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Education and Training Monitor 2018

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Additional contextual data can be found online (ec.europa.eu/education/monitor)*

Education and Training Monitor 2018 (Country analysis)

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Introduction

Volume 2 of the Education and Training Monitor 2018 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, with a focus on developments since mid-2017. 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 looks at investment in education and training. Section 4 focuses on citizenship education. Section 5 deals with policies to modernise 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		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		7.0%	7.4%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		40.0%	40.8%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		94.0% ¹³	94.9% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	19.5% ¹²	22.5% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	18.7% ¹²	21.8% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	15.8% ¹²	20.8% ¹⁵	16.6% ¹²	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)	87.2%	89.4%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	14.3%	15.8%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	4.6% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	9.8% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP	4.9%	4.9% ¹⁶	4.9%	4.7% ¹⁶	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€9 637	€10 266 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€10 547	€11 096 ¹⁵	€7 741 ^d	: ¹⁵
		ISCED 5-8	€12 433	€13 256 ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	5.7%	5.3%	10.4%	9.6%	
	Foreign-born	14.9%	18.4%	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	41.8%	42.5%	38.6%	40.6%	
	Foreign-born	35.0%	36.8%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	86.0%	87.6%	70.7%	74.1%	
	ISCED 5-8	88.5%	91.3%	80.5%	84.9%	

Sources: Eurostat (see section 10 for more details); OECD (PISA).

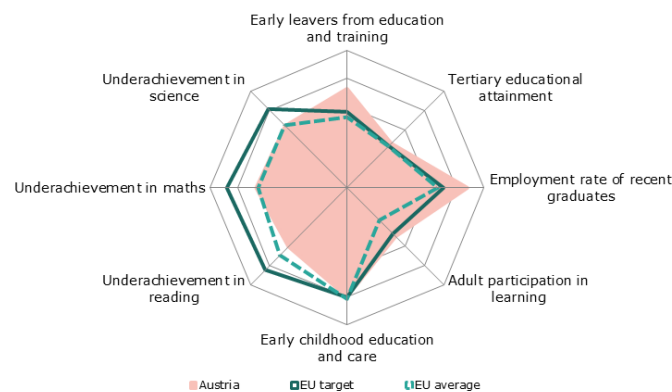
Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source;

d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers by the outer ring) and a minimum (the weakest performers by the centre of the figure).

2. Highlights

- Austria has an ambitious new reform programme, although it does not always directly build on previous reforms.
- Austria has recently invested heavily in higher education, reforming its funding system to boost quality.
- Austria has a comprehensive approach to citizenship education and aims to promote a holistic concept of citizenship.
- While Austria continues to spend 5 % of GDP on education, the outcomes do not match the spending levels yet.
- Those from poorer socio-economic and/or migrant backgrounds continue to have weak education outcomes.

3. Investing in education and training

Austria's spending on education remains relatively stable, in line with the EU average.

The share of general government expenditure stood at 9.7 % in 2013 and 9.8 % in 2016. Between 2007 and 2016, the share of local spending increased from 1.1 % to 1.4 % of GDP, while spending by the provinces (Länder) has remained stable at 1.6 % and at national level at 3.3 %¹. The allocation of funding to different educational levels has also remained rather stable². Austria spends a much smaller share on pre-primary education than comparable countries such as Sweden or Denmark. The share of expenditure on secondary and tertiary education is about half that of the Netherlands, Denmark and Finland³. The new government's reform programme envisages reviewing the formula for distributing funds to different education levels (see Box 1). Based on Purchasing Power Parity, Austria outspends both the EU and the OECD average by about one third⁴. This is considerably more than most other EU countries, on a par with traditionally high-spending countries such as Denmark and Sweden but more than the Netherlands and Finland. However, while Austria is among the countries with the highest education expenditures, it achieves only moderate education outcomes in an international comparison of basic skills (European Commission, 2017).

Austria is expected to see both its school population and the proportion of pupils with a migrant background increase. Austria's school-age population (6-18 year-olds) is forecast to increase by 17 % between 2015 and 2040 – an increase from the 1.09 million pupils in this age category in 2017 to about 200 000 by 2040. Net migration is expected to remain high⁵; a large proportion of the increase in the school-age population will be from children with a migrant background.

¹ General government expenditure by function (COFOG) [gov_10a_exp].

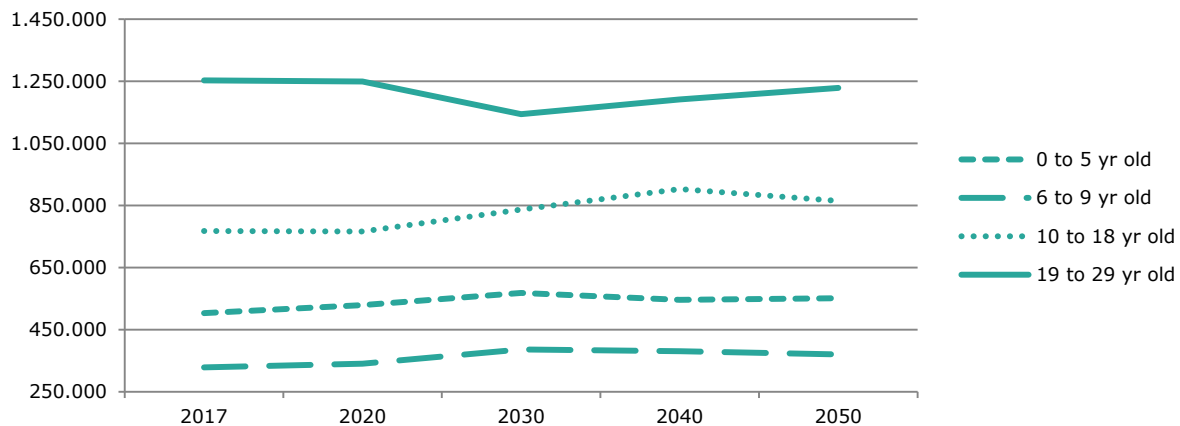
² General government expenditure by function (COFOG) [gov_10a_exp], deflated.

³ In comparison to the EU average, Austria has a higher share of the population aged 15-64 with upper secondary and post-secondary non-tertiary education, but a smaller proportion with tertiary education.

⁴ Austria USD 14 549; EU USD 10 897; OECD USD 10 759; Denmark USD 12 785; Sweden USD 13 219, Netherlands 12 495 and Finland 11 381 (OECD Education at a Glance 2017, Table B1.1).

⁵ It is expected to decrease however from about 45 000 in 2020 to 27 000 in 2040 according to Eurostat [proj_15nanmig]

Figure 1. Demographic projections of young in education age (0-29 years) 2017 – 2050



Source: DG EAC, based on data from Eurostat. Online data code [proj_15npms](#).

4. Citizenship education

Citizenship education is taught both as a separate subject and as a cross-curricular theme. Introduced as a cross-curricular principle 40 years ago⁶, citizenship education was brought more explicitly into an integrated subject known as ‘history, social sciences and citizenship education’ in 2008 following the lowering of the voting age to 16 in 2007. In the 2016 amended regulation, four out of nine compulsory modules under this subject cover citizenship fully or predominantly (Eurydice, 2017). Furthermore teaching citizenship has been advanced from eighth grade to sixth grade to ensure the timely education of young voters.

Austria delivers citizenship education in a form common to other EU countries. The 2017 Eurydice study shows that the Austrian curricula for primary, secondary and school-based vocational education and training (VET) are similar to those of most other EU countries. They cover such issues as ‘interacting effectively and constructively with others’ and ‘thinking critically’. Some issues, including ‘emotional awareness’, ‘flexibility/adaptability’ and ‘inter-cultural skills’, are treated less fully. To encourage students to act in a socially responsible manner, Austria concentrates mainly on solidarity and respect, both for human beings and for human rights and non-discrimination at all levels (ISCED 1, 2 and 3). Competences for acting democratically are comprehensively covered. Parents are fully included in school governance structures.

Based on national guidelines, testing is conducted at school level and teachers are not specifically trained for citizenship. The central authorities have issued guidelines on classroom assessment in citizenship education at primary and secondary levels. It focuses on knowledge and skills but not on attitudes. There are no national tests. As citizenship is not a stand-alone subject, the approach is to promote these competences to all teachers. In this context, the government has established a Federal Centre of Societal Learning to improve the quality of teaching and enrich research into teacher education⁷. Teachers in initial teacher training have to take citizenship, but citizenship teachers normally have bachelor or master degrees in ‘History, social studies and citizenship education’.

The last major reform of citizenship education, in 2013, aimed to promote a holistic concept of citizenship. The reform was based on the findings of an expert group representing stakeholders⁸. The new curriculum was first tested in the academic year 2015/2016 in 40 lower secondary education schools in all nine provinces with support from the Ministry of Education and

⁶ General Ordinance ‘Citizenship education as a cross-curricular educational principle’, Bundesministerium für Unterricht und Kunst 1978.

⁷ Established in 2013, the ‘Bundeszentrum für Gesellschaftliches Lernen’ has influenced initial and continued teacher training at all levels and in all school types through its didactic and basic scientific research. It is at the centre of a network including all institutions involved in teacher training, and communicates among other things through conferences with teachers and by developing competence-oriented teaching material.

⁸ These stakeholders represented central and provincial government, teachers, head teachers, the Austrian Centre for Citizenship Education in Schools, the National Youth Council and key university professors actually writing the curriculum.

the Austrian Centre for Citizenship Education in Schools ('Polis'). It was then made part of the policy mainstream with only minor amendments. Teaching of citizenship and history are closely linked, the approach to both subjects being based on shared principles (Eurydice, 2017). The current government is promoting as integration measure mandatory education in values during reception education of migrants and refugees.

5. Modernising school education

Austria's early school leaving rate fell continuously between 2007 and 2016, but increased again by 0.5 percentage point in 2017 to 7.4 %. While this remains well below the EU average and the national target for 2020 of 9.5 %, analysis of the increase shows that it has occurred particularly in towns and suburbs. While the rate among foreign-born pupils has continued to drop, in 2017 they were still more than three times more likely to leave school early than native-born pupils (18.4 % vs 5.3 %).

Participation in early childhood education and care (ECEC) has increased in Austria but quality issues remain. Attendance by 4 year-olds reached 94.9 % in 2016, close to the EU average of 95.3 %; for 5 year-olds it has already surpassed the EU average, reaching 97 %. Participation by under 3 year-olds increased between 2010 and 2016 by 8 pps. ECEC is administered at local level, but the provinces and federal governments also have responsibilities. The new government has announced a series of measures to improve both participation in ECEC and its quality. In September 2018 it intends to establish a compulsory framework through an agreement between the federal and the provincial level, and to include clear definitions of education goals. These will cover preparation for further education, standardised key competences in the German language, and a definition of common values. Learning German is central: there will be a standardised survey of each child at the age of 4, which will be followed by 2 years of compulsory German language training and further support, if required. Sanctions against parents are envisaged if compulsory measures are not complied with. The government programme also includes setting standards for infrastructure, group size, the qualification of different staff categories and initial and continued training of staff (Austrian government, 2017a).

Socio-economic status continues to have an important influence on education outcomes. Recent national and international test results, in particular from the 2016 Progress in International Reading Literacy Study (PIRLS) on the reading competences of 10 year-olds, confirm significant performance gaps. The difference in test results between those from the wealthiest and poorest socio-economic backgrounds has continuously widened since 2006 (BIFI&BMBWF, 2017). While overall test results and those of native-born pupils have improved, the results of those with a migrant background have remained static. Moreover, national testing of the 'education standards' (Bildungsstandards) continues to show that socio-economic and/or migrant backgrounds have a marked influence on education outcomes (BIFI&BMBWF, 2018)⁹. Austria received the following country-specific recommendation from the Council of the European Union in 2018: 'improve basic skills for disadvantaged young people and people with a migrant background' (Council of the European Union, 2018).

Box 1: Vienna to set up college for 1 000 young refugees

Vienna, Austria's capital, has in 2016 established a college for young refugees aged 15-21 to ease their transition into the regular education and vocational training system. The college has been co-funded by the European Social Fund (ESF).

'We don't let young people down irrespective of their origin. The Viennese Youth College is a unique education offer in Austria providing opportunities and a perspective for young people to make them independent quickly either through education or a job'. says councillor Jürgen Czernohorsky, who is in charge of integration.

⁹ Socio-economic background contributes overall about 40 % (25 percentage points) to the performance gap of migrant or non-German-speaking students (BIFI&BMBWF, 2018). According to Breit/Schneider, at 40 score points this corresponds to about one school year or grade.

The college has been designed to accommodate a total of 1 002 and offers actually 750 places. The training is a highly modular — and thus flexible — system on a monthly basis. In addition to career counselling, the syllabus includes German, English, mathematics and basic IT classes in small groups of 15 students.

The cost of the project amounted in the first year to EUR 6 million, going down to 4.8 million in the third year. The ESF co-finances 50%. Since the start around 2 000 young people were trained and more than 700 could successfully be integrated into a regular school, work place, other education or a labour market programme.

Information under <https://www.vhs.at/de/projekte/jugendcollege>

Only a small fraction of pupils aged 10-15 attend separate schools for pupils with special education needs. Numbers in segregated education at fifth grade fell from 4 600 in 1980/1981 to 1 500 in 2015/2016, or from 3.9 % of enrolments to 1.8 %. The underlying philosophy regarding education of those with special educational needs changed over this period to reflect the UN Convention on the Rights of Persons with Disabilities, which calls for fully inclusive education. Austria ratified it in 2008. However, the current government programme calls for strengthening special needs schools and reintroducing specialised training for teachers.

Digital skills in Austria have continuously improved and are above the EU average, though below the level of the Nordic countries. Austria is part of the cluster of EU countries with average performance on the adult population's digital skills (European Commission, 2018b). Even so, Eurostat's composite indicator on digital skills for 16-74 year-olds improved by 2 pps in 2018 over the previous year. Austria remained in eighth position in the EU. The digital skills of those in jobs or looking for work have not shown any progression over the last 3 years, in line with the overall EU trend. Though it has a higher proportion of people with 'above-average' basic skills (the highest category) than the rest of the EU, Austria still trails considerably behind the Nordic countries and the Netherlands.

A new Master Plan for Digitisation, announced in September 2018, builds on actions under the previous digitalisation strategy, 'School 4.0'. Under the latter various actions have already been implemented: (1) a new subject 'basic digital education' was introduced at lower secondary level this year, (2) a pilot project started in primary school providing an initial programming experience, (3) a modular teacher training on digital skills and digital didactics ('digi.folio') was set up combined with peer learning in 400 schools on the use of tablets while the school development network 'eEducation' was expanded, (4) teacher training is reinforced through the setting up of 'Education Innovation Centers' as virtual learning areas in teacher training colleges, and (5) digital text books in secondary school became e-books. The new Master Plan for Digitisation in education has three areas of intervention. Under 'Software – pedagogy, teaching and learning content' digitalisation will be introduced into all subject areas and systematically incorporated into revised curricula. Second, infrastructure and availability of mobile end devices is brought up to a unified and comparable standard allowing nationwide use in schools. And, thirdly, under 'Teachers - training and further education', e-content and innovation is systematically introduced into teacher training.¹⁰

Box 2: Education reform agenda of the new government

The government's wide-ranging reform agenda partially reverses the direction of previous reforms, placing a particular focus on standardised testing and use of tracking and changing the approach to inclusion. The government programme contains 115 measures specifically on education. Measures to strengthen ECEC are described above. Access to primary school will depend on standardised testing of school readiness, with a particular focus on German: if pupils fail, they get German lessons in separate classes before they can enter the regular school system.

¹⁰ For more information: <https://www.bmbwf.gv.at/presseunterlagen/masterplan-digitalisierung/>.

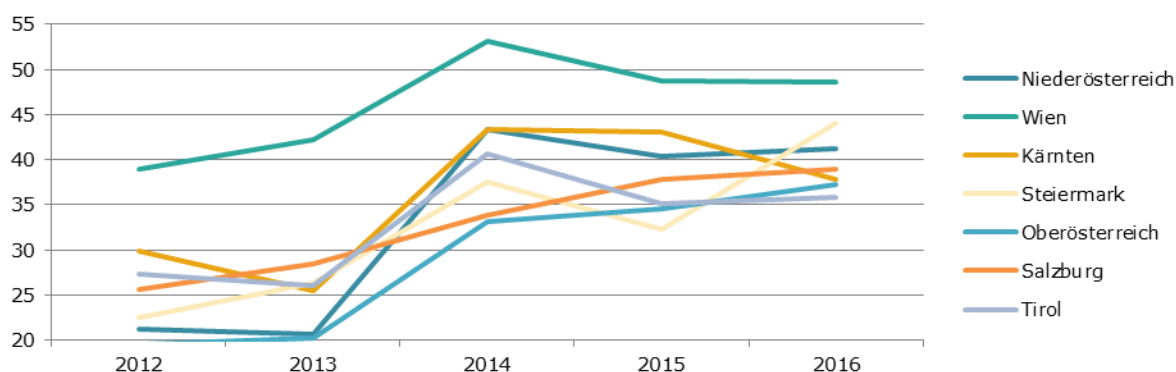
Standardised testing, previously undertaken in fourth and eighth grades, is brought forward to third and seventh grades. Such testing will determine the need for intensified support, but may also have an influence on subsequent tracking decisions. To supplement the central standardised school leaving examination (Matura), standardised regular testing based on curricula to document progress is also envisaged. The New Secondary School, the main lower secondary school leading mainly to VET education which was only recently introduced, will be reformed. The reform will reintroduce a 'performance group' approach within classes and abandon structural team teaching – a crucial element of the previous reform – in core subjects. Training of teachers for special educational needs will be strengthened, while new schools for the exceptionally gifted will be introduced.

The government programme announces a comprehensive review of all legislation and all curricula. All legislation in force should be reviewed and, as quickly as possible, all administrative acts checked to verify if they are necessary and practical. All curricula are to be reviewed and updated. A new comprehensive law for all teaching staff will be drawn up covering both federal and regional responsibilities. Common legislation and definitions should in particular be extended to staff in ECEC. Harmonised criteria and a new formula for distributing resources to different school types will be developed.

6. Modernising higher education

Austria has reached the national and EU targets for tertiary attainment but there are still wide participation gaps: between men and women, foreign- and native-born students and those from privileged and disadvantaged socio-economic backgrounds. Austria already reached the EU 2020 target of 40 % in 2014 and in 2017 its tertiary educational attainment rate was 40.6 %. While both male and female participation have improved considerably, the gender gap has widened from 0.2 pps in 2008 to 6.3 pps in 2017. Similarly, between 2010 and 2017 the gap between native- and foreign-born students increased from 1.1 pps to 5.7 pps, even though on average across the EU it narrowed considerably from 10.5 pps to 3.8 pps. Relatively few graduates come from poorer socio-economic backgrounds (European Commission/EACEA/Eurydice, 2018b). Graduation rates in Austria's provinces have converged, with Styria showing the most impressive increase, from 22.5 % in 2012 to 44.1 % in 2016¹¹ (Figure 2).

Figure 2. Tertiary attainment by NUTS 2 region in per cent



Source: DG EAC, based on data from Eurostat. Online data code: *edat_ifse_12*.
Burgenland and Vorarlberg have been excluded since no figures are available for 2012 and 2013.

¹¹ There is a big increase between 2013 and 2014 due to the reclassification of a part of upper secondary VET from ISCED 4 to ISCED 5 or short-cycle tertiary education. This explains part of the sharp overall increase between 2012 and 2016.

Austria has more graduates in business/law and social sciences and fewer in health and welfare. Austria has a larger share of graduates than the EU average at:

- bachelor level, particularly in social sciences;
- master level in social sciences, business, law, and information and communications technology (ICT); and
- doctorate level in business and law, ICT and engineering.

Compared to the EU average and some reference countries, Austria has a significantly smaller share of PhD graduates in natural sciences/mathematics.

Austria is increasingly attractive for foreign students. Austria is becoming more attractive to study and obtain a degree in. The share of students enrolled from abroad remains stable at about 16 %, one of the highest in the EU. Those enrolled in degree programmes increased from 10.7 % in 2013 to 12.1 % in 2015. Only the UK, the Netherlands and Luxembourg showed higher shares.

More resources, better targeting of students and structural reforms including improved career opportunities for scientific university staff are meant to improve higher education.

The new government has considerably increased resources for higher education, which had remained little changed over recent years. It also introduced capacity-based financing¹² in February 2018, an initiative already prepared by the previous government. This will better match funding directly to the number of study places offered, which universities no longer have full autonomy to determine. The government programme envisages additional measures to improve study conditions, expand access to higher education for talent from all backgrounds, and introduce fees, grants and an orientation service.

7. Modernising vocational education and training

With participation in VET declining, Austria is pursuing intensive efforts to make the dual vocational pathway more attractive for both companies and young people by better aligning it with the evolving needs of the economy, notably digitalisation. Even if the proportion of upper secondary students (ISCED 3) in VET has been declining slightly in recent years (from 70.2 % in 2013 to 68.8 % in 2016), it remains high, at 20 pps above the EU average. The employment rate of recent VET graduates is among the highest in the EU (89.2 % in 2017). The Austrian Federal Economic Chamber has announced a programme of 'Digitalisation of apprenticeship training' (Wirtschaftskammer, 2018), financed by the Ministry of Digital and Economic Affairs. The programme includes measures to increase the digital skills of learners and trainers in dual VET. The necessary tools are being developed and implementation started in spring 2018. In addition, the job profiles and training regulations in dual VET are being updated and adapted to new requirements to prepare for digital change, Industry 4.0 and other developments. The 2017 apprenticeship occupation package (Lehrberufspaket) comprises eight modernised apprenticeships. By 2020, it is planned that another 50 apprenticeship occupations (one quarter of all dual VET programmes) will be adapted or newly introduced to better match apprenticeship programmes to digitalisation (Cedefop, 2018).

VET is crucial to getting people with a migrant background into work. Ongoing initiatives and programmes integrate refugees into formal VET by assessing and validating their skills and qualifications gained abroad. An essential aspect is to help young refugees gain an apprenticeship diploma and choose the appropriate occupation.

8. Promoting adult learning

In line with the Council of the EU's 2016 Recommendation on upskilling pathways, Austria is implementing its Adult Education Initiative (Initiative Erwachsenenbildung). The initiative, entering its third programming period (2018-2021), enables adults who lack basic skills or never graduated from lower secondary education to continue and finish their education free of charge. Overall participation in adult learning in Austria is above the EU average (15.8 % vs 10.9 %). In 2017, 70 % of those aged 25-64 possessed basic or above-basic overall digital skills, above the EU average of 59 %.

¹² The new funding formula is a mix of basic and competitive indicators in three categories: (1) infrastructure and strategic development (39%), (2) teaching (32%) and (3) research (29%).

To underline the importance of skills acquired in all learning contexts and to foster adult participation in learning, in November 2017 the government published its strategy for validating non-formal and informal learning. The national strategy is in line with the Council of the EU's 2012 Recommendation on this issue¹³. For the first time, it offers a strategic framework for developing and coordinating these offers and related network-building. It aims to promote quality and trust, raise awareness and increase use of validation measures. The validation strategy will be developed and implemented (Federal Ministry of Education, Science and Research, 2017b) in close coordination with the 'Strategy for lifelong learning in Austria' and the 'Federal Act on the National Qualifications Framework in Austria'. The focus in 2018 and 2019 will be on promoting, disseminating and implementing the strategy. Four thematic working groups have already been established (on quality assurance, professionalisation, development of an online portal and system synergies) that should deliver results by the end of 2018. In 2019, the results should be put into practice before new working priorities are defined.

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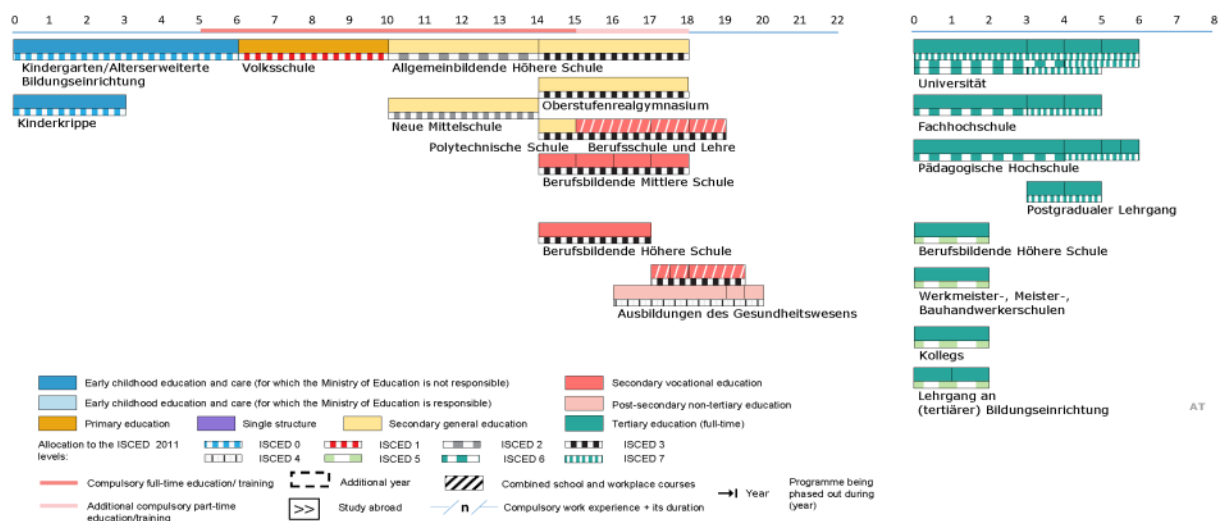
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams.* Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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BELGIUM

1. Key indicators

		Belgium		EU average	
		2014	2017	2014	2017
Education and training 2020 benchmarks					
Early leavers from education and training (age 18-24)		9.8%	8.9%	11.2%	10.6%
Tertiary educational attainment (age 30-34)		43.8%	45.9% ^b	37.9%	39.9%
Early childhood education and care (from age 4 to starting age of compulsory primary education)		98.4% ¹³	98.3% ¹⁶	94.2% ¹³	95.3% ¹⁶
Proportion of 15 year-olds underachieving in:	Reading	16.1% ¹²	19.5% ¹⁵	17.8% ¹²	19.7% ¹⁵
	Maths	19.0% ¹²	20.1% ¹⁵	22.1% ¹²	22.2% ¹⁵
	Science	17.7% ¹²	19.8% ¹⁵	16.6% ¹²	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)	79.0%	81.9%	76.0%	80.2%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	7.4%	8.5%	10.8%	10.9%
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	2.7% ¹⁶	:	3.1% ¹⁶
	Credit mobile graduates (ISCED 5-8)	:	: ¹⁶	:	7.6% ¹⁶
Other contextual indicators					
Public expenditure on education as a percentage of GDP		6.3%	6.4% ¹⁵	4.9%	4.7% ¹⁶
Education investment	ISCED 1-2	€8 084	€8 271 ¹⁵	€6 494 ^d	: ¹⁵
	ISCED 3-4	€9 825	€10 082 ¹⁵	€7 741 ^d	: ¹⁵
	ISCED 5-8	€12 531	€13 079 ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	8.7%	7.9%	10.4%	9.6%
	Foreign-born	17.5%	16.4%	20.2%	19.4%
Tertiary educational attainment (age 30-34)	Native-born	46.2%	48.8%	38.6%	40.6%
	Foreign-born	35.2%	37.6%	34.3%	36.3%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	67.4%	68.7%	70.7%	74.1%
	ISCED 5-8	86.2%	89.4%	80.5%	84.9%

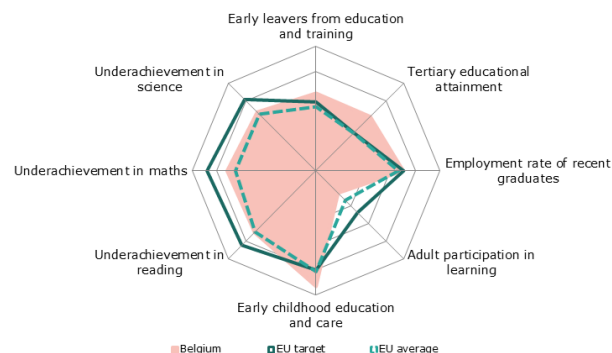
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; b = break in time series, d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Ambitious reforms of the school system have been launched to reduce inequalities and improve outcomes. Timing and budget challenges should be overcome to successfully implement them. Successful implementation will also require stakeholders to take full 'ownership' of the reforms.
- To reduce inequality in education, teachers need more support to deal with diversity in the classroom.
- Belgium is experiencing strong growth in the school-age population. This has highlighted the need to extend and modernise education infrastructure.
- The employment premium for graduates of tertiary education is high and increasing.
- The share of science, technology and mathematics (STEM) graduates is one of the lowest in the EU.
- Authorities place strong emphasis on citizenship education.

3. Investing in education and training

In 2016, Belgian general government expenditure on education as a share of GDP was among the highest in the EU at 6.4 %. In the period 2011-2016, general government expenditure on education increased at pre-primary and primary level (+10.2 %) and secondary level (+6.4 %), but decreased at tertiary level (-1.6 %). In 2017 and 2018, spending on tertiary education increased again.

The population of Belgium is growing, and the number of 3 year-old children reached an all-time high in 2018. Growth in the numbers of young people will be fastest among disadvantaged groups, especially students from an immigrant background (OECD, 2017a). This makes it necessary to extend and modernise school infrastructure, and increase teacher support and training for those working with vulnerable groups. In the French community '*Fédération Wallonie-Bruxelles*' (BEfr), initial 2018 budget plans allocate EUR 83 million for the school reform '*Pact for excellence in education*' ('*Pacte pour un enseignement d'excellence*'), EUR 23 million of which will be used to fund 33 000 new school places between now and 2020. In 2017, the Flemish community (BEfl) launched a new infrastructure programme for a total of EUR 300 million, and a plan for a further EUR 200 million in investment between 2017 and 2019.

4. Citizenship education

Belgium places strong emphasis on citizenship education. Belgium offers the same curricula for citizenship education to students in general and school-based vocational education and training. BEfr (in schools offering a choice between different courses in religion and moral studies) is one of only two systems (together with France) where citizenship education is a compulsory separate subject for all grades of general education (Eurydice/European Commission/EACEA, 2017). It is also integrated into other subjects. BEfr recently introduced a new, compulsory course in public education on philosophy and citizenship at primary and secondary levels. In BEfl, citizenship education is incorporated into the curriculum as a cross-curricular theme. Secondary school staff are responsible for deciding how to teach its broad objectives (e.g. taking responsibility, showing respect, being critical) as well as more specific objectives. Civic education is also covered by the new learning objectives for secondary education that are being drafted. In June 2017, a new '*Action plan for the prevention of radicalisation and polarisation*' was adopted, one of the aims of which is to strengthen the capacity and resilience of pupils and teachers against radicalisation. The action plan also seeks to help pupils and teachers build inclusion and diversity in the classroom. In early 2018, education authorities launched two related calls for projects for a total of EUR 200 000. The educational authorities are being supported in this action plan by external partners such as the Educational Network of Islam Experts. Belgian education authorities have developed or supported

the creation of online platforms for educators (in BEfr and the German-speaking community, BEde). These portals provide support for citizenship education and peer-to-peer platforms where teachers can share knowledge and resources ('KlasCement' online platform in BEfl). BEde's 2016/2017 'Action plan for intercultural and religious dialogue' outlines a project-based learning approach for citizenship education. In the action plan, BEde authorities set out specific skills for citizenship education that all teachers must have.

5. Modernising school education

In 2016, Belgium reached its national Europe 2020 target to reduce the early school leaving (ESL) rate to 9.5 %. It also maintained these results in 2017 thanks to a variety of measures. The national ESL rate in 2017 was 8.9 %, below the 10.6 % EU average. BEfl reported a slight increase in the 2016 ESL rate compared to 2015. This may partly be explained by jobs growth, making the labour market more attractive for those not motivated to continue in education (Onderwijs Vlaanderen, 2017). Regional disparities in ESL rates are high. The BEfr 'Pact' aims to achieve a 50 % reduction in the ESL rate by 2030 (NRP, 2018). Pupils' guidance will be strengthened in BEfl, as will centres supporting pupils from disadvantaged backgrounds. The 'Strategy for literacy' (*Strategisch plan geletterdheid 2017-2024*) aims to significantly raise literacy levels among pupils at risk of dropping out of school. The full roll-out of dual vocational education and training from September 2018 also aims to reduce ESL rates by increasing the motivation of students (see Section 7 below). BEfr strengthened the support it gives to schools with large proportions of disadvantaged pupils to help improve pupils' outcomes and reduce ESL rates. Funding allows these schools to recruit additional staff for classroom teaching, individualised support, homework supervision, training and team teaching. From September 2018, schools must adopt targets and a monitoring plan covering priorities such as the school's strategy to fight failure, reduce ESL rates and reduce the number of pupils that repeat a grade. In BEfr, the cost for public authorities of delayed progress through school (often due to pupils having to repeat a grade) was estimated at 10 % of the education budget (Fédération Wallonie-Bruxelles, 2017)¹⁴. The Brussels region launched the 'School contract' to improve relationships between young people, schools and residential areas as well as the attractiveness of schools that have a bad reputation. It funds extra-curricular projects aimed at reducing ESL rates.

Participation in early childhood education and care (ECEC) remains very high, at 98 % in 2016. However, as the share of the population from immigrant backgrounds increases, ECEC has struggles to reach families in poverty and deal with this increasingly multi-cultural population. Enrolment gaps in ECEC between different socio-economic groups are significant at the age of 3. BEfl supports increased enrolment and attendance in ECEC for children from the age of 3, under the 2016 'Action plan for participation in pre-primary education'. The plan includes working with parents and allocating a premium of EUR 950 for each child of non-Dutch speaking parents to improve the child's language skills. Another – recently extended – project, 'Small children, big opportunities', teaches future pre-primary teachers how to deal with deprivation and diversity (NRP, 2018). Funds for reception classes for non-Dutch speaking newcomers to mainstream education were also increased. Both BEfr and BEfl are making regular attendance in ECEC for 5 year-olds a compulsory condition to access primary education. In September 2017, BEfr increased staff resources for primary and special-needs education. Authorities have also initiated a pilot project to offer free meals in disadvantaged pre-primary schools. These measures are in line with international evidence showing that extra support is most effective in early childhood. This is likely to improve the current situation where, despite having spent their entire childhood in Belgium, many native-born with foreign-born parents have limited proficiency in the language of instruction when they enter primary education (OECD, 2017b).

Educational performance varies between schools, communities, socio-economic and immigrant backgrounds, and genders (European Commission, 2017 and 2018a). School segregation tends to go hand-in-hand with unequal access to resources: Belgium is one of the few countries where school principals report fewer teacher resources in disadvantaged schools than in advantaged ones (OECD, 2018). Managing diversity in pupils calls for improvement (Onderwijsinspectie, 2018). In the 2016 Progress in International Reading Literacy Study (PIRLS),

¹⁴ In 2014/2015, about one fifth of BEfr pupils at the end of their primary education, and nearly three out of five of those ending secondary education had experienced a delay in their education.

the results of BEfr and BEfl were below the EU average. BEfr scored the lowest in the EU, and BEfl scores were much lower than in the 2011 study. The most recent OECD PISA survey showed that in BEfr the worst-performing schools concentrate 80 % of pupils with a delayed education pathway, mostly due to grade repetition. This compares with a figure of 20 % in the best-performing schools (Lafontaine, 2017). BEfr has the highest proportion of pupils with academic delay among OECD countries, strongly impacting on performance. In BEfl, the value of certificates of primary education across schools may be unequal. The long-term impact of primary education on future educational performance has been demonstrated. The 2018 European Semester country-specific recommendations to Belgium included the following: 'Pursue the education and training reforms, including by fostering equity' (Council of the European Union, 2018).

On-going school reforms aim at improving basic skills, tackling inequalities and improving efficiency and governance (European Commission, 2017 and 2018a).

The latest measures under the 'Pact' that have been taken in BEfr include strengthened central governance and increased autonomy for schools. 'Improvement objectives' for the school system were adopted, together with a framework for corresponding schools' six-years plans. These plans must cover ESL and collaborative teaching, and are being piloted from September 2018. Support measures for significantly underperforming schools are being planned, and pupils will benefit receive individualised support. The planned extension by one year — from pre-primary to the ninth grade included — of the common, multi-disciplinary curriculum for all pupils aims to strengthen basic skills and reduce inequalities and grade repetition. It responds to OECD recommendations to Belgium to delay tracking (OECD, 2017b). Guidelines for the future curriculum are being drafted while leaving some flexibility to schools. Implementation of the curriculum will require recruitment of more mathematics and science teachers, subjects where there are already teacher shortages. It will be vital that teachers get training and that schools have enough time to prepare. Stakeholders' reactions to these reforms are divided. Successful implementation will require good timing, sequencing the reform phases in the correct order, and a genuine sense of ownership of the reforms by stakeholders. School heads insist that their autonomy is necessary for the reform to be successful (La Libre, 2018). Negotiations on the 'Pact' have reduced its initial ambitions, and there is uncertainty as to its future after the 2019 general elections. A 2017 BEfr decree aims at increasing the participation of pupils with special educational needs (SEN) in mainstream education by requiring every mainstream school to ensure 'reasonable accommodation' for such pupils. For this to be effective, appropriate teacher training will be needed. BEfr has increased resources for school integration of — and language support for — newly-arrived immigrants. These resources will be used for immigrants until they are able to join mainstream compulsory education. In BEfl, the modernisation of secondary education has begun. Measures include a new, centrally validated end-of-primary-education test. This test will be part of internal quality assurance and help to guide pupils into secondary education. The legal process for the revised structure of secondary education was extended in 2018, with a planned entry into force in September 2019. The range of subjects on offer is to be reduced and transition to higher education or the labour market will be made easier. It is not clear to what extent mobility between study fields will be improved. Early tracking of pupils remains a concern. A new support model for SEN pupils with special educational needs in mainstream education was introduced in September 2017 ('M-decree') to improve guidance and support for pupils and teachers. In 2018, BEfl increased subsidies to higher education institutions whose students offer tutoring for school pupils.

BEde applies a specific marking system for newly-arrived pupils with an immigrant background who have not reached a sufficient level of German. Additional funding has been granted to help these pupils.

There is a teacher shortage and limited data to help plan for teacher supply and demand in the future (European Commission/EACEA/Eurydice, 2018a).

For instance, data on teachers retiring, prospective teachers, or on the demand for teachers are not used systematically in Belgium. Considering the shortages in some subjects and geographical areas, the ageing teacher population, the high leaving rates from the profession, and the growth in the pupil population, forward planning should be more systematic. Measures to encourage the most suitable students to enter the teaching profession could help reduce the high leaving rate among newly qualified teachers. In 2016/2017, Belgium was among few EU countries without a compulsory induction programme for new teachers.

Since 2017/2018, entry examinations to initial teacher education (ITE) programmes were made compulsory in BEfl to reduce later dropout rates. From September 2019, authorities will strengthen their ITE programmes. The programmes will be exclusively offered by universities, and feature improved content on didactics, class management, multilingualism and diversity. Pathways to becoming a teacher will be extended to people already in the workforce. A new training session for teacher trainers was launched in 2018, with the participation of all institutions offering training programmes. An intensive induction period is to become compulsory. Permanent appointment will become possible after 400 instead of 600 days of work. Salary conditions have been improved. In BEfr, ITE will be extended from three to four years (five years for upper secondary teachers), possibly from September 2019. The possible impact of this on the supply of teachers and the sustainability of funding are concerns, and stakeholders have differing views on its impact. The measure is likely to increase the attractiveness of the profession and help reduce the proportion of young teachers who drop out. In December 2017, authorities increased funding for the continuing professional development of teachers. In both communities, results and follow-up to surveys on teachers' missions and workload are awaited. To improve schools with a high concentration of disadvantaged pupils, the OECD recommends that Belgium use incentive schemes to attract teachers and promote teacher training on how to teach in multi-cultural settings (OECD, 2017b). Ensuring sufficient ITE in the classroom is also essential, including to work with pupils from diverse backgrounds.

In 2017, the proportion of young Belgians aged 16-24 with basic or above basic digital skills levels (78.8 %) was lower than the EU average (81.9 %). This contrasts with the skill levels of people aged 25-64, where Belgians score better than the EU average (see section 8 below).

A new teacher training programme on digital education has been initiated in BEfr. 'Digital Wallonia' and 'Ecole Numérique – virtual school' joined 'Class code', an online training module. BEfr is planning to integrate digital skills in the extended common curriculum (see above). Further investment is needed to improve the use of digital tools in teaching (NRP, 2018). In BEfl, the renewed STEM (science, technology, engineering and mathematics) action plan 2020-2030 will strengthen the use of digital media tools and the 'Strategy for literacy 2017-2024' strongly focuses on digital literacy for all.

6. Modernising higher education

Tertiary educational attainment is high but there are wide disparities among socio-economic groups. In 2017, the tertiary educational attainment rate slightly increased to 45.9 %. Belgium is on track to reach its national target of 47 % by 2020. There are wide disparities related to socio-economic and immigrant background, which are partly linked with grade repetition at school. While 48.8 % of the native-born population aged 30-34 have attained tertiary education, 37.6 % of the foreign-born population have done so¹⁵. BEfr is among the few tertiary systems in the EU where neither completion nor dropout rates are measured systematically (European Commission/EACEA/Eurydice, 2018b).

The employment premium for holding a tertiary education degree is comparatively high in Belgium (see Figure 2 below). The 81.9 % employment rate of recent graduates aged 20-34 in 2017 was above the EU average (80.2 %) for this cohort. The share of workers whose qualification is above the level required for their job is comparatively low, suggesting that there remains room to increase educational attainment (OECD, 2017b). This positive employment situation suggests that measures to increase tertiary attainment for people with an immigrant background (outlined below) are likely to promote social mobility.

¹⁵ Source Eurostat. Online data code: [edat_ifs_9912](#).

Figure 2. Employment premium for tertiary education graduates (ISCED 5-8) (2014, 2017)



Source: EU LFS, Eurostat. Online data codes: [edat_lfse_24](#) and [lfsa_ergaed](#).

Note: employment premium (positive or negative) is the comparison of the employment rate of recent graduates aged 20-34 having completed education 1-3 years before the survey with a high-level qualification diploma (ISCED levels 5-8) and who are currently not enrolled in any further formal or non-formal education or training with the employment rate of the 'working age' reference population —adults aged 15-64 holding a high-level qualification diploma (ISCED levels 5-8). A positive premium indicates that employment rate of recent graduates is higher, while a negative rate indicates that employment rate of recent graduates is lower, than in the reference population.

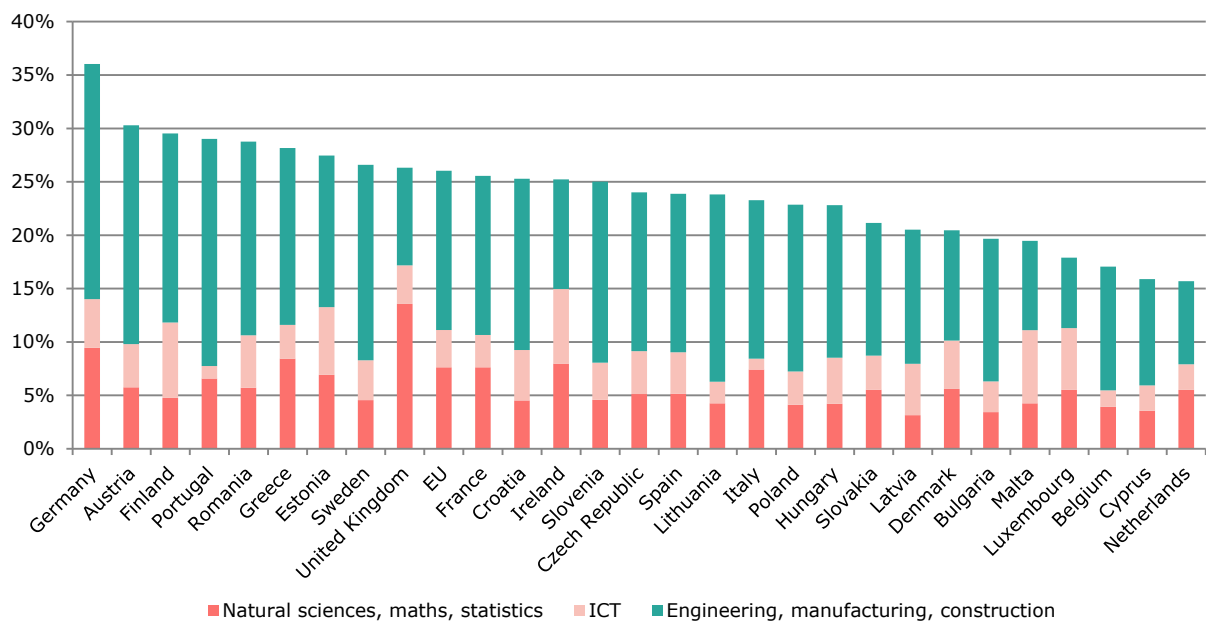
In response to the surge in migration in 2015, higher education institutions in BEfr adopted measures to improve the integration of refugees, including language classes, special programmes and funding for immigrant researchers. In 2017, BEfr revised its study allowances system for secondary and higher education students, to improve social fairness and better align the allowances with current costs of education. Students benefiting from a needs-based grant will no longer automatically lose their entitlement to a grant if they fail their course.

