to teaching in the same school; 2) heavy administrative burden; 3) lack of autonomy in curricular matters and teaching staff supervision, a task reserved to the educational inspectorate. Associations of school leaders cite a lack of professional identity for school leaders as the reason it attracts few candidates to the position[352].

4. Investing in education and training

Education spending was stable in 2018, below the EU average. While Spanish GDP has grown from 2016 to 2017, public expenditure on education as a share of GDP remained at 4%, below the EU average of 4.6%[353]. Public expenditure on education per pupil at primary, secondary and tertiary level is also below other similar EU Member States economies[354]**.** Regional administrations spend the vast majority (85.6%), largely on salaries (67.6% of all public education spending)[355]. 13.4% of education spending goes to publicly funded private schools (*escuelas concertadas*[356]), representing 8%-25% of all students enrolled in schools, depending on the region (MECD, 2019b). Between 2010 and 2015, spending on universities fell by EUR 1.5 billion and is projected to drop further by EUR 3.5 billion by 2021. The failure to approve the 2019 state budget means that the share of government expenditure on education will be the same in 2019 as in 2018.

Private spending on education is significant. The proportion of private-sector expenditure (primary to tertiary), excluded international sources, is among the highest in EU and OECD countries at 19% (OECD, 2018). Between 2012 and 2015, private education expenditure as a share of GDP increased (0.68% to 0.82%), mainly in secondary and tertiary education[357]. This

350 Ibid 7.
351 For teachers in public schools https://www.boe.es/buscar/pdf/2007/BOE-A-2007-4372-consolidado.pdf, and for teachers in private schools https://www.boe.es/buscar/pdf/2010/BOE-A-2010-11426-consolidado.pdf.
352 See: http://educalab.es/documents/10180/38496/MEDB+digital/4ea4b5d9-6a99-468c-a387-46affa4b6c50.
353 Eurostat, COFOG, 2017.
354 Eurostat, UOE 2017.
355 Ibid 12.
356 *Escuelas concertadas* (concerted schools) are private schools that provide free school places under the same conditions as public schools. Their administration is private but their financing is mostly public, alongside parental contributions. Around 26% of students attend this type of school.
357 OECD, Private spending on education. doi: 10.1787/6e70bede-en.

contrasts with most other EU countries in the OECD, where it either fell or remained the same[358]. In 2016/2017, over 30% of students (from primary to tertiary) had a scholarship (MECD, 2019b). In 2019, the government continued increasing funding for such scholarships.

Additional funding is available to address regional disparities. The 2019 European Semester country-specific recommendation to Spain included the recommendation to: 'Reduce early school leaving and improve educational outcomes, taking into account regional disparities' (Council of the European Union, 2019). In December 2018[359], the Ministry of Education and the Autonomous Communities agreed to allocate EUR 200 million for regional cooperation programmes. The government allocated EUR 81 million to support the new programme to reduce school leaving, EUR 46 million to dual-VET, EUR 19 million to continuing professional development and mobility of teachers, and EUR 8 million to raising the quality of vocational education and training.

5. Modernising early childhood and school education

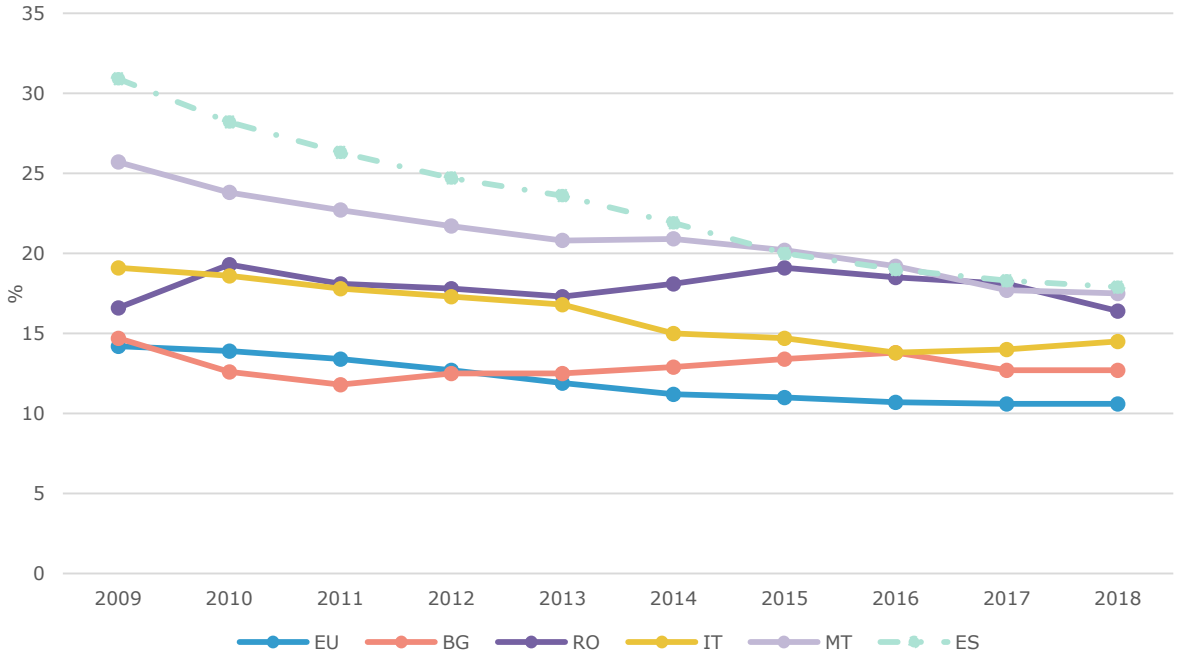
Enrolment in early childhood education and care (ECEC) is high, but with regional disparities for the youngest children. Participation in ECEC of children over 4 in 2017 was very high (97.4% v EU average 95.4%). The proportion of children under 3 in ECEC keeps rising, from 39.7% in 2015 to 45.8% [provisional data] in 2017, above the EU average of 34.2%[360]. The government plans to extend access to ECEC to all children from 0-3 years. There are major regional disparities in enrolment of children up to 2 years old: 53.8% in the Basque Country, 13.3 in Ceuta and 19.5% in Murcia (MECD, 2019b). There is no single legal framework; regions (Autonomous Communities) have different models and prioritise different factors, such as social equity in some regions (priority to children from lower socio-economic background), work-life reconciliation (priority to children whose parents work), or a blend of objectives. According to UNICEF (2018), these regional differences hinder equal access to childcare.

Progress to reduce early school leaving has slowed down. Although the percentage of early leavers from education and training fell from 28.2% in 2010 to 17.9% in 2018, it remains way above the EU average and Spain's Europe 2020 target of 15% (Figure 2). In 2018, the rate in 12 out of 19 regions either remained stable or rose (in 7 regions)[361]. In December 2018, the government adopted a new orientation and reinforcement programme, amending the former PROEDUCAR. It supports educational centres and students in vulnerable socio-economic situations, and aims to strengthen teachers' competences to address student diversity. Some Autonomous Communities approved programmes to improve pupil outcomes in primary and lower secondary education.

Announced major legislative reforms were delayed. The general election prevented the government from undertaking legislative proposals including the reform of the current education law, a new model of scholarships, universal access to early childhood education, reforms of access to the teaching profession and teacher education, and reforms to reduce the number of interim teachers. The only legislative reform adopted was the act on teaching conditions from pre-primary to secondary education[362]. This allows Autonomous Communities to reduce teaching hours (from 25 to 23 hours in ECEC, primary and special education, and from 20 to 18 hours elsewhere), lower the number of students per class, and substitute on-leave teachers more rapidly.

358 See: https://data.oecd.org/eduresource/private-spending-on-education.htm#indicator-chart).
359 See: http://www.educacionyfp.gob.es/prensa/actualidad/2018/12/20181207-programas.html.
360 Eurostat, EU-SILC. Online data code: tepsr_sp210.
361 Source: National Institute of Statistics (INE). EDUCAbase. Abandono temprano de la educación-formación por comunidad autónoma, sexo y periodo. See: http://estadisticas.mecd.gob.es/EducaJaxiPx/Tabla.htm?path=/Formacionyml/EPA/Indi//l0/&file=Indi01.px&type=pcaxis&L=0.
362 See: http://www.educacionyfp.gob.es/prensa/actualidad/2019/02/20190221-leyrecorteseducativos.html. The text of the proposal can be consulted in the web page of the Congreso de los Diputados: http://www.congreso.es/portal/page/portal/Congreso/PopUpCGI?CMD=VERLST&BASE=pu12&DOCS=1-1&DOCORDER=LIFO&QUERY=%28BOCG-12-A-49-1.CODI.%29#.

Figure 2 Early leavers from education and training, 2009-2018



Source: Eurostat, Labour Force Survey, 2018

6. Modernising higher education

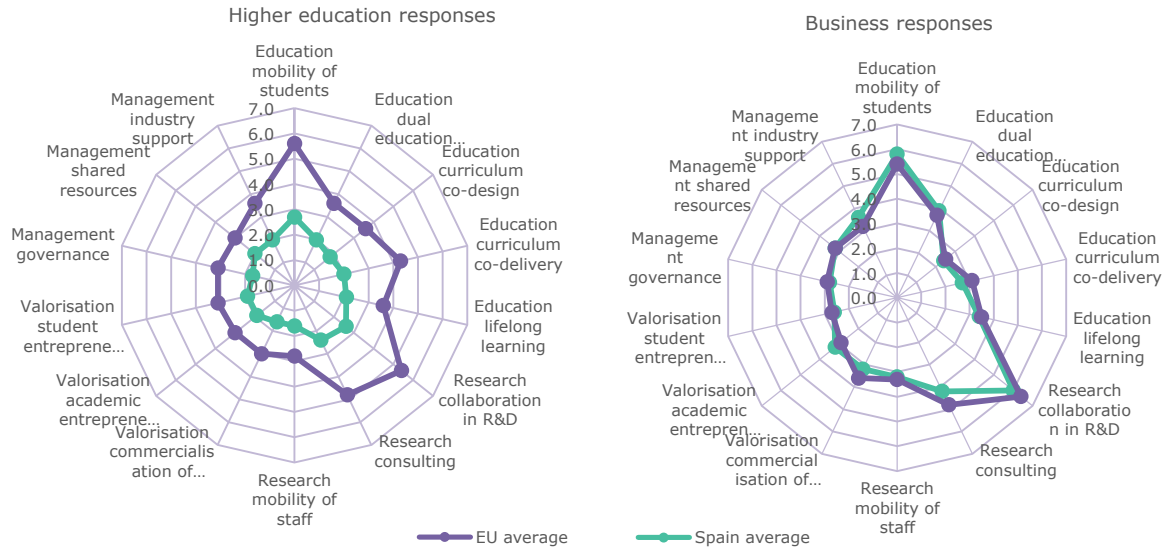
Expected reforms to higher education were delayed. The government announced in November 2018 a comprehensive reform of higher education, but this has not yet materialised. Other announced reforms (on scholarships, on the payment and recognition of social rights for university students on internships) were also not adopted. One of the reasons was that the government and the universities did not agree on who should cover the cost.

