

Comparative table of the Country Specific Recommendations and the Country Reports

in the areas of Active Labour Market Policies; Skills, Continuous VET & Adult Learning; Early Childhood Education & Care; Education (General, Initial, VET & Higher Education)¹

	Assessment and Context according to the Country Reports (RRF Plans)	Country Specific Recommendations 2022
Austria	<p>The education system faces significant challenges. The OECD (61) highlights significant challenges for Austria’s education system, including in access to early childhood education, the level of resources in focal schools – schools with a disproportionate share of children from disadvantaged backgrounds - and the need to attract and train sufficient staff and teachers. The limited number of places in ECEC and the lack of a compulsory quality framework hold back the positive development of children. Austria is experiencing growth in its school-aged population, and more and more ‘all day’-schools (where children are looked after until 6pm) are being set up. In addition, a high share of teachers are retiring soon. All these trends mean that Austria needs to attract more applicants to teacher education. Continued professional development for teachers needs to be made more relevant. Moreover, both initial and continued training in digital education needs to be</p>	<p><i>RECITALS</i></p> <p>(29) Several disadvantaged groups could be better integrated into the labour market, in particular low-skilled and older workers, and workers with a migrant background. Almost half of the long-term unemployed in Austria have completed at most lower secondary school (<i>Pflichtschule</i>). The labour market participation of people with a migrant background remains low, with an employment level 12.7 percentage points lower than native-born residents in 2020. This is especially problematic since educational outcomes, job opportunities and future income levels of children in Austria tend to be particularly determined by those of their parents. The ‘Promoting re-skilling and up-skilling’ measures of Austria’s recovery and resilience plan will</p>

¹ The sources of the text quoted in this table are the [Country Specific Recommendations 2022](#) and the [Country Reports 2022](#) published by the European Commission on 23 May 2022.

	<p>strengthened after the experiences of the pandemic. Before the pandemic, Austrian teachers felt the least prepared of any teachers in the EU to use ICT in the classroom (62). Disadvantaged schools in particular require adequate resources to improve the learning outcomes of pupils with low socioeconomic or migrant backgrounds.</p>	<p>address these challenges by supporting training for low-skilled workers and the longterm unemployed. At the same time, the planned measures do not fully address the underlying participation problem among people with a migrant background and lowskilled workers. Moreover, education outcomes for these groups need to be improved much earlier in life. There remains a need for additional retraining and lifelong learning opportunities for workers of all ages.</p> <p><i>RECOMMENDATIONS</i></p> <p>3. Boost labour market participation of women, including by enhancing quality childcare services, and improve labour market outcomes for disadvantaged groups.</p>
<p>Belgium</p>	<p>There are concerns about the quality, attractiveness and labour market relevance of vocational education and training (VET). A large share of the population has a negative perception of vocational secondary education (42.5% vs. 23.5% on average in the EU). In 2019, only 6.2% of students participated in work-based learning in Belgium compared to 29% on average in the EU (Cedefop database). According to public employment services, the lack of jobseekers with the relevant skills or experience accentuates shortages in technical professions. Increasing labour market relevance of the VET systems is particularly warranted in the French Community, where only 3 out of the 10 most popular upper secondary VET options prepare for occupations with labour shortages. In the Flemish Community, the reform of work-based training has led to an increase in the number of VET pupils, but concerns remain over its attractiveness and inclusiveness, in particular for pupils with a disadvantaged or migrant background. In addition, measures to attract qualified and experienced teachers to disadvantaged schools are lacking.</p>	<p><i>RECITALS</i></p> <p>(26) In terms of labour shortages and skills mismatches, there are concerns in particular about the performance and inclusiveness of the education system, also in the light of high public spending on education 21. The gap in educational outcomes is closely linked to students' socio-economic and migrant background and is among the largest in the EU, leading to inequalities in education. More than one in three young adults with disabilities do not finish secondary education. Moreover, only 6.2% of students participated in work-based learning in Belgium in 2019, well below the EU average (29%). Increasing the labour market relevance of the vocational education and training (VET) systems is particularly warranted in the French Community as only 3 out of the 10 most popular upper secondary VET options prepare for occupations with labour shortages. Overall, concerns in Belgium remain on the attractiveness of VET as a track of excellence, as reflected in the large share of the</p>