The share of STEM graduates is one of the lowest in the EU (see Figure 3 below). The 2018 European Semester country-specific recommendations to Belgium included the following: 'Pursue the education and training reforms, including by [...] increasing the proportion of graduates in science, technology, engineering and mathematics.' (Council of the European Union, 2018). In 2018, Belgium ranked 23rd in the EU (European Commission, 2018b) for STEM education. Authorities are developing plans to increase the share of STEM graduates and to develop digital skills. These plans include the BEfl 'STEM action plan', which authorities aim to renew for 2020-2030, and the 'Digital school plan' (2014-2020) in BEfr.

The proportion of female graduates in IT (information technology) is among the lowest in international comparison (OECD, 2017b). Shortages in these fields could become a barrier to growth and innovation (European Commission, 2018a). Providing girls and boys with objective and reliable career information about science-related careers could help improve the situation.

Quality assurance is being improved in BEfl. A new system is planned for 2019-2020, created in cooperation with stakeholders and the Accreditation Organisation of the Netherlands and Flanders. Guidance tests have been introduced at the end of secondary education in BEfl ('Columbus test'). As an alternative to admission tests, they help students make informed choices about higher education.

Figure 3. Graduates in STEM as a share of total graduates (2016)



Source: Eurostat, 2016. Online data code: [educ_uae_grad02](#).

7. Modernising vocational education and training

The share of upper secondary students in initial vocational education and training (VET) shows a slow but steady downward trend over time. In 2016, the share of ISCED 3 students in VET was 59.2 %, still about 10 percentage points above the EU average. In 2017, 63 % of people aged 25-64 possessed basic or above-basic overall digital skills (against the 59 % EU average).

Belgium continues to modernise the VET system by further implementing the dual VET pathway, expanding higher-level VET, and increasing its labour market relevance, but employment rates for VET graduates have declined. Employment rates of recent VET graduates declined in 2017 to 72.2 % from a 2016 rate of 73.1 % (EU average for 2017: 76.6 %). With the support of the European Social Fund (ESF), the piloting of dual learning continued in 2017 in BEfl. Its extension to more schools and fields of study is now planned, and it will be fully rolled out from September 2019 (Vlaanderen Onderwijs). BEfl is also developing higher-level VET to attract students who do not opt for tertiary education. BEfr also continues to develop its dual learning system: a common dual learning contract has been introduced. A new agency was created to steer implementation of dual learning and promote it (*'Office francophone de la formation en alternance'*). In addition, the Brussels Training and Employment Observatory was created to monitor the transition to employment and analyse training needs.

Box 2: Dual learning in BEfl

The ESF has provided significant support for the roll-out of dual learning in Flanders. It supports innovative projects, stimulates knowledge-building and increases the institutional capacity of dual learning. In total, the ESF has co-financed more than 60 projects in BEfl, accounting for a total budget of more than EUR 10 million, of which almost EUR 5 million came from the ESF.

8. Promoting adult learning

In 2017, participation in adult learning reached its highest level in 10 years (8.5 %). Nevertheless, it remains below the EU average (10.9 %). In 2015, 83.9 % of Belgian companies (compared to the EU average of 72.6 %) provided training to their employees, 53.9 % of whom participated (EU average participation rate: 40.8 %).

Adult learning is being strengthened in line with the 2016 Council Recommendation on Upskilling Pathways. BEfr has adopted a decree setting out new procedures for admission to adult education and new financial incentives for employers to train employees. It authorises Education Councils to take into account the applicants' working experience or training. BEfl is increasing the capacity of adult education training centres. Funding rules aim to support the use of output indicators and to give support to the most vulnerable groups. In 2017, the Brussels region introduced a new training bonus which encourages employers to train recently recruited low-qualified employees.

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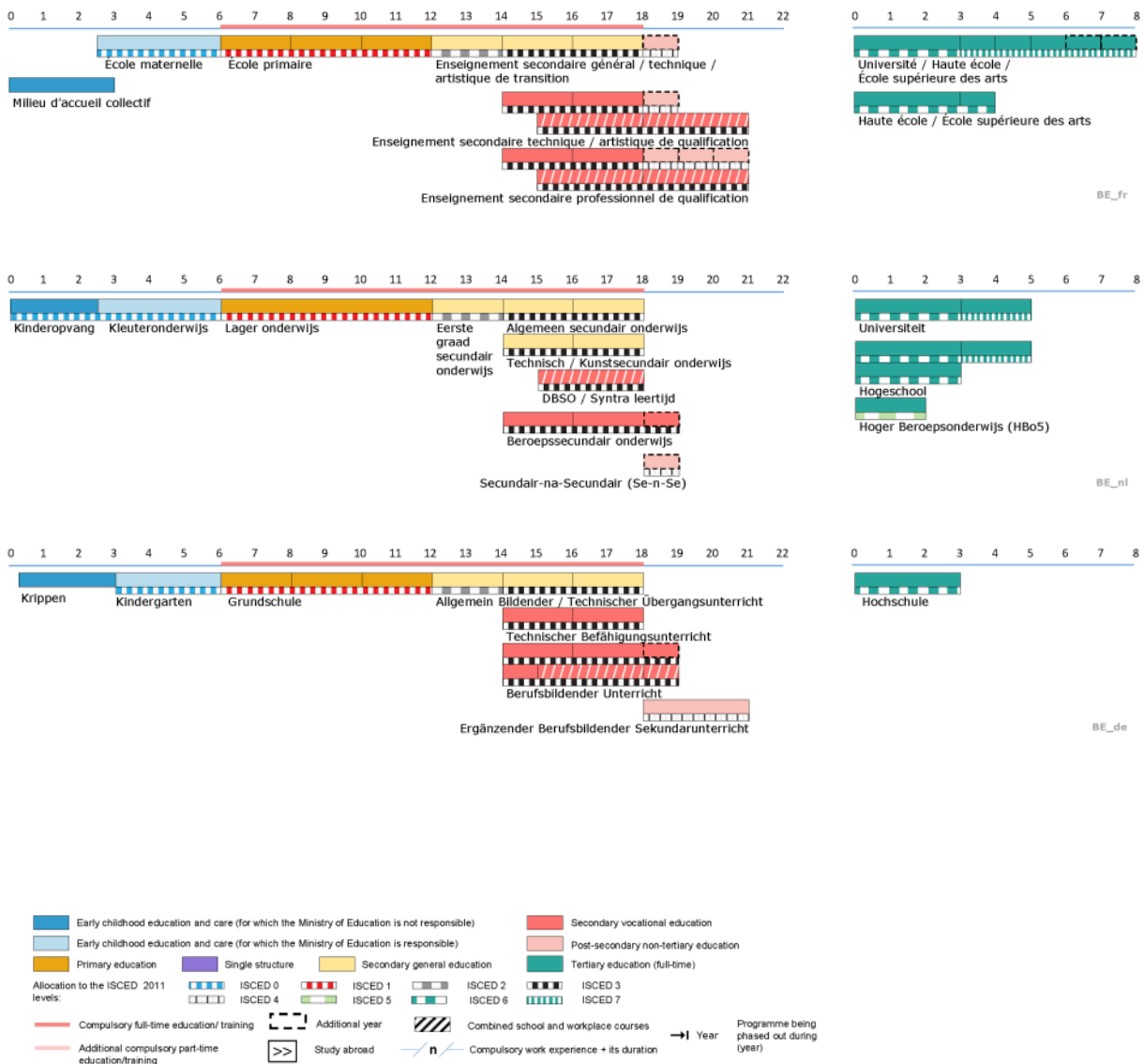
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

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BULGARIA

1. Key indicators

		Bulgaria		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		12.9%	12.7%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		30.9%	32.8%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		89.3% ¹³	86.5% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	39.4% ¹²	41.5% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	43.8% ¹²	42.1% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	36.9% ¹²	37.9% ¹⁵	16.6% ¹²	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)	65.4%	77.7%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	2.1%	2.3%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	7.4% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	1.5% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP	4.1%	3.4% ¹⁶	4.9%	4.7% ¹⁶	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€2 379	€2 388 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€2 477	€2 483 ¹⁵	€7 741 ^d	: ¹⁵
ISCED 5-8		€4 814	€5 050 ¹⁵	€11 187 ^d	: ¹⁵	
Early leavers from education and training (age 18-24)	Native-born	12.9%	12.8%	10.4%	9.6%	
	Foreign-born	:	:	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	30.9%	32.6%	38.6%	40.6%	
	Foreign-born	:	:	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	52.6%	61.0%	70.7%	74.1%	
	ISCED 5-8	74.5%	86.5%	80.5%	84.9%	

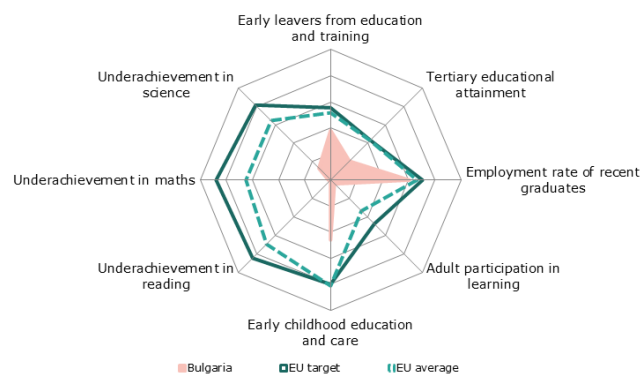
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Bulgaria is implementing reforms at all levels of education as this is a political priority. Although measures do not yet match the magnitude of the challenges, there is an increased focus on reducing early school leaving, increasing teacher salaries, introducing dual learning, improving digital skills and strengthening inclusive education.
- Bulgaria typically invests little in pre-primary and primary education, areas which are key for an equal start in life and for preventing income inequalities later in life. The funding model for schools was revised to allocate additional resources to disadvantaged schools.
- Bulgarian students' civic knowledge has increased. Recent measures seek to expand the provision of citizenship education.
- The challenge of Roma inclusion in education remains significant.
- The skills of graduates in higher education and vocational education and training insufficiently match the labour market needs. Participation in adult learning remains very low.

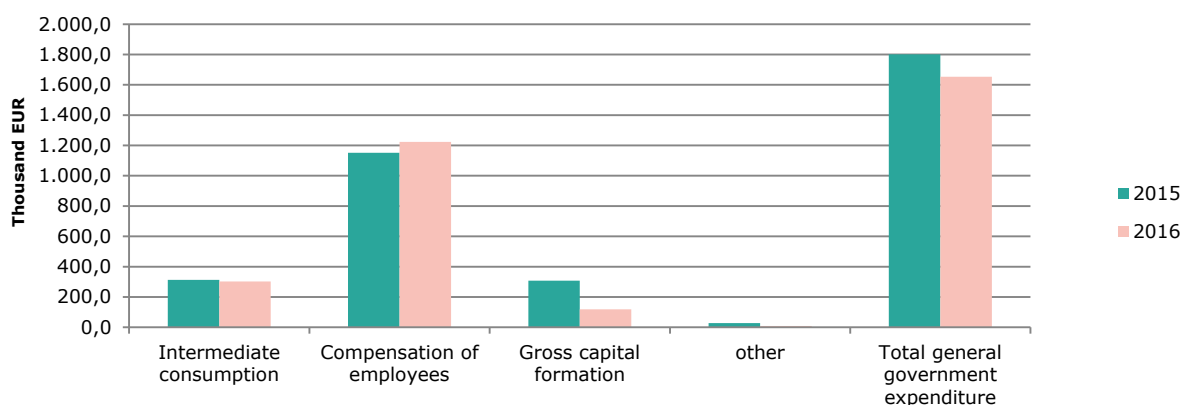
3. Investing in education and training

Spending on education was low in 2016 and impacted by the cycle of absorption of EU funds. In 2016 general government expenditure on education fell in real terms by 9.1 %, the steepest percentage decrease in the EU. As a result, spending on education dropped to 3.4 % of GDP from 4 % in 2015, significantly below the EU average of 4.7 %. Education as a share of total government spending remained at the same level of 9.8 %, below the EU average (10.2 %). These trends are explained by the sharp decrease in 'gross capital formation' (see Figure 2), which covers investment in educational infrastructure (e.g. buildings, computers, IT infrastructure). This was in part due to the closure of the EU's 2007-2013 multiannual financial framework in 2015 and the slow start of spending under the 2014-2020 programming period. This highlights the extent to which such spending in Bulgaria is dependent on EU funds. A commitment to double the salaries of teachers in pre-school and school education by 2021 (see Section 5) can be expected to drive major rises in the 'compensation of employees' category. The total cost for doubling teachers' wages over the period 2017-2021 is estimated at BGN 1.4 billion (EUR 715 million), equivalent to 1.4 % of Bulgaria's GDP in 2017 (IMF, 2018a).

Bulgaria typically invests little in pre-primary and primary education, areas which are key for an equal start in life. In 2016, spending on this level of education was equal to 0.7 % of Bulgaria's GDP, less than half the average of 1.5 % across the EU. It represented 23.1 % of total general government spending on education, compared to 31.7 % on average in the EU. Recent evidence shows that a large part of today's income inequalities in the EU are explained by inequalities of opportunity, which are, in turn, strongly associated with how much countries spend at pre-primary level (Checchi et al., 2015). Income inequalities in Bulgaria are among the biggest in the EU and the impact of parents' socio-economic status on students' educational attainment is strong. Evidence shows that the relationship between inequality and economic growth is largely negative through the negative impact that unequal opportunities have on human capital (WB, 2018). When measured as a percentage of GDP, Bulgaria's spending on secondary (1.7 %) and higher education (0.7 %) is more similar to the EU average (1.9 % and 0.7 %, respectively).

Bulgaria revised its funding model for school education to improve equity. Although the scope for making Bulgaria's public spending more efficient is wide, this is less the case for education, suggesting that more resources and better access to education could improve educational outcomes (IMF, 2018b). Since it introduced delegated budgets in 2007, Bulgaria has managed to improve the cost efficiency of its education spending (EC, 2017) by optimising the school network. However, the process did not cover higher education (see Section 6). In 2018, Bulgaria revised the school funding model to allocate more funding to disadvantaged schools, including those in rural areas, smaller schools and those with a concentration of disadvantaged students.

Figure 2. General government spending (COFOG) on education in Bulgaria



Source: DG EAC, based on Eurostat data and the Classification of the functions of government (COFOG). Online data code: gov_10a_exp.

4. Citizenship education

Bulgarian students' civic knowledge has increased. The International Civic and Citizenship Education Study (ICCS¹⁶) shows that in 2016 Bulgarian teenagers scored 485 points on average, 19 more than in 2009. However, this level is still below the average of 20 countries surveyed (517 points). 27 % of Bulgarian eighth graders have a very high level of civic knowledge (compared with the ICCS average of 35 %), while 22 % scored very low (ICCS: 13 %). Girls continue to outperform boys. Like other international surveys, ICCS confirms the strong impact of parents' socio-economic status on students' performance. In answering questions on values and attitudes, Bulgarian students showed less support for equal opportunities for women and men and for equal rights for ethnic minorities compared to the average among the 20 countries surveyed (MES, 2017). 84 % of teenagers in Bulgaria reported that they would vote in local elections in the near future, 79% would vote in national elections and 65 % in European elections. A higher than average proportion of Bulgarian students considers that working hard is important for good citizenship (53 % vs 42 %), but only 42 % consider that always respecting the law was very important (average: 59 %). The percentage of students who voted for class or school parliament was 56 % (survey average: 77 %).

Recent measures seek to provide more citizenship education. In Bulgaria citizenship education is integrated into social sciences in primary and secondary education (grades 3-7 and 11-12). It is also taught as a compulsory subject in upper secondary (grade 11-12) and as an optional subject in initial vocational education and training. 'Consumer rights and behaviour' is included in the curriculum (Eurydice, 2017). Bulgaria provides continuing professional development for school heads on citizenship education. The revised Education Act, in force since August 2016, extended the recommendations on student councils to primary schools and introduced the right of student representatives to participate, without voting rights, in school boards. Each year class teachers prepare students' personal profiles which include an assessment of their participation in out-of-school civic activities. There are plans to introduce European citizenship and knowledge of European institutions in citizenship education in upper secondary.

5. Modernising school education

Reducing early school leaving is a priority. In 2017 the percentage of early leavers from education and training among those aged 18-24 decreased for the first time since 2011. The rate was 12.7 %, 1.1 percentage points (pps) lower than in 2016. However, it remains above the EU average of 10.6 % and the national Europe 2020 target of 11 %. Early school leaving is particularly high in rural areas (27.9 %) and among Roma (67 %¹⁷, (FRA, 2016)). To tackle early school

¹⁶ In 2016, 14 EU Member States participated in ICCS: Belgium-Flanders, Bulgaria, Croatia, Denmark, Estonia, Finland, Germany (North Rhine-Westphalia), Italy, Latvia, Lithuania, Malta, the Netherlands, Slovenia and Sweden.

¹⁷ The indicators used in the 2016 FRA survey closely resemble those applied in standard European surveys (EU-SILC, EU

leaving Bulgaria has launched multidisciplinary teams (see Box 1) and is taking measures to support students to stay in school. Although not reflected automatically in the rate of early school leaving, data suggests that almost half of the students who dropped out of primary and lower secondary education in 2016/2017 have in fact emigrated, respectively one quarter of dropouts in upper secondary. However, the data collection and monitoring system is insufficiently developed.

Box 1: The multidisciplinary teams

In 2017 Bulgaria introduced a mechanism for interinstitutional cooperation to identify out-of-school children and return them to education. More than 1 100 multidisciplinary teams, comprising teachers, social workers, Roma mediators and other experts, were formed. They visited around 209 000 homes of children who had dropped out or never gone to school, emigrated or had changed school, but were not being tracked. Almost 22 000 children aged 5-18 were brought back to school.

For comparison, in 2016, 20 000 students from grades 1-12 abandoned school, of which more than 40 % are believed to have emigrated. Of the students re-enrolled, 1 200 (or 5 %) had dropped out by the end of the first school term, along with 4 500 other students not in the scheme. These figures point to the importance of complementing return-to-school efforts with retention measures. Legislation is being prepared to make the teams' mandate permanent.

Box 2: 'Your class'

'Your class' is a project financed by the European Social Fund to reduce school drop-out and improve school retention. The project is open to all schools, but funding is differentiated based on the concentration of students at risk of drop-out, including Roma, those from socio-economically disadvantaged backgrounds and those with special educational needs or health problems.

The project funds additional pedagogical support such as language training for students whose mother tongue is not Bulgarian and additional classes to overcome learning gaps. Extra-curricular activities aim to increase students' motivation. These include theatre classes, painting and photography workshops, robotics, coding clubs, civic education projects and health-related activities. 'Your class' supports parental involvement and school partnerships with NGOs and municipalities. Phase I of the project has a budget of EUR 54 million and is running between September 2016 and 2018. Phase II will run until 2022 at the latest.

The need to improve access to quality early childhood education and care is very important in Bulgaria, but remains a challenge. Participation in early childhood education and care (ECEC) by children aged between 4 and the compulsory school age (7) fell in 2016 to 86.5 % (-2.7 pps). This is significantly below the EU average (95.3 %) and the EU's 'Education and Training 2020' benchmark of 95 %. Enrolment rates are particularly low for children aged 4 (75.4 %). The rate is higher for 5 and 6 year-olds (89.4 % and 94.4 %, respectively), for whom pre-school attendance is compulsory. Authorities plan to extend the compulsory programme to age 4. Participation by Roma children in ECEC is particularly low at 66 % (FRA, 2016). Kindergarten fees are seen as the main barrier to attendance. Municipalities have the right to charge fees for care-related activities and the vast majority do so. Data available for 205 of Bulgaria's 264 municipalities (Amalipe, 2018) shows that only 9 % do not charge fees for the compulsory pre-school programme; only 5 % do not collect fees throughout the entire provision of kindergarten. Monthly fees range from EUR 5 to 35, with some municipalities charging reduced fees for the compulsory programme. For comparison, the level of the minimum guaranteed monthly income under social assistance is EUR 38 (BGN 75). A large-scale experiment in disadvantaged, mostly

LFS) but full comparability was not intended. For more details see FRA 2016.

ethnically segregated communities showed that offering free access is the most cost-efficient strategy to get children to attend kindergarten (WB, 2017). Recent measures to invest in pre-primary education include the project 'Active inclusion in the pre-school education system' co-financed by the European Social Fund. The project was approved in 2018 and has a budget of EUR 41.2 million. Additional training for children whose mother tongue is not Bulgarian is also being provided.

Roma inclusion in education remains a major challenge. Roma are at a higher risk of dropping out of school and fewer Roma children go to kindergarten. Segregation in education remains a problem, with an estimated 60 % of Roma students (FRA, 2016) studying in educational settings where all or most other students are Roma. In many cases in rural areas this is due to demographics: there are few or no ethnic Bulgarian children and most schools in rural areas are attended only by ethnic Roma, Turkish or Muslim Bulgarians (Amalipe, 2018). In urban areas, this is linked to residential segregation or secondary school segregation — the 'white flight' phenomenon. Segregation into separate classes or buildings is prohibited by law, but monitoring and enforcement are faced with challenges. In addition, almost all Roma-majority schools were classified as 'most-troubled schools' (ibid.). Notwithstanding efforts to increase participation rates and reduce dropping out, significant challenges remain in promoting ethnically-mixed schools and desegregation measures.

There is an increased focus on teachers. Bulgaria has one of the fastest-ageing teaching staff in the EU. In 2016, 49 % of school teachers were aged over 50 and 30 % were 55+. This means Bulgaria will see about half of its teachers retiring in the next 10 years. To make the profession more attractive, in May 2017 the government committed to doubling teacher salaries by 2021. Last year salaries increased twice: by 10 % in January and by 15 % in September. An additional differentiated pay rise is expected in January 2019. Initial teacher education was recently strengthened with the introduction of courses on early identification of educational difficulties and an increase in the number of hours of practical training, but difficulties remain. Mentoring training has been prioritised in continuing professional development programmes for teachers. Since January 2018, teachers' costs for commuting and for accommodation in remote and mountainous areas are eligible for reimbursement.

Improving equity in education and educational outcomes remain key challenges. About 40 % of Bulgarian 15 year-olds (twice the EU average) do not have a minimum level of basic skills in science, reading or mathematics, according to the 2015 PISA survey. Only 54 % of Bulgarians aged 16-24 have a basic or above basic level of digital skills, well below the EU average of 81.9 %). Moreover, the impact of socio-economic background on students' performance is significant. Social segregation — measured as the clustering of disadvantaged students in lower-quality schools — is high in Bulgaria and has been shown to be a major driver of the skills divide (WB, 2018). A new school curriculum is being implemented and innovative teaching at school level is being supported. In information and communication technologies (ICT), the number of classes has been increased, training of teachers in digital skills prioritised and coding clubs funded by the European Social Fund (ESF). While welcome, recent measures do not yet match up to the magnitude of the challenges and the need to ensure that education becomes a force for higher skills and inclusive growth. In this context, the Council of the European Union addressed a country-specific recommendation to Bulgaria in 2018 calling on it to 'improve the provision of quality inclusive mainstream education, particularly for Roma and disadvantaged students' (Council of the European Union, 2018).

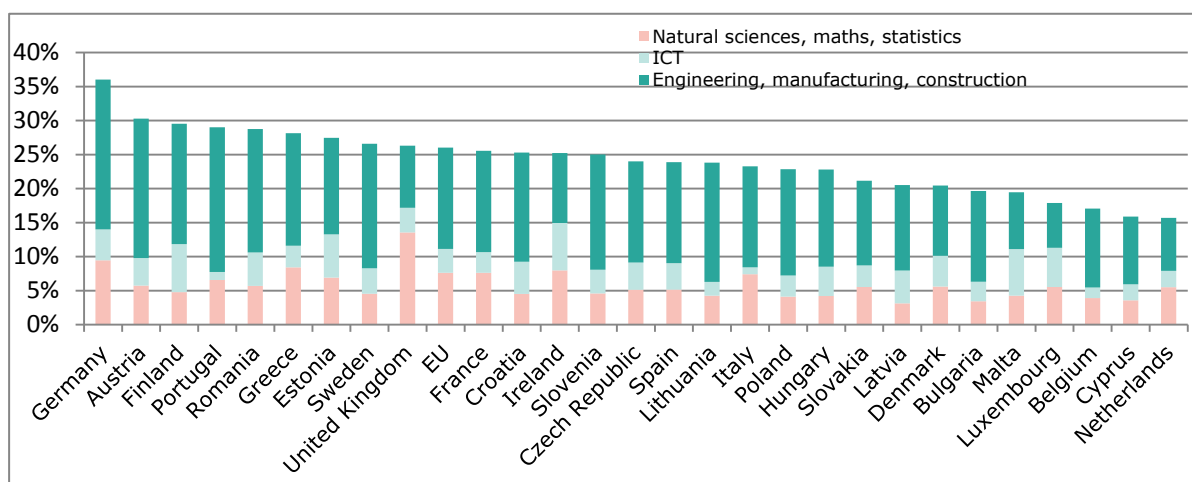
6. Modernising higher education

The skills of higher education graduates do not sufficiently match the needs of the jobs market. In 2017, tertiary educational attainment among Bulgarians aged 30-34 decreased slightly to 32.8 %, still well below the EU average (39.9 %) and the national Europe 2020 target of 36 %. The employment rate of recent tertiary graduates increased by 8 pps to 86.5 %, and is now above the EU average (84.9 %). However, skills shortages, particularly in the manufacturing, construction and digital sectors, and skills mismatches persist (EC, 2018a). Employers often identify knowledge and skills deficiencies, in particular related to the lack of soft skills among fresh graduates (Cedefop, 2018a). There are only 13.9 graduates in science, technology, engineering and mathematics (STEM) for every 1 000 inhabitants in the 20-29 age group, well below the EU average of 19.1, and the proportion of students graduating in these subjects is rather low (see

Figure 3). One in two students in Bulgaria graduates in social sciences, business administration or law, compared to one in three in the EU. Bulgaria is currently implementing a higher education reform focusing on STEM and performance-based funding: 60 % of funding is set to be performance-related by 2020. State-funded study places in certain professional fields, including economics, business administration and tourism, are being reduced or cut completely in universities with low rankings in these subjects under the Bulgaria University Ranking System (BURS).

The decline in student numbers is accelerating. From 2012 to 2017 the number of students in higher education declined by 17 %. This is due to a combination of demographic factors and a preference for studying abroad (in 2016 the number of Bulgarians studying abroad was the equivalent of 9 % of students at home, whereas the proportion of international students was only 3 %). These trends raise concerns over the efficiency of the fragmented network of higher education institutions, of which 37 are publicly funded and 14 are private. Bulgaria has one of the EU's highest numbers of public higher education institutions compared to its population (EC, 2018b). A 2018 independent experts' review of the Bulgarian research system (ibid)¹⁸ recommends radically reducing the system's fragmentation through mergers – it proposes a new landscape of 5-6 new research universities and 5-6 new entrepreneurial universities, while the remainder would focus on teaching. Through its European Semester country reports, the European Commission will follow the development and/or implementation of the recommendations of the independent review.

Figure 3. Distribution of tertiary graduates by STEM fields in 2016, as a proportion of total graduates



Source: DG EAC based on Eurostat data. Online data code: *educ_uoe_grad02*.

7. Modernising vocational education and training

The quality and relevance of vocational education and training (VET) are still faced with challenges, but some steps have been taken to improve the situation. The employment rate of Bulgarian VET graduates is low: 59.1 % of recent graduates were in employment in 2017, well below the EU average of 76.6 %. A plan for the development of VET was approved following extensive consultations. All learning plans and programmes are being updated in cooperation with business representatives. Dual VET was introduced in Bulgaria in 2016, confirming apprenticeship as a form of practical training. Pilot projects are being implemented in cooperation with Switzerland, Germany and Austria. In 2017, a total of 1 742 students (1 % of students in vocational 'gymnasiums'¹⁹) were in dual VET programmes. The highest demand was for technicians for computerised numerical control machines, electronic engineering, transport equipment, electro, gas, wood-processing, and milk and dairy production. Roll-out of the dual education system is to

¹⁸ Requested by the Bulgarian authorities and financed by the European Commission.

¹⁹ Which provide third and second level of professional qualification.

be supported by the ESF. Performance-based funding will be introduced in VET to direct learners to vocational programmes, targeting professions that are in short supply on the labour market. Financial incentives will be offered to VET schools offering these professions.

8. Promoting adult learning

Participation in adult learning remains very low. Bulgaria has one of the lowest adult participation rates in learning in the EU (2.3 % in 2017 vs 10.9 % EU average), according to the EU Labour Force Survey (LFS). 26.5 % of employees participated in continuing vocational training, well below the EU average of 40.8 %, according to the Continuing Vocational Training Survey (CVTS) from 2015. Participation by adults in education and training was 24.6 % in 2016 (also well below the EU average of 45.1 %), according to the Adult Education Survey (AES). These differences can be explained by the narrow spectrum of adult learning activities captured by the LFS and the difference in reference periods (4 weeks compared to 1 year for AES and CVTS). Bulgaria's overall level of digital skills is among the lowest in the EU (31 % in 2017 vs 59 % EU average) and closely linked to socio-economic status. The Bulgarian Digital National Alliance²⁰ continues to carry out activities to increase digital skills among different segments of the population. With funding from the ESF and national funds, the National Employment Agency helps employed and unemployed people with at most secondary education to acquire a professional qualification and learn digital skills and foreign languages.

Several measures seek to increase the flexibility and responsiveness of the education and training system. The implementation of the National Qualifications Framework is being supported by the European Commission's Structural Reform Support Service (SRSS) with the aim of adjusting the national list of professions to the requirements of the economy. While anticipating and matching skills is at an early stage in Bulgaria, cooperation with the European Centre for the Development of Vocational Training (Cedefop) started in 2017 to create the model and tools to connect the supply of and demand for skills and qualifications. Initial findings (Cedefop, 2018a) show that while steps have been taken in the right direction, effective coordination mechanisms at national, regional and local level to help stakeholders find work are still missing. The link between skills forecasting and education is weak. The scope of current occasional foresight activities, usually carried out for specific occupations, needs to be broadened. In addition, the dependence on EU funding encourages a project-based approach. In parallel, the 2016 ESF project 'Development of National Competences Assessment System – My competence' is analysing the skills needs in 20 economic sectors. It aims to develop sectoral competence models, e-training programmes and modules to assess employees' training needs.

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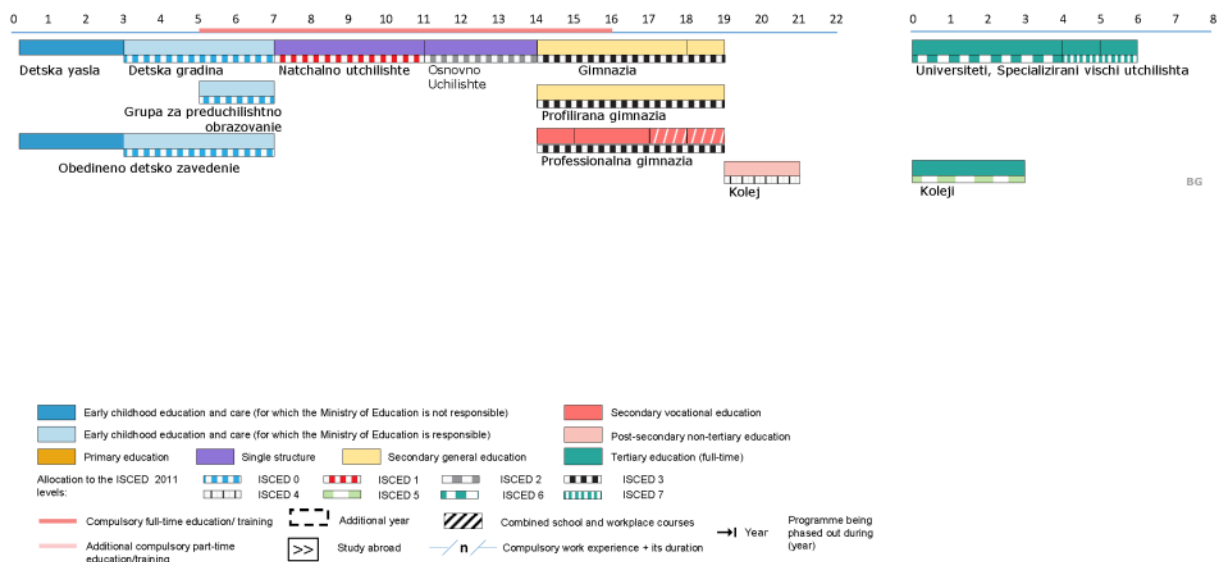
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10. Annex I: Key indicator sources

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_uae_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_uae_fini04
Learning mobility: Degree mobile graduates	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uae_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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CROATIA

1. Key indicators

		Croatia		EU average	
		2014	2017	2014	2017
Education and training 2020 benchmarks					
Early leavers from education and training (age 18-24)		2.8% ^u	3.1%	11.2%	10.6%
Tertiary educational attainment (age 30-34)		32.1%	28.7%	37.9%	39.9%
Early childhood education and care (from age 4 to starting age of compulsory primary education)		72.4% ¹³	75.1% ¹⁶	94.2% ¹³	95.3% ¹⁶
Proportion of 15 year-olds underachieving in:	Reading	18.7% ¹²	19.9% ¹⁵	17.8% ¹²	19.7% ¹⁵
	Maths	29.9% ¹²	32.0% ¹⁵	22.1% ¹²	22.2% ¹⁵
	Science	17.3% ¹²	24.6% ¹⁵	16.6% ¹²	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)	62.0%	65.9%	76.0%	80.2%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	2.8%	2.3%	10.8%	10.9%
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	2.4% ¹⁶	:	3.1% ¹⁶
	Credit mobile graduates (ISCED 5-8)	:	4.4% ¹⁶	:	7.6% ¹⁶
Other contextual indicators					
	Public expenditure on education as a percentage of GDP	4.8%	4.8% ¹⁶	4.9%	4.7% ¹⁶
Education investment	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€3 496	:	€6 494 ^d
		ISCED 3-4	€3 342	:	€7 741 ^d
		ISCED 5-8	€7 999	:	€11 187 ^d
Early leavers from education and training (age 18-24)	Native-born	2.8% ^u	3.1% ^u	10.4%	9.6%
	Foreign-born	:	:	20.2%	19.4%
Tertiary educational attainment (age 30-34)	Native-born	33.3%	29.5%	38.6%	40.6%
	Foreign-born	19.6% ^u	21.5% ^u	34.3%	36.3%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	47.3%	59.1%	70.7%	74.1%
	ISCED 5-8	72.2%	71.6%	80.5%	84.9%

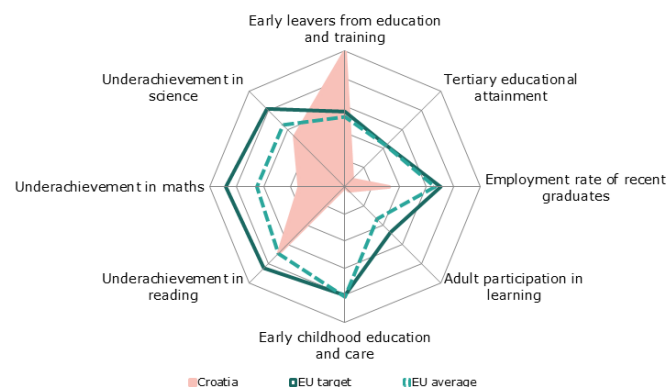
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Ambitious reforms in education and training have been launched, after a period when progress was stalled by political disagreement.
- Curricular reform has been introduced as a pilot project in 2018/2019 to address concerns about the quality and relevance of primary and secondary education.
- Despite the low level of time devoted to civic education and teacher preparation, Croatia's pupils show a solid level of civic competences.
- New legislation on vocational education and training is paving the way for reforms in a sector whose relevance to the labour market and whose quality has been challenged.
- Participation in early childhood education and care remains a significant challenge, but a comprehensive new study lays out evidence to support reforms.
- Amid challenges in tertiary education efficiency, Croatia reports a significant jump in equity of access for disadvantaged students.

3. Investing in education and training

Croatia's spending on education and training remains at the EU average, with a strong focus on primary and tertiary education. The percentage of GDP spent on education and training in 2016 increased slightly by 0.1 percentage points to 4.8 % (EU average 4.7 %) and stands just above the pre-crisis high in 2008²¹. This level of investment was not, however, reflected in the annual expenditure on educational institutions per pupil or student. In 2014, Croatia invested among the smallest amounts in the EU, at purchasing power standard, into pre-tertiary education. The investment was fourth-lowest at ISCED levels 1 and 2, and third-lowest at levels 3-4 (the respective figures were 3 496 and 3 342 in Croatia, compared to the EU average of 6 494 and 7 741²²).

Education spending other than salaries has not yet returned to pre-crisis levels. As Croatia adjusted to the 2009 financial crisis, cuts to the education budget primarily targeted investments, equipment and infrastructure. As a result, the proportion of funding for teacher salaries rose from 63.4 % to 72.35 % between 2010 and 2016²³ (Figure 2). Yet, gross salaries across the education sector have only increased mildly in real terms between 2010 and 2017 (by 2.75 %²⁴). The immediate challenge is to restore spending on items that are important for the quality of education while also addressing the attractiveness of the teaching profession²⁵.

²¹ Eurostat. Online data codes: gov_10a_exp, nama_10_gdp.

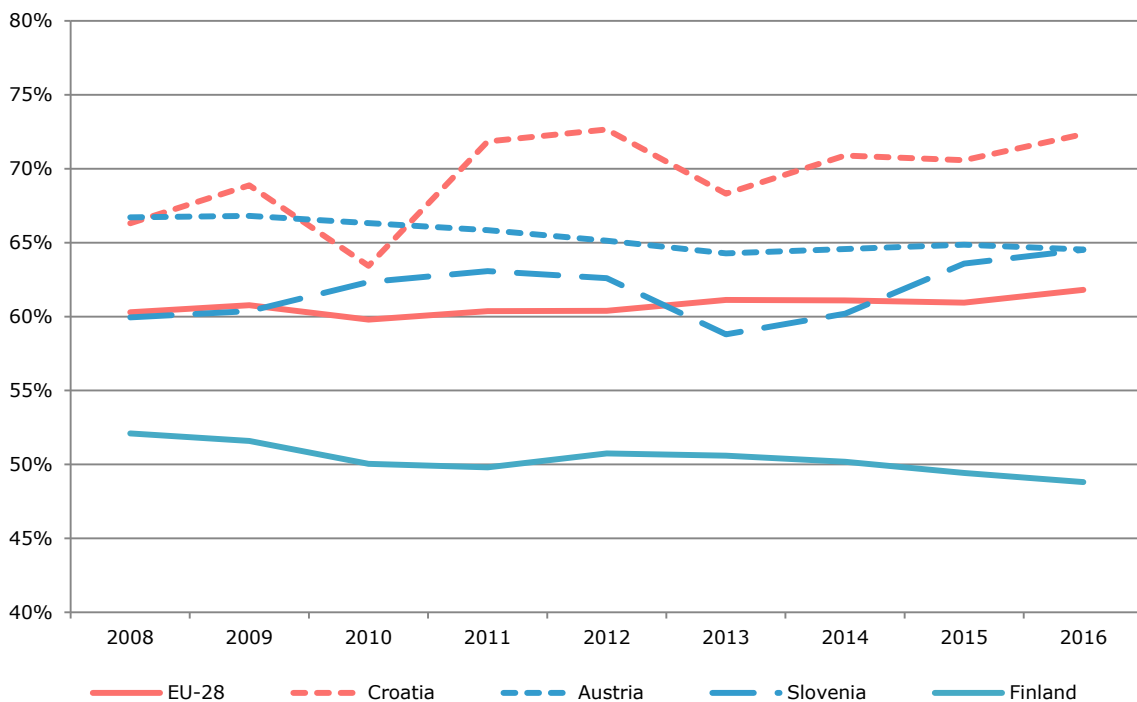
²² Eurostat. Online data code: educ_uoe_fini04. The definition of EU data differs.

²³ Eurostat. Online data code: gov_10a_exp. Additionally, teachers in Croatia at ISCED levels 1-3 do not receive a higher salary than teachers in neighbouring countries (EURYDICE 2016).

²⁴ Salary data: Croatian Bureau of Statistics. Consumer price index data: Eurostat, online data code prc_hicp_aind.

²⁵ In the 2013 Teaching and Learning International Survey (TALIS, OECD 2014), only 9.6 % of Croatian teachers thought that the teaching profession was valued in society, among the lowest in the survey (the average was 30.9 %)

Figure 2. Teacher salaries as a % of general government expenditure on education and training, 2008-2016



Source: Eurostat. Online data code: [gov_10a_exp](#).

There is potentially room to increase the efficiency of Croatia's spending on education and training, but a lack of capacity and tradition of evidence-based policy making affects reforms. Evidence suggests that Croatia could make more efficient investments in education and training: it ranks among the three EU Member States with the highest number of tertiary education institutions per citizen (European Commission/EACEA/Eurydice, 2018); and it has around 25 % fewer pupils per teacher than the EU average (11.0 HR vs 13.9 EU) and a declining pupil population²⁶. Yet, decisions on teaching staff need to take into account Croatia's numerous mountain and island municipalities which are facing problems attracting teachers. They would similarly need to consider recent emigration rates²⁷ which are affecting regional teaching workforce needs²⁸. While Croatia has been developing a growing evidence base²⁹, comprehensive studies bringing together different evidence streams — such as the recent early childhood education and care (ECEC) study outlined below (Dobrotic, Matkovic, Menger, 2018) — are rare.

Croatia has begun implementing some of the reforms of its strategy on education, research and technology. The Ministry of Education launched some of the reforms outlined in the strategy and its linked documents, such as the curricular reform, vocational education and training (VET) reform, higher education funding agreements and some aspects of the Croatian Qualifications Framework. However, the strategy's full implementation has been the subject of political disagreements, and the government has yet to adopt the national action plan for the specific activities.

²⁶ Eurostat. Online data code: [educ_uoe_perp04](#).

²⁷ Croatian Bureau of Statistics (CBS), Migration of population of Republic of Croatia 2016.

²⁸ The wide differences in emigration rates between regions further complicate decisions in this area.

²⁹ The 2018 studies include, among others, the Eurostudent report, register- and survey-based graduate tracking and the NEET tracking.

4. Citizenship education

Croatian pupils demonstrate an above-average knowledge of civic competences. In the part of the IEA study examining students' civic knowledge, 40 % of Croatian students reached level B, above the average of the countries taking part in the study. Nevertheless, in areas such as community volunteering or campaigning for a goal, Croatian pupils scored below the ICCS average. Furthermore, students from Croatia showed a lower level of trust in public institutions, the government, parliament and political parties and the media in comparison to other countries (IEA, 2017, Table 4.13). This lack of trust increased as citizenship knowledge increased (JRC, 2018).

The level of time devoted to civic education is low and teacher preparation is weak. Croatia delivers citizenship education primarily as a compulsory cross-curricular theme, with the addition at the secondary level of a one-year compulsory separate subject. Croatia and Portugal provide the fewest hours of citizenship education – either as compulsory separate subjects or integrated into other compulsory subjects – in the EU (Eurydice, 2017). As in most other EU countries, there are no specialist or semi-specialist teachers of citizenship education, and in addition there are no national regulations on the pedagogical competences in initial teacher education (ibid.). Croatian teachers also have significantly fewer opportunities to participate in citizenship education trainings, either in initial or ongoing training, as measured in the 2016 International Civic and Citizenship Education Study³⁰ (ICCS) (IEA, 2017, table 2.11).

Expanding citizenship education in Croatia depends on municipal-level initiatives. In 2017, the city of Rijeka experimented with introducing civic education in primary schools as an extra-curricular activity. Following a positive external evaluation, the experimental implementation expanded to 11 other municipalities and now includes the third- and fourth-largest cities in the country.

5. Modernising school education

Croatian schools have a high student completion rate, and reforms have been launched to address challenges in other areas. Croatia remains the EU leader in preventing early leaving from education and training, with a rate of 3.1 % leavers in the 18-24 age group compared to the EU level of 10.6 %³¹. Croatian pupils, however, score below-average in international competence surveys such as the OECD's Programme for International Skills Assessment (PISA) survey, which points to a need to reconsider the quality of the education provided. Croatia has initiated a number of reforms to improve quality. In addition to the curricular reform (see box 1), a proposed reform of the general education law plans several changes. While stopping short of licensing principals, which had been envisioned in the education strategy, anyone applying for the position will be obliged, if the law is adopted, to propose a work programme as supporting documentation. The law also proposes that teachers working on EU-funded projects be rewarded with a 30 % increase in their salary. Separately, the Ministry proposed an updated ordinance on teachers' advancement and reward, which has not been revised in over a decade. This may help increase the prestige of the teaching profession in Croatia, assessed as low by 63.9 % of pupils in a recent survey supported by the European Social Fund (IDIZ 2018).

Building on the success of the e-Schools project, Croatia moves to introduce mandatory computer courses in primary and general secondary schools. The e-Schools project to increase the digital maturity of 15 % of Croatian schools, supported by the European Social Fund (ESF) and the European Regional Development Fund (ERDF), was voted among the world's top 12 ICT education projects in a UNESCO contest. Building on the project's success and a general public interest in improving digital skills, the Ministry of Education published in February 2018 the decision to introduce IT in primary and general secondary schools starting in 2018/2019. VET schools rollout is expected in the next phase of the reform.