Higher education faces challenges. At 42.4%, Spain's higher education attainment rate in 2018 is high, above the EU average of 40.7%[363]. However, 21.5% of enrolled students drop out of university (12.1% of master's students)[364]. This is despite the fact that over 40% of students receive a scholarship in the first year of the bachelor's. Regarding learning mobility, the proportion of graduates graduating outside Spain (1.9%) is well below the EU average (3.6%), but the share of students participating in short-term study periods and/or work placements abroad (7.7%), is close (EU average: 8%).

Though both academia and business desire further cooperation, it remains weak. A recent survey (Galán Muros et al., 2019a) found that higher education institutions tend to cooperate with large and medium-size companies located in their region. This usually focuses on student mobility, with collaborative research and consultancies. But over 75% of academics are not involved; staff mobility and R&D commercialisation is particularly low (below the EU average). Academics perceive the main barriers to cooperation to be the lack of funding, administrative barriers and a lack of understanding of university activities by business. From the business perspective (Galán Muros et al., 2019b), 72% of respondents cooperate to a medium-high extent with universities, particularly in joint R&D. Few are involved in staff mobility, but cooperate significantly on student mobility. Cooperation is particularly low in aspects such as curriculum co-design, co-delivery and student entrepreneurship. Business perceive a lack of business knowledge within universities, low public financial support, and the high level of bureaucracy in universities as barriers to cooperation. The 2019 European Semester country-specific recommendation to Spain included the recommendation to: 'Increase cooperation between education and businesses with a view to improving the provision of labour market relevant skills and qualifications, in particular for information and communication technologies' (Council of the European Union, 2019).

[363] Eurostat. Online data code: sdg_04_20.
[364] Indicators of Higher Education 2018: http://www.educacionyfp.gob.es/servicios-al-ciudadano-mecd/estadisticas/educacion/universitaria/estadisticas/estadistica-indicadores-universitarios/2018-2019.html.

Figure 3 State of cooperation from the higher education and business viewpoints



Source: European Commission (DG Education and Culture) calculations, based on data from *State of University-Business Cooperation in Europe 2019*. Code: 0: Not at all; 1-4: Low; 5-7: Medium; 8-10: High.

National and regional administrations are seeking to foster university-business cooperation. Employment rates of recent graduates are improving (from 76.6% in 2017 to 77.9% in 2018) but below the EU average (85.5%). The government allocated EUR 19 million to hire 200 doctoral students under the programme 'Torres Quevedo'[365] to carry out industrial research in companies, business associations, and science and technology parks. Regional examples of university-business cooperation include the Basque region's university-business strategy, and the partnership agreement between Aragon, the automotive industrial cluster and other private-sector partners to build the first learning factory in Spain[366].

Box 1: Joint academia-business strategic alliance in the Basque country

In June 2017, the regional education department of the Basque Country adopted the University-Business strategy 2022. Its objectives are to generate knowledge based on scientific excellence and apply it in the business sector, and to train highly skilled people with the skills needed in the business sector. The strategy is aligned with the regional smart specialisation strategy (RIS3-Euskadi). The *Cluster 4Gune* was created in 2017 to foster collaboration between academia and education and training bodies in STEM areas. In 2019, the Plan for the Basque University system 2019-2022 was adopted to strengthen cooperation between the three Basque universities (UPV-EHU, Mondragón University and Deusto University) and research, innovation and business organisations (BERCs, Ikerbasque, Unibasq, Clúster 4Gune and Euskampus). In 2018/2019, the universities offer 25 dual-university degrees (bachelor and master's levels), including training in companies (accounting for 25-50% of credits). Almost 500 students are currently enrolled and 600 private-sector bodies involved. The goals by 2022 are to reach 1 750 students, to increase the share of female STEM students from 32-52%, and to increase the number of jobs in companies for highly qualified workers by 25%.

The Basque Country adopted in 2018 the law on vocational training and in 2019 the 5th Basque vocational training plan 2019-2021. Around 1 500 companies are involved in vocational training. Dual-VET graduates (around 20% of all VET students) have an employability rate of 96.2%. The Basque VET system is widely acknowledged as one of most successful and innovative in Europe.

365 See press note from the Spanish Ministry of Science, Innovation and Universities here.
366 See: https://www.eleconomista.es/aragon/noticias/9684428/02/19/Educacion-la-CAAR-y-TuvRheinland-impulsan-la-primera-fabrica-de-aprendizaje-en-Espana.html; https://cifpa.aragon.es/inauguracion-fabrica-aprendizaje/.

7. Modernising vocational education and training

Enrolment in upper secondary VET slightly increased in 2017. In 2017, 35.3% of students were enrolled in vocational programmes, well below the EU average 47.8%. Students had limited exposure to work-based learning; very few programmes provided for it in 2017. The level of employability of recent VET graduates rose significantly notably from 58.5% in 2017 to 70% in 2018, still below the EU average of 79.5% (2018).

The development of the strategic plan for vocational training intends to boost VET. The government presented a plan proposal in September 2018, including measures such as: developing new specialisation courses for VET graduates wishing to adapt their skills to labour-market needs, updating occupational standards and qualifications, easing progression to intermediate and higher-VET programmes, and improving the validation of non-formal and informal learning. The National Catalogue of Professional Qualifications and the Catalogue of VET Diplomas were updated. In December 2018, the government tripled the budget for VET teacher training and mobility (EUR 8.6 million, co-financed by the European Social Fund).

The general council for vocational training[367] set up working groups to boost the VET system and increase cooperation between education and businesses. The work of these groups focuses on the development, evaluation and quality of the system, professional information and guidance, national reference centres and integrated vocational training centres, dual-VET, and accreditation of professional competences acquired through work experience.
Spain has taken many measures on dual-VET. Royal Decree 28/2018 reduced the age limit for participating in dual-VET. In December 2018, the Council of Ministers approved further funding at regional level, with co-funding from European funds, to promote dual-VET. The agreement between the chamber of commerce and the public employment service to advise and support companies participating in dual-VET was extended until end 2019. In February 2019, the government published the strategic plan for dual vocational training, announcing more active participation of companies in continuous professional development for teachers and in designing occupational standards and training programmes.

Box 2: Innovative bottom-up approach to VET

Generation is an academy founded by McKinsey & Company that helps unemployed young people obtain career-launching jobs working closely with employers. It provides training programmes (web, digital, sales, robotics, etc.) lasting 4-12 weeks, including a mix of hard and soft skills and based on experiential learning. *Generation* also provides social support services and mentoring before and after training. Students are then recruited by the investing employers who have a guarantee regarding their skills. Since 2015, *Generation* has organised programmes in six regions, with 1 200 participants (500 men, 700 women), of which 81% found a job after graduation and 76% had a job six months later. From 2014-2020, *Generation* will receive EUR 5 000 000 from the European Social Fund.

8. Developing adult learning

In Spain, there is no specialised training to become an adult educator and no specific qualification to teach or train educators. Therefore, the supply of specialised adult education teaching/training staff is insufficient, both for VET and 'general' adult education.

The government approved the action plan for youth employment in December 2018. One of its six priorities is to promote vocational training for young adults to improve their competencies.

Adult participation in lifelong learning is increasing but still far from the EU benchmark. In 2018, the participation rate of adults in education and training (10.5%) was close to the EU average (11.1%), but far below the EU benchmark of 15%. 39.9% of adults in Spain lack an upper-secondary qualification (EU average: 21.9%). In 2017, around 63 500 adults aged 25 or older acquired an upper-secondary qualification[368], but this is only a small percentage of the nearly 10.7 million adults with only low-level educational qualifications. Skills polarisation and skills

[367] Consejo General de Formación Profesional.
[368] Eurostat, UOE, 2017.

mismatches affect the performance of the labour market in Spain and weigh on productivity grow. In 2018, the proportion of low and high qualified adults on total employment in Spain (32.8% and 43.2% respectively) are above EU averages (16.3% and 35.8%), while the proportion of mid qualified adults (23.9%) is below (47.7% in the EU)[369].

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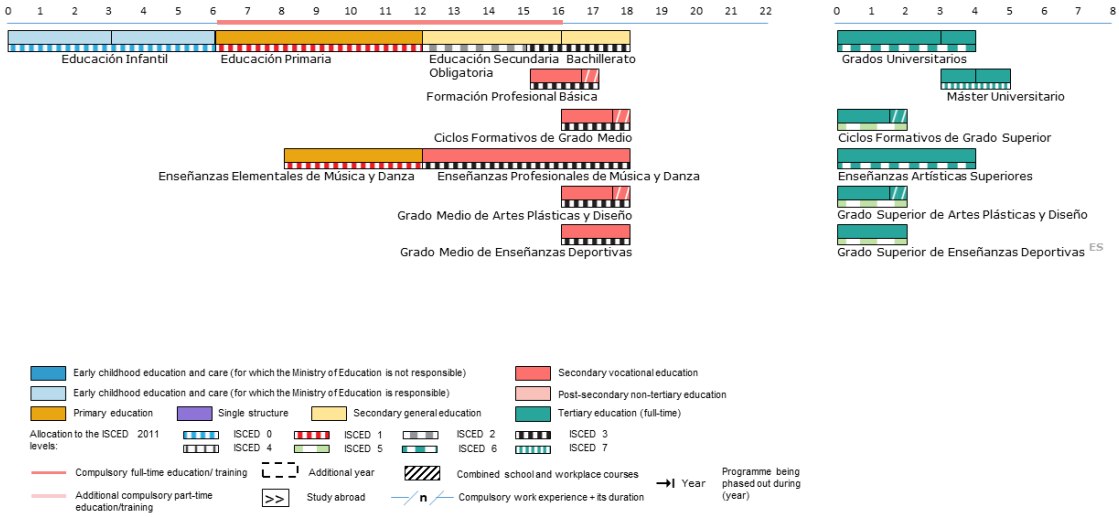
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