	<p>A growing shortage of qualified teachers poses a particular challenge to the education system. Schools principals report important shortages of qualified teachers (45.5% vs. 24.6% in the EU), which hinder schools' capacity to provide quality instruction (see Annex 13). The job vacancy rate in education is more than twice as high as in the euro area (3.2% in Q4-2020 vs 1.7%). The number of students in education bachelors decreased up until 2019. More than one out of five starting teachers leaves the profession within the first five years of teaching. There is scope to strengthen the teaching profession by enhancing professionalisation, evidenceinformed initial education, induction, and continuous professional development, including by preparing to address educational disadvantage and to teach in increasingly multicultural classes, as well as by developing more flexible and attractive career paths and frameworks.</p> <p>Beyond the reforms and investments in the RRP, Belgium would benefit from:</p> <ul style="list-style-type: none"> • addressing labour shortages and skills mismatches, notably by improving the performance and inclusiveness of the education system, including by strengthening the quality and labour market relevance of vocational education and training, and of teachers' career paths and training; <p>Teachers are not well prepared to provide quality instruction to the increasingly diverse student population. In the 2018 TALIS survey, Belgian teachers stressed the high diversity of students in the classroom more than teachers in other countries did (above the EU average for students being non-native speakers, having special needs, being migrants or with a migrant background, and coming from socio-economically disadvantaged homes). At the same time, teachers indicated</p>	<p>population with a negative perception of VET. Strengthening the teaching profession would help to retain teachers and reduce a growing shortage of qualified teachers. This poses a particular challenge to disadvantaged schools, risking further increasing existing inequalities in the education system. Despite measures already taken, the attractiveness of the teaching profession would be strengthened by providing better initial education and continuous professional development, and by developing more flexible and attractive career paths.</p> <p><i>RECOMMENDATIONS</i></p> <p>3. Address labour shortages and skills mismatches, notably by improving the performance and inclusiveness of the education and training system, enhancing the quality and labour market relevance of the vocational education and training and developing more flexible and attractive career paths and training for teachers.</p>
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feeling less well prepared than the EU average to teach in a multicultural and/or multilingual setting.

Strengthening the teaching profession, fundamental to improving educational outcomes for all, is highly relevant to address the growing shortage of qualified teachers. More than in other EU countries, principals report that shortages of qualified teachers (BE 46.5%, BEnl 34.2%, BEfr 65.6% vs EU-23 24.6%), including for students with special needs (BE 55.6%, BEnl 39.4%, BEfr 80.9% vs EU- 23 37.8%) and for vocational education and training (VET) (BE 33.8%, BEnl 28.0%, BEfr 43.3% vs EU-23 16.4%), hinder schools' capacity to provide quality instruction (TALIS 2018). While the age pyramid of teachers is more favourable than on average in the EU, the number of young people choosing education as a first career choice is decreasing. Newly recruited teachers have less favourable working conditions than older ones, including temporary contracts and assignments to multiple and disadvantaged schools. Newly recruited teachers in Belgium received less formal induction activities than the EU average (6.6% vs EU-23 25.1%; BEnl 1.2%; BEfr 15.2%). The EU's Structural Reform Support Programme (SRSP) is currently providing support to the Flemish Community to develop coherent support for teachers at the start of their careers and give guidance to its highly autonomous schools on how to set up such induction schemes (2020-2022). Continuing professional development is a professional duty, but there is no minimum number of defined hours in the Flemish Community. In the French Community, principals reported the second lowest planning of continuing professional development at school level (23.1% vs EU 56.2%; BEnl: 48.2%). More than one out of two principals reported that there is no mentoring programme for teachers in schools. Since TALIS 2018, the Communities have been taken some measures to improve the professionalisation of the teaching profession.

	From 2023/2024, the French Community will strengthen initial teacher training and increase it to 4 years.	
Bulgaria	<p>Educational outcomes are low, with almost half of Bulgaria’s teenagers lacking basic skills. Results of the Programme for International Student Assessment (PISA) show that twice as many Bulgarian 15-year olds than on average in the EU failed to demonstrate a minimum level of reading knowledge (e.g. 47.1% vs 22.5%). Data on the achievement of 15-year old pupils and their socio-economic status confirm that socioeconomic status strongly affects educational outcomes. Learning losses due to the repeated school closures and shift to remote learning threaten the past years’ efforts to improve educational outcomes and exacerbate inequalities. Although Bulgaria’s general government expenditure on education increased by 14% in 2019, it remained one of the lowest in the EU (3.9% compared to 4.7% of GDP in the EU-27). Lack of adequate IT infrastructure and insufficient digital skills among teachers create additional difficulties (see Annexes 7 and 12).</p> <p>The teacher population is one of the oldest in the EU, with about half of school teachers older than 50. Salaries are increasing the attractiveness of the profession, but attracting talented candidates into teacher education programmes remains difficult, in particular in rural areas. To strengthen the profession, additional measures, including with support from EU funds, were taken to strengthen initial teacher education and continuous professional development. Nevertheless, the need to upgrade teachers’ skills remains.</p>	/
Croatia	This annex outlines the main challenges for Croatia’s education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. Education in Croatia faces	/