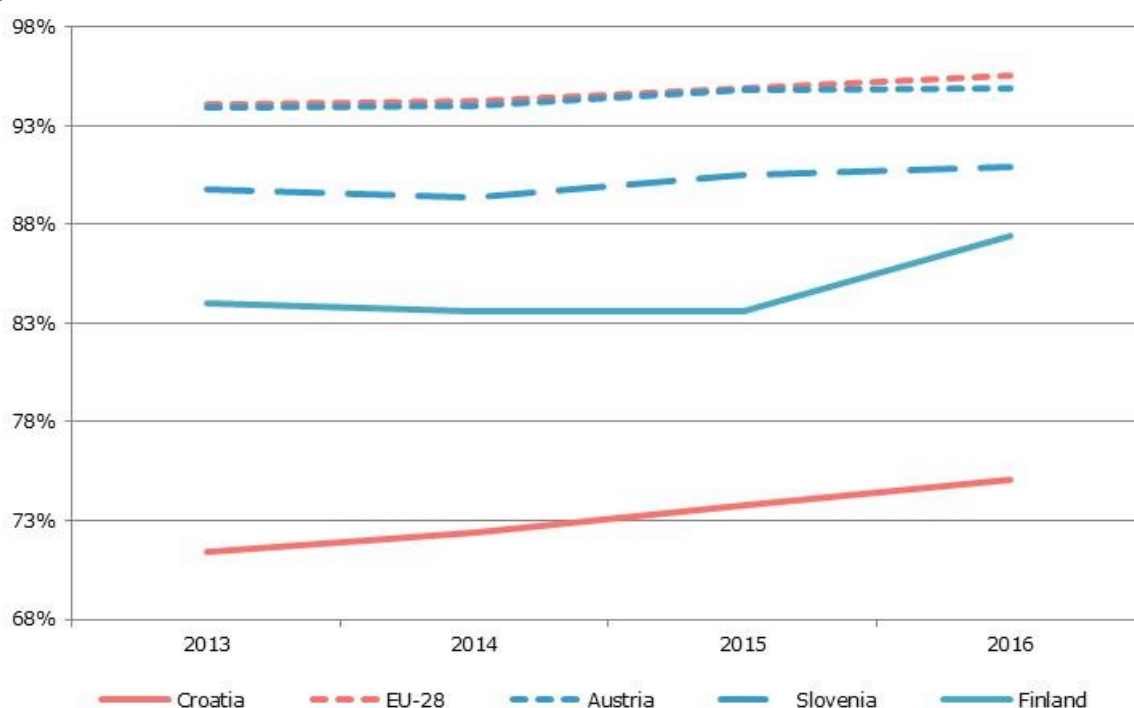
Croatia is facing significant difficulties in increasing ECEC participation, primarily due to the funding model. At 75.1 %, Croatia has the lowest rate of ECEC participation in the EU,

³⁰ ICCS investigates the ways in which young people are prepared to undertake their roles as citizens. 14 EU Member States participated in ICCS: Belgium-Flanders, Bulgaria, Croatia, Denmark, Estonia, Finland, Germany (North Rhine-Westphalia), Italy, Latvia, Lithuania, Malta, the Netherlands, Slovenia and Sweden.

³¹ Eurostat. Online data code: edat_lfse_14.

compared to the average rate of 95.3 % in the EU in 2016³² (Figure 3). This leaves a substantial number of children in Croatia, mostly in poorer regions³³ (Dobrotic, Matkovic, Menger, 2018), at risk of lower performance later in their schooling³⁴. The primary barrier to wider coverage is the decentralisation of 99 % of ECEC costs to the municipalities. This policy — only found in two other Member States for children ages 4-6 (Poland and Denmark, Eurydice, 2014³⁵), has created a strong tie between regional budgets and ECEC participation. Given significant differences in regional development — the GDP per capita of Brod-Posavina county is only 32 % of that of the City of Zagreb — higher participation is unlikely without targeted support to fiscally poorer regions. To improve quality, access and infrastructure, Croatia has earmarked investments worth EUR 40 million from the ESF, EUR 70 million from the European Agricultural Fund for Rural Development and a further EUR 9 million from the national funds. Nevertheless, in the absence of a review of the ECEC funding model, and given the trends since 2009, Croatia is likely to remain below the 95 % Education and Training 2020 benchmark.

Figure 3. ECEC participation from 4 years of age to the start of compulsory education 2013-2016 (%)



Source: Eurostat. Online data code: *educ_uoe_enra10*.

Box 1: School for Life initiative kicks off the curricular reform with a pilot year in 2018/2019

After a period of uncertainty in 2016 and 2017, the experimental implementation of the curricular reform was formally launched in March 2018 with the selection of 74 pilot implementation schools (around 6 % of all schools in Croatia). Despite criticism from some stakeholders, the reform helps to address the country-specific recommendation to *'deliver on the reform of the education and training system to improve its quality and labour market relevance*

³² Eurostat. Online data code: *educ_uoe_enra10*.

³³ Only 22 % of children in Brod-Posavina county participated in ECEC in 2014.

³⁴ The OECD (2016) found that pupils who had not attended pre-primary education had three times the chance of being low performers in PISA than those who did attend for more than one year.

³⁵ The report uses data from 2012/2013, but remains relevant for Croatia, which has not undertaken ECEC funding reforms since then.

for both young people and adults', issued to Croatia in 2018 (Council of the European Union, 2018).

During the pilot period, Croatia will invest around EUR 25 million in school equipment upgrades, part of which will come from EU funds, and the reform rollout will include new textbooks to be delivered in both paper and digital format. The pilot reform is supported by the European Commission's Structural Reform Support Service, bringing together experts from across Europe to train the trainers and facilitate the introduction phase.

The new curricula, developed in a comprehensive drafting and assessment process, adopt the learning outcomes approach, which shifts the classroom focus to the pupils' experience. The rollout will be staggered so that the pilot covers grades one, five and seven (covering Biology, Chemistry and Physics) of primary school and the first grade of secondary school.

The pilot will include:

- Curricula and pupil assessment based on the learning outcomes approach
- Teacher training for new curricula and teaching and assessment methods
- Training of school principals
- Framework for teaching pupils with disabilities
- Framework for teaching gifted pupils
- Introduction of cross-subject teaching of key competences.

6. Modernising higher education

While there has been success in increasing equity in tertiary education, attainment rates continue to decline, likely as a result of emigration of recent graduates. The proportion of people in Croatia ages 30-34 with tertiary education declined for a third year in a row and stood at 28.7 % in 2017 (EU average 39.9 %). An analysis of graduation rates in the relevant age cohorts³⁶ together with the relevant migration rates suggests that the decline is likely influenced by increasing rates of emigration³⁷. In terms of equity, access to tertiary education for students with lower socio-economic status appears to be improving, with an increase of 8 percentage points between 2010 and 2016³⁸, among the highest of the countries taking part in the Eurostudent VI survey (Hauschildt, Vögtle, Gwosc, 2018). This could in part be the result of series of reforms, started in 2010, which covered tuition fees, food subsidies, student financial support and accommodation.

Croatia's system of admission into tertiary education is leading to labour market issues and inefficiencies. Universities in Croatia are autonomous in determining their enrolment quotas and academic programmes, with the role of national authorities limited to setting rules covering tuition fee subsidies (EUA, 2017). This lowers the labour market relevance of tertiary education, including in the areas of strategic importance. For example, to meet the existing labour market needs for ECEC teachers, Croatia would need to double the admission quotas in corresponding programmes (Dobrotic, Matkovic, Menger, 2018). The actual increase of just 12 % between 2009 and 2017 (ibid.) therefore creates the risk of a shortage, limiting Croatia's ability to meet its ECEC quality and participation ambitions. At the same time, programmes with weak labour market prospects, as defined by the Croatian Employment Service, have seen only small changes in admissions numbers³⁹. Croatia has been trying to encourage enrolment in priority subjects through performance funding agreements, but the impact on admissions numbers has been limited. The introduction of Science, Technology, Engineering and Mathematics (STEM) scholarships supported by the ESF aims to create an incentive for students. But without a review of the current admissions

³⁶ On average, it takes an estimated 3.5 to 5 years to finish a first cycle tertiary education degree in Croatia, which implies a graduation age of 22-24 years. To analyse the education makeup of people ages 30-34, the relevant graduation years are therefore 2009-2011.

³⁷ It is worth noting that no data exists on the education profile of people ages 30-34 who are part of outgoing migration.

³⁸ From 50 % to 58 %.

³⁹ The Croatian Employment Service (CES) has been issuing annual guidelines on the need for qualification profiles. Reductions have been recommended for programmes in economics and business administration (CES 2012-2018), yet the number of first-year enrolments in these programmes remained the same, relative to the total number of first-year students, between 2012 and 2016 (source: CBS).

policy, Croatia's ability to strategically guide the tertiary education skills landscape will remain limited.

Croatia is launching a new round of performance-based funding agreements. After two cycles of performance-based funding agreements with relatively limited impact and many lessons learned on both sides of the negotiation table, the national authorities and higher education institutions are aiming to strengthen the link between funding and the achievement of agreed objectives. For the first time, research funding is an integral part of the funding agreements.

Box 2: EU funds help increase equity in tertiary education

The improved access to higher education for students with low socio-economic status in Croatia, visible from the Eurostudent VI study, was supported in part by two actions from the ESF and the ERDF:

- The ERDF action Modernisation, improvement and expansion of accommodation infrastructure in higher education to improve access and completion for disadvantaged students aims to provide 2 270 additional students with improved access to dormitories by renovating or building 5 000 new beds across Croatia, thus helping to reduce the cost of student accommodation. The action supported improvements in 14 towns and cities in Croatia for a total amount of EUR 160 million.
- The ESF action Provision of scholarships to students from lower socio-economic background will grant 22 000 scholarships over 5 years with a total budget of EUR 36 million, of which 85 % is EU funds. The scholarships help students pay on average a third of their expenses in an academic year (Hauschildt, Vögtle, Gwosc, 2018).

The actions show how using evidence-based planning of policy interventions can be beneficial. When Croatia first joined the Eurostudent survey in 2008, it only had access to limited data on the socio-economic makeup of the student population. After the results pointed to insufficient levels of direct student support and high accommodation costs, Croatia was able to target the ESF and ERDF support for 2014-2020.

7. Modernising vocational education and training

Croatia is progressively implementing a comprehensive curricular reform in VET. The share of VET students at upper secondary level remained stable at 70 % in 2016, among the five highest in the EU. However, the employment rate of recent VET graduates decreased from 70.3 % in 2016 to 59.4 % in 2017, pointing to the urgency of modernising the sector. Amendments to Vocational Education and Training Act were adopted in March 2018 allowing the introduction, in July 2018, of the new national VET framework curriculum, the development of modular, outcome-based sectorial curricula and greater autonomy of VET schools in the design school-level curricula. Further, at the end of 2017, the Agency for Vocational Education and Training and Adult Education (AVETA) launched an ESF-funded project to develop sectorial curricula in VET and to better enable VET schools to introduce and implement new curricula. Particular focus is on work-based learning and the learning-outcomes approach and on updating and redesigning teaching materials.

Regional centres of competences in VET and a pilot of dual VET education complement VET reforms. In May 2018, Croatia adopted the national network of regional centres of competences in VET whose purpose is to designate, with ESF and ERDF support, places of excellence that will implement programmes of regular vocational education and training, lifelong learning and other forms of formal and informal education. In July 2018 25 VET schools were appointed to the Regional Centres of Competences in VET in the sectors / sub-sectors Tourism and Hospitality, Mechanical Engineering, Electrical Engineering and Computing, Agriculture and Health, the aim being to achieve a balance between regional presence and high levels of quality. In addition, the Ministry presented a model of Croatian dual education and experimental programme "Dual Education in VET" for 4 qualifications in June 2018. The programme is to be delivered in 11 VET schools in Croatia and address challenges with inadequate practical training and insufficient attention to entrepreneurial competences. It is based in part on cooperation between the Ministry

of Education and the Swiss Federal Institute for VET, the German-Croatian Industrial and Trade Chamber and the Austrian Embassy. VET graduate tracking is not covered by the VET Act, and data is collected by schools on a voluntary basis. The recent programme for the development of the VET system refers to the importance of tracking students after they finish secondary education. Through this programme, the Agency for VET plans to implement a tracking model as part of a wider project. A separate inter-institutional project aims to establish a system of monitoring persons not in employment, education or training.

8. Promoting adult learning

An upcoming law on adult education aims to address Croatia's persistent challenge in this field. The adoption of the new Adult Education Act in 2018 has the potential to address one of the lowest rates of adult participation in learning in the EU, which further dropped from 3 % in 2016 to 2.3 % in 2017. In 2015, according to the Continuing Vocational Training Survey, 55.4 % of Croatian companies (compared to an EU-28 average of 72.6 %) provided vocational training to their employees and 28.7 % of employees participated in this training (EU-28 average, 40.8 %). In 2015, the majority of Croatian enterprises indicated that team working skills and technical, practical and job-specific skills were the main skills needed to develop a business. The changes in the Adult Education Act include measures for self-assessment, external evaluation of adult education institutions and a professional licensing system for teaching staff. Implementation should help increase quality and access to education, provide support to upskill and reskill workers and ultimately lead to increased employment rates for vulnerable groups, in line with the objectives of the EU Council Recommendation on upskilling pathways. The new Act also envisages the development of adult education programmes in line with the Croatian Qualifications Framework Act. In 2016, 55 % of the population had at least basic digital skills, close to the EU average of 56 %.

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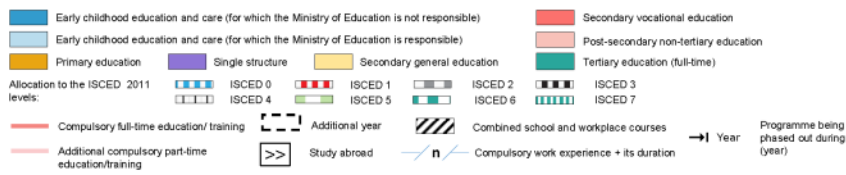
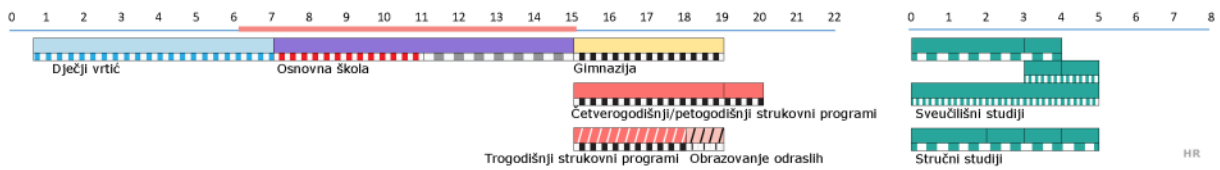
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: 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:

EAC-UNITE-A2@ec.europa.eu

CYPRUS

1. Key indicators

		Cyprus		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		6.8%	8.6%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		52.5%	55.8%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		82.6% ¹³	89.7% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	32.8% ¹²	35.6% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	42.0% ¹²	42.6% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	38.0% ¹²	42.1% ¹⁵	16.6% ¹²	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)	68.7%	71.5%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	7.1%	6.9%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	13.3% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	2.5% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP	6.0%	6.0% ¹⁶	4.9%	4.7% ¹⁶	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€8 324	€8 868 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€9 942	€10 749 ¹⁵	€7 741 ^d	: ¹⁵
		ISCED 5-8	€9 474	€9 731 ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	4.6%	5.7%	10.4%	9.6%	
	Foreign-born	19.5%	18.1%	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	58.3%	64.3%	38.6%	40.6%	
	Foreign-born	39.4%	40.5%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	54.6%	54.6%	70.7%	74.1%	
	ISCED 5-8	72.4%	75.2%	80.5%	84.9%	

Sources: Eurostat (see section 10 for more details); OECD (PISA).

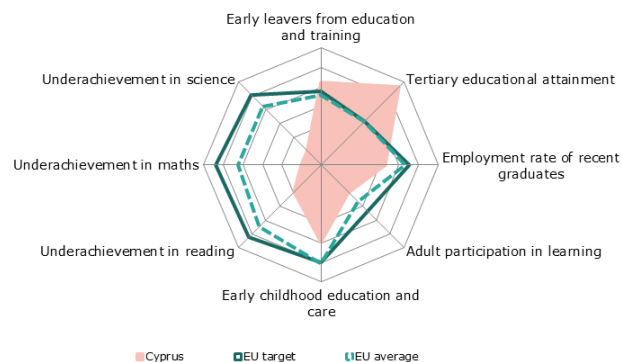
Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source;

d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Public spending on education remains high, but the low effectiveness and efficiency of the education system continue to be a major challenge.
- Citizenship education is integrated in general education and also present in digital education. The modernisation of school education has progressed further on teacher appointments, implementation of new curricula and school regulations and continuing professional development.
- Tertiary attainment is very high overall, but overqualification remains an issue and graduates in science, technology, engineering and mathematics (STEM) are underrepresented.
- Vocational education and training (VET) was strengthened, yet participation levels and VET graduate employability remain low.
- Efforts were made to improve adult learning, but the very low share of low-skilled participants remains a concern, especially given the shrinking and ageing population.

3. Investing in education and training

Public spending on education remains high. At 6 % of GDP in 2016, public spending on education remains well above the EU average of 4.7 %. Measured as a share of total government expenditure, Cyprus spent 15.6 % on education in 2016, more than any other EU country. Change in real terms was 2.7 percentage points up from 2015. As with most countries, teachers' salaries (73 %) are the biggest expenditure. Cyprus has an education system with low effectiveness, since spending is high but educational outcomes (i.e. the knowledge, skills and abilities students attain as measured by the OECD Programme for International Student Assessment (PISA), are low. The resulting low spending efficiency (Agasisti et al, 2016) could be improved. Better educational outcomes will benefit society at large given the positive effect of education on growth, productivity and income equality (OECD, 2016).

4. Citizenship education

Citizenship is taught across several subjects. The separate 'civics' subject at upper secondary level was replaced in 2017/2018 by a cross-subject approach applied mainly in history and Greek lessons. Other subjects integrating citizenship education at both primary and secondary level include social sciences, ethics/religious education, health education, physical education and STEM (European Commission, 2018a). In addition, schools can join in various programmes programs that promote lifelong civic participation (e.g. UNESCO schools, Young Volunteers, MEDIMUN). The Cyprus Pedagogical Institute provides tailored training to teachers in citizenship education, covering areas such as racism prevention, stereotypes, empathy and practices for teaching controversial issues (European Commission, 2018b).

Citizenship education is a point of focus in digital education. As part of the national digital strategy, each year 15-20 schools participate in a number of programmes with a specific citizenship focus. For example: (i) the EU-funded 'EduWeb-programme' where children educate digitally illiterate adults on safe and creative internet use; (ii) 'eSafe Schools' which helps schools develop strategies for safe and creative internet use; and (iii) 'Young Coaches for the Internet' which trains students to develop and apply an annual action plan and educate their peers on creative and safe internet use (NRP, 2018).

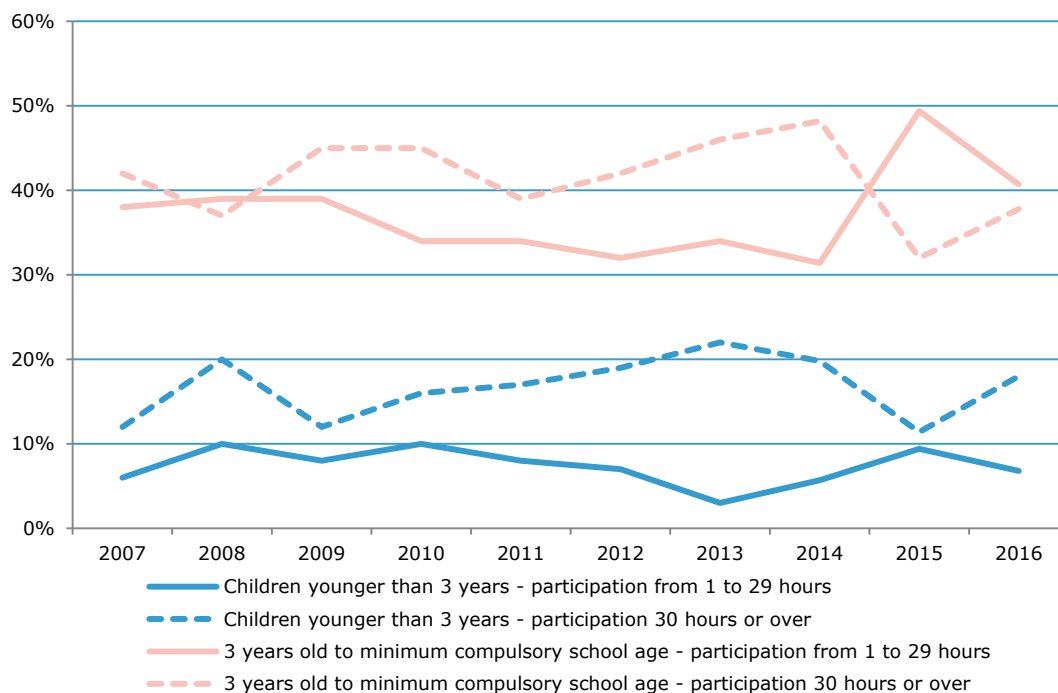
5. Modernising school education

Early school leaving (ESL) rose in 2017. At 8.6 %, the share of early leavers from education and training aged 18-24 went up by 1 percentage point between 2016 and 2017. However,

national data show that actual dropout rates remained low at 0.3 % in lower secondary and 0.2 %⁴⁰ in upper secondary education (Government of Cyprus, 2018). Despite the increase, Cyprus remains below the EU average (10.6 %) and the Europe 2020 national target of 10 %. The gender gap narrowed considerably, with ESL among boys decreasing by 2 percentage points to 9.4 %, while among girls it increased from a very low base of 4.3 % in 2016 to 7.8 % in 2017. The ESL share of foreign-born students remained stable at 18.1 % in 2017, while for native-born students it increased to 5.7 % from 4.6 % in 2016. Considering the booming tourism sector, causes such as the increased take up of seasonal work (European Commission, 2014) need to be explored.

Participation in early childhood education and care (ECEC) is stable. At 89.7 % in 2016, participation of 4-6 year-olds in ECEC is unchanged from 2015. In contrast, more children under 3 years-old were in formal childcare in 2016 than in 2015 (24.8 % vs 20.8 %). However, this is still far below the EU average of 32.9 % for this age group. For many years, the transition from ECEC to primary education has been challenging. To reduce the gap between the two education levels, the Ministry of Education and Culture⁴¹ has started to upgrade the pre-school curriculum using success and adequacy indicators. Exchange visits between public pre-primary and primary education schools continued and further expanded in the 2017-2018 school year.

Figure 2. Children in formal childcare or education



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

The entry ages for ECEC and primary education are set to increase. As of the 2020/2021 school year, the entry age into primary education will be gradually raised from 5 years 8 months to 6 years. The Ministry of Education considers older children to be better prepared for school emotionally and therefore expects the measure to improve school success in the long term. The compulsory ECEC admission age remains at 4 years and 8 months, therefore extending the period of compulsory pre-primary education.

The share of teachers aged 50+ has been constantly growing. The ratio increased from 29 % in 2013 to almost 40 % in 2016 at ISCED level 3, mainly due to the increased retirement age

⁴⁰ 2016 data.

⁴¹ Henceforth the Ministry of Education.

of teachers from 60 to 65 years old. One aim of the reform of the teacher appointment system is to lower the age of first-time teachers by basing entry into the profession primarily on merit as opposed to waiting time.

The rollout of the new teacher appointment system has begun but progress in teacher evaluation is slow. Following the first entry exams in November 2017, the pool of successful candidates is large enough to fill positions planned for the next 2 years. The authorities considered the comparatively low overall success rate as proof of the credibility of the process, while disappointed candidates and other stakeholders expressed the opposite view. Of the 5 020 exam participants only 1 869 succeeded. The lowest success rate (6.9 %) was in the Greek language specialisation. No policy measures were taken to reform teacher evaluation⁴²; stakeholder discussions — including with teachers' unions have yet to commence.

Steps have been taken for more school autonomy. From the 2017/2018 school year, all schools are asked to develop action plans based on their specific needs and the strategic goals laid down by the Ministry of Education. An online tool was developed for this purpose. However, there is currently no adequate monitoring or support system to strengthen implementation. Overall, school autonomy remains limited, as school principals have no discretion over budgetary issues or appointment of teachers, both of which are organised centrally (World Bank, 2014).

Continuing professional development for teachers has become school-based. In line with the individual school action plans, continuing professional development for teachers has become school-centred rather than provided by general conferences, summits or centralised training as previously (Hatzitheodoulou, 2017). After piloting the new 'professional learning' framework in 2015/2016, this new approach has gradually extended to all schools. In addition, teachers of all levels can benefit from various other forms of professional learning (school based or central) throughout the year.

Digital skills are improving but STEM graduates remain rare. Half of the population reported to have at least basic digital skills vs 43 % in 2016. However, Cyprus' share of STEM graduates (9.8 %⁴³) remains the lowest in the EU (European Commission, 2018c). To boost digital skills, the National Coalition for Digital Jobs has introduced cost-free digital certification for students and school competitions in fields such as coding and robotics. Furthermore, computer science is taught in all-day primary schools and secondary schools.

Cyprus is reforming special needs education to make the education system more inclusive. In 2014/2015, 5 559 students, i.e. around 7 % of all primary and secondary students, were officially recognised as requiring special needs education⁴⁴. Most were integrated in the general classes of mainstream schools, 583 were schooled in separate classes within mainstream schools and another 373, i.e. those with severe physical, mental or emotional needs, were placed in special needs schools. Despite most children with special needs being schooled in mainstream education, in its 2017 report the UN Committee on the Rights of Persons with Disabilities criticised the 'absence of a clear and implemented concept of inclusive education in mainstream schools in national legislation' (UN, 2017). According to the UN, segregated approaches remain common in teachers' and other professionals' attitudes. To address the problem, Cyprus is currently reviewing its policy.

Box 1: Schooling of recently arrived migrant children

The number of migrants and in particular asylum-seekers in Cyprus has grown sharply in recent years. From 2002 to 2017, 59 099 asylum applications were received, of which 8 968 asylum-seekers were granted protection (UNHCR, 2017b). Asylum applications increased by 36 % between 2015 and 2016. 221 unaccompanied minors, coming from Syria, Somalia, the Democratic Republic of the Congo and other countries, applied for asylum in 2016 and another

⁴² In 2017 Cyprus received a country-specific recommendation to 'Complete the reform of the education and training system, including teacher evaluation and actions to increase the capacity of vocational education and training.' (Council of the European Union, 2018).

⁴³ Per 1 000 individuals aged 20-29

⁴⁴ According to 2014/2015 data from the European Agency for Special Needs and Inclusive Education (EASIE).

109 in 2017. The country's only accommodation and reception centre in Kofinou has a capacity of 400 people.

According to the Refugee Law of Cyprus of 2000, asylum-seeking children's school enrolment should start no later than 3 months from the date of their asylum application. In 2016, an action plan based on recommendations by the EU's SIRIUS network for the education of children with a migrant background, was developed to coordinate individual actions by schools and create a single educational policy on integrating migrant (including refugee) children.

Five priorities guide actions and programs in this field:

1. learning the Greek language
2. reception of newly arrived children with a migrant background
3. teacher education and continuing professional development
4. collection and analysis of data on the needs of pupils with migrant background
5. intercultural approach through the new curricula.

Most refugee children follow general education. Support for their educational integration has come in particular from the DRASE programme (Actions for School and Social Integration), which supports disadvantaged students at all education levels.

However, difficulties remain. A recent study by the University of Nicosia on living conditions of asylum seekers in Cyprus reports that participation in and effectiveness of refugee education is limited so far. According to the report, the state's role in enrolment of refugee children has not been clarified. In addition, in secondary education the language barrier prevents refugee children from being active participants in class. Therefore, challenges to be tackled include enforcing school access and attendance including for children aged 16+, language learning, cooperation between schools and the local community and conflict resolution (University of Nicosia, 2018).

Assessing educational level and matching needs with offers can be problematic (UNHCR, 2017a). In addition, there is a need to ensure continuity of migrant-specific competences in schools when teachers leave⁴⁵ and to appoint teachers with intercultural competences.

6. Modernising higher education

Higher education (HE) attendance further increased but many graduates struggle to find adequate jobs. Tertiary educational attainment has risen by 2.4 pps since 2016 to reach 55.8 % — a record high. Cyprus is far above the EU average (39.9 %) and second only to Lithuania. At 40.5 %, foreign-born students are notably less likely to obtain tertiary degrees than native-born students (64.3 %). While still below the EU average of 84.9 %, at 75.2 % in 2017 the employment level of recent HE graduates is still markedly higher than that of people with lower qualifications (ISCED 3-4: 54.6 %). However, a very high proportion (41.2 %⁴⁶) of HE graduates work in jobs that require lower skills (Cedefop, 2018).

The high number of social science graduates and comparatively few STEM graduates creates an imbalance. One third (33 %) of bachelor's students graduate with a degree in business, administration and law. This is higher than any other field of study in Cyprus⁴⁷ and the highest in the EU. The majority of bachelor's graduates continue to master's level, thus contributing to a participation rate at that level of almost 35 % of all enrolled students⁴⁸ (European Commission 2018). Again, business, administration and law are the most attractive subjects at master's level, chosen by 38.2 % (2016) of all graduates. A large share of master's students also graduate in education studies (30.8 %) irrespective of their bachelor's degree subject — an indication of the attractiveness of the teaching profession. At the other end of the spectrum, subjects critical to innovation are underrepresented. At 2.4 %, the share of students obtaining a master's in natural sciences, mathematics and statistics is the lowest in the EU. At 1.5 %, ICT is

⁴⁵ Teachers are required to change schools every 6 years.

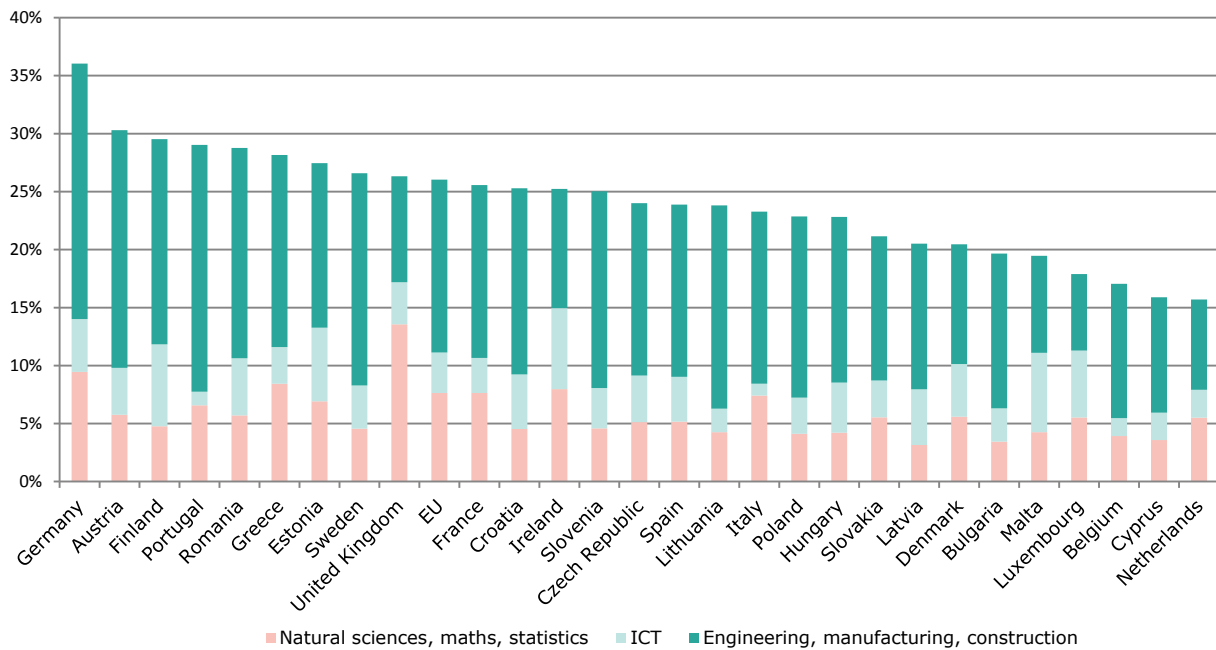
⁴⁶ Only Greece has a higher share.

⁴⁷ Engineering, manufacturing and construction in second place gathers 13 % based on 2016 Eurostat data.

⁴⁸ 2014/2015 data.

also among the lowest in the EU. However, at PhD level this trend is reversed, with the highest share of graduates having studied natural sciences, mathematics and statistics (26.7 %) followed by engineering, manufacturing and construction (18.9 %⁴⁹). While this data is positive, only 3 % of all students were enrolled in PhD programmes in 2014/2015 (European Commission, 2018d) so STEM is a very small part of overall degrees. There is therefore clearly a need to increase the attractiveness of science and technology subjects (HRDA, 2017).

Figure 3. Distribution of tertiary STEM graduates in the EU (2016)



Source: Eurostat. Online data codes: [educ_uoe_grad02](#)

Demand for education professionals is growing. Cyprus' Human Resource Development Authority expects the highest labour market growth to be among mid-level jobs that require secondary education. These will account for almost half of the available positions until 2027, as opposed to 1 in 3 people being in jobs requiring tertiary education. The high and increasing choice in tertiary education pathways might exacerbate the existing overqualification challenge. The biggest employment sector in 2027 will be car trade and repairs, followed by tourism, while the highest increase (45.6 %) in occupation needs will be for technical and scientific profiles. Jobs in education, expected to increase by 22.9 % and to account for around 8 % of those employed in 2027, also show a significant upward trend.

Cyprus has a very mobile student population. Inward degree mobility (i.e. students from other countries coming to study and obtain a degree in Cyprus) as a percentage of the total enrolled student population was the third highest in the EU in 2014/2015 after Luxembourg and the UK (European Commission, 2018d). Whereas well over 90 % of EU international students come from Greece, the shares of non-EU students are more equally distributed with the top three countries of origin being Bangladesh, Nigeria and Pakistan⁵⁰ (Ministry of Education, 2016). National data shows that Cyprus hosted more than 21 000 students from abroad during the 2016/2017 academic year vs 8 300 in 2012/2013. Outward degree mobility is even higher, with more than half of the country's graduates having received their degree abroad in 2014/2015⁵¹. Cyprus is one of the few EU countries with unrestricted portability of public grants and loans for studying abroad, both for full degrees and shorter-term exchange programmes (European Commission, 2018d).

⁴⁹ 2016 data.

⁵⁰ In 2014/2015.

⁵¹ Only Luxembourg has a higher share at 77.5 %.

Attracting international students remains essential. Cyprus is continuing its efforts to become a regional hub for HE and research. Franchise agreements with British and other European universities help support the high rate of inward degree mobile students (European Commission, 2017). To attract foreign students, Cyprus' universities focus on improving infrastructure, offering a higher number and more attractive study programmes and allowing for instruction in English. Further bilateral agreements on cooperation in HE were concluded with a number of countries in 2018, including China and Germany.

An Academy of Sciences, Letters and Arts has been established. The Academy, established in 2017, serves as the country's highest-level institution devoted to cultivating and advancing the sciences and humanities, literature and art. Its objectives include promoting research by Cypriot scientists internationally, providing scientific advice and facilitating cooperation between local industry, universities and research centres.

7. Modernising vocational education and training

Further progress was made in reforming secondary technical and vocational education, but participation in VET is still far below the EU average. Only 17 % of upper secondary students participated in VET in 2016 (EU average: 49 %). The employment rate of VET graduates was the lowest in the EU in 2017 (52 % vs 76.6 %). Efforts have been made to increase participation levels and the capacity of VET schools and to update the curricula in cooperation with industry. A comprehensive analysis of the national apprenticeship system was completed in June 2018 in cooperation with Cedefop. It will help national stakeholders to build their capacity to further develop the national apprenticeship scheme.

Several recent measures are expected to strengthen the VET sector. For example: (i) the accreditation of post-secondary institutes of VET (PSIVET) in April 2017; (ii) the reform of the teacher appointment system (see Section 2), which extends to VET teachers who obtain the qualification 'Vocational Trainer – Level 5' as part of the Cyprus Qualifications Framework (CyQF); and (iii) stepping up VET teachers' training as part of the new training policy (see Section 2).

Steps have been taken to tackle skills mismatches in the VET sector, but challenges remain. Tracking of graduates is implemented and information campaigns to reduce skills mismatches are planned. However, these measures are insufficient given the scale of the challenge. According to the 2015 Continuing Vocational Training Survey (CVTS), most Cypriot companies need customer service and teamwork skills.

Box 1: Liaison offices to improve universities' labour market links

Liaison offices have been created in all Cypriot universities to improve the relevance of education to the labour market and facilitate students' transition to work, e.g. through: (i) student placement in companies (already in place in some universities); (ii) developing methodological tools; (iii) anticipating needs for certain skills; and (iv) developing work-based learning systems, including dual learning⁵² and apprenticeships. Furthermore, an online platform will be established to match students with businesses and track placements and the project in general.

<http://www.liaisonoffices.ac.cy>

8. Promoting adult learning

Adult learning is slow to respond to the low share of low-skilled people in learning and the shrinking and ageing population in Cyprus. Adult participation in learning remains below the EU average (6.9 % vs 10.9 %) and critically low (1.0 %) among low-skilled adults. According to the CVTS, 69.5 % of Cypriot companies (EU average: 72.6 %) provided vocational training to their employees in 2015 and only 33.2 % of employees participated in this training (EU average: 40.8 %). Furthermore, 50 % of adults aged 25-64 reported to have basic or above basic digital skills – 10 percentage points lower than the EU average.

⁵² Integrated courses of learning at both companies and schools.

Remedial actions have been taken to ensure that low-qualified people upgrade their skills and acquire new ones. In line with the Council of the EU's Recommendation on upskilling pathways, measures to strengthen the adult learning system include: (i) initiating a validation system for informal and non-formal learning; (ii) developing additional professional standards; and (iii) strengthening the capacity of PSIVET schools and second-chance schools. The National Qualifications Authority, established in May 2017, has the responsibility to further strengthen the legal aspects of the CyQF by: (i) developing a registry; (ii) integrating the validation of non-formal and informal learning; and (iii) monitoring the CyQF/European Qualifications Framework levels of certificates, diplomas and Europass documents⁵³. Several ongoing programmes are helping to integrate unemployed and inactive people into employment and promote learning opportunities for workers.

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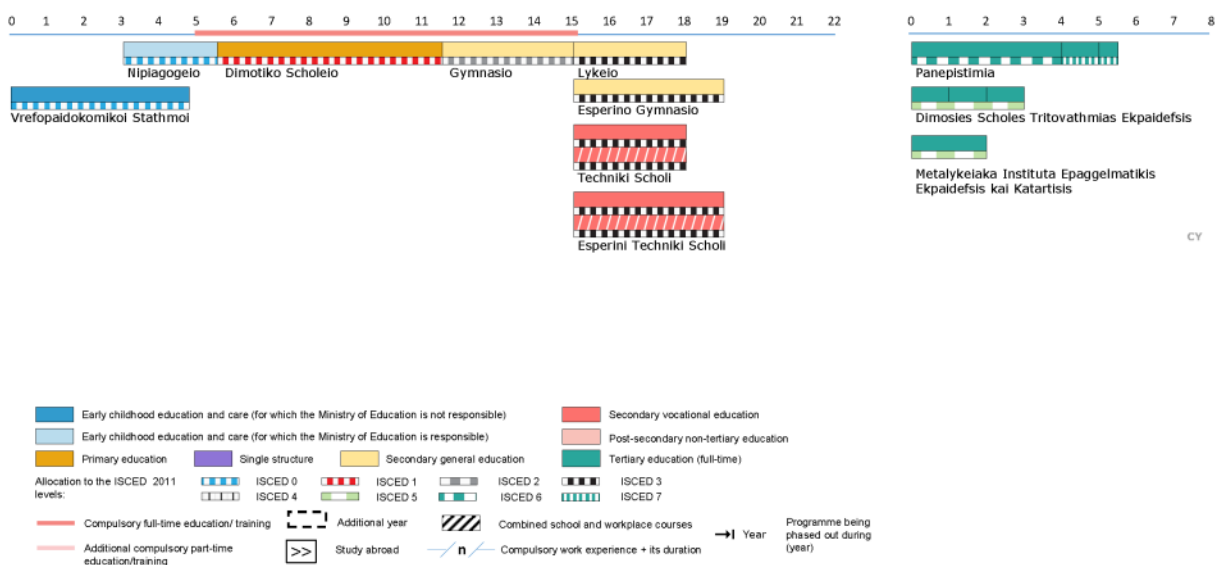
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10. Annex I: Key indicator sources

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_uae_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_uae_fini04
Learning mobility: Degree mobile graduates	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uae_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: 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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CZECH REPUBLIC

1. Key indicators

		Czech Republic		EU average	
		2014	2017	2014	2017
Education and training 2020 benchmarks					
Early leavers from education and training (age 18-24)		5.5%	6.7%	11.2%	10.6%
Tertiary educational attainment (age 30-34)		28.2%	34.2%	37.9%	39.9%
Early childhood education and care (from age 4 to starting age of compulsory primary education)		86.4% ¹³	90.7% ¹⁶	94.2% ¹³	95.3% ¹⁶
Proportion of 15 year-olds underachieving in:	Reading	16.9% ¹²	22.0% ¹⁵	17.8% ¹²	19.7% ¹⁵
	Maths	21.0% ¹²	21.7% ¹⁵	22.1% ¹²	22.2% ¹⁵
	Science	13.8% ¹²	20.7% ¹⁵	16.6% ¹²	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)	81.3%	89.9%	76.0%	80.2%
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	9.6%	9.8%	10.8%	10.9%
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	1.7% ¹⁶	:	3.1% ¹⁶
	Credit mobile graduates (ISCED 5-8)	:	6.5% ¹⁶	:	7.6% ¹⁶
Other contextual indicators					
	Public expenditure on education as a percentage of GDP	5.1%	4.5% ¹⁶	4.9%	4.7% ¹⁶
Education investment	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€4 783	:	€6 494 ^d
		ISCED 3-4	€5 683 ^d	:	€7 741 ^d
		ISCED 5-8	€7 725 ^d	:	€11 187 ^d
Early leavers from education and training (age 18-24)	Native-born	5.4%	6.7%	10.4%	9.6%
	Foreign-born	9.9% ^u	9.5% ^u	20.2%	19.4%
Tertiary educational attainment (age 30-34)	Native-born	27.9%	33.9%	38.6%	40.6%
	Foreign-born	34.0%	39.1%	34.3%	36.3%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	81.2%	87.5%	70.7%	74.1%
	ISCED 5-8	81.4%	91.6%	80.5%	84.9%

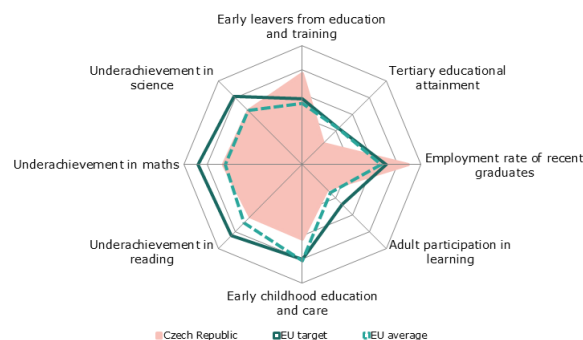
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Better supporting teachers, reducing inequalities and improving governance are the three priorities of the Czech strategy for education policy until 2020. A recent evaluation shows they remain valid.
- It remains a challenge to make the teaching profession attractive. In 2018 the Council of the EU addressed a country-specific recommendation to the Czech Republic on this issue.
- Implementation of the inclusive education reform needs to be closely monitored if the desired impact on pupils with special needs and those from a disadvantaged background, particularly Roma, is to be achieved.
- Against a background of skills shortages, the importance of continuing vocational education and training is growing.
- Strengthening citizenship education is important given the country's low rate of social participation.

3. Investing in education and training

General government expenditure on education as a share of GDP decreased between 2015 and 2016 to 4.5 %, below the EU 4.7 % average. Expenditure per student remains lower in the Czech Republic than on average across the EU, mainly due to considerably lower teacher salaries (OECD, 2017). Overall annual expenditure on educational institutions per pupil/student for all ISCED 2011 levels (excluding early childhood education and care) was the third lowest in the EU in 2015⁵⁴.

The 2018 education budget is 13.5 % higher than in 2017. Teachers' salaries were increased by 15 % from November 2017 in reaction to a strike warning. The increase in funding for higher education benefits the salaries of academic staff, among other things. This is needed, given the low level of spending on higher education by international standards: in 2015 it was 0.77 % of GDP, among the lowest in the EU⁵⁵.

Despite increases in recent years, teachers' salaries remain comparatively very low at all school levels (see Box 1). Furthermore, the salary progression is among the least rewarding (OECD, 2017).