[369] Eurostat, Labour Force Survey, 2018

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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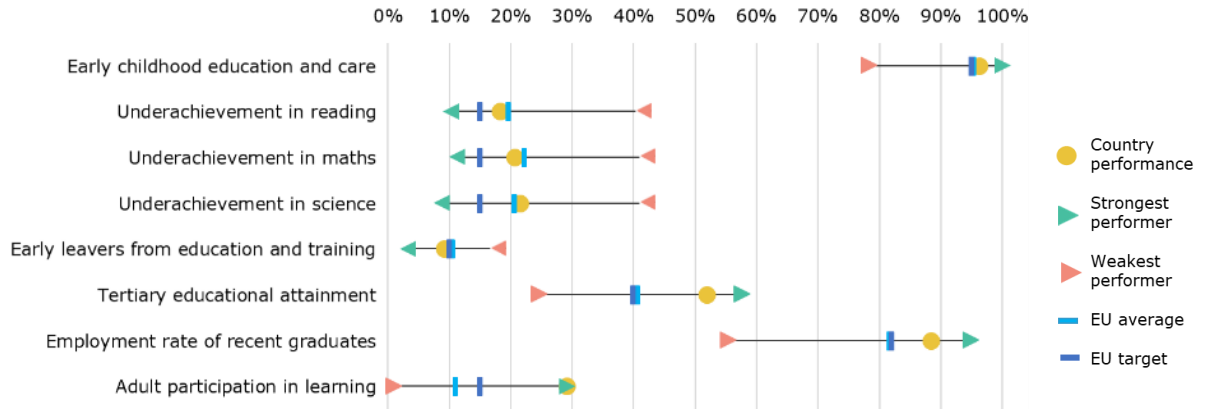
SWEDEN

1. Key indicators

			Sweden		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			7.0%	9.3%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			43.9%	52.0%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			94.7%	96.3% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		17.4%	18.4% [15]	19.5%	19.7% [15]
	Maths		21.1%	20.8% [15]	22.3%	22.2% [15]
	Science		19.1%	21.6% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		81.6%	88.5%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		22.5%	29.2%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	4.6% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	10.9% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.8%	6.8% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€9 822 [12]	€10 513 [16]	:	€6 111 [15,d]
		ISCED 1	€7 943 [12]	€8 248 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€8 446 [12]	€8 745 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€8 430 [12]	€8 407 [16]	:	€7 730 [14,d]
		ISCED 5-8	€17 358 [12]	€17 647 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		6.4%	7.3%	13.1%	9.5%
	Foreign-born		11.9%	17.7%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		44.3%	51.9%	33.1%	41.3%
	Foreign-born		42.6%	52.3%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		74.6%	83.6%	72.5%	76.8%
	ISCED 5-8		89.6%	92.5%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, u = low reliability, p=provisional, 15 = 2015, 17 = 2017.

Figure 32 Position in relation to strongest and weakest performers



Source: European Commission, Directorate-General for Education, Youth, Culture and Sport (DG EAC) calculations, based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Tertiary educational attainment and graduate employment rates are high.
- The population's digital skills are among the best in the EU.
- There is a serious teacher shortage, and a large number of teachers lack formal qualifications.
- School segregation and inequality are serious and growing concerns.

3. A focus on teachers

There is a serious teacher shortage. The number of pupils is rising. Simultaneously, around 40% of teachers are aged over 50[370], and 10% of compulsory school teachers are aged 60-65. One in five special needs teachers will retire within 5 years[371]. Many teachers are leaving the profession due to health issues and work-related stress (Arevik, 2015)[372]. According to the National Agency for Education (NAE), an additional 92 000 fully qualified teachers and pre-school teachers are needed within the next 4 years (NAE, 2017a). Projections to 2031 show that while 227 000 teachers will be needed, only about 145 000 will graduate, leaving a shortfall of over 80 000 (NAE, 2017b). There are already shortages of science, technology and modern languages teachers. 10% of all university students are already studying to become teachers, and increasing the number in teacher education will not be enough. Efforts are being made to draw on newly arrived migrants who have teaching qualifications from their country of origin (see box). The Swedish Association of Local Authorities and Regions (SALAR) has further suggested employing retired teachers and more effective use of distance education. Only 10.7% of teachers in Sweden believe their profession is valued in society, and it is the first choice of career for only 59.1% (OECD, 2019)[373]. The gender imbalance among teachers is somewhat less pronounced than in other Member States[374].

Initial teacher education programmes vary with the level of education. Initial teacher education programmes for pre-school last 3.5 years and lead to a bachelor's degree. Those for primary school last 4 years, lower secondary 4.5 years and upper secondary 5 years, and lead to a master's degree. There is also a 'Bridging Teacher Education' programme consisting of school placement and education science for those already qualified in school subjects but who have no teacher education.

A high proportion of people working as teachers lack formal teaching qualifications. In 2017/2018, almost 20% of teachers in compulsory and 20% in upper secondary schools had no formal initial teacher education[375]; for teachers younger than 29, this rises to 53%. The proportion of unqualified teachers is higher in independent schools (NAE, 2018). There is a strong socio-economic dimension in municipal schools, with students who are Swedish-born and whose parents are better educated more likely to be taught by qualified teachers (Granestrand and Halth, 2018). Researchers claim that many teachers also lack appropriate subject knowledge (Lärarnas Nyheter, 2013). Following a reform in autumn 2016, unqualified teachers are no longer able to have permanent contracts (except for VET or mother tongue teachers) or to grade students (NAE, 2018). According to the Education Act, municipalities should distribute funding for hiring qualified teachers on the basis of socio-economic factors, to improve equality.

Several major continuous professional development initiatives have been introduced in recent years. 'Boost for mathematics' (2012) was attended by 75% of all mathematics teachers. 'Boost for reading' (2015) was attended by teachers from 50% of all municipal schools and 25% of independent schools in the first 3 years. 'Boost for teachers' (introduced in 2007) is university–

370 From 35% for ECEC to 44% for tertiary education.
371 Swedish Teachers Union.
372 According to a report from one teacher union, 50% of teachers feel stress, compared with 21% of people in comparable occupations - Lärarförbundet (2018).
373 In 2018, 23 Member States participated in TALIS survey: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.
374 In 2017, 95% of teachers in ECEC, 76% of primary and 64% of secondary school teachers were women. In tertiary education less than half the teachers were female– Eurostat, UOE, 2017.
375 See: https://www.skolverket.se/om-oss/press/pressmeddelanden/pressmeddelanden/2018-03-22-stora-skillnader-i-lararbehorighet-mellan-kommuner

based training for teachers who do not have a teaching qualification in the subject or age group they teach, with 30 000 teachers enrolled.

Teachers' salaries are lower than those of other tertiary graduates, and wage progression is very limited. Teachers' statutory starting salaries are somewhat higher than those of their peers across the EU, but progression to the maximum salary is much lower than the EU average (e.g. for primary 35.2%, EU average 61%)[376]. Teachers earn considerably less than other full-time workers with tertiary degrees (ranging from only 76% for pre-school teachers to 91% for upper secondary school teachers) (OECD, 2018). Low salaries and limited wage progression hinder teacher recruitment and reduce job satisfaction among experienced teachers (which slips from 92.3% initially to 89.9% after 5 years). Only 63.1% of Swedish teachers would become teachers if they could choose again. This is the lowest percentage in the EU (EU average 77.6%), though it has improved by nearly 10 pps since 2013 (OECD, 2019). From 2016/2017, the government has earmarked central funds to increase salaries, under the 'Boost for Teachers' Salaries' initiative. The funds increase salaries for about 30% of teachers by varying amounts (the average is SEK 2 594 (EUR 243.60) per month), and are distributed by municipalities and independent schools to excellent teachers.

Box 1: 'Fast-track' – an opportunity for newly arrived pre-school teachers and teachers in Sweden

In 2015, six universities jointly developed a 'fast-track training course' for newly arrived migrant teachers and pre-school teachers. It has since targeted refugees and asylum seekers. The programme combines 'supplementary teacher education' at one of the universities, given partly in Arabic and partly in English, with studies in Swedish and a 26-week internship at a school or pre-school. Between April 2016 and December 2018, 1 261 newly arrived teachers and pre-school teachers benefited from the programme. To become a qualified teacher, they still need to complete a bridging programme and pass a teaching examination. This is proving a challenge for many.

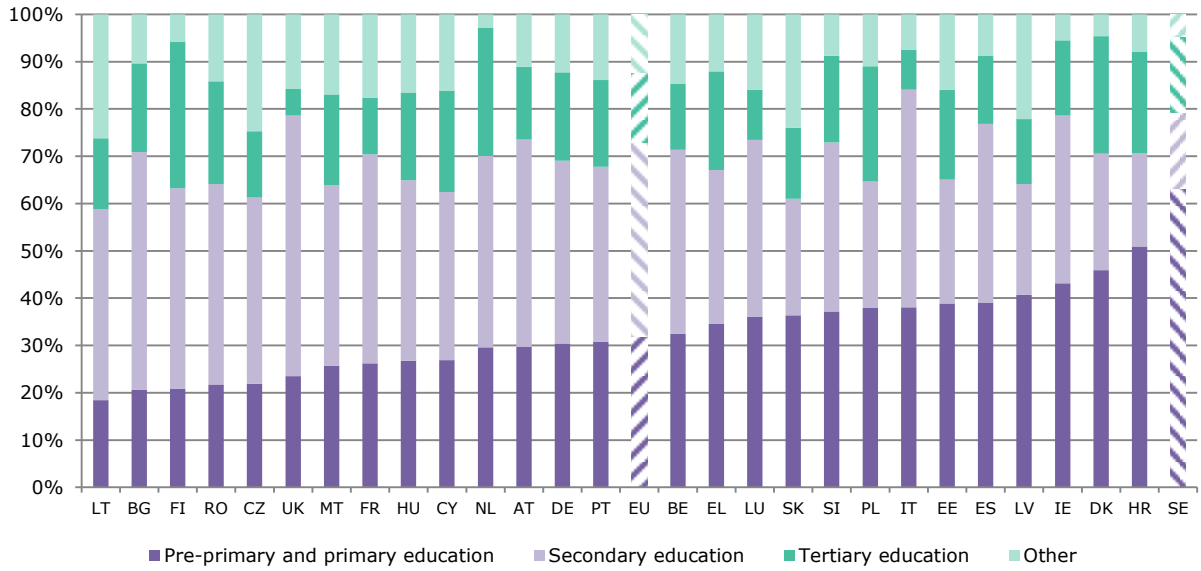
The broader 'fast-track' initiative was set up, also in 2015, by the social partners and the public employment service in 20 professions where there are labour shortages. The scheme for teachers has been one of the most successful.