	<p>challenges with regard to low participation in early childhood educational and care (ECEC), low basic skills and tertiary education attainment (TEA). There are also regional differences and shortage of teachers in ECEC, as well as gender gaps and urban-rural divide in TEA. The participation of Roma children and pupils in education is much lower across all levels. ECEC participation is improving, but remains low with marked regional differences. Participation in ECEC from age 3 has increased by 11.8 percentage points (pps) since 2014, but remains substantially below both the EU average and the new EU-level target. Regional differences are high, with provision especially lacking in rural municipalities: 40% lack a nursery school and more than 25% lack a kindergarten. The participation of Roma children is also much lower: 23% in 2016-2017. Challenges persist in terms of quality (i.e. Croatia lacks a quality framework and has oversized class groups, as Table A13.1 shows) and a shortage of ECEC teachers, due to unattractive working conditions</p>	
<p>Cyprus</p>	<p>In recent years, there has been only limited progress in education and training reforms, including the evaluation of teachers. This remains one of the key challenges for the Cypriot education system. It negatively affects pupils' educational outcomes, and results in low participation rates in vocational education and training (one of the lowest in the EU in 2019) and adult learning, as well as skills mismatches</p> <p>The reforms and investments under the Recovery and Resilience Facility will help address some of these longstanding challenges. Key measures focus on (i) rising skills mismatches and low digital skills, (ii) addressing the skills mismatch between education and the labour market, (iii) modernising the evaluation system for teachers and schools, (iv) addressing the quality of teaching and the availability and affordability of ECEC</p>	<p>/</p>

Czechia	<p>Teacher shortages and the limited attractiveness of the teaching profession remain a challenge. Despite significant increases in Czech teachers' salaries, teacher shortages persist, particularly in disadvantaged regions. The proportion of teachers who are aged 50 or over increased between 2015 and 2021 and remains above the EU average. Czech teachers report comparatively lower rates of classroom practice acquired during their studies. Reform to initial teacher education has been launched. Attracting highly qualified teachers and pedagogical support staff to disadvantaged schools remains a challenge.</p>	/
Denmark	<p>Evidence shows that teacher policies face major challenges such as teacher shortages and a lack of fully trained teachers. Fewer young people are attracted to initial teacher training programmes, and many drop out during training. 18% of teachers in primary school lack adequate qualification in 2021. Teachers are obliged to participate in continuous professional development. Compared with their peers in other countries they are generally less satisfied with the training available</p>	/
Estonia	<p>While Estonia performs well in education and training, employers' needs are not fully met due to a shortage and mismatch of skills. The Estonian education system already provides very good basic skills in schools and a high number of higher education graduates. However, companies in technology, manufacturing, construction, science and agriculture in Estonia repeatedly report a lack of skilled workers, especially in rural areas. Similarly, skills shortages continue in the care and education sectors. The main reasons are that the education system cannot keep up with the rapidly changing labour market and technological developments and companies provide limited training. The number of vocational education and training and higher education graduates with relevant skills is too low to fill job vacancies. In 2020 the rate of early leavers</p>	/

from education and training fell below the EU average. However, this hides significant differences: there is a higher rate for men, those in rural areas and amongst youth with disabilities. Estonia has the third highest gender gap in higher education graduates in the EU, with significantly more 10 young women than young men graduating (see Annex 13). Furthermore, ageing of teachers and a high number of dropouts from the profession at the start of their career are key challenges to the education and training system in the years to come (see Annex 13).

Improving workers' skills and solving teacher shortages can contribute to meeting employers' needs and maintaining a good education system. Since the measures in the RRP concentrate on digital and green skills, more comprehensive solutions will be needed to meet all skills needs. In addition to tackling the challenges above in higher education and in vocational education and training, effective measures to address skills shortages could be to encourage employers to provide more training and to redesign the skills forecasting system by transferring skills surveys to existing registry data relevant for the education and training system to help better anticipate skills needs. The Education Strategy 2021-2035 and the action plan for ensuring a new generation of teachers are steps in the right direction to address teacher shortages.

Beyond the reforms and investments in the RRP, Estonia would benefit from:

- Addressing skills shortages and mismatches, including by improving the labour market relevance of the education and training system and easing teacher shortages.

Estonia benefits from tailored expert advice through the Technical Support Instrument to design and implement growth-enhancing reforms, including carrying out the RRP.