From January 2019, the funding system for regional education will be revised, shifting from funding per pupil to funding linked to pedagogical work or hours taught. The new system aims to reduce differences in funding levels for comparable schools in different regions. It will allow specific regional characteristics to be taken into account. These include the size of schools, the structure of secondary and tertiary vocational education and training, and differences in student populations with special needs.

4. Citizenship education

In the Czech Republic citizenship education is embedded in the broader youth strategy for 2014-2020 and taught at all school levels. It is taught as a cross-curricular theme that is integrated into other compulsory subjects. Teachers are trained to become semi-specialists in teaching citizenship education, together with two or three other subjects (European Commission/EACEA/Eurydice, 2017a). Cross-curricular themes covered include personal and social

⁵⁴ Source: Eurostat, table educ_uoe_fine06.

⁵⁵ Same as above

education, thinking within the European and global context, multicultural education, and environmental and media education. As in a number of countries, it is less present in initial vocational education and training (IVET). Still, the IVET curriculum covers democratic citizenship, environmental education and the basics of civic education/social sciences. The methodological portal for teachers includes guidance and resources for citizenship education. The National Programme for Environment supports a network of centres organising curricular and extra-curricular programmes in cooperation with schools and providing guidance for teachers.

5. Modernising school education

The conclusions of the 2017 external evaluation of the strategy for education policy 2020 confirm the relevance of its priorities. These are: (i) supporting high-quality teachers and teaching; (ii) reducing inequalities; and (iii) improving the governance of the education system. Experts consider that most of the measures proposed are relevant but that implementation has not yet been a complete success. They recommend substantially improving the quality of administration and making communication between all involved parties more effective (Eurydice, 2018).

While still below the 10.6 % EU average, the 6.7 % early school leaving rate in 2017 continued the increase seen since 2010, when it was at 4.9 %. The rate now exceeds the 5.5 % national target for 2020. This trend contrasts with the steadily decreasing EU average. Wide regional disparities and a high proportion of early leavers among Roma — estimated at 72 % (FRA, 2016) — call for strengthened analysis of the situation and targeted measures (European Commission, 2018). In the Czech Republic the relationship between socio-economic background and grade repetition — often an early indication of early school leaving — is among the strongest in the EU.

Participation in early childhood education and care (ECEC) continues to catch up with other Member States. Participation by children aged 4-6 reached 90.7 % in 2016, narrowing the gap with the 95.3 % EU average rate.

Since September 2017, participation in ECEC is compulsory for 5 year-olds. The law also entitles 4 year-olds to a place and the same will apply progressively for younger children (European Commission, 2017). This measure is likely to help reduce inequalities and promote inclusion, especially if schools and classes are mixed socially and if there are no (hidden) costs for families. Local authorities may have to strengthen their efforts to inform families and ensure that all children concerned participate.

A number of indicators point to a relatively difficult situation for teachers on many fronts (European Commission, 2017 and 2018). This includes low prestige, demographic challenges, low salaries, insufficient continuing professional development (CPD) and weaknesses in education governance (see box below).

Box 1: The teaching profession: challenges and reforms

The 'Strategy for education policy 2020' identified support for teachers as a pre-requisite for high-quality education. It proposed implementing a new career system and improving future teachers' education and training.

The profession is still facing a number of challenges that indicate a need for further reforms to ensure there will be enough teachers, and of sufficient quality.

The proportion of school teachers younger than 40 is especially low and the share of women among lower secondary education teachers is one of the largest among OECD countries (OECD, 2017). The Czech Republic is among the EU members with the highest and fastest-growing proportion of teachers aged 50 or over in ISCED 3 and 4. At the same time, the numbers of children entering primary education are rising. A number of students opt for initial teacher education as a second choice rather than a first choice, raising questions about their motivation.

The 2013 OECD Teaching and Learning International Survey survey found that the proportion of Czech teachers reporting that their profession is valued in society and that they are satisfied with the job is below the OECD average.

Teachers' salaries have historically been low, both internationally and compared to those of people with similar qualifications. The career structure is flat: teachers cannot move to higher career levels (European Commission, 2018 and European Commission/EACEA/Eurydice, 2018b). Salary increases over the past decade have somewhat improved the situation but as these have often also gone to all public employees, the relative attractiveness of teacher salaries has not always improved.

There are shortages of qualified teachers in some subjects and geographical areas. The situation calls for active planning of the number of teachers needed in future. In this respect, however, the central governance of the system is less developed than in most Member States: there was no central forward planning in 2016/2017. About one third of European education systems offer alternative pathways to a teaching qualification besides the mainstream programmes, often in systems suffering from teacher shortages. No such pathways have been developed in the Czech Republic.

In 2016/2017, the country remained among the few without a regulated induction programme for teachers or appraisal for new teachers. In countries where such appraisal exists, it is intended to ensure that new teachers have acquired the necessary practical skills to work independently. It is therefore likely to contribute to the quality of teaching and to identifying teachers' possible needs. Low participation in CPD is reportedly linked to a lack of incentives, conflicts with work schedules and the absence of compensation for replacement teachers.

The OECD has recommended several measures to make teaching more attractive. These are:

- further increasing salaries;
- developing new entry pathways;
- adopting measures to make teachers' everyday work less isolated and more motivating;
- strengthening the link to practical experience in initial teacher education; and
- raising the quality of course provision (Shewbridge, C., et al., 2016).

Social partners advocate for public campaigns to improve the image of the profession.

Despite a lengthy process, the planned new career system for teachers was not adopted in 2017 (European Commission, 2017). It had been proposed to combine performance assessment, career advancement based on standards, strengthened CPD and improved pay. The failure to adopt it was partly due to protests by a new grouping of teachers who feared, among other things, that funding would not be sufficient to bring a real improvement in conditions.

Following the non-adoption, the Education Ministry launched EU-supported projects to improve support to beginning teachers and strengthen the CPD of teachers and school heads (Government Office, 2018). It also finalised standards for university programmes preparing future teachers. In November 2017, it awarded teachers a 15 % pay rise.

The 2018 European Semester country-specific recommendations to the Czech Republic included a recommendation to 'Strengthen the capacity of the education system to deliver quality inclusive education, including by promoting the teaching profession.' (Council of the European Union, 2018).

Inequalities in educational outcomes based on socio-economic background have risen over recent years (European Commission, 2017 and 2018). Differences between schools' educational attainment, as measured by the OECD Programme for International Student Assessment (PISA) and the Progress in International Reading Literacy Study (PIRLS), are among the widest in the EU. Inequalities are particularly concentrated among Roma children.

The 2016 reform for inclusive education represented a major concerted effort by the authorities, with the support of the European Social Fund (ESF). The reform was generally welcomed by NGOs and experts, although less by teachers and the general public. The evaluation

carried out by the Czech School Inspectorate in 2017 indicates the reform has improved support for pupils with special needs in mainstream education. The heavy administrative burden on schools was identified as a drawback and the funding requested by schools for support measures was higher than expected. Furthermore, on top of support measures teachers will need to be equipped with the right skills, training tools and teaching materials to meet the ambitions of the reform. So far the impact on the education of Roma pupils in mainstream education remains limited (Center for Policy Studies Central European University, 2018). This is partly due to its very rapid implementation without piloting. Full implementation and possible adjustments are awaited. The future scope of the reform is somewhat uncertain, in particular due to the uncertainty over sufficient funding. A 2018 amendment of the implementing decree may put the spirit of the law at risk by enabling special schools to open classes for children without mental disabilities but with behavioural/learning difficulties. This could create new forms of social segregation. It calls for close monitoring.

Monitoring of the national Roma integration strategy has identified both positive developments and obstacles. The Roma civil monitor pilot project has reported on implementation of the national Roma integration strategies (Center for Policy Studies Central European University, 2018). It pointed to the Czech School Inspectorate's recent good practice of collecting data on Roma pupils which allows analysis of the correlation between schools' achievements and the proportion of Roma pupils enrolled. It also identified obstacles and measures needed to improve educational outcomes. They include: (i) an insufficient number of places in ECEC facilities, (ii) early tracking and (iii) individual financial support. This last is considered crucial for Roma upper secondary students. It needs to include good facilities and dormitories for students from rural areas.

To promote equal opportunities, in 2018 the Ministry of Education also approved a methodology on equal opportunities in education. This was done under the operational programme on research, development and education funded by the ESF. It focuses on ways schools and school founders can promote access to high-quality pre-school and school education for children from disadvantaged backgrounds.

On inequalities more generally, the OECD has noted that the uneven distribution of teachers across schools is a real concern in the Czech Republic (Shewbridge, C., et al., 2016). Disadvantaged schools are more likely than privileged ones to report shortages of qualified staff even though it is in these schools that the best teachers are needed most. Targeted measures to attract and retain teachers to work in remote or regional areas, or schools with more challenging populations, are lacking.

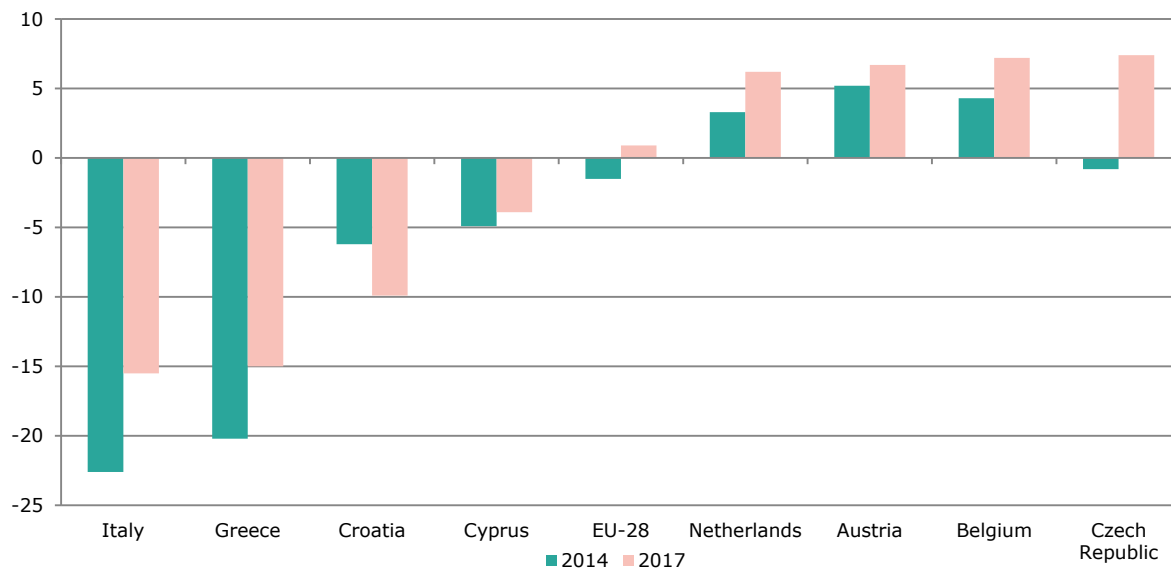
A 2017 report by the Czech School Inspectorate points to delays in implementing the 2015-2020 strategy for digital literacy. It finds that every second school has an information and communications technology (ICT) teacher without relevant qualifications and that the ICT equipment is outdated. EU-supported projects aim to bring ICT teaching into the mainstream and equip schools.

6. Modernising higher education

The 34.2 % of young people aged 30-34 with a tertiary education degree in 2017 is very close to the revised national target of 35 % for 2020. The recent increase in tertiary attainment has been among the fastest in the EU. The Czech Republic has one of the lowest percentages of young people graduating via short tertiary education programmes. At the same time, in a generally very good employment situation, the unemployment rate of Czech graduates holding a bachelor degree is comparatively low, at 3.5 % in 2016 against 7.1 % across the European Higher Education Area (European Commission/EACEA/Eurydice, 2018a). For graduates with a master's degree, the Czech unemployment rate is 3.4 %. The employment premium of a tertiary education degree is high (see Figure 3 below) and tertiary graduates as a whole earn nearly twice as much as those with only an upper secondary qualification — 50 % more for those with a bachelor degree (OECD, 2017). Nevertheless, completion rates for bachelor or equivalent programmes are low, at 37 %. The difference in tertiary educational attainment between women and men is larger than the EU average, and the gender employment and pay gaps are wide

(European Commission, 2018). Only about 1% of students receive a 'social scholarship' (European Commission/EACEA/Eurydice, 2017b).

Figure 3. Employment premium of tertiary graduates (ISCED 5-8), 2014, 2017



Source: EU Labour Force Survey, Eurostat. Online data codes: *edat_lfse_24* and *lfsa_ergaed*.

Note: employment premium (positive or negative) is the comparison of the employment rate of recent graduates aged 20-34 having completed education 1-3 years before the survey with a high-level qualification diploma (ISCED levels 5-8) and who are currently not enrolled in any further formal or non-formal education or training with the employment rate of the 'working age' reference population —adults aged 15-64 holding a high-level qualification diploma (ISCED levels 5-8). A positive premium indicates that employment rate of recent graduates is higher, while a negative rate indicates that employment rate of recent graduates is lower, than in the reference population.

Achieving upward educational mobility remains difficult in the Czech Republic: adults without tertiary-educated parents are less likely to obtain tertiary education themselves than on average in OECD countries (OECD, 2017).

Quality assurance in higher education is being strengthened. Following the 2016 reform, internal quality assurance is being upgraded in a number of institutions and the first requests for institutional accreditation have been submitted to the national accreditation authority (European Commission, 2017 and Government Office, 2018). The Ministry is carrying out surveys and studies on different topics in order to better steer future policy-making on higher education (European Commission/Eurydice, 2018a). The Czech Republic will be one of the countries piloting the European graduate survey in autumn 2018. The survey will be conducted among bachelor, master and tertiary short-cycle graduates 1 and 5 years after graduation. It will assess their integration into the world of work, perceived skills, career paths, working conditions and the effect of other contextual factors on them.

To improve quality, the diversification of institutions and programmes, and completion rates, in 2018 the Ministry revised the system for allocating funding to institutions. This decision built partly on recommendations from a peer counselling activity held in 2015 with the support of the European Commission. Funding is made up of a fixed part to ensure stability and predictability, and a variable part based on quality and performance criteria. These criteria now include course completion rates. For performance-based funding allocation, institutions have been grouped into four categories to ensure diversification of profiles and courses. The funding is first distributed to each category, so that institutions only compete within their category with similar types of institutions and according to indicators and weights that are specific to that category. The system reflects the different needs of different types of institutions.

The country is dynamically digitising higher education and adapting programmes for digitisation (European Commission/EACEA/Eurydice, 2018a). New resources are being invested in digital infrastructure as well as in developing related skills for academic staff and learners.

7. Modernising vocational education and training

The Czech Republic continues to improve the quality of vocational education and training (VET) and its relevance to labour market needs. The outcomes of secondary VET continue improving, with the graduate employment rate reaching 87.5 % in 2017 — well above the 76.6 % EU average. IVET is largely school-based, with mandatory practical training and work placement. There is scope to increase work-based learning as a proportion of VET, particularly through greater involvement of small businesses. The main policy development is a three-year ESF-supported project launched by the Ministry of Education, Youth and Sports in May 2017 on 'Modernisation of VET'. The aim is to ensure the quality of IVET and make secondary VET graduates more employable. It focuses on modernising the general and vocational parts of the upper secondary VET curriculum (school curricula) in order to further develop students' key competences for employability and lifelong learning (Cedefop ReferNet, 2018).

Box 2: The Creative Partnership for Inclusive School project

The Creative Partnership for Inclusive School project was launched in 2016 by the partnership of the Society for Creativity in Education and the Palacký University in Olomouc. It aims to:

- develop pupils' key competences, functional literacy and motivation to learn;
- improve the social climate in class; and
- support pupils from socially disadvantaged or culturally different backgrounds.

The concept is based on structured cooperation between artists and educators, teaching creative methods and arts in relation to all school subjects, and focusing on individual support of pupils. In addition to being introduced at several primary schools across the country, the programme is being piloted in vocational schools without a school-leaving examination. Implementation runs from October 2016 to September 2019. In total, 14 elementary and secondary schools are involved. Around 1 000 pupils will be supported, of whom at least 290 will come from socially disadvantaged or culturally diverse settings.

8. Promoting adult learning

Against a background of skills shortages and mismatches, attention to the importance of continuing VET (CVET) and of realising greater synergies between CVET and IVET continues to grow. According to the Continuing Vocational Training Survey, 90.6 % of Czech companies (well above the EU average of 72.6 %) provided vocational training to their employees in 2015, and 83.7 % of employees participated (the highest rate in the EU). The majority of Czech businesses indicated that the main skills they need in order to develop are customer handling skills and technical, practical and job-specific skills. Through the above-mentioned project 'Modernisation of VET', the link of IVET to the National Register of Qualifications (the reference point for accrediting continuing VET programmes) will be piloted under an EU-supported project. Principles of the European Credit system for VET will be used to ensure better communication between IVET and CVET programmes and a more transparent description of practical training taking place in companies. Cooperation with employers is key to the project's successful implementation. As part of the project, working groups were set up involving representatives from 77 upper secondary schools (representing 42 % of the school cohort), the Ministry of Education, Youth and Sport and employers to develop innovative educational modules. A key development in adult learning took place under the national 'digital literacy strategy for 2015-20'. Another EU-supported project, involving 2 000 companies and 2 500 job seekers, aims to increase employability through in-company training. More than 50 % of job seekers were offered a job at the end of their traineeship. A project called DigiKatalog was launched in October 2017 to enable users to assess their transferable digital skills and identify further education programmes. It will create an online tool called 'Smart Online System (SOS)' that will contain a catalogue of transferable digital skills for 500 key occupations.

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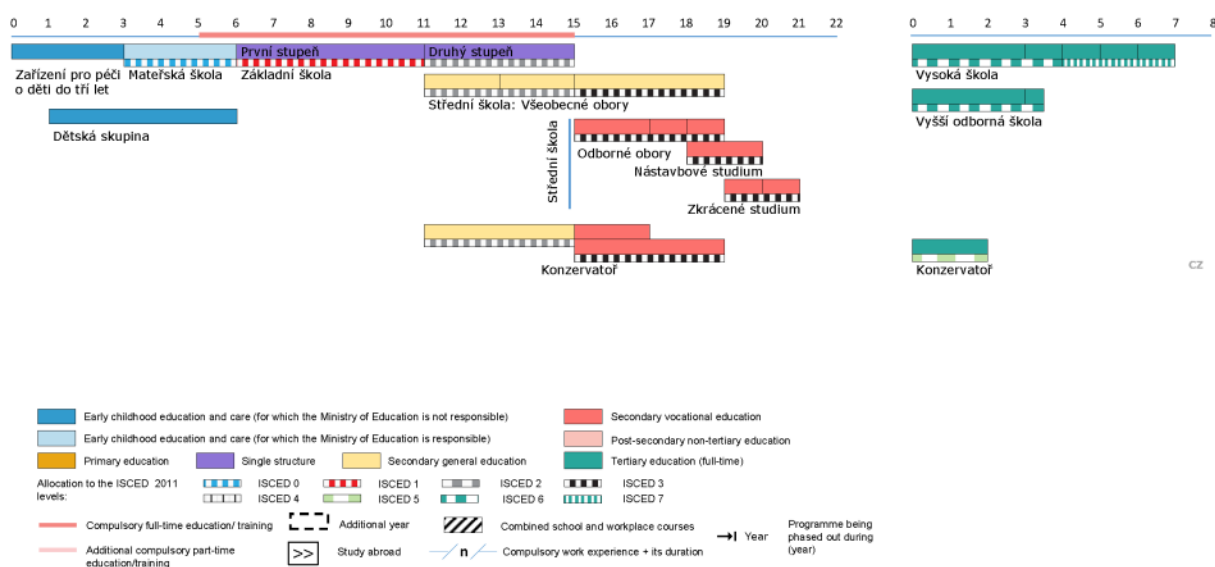
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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DENMARK

1. Key indicators

		Denmark		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		7.8%	8.8%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		44.9%	48.8%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		98.1% ¹³	98.1% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	14.6% ¹²	15.0% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	16.8% ¹²	13.6% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	16.7% ¹²	15.9% ¹⁵	16.6% ¹²	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)	83.7%	82.9%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	31.9%	26.8%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	1.4% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	8.4% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP	7.1%	6.9% ¹⁶	4.9%	4.7% ¹⁶	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€8 587	:	€6 494 ^d	:
		ISCED 3-4	€7 730	:	€7 741 ^d	:
		ISCED 5-8	:	:	€11 187 ^d	:
Early leavers from education and training (age 18-24)	Native-born	7.8%	8.8%	10.4%	9.6%	
	Foreign-born	8.4% ^u	9.3% ^u	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	44.6%	46.6%	38.6%	40.6%	
	Foreign-born	46.0%	58.1%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	81.3%	81.7%	70.7%	74.1%	
	ISCED 5-8	85.9%	83.8%	80.5%	84.9%	

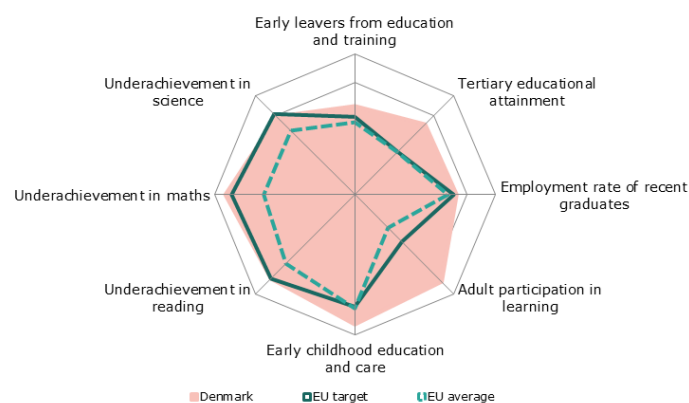
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Danish education combines high achievement with a focus on student well-being.
- Despite the strong participation in early childhood education and focus on inclusion throughout the system, the impact of socio-economic status on education outcomes persists and those with an immigrant background still lag seriously behind.
- Citizenship education is a cross curricula topic in Denmark and the differentiation of competences is less developed than in other Nordic countries.
- Education has seen many reforms leading to 'reform fatigue'. Teachers' participation in continuing professional development is low.
- Public budgets have been reduced, but Denmark remains one of the biggest spenders on education in the EU, operating very generous grant systems.

3. Investing in education and training

Denmark continues to belong to the group of countries with the highest education spending in the EU, despite recent reductions. Public spending as a percentage of GDP has remained practically the same, at 6.9 % in 2016 (Eurostat COFOG). General government expenditure on education also remained broadly unchanged at EUR 19 billion. Cuts were made to expenditure at local level, with a particular impact on early childhood education and care (ECEC). The quality of the services delivered, as measured by child/teacher ratios and the qualification levels of ECEC staff, varies considerably between municipalities. The impact of budget savings was also visible in tertiary education, where for instance the University of Copenhagen announced in 2016 that more than 500 teachers, researchers and staff providing services risk losing their job. This equates to 7 % of staff.

Denmark spends a higher share than comparable countries at early stages of education⁵⁶ and offers generous grants. Over 90 % of spending on primary education is dispensed by local authorities. Denmark spends 1.3 % of GDP on ECEC; this is 0.5 percentage points more than the EU average, but still below the 2 % spent by Sweden. Overall a significant part of spending compared to other Nordic countries is related to the generous student grant system at tertiary level. Compared to teachers in other EU countries Danish teachers are well paid, earning about 90 % of the salary of other tertiary-educated full-time employed⁵⁷ (OECD, 2018a).

The student population is expected to fluctuate over the next decades, with a particular increase at earlier ages and more stable cohorts at tertiary level. Eurostat forecasts a 2 % reduction of 7-18 year-olds by 2030 compared to 2017 (in line with the OECD 2016b) and a 7 % increase by 2050. For below-6 year-olds, a dramatic increase of 18 % by 2030 is expected, and a further increase of 10 % by 2050. The relevant age group for tertiary education (19-26 year-olds) will shrink by 4 % by 2030 and thereafter increase very slightly by 1 % by 2050. This necessitates a particular focus on ECEC in the future. More immediate fluctuations in participation patterns in education included a 3 % decline in vocational education and training (VET) between 2013 and 2014 and a particular increase in short-cycle university students of 6 % in 2014 and again 5 % in 2016.

⁵⁶ OECD EaG 2017, indicator B1.

⁵⁷ OECD EaG 2017, table D3.2a.

4. Citizenship education

Citizenship education is a cross-curricula topic in Denmark. Given the decentralised structure of education in Denmark there is no central oversight, but students excel.

Citizenship education in Denmark is mainly a cross curricular theme at ISCED level 1 to 3. But citizenship is offered as an independent subject at grade 8 and 9 as well ("samfundsfag"). Curricula for upper secondary education state that both educational programmes and the school culture should help to prepare pupils for participation, co-responsibility, rights and responsibilities in a free and democratic society. According to the 2016 International Civic and Citizenship Education Study (ICCS)⁵⁸ by the International Association for the Evaluation of Educational Achievement (IEA) (Schulz et al, 2017), Danish eighth grade students score highest on knowledge on civic issues in international comparison.

The differentiation of competences is less developed than in other Nordic countries (Eurydice, 2017). There are no guidelines on classroom assessment in citizenship education in primary, general secondary education and in school-based VET and there are no national tests in citizenship education. In general secondary education, citizenship education is taught by non-specialist teachers qualified in other subjects. But since 2017 a part-time two-year course is available leading to a 'Master of Authority and Citizenship' covering issues such as the relationship between the individual and the community and concepts like individualism, globalisation, Europeanisation and multiculturalism. Experience from the first courses will allow the authorities to improve future initial teacher education.

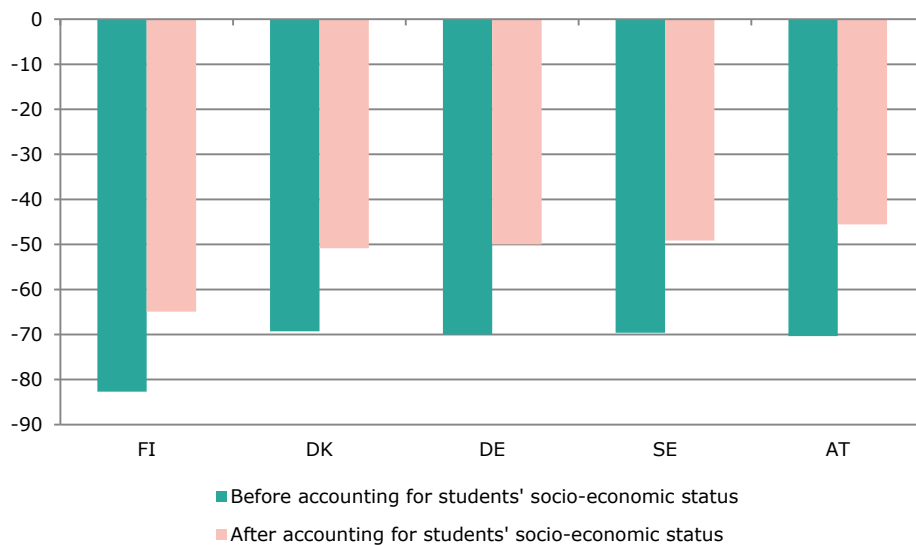
Critical thinking has now been made an explicit learning objective and extra-curricular activities depend on schools. The new curriculum for the Folkeskole in 2015/2016 simplifies the common objectives issued in 2009 and focuses on citizenship and human rights and makes critical thinking now an explicit learning objective. This reform gives students more possibilities to modulate their own school day. Engagement and extra-curricular activities with the community are a regular part of a student's life. Primary and secondary schools are responsible for organising this.

5. Modernising school education

Denmark has generally good education outcomes; however young people from a weak socio-economic and in particular immigrant background lag seriously behind. Denmark does well in international testing. It is among the best performing EU countries with regard to the share of low achievers in mathematics, science and reading (PISA 2015) with an overall rate of 15 % which meets the Education and Training 2020 benchmark and exceeds it for mathematics with 13.6 %. However, PIRLS data from 2016 show that reading skills among Danish fourth graders have not improved since 2006 in contrast to other Nordic countries such as Norway or Sweden (Mejding et al, 2017), confirming the lack of progress in PISA among 15 year-olds since 2000. Recent reforms in Folkeskolen and in upper secondary education that have aimed to improve quality have still to be evaluated. Denmark has, compared to other Nordic countries, a significantly smaller share of high-performing students (OECD, 2016a).

⁵⁸ ICCS reports on students' knowledge related to concepts of citizenship, equity, decision-making and civic self-image. In ICCS 2016 the civic knowledge scale was set to a metric with a mean of 500 (the average score of countries participating in ICCS 2009).

Figure 2. Difference in science achievement between immigrant and non-immigrant students (PISA score points) with and without adjustment for socio-economic status



Source: OECD PISA 2015.

Second-generation young people with an immigrant background are much more likely to be low achievers than non-immigrant students. While Denmark's immigrants have a smaller share of low performers in mathematics than the EU average, it is the only country where the second generation does not improve as measured by PISA 2015 (European Commission, 2016 and 2018a). Among immigrants, those from Western countries generally perform better than those from other countries but still perform below non-immigrants. National tests in reading in 2016/2017 confirm a clear performance gap for immigrants but not that the second generation does worse. While 78 % of non-immigrants performed well in second grade, only 52 % of first-generation immigrants and 61 % of second-generation with a migrant background did so. Tests in eighth grade showed a similar pattern (Ministry of Education, 2017).

The Folkeskolen reform means Danish students now have the longest school hours among Nordic countries (Vive, 2017). According to national PIRLS 2016 analysis, this additional learning time has not yet contributed to improved learning outcomes. This is in line with international studies. Bad results in international reading testing may also reflect the finding that Danish students take the lowest pleasure in reading of all countries participating in PIRLS. Their teachers similarly report that only about 15 % of them read for pleasure. The resilience of Danish students with immigrant background is mixed. Compared to other Nordic countries they do better academically and show a stronger achievement motivation but have higher life-related anxieties (OECD, 2018b).

While internet usage has increased to one of the highest levels in the EU there is no clear indication of a short-term improvement in digital skills. 95 % of the population aged 16-74 used the internet in 2017 compared to 78 % in 2006. For the same age group the indicator for basic or above digital skills improved between 2015 and 2016 but dropped in 2017 below the level of 2015, unlike in the other Nordic countries. The digital skills of the employed population increased between 2015 and 2017 for those with low overall skills, remained about the same for those with basic skills and decreased somewhat for those with above-basic digital skills. Denmark's 'Digital Growth Strategy' (Ministry of Industry, 2018), agreed upon in parliament in February 2018, identifies 38 activities with the aim of making Denmark a digital frontrunner. About EUR 10 million have been allocated for a four-year trial programme (2019-2021) on testing different models to strengthen technology understanding in primary and secondary school, one of the strategy's seven key initiatives (European Commission, 2018b). In addition, a strategy to strengthen teaching and learning of natural sciences was presented in 2018 (Eurydice, 2018).

There is a strong focus on harnessing digitalisation, including in education. In 2018, an action plan for technology in teaching and learning was prepared, addressing how to strengthen

digital competences for all age groups and among teachers and school managers; to make better use of ICT in teaching; and to educate on the ethical use of data. More broadly, the government and the social partners have established a 'Disruption Council' to adapt the Danish labour market to the collaborative economy and digitisation. The aim is to develop a strategy whereby digitalisation, robots and artificial intelligence improve welfare, while preparing the labour market for a future in which many traditional jobs are expected to disappear. Its work also informs education providers on the reforms required due to these technological changes.

Figure 3. Percentage of low achievers in mathematics (PISA 2015)



Source: OECD PISA 2015.

The rate of early leavers from education and training (ESL) for 18-24 year-olds has fallen steadily, but immigrants have difficulties accessing upper secondary education. From 2007 to 2017 ESL declined by 5.7 percentage points to 7.2 % but increased in 2017 by 1.6 percentage points. This increase was more pronounced in towns, suburbs and rural areas than in cities. The ESL performance gap of young people from an immigrant background is only 0.7 percentage points higher than native-born; for those not originating from western countries, it is only at 1.5 percentage points higher. While comparatively fewer young immigrants drop out from education in Denmark, they still face difficulties entering upper secondary education. 28 % of the students that are interested in continuing in upper secondary education have been declared educationally not ready. This group reaches 52 % for vocational programmes as against 17 % for general upper secondary education. In general upper secondary education, the share of young people not fit to continue has increased continuously in recent years. Since 2017, all schools have to assess in eighth grade whether a pupil is ready to pass on to upper secondary education, not only focusing on the pupil's academic, personal and social competence but also using a newly introduced practical dimension⁵⁹.

Box 1: Youth Initiative North Jutland assisted about 1400 marginalised Danes into education and work.

15-30 year-olds with no educational qualifications received tailor-made support with an ESF contribution of EUR 5 million, about 50 % of the total budget. Collaboration between professionals from education, social services and employment made it possible to develop personalised education and job plans. A wide range of services including job guidance, mentoring, internships and traineeships prompted 68 % of the young people to start education or take up work. Besides essential skills (Danish language, maths and social studies) they learned also about healthy diet, personal communication and financial literacy.

More information: <http://ec.europa.eu/esf/main.jsp?catId=46&langId=da&projectId=2137>

⁵⁹ The Consolidation Act on Guidance.

Denmark has one of the highest participation rates in early childhood education and care (ECEC) both for native and foreign-born. In 2015, 91 % of children under 2 years old participated in ECEC and 97.1 % of 3 year-olds. This is the highest participation for under-2s in the EU (OECD, 2018a). While the government has identified ECEC as a key measure to reduce the socio-economic isolation of foreign-born people in its strategy 'One Denmark — without parallel societies, no ghettos in 2030', the situation at municipality level remains uneven and, as previously stated, may also be deteriorating due to budget cuts. Teacher-child ratios keep increasing in some municipalities as does the share of unqualified staff working in ECEC (Christensen, 2017).

Box 2: Teachers in Denmark

Denmark has a relatively even age distribution of teachers in education and a more even gender balance than other EU countries. The bulk of teachers are between 30 and 60 years old (OECD, 2016a). However, Denmark will have to continue to attract young people to the teaching profession considering the future demographic trend. Denmark is one of only seven EU countries that engage in forward planning for teachers (Eurydice, 2018). Male teachers are comparatively well represented with 30.4 % in primary and 32.3 % in lower secondary education. This compares to, for instance, 2 % in primary school in Slovenia and 22 % in lower secondary school in Sweden.

Danish teachers earn relatively well but working conditions have been subject to reforms. Teachers' pay is relatively attractive at primary and lower secondary level, but less so at upper secondary level (OECD, 2017a). Generally, the impact of these reforms has been positively evaluated. But the increased instruction time leaves teachers with less time to prepare lessons for students more individually (Vaaben and Vive, 2017), which is a central aim of the reform.

Qualification of teachers is an issue, as is their limited engagement in continuing professional development. The National Research and Analysis Center for Welfare reports that 12 % of school leaders find that the lack of qualified teachers hampers schools from delivering optimal education. An additional 25 % consider this somewhat the case. In a recent survey, 41 % out of 98 municipalities reported that they experience shortages in skilled labour in schools. 43 % believe it has become more difficult to recruit teachers within the last 3 years (Kommunernes Landsforening, 2017). The international PIRLS 2016 study identified a decrease in the continuing professional development of teachers compared to 2011. About 50 % of students have teachers not attending further professional development. There are no courses during working time, no special leave and expenses for travel or substitute teachers are not covered (Eurydice, 2018). Most Danish teachers and school heads hold bachelor's degrees only. The lack of continuing professional development is a concern as teaching and the management of schools becomes an ever more challenging task.

6. Modernising higher education

Denmark continues to have, with 48.8 %, one of the highest tertiary educational attainment rates in the EU with a sizeable number of students from abroad. Tertiary attainment increased by 10.7 percentage points during the last 10 years. Denmark belongs to the countries with a high number of foreign students. According to Eurostat, both the number of students originating from EU countries as well as those from non-EU countries continued to increase between 2013 and 2016, reaching 9 % for the former and 10.8 % for the latter. As far as degree-mobile students are concerned, in 2016 alone Denmark registered a 10 % increase to 10.9 % among EU students and to 12.9 % for all foreign students. Thanks to the traditional gap year between upper secondary education and tertiary education, Danish students entering tertiary education are older in international comparison. They also tend not to enter the labour market after having obtained their bachelor's degrees but to stay in education for a master's degree.

When migrant students reach tertiary level, their educational outcomes are broadly similar to those of natives. Analysing the highest completed qualification by ethnicity in 2017 (Ministry of Foreign Affairs and Integration, 2017) shows that about the same percentage of women from migrant as from native backgrounds had obtained a bachelor's or a master's degree.

Migrants from a western background did more than twice as well (28 %) as natives or migrants from a non-western background (both 12 %) in obtaining master's degrees. These figures suggest a certain inward migration of already well qualified migrants to undertake master's studies.

Danish reforms in higher education concentrate on funding. A new funding formula for higher education is intended to form the basis for performance-based funding. Basic funding (25 %) will be renegotiated every 4 years. The number of active students determines activity funding (67.5 %) and the remaining 7.5 % is distributed based on performance on certain criteria (7.5 %). The key measurement for this performance-based funding is the amount of time it takes graduates to find their first employment.

Denmark aims to become digitally the leading country in Europe. The "Digital Growth Strategy" provides for relevant measures in higher education. As well as offering more IT courses, higher education should train students to be among the best in the world and thus make Denmark a catalyst for both new technologies and new business models. Even though Denmark has made progress in increasing the number of science, technology, engineering and mathematics (STEM) graduates⁶⁰ (European Commission, 2018b), these graduates still don't fully satisfy labour market demand. No increase is registered for ICT specialists. (European Commission, 2017b). The Technology Pact — part of the 'Digital Growth Strategy' signed by 80 participating institutions in April 2018 — aims to encourage even more young people to select technology-oriented STEM subjects.

7. Modernising vocational education and training

Denmark is addressing decreasing enrolments in VET and links VET more strategically to economic and innovation systems. The share of students in upper secondary participating in VET further decreased to 41 % in 2016 (Cedefop, 2018a). A tri-partite agreement aiming to attract young people into VET and to increase completion rates was concluded in August 2017. Under this agreement, employers committed to offer at least 8 000-10 000 additional apprenticeship places by 2025 to allow more young people to choose and to complete a VET programme (Apprenticeship toolbox, 2018). Initiatives to secure a sufficient and qualified workforce in the long run include strengthening financial incentives for companies that offer apprenticeships and the creation of subsidy programs providing internships. In 2017, VET knowledge centres were launched to develop Centres of Excellence (Cedefop, 2018). These are to provide knowledge and training in specific areas with high relevance for emerging and growing sectors: robotics and automation, welfare technology, process technology, craftsmanship and handicrafts, craftsmanship and design, sustainable building and energy-related building renovation, e-business, and database service development. These centres have a close and formalised cooperation with other actors relevant for regional growth. The government has provided DKK 133 million (EUR 17.8 million) to establish and operate the centres between 2017 and 2020, and a further DKK 80 million (EUR 10.7 million) for specific technology investments.

8. Promoting adult learning

Denmark continues to further modernise its high performing adult education and continuing training system. Denmark has one of the highest adult participation rates in learning in the EU: 26.8 % in 2017 (Eurostat 2017). According to the Continuing Vocational Training Survey from 2015 (Eurostat 2015), 34.6 % of employees participated in continuing vocational training (EU-28 average 40.8 %). Participation of the low-skilled in education and training is the second highest in Europe (17.3 % in 2017).

A tripartite agreement towards stronger and more flexible adult education and continuing adult training was concluded in October 2017. The agreement contains initiatives aimed at helping those wishing to upgrade their qualifications in their present profession as well as those considering switching jobs to another profession or industry in line with the Council Recommendation on Upskilling Pathways. It will also serve to improve the quality of the adult

⁶⁰ In 2016, Denmark had the second highest number of STEM graduates among Nordic countries (23.3 % compared to 15.5 % in Sweden, 14.3 % in Norway) but this compares to 28.9 % in Ireland and 25.5 % in France. Denmark produces a comparable share of STEM PhDs to Germany and Finland with 1.3 % but less than Sweden (1.4 %) or Switzerland (1.9 %) and clearly more than Norway with 0.8 %.

vocational training (ArbejdsMarkedsUddannelser (AMU)) programmes, and ensure more flexibility for companies. The agreement will give employers in the public and private sector better access to qualified labour, and a better framework will be created for keeping workforce skills up-to-date with the pace of change in the labour market.

The agreement will run for 4 years (2018-2021). Its key elements are:

- (1) Targeted labour market transition — with establishment of a ‘transition fund’ (more than DKK 400 million (EUR 54 million)) intended to promote labour market mobility by strengthening the possibilities for employees to participate in job-orientated training and education, either in their spare time or during their working hours;
- (2) Strengthening basic skills and more extensive use of screening tests (around DKK 60 million (EUR 8 million));
- (3) Improving the quality of the adult vocational training (AMU) programmes (DKK 420 million (EUR 56.3 million));
- (4) Increased compensation for participation in all AMU programmes;
- (5) Further development of the adult and continuing higher education system and a better certification system (DKK 5 million annually (EUR 0.7 million));
- (6) A more professional AMU system with greater flexibility, documented learning through tests and easier access for providers of AMU programmes and a single entrance to the VET system;
- (7) Flexible VEU employer contribution and refund of DKK 680 million (EUR 91 million);
- (8) Dedicated outreach activities (DKK 100 million (EUR 13.4 million)).

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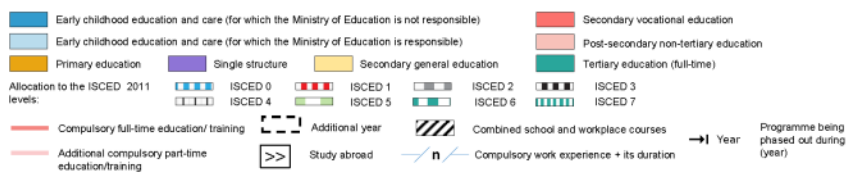
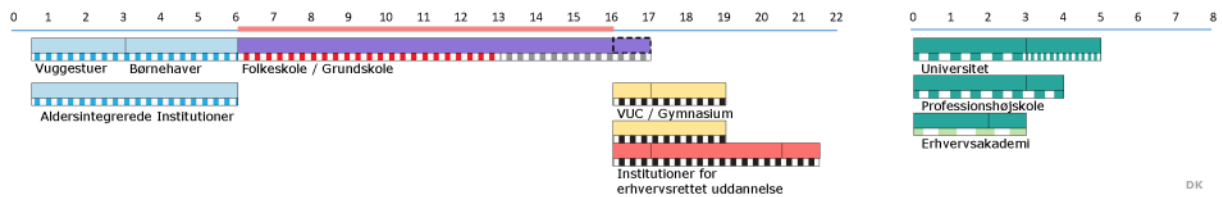
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: 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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ESTONIA

1. Key indicators

		Estonia		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		12.0% ^b	10.8%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		43.2%	48.4%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		91.7% ¹³	92.6% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	9.1% ¹²	10.6% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	10.5% ¹²	11.2% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	5.0% ¹²	8.8% ¹⁵	16.6% ¹²	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)		76.0%	80.2%	
Adult participation in learning (age 25-64)		ISCED 0-8 (total)		10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	8.6% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	: ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Public expenditure on education as a percentage of GDP		5.7%	5.9% ¹⁶	4.9%	4.7% ¹⁶	
Education investment	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€4 623	€4 846 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€5 015	€5 473 ¹⁵	€7 741 ^d	: ¹⁵
		ISCED 5-8	€8 818	€9 716 ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	12.0%	10.9%	10.4%	9.6%	
	Foreign-born	:	:	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	42.5%	48.1%	38.6%	40.6%	
	Foreign-born	55.4%	52.4%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	75.2%	80.1%	70.7%	74.1%	
	ISCED 5-8	86.7%	83.0%	80.5%	84.9%	

Sources: Eurostat (see section 10 for more details); OECD (PISA).

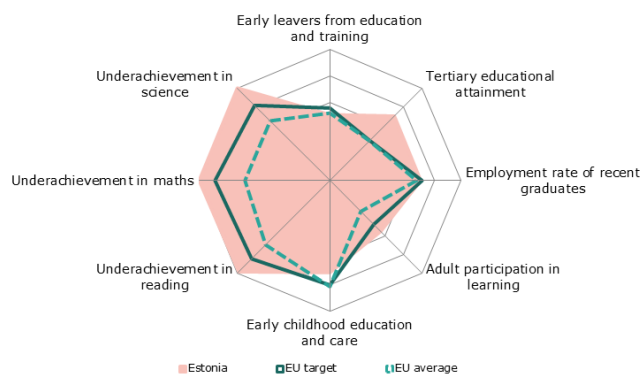
Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source;

b = break in time series, d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Modernisation efforts are being made at all levels of education in Estonia and investment in education remains above the EU average. However, the need to adapt the education system to anticipated shifts in the labour market and in the economy, as well as to the interests of students and adults persist. Ageing trends among teachers raise important challenges.
- The level of civic knowledge of Estonian students has increased. There are clear policies and approaches to support citizenship education.
- Tertiary educational attainment is increasing, but dropout from university is still high.
- Performance-based funding was introduced in vocational education and training to encourage schools to tackle high dropout, offer workplace-based learning and foster cooperation with the business sector.
- Participation in adult learning is higher than the EU average, but the need for upskilling among the adult population is high.