4. Investing in education and training

Investment in education is high, and is concentrated in compulsory education. In 2017, Sweden was the Member State that dedicated the biggest share of GDP to education (6.8%), much higher than the EU average (4.6%). The share of total general government expenditure on education is also very high (13.7%, EU average 10.2%), with an increase of 1.1 pps from 2013 to 2017. Sweden spends 63.3% of this on pre-primary and primary education, a share which is the highest in the EU and almost double the EU average. The proportion spent on upper secondary education (16.1%) is the lowest in the EU (EU average 41.0%)[377].

376 Eurydice, 2018.
377 Eurostat, COFOG, 2017.

Figure 33 General government expenditure in education by level, 2017



Source: Eurostat.

The school-age population is rising, and further investment in education will be needed. The school-age population is expected to grow by 12.3% between 2020 and 2030, and by 17.8% by 2040, one of the highest rates of growth in the EU. Continued high investment in education will be needed[378]. In 2019, Sweden received a country-specific recommendation from the Council of the European Union to, among other things 'focus investment-related economic policy on education and skills' (Council of the European Union, 2019).

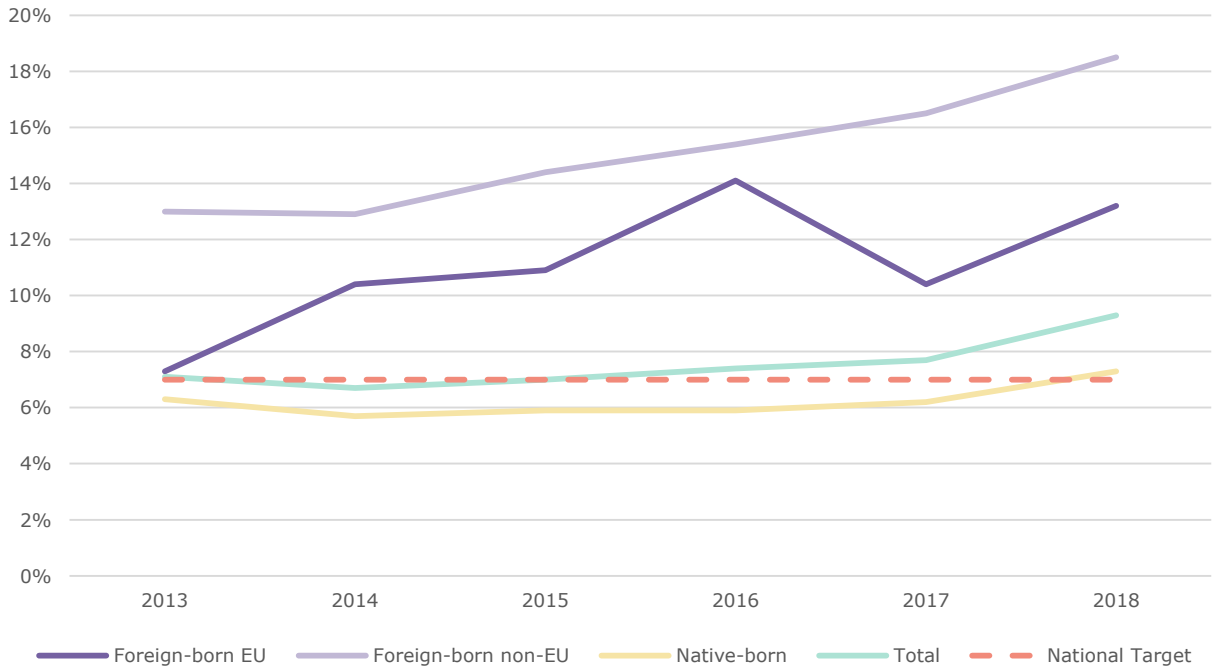
5. Modernising early childhood and school education

Participation in early childhood education and care (ECEC) is high and a new emphasis on learning is being introduced. Participation in ECEC for children up to 3 years old is one of the highest in the EU (52.7%, EU average 34.2%)[379]. In 2017, it was 96.3% among children from 4 until the starting age of compulsory education, above the EU average of 95.4% and the EU benchmark for 2020 of 95%[380]. Traditionally, ECEC has concentrated on play and pupil-centred pedagogy, but in 2018 a new curriculum was adopted (Regeringen, 2018a) which incorporates a strengthened focus on learning, in particular reading and digital skills. Implementation should begin from autumn 2019. From autumn 2018, 'pre-school class' is a mandatory part of the school cycle[381], with more teaching content to prepare children for their first school year. Challenges for ECEC relate to the differences in quality and provision between municipalities and the shortage of qualified ECEC teachers.

Early school leaving is below the EU average. While the rate of 9.3% is below the EU average (10.6%), there has been a rise from 7% in 2009, and the national Europe 2020 target of 7% seems unattainable. Young men are 2.4 pps more likely to leave school early than young women. There is a wide and growing difference between native-born pupils (7.3%) and those born abroad (17.7%).

378 600 new schools and 300 new kindergartens need to be built by 2020 – (SALAR, 2018).
379 Eurostat EU-SILC survey.
380 Eurostat, UOE, 2017.
381 The amendment to the Education Act (2010:800) entered into force on 1 January 2018.

Figure 3 Early leavers from education and training by country of birth(18-24 years) 2013-2018



Source: Eurostat. Online data code: edat_lfse_02

Growing segregation and inequality in schools are serious concerns. Growing inequalities within a traditionally highly inclusive system can be traced to the 1990s education reform, when education was decentralised and a school market and school choice were introduced. Private providers run independent schools (publicly funded but privately run). Evidence shows that school choice contributes to segregation, as children of well-educated and Swedish-born parents tend to opt for independent schools more frequently than migrants and children of less well-educated parents (Kornhall and Bender 2019, p. 5). This segregation has a negative effect on school results for already vulnerable students. It is likely that segregation has contributed to the reduced equity and declining overall educational results observed in the OECD's PISA survey and in national grades and tests (Kornhall and Bender, 2019, p. 18). PISA shows that the impact of socio-economic status in Sweden is higher than the EU average[382]. The fact that municipalities are responsible for funding schools creates further potential for inequality, given the wide differences in resources at their disposal. Additional funding is being directed to municipalities whose schools have concentrations of children from migrant and lower socio-economic backgrounds: SEK 1 billion (EUR 104 million) in 2018, SEK 3.5 billion (EUR 365 million) in 2019 and SEK 6 billion (EUR 627 million) in 2020. The aim is to help schools attract better teachers and improve teaching quality (SOU, 2017).

Swedes' digital skills are among the best in the EU and continue to improve. The digital skills of young people aged 16–19 are better than the EU average (68% have above-basic skills, EU average 57%). Sweden has the second highest proportion (77%) of individuals aged 16-74 who have basic or above-basic overall digital skills (EU average 57% in 2017)[383]. The proportion of those regularly using the internet is also among the highest (91% in 2018, EU average 83%). This figure has remained high for the past 7 years. The education system is one of the most digitalised in the EU: most schools have one computer per student and even pre-schools are close to that level. Sweden has had a digital strategy for schools since 2017, and programming has recently been incorporated into 13 of the 19 subjects in the national curriculum (Regeringen, 2017). One goal is that by 2022 all schools should be prepared for national tests to be taken digitally. In March 2019 SALAR and NAE created a national action plan to digitalise the school system and formal adult education. Despite the good digital skills of the population, the proportion of teachers who feel well

382 Measured as the score-point difference in science associated with one-unit increase in the PISA index of economic, social and cultural status (OECD, 2016).
383 Eurostat, DESI, 2017.

or very well prepared to use information and communications technology (ICT) for teaching is below the EU average (37%, EU average 39.4%). 22.2% of teachers report a high need to develop their ICT skills (EU average 16.1%).

6. Modernising higher education

Tertiary educational attainment is one of the highest in the EU. Sweden has a high tertiary educational attainment rate (52 % in 2018), above the Europe 2020 national target of 45-50% and much higher than the EU average (40.7%). It has been consistently high for years, and since 2010 has risen by approximately 1 p.p. annually. The rate for women is 59.1% and that for men 45.3%. The attainment rate of foreign-born people from other EU countries is almost as high as that of the native-born population, but there is a big gap for foreign-born people from non-EU countries (attainment rate 35.2%)[384].

Although the employment rate of tertiary graduates is among the highest in the EU, the proportion of graduates in natural sciences and mathematics is low. While the proportion of graduates in science, technology, engineering and mathematics (STEM) subjects (27.5%) is slightly above the EU average, most of them are studying engineering and construction (18.8%). In 2017, the proportion studying natural sciences, mathematics and statistics was among the lowest in the EU (4.4%, EU average 7.6%)[385]. The employment rate among recent tertiary graduates is one of the highest in the EU (92.5% in 2018)[386] and has been constantly increasing since 2010. However, there is a shortage of graduates in teaching, medicine, nursing (European Centre for the Development of Vocational Training (Cedefop, 2018) and ICT (Almega, 2017).

Two major changes in the right to access tertiary education will enter into force in 2022. One affects existing access through the National University Aptitude Test, which is taken after successful completion of secondary education to improve the chances of being selected for highly attractive university studies. The test will be restricted to students who are at least 18 years old. The government hopes the change will encourage students to focus on completing their upper secondary studies first. The second change is the creation of a new test to validate competencies, designed to allow those aged 24 or older who have not completed secondary education to pursue tertiary studies.

An expert group has proposed changes in the funding of tertiary education. In 2018, a commission of inquiry into funding for higher education recommended a common budget allocation for education and research, with an increased share for research (to rise from 44% to at least 50% of the total). It also proposed quality assurance of both higher education and research, and a funding mechanism for universities' social responsibilities (SOU, 2019).
Tertiary education teachers are among the oldest in Europe, and their employment is insecure. Of tertiary education teachers, 44% are older than 50, and 19% older than 60[387]. Employment in tertiary education is not always secure, as 28% of teachers and researchers have only temporary contracts (SULF).