Since 2017, the country has received assistance through 42 technical support projects. Projects delivered in 2021 aimed, for example, to strengthen the financial management information system, improve active labour market policies, promote professional development of teachers and school leaders, and develop a draft transport and mobility plan. New projects started in 2021 included implementing specific reforms and investments in the RRP, for instance for e-health, and the development of an integrated hospital master plan, digital public administration, decarbonisation, and anti-money laundering. In 2022, new projects will focus, among others, primary health-care and the renovation of buildings

This Annex outlines the main challenges for Estonia's education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. The Estonian education system continues to combine high performance with a high level of equity. However, continued success depends on the future supply of teachers and addressing the substantial shortage and ageing in the profession will be crucial. The education system also struggles to produce a sufficient number of graduates to fill jobs requiring skilled workers.

Estonia's teaching staff is among the oldest in the EU, while half of novice teachers leave the profession. Half of Estonian teachers in primary and secondary schools are over 50 (EU average: 39%), and 9% are over 65 (EU average 1%) (36). The shortages and ageing of teachers concern all levels of education: 11% of teaching staff in higher education are over 65 and 12.6% are over 65 in vocational education and training. At the same time, only half of novice teachers remain in the profession for more than 5 years (37). The teacher shortage concerns both urban and rural areas and is especially acute for certain subjects

	<p>(maths, sciences). Shortages of educational support specialists are also a concern, especially as the pandemic further increased the need for them. Currently, the number of admissions for these professions at universities is not sufficient to cover this need</p> <p>Teacher shortages have an impact on teacher qualification levels. If no qualified teachers can be recruited, school heads sign fixed-term contracts with candidates having at least secondary education. In 2020/2021, 57% of beginning teachers did not meet the qualification requirements. A newly adopted action plan on teachers contains different measures to address these challenges and is partly supported by the European Social Fund+. The action plan focuses on career progression, working conditions, further developing flexible pathways into the profession, initial and in-service training of teachers and school leadership.</p>	
<p>Finland</p>	<p>The shortages of teachers in early childhood education and care (ECEC) challenges the expected increase of ECEC participation. The participation rate in Finland is below EU average. Recently adopted reforms in ECEC have not born the expected fruits. They include the restoration of children’s right to ECEC, the transfer of the sector to the Ministry of Education and Culture, pilots of free-of-charge ECEC for five-year-olds, an extended pilot of two year pre-primary education and a new national curriculum. Challenging working conditions and relatively low salaries reduce the attractiveness of the ECEC teachers’ profession, leading to staff shortages. The 2018 reform required that two thirds of ECEC staff to have a Bachelor degree, which may also exacerbate shortages. The announced creation of 400 new study places for ECEC teachers is a step in the right direction but might not be enough to remedy the situation. Meanwhile, the birth rate has increased again over</p>	<p>/</p>

the last 2 years, after previous decline (from 1.35 to 1.46), requiring further improvement to the provision of ECEC.

The shift to distance learning during the COVID-19 pandemic was quite effective but upper-secondary students seem to have been badly affected, in particular their mental health.

Upper-secondary students were the first to switch to distance learning and the last to be released from it. FINEEC reports on data collected during the COVID-19 pandemic indicate that while most students considered their studies to have advanced as planned, about half of the students feel less motivated and a fifth believe that their studies had not advanced as planned. A joint study from Tampere and Helsinki Universities (52) reported that 40% of the upper-secondary schools' counselling and guidance staff felt that personal student welfare services provided by multi-professional teams had weakened during the pandemic. The teachers surveyed also reported of declining performance.

Recent reforms in upper-secondary education pose challenges to students and teachers. Apart from the extension of compulsory education to 18, the main novelty in secondary education is the reform of student grading in the final assessment (53). The extension of compulsory education has brought new requirements for upper secondary regarding support for learning and monitoring of absenteeism in upper-secondary education. The Trade Union for Education (OAJ) has criticized the fact that an excessive share of teachers' time is now taken up by work not directly related to teaching and learning. An impact assessment of the 2018 reform of higher education students' selection, has been launched by the Prime Minister's Offices.