3. Investing in education and training

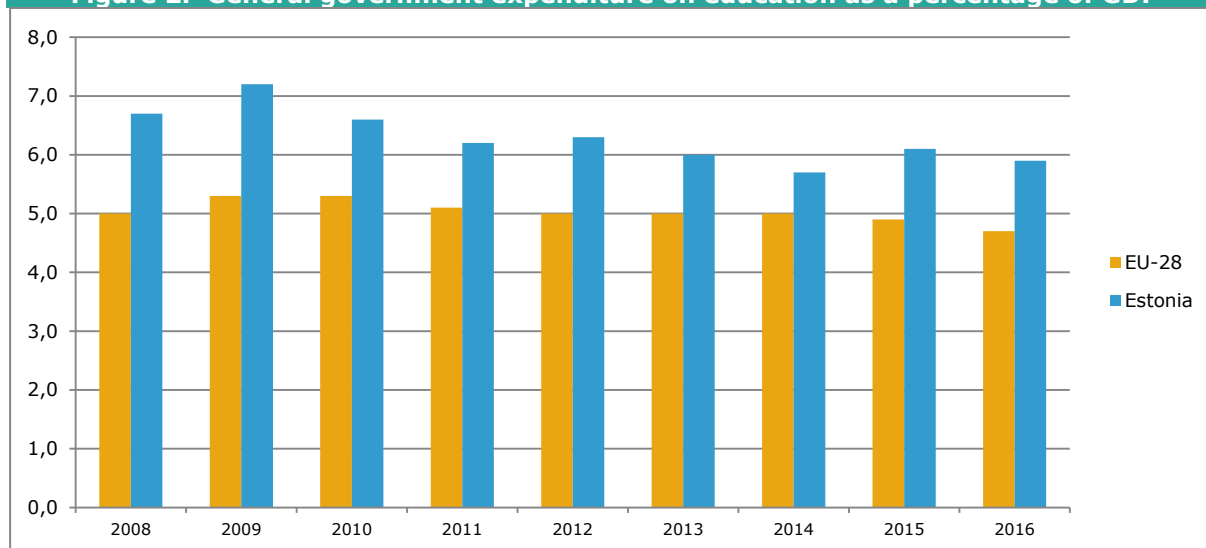
In relative terms, public spending on education is above the EU average. In 2016, general government expenditure on education (COFOG) decreased in real terms by 3.2 %. Spending on education accounted for 5.9 % of GDP, compared to 6.1 % in 2015, although this was still above the EU average of 4.7 %. Spending on education decreased to 14.6 % of total government spending in 2016 (15.1 % the year before), but is still among the highest in the EU and well above the EU average of 10.2 %. By type of transaction, the sharpest decrease compared to 2015 (-33 %) was recorded under gross capital formation. This reflects the completion of investments in educational infrastructure (e.g. buildings, computers, IT infrastructure) in 2015 linked to the end of the funding cycle 2007-2013.

The reorganisation of the school network continues but is incomplete, which raises cost efficiency challenges. Municipalities can apply for grants to modernise the school network, financed partly by the European Regional Development Fund (ERDF). In exchange, municipalities have to arrange the network of local schools, while merging or restructuring basic schools (ISCED 1-2) and to discontinue the provision of general upper secondary education. 16 state gymnasiums (ISCED 3) are already operating (out of a planned total of 24). The goal is to address demographic trends, ensure quality education and optimise spending by reducing unused space⁶¹ and maintenance costs. However, the pace of adaptation varies among municipalities, and responsibilities for the school network have not yet been aligned to the recent local administration reform. In 2017, 163 schools offered upper secondary education⁶² (compared to about 200 in 2013), but the reorganisation aims to further lower the number to 100 by 2020.

⁶¹ When the reform started there were more than 20 square meters per student that needed maintenance (lighting, heating, repairs, etc.) in half of the school buildings in Estonia.

⁶² This includes gymnasiums that also offer basic education.

Figure 2. General government expenditure on education as a percentage of GDP



Source: DG EAC elaboration on Eurostat's general government spending. Online data code: [gov_10a_exp](#).

4. Citizenship education

The level of civic knowledge of Estonian students increased. The International Civic and Citizenship Education Study (ICCS)⁶³ shows that the level of civic knowledge of Estonian students is above the average of the 20 countries surveyed (546 points compared to the ISSC-average of 517). Compared to 2009, Estonian students scored 21 points higher. 43 % of Estonian eighth graders have a very high level of civic knowledge (ICCS average: 35 %), while only 3.4 % scored very low (average: 13 %). Girls outperform boys by 33 points (ICCS average: 25 points). Students in Russian-medium schools scored significantly lower than their peers in Estonian-medium schools (58 points). This performance gap is not linked to students' socio-economic background, their political interest or activities, nor the characteristics of the school (MoER, 2016a). Answers to questions on values and attitudes show that students' support for equal opportunities between men and women improved. 80 % of teenagers in Estonia reported that they would vote in local elections in the near future (85 % on average), but less so in national elections (77 % vs 85 %). 70 % of students assessed their relationship to teachers as positive and more than 90 % valued their own contribution to school life.

There are clear policies and approaches to support citizenship education. In Estonia citizenship education is taught as a separate subject in general education starting from sixth grade and integrated into other compulsory subjects throughout the entire school education, including in initial vocational education and training (VET). Students' civic competences are assessed at school to summarise individual achievement. A new testing model will be developed starting from 2019. A model of entrepreneurship training aims to develop entrepreneurial spirit among students and teachers. 47 % of all general education schools, 85 % of vocational schools and 90 % of higher education institutions tested the model in 2017, with on average 64 % of participating institutions already implementing it.

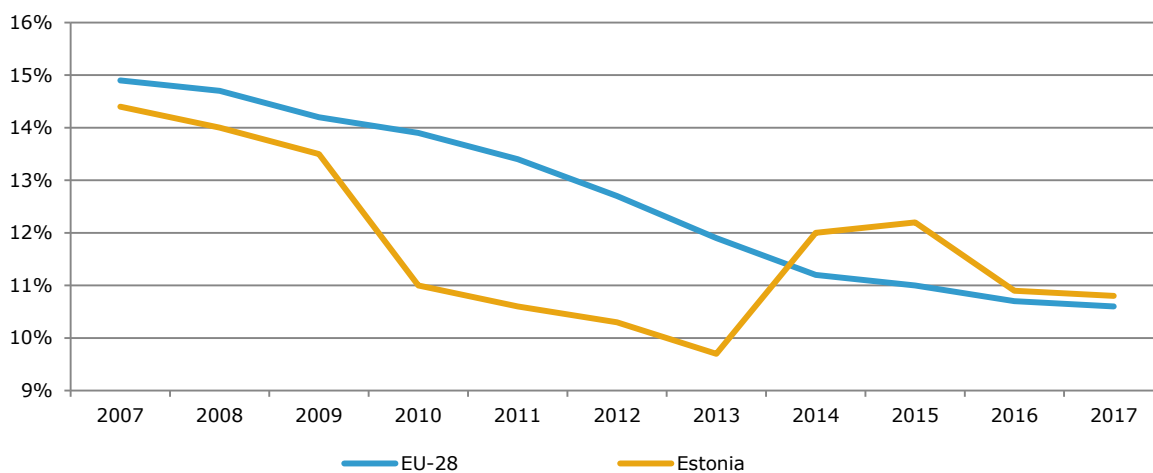
5. Modernising school education

Early school leaving is a challenge, particularly in the context of labour market trends and the changing structure of the economy. The rate of early leavers from education and training among those aged 18-24 was 10.8 % in 2017. Although this is around the EU average (10.6 %), it is above Estonia's Europe 2020 target of 9.5 %. Early school leaving remained virtually unchanged in the past years and is high in the context of a shrinking population, skills shortages

⁶³ In 2016, 14 EU Member States participated in ICCS: Belgium- Flanders, Bulgaria, Croatia, Denmark, Estonia, Finland, Germany (North Rhine-Westphalia), Italy, Latvia, Lithuania, Malta, the Netherlands, Slovenia and Sweden.

and the need to update the skills of the population. The rate remains much higher for men (14.2 %) than women (7.3 %). About 60 % of all early school leavers in Estonia⁶⁴ have never started upper secondary education and 40 % dropped out in upper secondary, mainly in VET. Dropout in VET has decreased (22.4 % in 2016), but remains high. About 20 % of young people fail to complete secondary education within seven years of graduating from basic education (MoER, 2017a). These figures point to the importance of strengthening career guidance and support services, particularly in basic schools, to tackle early school leaving.

Figure 3. Early leavers from education and training (ages 18-24)



Source: Eurostat. Online data code: [edat_lfse_14](#).

Enrolment rates in early childhood education and care (ECEC) are improving. The participation of children aged between 4 and compulsory school age (7) increased to 92.6 % in 2016. This remains below the EU-average of 95.3 % and the EU's 'Education and Training 2020' benchmark of 95 %. Enrolment rates for lower age groups have also been improving⁶⁵. EU funds are supporting the development of places for age-groups 0-7. Parents are entitled to a place in early education once the child is 1.5 years, if they wish. Municipalities can offer placement in childcare⁶⁶ for children below four. However, the curriculum and the requirements for staff have not yet been harmonised between the two types of care options (i.e. childcare and pre-school⁶⁷). The number of children in the ECEC age-group is expected to decrease slightly in coming years, in line with demographic trends. The proportion of children with a different mother tongue who are in language immersion classes in pre-school is increasing, which may support language acquisition from early on.

Although Estonia performs well in terms of equity in international surveys, some challenges remain. Estonia performs well in international skills surveys like PISA. Average student performance is high, while the impact of socio-economic status on the acquisition of basic skills is one of the lowest in the EU. The gender gap is a challenge in functional reading (albeit improving), but not in mathematics or science (MoER, 2016b). However, national examinations show that the learning outcomes of students in schools in rural areas are lower than those of their peers in urban areas (Serbak and Valk, 2016). Although the number of learning support specialists is increasing, there are shortages: less than half of all schools had a speech therapist and a social pedagogy therapist in 2017, and less than a third had a psychologist or special education teacher. In addition, teachers sometimes lack knowledge on how to deal with students with special educational needs (MoER, 2018).

Proficiency in Estonian language for students with a different mother tongue remains a challenge. PISA 2015 showed that the performance gap between students studying in Estonian

⁶⁴ Eurostat data for 2016: [lfso_16elvnsta] and [lfso_16elvncom].

⁶⁵ Enrolment rates by age groups (2017): 1y: 33.46 %, 2y: 76.68 %, 3y: 90.89 % (Statistics Estonia).

⁶⁶ Outside ISCED classification.

⁶⁷ For children up to school age. ISCED 0 classification.

and those in Russian-medium school persists. The proportion of Russian-medium basic school graduates (ISCED 1-2) with at least an intermediate level of proficiency in Estonian (B1) decreased to 57 % in 2017, significantly below the 90 % target set for 2020. However, Estonian language acquisition has been improving in upper secondary, where at least 60 % of the curriculum has been taught in Estonian since 2007. 83 % of graduates had reached the required B2 level in 2016. Evidence shows that proficiency in Estonian and foreign languages improves labour market outcomes, but Russian-medium basic school graduates have lower levels of proficiency (MoER, 2015). In 2017 the number of teachers in general, vocational and pre-school whose Estonian language skills did not meet the requirements was equal to 7.8 % of all teachers.

Despite an increased focus on teachers, the attractiveness of the teaching profession is still low. Almost 50 % of school teachers are aged 50+ and one in three works part-time. Teacher salaries have increased by almost 60 % since 2012. On average, in 2017, a municipal school teacher working full-time earned the equivalent of 105 % of the average wage in Estonia. Authorities' goal is for salaries to reach 120 % of the average wage, in line with those of higher education graduates. Despite increases, teachers in pre-school earn only 73 % of the average salary of school teachers. Competition for teacher education programmes has improved slightly, but is still low. A new leaders' competence model for headmasters was designed and incorporated in master's programmes for school leaders. In addition, the salaries of lecturers in higher education are not at a competitive level (MoER, 2018).

There is an increased focus on digital skills, but about half of students are unhappy with the development of their digital skills. Estonia uses self-assessment to evaluate students' digital skills at various levels of the school system (grades 4, 8, 11). In 2017, 82 % of students assessed their skills level as above average, but almost 50 % were not happy with the amount of digital skills development at school. More than a third of students were not happy with how often digital tools are used in the classroom and would like to use them more often (MoER, 2018). The provision of digital skills through the school curriculum is unequal among schools (ibid). Although a full picture of teachers' digital competences is not available, official reports by the Ministry of Education and Research suggest that the need for upgrading teachers' digital skills is high (ibid).

6. Modernising higher education

Tertiary educational attainment continued to increase in 2017 but dropout rates are still high. In 2017, 48.4 % of the population aged 30-34 had a higher education degree, 3 percentage points more than in 2016. This is significantly above the EU average of 39.9 %. The gender gap persists —41.6 % of men compared to 55.6 % of women in the target age group have a tertiary degree, although it should be noted that the attainment rate for men is above the EU benchmark of 40%. Nevertheless, maintaining these high rates will be difficult considering the high dropout rates (21.9 % in 2017). Since 2017, Estonia has been applying a revised performance-based funding model in higher education. Preliminary data shows a slight improvement in the proportion of students graduating within time, the proportion of students studying in priority fields, and an increase in the proportion of foreign students in Estonian universities and of Estonian students participating in mobility abroad (MoER, 2018).

The number of students is declining and a large part of students work and are adult learners. Between 2012 and 2017 the number of students enrolled in Estonian universities decreased by 28 %. The latest EUROSTUDENT survey shows that 66 % of all students in Estonia work and study at the same time (PRAXIS, 2018). Students' average age is 26. More than one in five students is over 30. Therefore, many students are adult learners, requiring flexible study arrangements. Students enter the labour market early on, with 41 % of 20-24 year-old students already working regularly during their studies. More than half of working students are employed in their area of specialisation and 69 % of students work to gain experience. Surveys (Ernst & Young, 2017) show that 38 % of graduates are not satisfied with workplace-based learning opportunities⁶⁸ and 22 % were not satisfied with their study programmes. In addition, 23 % of graduates were not satisfied with their teachers and the level of teaching. The employment rate of recent graduates improved in 2017 to 83 % (75.5 % in 2016), placing it slightly below the EU average of 84.9 %.

⁶⁸ Workplace-based learning has only been piloted in higher education since 2017.

One in four graduates reported not working in a field related to their studies. Since 2015, ERDF has been financing scholarships in smart specialisation fields.

The skills profile of higher education graduates is insufficiently aligned to labour market needs. The proportion of graduates in science, technology, engineering and mathematics (STEM) is improving, reaching 29 % in 2017. However, there are only 12.8 STEM graduates for every 1 000 people in the 20-29 age group, compared to 19.1 on average in the EU. The number of ICT graduates has increased by 50 % in five years, but unmet demand in the ICT sector is particularly high (EC, 2018). Labour shortages have been identified in sectors such as science, technology and engineering, in managerial positions, and in legal and healthcare professions (OECD, 2017). The labour market outcomes of STEM graduates are very different depending on the field of study. Graduates in mathematics and statistics continue their studies to postgraduate and to doctorate level twice as often as ICT graduates. Their salaries are high, but not as high as those of ICT graduates. Although technical fields (engineering, manufacturing and construction, including architecture) offer good labour market prospects, their attractiveness is low (MoER, 2017). Recent evidence shows that a growing number of university graduates start vocational studies after graduating from university and gaining experience on the labour market (Cedefop, 2018a).

There is some progress with the internationalisation of higher education. International students accounted for 9.5 % of the total student body in 2017 (2.3 % in 2011) and 17 % in doctoral studies. By field of study, the proportion of international students exceeded 10 % in business, social sciences and agriculture and is close to 10 % in ICT-related studies. National data suggests that one in five international students stays for work and 7 % continue their studies in Estonia. Not speaking Estonian is the main barrier to entering the labour market (except in ICT).

The full potential of Estonia's research and innovation (R&I) system remains underused. Estonia has implemented several measures to boost the growth of the knowledge economy, but the challenge is to maximise its impact. There is a good variety of higher education, research and technology-enabling institutions and infrastructure in place. However, weak links between business and science, low private investment in R&D, the quality of scientific output and the supply of human capital and skills are key bottlenecks to expanding Estonia's innovation capacity. Supported by EU funds, Estonia's public R&D intensity, at 0.6 % of GDP, has been generally above the EU average. The government has put in place several measures to improve the working conditions of researchers, promote research careers and attract foreign talent. The mismatch between the needs of the business sector and the limited provision of knowledge from the public research system continues to hamper Estonia's innovation capacity. Doctoral grants increased by 1.5 times in 2018 to support the completion rates. In this context, the 2018 country-specific recommendations call on Estonia to promote research and innovation, in particular by providing effective incentives to broaden the innovation base (Council of the European Union, 2018).

7. Modernising vocational education and training

Efforts are being made to improve the attractiveness of VET, which remains low. The share of basic school graduates who continue to VET has not increased significantly in the past ten years. It was 25 % in 2017, below the national target of 35 %. However, recent data shows that an increasing number of young people (37 %) are opting for VET 3 years after graduating from basic education, showing once again the need to strengthen career guidance. The employment rate of recent VET graduates was 86.2 %, above the EU average (76.6 %). The salaries of VET graduates have increased rapidly, indicating a strong demand for specialists with professional skills (MoER, 2018). 78 % of VET graduates from 2015-2016 are in employment (Ernst & Young, 2017) and 68 % of employed graduates work in a field related to their studies. 21 % of graduates have continued their studies after graduating from VET, half of them in higher education. Work-based learning is increasing: 7 % of students in VET were involved in workplace-based learning in 2017. A quarter of all VET institutions offer this type of learning together with more than 370 companies (ibid). The curricular reform launched in 2013 was finalised in 2017. It introduced a new system of vocational qualifications with five levels of qualifications, corresponding to the European Qualifications Framework. The process was supported by the European Social Fund and national funds.

Box 1: Performance-based funding in VET

In 2018 Estonia introduced performance-based funding in VET, complementing a revised basic funding component, which will no longer be exclusively based on per-capita financing. The overall budget for VET was also increased, particularly to finance support services. Basic funding is fixed for three years and linked to the number of learners, the fields of study, the salaries of teachers, number of students with special educational needs, the number of support specialists and the school infrastructure. Performance funding is based on the proportion of students who graduate in nominal time; graduate by taking the professional examination or who continue their studies on entering the labour market; and the proportion of students in workplace-based learning. On average, performance-based funding will account for 8 % of total funding. The new funding model aims to promote innovation and better cooperation between schools and companies.

8. Promoting adult learning

Adult participation in learning continues to increase, however, the need for reskilling and upskilling is high. In 2017 adult participation in learning reached 17.2 %, surpassing the Education and Training 2020 benchmark of 15 % and the EU average of 10.9 %. A more ambitious target (20 %) was set for 2020 at national level. In 2017, participation increased particularly among the unemployed (from 10 to 14 %). The proportion of adults aged 25-65 without at least professional or vocational education was 28.6 % in 2017 and has not improved significantly in recent years. In the context of Estonia's labour market and population trends, the need for upskilling and reskilling is particularly important. According to the Continuing Vocational Training Survey, in 2015, 86.1 % of Estonian companies (compared to EU-28 average of 72.6 %) provided vocational training to their employees and 31.9 % of employees participated in training (EU-28: 40.8 %). The majority of Estonian enterprises indicated that the main skills needed to develop the enterprise were team working, technical, practical and job-specific skills. Mobile workshops were organised throughout the country to introduce young people to professions and work practices in carpentry and metalwork and to familiarise them with nursing and bio-analytics through a virtual reality workshop. A pre-vocational education programme was launched targeting people younger than 26 who are not aware what to study or have not graduated from any VET programmes.

Box 2: Upskilling supported by the European Social Fund

There are three different support schemes.

- 16 projects totalling over EUR 2.6 million are being implemented with the aim to bring adults with low educational attainment back to formal education and upgrade their skills. Nearly 3 000 participants were involved in these projects by the end of 2017.
- Other projects support the development of key competences such as digital skills, language skills for adults whose mother tongue is not Estonian, social skills and personal development for persons with disabilities. The number of beneficiaries targeted over the period 2015-2020 is 20 000.
- In addition, around 25 000 adults have received work-related training by the end of 2017 and over 66 000 are targeted by the end of 2020.

All courses are provided free of charge.

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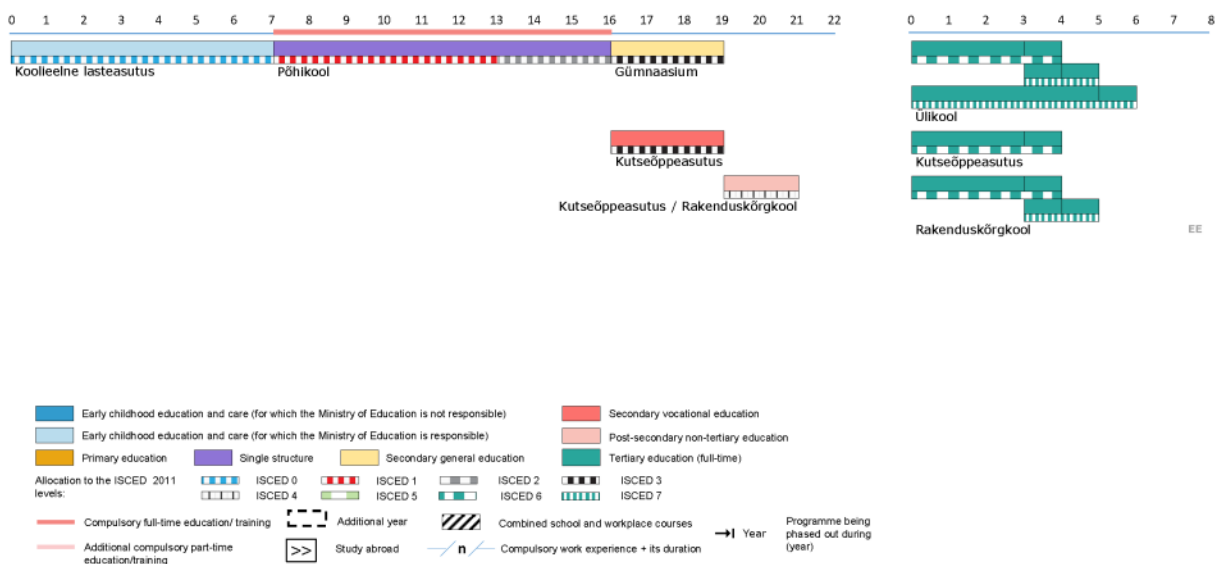
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: 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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FINLAND

1. Key indicators

		Finland		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		9.5%	8.2%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		45.3%	44.6%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		83.6% ¹³	87.4% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	11.3% ¹²	11.1% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	12.3% ¹²	13.6% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	7.7% ¹²	11.5% ¹⁵	16.6% ¹²	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)	77.0%	77.0%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	25.1%	27.4%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	3.6% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	15.8% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Public expenditure on education as a percentage of GDP		6.4%	6.1% ¹⁶	4.9%	4.7% ¹⁶	
Education investment	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€7 718	€8 377 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€6 432	€6 451 ¹⁵	€7 741 ^d	: ¹⁵
		ISCED 5-8	€13 138	€13 283 ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	9.1%	7.9%	10.4%	9.6%	
	Foreign-born	19.5% ^u	15.2% ^u	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	46.9%	46.7%	38.6%	40.6%	
	Foreign-born	31.0%	27.1%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	74.0%	73.3%	70.7%	74.1%	
	ISCED 5-8	81.5%	82.1%	80.5%	84.9%	

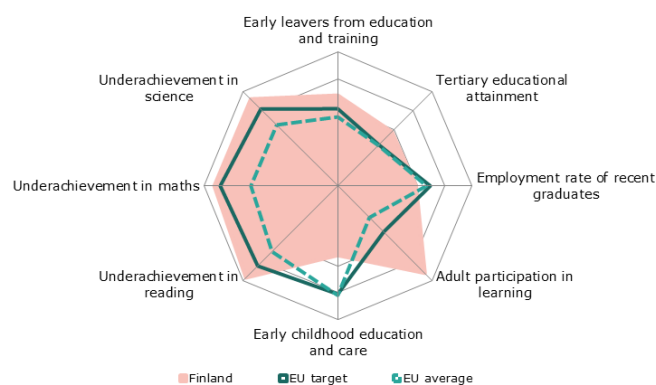
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Education outcomes have declined slightly over time but remain good, in particular with regard to basic skills.
- The very comprehensive Finnish approach towards citizenship education gives rise to young Finns having high civic skills compared to their peers in other Member States.
- While equity is a key principle of Finnish education performance, gaps between different groups have increased and young people with an immigrant background, although still a relatively small group, perform significantly worse than native-born people.
- Higher education faced consolidation and budget restrictions but the 'Vision for higher education and research in Finland 2030' aims to mobilise the sector.
- Finland continues to implement crucial and forward-looking reforms in its education system, in a climate of fiscal adjustment.

3. Investing in education and training

Fiscal consolidation continues; education expenditure as a share of GDP remains well above the EU average but below other Nordic countries. Government expenditure on education as a share of GDP declined by 0.5 percentage points between 2010 and 2016, to 6.1 %. This is still 1.4 percentage points above the EU average but 0.8 percentage points lower than Denmark and 0.5 percentage points lower than Sweden. Finland spends a higher share on secondary level, 2.6 % compared to the 1.9 % EU average, more than other comparable countries except Denmark. The share of GDP devoted to higher education is similar to Denmark, but considerably larger than in other comparable countries and the EU average. While most spending categories did not see a reduction over time, compensation for employees (teachers) has declined since 2015.

Finnish education remains efficient and effective but cutbacks were felt in all educational sectors, most heavily in vocational education and training (VET) and in higher education. Two thirds of primary education is financed at local level and this share slowly increased between 2012 and 2014 as consecutive governments reduced public education spending by EUR 1.5 billion between 2011 and 2018. Cumulatively, funding for schools was reduced by about EUR 190 million. If savings at municipal level since 2012 for early childhood and care (ECEC) and basic education are added, overall savings would increase to EUR 1 billion. EUR 300 million was cut for VET, and in higher education the cuts reached EUR 250 million for universities of applied sciences and EUR 300 million for other universities. In the same period 2011 to 2018, public funding for research was reduced by EUR 300 million. A recent survey by the Finnish teacher union⁶⁹ showed that the workload of teachers in general education, including non-teaching tasks, has increased compared to 2011.

Measures aim to increase efficiency in education. This is to be achieved through mergers and by closing institutions at all levels. Job losses in higher education have occurred; 3 000 jobs have been shed in VET. The number of courses offered has been reduced, and an impact on teacher/student ratios has been observed. Institutions have been encouraged, in particular in higher education and VET, to review their course offer. This also allowed them to update their offer and to develop also broader and interdisciplinary courses.

Recent initiatives aim to increase the quality of education and research. These include the 'basic education forum', the introduction of a 'guarantee of learning', a new proposal on upper secondary education and the 'Vision for higher education and research in Finland 2030' (all are described elsewhere in this report). All of these outline new approaches to strengthen the quality and relevance of education. However, since the additional funding associated with them does not

⁶⁹ OJA Trade Union of Education (6.4.2018).

fully offset previous and current spending cuts it may be difficult for the education sector and education stakeholders to fully benefit from them.

4. Citizenship education

Finland has a very comprehensive approach towards citizenship education. It is both a cross-curricular theme integrated into other compulsory subjects and a subject in its own right. Schools at each level of education are required to implement multi-disciplinary learning modules relevant for citizenship education. Pupils take an active part in planning the learning content and delivery processes (Eurydice, 2017).

Finland has a comparatively high number of minimum recommended hours of citizenship education as a separate subject. This amounts to 9.5 hours per year at ISCED 1 and 28.4 hours at general ISCED 2 and 3 levels – Estonia and Luxembourg are the only other countries teaching between 25 and 30 hours at these levels. In upper secondary general education students can choose the grade at which they complete the three compulsory courses in social studies, but they can also enrol in an additional optional course on this subject area (Eurydice, 2017). Curricula for upper secondary education further state that both educational programmes and the school culture should help to prepare pupils for participation, co-responsibility and rights in a free and democratic society (Eurydice, 2017).

Finland provides rather general guidelines instead of specific recommendations for the classroom assessment of citizenship education and actively trains teachers. It proposes several methods for classroom assessment in primary, in general secondary and in school-based VET, ranging from questionnaires and oral examinations to project-based or self-assessment. These aim to evaluate knowledge and skills rather than attitudes. National tests in social sciences at grade 9 were administered in Finland for monitoring purposes in 2010/11 and are scheduled to be repeated in 2022. Finnish teachers dealing with subjects that are related to citizenship education must cover these topics as elective part of their pre-service or initial teacher education, and can also do further in-service and professional development.

Finnish young people have strong civic skills. According to the 2016 International Civic and Citizenship Education Study (ICCS) by the International Association for the Evaluation of Educational Achievement (IEA)⁷⁰, Finnish eighth-grade students score among the best on knowledge on civic issues in international comparison. As in other subject areas, girls do better than boys. Language and immigrant background have a greater impact on performance than in other participating EU countries, whereas the impact on performance of socio-economic status is lower.

5. Modernising school education

Finland continues to be among the best performing EU countries regarding basic skills with a relatively equitable and accessible education system. Finland has reduced its early school leaving (ESL) rate from over 10 % in 2010 to close to 8 % in 2017, the national target for 2020. In 2017, the ESL rate for foreign-born (15.2 %) was almost twice as high as for the native-born (7.9 %). Large differences in the ESL rate also exist between young people in rural areas (10.1 %) and those in cities (7 %). According to the 2015 OECD PISA survey of 15 year-olds, Finland remains one of the best performing countries, notwithstanding a somewhat negative trend over time. Since 2009, performance in mathematics and science has worsened and has stalled for reading (European Commission, 2017a). But the IEA's survey in 2016 (PIRLS) showed that the reading skills of 10 year-olds remain strong and unchanged compared to 2011. The main factors influencing reading skills are: (1) reading knowledge before entering school, (2) reading as a leisure activity, and (3) the family background (Kaisa Leino et al, 2017).

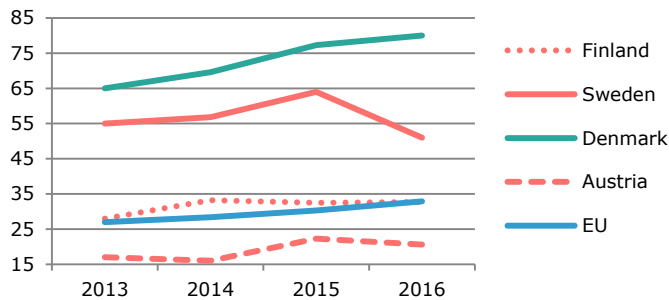
Finland has a traditionally low participation in early childhood education and care (ECEC). The share of under 3 year-olds in ECEC increased by 6.7 pps between 2007 and 2016 to

⁷⁰ ICCS reports on students' knowledge related to concepts of citizenship, equity, decision-making and civic self-image. In ICCS 2016 the civic knowledge scale was set to a metric with a mean of 500 (the average score of countries participating in ICCS 2009).

32.7 %. Both the share and the growth are in line with the EU average but are below other Nordic countries⁷¹. Participation for those between 4 years old and compulsory school age increased to 87.4 %. Lowering ECEC fees in 2018 for families with middle and low incomes should help increase participation (NRP, 2018).

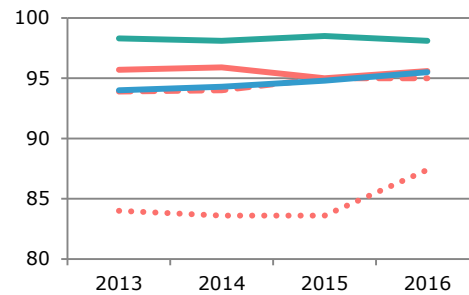
Figure 2. Participation in early childhood education and care

Participation of less than 3 year-olds



Source: Eurostat. Online data code: *ilc_caindformal*.

Participation of 4 year-olds until school age



Source: Eurostat. Online data code: *educ_uoe_enra10*.

Upcoming legislation aims to improve the quality of ECEC. A new law to be adopted in September 2018 aims to improve quality of ECEC as well as national data collection and statistics. The number of tertiary educated teachers, in particular those having a bachelor of education degree, will rise. From 2030 onwards two thirds of centre based staff must have a tertiary degree and all managers have to hold master degrees. Over the last 5 years, ECEC teacher training places at universities have been expanded by 1 000 and a further 1 000 places are to be created from 2018 to 2021.

Inequality in Finland has traditionally been low but has started to increase (European Commission, 2018a). Comparing OECD PISA 2006 and 2015 in science performance, equity indicators showed a significant deterioration. Of three main determinants of inequalities reviewed in a recent study — low educational level of parents, unemployment or receipt of social assistance — the latter has the greatest impact on the education outcomes of children (Vauhkonen et al, 2017). Foreign-born students not only leave education more often, they also tend to repeat grades. PISA tests show that in 2015 the difference between schools remained one of the lowest internationally and that the largest variation occurs within schools. At regional level, performance differences increased: the best performing region, Helsinki Metropolitan area, outperformed Western Finland, the worst performer, by about 37 PISA score points (equivalent to one school year). Performance decreased the most in Eastern Finland (OECD, 2016b). And the gender performance gap between boys and girls was one of the most pronounced in PISA 2015, in particular in science (Vettenranta J. et al, 2016).

Besides introducing new curricula at all levels of education, Finland is taking a series of additional measures to increase quality in education. The 'Basic education⁷² forum' convening researchers, experts, teachers, principals, students, parents, municipalities and all other levels of administration, proposes to build on the existing highly egalitarian system to introduce the 'future basic school'. It will strengthen the diversity of teaching and learning models, use individualised instruction and systemic development of expertise while increasing cooperation within and beyond schools. The school system is already characterised by intensive communication with parents and teachers supporting students attentively.

Finland's teaching force is ageing but teaching is a very attractive occupation with remuneration in some sectors and in later career lower than in other Nordic countries. At upper secondary level (ISCED 3) the age of teachers continuously increases, with close to 50 % of teachers being 50 years or older. This is in contrast to countries like Denmark or Sweden where the average age of teachers remains rather stable or slightly decreases. Finland is one of the few countries with long-term forward planning (Eurydice, 2018). The salary of Finnish teachers

⁷¹ Denmark had 70 % and Sweden 51 % in 2016 [*ilc_caindformal*].

⁷² Basic education comprises 6 years of primary and 3 years of lower secondary education.

compared to other tertiary-educated workers is higher at all education levels except in pre-primary level than in other Nordic countries or the EU/OECD average (OECD, 2018, Table D3.2a). However, comparing Finnish teachers' salaries after 15 years of experience using purchasing power parity shows them to be clearly lower than those in other Nordic countries and only around the EU/OECD average. In the increasingly important ECEC sector, Finnish teachers earn about the EU average at recruitment but their maximum salary amounts to only two thirds of the EU average (OECD, 2017), potentially limiting attractiveness.

Formerly weak participation in continuing professional development has improved. In 2013, the OECD's TALIS survey showed low levels of continuing professional development, with only 15 % of teachers having a personal study plan and limited teacher collaboration and networking. A recent national study showed improvement — 80 % of teachers in basic and 88 % in general upper secondary education have participated in continuing professional development beyond the 3 annual obligatory days during the last 3 years (Kumpulainen, 2017). In 2016, the government established the 'Teacher Education Forum' to reorganise initial teacher education and continuing professional development based on national and international research, best practices and experience. Its result is the 'Development programme for teachers' pre- and in-service education'. EUR 15 million for 2017 and EUR 12 million for 2018 have been distributed to pilot projects through the Forum.

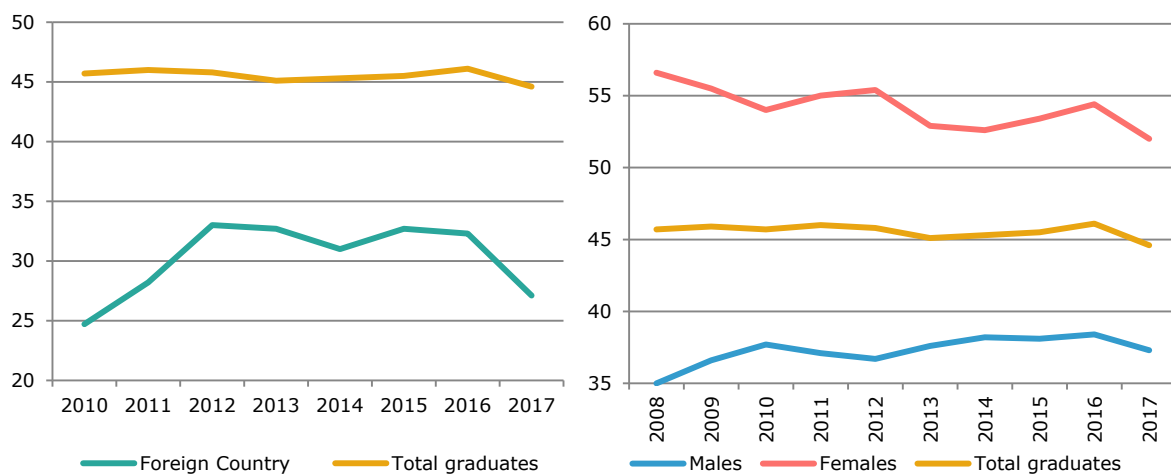
Finland compares generally well on digital skills. For advanced ICT skills and development, Finland retains a leading position. On basic ICT skills, the Netherlands, Sweden and Denmark score better (European Commission, 2018b). The current government initiated two key programmes in this area. For 2016-2019 it allocated EUR 300 million for the Knowledge and Education programme and EUR 100 million for the Digitalisation programme. This will make it possible to temporarily create 2 500 mentor teacher positions in municipalities to assist teachers in using new technologies and to promote using digital environments. Introducing the upper secondary matriculation examination as a fully computer-based exam by 2019 should encourage all teachers and students to update their digital skills.

6. Modernising higher education

Tertiary educational attainment levels are high but have recently dropped slightly. 44.6 % of 30-34 year-olds obtained tertiary education in 2017, 2.7 percentage points fewer than in 2007. With 37.3 % in 2017, male tertiary attainment increased by 2.3 percentage points since 2008, while the share of women of 52 % declined by 4.6 percentage points. In 2017 only 27 % of foreign-born people had tertiary education. This is less than in Austria (36.8 %) or the Netherlands (34.6 %) and other Nordic countries, where over 50 % of foreign-born people had tertiary education⁷³.

⁷³ In 2017, 58.1 % foreign-born people aged 30-34 in Denmark had obtained tertiary education compared to 46.6 % native-born and in Sweden 51.2 % compared to 51.5 %.

Figure 3. Trends in tertiary attainment in Finland by country of origin and gender



Source: Eurostat. Online data codes: *edat_lfse_03* and *edat_lfs_9912*.

Some surveys aim to shed light on the decline in tertiary attainment. Attitude surveys show that, for those who do not start tertiary education, the main reason is the wish to work (40 %) followed by family and health reasons (18 %). This is in line with the EU average, but Finns are clearly less content with their education level and consider more often that their studies did not meet either their needs or their interests. The reasons behind this are complex. Career tracking started in 2004, was extended to all public universities in 2016 and is currently being further developed in three projects.

Higher education has suffered more under the rebalancing of the budget than other education sectors. As described above, higher education was subject to cumulative budget cuts of EUR 850 million for the period 2011–2018. Only some universities could temporarily compensate with their own funding sources. This led to staff reductions and changes to teaching and research routines. Budgetary realignment has speeded up streamlining and consolidation of the higher education offer. Universities have tried to support a process where institutions develop a clearer vision, better cooperation on national and international levels and a matching offer of studies and research.

The 'Vision for higher education and research in Finland 2030' aims to mobilise the higher education sector. As a response to identified challenges and as a follow-up to the 2017 OECD Review of Innovation Policy in Finland, the government invited higher education institutions, professors, students and experts to develop a vision to achieve the following goals:

- (1) more than 50 % of the 25 to 34 year old should complete at least a bachelor's degree;
- (2) improved opportunities for continuous education/learning;
- (3) more resources for research outcomes of higher quality;

Box 1: A tournament involving multidisciplinary teams of students promotes innovation in Finland.

The Teiniminnotalkoot project organised the SuperTeam tournament for students from the Metropolia University and the education provider Omnia. The aim is to strengthen innovation skills and support students' transition from education to employment. Teams included students from a wide variety of fields and were given 6 weeks to develop innovative ideas for actual challenges presented by companies. One of the tournament prizes was awarded to a group who found a new way to inspire physically inactive young people to exercise by using smart watches, encouraging them to exercise through weekly challenges programmed into their smart watches.

The project is financed by the European Social Fund and will run until 2018.

<http://www.metropolia.fi/>

7. Modernising vocational education and training

The 2017 comprehensive VET reform aims to provide flexible pathways for learners, to integrate separate funding schemes into one coherent funding system and to further develop apprenticeship training and other forms of work-based learning (Cedefop, 2018c). The proportion of VET students of all upper secondary students (ISCED 3) remained stable in 2016 at 71 %⁷⁴, which is well above the EU average of 49 %. The employment rate of recent VET graduates in 2017 (77 %) is slightly above the EU average (76.6 %).

Box 2: Reform of vocational education and training

Emerging skills needs, relatively high inactivity rates of the working age population and the low employment rates of the low-skilled (53.2 % in 2017) triggered the reform, with the goal of improving the status of VET in Finnish society. It aims to guarantee access to education and training and to strengthen the lifelong learning dimension in line with the Upskilling Pathways Council Recommendation. Important aspects are:

- (1) preserving eligibility for further studies;
- (2) ensuring a regionally comprehensive network; and
- (3) reforming apprenticeship training by easing the administrative and financial burden on employers.

A key aspect of the reform is its competence-based approach, in particular the introduction of individual competence-based study plans for all learners. These include information on identification and recognition of prior learning, competence tests and other demonstration of skills and guidance and support to complete an entire qualification or a supplementary skill set, for both young people and adults already in working life.

The reform will be supported by a new uniform funding system for upper secondary VET, continuous VET, apprenticeship training and labour market training leading to qualifications. In this way it keeps the various existing educational pathways and includes core funding (50 % of total funding, based on the number of learners), performance funding (35 %, based on the number of completed qualifications and units) and effectiveness funding (15 %, based on learners' transition to employment, pursuit of further education and feedback from learners and employers). The reform came into force at the beginning of 2018 and will, after a gradual roll-out, be fully operational by 2022. A budget of EUR 60 million has been allocated to the reform.

Successful implementation of the VET reform (Cedefop 2018b) could result in improved skills matching on the Finnish labour market and a better-qualified labour force in the future, contributing to an improved employment rate. However, recent significant cuts in the VET budget (a total of EUR 230 million, with the most significant taking place in 2017) could make it difficult to successfully implement the reform. Monitoring the reform will be essential to potentially allow for corrective action on certain aspects (discontinuation of studies, impact on the regional availability and linguistic accessibility of education, increase in the number of places for apprenticeship training and training agreement, quality of training places). In addition, the National framework for qualifications entered into force on 1 March 2017, with referencing to the European Qualifications Framework and self-certification to the Qualifications Frameworks in the European Higher Education Area completed in December 2017 (Cedefop, 2018a). It covers the full range of national qualifications classified into eight levels on the basis of learning outcomes.

8. Promoting adult learning

Finland continues to improve its high-performing adult learning system. With 27.4 %, adult participation in learning is the second highest in the EU — notably through better alignment of the offer to future labour market needs. New provisions on basic education for adults entered into force on 1 January 2018, introducing a new uniform basic education structure to support the basic skills of individuals who are over the compulsory education age. The Finnish National Agency

⁷⁴ This figure encompasses all age groups including adult learners .

for Education and the European Social Fund are financing the project 'National anticipation model for adult education'. Its aim is to develop and pilot an anticipation system for adult education and training. An expert group representing companies, employers and employees' organisations, providers of further training, administration (relevant ministries and regional administration), researchers and adult learners proposed measures for transport and logistics as a pilot sector to develop the skills and competences of adult learners. Responding to the increase in migrants and refugees, the Liberal Adult Education Act was amended early 2018. The revised act gives greater responsibility to training institutions to provide language and vocational training to facilitate the integration of migrants including refugees into society and employment. Without the prior obligatory national language proficiency test (abolished on 1 January 2018) migrants should more easily enter vocational education and training, learn professions and become integrated into the labour market.