A new strategy for internationalisation was proposed recently. An expert group proposed a new national strategy to internationalise higher education. The proposals call for the recruitment of more international students by facilitating enrolment and increasing scholarships (including bilateral funding agreements with non-EU countries), incentives for industry (tax deductions for donations and scholarships) to support higher education and boost the supply of skills, and increased funding for universities, with increased autonomy to reduce tuition fees for non-EU students. These proposals should be implemented in 2020–2030. Learning mobility among Swedish graduates is higher than the EU average (15.5%, EU average 11.6%), but it is still below the EU benchmark of 20%. Inward mobility, at 10.3%, is somewhat lower than the EU average (10.8%), and most of it is in postgraduate degrees. Most international graduates come from other EU countries or from countries in Asia.

384 Eurostat, LFS, 2018.
385 Eurostat, UOE, 2017.
386 Eurostat, LFS, 2018.
387 Eurostat, UOE, 2017.

7. Modernising vocational education and training

Participation in initial VET is low, though the employment rate of recent VET graduates is one of the highest in the EU. In 2017, nearly 37 900 new students entered upper secondary formal VET education in Sweden, an increase of 3% from 2016 (UOE, 2017). 34.1% of students at upper secondary level attend vocational education, below the EU average (47.8%) (UOE, 2017). Few students participate in combined school- and work-based programmes (UOE, 2017). The employment rate among recent VET graduates has increased slightly from 87.8% in 2017 to 88.7% in 2018. It is above the EU average (79.5%) (LFS, 2018), among the highest in the EU and almost as high as that of tertiary education graduates[388].

Measures are being taken to make VET more attractive. They include establishing VET courses that prepare for tertiary education, and the development of new apprenticeships by the Apprenticeship Centre, working with stakeholders. National and regional coordinators have been set up to help schools collaborate with local enterprises (Cedefop, forthcoming). A national commission of inquiry into vocational education suggested establishing trade or industry schools to provide a work-based component. This has been a pilot project since January 2018, involving 10 trade schools which can obtain a state grant of up to SEK 50 000 (EUR 4 670) per learner (Cedefop, forthcoming). In 2018, an inquiry began to explore a regionalised model of upper secondary provision and diversification of programmes, to better address the mismatch with skills needs (Regeringen, 2018b). Findings will be presented in February 2020. A January 2019 report explored supporting learners in making well-informed choices. It proposes individual career guidance and a compulsory activity 'Future choices' focusing on working life, career paths and vocational areas before learners proceed to upper secondary education (Ministry of Education, 2019).

The shortage of teachers also impacts VET. There is a lack of qualified VET teachers, and the situation is expected to get worse. The NAE is running a campaign to attract professionals. State grants were introduced in 2013 and 2016 to raise salaries for particularly well-qualified teachers, while companies that offer apprenticeships receive financial support if their trainers undergo training. School managers and school leaders in municipalities receive support in change management and digitalisation (NAE, ReferNet Sweden, 2019).

Box 2: Yrk in

The 'Yrk in' project (2017–2020) aims to increase young people's interest in VET, provide them with better job opportunities, develop new forms of study and vocational guidance, step up collaboration with employers and achieve less gender-stereotyped programme selection.

The target group is young people aged 15–24 who lack secondary school education, with a particular focus on newly arrived migrants. The project aims to support 400 young people who are preparing for upper secondary school studies or who wish to resume them.

Yrk in supports improved guidance and flexible admission and forms of training for migrants and others.

Methods used are early work-life training/education, support to businesses, training of mentors/job coaches, study guidance, visits to industries, and career portfolios for new arrivals. Yrk in is being implemented by SALAR in four regions. The total budget is SEK 30.5 million (EUR 3 million), of which SEK 20.5 million (EUR 2 million) comes from the European Social Fund.

8. Developing adult learning

The proportion of low-skilled adults is below the EU average, and they are more likely to participate in adult learning, but there are jobs available to only one in three of them. 14.47% of the adult population have not acquired at least an upper-secondary qualification (EU average: 21.9%) (LFS, 2018). Furthermore, the proportion of low-qualified adults actually in employment is higher (64%), than the EU average (56.8%) (LFS, 2018). Participation in adult learning (29.2%), is the highest in the EU and substantially above the EU average (11.1%) (LFS, 2018). The need for more substantial upskilling remains, however: in 2017 there were 751 000

388 Eurostat, LFS, 2018.

low-qualified adults but only 242 000 jobs with an elementary skills requirement (LFS, 2017). In 2017, no adults aged 25 or above acquired an upper-secondary qualification (UOE, 2017).

Boosting adult learning is an objective of the new government's coalition agreement (January 2019). Adults will be given additional opportunities to participate in further education and training, and the conditions of study loans will be improved (NAE, ReferNet Sweden, 2019).

Changes have been proposed to municipal adult education and there are proposals to develop a new teacher education profile for adult learning. In August 2018 a national commission of inquiry proposed making the system more responsive to changes in the labour market and to the needs of individuals, both as second-chance education and as support for career changes (Ministry of Education, 2018). It also proposes offering more apprenticeship and school-based training to adults with intellectual disabilities (NAE, ReferNet Sweden, 2019). There are no programmes which directly train teachers to teach in formal adult education. The inquiry into municipal adult education has proposed offering a formal adult education profile by some higher education institutions (NAE, ReferNet Sweden, 2019). The commission's proposals are now being worked on within the Government Offices.

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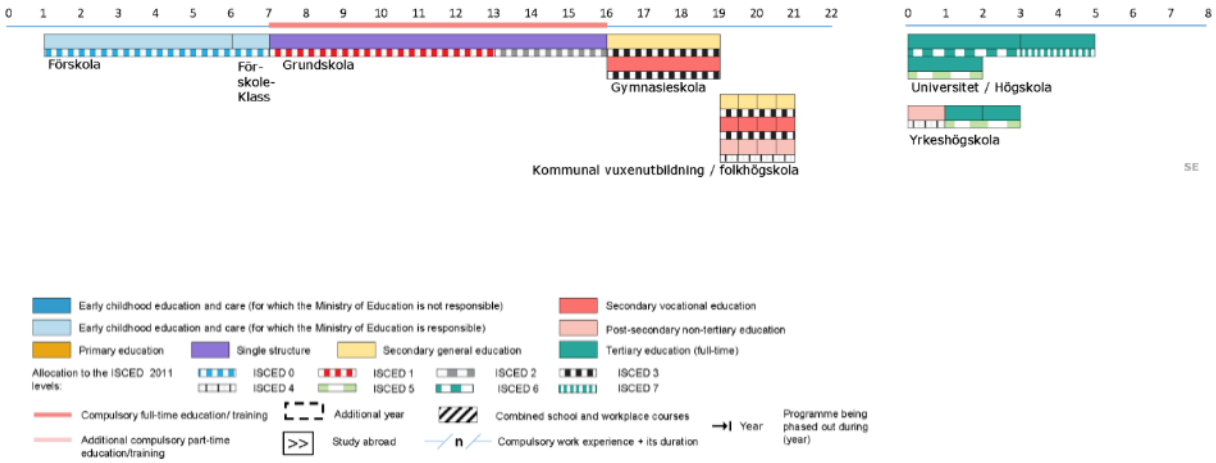
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	 *JRC computation based on Eurostat / UIS / OECD data* *JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2018. *The Structure of the European Education Systems 2018/19: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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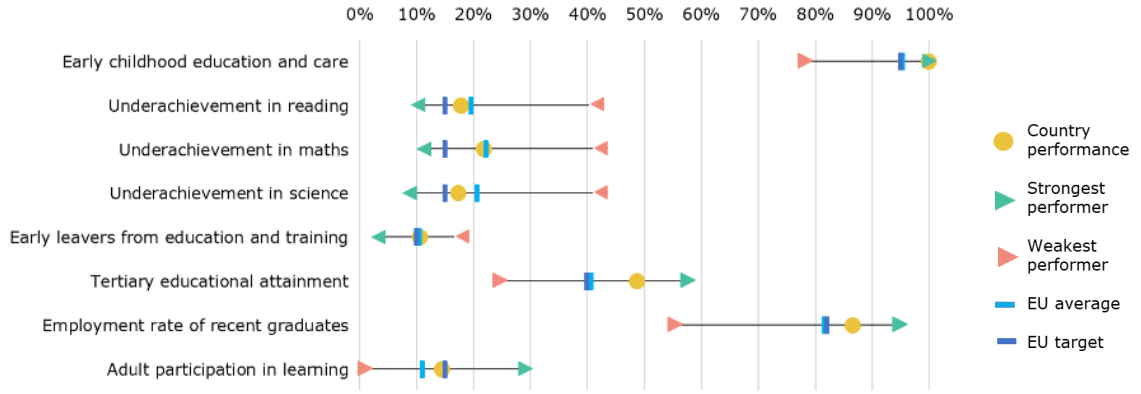
UNITED KINGDOM

1. Key indicators

			United Kingdom		EU average	
			2009	2018	2009	2018
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)			15.7%	10.7%	14.2%	10.6%
Tertiary educational attainment (age 30-34)			41.4%	48.8%	32.3%	40.7%
Early childhood education and care (from age 4 to starting age of compulsory primary education)			97.3%	100.0% [17]	90.8%	95.4% [17,d]
Proportion of 15 year-olds underachieving in:	Reading		18.4%	17.9% [15]	19.5%	19.7% [15]
	Maths		20.2%	21.9% [15]	22.3%	22.2% [15]
	Science		15.0%	17.4% [15]	17.7%	20.6% [15]
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-8 (total)		80.1%	86.7%	78.3%	81.6%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)		20.7%	14.6%	9.5%	11.1%
Learning mobility	Degree-mobile graduates (ISCED 5-8)		:	0.8% [17]	:	3.6% [17]
	Credit-mobile graduates (ISCED 5-8)		:	3.3% [17]	:	8.0% [17]
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		6.2%	4.6% [17]	5.2%	4.6% [17]
	Expenditure on public and private institutions per student in € PPS	ISCED 0	€7 895 [12]	€5 833 [16]	:	€6 111 [15,d]
		ISCED 1	€7 498 [12]	€8 140 [16]	€5 812 [12,d]	€6 248 [15,d]
		ISCED 2	€7 688 [12]	€7 945 [16]	€6 937 [12,d]	€7 243 [15,d]
		ISCED 3-4	€7 458 [12]	€7 997 [16]	:	€7 730 [14,d]
		ISCED 5-8	€18 217 [12]	€17 294 [16]	€10 549 [12,d]	€11 413 [15,d]
Early leavers from education and training (age 18-24)	Native-born		16.3%	11.0%	13.1%	9.5%
	Foreign-born		11.6%	8.9%	26.1%	20.2%
Tertiary educational attainment (age 30-34)	Native-born		41.9%	46.5%	33.1%	41.3%
	Foreign-born		39.6%	55.7%	27.7%	37.8%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4		74.9%	83.1%	72.5%	76.8%
	ISCED 5-8		84.2%	88.4%	83.8%	85.5%

Sources: Eurostat; OECD (PISA); Learning mobility figures are calculated by the European Commission's Joint Research Centre from UOE data. Further information can be found in Annex I and in Volume 1 (ec.europa.eu/education/monitor). Notes: The EU's 2009 PISA averages do not include Cyprus; d = definition differs, := not available, 12= 2012, 14= 2014, 15 = 2015, 16= 2016, 17 = 2017.

Figure 34 Position in relation to strongest and weakest performers



Source: Calculations by the European Commission's Directorate-General for Education, Youth, Culture and Sport (DG EAC), based on data from Eurostat (LFS 2018, UOE 2017) and OECD (PISA 2015).

2. Highlights

- Efforts are being made to tackle the high proportion of teachers leaving the profession.
- In England, academies are growing in number, but many are facing financial pressures.
- The consequences of Brexit for UK higher education are unclear but policy responses to address the potential loss of EU research funding and reduced student inflows will be needed.
- England will introduce new qualifications as part of ongoing reforms of upper secondary VET.

3. A focus on teachers

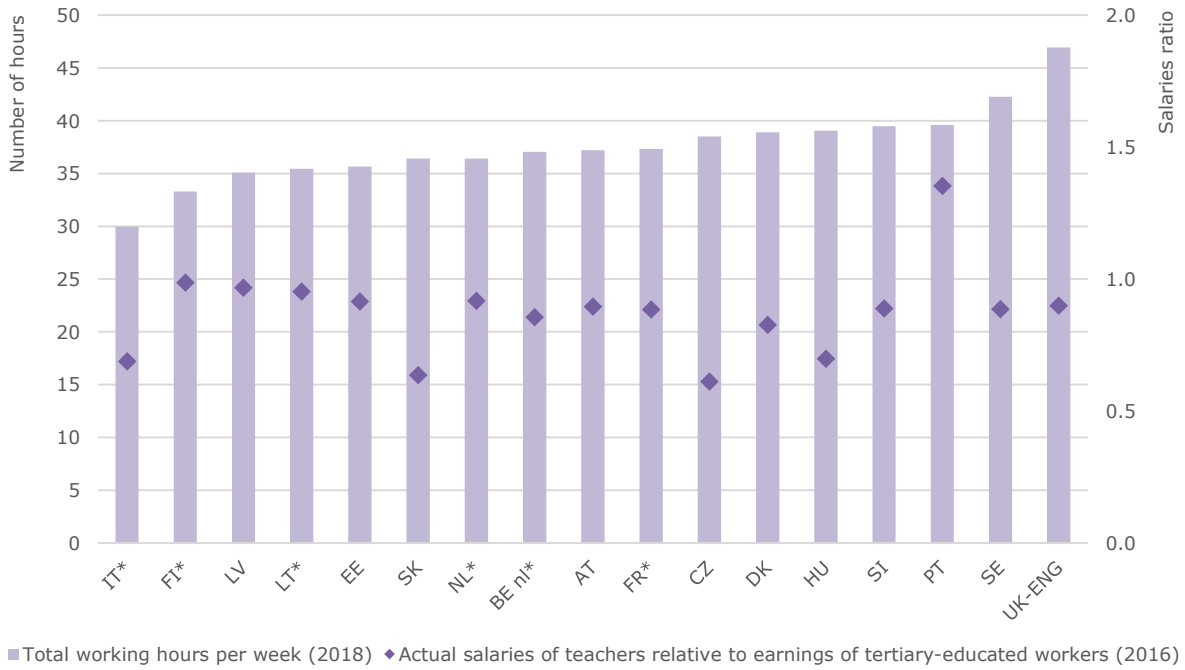
Teachers in the United Kingdom are comparatively young. About 80% of teachers in early childhood education are below the age of 50, one of the youngest workforces in the EU. The proportion is 85% in primary schools (EU average 68%) and 78% at secondary level (EU average 61%). The gender balance is close to the EU average for all educational levels.

Teachers' working conditions place heavy demands. At 26 pupils, the average class size in primary schools is the highest in the EU (EU average 21) (OECD, 2018). Pupil-teacher ratios at lower and upper secondary levels are also among the highest in the EU, with 15.2 and 17.2 pupils per teacher respectively, compared with an EU average of 12.2 for both. In addition, teaching time is far above the EU average. In Scotland it is among the highest in the EU, with 855 teaching hours per year in 2017 for all levels, compared to EU averages of 633 hours in upper secondary, 665 in lower secondary, and 754 in primary (OECD, 2018). One explanation for this is the comparatively short school holidays. In England, lower secondary teachers report that they work 47 hours a week, the highest working time across EU countries participating in the OECD Teaching and Learning International Survey (TALIS)[389], of which 20 hours are devoted to teaching (OECD, 2019).

Salaries are slightly below the EU average. Teachers in England earn about 20% less than average tertiary-educated workers in pre-primary and primary, and 10% less at secondary level. Teachers in Scotland at all levels earn on average 17% less than similarly educated workers. On average in the EU, upper secondary teachers earn the same as tertiary-educated workers, and lower secondary teachers 7% less. School leaders in England are comparatively better paid, with secondary school leaders earning more than twice the average for tertiary-educated workers (the EU average is about 40% more). Primary school leaders are also above the EU average (earning 48% more, EU average 21%). In Scotland, the differential is 28% at all levels (OECD, 2018). Salary progression from minimum to maximum statutory salary for lower secondary teachers in England, Wales and Northern Ireland is close to the EU average of 64%, but in Scotland is well below the EU average at 33% (European Commission/EACEA/Eurydice, 2018).

[389] In 2018, 23 Member States participated in TALIS: Austria, Belgium fr, Belgium nl, Bulgaria, Croatia, Cyprus, Czechia, Denmark, England (UK), Estonia, Finland, France, Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. TALIS 2018 covers lower secondary teachers and school leaders in mainstream public and private schools.

Figure 2 Working time of lower secondary teachers in comparison with actual salaries of those teachers relative to earnings of tertiary-educated workers, 2016-2018



Source: OECD, Education at a Glance 2018, Table D3.2, and OECD, TALIS 2018 Results, Table I.4.12. Notes: ratio of salary, using annual average salaries of teachers in public institutions relative to the earnings of full-time, full-year workers with tertiary education. Working time is self-reported. *Country-specific notes: FR, IT, NL, LT: Reference year for earnings of tertiary-educated workers is 2014. CZ, FI, BE: Reference year for earnings of tertiary-educated workers is 2015.

The number of teachers leaving the profession keeps increasing, and is a policy concern. The proportion of teachers who left state-funded schools in England for reasons other than retirement was 8.3% in 2017, an increase of 2.5 pps since 2012 (Department for Education (DfE), 2018a, Table 7b). Workload is the reason most often cited for teachers leaving the profession (Sims, 2017). In the 2018 TALIS, although they were more positive than the EU average in terms of how their profession was valued in society (28.8%, EU average 17.7%), only 77.5% of teachers in England reported that they were satisfied with their job, the lowest result in the EU (EU average 89.5%) (OECD, 2019). In 2010-2018, 4 152 secondary school teachers in the UK sought formal recognition of professional qualifications for the purpose of permanent establishment within the EU Member States, EEA countries and Switzerland[390], a higher number than any other professional group, and a big increase on the 2 207 applications lodged in 2001-2009.

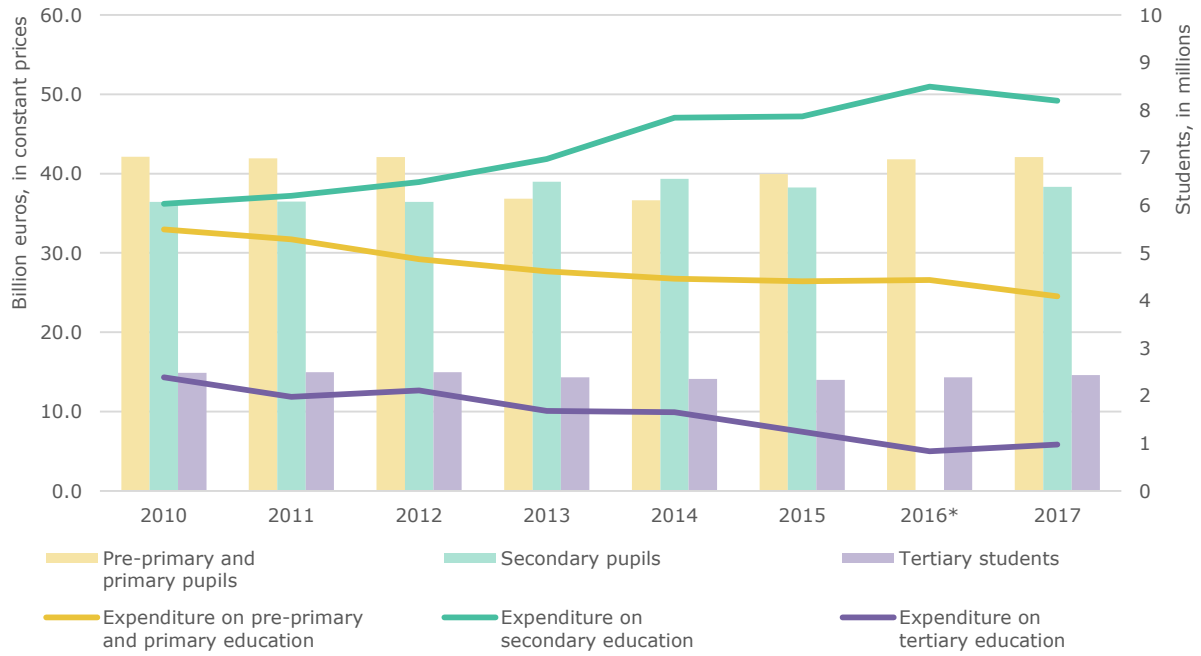
The government has flagged teacher recruitment and retention in England as a priority. Authorities aim particularly to reduce departures during teachers' early careers, since 'over 20% of new teachers leave the profession within their first two years of teaching, and 33% leave within their first five years' (DfE, 2018a). A teacher recruitment and retention strategy has been developed together with teachers, head teachers, representative bodies and initial teacher training providers. The strategy includes pay increases to teachers each summer between 2018 and 2020. The 'Early Career Framework' aims to tackle the issue of teachers leaving the profession in the first few years. Early career teachers will be entitled to a fully-funded, two-year package of structured support, including funding and a guaranteed 5% off timetable in the second year of teaching, and training and support by mentors (DfE, 2019a).