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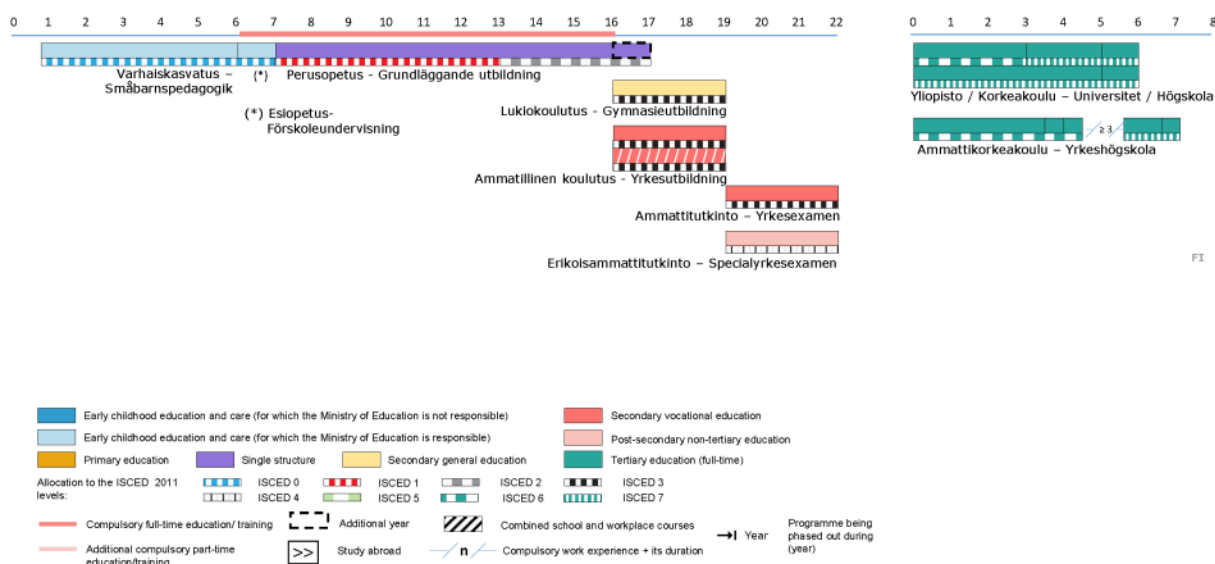
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: 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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FRANCE

1. Key indicators

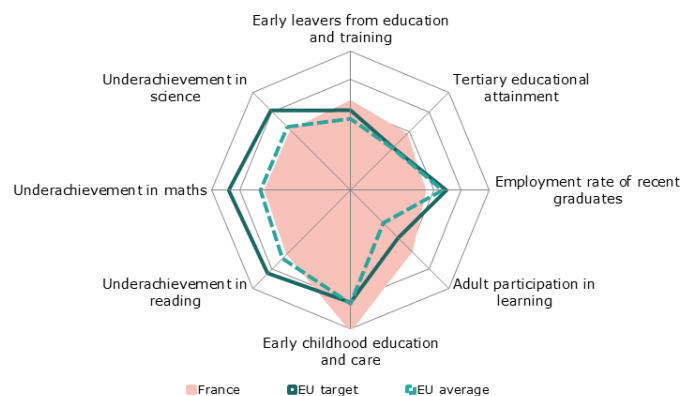
		France		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		9.0%	8.9%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		43.7%	44.3%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		100.0% ¹³	100.0% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	18.9% ¹²	21.5% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	22.4% ¹²	23.5% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	18.7% ¹²	22.1% ¹⁵	16.6% ¹²	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)	75.2%	74.4%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	18.4%	18.7%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	2.9% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	13.2% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP	5.5%	5.4% ^{16,p}	4.9%	4.7% ¹⁶	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€6 378	€6 587 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€10 147	€10 415 ¹⁵	€7 741 ^d	: ¹⁵
		ISCED 5-8	€12 058	€12 382 ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	8.6%	8.3%	10.4%	9.6%	
	Foreign-born	15.5%	15.5%	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	44.4%	45.4%	38.6%	40.6%	
	Foreign-born	38.5%	38.1%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	66.7%	61.6%	70.7%	74.1%	
	ISCED 5-8	80.4%	83.0%	80.5%	84.9%	

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, p = provisional, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- The government has introduced measures to improve basic skills, reduce inequalities and transmit moral and civic values.
- The age for compulsory education will be lowered to three from September 2019.
- Complementary reforms of upper secondary and tertiary education have been launched to improve guidance and success rates.
- The authorities are encouraging more research on education, innovative practices and strengthening evaluation.
- France continues to perform well on the Europe 2020 headline targets on early school leaving and tertiary education attainment.

3. Investing in education and training

The budget of the Ministry of Education for school education increased by 2.6 % in 2018 compared to 2017, reaching EUR 50.6 billion (MEN, 2017 a). In 2016, France spent 5.4 % of its GDP on education (compared to the EU average of 4.7 %). 2.4 % of GDP was spent on secondary education, ranking France second in the EU (EU average 1.9 %). The 2018 budget for primary education has been increased (see Section 5 below)⁷⁵. The *'Grand Plan d'Investissement'* will dedicate EUR 0.3 billion to pilot innovative projects for teacher training and EUR 0.4 billion to improve the completion rate for tertiary education (Premier ministre, 2018a). The authorities are expecting the number of students entering tertiary education between 2016 and 2026 to increase by 327 000, which will call for further spending increases (MESRI, 2018a).

4. Citizenship education

France puts a strong emphasis on citizenship education. It is one of two EU countries — together with Belgium — where citizenship education is provided as a compulsory separate subject for all grades of general education (Eurydice/European Commission/EACEA, 2017). The topic is also a cross-curricular theme incorporated in other subjects. Recent official documents place respect for others within the scope of basic skills, alongside reading, writing and mathematics.

In the aftermath of the terrorist attacks in 2015, the French action plan for the 'Great mobilisation of schools for the values of the Republic' led to a stronger focus on moral and civic values and critical thinking. A 'Citizen Pathway' (*Parcours citoyen*) was launched in 2016, consisting mainly in moral, civic and media education, and targeted at all levels of school education (MEN, 2018a). There are no specialist teachers of citizenship education but increased efforts have been made since 2015 to strengthen teachers' competences in transmitting values related to civic and moral education, both in initial teacher education (ITE) and in continuing professional development (CPD) programmes. The role of teachers in this area has moved towards helping students to learn, for instance by promoting their ability to engage in debates and develop critical thinking. This requires a significant shift from the traditional central role that teachers have played to the role of facilitator of student learning. In continuation of the 'Citizen Pathway' initiative, France will launch a one-month universal national service for all young people aged 16 in 2019.

As in a number of countries, the curriculum for citizenship education for initial vocational education and training is less developed than for general education. This could require measures to ensure the same offer for all types of education. The Observatory for Secularism is of the view that schools need to be socially mixed to ensure secularism (Premier ministre, 2018b).

⁷⁵ Annual expenditure by educational institutions on primary students in France is 15 % lower than in OECD countries, whereas it is 37 % higher for upper-secondary students. (OECD, 2017a).

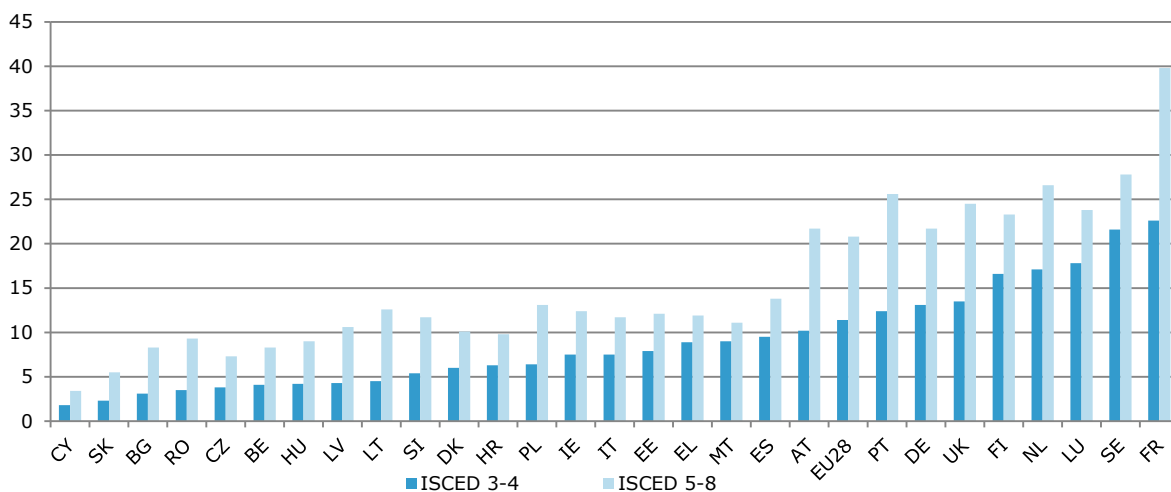
France also promotes the active participation of students in the social and democratic life of the classroom or school. Elected student councils have become a requirement for each lower secondary school as places for learning democracy. Generally, student participation in the collective life of the school has been assessed as having a stronger impact on civic knowledge or voting later on than participation outside the school, making student participation particularly relevant (CNESCO, 2016). According to the EU-SILC survey, France has the highest proportion of citizens who are active in social, civic and political activities with a strong correlation with educational attainment (see Figure 2 below).

The 2017 Law on equality and citizenship allows for the validation by higher education institutions of the knowledge and competences acquired by students through non-academic activities that include citizenship involvement.

A 'Citizen Reserve of National Education' was created in 2015. It enables civil society volunteers to work alongside teachers on citizenship and secularism projects.

In February 2018, the government adopted a national plan for the prevention of radicalisation that includes educational measures. These include: (i) educating teachers more about the values of the French Republic, (ii) revising the status and inspection of schools that do not have a contract with the Ministry and doing the same for home-schooling, and (iii) systematically educating pupils about the media and information to develop critical-thinking, instil a culture of debating and reduce the risk of on-line radicalisation (MEN, 2018b).

Figure 2. Active citizens by educational level 2015 (% of people ages 16 and over)



Source: EU-SILC, Eurostat: Social participation and integration statistics. Online data code *ilc_scp19* and *ilc_scp20*.

Note: 'Active citizenship' is defined as 'having attended meetings, signed petitions, or otherwise participated in activities related to political groups, associations or parties.'

5. Modernising school education

France performs well in reducing early school leaving. The 2017 rate was 8.9 %, which is below the EU and national targets for 2020 (less than 10 % EU, less than 9.5 % France).

Box 1: An original project to fight against early school leaving

The *Demos* project offers children from disadvantaged backgrounds the opportunity to become members of a youth orchestra to help integrate them socially and fight against early school leaving. It is notably supported by the European Social Fund.

More information: <http://demos.philharmoniedeparis.fr/>

Socioeconomic and territorial disparities in educational outcomes remain strong at all educational levels. Inequalities linked to pupils' immigrant background are also high (European Commission, 2017). Inter-generational social mobility is at risk due to the strong impact of the parents' background on educational outcomes (OECD, 2017b, p.48). Access to higher education varies widely between regions; hence social mobility also strongly depends on a pupil's geographical location (DEPP 2017a, France Stratégie, 2016).

Basic skill levels in primary education are low. French results from the Trends in International Mathematics and Science Study (TIMSS 2015) and the Progress in International Reading Literacy Study (PIRLS 2016) are at the bottom of the results of EU countries (IEA, 2017). To help improve policy-making, enable teachers to adapt teaching practices to pupils' needs, provide inspectors with indicators on schools' performance and give students feedback on their results, the Ministry has set up new pupil, school and education system evaluations (MEN, 2017b), in line with recommendations from the country's Court of Auditors (Cour des Comptes, 2018).

The type of secondary school-leaving diploma (the 'baccalauréat') obtained is strongly dependent on a pupil's socio-economic background. While 77 % of children whose parents are managers have a general education diploma and 9 % of them a vocational diploma, the corresponding proportions for children of blue-collar workers are 34 % and 44 % (MEN, 2017c). Similar findings hold true for higher education.

To improve basic skills and reduce inequalities, France is lowering the starting age of compulsory education from six to three starting in September 2019. The measure targets those few children who do not participate in early childhood education and care (ECEC), most of whom are from disadvantaged and immigrant backgrounds. The focus will be on language acquisition and well-being as foundations for building basic skills. All children ages 4-6 already participate in ECEC⁷⁶.

Plans to improve continuing professional development are focusing on improving (ECEC) teachers' competences to tackle individual students' difficulties. It is argued that staff dealing with children in ECEC are not sufficiently aware of and trained in research findings on child development, educational methods or socio-economic inequalities (Taddei F., 2018), and that such training will be decisive for the measures to have an impact on child well-being, basic skills and the reduction in inequalities.

The halving of class size in the first two grades of primary education will progressively be extended to all classes in disadvantaged schools until September 2019. The government is planning to strengthen teacher training to improve teachers' ability to deliver differentiated teaching. This is essential if class size reduction is to have an impact. It is estimated that reducing the size of classes may bring about an increase of 2 percentage points in GDP and create 120 000 jobs over the long run (Premier ministre, 2018a). Positively, teachers in priority education get bonuses; however, they enjoy an accelerated accumulation of points which helps them move faster to a school of their choice. This could exacerbate the already high turnover in disadvantaged schools (OECD, 2017b).

The newly created catch-up holiday tutoring for pupils entering secondary education and increasing the number of assistants for pupils with a disability are two measures aimed at better enabling teachers to effectively tackle individual pupils' difficulties (European Commission, 2017 and MEN, 2017a). The measures may also help to further reduce the historically very high rate of grade repetition in France, which has already decreased sharply since the introduction of a law in 2014 stipulating that it should be exceptional (DEPP, 2016 and 2017b). This was in line with an OECD analysis that the practice is expensive and ineffective in improving learning outcomes (OECD, 2017b). Nevertheless, a 2018 decree giving back to teachers the possibility to propose grade repetition was welcomed by stakeholders and could reverse the trend. The belief remains strong among parents and teachers that grade repetition is beneficial (CNESCO, 2015).

⁷⁶ Source: Eurostat, table educ_uoe_enra10.

Teacher participation in continuing professional development (CPD) is comparatively low (OECD, 2014). 18 hours of annual participation are compulsory for primary education teachers, while there is no similar obligation for secondary education teachers. The budget allocated for CPD is far from being fully used (Assemblée Nationale, 2016)⁷⁷. The difficulty of replacing teachers and insufficient reimbursement of costs are regular obstacles to participation. Participation in CPD is not taken into account for career advancement, except when acceding to supervisory positions. This is contrary to a number of recommendations by various public bodies (European Commission, 2017). Content-wise, the subject-specific approach is prevalent in CPD in France, combined with training to support the implementation of reforms. This contributes to the low level of French teachers feeling (well) prepared in terms of pedagogy – 60 % compared with 89 % on average across the OECD (OECD, 2014). The newly created *Conseil scientifique de l'Éducation nationale* may help to deliver on the Ministry's intention to better articulate training with the latest research findings. A guide of good practices for teachers to support teaching reading and mathematics was released in April 2018 (MEN, 2018c).

While the OECD *Teaching and Learning International Survey* (TALIS) highlighted a low level of collaboration practices between teachers in France, only half of the schools have a dedicated room for such exchanges besides the teachers' room (CNESCO, 2017). Also, classroom furniture is not sufficiently adjustable to enable group workshops that are commonly used for differentiated teaching. Modernising teaching would therefore require some improvement in the infrastructure in many schools.

Box 2: Coordinated reforms of upper secondary and tertiary education

Upper secondary and tertiary education are being reformed in a mutually complementary manner (MEN, 2018d and MESRI, 2018b and 2018c). Both reforms are subject to wide consultations.

The upper secondary reform plans improving guidance and modernising the school-leaving examination ('baccalauréat').

On 14 February 2018, France's Council of Ministers adopted a communication on the *baccalauréat* reform in general and technological education. The objective is to better direct the examination at preparing for higher education or the labour market. The revised *baccalauréat* – to be fully in place by 2021 – will include a stronger role for continuous evaluation during the last 2 years of schooling (40 % of the final mark) and five examinations (60 %), including a written philosophy test and an oral test.

Streams ('*filiales*') will be replaced by a more flexible curriculum: pupils will follow a common curriculum, including a new 'Scientific and digital humanities' course, and opt for specialities. They will have one and a half hours of guidance per week during the last 2 years of upper secondary education. This could help to address the impact of parental background on students' choices and help reduce the failure and dropout rates in higher education, which disproportionately affect less advantaged students (DEPP, 2017c).

In the context of increasing numbers and cohorts' proportion of young people entering higher education, the sector is being reformed to increase the completion rate at bachelor level ('licence'). Very low and uneven completion rates make the current situation neither efficient nor equal: the socio-economic background of students impacts on their type of *baccalauréat* which in turn is strongly correlated with success or failure at university (see Section 6 below). Together with the improved guidance and preparation at upper secondary level, access to and conditions for success at higher education are being reformed.

In France, all *baccalauréat* graduates are entitled to admission to the university and study programme of their choice. The strong and long-term increase in the proportion of cohorts passing the *baccalauréat* (88 % in 2017, MESRI, 2018a), combined with an increase in the population, has put strong pressure on higher education institutions. This has led to, among other things, random selection of students in certain study areas where demand for places exceeds availability.

⁷⁷ For instance, in 2015, less than a third of the available budget for primary education teachers' CPD was used.

On 8 March 2018, a new higher education law was promulgated to support guidance to and success in higher education. It is to be implemented beginning in September 2018. Information for prospective students on the 'Parcoursup' platform has been improved to combine right of access, an end to random selection and individualisation of pathways framed by a 'contract for pedagogical success'. Universities can require those who wish to study in particular fields to have specified levels of competences or to take complementary courses if their secondary education has not provided sufficient preparation ('*attendus*'). Financial support is provided to the teaching staff to implement the individualisation of pathways. Educational support, more flexibility in programmes and the promotion of new forms of teaching methods are planned to increase completion rates.

A number of stakeholders have argued against universities imposing so-called expectations ('*attendus*') which they fear could constitute a disguised selection system, while authorities repeatedly state that the traditionally taboo selection is not envisaged. The Conference of Presidents of Universities of France warned of the need to align funding with the ambitions of the reform (CPU, 2018).

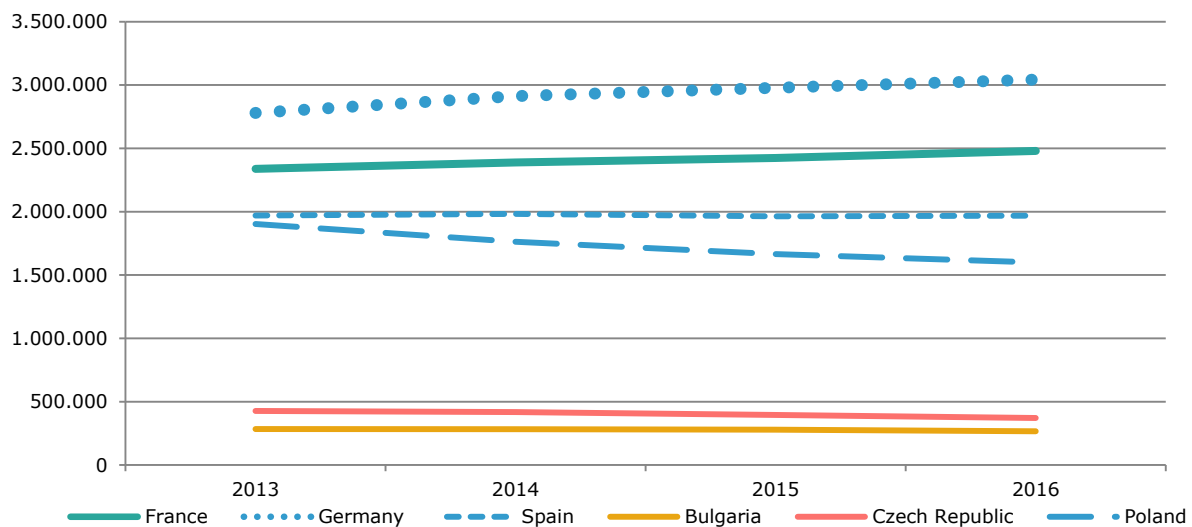
6. Modernising higher education

The percentage of French people ages 30-34 with tertiary education was 44.3 % in 2017, well above the EU average of 39.9 %. In 2015, 49.2 % of people ages 17-33 held a tertiary education degree, compared with the national target of 50 % for 2020.

Student numbers in higher education continue to increase (+ 1.4 % or 36 000 additional students in 2017 compared to 2016, see Figure 3 below) with a steadily rising proportion of vocational upper secondary graduates going on to higher education (MESRI, 2018a). Only 28 % of students graduate from their bachelor programme within 3 years, 41 % within 4 years. The figures are lower for holders of a technological or vocational *baccalauréat*. 31 % of students drop out after only 1 year, a part of them changing programme (MESRI 2018b). This has led the government to propose the reform presented in box 1 above (MESRI, 2018c and 2018d).

Measures have been adopted to support greater equity in higher education, together with the on-going reform. 21 000 additional places were created in September 2018: 17 000 in universities and 4 000 in short-cycle institutions. The Government committed to creating 10 000 additional places in programmes with high demand from students. Minimum numbers of places reserved for holders of the technological or vocational *baccalauréat* in technological and vocational higher education will be increased substantially to help support completion of studies. Minimum percentages for holders of a needs-based grant will be guaranteed. In addition, under the 2018 law to support guidance to and success in higher education, students will be exempted from paying annual social security contributions.

Figure 3. Students enrolled in tertiary education



Source: Eurostat. Online data code: *educ_uoe_enrt03*.

7. Modernising vocational education and training

The labour market integration of vocational education and training (VET) students is slowly improving and there is potential for increasing the labour market relevance of the initial VET (I-VET) system. In 2017, 48 % of recent graduates from school-based VET and 69 % of recent graduates from work-based VET found a job (DEPP 2018a and 2018b). The employment premium of work-based pathways can be observed at all ISCED levels. Significant efforts have been made by public authorities to tackle the challenges in VET, notably by increasing the financial incentives for apprenticeships.

The 2018 European Semester country-specific recommendations to France included the following recommendation: 'Pursue the reforms of the vocational education and training system, to strengthen its labour market relevance.' (Council of the European Union, 2018).

The 2018 VET reform encompasses all stages of apprenticeships (see box below). The French government plans to improve the transparency and funding of the apprenticeship system, with direct financing of the centres based on individual contracts (instead of a structure-based funding through the regions) and companies' incentives targeted to SMEs and first level of qualifications. The authorities are also planning improvements in school-based VET which represents around 75 % of I-VET (MEN, 2018e). The measures target attractiveness, efficiency, labour market relevance and bridges with other pathways including European mobility.

Box 2: The 2018 reform of VET and apprenticeships

The initial and continuing VET system in France still faces challenges with effectiveness (in terms of access and labour market outcomes) and efficiency (in terms of financing and governance). Parallel to the reform of general and technological education presented above, an ambitious VET reform was initiated in 2017 (adopted on August 1st 2018). Its aim is to enable all individuals (and in particular the most vulnerable) to upskill or reskill in order to build their professional career and protect it against labour market changes and unemployment risks. I-VET is to be made more attractive to young people and relevant to labour market needs and contracting conditions simpler and safer both for apprentices and employers. For continuing VET, the personal training account will be modernised, the quality of the training provided improved, and access to training for the unemployed and low-skilled should be supported by increased means. In both sub-sectors, the funding mechanisms and governance will be simplified by a National Skills Agency '*France compétences*' and through readjustments in the joint management by the State, the regions and social partners (e.g. regions are to be given a greater role in guidance,

but a lesser role in apprenticeship steering). Additionally, a massive Skills Investment Plan was launched at the end of 2017 (EUR 14 billion, 5 years), with the objective of upskilling and returning to the labour market 1 million low-qualified unemployed adults and 1 million young people not in education, employment or training (the objective for 2022 is to increase the number returning to work by 15 %), and to support some aspects of the reform and policy experimentation.

8. Promoting adult learning

The 2018 VET reform (see above) puts significant emphasis on continuing vocational education and training (C-VET) to address the needs of the adult population with a particular focus on the low-qualified. In 2017, the share of low-qualified people ages 25-64 stagnated (21.6 %). Their participation in learning and their employment rate slightly improved (52.7 %) in line with the economic recovery. Still, the gap remains substantial compared to the rest of the population, and equality in access to training could be improved, especially for low-qualified adults, SME employees and jobseekers. For employees, re-boosting the C-VET system would help to increase the number of participants in courses. One of the flagship measures to help individuals secure their professional pathway is the reform of the personal training account. It includes the account to be credited in euros instead of hours and to be made available on a new mobile application enabling peer reviews of the training provision, backed by more career guidance. It will still be possible to use the account for longer-term training projects to secure a professional transition. For the quality of the learning offer, providers benefiting from public funds will also need to be certified by an independent body beginning in 2021. A strengthening of the solidarity system will help SMEs finance their company training plans and give their employees easier access to training.

In 2017, only 57 % of individuals ages 25-64 possessed basic or above basic overall digital skills (compared with the EU average of 59 %).

Some aspects of the reform may show results that will be in line with the EU Council Recommendation on upskilling pathways. These include systematically proposing basic skills modules to jobseekers and keeping the top-up for low-qualified people's personal training accounts. All existing tools on validation of non-formal and informal learning can be mobilised. It should be noted that the decree of 4 July 2017 widened the scope of eligible activities and shortened the reference period to one year instead of three.

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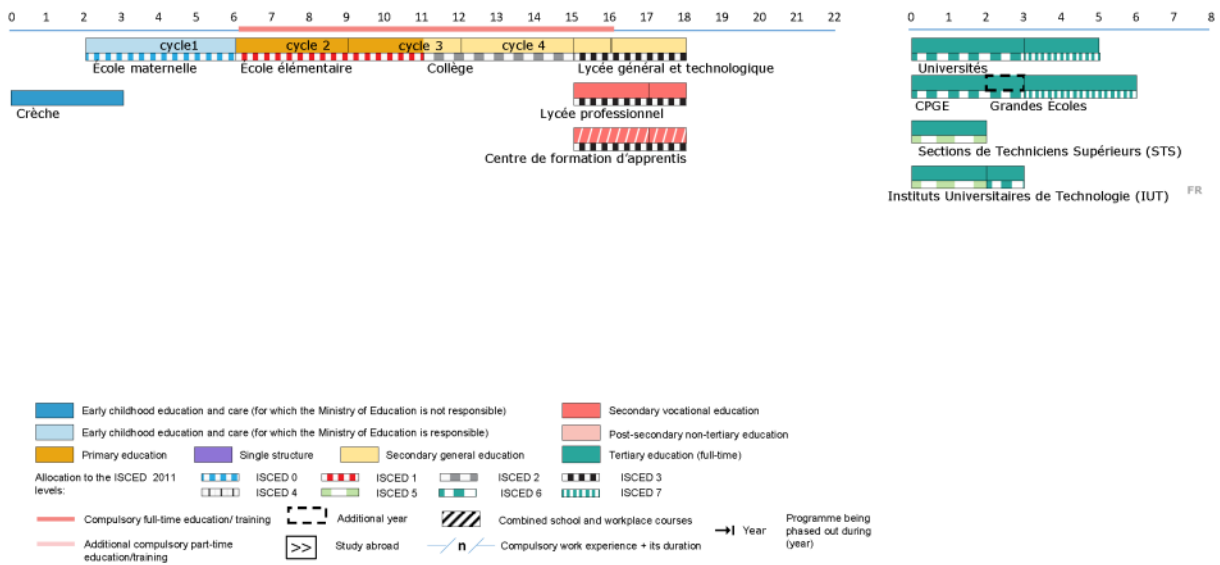
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: 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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GERMANY

1. Key indicators

		Germany		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		9.5%	10.1%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		31.4%	34.0%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		97.4% ¹³	96.6% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	14.5% ¹²	16.2% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	17.7% ¹²	17.2% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	12.2% ¹²	17.0% ¹⁵	16.6% ¹²	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)	90.0%	90.9%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	8.0%	8.4%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	4.9% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	12.9% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP		4.2%	4.2% ¹⁶	4.9%	4.7% ¹⁶
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€7 176	€7 452 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€9 510	€9 824 ¹⁵	€7 741 ^d	: ¹⁵
ISCED 5-8		€12 614	€12 864 ¹⁵	€11 187 ^d	: ¹⁵	
Early leavers from education and training (age 18-24)	Native-born	8.3%	8.1%	10.4%	9.6%	
	Foreign-born	19.5%	23.1%	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	32.0%	34.4%	38.6%	40.6%	
	Foreign-born	29.3%	32.8%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	87.7%	89.1%	70.7%	74.1%	
	ISCED 5-8	93.1%	93.0%	80.5%	84.9%	

Sources: Eurostat (see section 10 for more details); OECD (PISA).

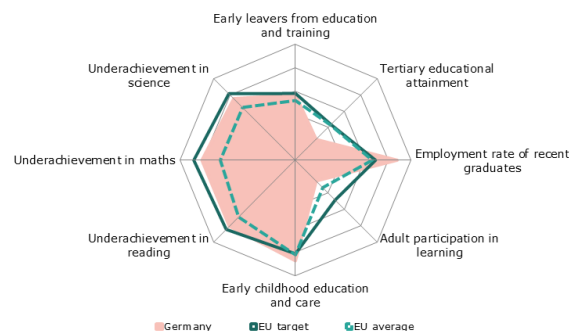
Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On tertiary education attainment, Germany includes post-secondary education (ISCED 4) in the measurement of progress towards its national Europe 2020 target of 42%. When included, Germany has reached 48.8% in 2017.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Spending on education remained flat as a share of GDP while increasing challenges call for sustained long-term financial efforts.
- Citizenship education is well established in schools and elsewhere and is responding to new challenges, such as radicalisation.
- Primary students' performance worsened in key competences such as reading and maths. Social and immigrant backgrounds remain decisive for performance.
- Teacher shortages impact negatively on education and call for additional efforts to raise the attractiveness of the profession.
- German universities report the third-highest rate of incoming students in the EU, from Europe and beyond.

3. Investing in education and training

Germany's spending on education remains below the EU average. Spending as a share of GDP remained unchanged in 2016 at 4.2 % compared to an EU average of 4.7 %⁷⁸. Out of overall government expenditure, 9.5 % went to education, also below the EU average (10.2 %). However, real growth compared to 2015 was 2.6 %. Owing to the federal structure of the country, the bulk of Germany's education expenditure is borne by the federal states and the municipalities.

Upward education spending is a long-term investment. To tackle the low level of education expenditure in Germany by international comparison (Destatis, 2017), experts advise on targeted spending increases rather than simply increasing the volume of spending (IW, 2017). An overall spending target of 10 % of GDP for research, innovation and education combined has been raised to 3.5 % of GDP for research and innovation alone. For education, the government announced specific investments of EUR 2 billion to further expand all-day schools, 3.5 billion for early childhood education and care (ECEC) and 3.5 billion for digital education (German Government, 2018).

Particular investment needs arise from demographic developments and changed work patterns. While the population is aging over the long term (European Commission, 2017a), a growing young population over the next 10-15 years due to higher birth rates and immigration necessitates increased expenditure for ECEC and for school education. Neither ECEC provision nor all-day offers are sufficient to meet projected needs. Estimates for necessary additional investment to further increase quantity and quality range from EUR 18 billion until 2025 for ECEC and all-day care (Rauschenbach et al., 2017) to EUR 24 billion until 2021 for ECEC alone (Bertelsmann, 2018). At municipal level, investment needs in schools and adult education currently amount to EUR 32.8 billion, the second highest expenditure item after traffic infrastructure (KfW, 2017).

4. Citizenship education

Citizenship education is taught widely at all levels of education. The Standing Conference of the Ministers of Education and Cultural Affairs (KMK) has issued guidance on education on human rights, democracy, media literacy, history, politics and intercultural education which apply to all federal states (European Commission, 2018a). The topic is both taught as a separate subject and integrated into other subjects. Competences defined in the curriculum include thinking critically (taught already at primary school and also in secondary VET); fostering a sense of belonging; respecting other cultures and religions; and democracy, including knowledge of international organisations (European Commission, 2018a). Citizenship education features also highly in extra-

⁷⁸ Since 2011 Germany has had a country-specific recommendation to increase investment in education in the context of the European Semester (Council of the European Union, 2018).

curricular activities, where the OECD reports for Germany one of the highest shares of schools offering volunteering or service activities among OECD countries (OECD, 2016).

Recent initiatives address current societal challenges. The national programme 'Live Democracy', which has run since 2015, funds projects to prevent radicalisation and promotes democracy at a local, regional or national level. In 2018, EUR 115.5 million have been earmarked for initiatives under the programme, including for the prevention of Islamic extremism in schools. More than 170 specifically trained social workers, called anti-mobbing professionals or respect coaches, will be deployed in schools across Germany. They will train young people in discussion culture to enable them to withstand radical propaganda⁷⁹.

Citizenship education extends beyond the school context. Germany has an impressive network of one federal and 16 state agencies for political education. They provide analyses, studies and teaching material to teachers, schools and the public at large on political and societal issues. These issues include national, European and international politics and history; migration; populism; left- and right-wing extremism; Islamism; education; and the environment. To promote democracy through education, the German Society for Democratic Education brings together expert educational researchers and practitioners, publishers, parents and students. The 'voluntary social year' and the 'voluntary environmental year' established in 2008 as federal programmes have their origins in the 1950s. They enable young people no longer attending school to work mainly in the social and environmental sector but also in culture, politics, sports, at home and abroad, and in this way help improve both their personal development and professional orientation.

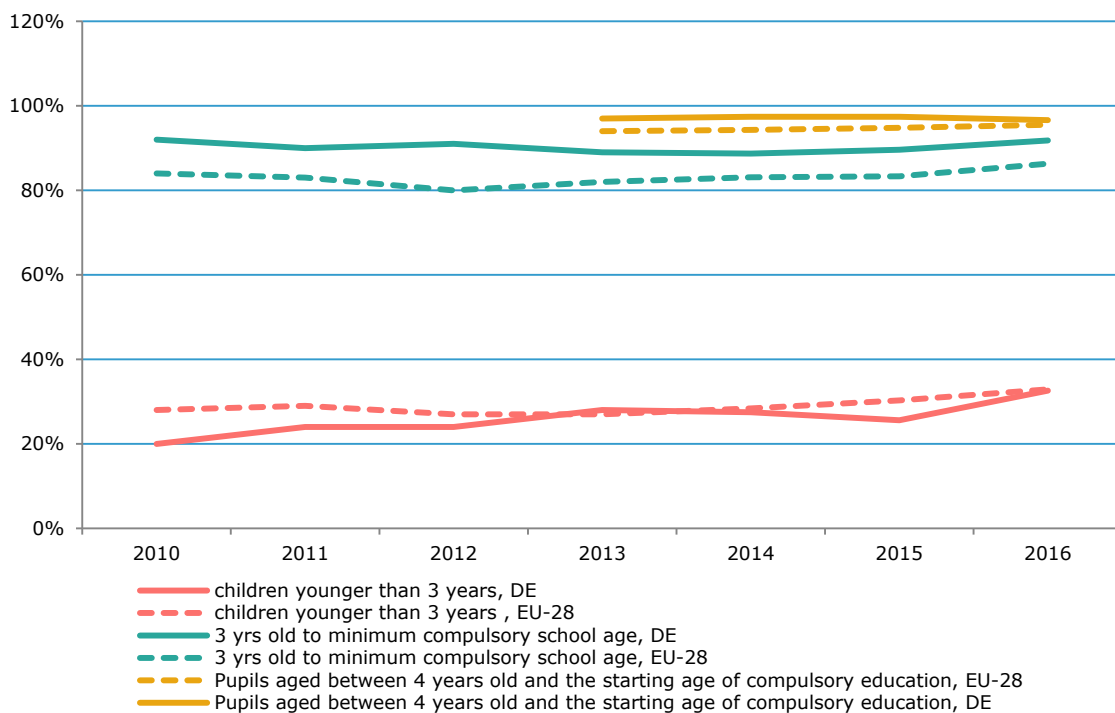
5. Modernising school education

Early school leaving remains stable. In 2017, the share of young adults (18-24) having left school with at most lower secondary education was 10.1 %, i.e. at the national target of 10 %. Early school leaving is higher in cities (10.3 %) and towns and suburbs (10.7 %) than in rural areas (8.5 %), most likely owing to the higher concentration of schools with socio-economic challenges in urban environments. The higher risk of early school leaving for foreign-born students compared to native-born remained the same at 23.1 % vs 8.1 %.

Participation in ECEC is above the EU average but supply still does not meet demand. In 2016, a total of 96.6 % of children aged between four and compulsory school age were enrolled in ECEC compared to 95.3 % in the EU. Reflecting the recent creation of places in the early care sector, the participation of under-3 year-olds in ECEC rose from 25.9 % in 2015 to 32.6 % in 2016. National data suggest the demand-supply gap ranges from 7.3 percentage points in eastern to 14.8 percentage points in western federal states (Federal Ministry of Family Affairs, 2017). Regional and local disparities exist with regard to child-teacher ratios, which are overall much higher in East Germany. Hours of coverage are also higher in East Germany where the majority of ECEC places in 2016 (77 %) were for 35 hours and more per week, compared to 43 % in West Germany (Ländermonitor).

⁷⁹ <https://www.jugendmigrationsdienste.de/respekt-coaches/>

Figure 1. Children in formal childcare by age group

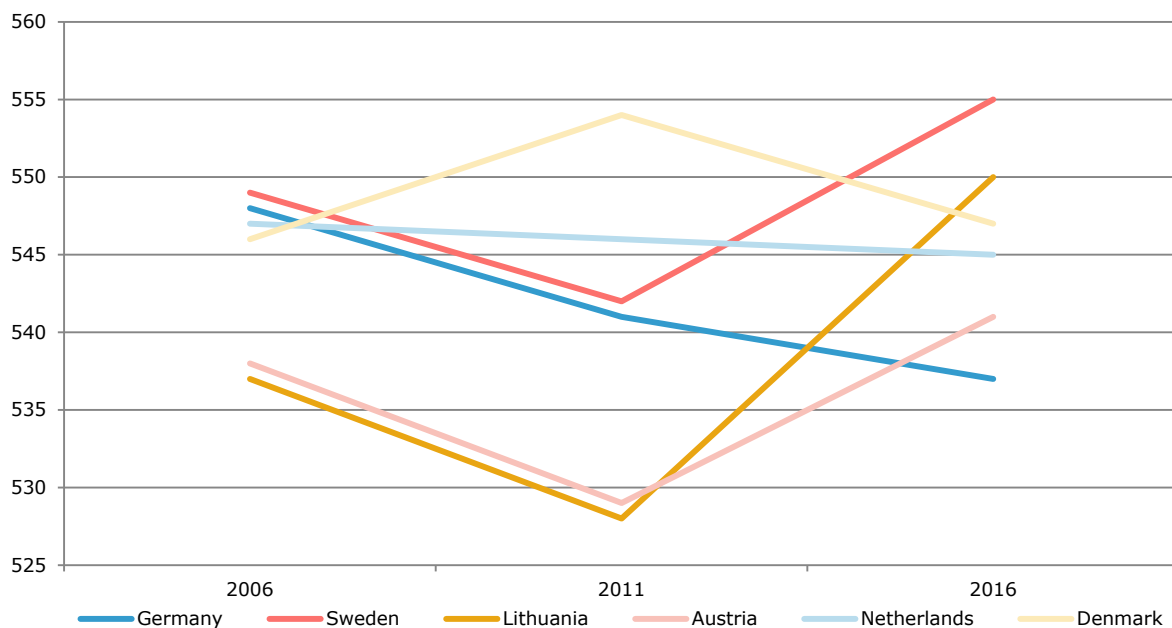


Source: Eurostat, EU-SILC survey. Online data codes: [ilc_caindformal](#) and [educ_uoe_enra10](#)

Free ECEC provision is increasing. Several federal states across the political spectrum (Berlin, Brandenburg, Mecklenburg-West Pomerania, Lower Saxony and Rhineland-Palatinate) have entirely or partly abolished ECEC tuition fees, while others are planning to do so. The main reason is the recognition of ECEC facilities as educational institutions providing more than pure care tasks. There is some debate on whether scrapping or reducing fees may impede further expansion of places and quality improvements. The increased financial support from central government (see section 3) is meant to support federal states' efforts to improve quality and quantity and reduce fees (German Government, 2018).

Performance of primary students worsened. A 2016 national survey measuring fourth graders' skills in reading, listening, spelling and maths showed on average worse performances in all areas compared to 2011 (Stanat et al., 2017). The survey highlights a strong connection between skills level and social and immigrant background⁸⁰. However, the higher share of students with a migrant background among fourth year primary students (from 9 % in 2011 to 34 % in 2016) is not the only explanation for the worsening of performance as it deteriorated for native-born students too. PIRLS, focusing on reading skills of fourth graders, also emphasises social disparities with regard to reading competences (Hußmann et al., 2017). It showed that while the share of high performers rose from 8.6 % in 2001 to 11.8 % in 2016, so did the share of low achievers, with almost one fifth (18.9 %) reaching only the lowest or second lowest competence level. By international comparison Germany has fallen behind since 2001 when only four EU countries scored significantly better: in 2016 it was 13.

⁸⁰ In 2018 Germany received a country-specific recommendation to 'improve educational outcomes and skills levels of disadvantaged groups.' (Council of the European Union, 2018).

Figure 2. Average reading achievement of 4th graders in Germany and peer countries


Source: IEA's Progress in International Reading Literacy Study – PIRLS (2016).

Integration of refugee children is more difficult when they are concentrated in specific schools. In 2017 new asylum seekers dropped sharply to 198 317 from 722 360 in 2016 (BAMF, 2018a). The number of unaccompanied minors remains high, amounting to 30 874 by December 2017 and 54 962 if counting those that just recently reached legal age (BAMF, 2018b). Most of them are channelled into vocational education and training (see section 7). Since 2015, welcome classes and parallel support classes with a focus on language teaching for newly arrived migrant children have been developed at all school levels (BAMF, 2018b). Placing refugee children in schools in challenging socio-economic environments has been criticised. While teachers there are usually better trained to deal with diversity, lacking contact with students without a migrant background or from stable families without behavioural or motivational problems renders the integration of refugee children more difficult (SVR, 2018).

Inclusive education of special needs students is a long-term challenge. While schooling of special needs students in mainstream education has increased overall, the majority of special needs students continue to attend special needs schools in 12 federal states. Due to educational tracking, considerably more special needs students are integrated in the less academic tracks. Regional differences also exist with regard to diagnosing children (Autorengruppe Bildungsberichterstattung, 2018). Examples of successful integration, such as a school winning the national school prize in 2018, exist alongside demands to pause further integration of special needs students in mainstream schools⁸¹ mainly because of a lack of personnel, preparation and support for teachers.

Policy-making is focusing on digital skills. In 2017, 68 % of Germans reported having at least basic digital skills, a share unchanged since the previous year, placing Germany seventh among EU Member States (EU average 57 %) (European Commission, 2018). The political attention to digitalisation, including infrastructure and skills, is high, with a newly established post of state minister for digitisation. For schools, the DigitalPakt Schule, announced in 2016, was endorsed by the new government. It stipulates that the federal government will invest EUR 5 billion in digital infrastructure in schools within the next 5 years. The federal states will in return provide necessary teacher training and curricula updates.

⁸¹ For example, by a major teachers' association, the 'Deutscher Lehrerverband'.

Media literacy is underrepresented in digital training. Various initiatives by federal states aim to strengthen continuing professional development on digital skills, which teachers judged inadequate according to a study on digital education (Schmid, 2017). Both teachers and pupils rate media competence, including data protection and ethics, as highly important (BITKOM, 2015). While media competence is a policy priority, shortcomings and big regional differences appear to exist with regard to news and the ability to analyse and contextualise them, which might compromise effective education on fake news at schools. A small-sample survey by the Technical University of Dresden (Hagen et al., 2017) showed that usage of online and social media for news consumption is hardly present in curricula, and that news literacy forms a minimal part of initial teacher training, resulting in a lack of basic skills and knowledge on the subject.

Box 1: Teachers face multiple challenges

Primary schools in Germany have to cope with increasing numbers of children due to demographic changes and immigration. Education experts predict that almost 105 000 new primary teachers will have to be hired by 2025 – 60 000 to replace retiring teachers, 26 000 to cope with increasing pupil numbers and 19 000 for the extension of all-day schooling – while only 70 000 teacher graduates can be expected until then (Klemm; Zorn, 2018). Official needs forecasting by the KMK was last published in 2015. It will be updated in autumn 2018 to account for the trend change. Furthermore, past policy decisions such as the closing of teacher study programmes and hiring freezes will take time to reverse.

Cancelled classes across school types are considered a major problem related to teacher shortages. Estimates range from 5-7 %, but exact monitoring remains the exception⁸². Career changers receiving fast-track and on-the-job training are a common response, and represent in some regions the majority of new hirings (GEW, 2017). However, they often lack the competences acquired through a fully-fledged initial teacher education. Different accreditation procedures for teacher candidates and career changers also create tensions.

Teachers' unions draw attention to heavy workloads due to replacement teaching necessary to compensate shortages, but also inadequate physical working environments because of overdue renovation all of which affect the attractiveness of the profession. A representative survey among school directors revealed that in the last 5 years 48 % of German schools reported cases of psychological violence against teachers such as mobbing, direct verbal aggression and harassment. At a quarter of all schools (26 %) teachers were subject to physical violence. Experts disagree whether there is an actual increase in incidents or merely more media attention, and have called for better monitoring of the issue.