390 European Commission, Regulated professions database, http://ec.europa.eu/growth/tools-databases/regprof/index.cfm

4. Investing in education and training

UK's general government expenditure on education continues to fall, but remains close to the EU average. With a total budget of EUR 104 billion spent on education (a 2.3% decrease in real terms from the previous year), the UK allocates 4.6% of its GDP to education, the same as the EU average. This represents 11.3% of total general government expenditure, a fall of 0.3 pps. from 2016, but still above the EU average of 10.2%. Expenditure per pupil has fallen much more rapidly, by 13.4% in real terms in 2009-2016, reflecting the 10% increase in total pupil numbers in the same period. It is still comparatively high at primary level, at EUR 8 140 in purchasing power standards (PPS), comparable with Scandinavian countries. At secondary level, however, it is below the level of comparable countries, at EUR 7 945 and EUR 7 997 respectively for lower and upper secondary. The government spends 25% of the education budget on intermediate consumption (the purchase of goods and services by government), which is the highest proportion in the EU. It spends only 47.2% on compensation to employees (EU average 62%).

Figure 3 Evolution of expenditure and number of students per education level



Source: DG EAC calculations based on Eurostat, COFOG and UOE data. Online data codes: *gov_10a_exp*, *nama_10_gdp, educ_uoe_enra01* and *educ_enrl1tl*. Notes: *2016 data for number of students in secondary education is not available. Number of students is expressed in millions on the right-hand axis; real government expenditure per level of education is expressed in billion euros on the left-hand axis, valued at constant prices using the implicit deflator for final consumption of the general government.

5. Modernising early childhood and school education

A third (33.2%) of children aged under 3 attended formal early childhood education and care (ECEC) in the UK in 2017. This is slightly below the EU average (34.2%), and represents a fall by almost 2 pps compared to the previous year. On the other hand, practically all children aged between 4 years and the starting age of compulsory education participate in ECEC.

The lack of resources in ECEC has worsened. Expenditure per pupil in ECEC fell from EUR 9 042 in 2012 to EUR 6 836 in 2016. The current level of spending per child of EUR 5 833 in PPS is far below Germany (EUR 8 529 in PPS) or Scandinavian countries (EUR 10 513 in PPS for Sweden). The pupil-teacher ratio grew from 17.6 pupils per teacher in 2014 to 23 in 2017, by far the highest rate in the EU[391].

Several policy initiatives have been taken in ECEC. The Scottish government launched its 'Leadership of early learning' programme in April 2019, which provides professional learning to

[391] Eurostat, UOE, 2017. Online data code: educ_uoe_perp04

school leaders in ECEC. Wales has a successful 'Flying start' programme[392]. Authorities in England have been rolling out the 30 hours of free childcare entitlement to three and four year olds children of working parents. Since 2017 the program has delivered support for over 600 000 children and was evaluated a success for families benefiting from it (DfE, 2018b). However, a review by a parliamentary committee concluded that funding was inadequate to deliver this commitment fully (NDNA, 2018).

Early school leaving varies between regions and populations. Overall, the rate of early school leaving (ESL) is at the EU average (10.6%) in 2018. Uniquely among EU countries, it is higher for native-born than foreign-born (2 pps difference). Among pupils born outside the EU, this rate falls to 6%, whereas the EU average for this group is 20.7%. The rate varies strongly by region, from 6% in London to almost 14% in the East of England. There is no major difference between Scotland, Wales, Northern Ireland and England. Wales, through its 'Youth engagement and progression framework', succeeded in reducing its ESL rate by 4.1 pps between 2013 and 2017 and at the same time has reduced the share of students not in employment, education or training (NEET)[393].

In England, there is rising concern about the financial viability of academies. Academies are publicly funded independent schools which don't have to follow the national curriculum and can set their own term times. They're run by an academy trust which employs the staff and some academies have sponsors such as businesses, universities, other schools, faith or voluntary groups. About 8 600 of the more than 20 000 state schools in England have become academies (DfE, 2019b). However, the financial viability of many of them is in question, as surveys suggest that half of academies are accumulating debts, and 7.7% of trusts show cumulative deficits for 2018 (Kreston Academies Group, 2019).

Also in England, the rise in the number of school exclusions is worrying. The latest government statistics showed that schoolchildren were permanently expelled on 7 900 occasions in 2017/18, a rise of 3% compared to 2016/17, and the highest level since 2008/09 (DfE, 2019c).

In 2019, the Welsh government announced the content of the school reform to be implemented from 2022 to 2026[394]**.** This reform comprises a new curriculum, the introduction of a digital competence framework and more freedom in teaching. This comes along with a more rigorous inspection by the Inspectorate for Education and Training in Wales (at least twice in a 7-year period)[395]. Unions support this reform, but regret that teachers were not more involved in the consultation process[396].

Scotland is addressing equity and poverty issues with the Scottish Attainment Challenge. GBP 750 million (EUR 840 million) has been dedicated to addressing socio-economic disadvantage and improving literacy and numeracy among disadvantaged children. A further GBP 120 million (EUR 135 million) will be available through the Pupil Equity Fund to schools with high numbers of children registered for free school meals[397].

UK pupils' digital literacy skills fell back. According to a study by the University of Roehampton (Kemp & Berry, 2019), information and communication technology (ICT) skills have dropped: additionally, the number of hours of computing/ICT taught in secondary school dropped by 35.8% from 2012 to 2017. Meanwhile, the Department for Education announced the creation of the first ever National Centre of Computing Education. That centre will help improve teaching of the computing curriculum and is supported by a new programme which will train up to 8 000 computing teachers on the latest digital skills[398].

[392] See: https://familypoint.cymru/flying-start-wales/
[393] See: https://gov.wales/youth-engagement-and-progression-framework-implementation-plan
[394] See: https://gov.wales/new-school-curriculum-overview
[395] See: https://www.estyn.gov.wales/inspection
[396] NASUWT responds to draft curriculum for Wales, 7 May 2019, https://www.nasuwt.org.uk/article-listing/nasuwt-responds-to-draft-curriculum-for-wales.html
[397] See: https://www.gov.scot/policies/schools/pupil-attainment/
[398] See: https://www.gov.uk/government/news/schools-minister-announces-boost-to-computer-science-teaching

6. Modernising higher education

The higher education system remains one of the best in the EU and the world. UK higher education institutions (HEI) retain their reputation for global excellence, with no less than seven universities in the Top 50 of the Global QS Employability Rankings of HEIs[399]. The tertiary educational attainment rate increased slightly to 48.8% in 2018 (52.0% for women). This is one of the highest rates in the EU. Access by students from low socio-economic backgrounds to higher education in England is still difficult (DfE, 2018c). Despite some efforts from top universities to ensure greater openness, diversity and inclusion at university level remain a policy concern[400].

Tertiary educational attainment is, unusually, higher among foreign-born than native-born. This can be at least partially explained by the great attractiveness of UK higher education: inward mobility in 2016 resulted in over 200 000 mobile graduates, of which 47 600 originate from other EU countries; this is a third of all mobile graduates in the EU. International students contributed GBP 11.9 billion (EUR 13 billion) to UK education exports in 2016. The Department for Education (DfE) and Department for International Trade (DIT) announced the launch of a new International Education Strategy in March 2019 which included an ambition to increase the number of international students to 600 000 by 2030 (DfE and DIT, 2019) and diversify the country of origin of students in favour of emerging economies, in particular China, India, and countries from South East Asia and Africa (Hinds, 2019). The reasons for this include the spending potential of those students, the anticipated falling age cohort of young Britons and the potential impact of Brexit on inflows of EU students.

Outward mobility remains low among tertiary students. Only 3.3% of graduates in 2017 undertook credit mobility during their studies, and 0.8% went abroad to take their whole degree. The UK government has started to address this, with the launch of the 'UK strategy for outward student mobility 2017-2020', which aims to double the number of students undertaking international placements as part of their higher education programmes (Universities UK (UUK), 2017).

Box 1: Universities UK International (UUKi) and promoting outward student mobility

UUKi's 'strategy for outward student mobility' aims to double the percentage of UK-domiciled, full-time first-degree students who undertake international placements as part of their higher education programmes to just over 13% of students by 2020.

UUKi's 'Go International' programme helps implement the strategy by working with different stakeholders (UK HEIs, the Erasmus+ National Agency for the UK, sector agencies, careers services, employer representatives, UK government, overseas governments and professional, statutory and regulatory bodies).

Stakeholders have expressed concerns about the impact of Brexit on the UK's higher education and research. The Welsh government has expressed its concerns about a drop in funding linked to the end of access to European structural and investment funds. The UK government has announced a UK Shared Prosperity Fund to help compensate for this cut and has expressed its openness to continue participation in Horizon 2020 and Erasmus+. Universities UK has stated that a 'no deal' exit from the EU would be bad for their students, researchers and its 136 member universities (UUK, 2019).The House of Lords has emphasized the importance of securing association to the EU programmes, warning that it would be a challenge to try to replicate their benefits at a national level (House of Lords, 2019).

399 QS, Graduate Employability Rankings 2019. https://www.topuniversities.com
400 See: https://www.educationopportunities.co.uk/

In England, the level of tuition fees is under review. The government-commissioned independent panel report on the review of post-18 education and funding, known as the Augar review, presented in May 2019, recommended a reduction of tuition fees to a maximum of GBP 7 500 (EUR 8 400) a year, with the shortfall to be bridged by additional grant funding (UK Government, 2019). However, universities fear that this would cause difficulties in their financial planning[401]. Meanwhile, the UK Government has increased the annual fee caps and maximum fee loans for accelerated degree courses (those that are completed at least one year sooner than their standard equivalents) for the 2019/2020 academic year, with the aim of incentivising wider provision and uptake of these courses (DfE, 2018d). The objective is to decrease the amount of the tuition fees and living costs for students. Meanwhile, the gap between future earnings of postgraduate and undergraduate degree holders is widening while the 'graduate earnings premium' is decreasing. The differential in median salaries between young graduates (age 21-30) and non-graduates decreased by GBP 1 500 (EUR 1 638) since 2017 whereas the gap between those of graduates and postgraduates increased by GBP 1 000 (EUR 1 092) (DfE, 2019d).

Student mental health remains a preoccupation. NHS England is working closely with UUK via the 'Mental health in higher education' programme, and announced a particular focus on mental health of young adults through prevention and early intervention in their long term plan released in January (NHS, 2019).

7. Modernising vocational education and training

Vocational Education and Training (VET) has become more attractive. In 2017, 1.3 million new students entered formal VET programmes, an increase of almost 8% on 2016. The enrolment rate in upper secondary VET remains below the EU average (46.6%, EU average 47.8%). The employment rate of recent VET graduates in 2017 increased slightly to 84.2% (82% in 2016), above the EU average of 79.5% in 2018.

In 2018, policy developments in England included a strong investment in the further education (FE) sector. The FE Commissioner role has been expanded and strengthened since it was established in 2013. The 'National Leaders of Governance' and 'National Leaders of Further Education' initiatives were launched to share expertise between colleges across the country. A new innovative funding scheme, the Strategic college improvement fund, launched in 2018 for a period of 2 years, allocates GBP 15 million (EUR 17 million) for funding partnerships between top colleges and ones in need of improvement, to share best practices and drive up standards. Building on the 2016 Post-16 skills plan, and as part of a reform of upper secondary VET qualifications in England, a new technical qualification called T level, equivalent to three A-levels, will be introduced as of September 2020 in specific sectors (digital industry, construction industry, education and childcare) for learners after the general certificate of secondary education (GCSE) exam.

Campaigns around the UK aim to make VET more attractive. In Scotland, a new TV campaign was launched in November 2018 to raise the profile of colleges as first training options, and to assist national recruitment activities. A national apprenticeship network has also been launched. It targets former and current apprentices willing to engage in networking activities and share their experiences, in the hope of inspiring others to enrol in apprenticeships. In Wales, the 'The answer is apprenticeship' campaign aimed at youth (including NEETs) and their parents ran in summer 2018, to publicise the benefits of apprenticeships for gaining skills and qualifications needed to start a career.

[401] 'Tuition fee cut will send universities into crisis, leading vice-Chancellors warn'. Daily Telegraph, Published November 23. https://www.telegraph.co.uk/education/2018/11/23/tuition-fee-cut-will-send-universities-crisis-leading-vice-chancellors/

Box 2: Graduate Apprenticeships as part of the Developing Scotland's workforce strategic intervention

Graduate apprenticeships provide a new way into degree-level study for individuals who are currently employed, or who want to go straight into work. Employees can equip themselves with higher levels of academic learning and industry accreditation, which helps them progress as professionals. By investing in their staff through such apprenticeships, employers can develop their workforce and help staff develop their skills to industry and professional standards.

14 of Scotland's universities and colleges will be delivering Graduate Apprenticeships, in 12 subject areas including ICT/Digital, Cyber Security, Data, Civil Engineering, Engineering, Construction and Business. Graduate Apprenticeships as part of the 'new work based learning models operations' have a combined budget of GBP 20.6 million (EUR 23.1 million), with support from the European Social Fund of GBP 8.5 million (EUR 9.5 million) in Phase 1 of delivery to December 2018.

8. Developing adult learning

Adults in the UK are more likely to frequently update their knowledge and skills. 14.6% of adults aged 25-64 have had a learning experience in the past 4 weeks, (EU average 11.1%). Of adults aged 25 or above, 151 328 acquired an upper secondary qualification in 2017. UK adults are on average better educated than their EU counterparts: 80.4% of adults have acquired at least an upper secondary qualification, compared with the EU average of 78.1%. However, the proportion of low-qualified adults in employment in the UK is high, at 65.7% compared with the EU average of 56.8%. This is excessive, given the low number of jobs requiring such qualifications, and highlights the need for a more substantial upskilling and reskilling effort. In this context, the Council of the European Union addressed a country specific recommendation to the UK in 2019 calling on it to 'focus investment-related economic policy on […] training and improving skills' (Council of the European Union, 2019).

National initiatives to promote adult learning are emerging. In England, a national initiative 'Taking teaching further'[402], was launched in 2018 for a pilot period of 2 years. It aims to raise the profile and attractiveness of the further education teaching profession to attract highly experienced industry professionals from key industry sectors to teach full or part-time. To increase the attractiveness of the construction sector – which has experienced skills shortages and a productivity gap in recent years - a GBP 22 million (EUR 25 million) construction skills fund was launched in June 2018 in England[403]. A digital skills partnership was set up in 2018 by the UK Department for Digital, Culture, Media and Sport, which supports implementation of the UK digital strategy in England. Skills advisory panels are being formed to provide information on skills needs and challenges in specific sectors and areas across England. In Scotland, the science, technology, engineering and mathematics (STEM) bursary programme 2018-19, an initial teacher education support scheme, was funded by Skills Development Scotland[404]. In Wales, a GBP 10 million (EUR 10 million) skills development fund was launched in September 2018 to support skills provision in areas where job-specific skills gaps have been identified by regional skills partnerships. The 'Inclusive apprenticeship action plan 2018-2021' also feeds into the Wales employability plan[405].

402 See : https://www.et-foundation.co.uk/supporting/support-teacher-recruitment/taking-teaching-further/
403 See : https://www.gov.uk/government/news/22m-fund-launched-to-boost-construction-skills
404 See :https://www.gov.scot/publications/science-technology-engineering-mathematics-education-training-strategy-scotland/
405 See :https://gov.wales/sites/default/files/publications/2018-11/inclusive-apprenticeships-disability-action-plan-for-apprenticeships-2018-21-1.pdf

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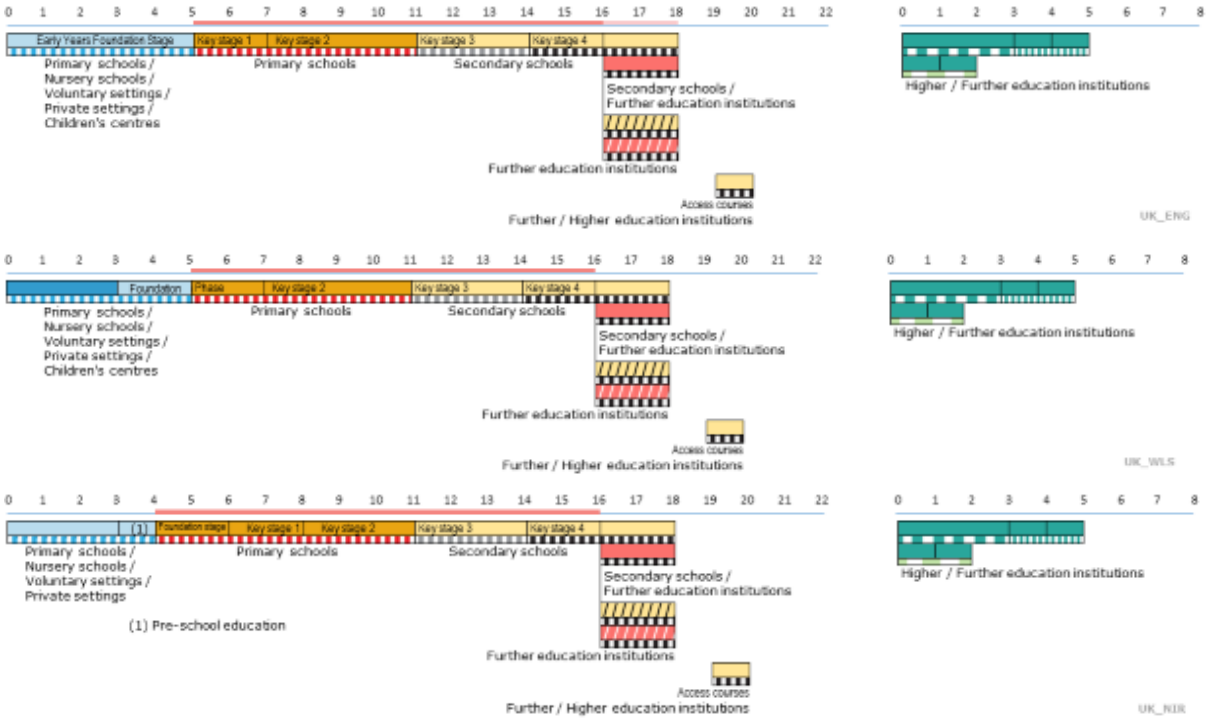
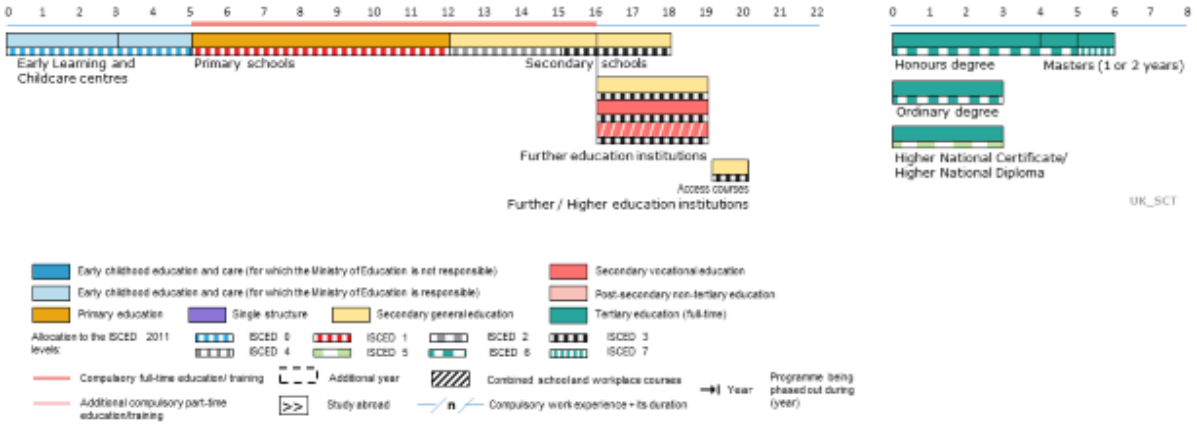
Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_lfse_14 + edat_lfse_02
Tertiary educational attainment	edat_lfse_03 + edat_lfs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	*OECD (PISA)*
Employment rate of recent graduates	edat_lfse_24
Adult participation in learning	trng_lfse_03
Public expenditure on education as a percentage of GDP	gov_10a_exp
Expenditure on public and private institutions per student	educ_uoe_fini04
Learning mobility: - Degree-mobile graduates - Credit-mobile graduates	*JRC computation based on Eurostat / UIS / OECD data*

Annex II: Structure of the education system





Source: European Commission/EACEA/Eurydice, 2018. The Structure of the European Education Systems 2018/19: Schematic Diagrams. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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