6. Modernising higher education

Tertiary educational attainment remains stable. The long-term increase in higher education enrolment continues, with a slight increase in tertiary education attainment of 34 % in 2017 compared to 33.2 % in 2016⁸³. The employment rate of recent tertiary graduates continued at 93 % in 2017 to be above the EU average (84.9 %). Of the 556 800 graduates in 2016, 58.2 % obtained a bachelor's degree, 37.5 % a master's and 5.3 % (29 000) a PhD. As in most EU countries, the most common undergraduate studies were in business, administration and law (26.7 %) followed by engineering, manufacturing and construction (25 %). At master's level, this order was broadly maintained, with 20.1 % and 18.7 % respectively, followed by arts and humanities (16.9 %) and natural sciences, mathematics and statistics (11.9 %), where Germany had the highest shares of graduates in the EU in both fields. Conversely, most PhDs were in natural sciences, mathematics and statistics (28.6 %), followed by health and welfare (26.6 %) and engineering, manufacturing and construction (12.7 %). Across all levels, Germany maintained its first position in the EU for science, technology, engineering and mathematics graduates (36 % compared to the EU average of 25.7 %).

⁸² Saxony collects relevant data.

⁸³ Eurostat data.

German students are highly mobile. Germany is the only country in the EU where all higher education institutions are legally required to provide mobility opportunities for all students (European Commission, 2018c). Consequently, the share of credit-mobile students is significant, with 12.8 % of students studying for some period abroad in 2016. The most popular destinations for credit-mobile students were France, followed by the United Kingdom and Spain. German students are also increasingly likely to obtain academic degrees abroad, while at the same time the country remains an attractive place of study for foreign students. In absolute numbers, Germany has the highest outward degree mobility in the EU and the third highest inward degree mobility after the UK and France⁸⁴. Outgoing students are clearly fewer than incoming students who come from diverse geographical backgrounds including China, Russia and India (European Commission, 2018c).

Social factors still play a decisive role in participation in higher education. Only about a quarter (27 %) of higher education students in Germany have parents without tertiary education, the second lowest share in the EU after Denmark (DZHW, 2018). Studies show that the reasons for this are not confined to the higher education system, which has become more permeable in recent years, but also reflect selective processes early on in educational biographies (Kracke et al., 2018). School-based university entry systems like Germany's are usually effective with regard to labour market transition but have the lowest participation rates of disadvantaged students (European Commission, 2017b). The OECD has classified Germany as one of the countries with low social mobility with regard to earnings, occupation and education (OECD, 2018).

A large share of students work while studying. As in many EU countries, financial support from family and partners accounts for half of students' funding, whereas self-earned income makes up 34 % and national public student support 12 % (DZHW, 2018). While tuition fees are low or non-existent, accommodation costs are the biggest burden on students' finances and have risen substantially in recent years. 71 % of all students have either regular or occasional jobs during term time, the highest share in the EU (DZHW, 2018). The value of individual national public support is high compared to other EU countries, while the share of students receiving student support is smaller than the European average (DZHW, 2018). The government plans to extend the public support system for students (BAFöG), with higher grants and loans to be provided to more students (German Government, 2018).

Access to medical studies will be reformed. In Germany the demand for study places in medicine greatly exceeds the supply, with 45 000 applications for 9 000 places in 2017/18. In December 2017, the German constitutional court ruled that access to medical studies would have to be reorganised within 2 years. Standardised admission procedures have to be introduced, the waiting time for applicants capped and the limited choice to six universities abolished. The ruling also has implications for school policy as federal states are called upon to ensure the nationwide comparability of school leaving (Abitur) grades.

7. Modernising vocational education and training

Germany continues to promote very high quality in VET. The employment rate of recent VET graduates was at 91.3 % in 2017, the highest in the EU. However, the proportion of upper secondary students (ISCED 3) in VET decreased slightly to 46 % in 2016, below the EU average of 49 %. As a response to an increasing trend towards academic education, Germany has continued to promote dual VET among learners and employers through information tours, workshops and guidance sessions in schools, and youth, vocational and training fairs. However, despite slight increases in the number of people searching for training places (by 0.4 %), offered training places (1.5 %) and training contracts (0.6 %) in 2017, the number of unfilled apprenticeship positions rose further compared to 2016 due to the difficulty of matching demand and supply (BMBF, 2018).

Digital skills are strengthened in VET. The first digital learning transfer networks between companies, chambers and universities (DigiNet) were launched in October 2017. EUR 10 million was provided to purchase digital equipment and fund pilot projects to modernise teaching and learning. Provisions were established to help people with disabilities participate in initial VET and continuing VET programmes using digital media (Cedefop, 2018).

⁸⁴ Data from 2014/15.

Students with a migrant background face larger obstacles in VET education. Measures providing training to people with a migrant background, including refugees, comprised German language training, individual analysis and competence assessments, personalised guidance to take up an apprenticeship or internship, and support to companies who employ refugees. The national report on VET education found that people with a migrant background still face larger systemic obstacles. They are only half as likely to start VET as people without a migrant background (27.6 % v 55.8 %). Particular difficulties exist for persons from Turkish or Arabic backgrounds even though they made the most effort to find apprenticeships (BMBF, 2018).

8. Promoting adult learning

Upskilling and reskilling of the workforce is needed. Adult participation in learning lies at 8.4 % (EU average 10.9 %) affecting particularly the low-skilled (see Box 2). In 2015, 77.3 % of German companies (EU-28 average 72.6 %) provided vocational training to their employees and 38.1 % of employees participated in this training (EU-28 average 40.8 %). The majority of German enterprises indicated that the main skills needed to develop the enterprise are team working and customer handling skills. Skills shortages increasingly hamper economic development. Economic simulations suggest that the lack of about 440 000 skilled workers is slowing down economic growth by about 0.9 % (IW, 2018).

Box 2: Several upskilling measures are under way

Several projects are being implemented which are relevant for the Upskilling Pathways Council Recommendation (Council of the European Union, 2016). The federal state of Baden-Württemberg launched 'Upskilling 4 All', a one-year project for low-qualified employees aged 25+. The Federal Ministry of Education has provided EUR 583 000 to finance a three-year project ('CHANCEN NUTZEN!') to help low-skilled adults get a recognised vocational qualification. The Ministry also provided EUR 1 500 000 to fund 'VALIKOM', a three-year pilot initiative to coordinate the validation of job-related competences, targeting people aged 25+ irrespective of their employment status and any previous qualifications.

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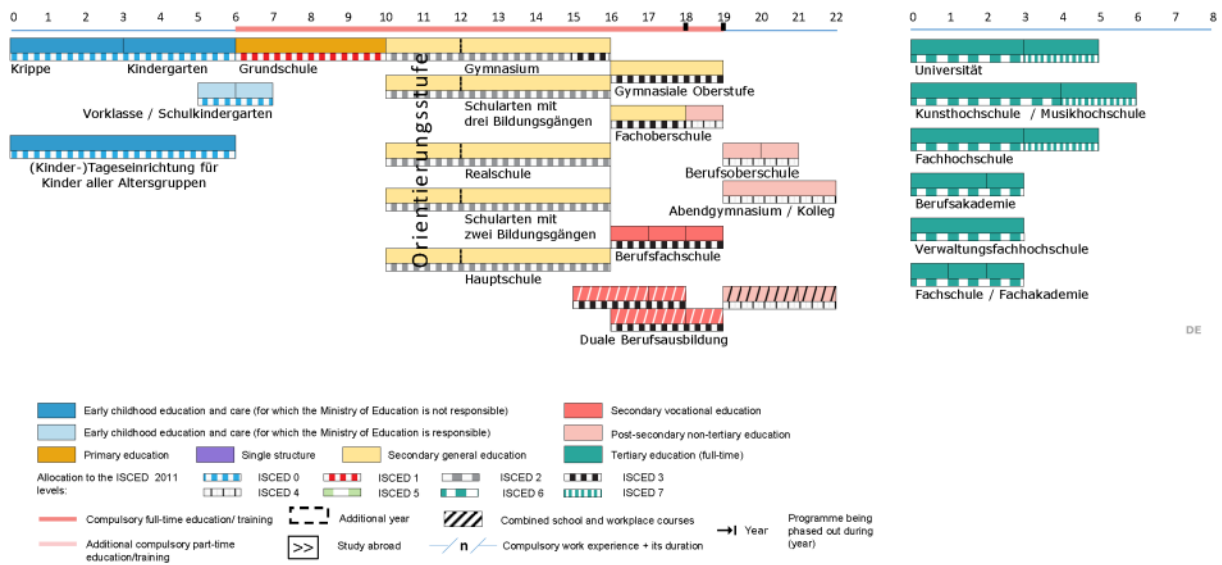
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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GREECE

1. Key indicators

		Greece		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		9.0%	6.0%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		37.2%	43.7%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		76.3% ¹³	79.8% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	22.6% ¹²	27.3% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	35.7% ¹²	35.8% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	25.5% ¹²	32.7% ¹⁵	16.6% ¹²	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)	44.3%	52.0%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	3.2%	4.5%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	11.1% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	2.2% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP	4.3%	4.3% ¹⁶	4.9%	4.7% ¹⁶	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	:	: ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	:	: ¹⁵	€7 741 ^d	: ¹⁵
		ISCED 5-8	:	: ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	7.3%	5.4%	10.4%	9.6%	
	Foreign-born	27.8%	16.9%	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	41.3%	47.1%	38.6%	40.6%	
	Foreign-born	8.4%	11.9%	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	38.8%	44.8%	70.7%	74.1%	
	ISCED 5-8	47.4%	55.8%	80.5%	84.9%	

Sources: Eurostat (see section 10 for more details); OECD (PISA).

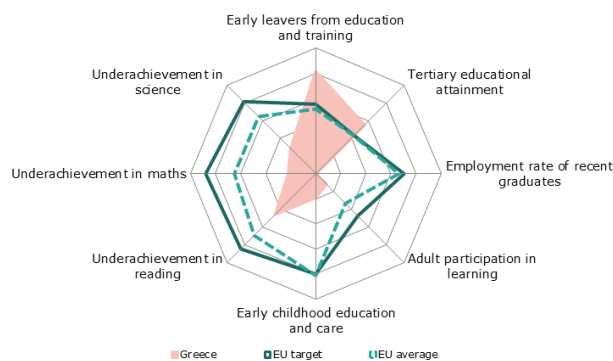
Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source;

d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Education funding is low. Better monitoring of spending could help improve efficiency.
- Compulsory pre-primary education will be extended. Affordable childcare for under 3 year-olds remains scarce, resulting in declining participation and increased reliance on informal childminding.
- Citizenship education is well covered in general education but less present in vocational education.
- Tertiary educational attainment has increased further and is well above the EU average. Despite improvements, recent tertiary education graduates still face the lowest employability in the EU, together with the highest overqualification in their jobs.
- Provision of vocational education and training was strengthened by the expanded apprenticeship system, while adult learning remains insufficient, especially the training of employees in companies.

3. Investing in education and training

Spending on education remains low. At 4.3 % in 2016, education expenditure as a share of GDP remained the same as in 2015 and below the EU average (4.7 %). Education expenditure has picked up somewhat in real terms, reflecting GDP growth. Since 2010, cuts were proportionally higher in secondary and — to a lesser extent — tertiary education than in primary education. Private spending, which accounts for more than one third of overall spending on education, has between 2013 and 2015 considerably decreased for books, stationery and other school material as well as for private childminding. Spending on tutorial schools (*frontistiria*) and private tuition remains high and spending on studies abroad increased substantially (31.7 %) (KANEP, 2018). According to Eurostat, 89 % of Greek households — more than in any other EU country — reported difficulties in paying for formal education⁸⁵.

Spending on education is inefficient. Overall spending on education, which was severely affected by the economic crisis, is low. There appears to be room for more efficiency including on the distribution of administrative tasks for teachers and school directors (OECD 2018). Consistent data collection and consolidated budgets would render monitoring expenditure more effective (OECD, 2018). To tackle the problem, the Greek statistical authority ELSTAT has signed a memorandum with the Ministry of Education, Research and Religious Affairs⁸⁶.

4. Citizenship education

Citizenship education is part of general education but less present in vocational education. Citizenship education is integrated into a range of subjects such as social sciences, languages and literature, ethics/religious and physical education in primary and general secondary school. It is also a separate subject in primary, lower and upper secondary education, with a significant amount of time allocated to it (European Commission, 2018a). In addition, it is covered during the thematic week when teachers design their own programmes according to the Ministry of Education's guidelines. In initial vocational education and training (IVET), citizenship education is provided to a much lesser extent both as integrated and separate content (European Commission, 2018a).

The curriculum covers a broad range of objectives. Emotional awareness is primarily conveyed through communicating and listening. Responsibility and autonomy is already stressed at primary level and critical thinking extends to initial VET (European Commission, 2018a). Many more Greek students than their peers in OECD countries feel that their teachers give them the opportunity to express themselves (OECD, 2017). Respecting other cultures and religions is also

⁸⁵ The 2018 publication refers to data from 2016.

⁸⁶ Henceforth the Ministry of Education.

part of the citizenship education curriculum whereas developing a collective identity is covered mainly in the subject of religious education.

The role and format for religious education at school are subject to debate. After the Greek Constitutional Court repealed changes to the religious education curriculum in April 2018, a public debate ensued over the role of the church in education. The Greek constitution stipulates that a national and religious conscience should be developed and defines Orthodox Christianity as the principal religion.

5. Modernising school education

Early school leaving decreased further. At 6 % in 2017, the early school leaving (ESL) rate was well below the EU average of 10.6 %. There is a significant gap between the very low ESL occurrence in Greek cities (3.8 %) and a higher rate in rural areas (11.2 %)⁸⁷.

Participation in early childhood education and care (ECEC) remains lower than in most EU countries. In 2016, 79.8 % of 4-6 year-olds attended ECEC facilities compared to the EU average of 95.3 %. Participation in ECEC for under 3 year-olds declined further from already very low levels and stands at 8.9 % (2016), well below the EU average (32.9 %), making Greece one of the countries with the highest reliance on informal care (OECD, 2017b). In 2017, around 40 000 children from low-income families did not receive vouchers for participation in ECEC (EETAA, 2017a, b), suggesting a considerable gap between demand and supply both within and beyond the group eligible for subsidies. To reduce the gap, municipalities can apply for financial support from the government to create additional ECEC facilities (EETAA, 2018).

Compulsory pre-primary education will be extended by one year. Mandatory enrolment of 4 year-olds in kindergarten is being gradually introduced from 2018/2019, to be applicable in all municipalities after a three-year adjustment period. It remains to be seen how implementation will proceed given the shortage of places in ECEC.

Refugee education is becoming an integral part of the system. In 2017, 23 kindergartens were opened in refugee centres, including on the islands of Lesbos, Kos, Samos, Chios and Leros. Seconded permanent teachers worked as refugee education coordinators in all major refugee accommodation centres and monitored school attendance of children in residential neighbourhoods. Reception classes in primary and secondary schools allowed 5 291 children to attend mainstream schools in 2017/2018, while preparatory afternoon classes provided schooling for another 2 025 children. Two new preparatory afternoon classes for primary school children were opened on Lesbos. Furthermore, the working group for the integration of refugees within the Ministry of Education has been upgraded into an independent department. However, despite these major efforts, the challenge remains substantial and long term, especially on the islands where most refugee children still lack access to education⁸⁸.

Education professionals are missing an overall strategy for education. A survey among 1 248 educators and administrators from all education levels conducted in Spring 2018 revealed that a lack of overall strategic planning is considered the biggest problem of the Greek education system (71 %), followed by underfunding (66 %) and lack of evaluation (44 %) (Global Link, 2018). Furthermore, 76 % of respondents think that teachers should be evaluated, while opinion on whether evaluation results should be linked to salary development is divided (45 % for vs 48 % against). While some issues are clearly linked to the economic crisis, such as poor infrastructure (92 %) or cancelled classes due to lack of personnel (78 %), others are structural, such as the need for better organisation in classrooms (80 %) and the overload of teaching content (66 %).

Substitute teachers shoulder a large part of school education. Non-permanent substitute teachers continue, at 14 % of the teacher population⁸⁹ (OECD, 2018), to be disproportionately prevalent in Greek schools. Their contracts, which are limited to the duration of the school year and non-renewable for the same school, undermine continuity and sustainability for students and

⁸⁷ Eurostat data.

⁸⁸ Of the 58 000 estimated migrants, including refugees currently in Greece, 38 % or 22 000 are children (UNHCR, 2018).

⁸⁹ In 2015/16.

schools and impede on these teachers' professional development and personal lives. Despite the precarious status, in 2018 more than 120 000 candidates applied for around 20 000 available posts for 2018/2019. Reform options for substitute teachers presented by the OECD in its recent review on education in Greece include: (i) creation of a specific employment status that offers stable, though not lifelong, employment; or (ii) extending the induction period and adding a contractual period prior to obtaining public official status (OECD, 2018).

Special needs education faces multiple challenges. People with special needs in Greece are more likely than the EU average to be limited to lower secondary education attainment (42.8 % vs 34.8 %). Although the participation rate of people with special needs decreases at age 16+ across Europe, it is significantly lower in Greece, with 14.9 % graduating from upper secondary and post-secondary education (ISCED 3-4) vs the EU average of 21.3 % (KANEP, 2018). In 2017/2018, of the 75 680 students who were officially recognised as requiring special needs education, most were included in mainstream schools, with only 10 883 educated in special needs schools. New Centres for Educational and Counselling Support are foreseen by law 4547/2018 with more staff. They are expected to shorten currently long waiting times — up to 3 years — for needs diagnosis, which leave many children without timely therapeutic and/or learning support. Furthermore, two thirds of special needs teachers have substitute contracts, so the continuity of support so important for this vulnerable group is not available.

Box 1: Changes in school education for teachers and pupils

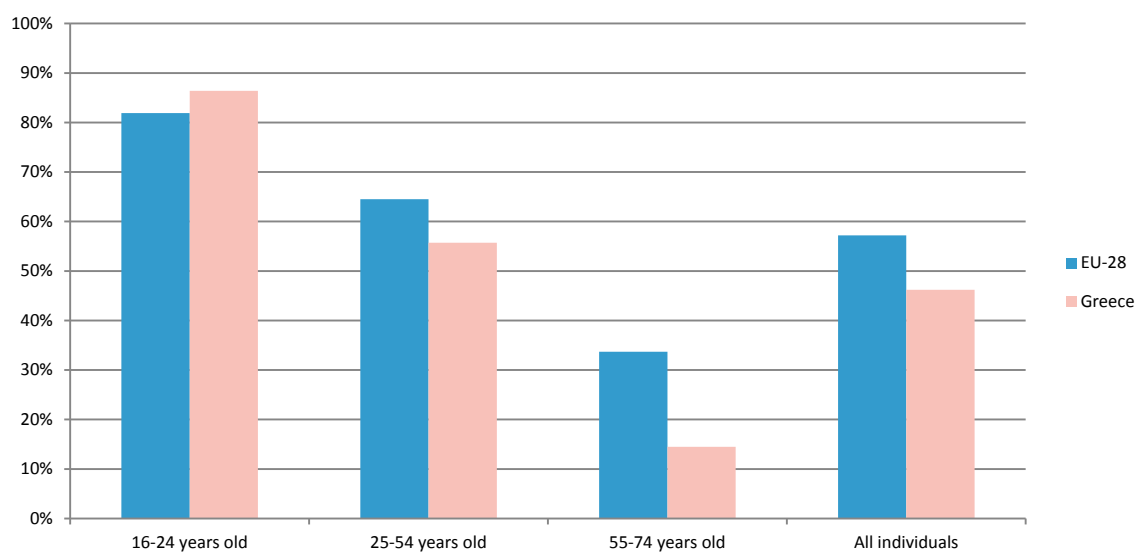
Law 4521/2018 reduces the number of subjects tested in school leaving exams in upper secondary from 12 to 4 (modern Greek, mathematics, history and biology) as of 2019. For the remaining subjects, assessment during the school year will count towards the final grade. The law also introduces creative projects in various subjects in upper secondary. The changes are intended to scale up upper secondary education from being merely a preparation for university. In addition, provision of primary and secondary education — including VET — will be significantly expanded in correctional facilities. Finally, several teacher subject specialisations are merged, reducing the overall number from 164 to 89.

Law 4547/2018 reorganises support structures in schools and introduces mandatory evaluation of education executives (such as regional education directors, directors of educational support centres, school directors) and self-evaluation by schools. The existing — but partly scattered and/or overlapping resources — will be streamlined into fewer bodies, which will provide support for schools, in areas such as pedagogy, implementation of curricula and training and diagnoses for learning support. In the new support system, school advisors are removed from the front line within schools and their role is taken over by educational coordinators placed in centres. At the same time, schools are expected to exert greater autonomy by carrying out self-evaluation. The evaluation measures introduced for education executives are a step towards more accountability, which is largely lacking in the Greek education system (Dimitropoulos, Kindi, 2017). However, the law also abolishes teacher evaluation (which had in practice been frozen since 2014), going against the OECD's recommendation for an overall evaluation framework for teachers, linked to their career development (OECD, 2018).

More than half of the Greek population lacks basic digital skills. At 46 % in 2017, the share of Greeks reported to have at least basic digital skills has not progressed since 2016, putting the country in 25th position within the EU. Greece has the fewest ICT specialists (1.4 %⁹⁰) among the EU-28 despite an anticipated need for advanced digital skills in the EU labour markets (Cedefop, 2016). Through the European Social Fund (ESF), IT infrastructure has been provided at many schools, but digital education is still insufficiently integrated into the curriculum. On science education, a striking 50 % of Greek 15 year-old students report they spend little or no time doing practical experiments in the lab (OECD, 2016).

⁹⁰ Of the working population.

Figure 2. Individuals with basic or above basic digital skills, by age group (2017)



Source: Digital economy and society index (DESI) (2017).

6. Modernising higher education

Tertiary educational attainment has risen further. At 43.7 % in 2017, Greece is well above the EU average (39.9 %) and the national target (40 %). This reflects one of the steepest increases (8.8 percentage points) in the EU⁹¹ over the last 5 years. The economic crisis, which may have caused people to stay longer in education, can only partly explain the increase. The most rapid expansion of higher education (HE) took place around the millennium and demographic changes resulted in a decreasing age cohort. Within Greece, big regional differences in tertiary attainment exist, ranging from over 50 % in Attica (which includes Athens) to 25 % in the southern Aegean. Foreign-born students are much less likely to obtain HE degrees than native-born students (11.9 % vs 47.1 %) — the biggest gap in the EU.

Employment rates of recent graduates further increased but continue to be the lowest in the EU. Due to the incipient economic recovery, it has become somewhat less difficult for recent graduates to find jobs in Greece. For tertiary graduates (ISCED 5-8), employment rates grew by 8.4 percentage points over the period 2014-2017 and stood at 55.8 % in 2017, but were still well below the EU average (84.9 %). Among non-tertiary secondary graduates, 44.8 % were employed in 2017 vs. 74.1 % in the EU, an increase of 6 percentage points over the previous 3 years.

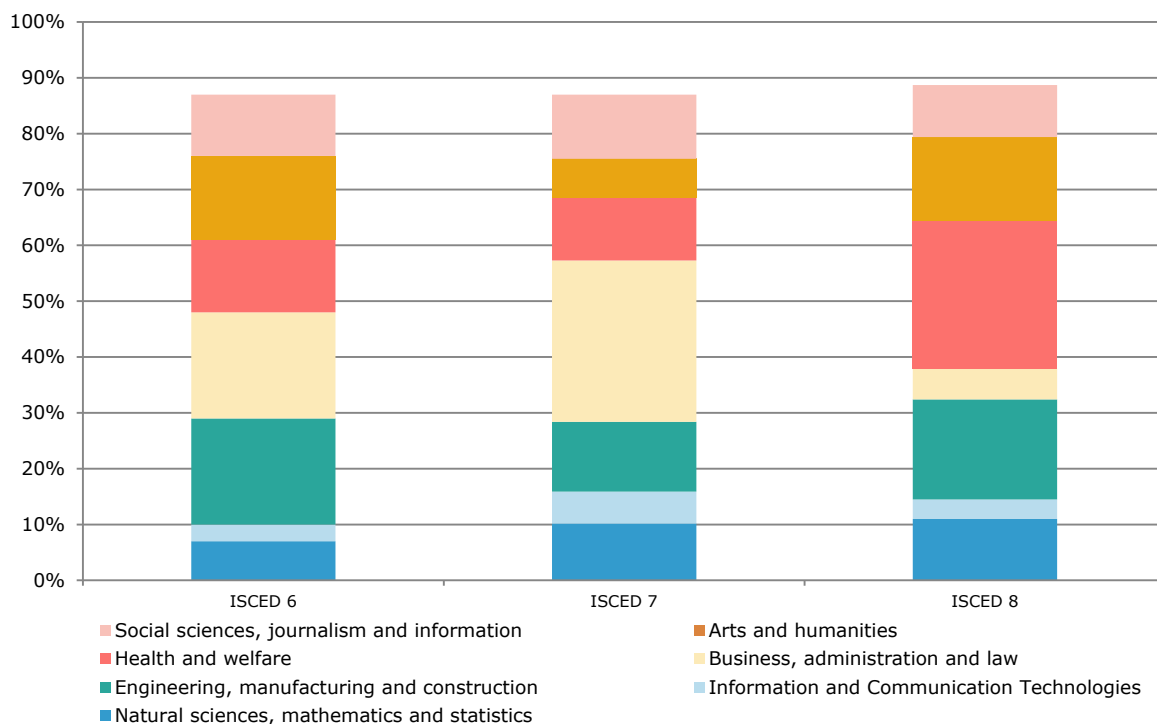
Skills mismatches are the highest in the EU. At 43.3 % in 2016, the share of tertiary graduates working in jobs that do not require a higher education qualification was higher than elsewhere in the EU (EU average: 26 %) (Cedefop), (2018). Crop production, retail trade, services and state administration are the four main employment sub-sectors in Greece and the most new jobs were created in the catering sector between 2014 and 2017 (National Institute of Labour, 2018). While the difficult macro-economic environment partly explains the high degree of mismatches, there is also a need to create stronger links between labour market needs and education. This includes well-functioning skills forecasting which feeds into VET and university curricula (OECD, 2017a). According to a recent study, main policy challenges include: to increase the attractiveness of VET; to reorientate from preparing graduates for the public sector to towards the private sector; and to upskill the unemployed (IOBE, 2018).

Study preferences of Greek students resemble those of their European peers. Most students graduate with a first degree in business, administration and law or engineering (both

⁹¹ Second only to Austria, where the increase is, however, due to statistical reclassification.

19 %) followed by arts and humanities (15 %) and natural sciences (7 % of in 2016⁹²). At master's level, more degrees are awarded in business, administration and law (28.9 %) than any other field, matching the trend in most EU countries. 10.2 % of master's degrees are awarded in natural sciences, above the EU average of 7.1 %. However, the participation rate in master's programmes is, at 8.1 %, the lowest in the EU (European Commission, 2018c). At PhD level, with a participation rate of 3.5 %⁹³ (European Commission, 2018c), the share of natural sciences graduates is, at 11 %, among the lowest in the EU (26 %)⁹⁴ while most PhDs (26.5 %) are awarded in health and welfare.

Figure 3. Distribution of Greek tertiary graduates by programme orientation (2016)



Source: Eurostat. Online data code: [educ_uoe_grad02](#).

The higher education landscape is being re-mapped. The Ministry of Education's intention to upgrade technical education institutions (TEIs) — which focus on applied sciences, technology and art — into universities, entails several mergers of HE institutions. ADIP, the agency for quality assurance in HE, has pointed out the need for a strategic plan and comprehensive prior evaluation of the potential effects of this reform. The new University of West Attica was established in 2018 by merging the TEIs of Athens and Piraeus. As of 2019/2020 the TEI of Epirus will become part of the University of Ioannina, while the TEIs of Central Macedonia and of Eastern Macedonia and Thrace are to be merged with the International Hellenic University.

Strong outward mobility continues. With more than 30 000 students enrolled in a degree programme abroad in 2014/2015, Greece is fourth in the EU for outward degree mobility in absolute numbers after Germany, France and Italy (European Commission, 2018c). This student mobility is mainly privately funded since grants and loans do not extend to studies abroad apart from limited credit mobility within recognised short-term mobility schemes such as Erasmus+ (European Commission, 2018c).

⁹² The best performer is the United Kingdom at 17 %, followed by France (10 %) and Germany (6 %) (Eurostat data 2016). 2014/2015 data.

⁹⁴ Preceded by Slovenia and Romania, with the leaders being France at 44.5 % and Spain at 32 %.

Resources are strained in the higher education sector. After Croatia, Greece has the second highest teacher-student ratio in the EU, with one professor serving 44 students (EU average: 1 to 15). The net loss of professors since 2010 due to non-replacement of retirees is estimated at around 30 %. The share of academic staff under 35 is, at 3.3 %, the smallest in the EU, while more than 50 % are aged 50 and above (European Commission, 2018c). For the 2018/2019 academic year, the Ministry of Education announced an increase of 4 000 places for first-year students (76 692 places overall) compared to 2017, as well as EUR 34 million in additional funding. Funded by the ESF, 1 500 young researchers will be hired as lecturers as of the 2018/2019 academic year. They are expected to teach up to three classes to acquire teaching experience. However, the positive effect on student-teacher ratio might be offset by an increasing lack of space at many higher education institutions (HEIs).

Violence at HEIs is a persistent problem. Findings by the University of Macedonia reported in the press, indicate that 358 violent incidents took place from 2011 to 2017 at HEIs in Greece, including obstruction of activities, trespassing, threats, attacks and drug dealing. The report, which draws on print media articles, is inconclusive on the effect of abolishing 'university asylum' (which allows law enforcement presence inside universities only by permission of the University Senate) in 2011 and its reintroduction in August 2017. While violent incidents rose sharply in 2012, numbers later dropped, especially in the last 3 years covered by the study. To address the problem of delinquency at HEIs, the Ministry of Education set up a special 'Committee for the Study of Academic Freedom and Peace Issues'. The committee's recommendations were published in September 2018.

7. Modernising vocational education and training

The national strategic framework for VET is in place but ensuring the attractiveness of the sector remains a challenge. The proportion of students (at ISCED 3) in upper secondary VET in Greece remains stable at around 30 %, but is far below the EU average (47.3 %). The employment rate of recent VET graduates remains much lower than the EU average of 76.6 %, and well below the total employment rate in Greece (56.2 %), despite having increased to 40.7 % in 2016. Common quality frameworks for apprenticeships and VET curricula were established in 2017. Furthermore, two bodies support the national strategic framework, namely: (i) the National Education and Human Resource Development Council, which provides advice and scientific guidance for policy making, including effective linking to the labour market; and (ii) the new National VET Committee, which is monitoring the framework's actions.

Greece has continued to expand its apprenticeship system. An optional fourth apprenticeship year for upper secondary VET graduates was introduced with the support of the ESF. Following a pilot phase, this option was launched in March 2017 for 1 200 apprentices in the public and private sector in seven specialisations. Nine more specialisations were added in October 2017 for the second cycle, involving 3 450 apprentices. This nine-month programme gives access to EQF level 5 qualifications. For the academic year 2018-2019 five new specialisations are introduced. There is also a dual VET scheme at upper secondary level implemented by OAED (the Greek Public Employment Service) in its vocational schools, with over 6 000 apprentices in 2017.

Box 2: ESF support for secondary VET schools

The ESF-funded 'New beginning for EPAL' programme ('EPALS' are vocational upper secondary schools), launched in October 2017, aims to improve the efficiency of VET provision and reduce the dropouts rates in upper secondary VET schools. Among other things, it offers pedagogical support in schools to improve learners' literacy and numeracy competences and psychological support to assist their smooth integration into school. The programme is currently being piloted in nine EPALS and is expected to expand to all such institutions (approximately 400) in the 2018/2019 academic year. An overall budget of EUR 26.3 million has been earmarked for a four-year implementation period.

https://www.minedu.gov.gr/publications/docs2018/mia_nea_arxi_gia_ta_epal.pdf

8. Promoting adult learning

Despite the need for upskilling, participation in adult learning remains very low. At 4.5 % in 2017, participation in adult learning was well below the EU average (10.9 %). According to the Continuing Vocational Training Survey, in 2015, 21.7 % of Greek companies provided vocational training to their employees (EU average: 72.6 %) and only 18.5 % of employees participated in this training (EU average: 40.8 %) — the lowest rate in the EU. Most Greek companies consider customer service and teamwork skills as the most important for business development. To remedy the low level of digital skills (see Section 5), Greece is setting up a programme to train and certify young unemployed 18-24 year-olds in the ICT sector. In addition, 74 second chance schools across the country as well as Lifelong Learning Centres of municipalities provide education and qualification opportunities for low-skilled adults.

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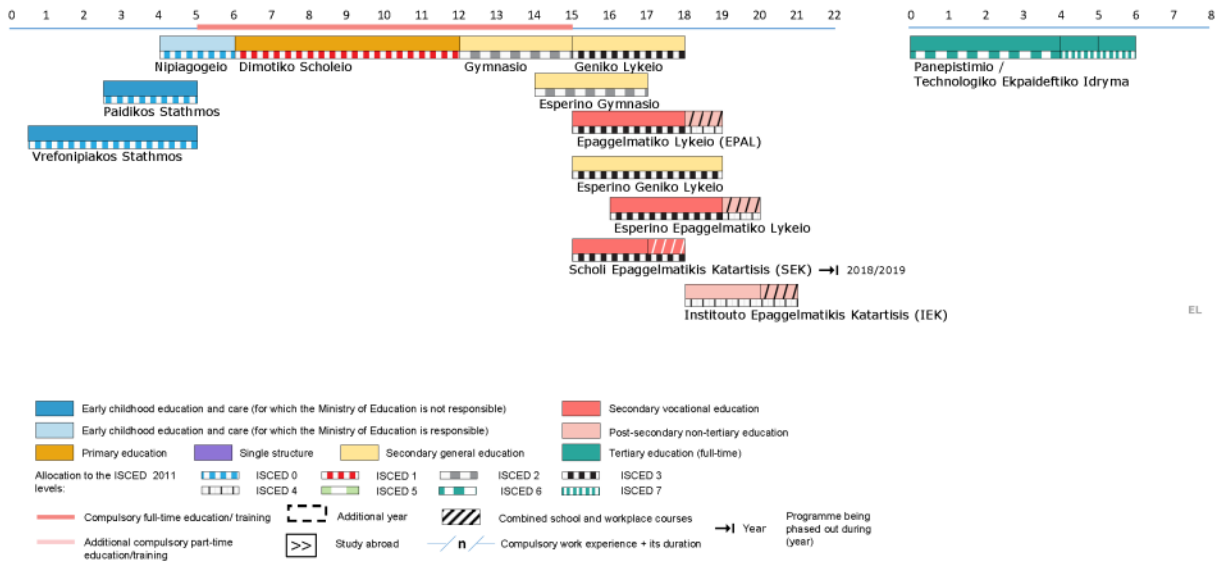
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10. Annex I: Key indicator sources

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	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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HUNGARY

1. Key indicators

		Hungary		EU average		
		2014	2017	2014	2017	
Education and training 2020 benchmarks						
Early leavers from education and training (age 18-24)		11.4%	12.5%	11.2%	10.6%	
Tertiary educational attainment (age 30-34)		34.1%	32.1%	37.9%	39.9%	
Early childhood education and care (from age 4 to starting age of compulsory primary education)		94.7% ¹³	95.7% ¹⁶	94.2% ¹³	95.3% ¹⁶	
Proportion of 15 year-olds underachieving in:	Reading	19.7% ¹²	27.5% ¹⁵	17.8% ¹²	19.7% ¹⁵	
	Maths	28.1% ¹²	28.0% ¹⁵	22.1% ¹²	22.2% ¹⁵	
	Science	18.0% ¹²	26.0% ¹⁵	16.6% ¹²	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)	78.5%	84.7%	76.0%	80.2%	
Adult participation in learning (age 25-64)	ISCED 0-8 (total)	3.3%	6.2%	10.8%	10.9%	
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	3.3% ¹⁶	:	3.1% ¹⁶	
	Credit mobile graduates (ISCED 5-8)	:	2.9% ¹⁶	:	7.6% ¹⁶	
Other contextual indicators						
Education investment	Public expenditure on education as a percentage of GDP	5.1%	4.9% ¹⁶	4.9%	4.7% ¹⁶	
	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€2 828	€3 702 ¹⁵	€6 494 ^d	: ¹⁵
		ISCED 3-4	€6 068	€5 802 ¹⁵	€7 741 ^d	: ¹⁵
		ISCED 5-8	€6 379	€6 616 ¹⁵	€11 187 ^d	: ¹⁵
Early leavers from education and training (age 18-24)	Native-born	11.5%	12.5%	10.4%	9.6%	
	Foreign-born	:	:	20.2%	19.4%	
Tertiary educational attainment (age 30-34)	Native-born	33.9%	32.3%	38.6%	40.6%	
	Foreign-born	44.7%	24.8% ^u	34.3%	36.3%	
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	72.6%	81.6%	70.7%	74.1%	
	ISCED 5-8	85.7%	88.7%	80.5%	84.9%	

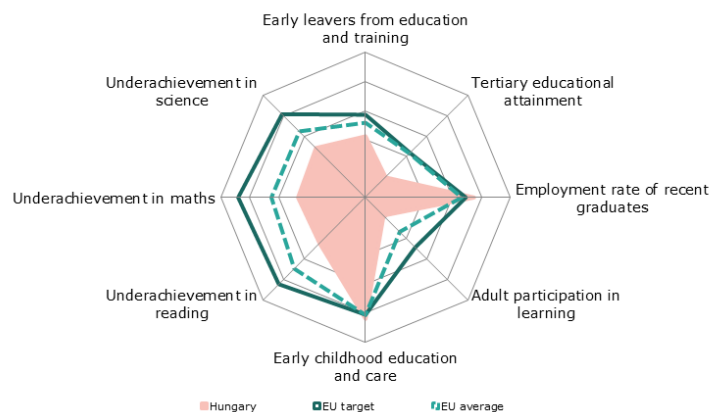
Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016.

On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data.

Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre of the figure).

2. Highlights

- Recent measures have attracted more teacher education applicants to study programmes in special and pre-school education.
- Large performance gaps between schools indicate strong selectiveness in education.
- Citizenship education, also covering patriotic values, is integrated in the curriculum of primary and secondary education.
- Recent legislative changes bring some flexibility to VET and adult education but lower the age of career choice.
- Tertiary graduates enjoy the highest wage premium compared to lower secondary education in the EU, but enrolment in higher education is still low.

3. Investing in education and training

General government expenditure on education as a proportion of GDP was 4.9 % in 2016, above the EU average of 4.7 %. In 2016 education absorbed 10.5 % of total public expenditure, slightly above the EU average. In real terms, however, this represents a 5.8 % decrease compared to the previous year.

Skills shortages are comparatively high in Hungary. There were nearly 80 000 unfilled positions registered in the first quarter of 2018, which is 33 % more than at the same time in 2017 (KSH, 2018). Reflecting skills shortages, adults who have tertiary education enjoy one of the highest wage premiums in the OECD. In vocational education and training (VET), much emphasis has been put on adapting the curriculum to the immediate needs of companies in recent years. In vocational secondary education, the lower track of VET, the teaching of vocational content and work-based learning was advanced to ninth grade, while general education content was reduced. 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).

The population is shrinking despite several measures in family policy. Though the fertility rate has improved since 2010, it is still insufficient to stop the population decline of the last 40 years. The yearly decrease of the school population was 0.8 % in 2017/2018 (KSH, 2018). The decline in student numbers was 10 times stronger than the decrease in the number of schools in the period 1990-2016. This reduces efficiency in spending. Furthermore, the resultant larger school choice gives more room to separate students by socioeconomic status, leading to increasing differences between schools (Radó, 2018). In recent years Hungary has introduced a number of incentives to increase the birth rate, such as waiving a part or the full amount of the student loan for mothers of two or more children, extending the duration of maternity leave and increasing the capacity of nurseries. Demography remains high on the government agenda, and the government has announced taking further measures to stop the negative trend.

4. Citizenship education

Students are familiarised with the concepts of citizenship both in theory and in practice. Throughout the whole general education pathway, students can choose between the subjects of ethics or religious education, which integrate elements of citizenship education. The subject 'history, social and citizenship studies', taught in grades 5 to 12, includes sections on 'basic citizenship knowledge', 'media models and institutions' as well as 'social knowledge'. Citizenship education is integrated in the subject 'community development' in initial vocational education and training. To increase students' sense of citizenship, the 2011 Act on National Education introduced a compulsory school community service programme. From January 2016, proof of participation in this programme (i.e. 50 hours of community service) is a condition for obtaining the upper secondary school leaving certificate. The core curriculum also covers patriotic education (Government, 2012). In December 2017, the government ordered all public institutions including

pre-schools and schools to draw up an Action Plan by June 2018 to prepare themselves in case a state of emergency is declared. In June 2018 a Commissioner for Patriotic and Defence Education was appointed.

A growing number of schools apply an ecological programme to increase students' awareness of their environment. The Hungarian network of eco-schools started in 2000 as part of the international network of Environment and School Initiatives. An eco-school aims to provide environmental education not only through its pedagogical programme but every aspect of the school life, such as the operation of school facilities, extra-curricular activities and waste management. The environment is considered in its broader sense, including the local community in which the school is situated. Schools encourage students' initiatives and team work across the board.

5. Modernising school education

The 2016 Progress in International Reading Literacy Study (PIRLS) showed improvements in reading but large performance gaps between schools. The reading comprehension of fourth-grade students measured by the PIRLS had improved since 2011, by more (37 %) than the international average (29 %). The Study shows that 37 % of Hungarian students go to schools where disadvantaged students are the majority, the second-highest share among participating countries. This means that disadvantaged students are more strongly separated from their non-disadvantaged peers in Hungary than in other countries. The difference between the performance of the most advantaged and most disadvantaged students is 57 score points, against a 43 international average score gap. In PISA 2015, which tested competences at age 15, the impact of Hungarian students' socioeconomic status on their performance was the strongest across all participating countries. In its 2018 European Semester 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 and inclusive mainstream education (Council of the European Union, 2018).

In 2017, the early school leaving (ESL) rate increased to 12.5 %, above the EU average of 10.6 %. While the ESL rate has been decreasing steadily across the EU, it has not fallen in Hungary since 2010. Participation of 17 and 18 year-olds in secondary education dropped sharply between 2011 and 2016 (from 98 % to 85 %), after the school-leaving age was lowered from 18 – the age of completing secondary education – to 16 in 2012. These trends make it likely that ESL, which measures 18-24 year-olds with only low qualifications not in education or training, will rise further in the years ahead. In November 2016 the government adopted an action plan to reduce ESL and introduced mandatory data collection on students' progress at school, which feeds into a digital early warning and pedagogical support system (EWS). The first surveys show that 11 % of students are at risk of leaving school without completing upper-secondary education (Educational Authority, 2018a). The share of students concerned varies greatly by school type and region. In the three most affected counties, 17-19 % of students are identified as being at risk of dropping out. In the lower track of VET, the share is 21 %; in the higher VET track, 14 %; and in lower secondary 12 %. In general upper-secondary education the risk of dropping out is exceptionally low, at 3 %.

Box 1: Supporting schools at risk of student dropout

European Social Fund Project HRDOP 3.1.5-16
Duration: January 2017 – September 2020
Available budget: HUF 12.9 billion (~EUR 40 million)

Objectives: to support students at risk of dropout; improve the capacity of the school system to compensate for students' disadvantages; tackle segregation; develop the professional support capacity of the Educational Authority; foster collaboration between the education sector and local communities and address differentiated development of the schools involved.

Expected results: within-school segregation will be resolved in 100 schools; 150 kindergartens and 240 schools will apply new skill-development/teaching methods; 1 800 teachers will participate in continuing professional development; 4 000 kindergarten children and 30 000 students will receive support.

Based on the first EWS survey results, 300 schools were selected that showed the highest risk of dropout. Mentors assist the entire school staff in mapping development needs and coordinate interventions. Mentors come from schools that are similar to the assisted schools in the composition of their student population but that have better completion rates. By the end of 2017/2018, school development plans had been drafted for every participating school. As a next step, 150 kindergartens with high shares of disadvantaged children will be selected and involved in the project. The aim is to increase their capacity to prepare children for starting school.

Interventions to improve access and quality of early childhood education and care may help level out child development differences prior to schooling. 95.7 % of children aged 4-6 participate in early childhood education and care (ECEC), around the EU average and slightly above the Education and Training 2020 benchmark of 95 %. Roma participation is 91 %, close to the national average and 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 as of 2015/2016 is a positive step, likely to improve children's later performance at school. To ensure participation, the family allowance was made conditional on kindergarten attendance. The provision of free access to kindergarten and school meals to disadvantaged children has been extended substantially since 2015/2016. To help make the profession more attractive, the teacher career model was extended in 2016 to ECEC staff holding a tertiary degree in education. This may have contributed to the steady increase in applications to pre-school teacher training programmes in recent years. Increasing the qualification level of ECEC staff improves the quality of the service and is strongly associated with improved educational outcomes for children (European Commission, 2014).

Early tracking increases selectiveness and the risk of disadvantaged pupils being separated from their peers. Grouping into different educational tracks can start as early as age 10. Disadvantaged students have very low chances of entering the higher educational tracks⁹⁵. According to the 2017 national survey, the competence level of pupils at grade 10 in vocational secondary schools was lower on average than the competence level of sixth-graders and showed no progress from grade 8 to 10. This reflects the concentration of low-performing pupils in such schools (Educational Authority, 2018b) and shows that this school type does not effectively develop students' basic skills. Enrolment data show over-application especially to the well-performing 6- and 8-year upper secondary schools. Entry to these schools is via a highly competitive exam which makes high demands on candidates in terms of the application of content. These differences between school types worsen the substantial 'opportunity gap' between privileged and disadvantaged families observed as early as at primary level (see section on PIRLS). Inequality in education narrows the possibility for social mobility: from all EU countries, low-income families in Hungary have the poorest chances of approaching the mean income (OECD, 2018).

The separation of disadvantaged pupils, including Roma, has accelerated in the last decade. Increasing residential separation and the effect of parental choice on local school enrolment policies within the highly differentiated school system have resulted in the education system becoming ever more segregated on ethnic grounds. Despite the state taking over the management of all public schools from municipalities in 2013 with the aim of levelling inequalities, most Roma children still attend schools where all or most children are Roma. In certain cases this is linked to the ethnic composition of the locality of the school (FRA, 2016). ESL is more than six times higher (59.9 %) among Roma than among non-Roma (8.9 %)⁹⁶. In May 2016, the European

⁹⁵ Proportion of disadvantaged and cumulatively disadvantaged students by education track (MTA 2018):

- 1 % in 6- and 8-year grammar schools;
- 4 % in the other grammar schools (= general upper-secondary schools);
- 7 % in vocational 'grammar' schools; and
- 21 % in vocational secondary schools.

⁹⁶ Labour Force Survey 2014.

Commission launched infringement proceedings against Hungary over discrimination against Roma children in education in breach of the Race Equality Directive. Legislative amendments to address this issue have since been adopted by Parliament but will only apply to inscriptions as of 2018/2019.

The number of applicants for initial teacher education rose in 2017 but teacher shortages are still acute. The teaching workforce is ageing, and according to forecasts some 50 000 teachers will retire within 10 years (Government, 2016a). In the meanwhile, dropout rates are high and the number of new entrants to the profession remains low. According to the 2016 Career Tracking Survey, 71 % of recently graduated primary school teachers were active on the labour market, but only 88 % of them in occupations that needed a higher education degree (Educational Authority, 2017b). This means that at least 38 % of these graduates do not work as a primary teacher. Teachers' salaries have been raised in recent years but are still 25 % lower than those of other tertiary graduates (OECD, 2018b). Students in initial teacher education are entitled to the 'Klebersberg stipendium' on condition that they work for a time at a public school after graduation.

Recent measures aim to increase the number of new entrants to training for special education. In 2017 the number of admitted entrants to special education training was less than 1 400 while there were nearly 2.5 times than number of applicants. More than 2 000 special needs teachers are estimated to be missing in daily practice and a further 1 000 related positions are fulfilled by teachers with no appropriate qualifications. As of 2017/2018, two additional higher education institutions launched programmes to train new teachers in special education, and the Klebersberg stipendium was extended to special education students. The government announced that HUF 3.8 billion (~EUR 11.6 million) in additional funding would be earmarked in 2017 and HUF 1.9 billion (~EUR 5.8 million) in 2018 to cover the costs of increasing student numbers (Educational Authority, 2017a).

Box 2: Digital Education Strategy

Hungarian students scored the lowest in the EU in the 2012 PISA computer-based tests (OECD, 2015) and the digital skills of the adult population lag behind the EU average (European Commission, 2018). In response, the Ministry of Human Capacities adopted the Digital Education Strategy for 2017-2020 (Government, 2016b). The aim is that Hungary should reach the EU average with respect to digital literacy and usage, internet penetration rate, teachers' digital competences and the digitalisation of education by 2018.

The Strategy covers all sectors of education from school to adult learning. It addresses infrastructure; teachers' digital skills; teaching methodologies; education management; curricular reform and the development of digital content.

In 2017, the Digital Pedagogical Methodological Centre was established to support the implementation of the Strategy in school education. As a first step, the Digital School pilot was conducted in 2016/2017, coordinated by the Association of Informatics, Telecommunication and Electronic Companies (IVSz). Participants made recommendations to create a digital model school and regarding the professional and technological conditions of digital education.

Financial support is available for tools and methods supporting the development of digital competences and related infrastructural development through a dedicated call for proposals⁹⁷. School maintainers may receive HUF 70-110 million (EUR 220 000-350 000) per school to finance development plans. The total available budget is HUF 6.2 billion (EUR 20 million). Other projects⁹⁸ provide funding for the purchase of digital equipment, network building, methodological development and publications.

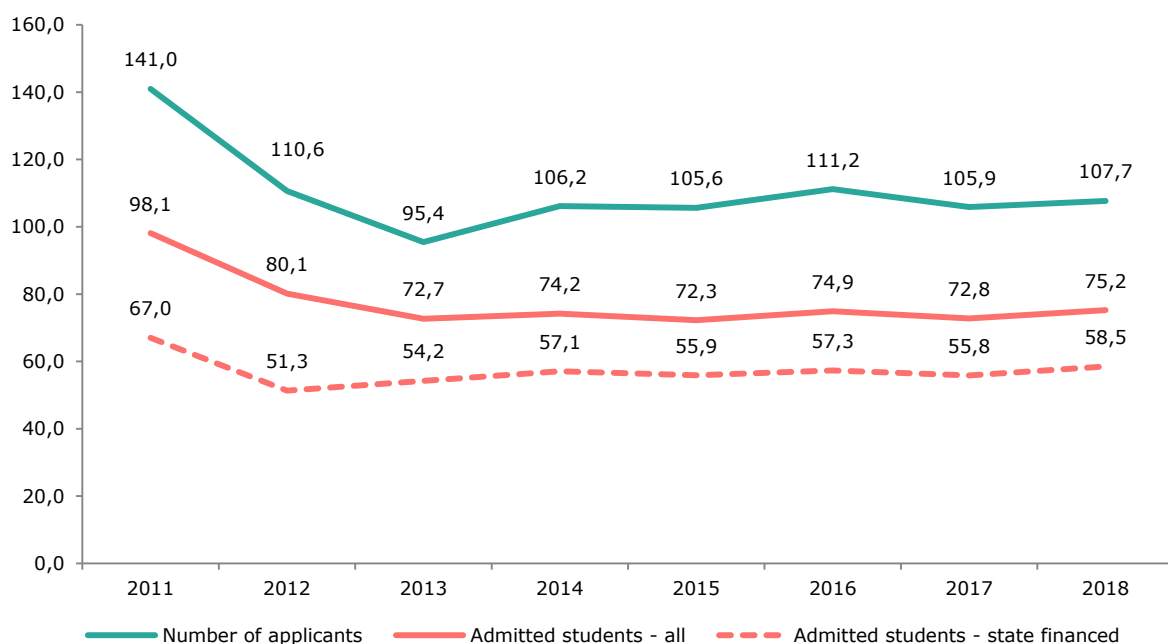
⁹⁷ HRDOP-3.2.3-17.

⁹⁸ HRDOP-3.2.4-16 and HRDOP-3.2.15.

6. Modernising higher education

A continuing low level of applicants in higher education is likely to further restrain tertiary attainment rates. The employment rate of recent tertiary graduates is 88.7 %, well above the EU average of 84.9 %, reflecting strong demand for highly skilled workers. Tertiary graduates also enjoy the highest wage premium across the EU (OECD, 2017). However, current enrolment and completion trends are not aligned with the demand: the tertiary educational attainment rate among 30-34 year-olds decreased to 32.1 % in 2017, against an increasing EU average (39.9 %). Enrolment numbers dropped significantly in 2012 when the government announced it was cutting the number of state-financed student places and introducing study contracts. In 2018, the number of admitted students increased for the first time in 2 years (Figure 2). As of 2020, a foreign language certificate of proficiency level B2 will be an entry requirement for 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 certificate (MTA, 2018). 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). To support participation in language exams, the Government made the fees of the first successful B2 level exam reimbursable⁹⁹.

Figure 2. Change in the number of applicants and admitted students, 2011-2018 (in thousands)



Source: Felvi database, 2018

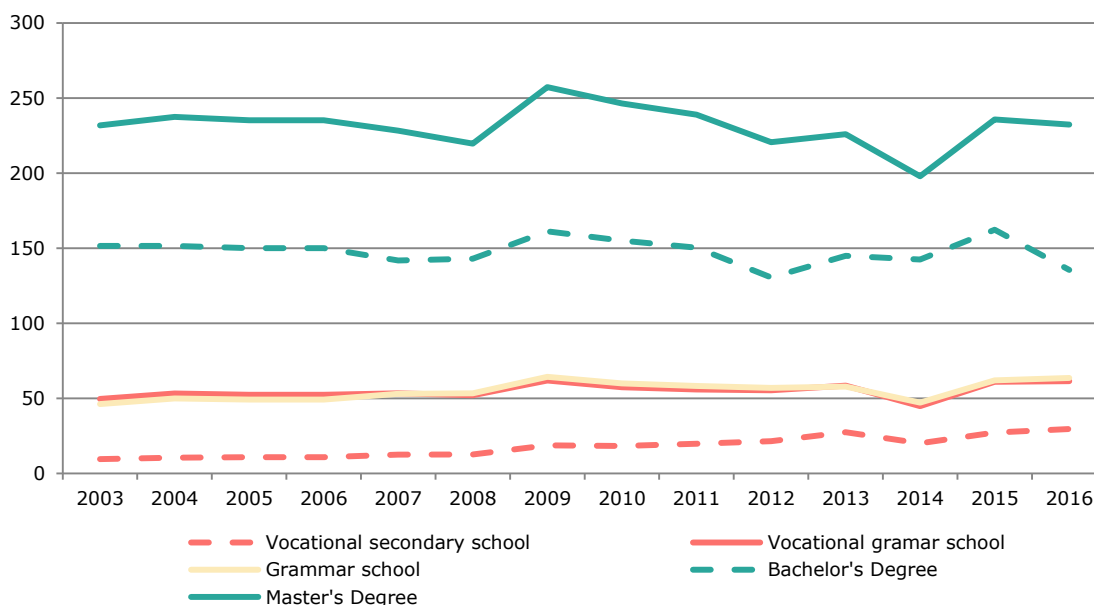
The share of private funding used to support participation in tertiary education is the third highest across the EU. More than one in three Hungarian students works throughout the year, including during the exam and holiday periods (Eurostudent, 2018). Students having paid jobs work on average 35 hours a week, and only half of these jobs are closely related to their studies. This reduces their time for studies and thereby the efficiency of public spending on higher education. More than a quarter of the students interrupting their studies for at least 1 year indicate work-related reasons. The share of disadvantaged students among all admitted students was very low at 1.4 % in 2016 (MTA, 2018), indicating a high level of inequity in study options. In April 2018 the government announced it would increase the budget for students' social benefits by about 40 % (Government, 2018b).

⁹⁹ Government Decree 503/2017.

7. Modernising vocational education and training

The two tracks of vocational education and training differ strongly in terms of the career perspectives of their graduates. The employment rate of recent VET graduates (ISCED 3 and 4) in 2017 was high: 85.9 % against an EU average of 76.6 %. VET has two regular pathways: vocational secondary school (*szakközépiskola*) for less academically-inclined students and vocational grammar school (*szakgimnázium*) with a higher element of general education. Vocational secondary schools provide practical workplace training focused on the imminent needs of companies, with limited general education content. This, together with the concentration of children of low socioeconomic status in this type of schools, explains their heavy deficit in basic skills measured in PISA and national surveys (Educational Authority, 2018b). Half of vocational secondary school graduates are employed as unskilled or semi-skilled workers. Their proportion in the public work scheme — doing primarily unskilled work — increased from 2.4 % to 6.2 % between 2011 and 2016 (MTA, 2018). Students leaving vocational grammar schools, with a higher element of general education, fare much better on the labour market than students leaving vocational secondary schools.

Figure 3. Relative wage premium of qualifications compared to basic qualification — whole population (% , 2003-2016)



Source: MTA 2018 http://www.mtaki.hu/wp-content/uploads/2018/01/D2_8.xlsx

Recent legislative changes bring some flexibility to VET and adult education but further lower the age of career choice. The obligation to learn a 'side-qualification' in vocational grammar schools — at the cost of general education content — was cancelled by an amendment of the law on VET and adult education in December 2017. Students will no longer be obliged to pass an exam for a vocational side-qualification as part of the matura. In certain sectors students will be able to choose a specialisation instead of studying the whole sector. In adult education it has become possible to train for a specific module and not a whole profession. The amendment also makes it possible for students to sign a pre-study contract with a training company as early as in their final year of lower secondary school, potentially determining career choice at the age of 13. Switching between professions or between levels of education is cumbersome because of the reduced general education and the increased vocation-specific content starting in the first year of VET programmes. The wage disadvantage of vocational secondary school graduates increases by age, which indicates a lack of transferability of skills acquired in these schools (Köllő, 2018).

Sectoral Skills Councils will decide on training needs. As part of the 2017 amendments, 20 Sectoral Skills Councils were established in July 2018 to define training needs by sector and region. Their members, appointed for the first time by the Hungarian Chamber of Commerce and Industry,

will compile the syllabus and provide work-based training places. Students may learn to use technologies at the VET centres if these are not available at the training companies.

8. Promoting adult learning

Promoting adult participation in learning remains a challenge, especially among the unemployed. Adult participation in learning remained low at 6.2 % in 2017, well below the EU average of 10.9 %. According to the Continuing Vocational Training Survey, 19.4 % of employees participated in continuing training provided by their employers in 2015, the second lowest rate in the EU. People in employment are about four times more likely to participate in training than unemployed people. Only 50 % of the population has at least basic digital skills (see section on the Digital Education Strategy).

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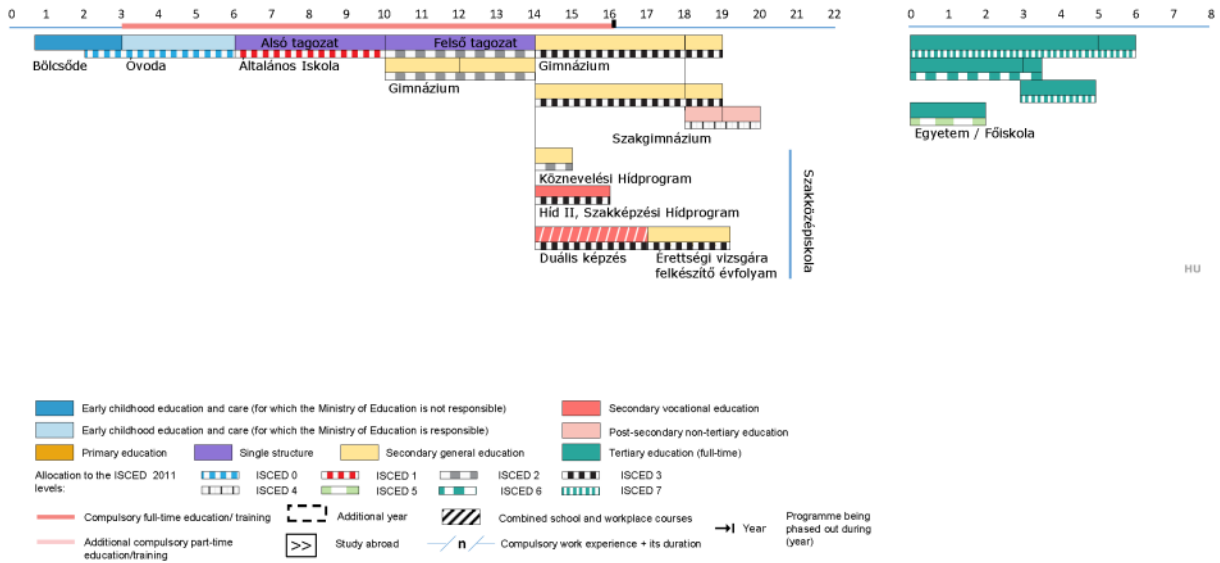
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10. Annex I: Key indicator sources

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_uae_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_uae_fini04
Learning mobility:	
Degree mobile graduates	JRC computation based on Eurostat / UIS / OECD data
Credit mobile graduates	educ_uae_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg: Publications Office of the European Union.

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IRELAND

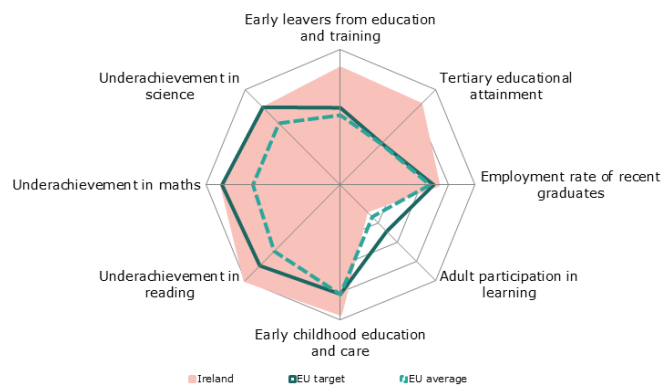
1. Key indicators

		Ireland		EU average	
		2014	2017	2014	2017
Education and training 2020 benchmarks					
Early leavers from education and training (age 18-24)		6.9%	5.1%	11.2%	10.6%
Tertiary educational attainment (age 30-34)		52.2%	53.5% ^b	37.9%	39.9%
Early childhood education and care (from age 4 to starting age of compulsory primary education)		99.7% ¹³	98.8% ¹⁶	94.2% ¹³	95.3% ¹⁶
Proportion of 15 year-olds underachieving in:	Reading	9.6% ¹²	10.2% ¹⁵	17.8% ¹²	19.7% ¹⁵
	Maths	16.9% ¹²	15.0% ¹⁵	22.1% ¹²	22.2% ¹⁵
	Science	11.1% ¹²	15.3% ¹⁵	16.6% ¹²	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)	75.7%	83.6%	76.0%	80.2%
	ISCED 0-8 (total)	6.8%	8.9%	10.8%	10.9%
Learning mobility	Degree mobile graduates (ISCED 5-8)	:	6.9% ¹⁶	:	3.1% ¹⁶
	Credit mobile graduates (ISCED 5-8)	:	: ¹⁶	:	7.6% ¹⁶
Other contextual indicators					
Public expenditure on education as a percentage of GDP		4.3%	3.3% ¹⁶	4.9%	4.7% ¹⁶
Education investment	Expenditure on public and private institutions per student in € PPS	ISCED 1-2	€6 356	: ¹⁵	€6 494 ^d
		ISCED 3-4	€8 064	: ¹⁵	€7 741 ^d
		ISCED 5-8	€10 376	: ¹⁵	€11 187 ^d
Early leavers from education and training (age 18-24)	Native-born	7.0%	5.3%	10.4%	9.6%
	Foreign-born	6.2%	4.0%	20.2%	19.4%
Tertiary educational attainment (age 30-34)	Native-born	52.0%	52.1%	38.6%	40.6%
	Foreign-born	52.8%	56.6%	34.3%	36.3%
Employment rate of recent graduates by educational attainment (age 20-34 having left education 1-3 years before reference year)	ISCED 3-4	60.4%	72.6%	70.7%	74.1%
	ISCED 5-8	84.5%	89.5%	80.5%	84.9%

Sources: Eurostat (see section 10 for more details); OECD (PISA).

Notes: data refer to weighted EU averages, covering different numbers of Member States depending on the source; b = break in time series, d = definition differs, 12 = 2012, 13 = 2013, 15 = 2015, 16 = 2016. On credit graduate mobility, the EU average is calculated by DG EAC on the available countries; on degree graduate mobility, the EU average is calculated by JRC over Eurostat and OECD data. The calculation of the ECEC benchmark includes ISCED 0 and ISCED 1 as in Ireland primary education starts before compulsory education. Further information can be found in the relevant section of Volume 1 (ec.europa.eu/education/monitor).

Figure 1. Position in relation to strongest (outer ring) and weakest performers (centre)



Source: DG Education and Culture calculations, based on data from Eurostat (LFS 2017, UOE 2016) and OECD (PISA 2015). Note: all scores are set between a maximum (the strongest performers represented by the outer ring) and a minimum (the weakest performers represented by the centre) of the figure.

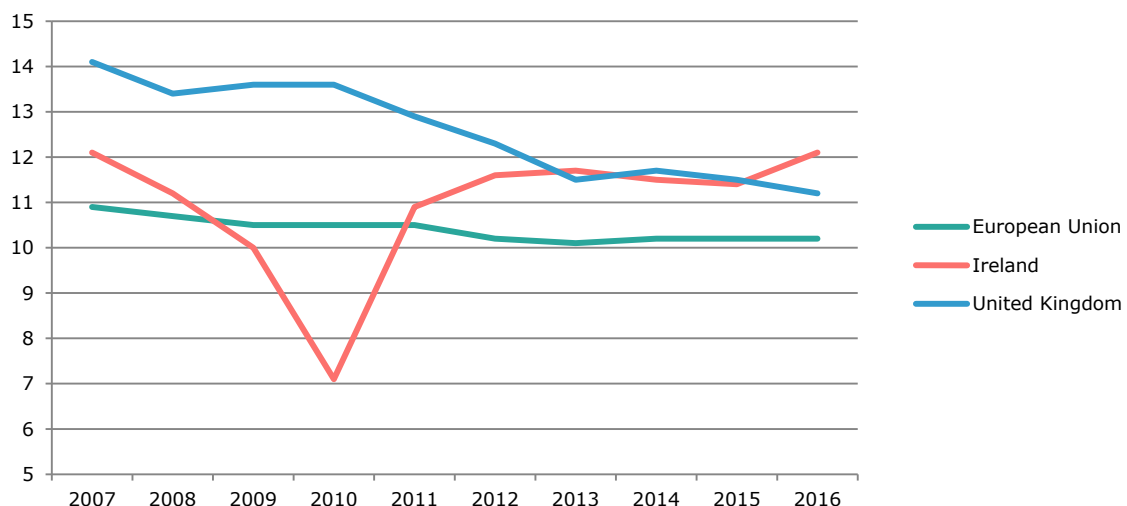
2. Highlights

- Ireland is undertaking reforms to increase quality, relevance and achievement at every level of its education system. There is also significantly increased investment on education and training.
- The country maintains a very good overall performance in the provision of basic skills.
- Ireland is seeking to adapt its education system to the challenges of the digital transformation and pursue the key higher education reform.
- Ireland is seeking to upskill and reskill its adult population to better meet the needs of the business sector and match education with the future labour market evolution.
- Ireland is running two key programmes fostering civic education in schools.

3. Investing in education and training

Expenditure on education has recovered recently, recording a sharp increase. Public expenditure on education as a proportion of GDP is not a fully reliable indicator in Ireland, given the specific structure of the Irish GDP and its recent significant shifts¹⁰⁰. Measured as a percentage of total public budget, Ireland spent 12.1 % on education in 2016, against 10.2 % for the EU-28 average (see Figure 2 for changes over time). This indicates that the sector is once again a budgetary priority. New funding has gone in particular to the recruitment of a sizeable number of new teachers and special needs assistants (Irish Government, 2018). These expansionary measures have been highly welcomed by stakeholders (ESRI, 2018).

Figure 2. Education as % of total general government expenditure in 2007-2016



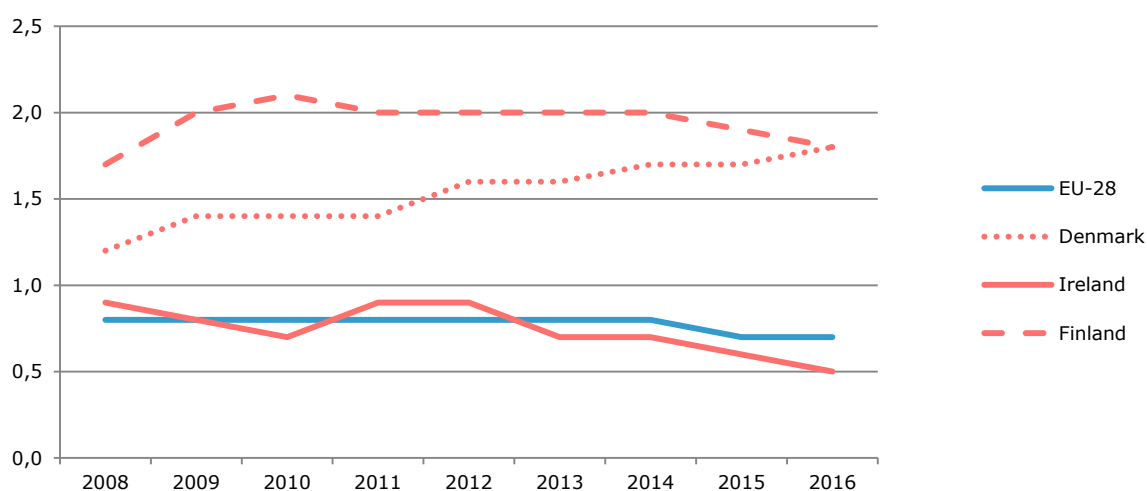
Source: Eurostat, 2018. Online data code: [gov_10a_exp](#).

Capital and infrastructure investment are also on a renewed positive trend. In February 2018 a EUR 30 million investment in ICT infrastructure for primary and post-primary schools was announced, enabling a large number of schools to purchase equipment and integrate digital technology into teaching and learning (Eurydice, 2018).. This is set to be complemented by

¹⁰⁰ Using gross domestic product (GDP) the figure would be 3.3 % in 2016, whereas using gross national income (GNI*) specifically adapted to Ireland, it would be c. 4.7 %.

additional supports for the introduction of Computer Science as a new subject in schools from September 2018. There is a particular focus on physical capital needs, concentrating on the institute of technology sector, with the aim being to expand capacity and upgrade campus infrastructure in the 2018-2021 period (Eurydice, 2018). In this context, EUR 21 million has been earmarked to increase the number of researchers across all disciplines, plus EUR 200 million for public-private partnerships. Public investment in early childhood education and care has also risen significantly in recent years, from EUR 260 million in 2015 to EUR 486 million in 2018. Finally, major investments on education are planned under the National Development Plan 2018-2027¹⁰¹.

Figure 3. Higher education (ISCED 5) expenditure as share of GDP in 2008-2016



Source: Eurostat, 2018. Online data code: [gocv_10a_exp](#).

Third-level spending is still considered insufficient by international standards. The 2017 OECD *‘Education at A Glance’* report highlights that Ireland spends a much lower proportion of its GDP on third-level education than other OECD countries on average (Graph 3). Overall funding for higher education has increased in recent years, but a decision on the future financing mechanisms, including the possible introduction of an income-contingent loan system, is still awaited (OECD, 2017). These decisions are even more pressing in the context of Brexit, as increases in non-EU applications to Irish higher education institutions are already being felt. A new reform was tabled on 15 January 2018 with the publication by the Department of Education and Skills (DES) of the *‘Review of the Allocation Model for Funding of Higher Education Institutions’* and the *‘Higher Education System Performance Framework for 2018-2020’*, paving the way for a new and ambitious tertiary sector agenda for Ireland¹⁰².

4. Citizenship education

Two key programmes are now in place to foster civic education. These prompt students to consider the social, political, cultural and economic factors affecting individual and collective relations. A new area of learning entitled *‘Wellbeing’* was introduced in Ireland for first-year students in secondary education as of September 2017. Key components include: social, personal and health education (SPHE); and civic, social and political education. Students’ performance will be recorded for the first time under the junior-cycle profile of achievement in autumn 2020. Students also take courses in SPHE at primary level, fostering their personal development, health and wellbeing (Eurydice, 2017). Civic education will also be a key component of further curricular reforms for the senior cycle in the future. Experts recommend that there should be an explicit reference to human rights in the planned new framework and that education on religious beliefs and ethics should be incorporated into the new reform (Ruane and Waldron, 2017).

¹⁰¹ See pages 86-88 on <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

¹⁰² More on <https://www.education.ie/en/Press-Events/Press-Releases/2018-press-releases/PR18-01-15.html>

5. Modernising school education

Ireland performs quite well on participation in early childhood education and care (ECEC) and on early school leaving. The ECEC participation rate in Ireland was slightly above the EU average at 98.8 % in 2016¹⁰³. The proportion of early school leavers in Ireland fell to 6.1 % in 2017, substantially below both the 8 % national target and the EU-28 average. The 2018 Irish national reform programme highlights a number of recent policy initiatives to support learners at risk, particularly socio-economically disadvantaged students and pupils with special educational needs. Recent policy changes in this area will need to be monitored in terms of their impact. Meanwhile, reviews of non-school programmes currently under way, including Youthreach and Out of School Provision, will focus on how to ensure effective inclusion for those who do not succeed in the mainstream school system (Irish Government, 2018).

The provision of accessible, affordable and quality full-time childcare is still insufficient. The universal free pre-school provision scheme will be further extended in September 2018, allowing all children to have 2 full years of pre-school education, broken down into two 38-week programme years. The Affordable Childcare Scheme (ACS) is currently under development. Legislation to underpin the scheme was passed on 26 June 2018¹⁰⁴. The ACS will include both universal and targeted subsidies, and will replace all existing targeted childcare schemes, providing financial support for both pre-school and school age childcare. In advance of the rollout of the ACS, subsidies under a number of childcare schemes, both universal and means-tested, have been increased (Irish Government, 2018).

More is being done to ensure better service delivery in ECEC. A minimum qualification requirement (NFQ Level 5) for ECEC staff came into force in 2017. In addition, the Irish Government has incentivised professionalization through providing higher rates of payment to pre-school rooms with a graduate leader and through a bursary scheme for staff working in the sector who acquire a degree-level qualification at their own expense. In 2017, 20% of ECEC staff working directly with children had a graduate qualification (NFQ Level 7 or higher). In addition, the quality of ECEC is supported through mentoring and training, including the Better Start Quality Development Service and the National Síolta-Aistear Initiative. The Access and Inclusion Model (AIM) provides a continuum of universal and targeted supports to enable the meaningful participation of children with disabilities in pre-school provision. A childminding action plan, to support the wider regulation and quality of home-based ECEC, is planned for the end of 2018 (Irish Government, 2018). Since 2016, the National Síolta Aistear Initiative is funding the development of materials, resources and CPD opportunities for the ECEC workforce in the two frameworks.

Box 1: an ESF-funded project in County Donegal is helping students who recently dropped out of school to gain employment skills

The 'Support, Training and Enterprise Programme' (STEP) is organised by the YMCA in the northern town of Letterkenny (County Donegal).

The project targets unemployed young people who have been out of school for over 6 months. STEP courses include training in communications, career planning, and customer service and information technology.

Participants complete two work placements over 6 weeks during the course. They are awarded a certificate on completion. Training, transport and food allowances are also provided.

The project is co-financed by the European Social Fund and the DES.

<https://www.donegalnow.com/news/donegal-step-programme-currently-recruiting-2017-18-classes/160231>

¹⁰³ ECEC participation includes participation in both primary schools as well as ECEC centres.

¹⁰⁴ https://www.dcy.gov.ie/docs/26.06.2018_Childcare_Support_Bill_is_passed_by_the_Oireachta/4722.htm

Compared with other countries, Ireland achieves a high level of basic skills. The 2016 Progress in International Reading Literacy Study (PIRLS) report shows that Ireland's primary school children are one of the best performing in Europe and are in the top tier of OECD countries for reading skills¹⁰⁵. The reading achievement scores of fourth graders improved by 15 score points since the last survey in 2011. The number of students with only basic reading skills has dropped significantly, while the percentage of those with advanced reading skills rose from 16 % in 2011 to 21 % in 2016 (Eivers et al. 2019). Recent international tests place Ireland in a strong position in terms of how students perform in English and maths in an international context (OECD, 2017), but, a deterioration has been visible in the teaching and learning of the Irish language in the primary and secondary school systems (ESRI, 2018). Performance in foreign languages is still insufficient by international standards (Chief Inspector's Report, 2018).

Box 2: New and ambitious foreign languages strategy for Ireland

In December 2017, the DES launched the government's 'Strategy for Foreign Languages in Education 2017-2026'.

The plan sets out a roadmap to put Ireland in the top 10 countries in Europe for the teaching and learning of foreign languages and includes actions to ensure a steady supply of language teachers.

It also sets out targeted measures for increasing the number of languages taught, improving proficiency, fostering diversity and increasing immersion programmes. The number of post-primary schools offering two or more foreign languages will be increased by 25 % and the number of foreign language assistants in schools will be doubled in the years to come.

The implementation of such an ambitious plan will require significant changes to how foreign languages are taught in Ireland and will require extra resources.

<https://www.education.ie/en/Schools-Colleges/Information/Curriculum-and-Syllabus/Foreign-Languages-Strategy/Foreign-Languages-Strategy.html>

Student performance is benefiting from Ireland's literacy and numeracy strategy, from investment in disadvantage and special educational needs support, and from curricular reforms. DEIS (Delivering Equality of Opportunity in Schools), remains the policy instrument for addressing educational disadvantage: its central strands are enhancing attendance, progression, retention and attainment. Policy actions focus on a school action plan for literacy and numeracy from an early stage, with strong links between the home, school and community. The action also focuses on schools working cooperatively and on cooperation between education and other services. The plan prioritises the educational needs of children and young people from disadvantaged communities from early childhood through second-level education. 825 schools are included in the programme in the 2016/17 school year. These comprise 640 primary schools (328 urban/town schools and 312 rural primary schools) and 185 second level schools.

There is more strategic steering of education from the authorities. On 7 February 2018, the DES published its 2018 action plan for education, with over 370 actions and sub-actions to be implemented during the year. The plan recognises the importance of changing demographics, inclusion and the role of teachers and sets out to further tackle disadvantage, strengthen inclusion and support transitions between different education levels (DES, 2018). The 'End of Year Review' 2017, the first full-year review published under the 2016-2019 action plan, concluded that 86 % of the actions for 2017 had been fully or partially carried out. In February 2018, the National Council for Curriculum and Assessment announced a review of senior-cycle education, to commence in September 2018, which will feed into a possible future reform of this sector.

⁶ More on <http://pirls2016.org/pirls/student-achievement/pirls-achievement-results/>

Measures have been taken to support teacher supply. A number of measures have been introduced to support the supply of teachers, particularly in specific subject areas at post primary level. In March 2018 the DES, following discussions with the universities, announced an expansion in the number of places on initial teacher education programmes in 2018 at both undergraduate and postgraduate levels, including additional places in STEM, Irish and modern foreign language programmes. The Programme for Access to Higher Education (PATH) Fund supports the implementation of the National Plan for Equity of Access to Higher Education 2015-2019. This Fund comprises dedicated funding to support access to higher education allocated on a competitive basis to higher education institutions to support particular priority areas as determined by the DES. PATH 1 in line with a priority in the National Access Plan provides €2.7m over 3 years to support the objective in the National Access Plan to increase access to initial teacher education for 120 students from the target groups identified in the National Access Plan such as Lone Parents and Travellers (DES, 2017).

Ireland is currently developing its 2018-2022 ICT action plan to address skills shortages in this sector. OECD PISA survey results show that Irish 15- and 16 year-old students engaged significantly less often with ICT at school and with ICT use outside of school, highlighting the need for policy focus on this area (OECD, 2017). A new computer science subject is being introduced in secondary schools from September 2018. Meanwhile, significant teacher supply and infrastructural deficits are set to be addressed via recently announced new measures (DES, 2017). Irish schools have been invited to apply to form clusters of 'digital savvy' schools. In December 2017, the DES announced the 'School Excellence Fund — Digital'. Primary and secondary schools are invited to apply to form clusters of schools, working together on innovative projects in teaching and learning with digital technologies. The project seeks to demonstrate the use of digital technologies and to include it into curricula. Finally, in January 2018 it was announced that 40 post-primary schools around the country will start teaching computer science for the Leaving Certificate from this September, with the first students sitting an exam in this subject in 2020 (Eurydice, 2018).

6. Modernising higher education

Ireland has a very high tertiary attainment rate and has set ambitious goals for the future. In 2017 as much as 53 % of 30-34 year-olds had tertiary qualifications, compared to an EU average of just below 40 %. Enrolment in higher education has been traditionally high in Ireland, reflecting at least in part the lack of alternatives and the relative undervaluing of vocational pathways (McCoy et al., 2014, McGuinness et al., 2018). While the 2018 national reform programme identifies a target of 60 % of 30-34 year-olds with tertiary attainment, the further education and training sector's potential to provide pathways to sought-after qualifications is not yet fully exploited. The national reform programme highlights areas where the dropout rate from higher education is particularly high; it acknowledges that more work is needed to support students to complete their studies (Irish Government, 2018). By the end of 2018, a review of career guidance tools and career information will be completed for post-primary, further education and higher education students, as well as for adults. The aim is to ensure that Ireland is providing high quality, relevant career guidance support service to all students from post-primary level up to further and higher education (Eurydice, 2018).

Tracking of students and graduates is well developed in Ireland. The Higher Education Authority (HEA) reports on 'Retention and Progression in Higher Education' and shows that 86% of new entrants to full-time undergraduate degrees in 2014/2015 progressed to their second year of study in 2015/16. Further work will be done to see how students can best be supported to continue on their course or transfer to another programme (HEA, 2018). Graduate tracking and labour market pathways are also on the agenda in Ireland: 'What Do Graduates Do? - The Class of 2016' was published in January 2018. This study shows that 70% of recent graduates progressed to employment, and 10% went overseas. 81% of Masters and Doctorate level graduates are in employment nine months after graduation, up one percentage point from 2015 (80%) (HEA, 2018)

There is increased long-term investment in Irish higher education. Additional funding of EUR 36.5 million was provided for higher education in the 2017 budget and a further EUR 60 million was announced in the 2018 budget. This additional funding will support targeted initiatives including skills programmes, performance and innovation funding, technological university development and apprenticeships in the sector. The DES has recently announced a new EUR 5.7 million 'Higher Education Access Fund' to help students from under-represented groups to

access higher education. Funding will be given to regional clusters of institutions to support approved access initiatives and will support places for 2 100 additional students in 2018. Finally, higher education was highlighted as a key area for investment under 'Project Ireland 2040'. An investment programme is planned, including a EUR 200 million public-private partnership in 11 institutes of technology and a comprehensive capital investment programme with additional cumulative investment of EUR 2.2 billion up until 2027. This will also be accompanied by the new role of technological universities, which will have a new mandate to underpin and drive regional economic development.

The applied sciences sector is being upgraded in Ireland. The new Technological Universities Act came into force in March 2018. Applications for technical university status are submitted to the HEA for assessment by an international panel of experts. These are put forward by consortia of existing institutes of technology, which come together to seek future technical university status. The first application was submitted and approved earlier this year, and the first Technological University will be established in Dublin in early 2019. Further applications are anticipated later in 2018 and in subsequent years. A €220m project, being delivered via PPP, will benefit the new TU for Dublin. This is in addition to the forthcoming PPP programme for the wider Institute of Technology sector as 8 of the 11 institutes benefitting from this scheme are in TU consortia. This latest initiative confirms the strong focus on STEM, including ICT, engineering and life sciences to drive regional development in Ireland. Finally, quality assurance is becoming an area of growing strategic importance to Irish higher education institutions. In December 2017, two Quality and Qualifications Ireland (QQI) reports were published, with the aim of making higher education more relevant for both students and the future labour market (QQI, 2017).

7. Modernising vocational education and training

Ireland continued to expand its apprenticeship system to higher qualification levels and to new sectors. This action is part of the 2025 national skills strategy, published in 2016, and aims to significantly increase work-based learning opportunities for school graduates who choose not to go to general higher education, as well as for employees (DES, 2016). Steps were taken to develop new apprenticeships, up to European qualifications framework (EQF) level 8; previously apprenticeship qualifications were only at EQF level 5, covering a wider range of sectors. It is also expected that the new apprenticeship fields will increase female participation. The National Women's Council of Ireland and the Further Education and Training Authority (SOLAS) have been working together to identify the reasons for, and obstacles to, low female participation in apprenticeships. Approximately 40 new apprenticeship areas will be introduced over the next few years, including in ICT and other STEM occupations. Despite reforms, the employment rate of recent vocational education and training graduates, at 72.3 % in 2017, was still below the EU average of 76.6 %. In 2018, the National Skills Council is continuing its work to identify and prioritise skills demands and pinpoint how the education and training sector and other relevant stakeholders can best respond to this challenge. Finally, a survey of businesses that have worked with the regional skills fora will be held to measure satisfaction with their engagement with the fora so that the Education and Training system can continue to improve the service that is offered in each region.

8. Promoting adult learning

Adult participation in learning increased by 2.7 pps in 2017 to 8.9%, as against an EU average of 10.9%, suggesting that recent reforms in the field of Further Education and Training (FET) are beginning to show results. The Action Plan for Education 2018 foresees the creation of better career pathways through strengthening the apprenticeship and traineeship systems, supporting the development of an Upskilling Pathways Plan, and continuing to work with Skillnets to deliver enterprise-led training, including the establishment of four new Skillnets in sectors and regions highlighted in national workforce and sectoral policy, creating greater diversity of opportunity in learning beyond school. In-depth analysis of the potential target group of Upskilling Pathways has been undertaken. 'Supporting Working Lives and Enterprise Growth in Ireland', a new policy framework for the FET sector focuses on up-skilling and re-skilling opportunities for those already in employment, with a particular emphasis on groups furthest from the education system, e.g. those with lower education attainment. The policy was published in July 2018, and will be followed by initiatives to support FET actors in providing adult learners with the skills necessary for work. In 2018 the Council addressed to Ireland the following country-specific

recommendation under the European Semester: "Prioritise the upskilling of the adult working-age population, with a focus on digital skills" (Council of the European Union, 2018).

A comprehensive review of the National Training Fund was published in August 2018. This review will guide strategic decisions on the Fund's structure and future direction.

Other developments outlined in the 2018 Action Plan include: developing a national policy on the recognition of prior learning; implementation of the FET Professional Development Strategy 2017-2019; completion of the Mid-Term review of the Further Education and Training Strategy; improving the impact of the Post Leaving Certificate (PLC), Youthreach, Vocational Training Opportunities Scheme (VTOS) and Specific Skills Training (SST) schemes, to ensure relevance to the labour market and effective progression for learners; completing a review of career guidance services; and the implementation of actions from the ICT Skills 2014-2018 Action Plan.

Digital skills levels of the population are improving but still remain relatively low. In 2017, only 48% of the population possessed at least basic digital skills, as compared with the EU average of 57 %. In 2017, a Strategy for Technology-Enhanced Learning (TEL) in Further Education and Training (FET) was published. It aims to establish TEL as an intrinsic element of FET. Implementation will improve access to FET, equip learners with the skills and confidence to use technology as part of their work, and enhance overall learner engagement in FET. SOLAS will work closely with the DES to implement this strategy.

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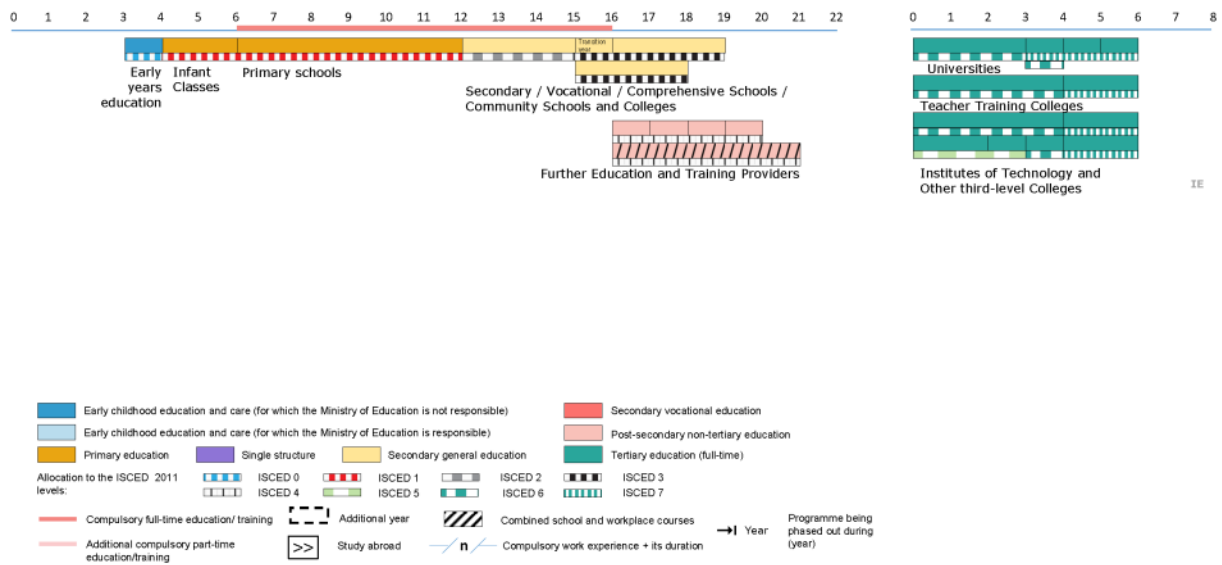
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10. Annex I: Key indicator sources

Indicator	Eurostat online data code
Early leavers from education and training	edat_ifse_14 + edat_ifse_02
Tertiary educational attainment	edat_ifse_03 + edat_ifs_9912
Early childhood education and care	educ_uoe_enra10
Underachievement in reading, maths, science	OECD (PISA)
Employment rate of recent graduates	edat_ifse_24
Adult participation in learning	trng_ifse_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	Eurostat / UIS / OECD
Credit mobile graduates	educ_uoe_mobc02

11. Annex II: Structure of the education system



Source: European Commission/EACEA/Eurydice, 2017. *The Structure of the European Education Systems 2017/18: Schematic Diagrams*. Eurydice Facts and Figures. Luxembourg; Publications Office of the European Union.

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