Finland is widening its higher education offer, notably for the study fields most demanded. The National Recovery and Resilience Plan contributes to widening their higher education

	<p>offer and increasing study places, especially in areas with labour shortage. The Minister of Science and Culture expressed the intention of redcentralising higher education by allowing the establishment of smaller units across the country and allowing existing institutions to expand into new fields of science. However, several stakeholders are concerned that the reform might endanger the quality of Finnish higher education and the international attractiveness of Finnish universities. Universities managed the impact of the COVID-19 crisis relatively well with regard to both research and education, but students' wellbeing was badly affected. Higher education run largely in a remote mode since the onset of the COVID-19 pandemic. At the end of the spring semester, Bachelor degrees will be awarded to students who have studied all or most of their courses without a live contact to either their fellow students or teachers. Demands for psycho-social help at the Student Health Services keep growing since the beginning of the pandemic.</p>	
<p>France</p>	<p>High socio-economic inequalities in the education system impact the level of basic skills. Despite good performance with regard to early school leaving, tertiary education and adult participation in learning, the impact of socio-economic inequalities and migrant background on educational outcomes is significant (see Annexes 12 and 13). According to the 2018 PISA report, 20% of 15- year-olds in France lacked basic skills in reading, mathematics or science and over a third of 15-year-olds with disadvantaged backgrounds lacked basic skills in reading (35.3%). According to the 2019 Trends in International Mathematics and Science Study, French pupils in the 4th grade had the lowest performance in maths across the 22 participating EU countries with disadvantaged pupils scoring significantly lower than advantaged ones. According to PISA 2015 (16), science teachers working in disadvantaged areas tend to have lower levels of certification to a larger extent than in other EU</p>	<p><i>RECITALS</i></p> <p>(26) Despite good outcomes overall, high socio-economic and regional inequalities in the French education system impact the level of basic skills. According to PISA, France is one of the EU Member States where socio-economic background most influences pupils' performance. Indicators show that 35.3% of disadvantaged 15-year-olds and 44.5% of first-generation migrant pupils do not have sufficient basic skills in reading, compared to 20.9% on average. To address this issue, in 2017 France introduced a pilot reform consisting of 'halving class sizes' in early years of education for students in priority areas, to enable pupils to benefit from more personalised support in an atmosphere conducive to learning. In 2021, the French Court of Auditors highlighted shortcomings in the school system, especially impacting the learning outcomes of</p>

countries (see Annex 13). In 2017, France introduced a pilot reform consisting of 'halving class sizes' in early years of education for students in priority areas, to enable pupils to benefit from more personalised support in an atmosphere conducive to learning (see Annex 13). The French Court of Auditors (17) highlighted shortcomings of the school system, especially impacting the learning outcomes of disadvantaged pupils, and called for greater autonomy and evaluation of schools. Participation in continuous training is low despite the high level of need declared by teachers. According to TALIS 2018 (18), 50% of lower secondary education teachers in France participated in professional development in the form of courses or seminars attended in person, against an OECD average of 76%. The 2018 reform and significant incentives for employers boosted the number of apprentices, with a positive impact on the employment rate of graduates. However, this effort needs to be consolidated in the longer term, in terms of both financing and attractiveness for all (see Annex 13).

Despite a relatively good performance with regard to early school leaving, tertiary education and adult participation in learning, France has strong inequalities in its education system. The impact of socio-economic inequalities on educational outcomes in France is significant, with basic skills particularly lacking among vulnerable groups. According to the 2018 PISA report, around one fifth of 15-year-olds lacked basic skills in reading, mathematics or science, even though these shares are slightly below the EU average. France is the third worst performer in the EU in terms of the impact of socio-economic inequalities on outcomes in sciences. These inequalities are confirmed by the results of studies conducted annually by the French authorities. The lack of access to adequate training for teachers exacerbates the issue. According to TALIS 2018, only 50% of lower secondary education teachers

disadvantaged pupils, and called for greater autonomy and evaluation of schools. Lower rates of participation in continuous training by teachers and high student-teacher ratios may exacerbate socio-economic inequalities. Science teachers working in disadvantaged areas tend to have lower levels of certification to a larger extent than in other EU countries. The 2018 reform of vocational education and training and significant incentives for employers boosted the number of apprentices, with a positive impact on employment rates for graduates

RECOMMENDATIONS

3. Address the shortage of skills by raising the level of basic skills, providing additional work-based learning options and improving the learning outcomes of all students, notably by adapting resources and methods to the needs of disadvantaged students and schools and by improving the working conditions and continuous training of teachers.

in France participated in professional development in the form of courses or seminars attended in person (vs. 75.6% on average in the OECD). Compared to the OECD average, French teachers have one of the highest student/teacher ratios. The French early school leaving rate is below the EU average (7.8% versus 9.7% in 2020) with, however, strong regional and social disparities (see Annex 13). Equal access to education services for people with disabilities remains a challenge, calling for inclusion measures also in the context of a broader deinstitutionalisation process. Access to training for the low skilled remains comparatively lower (4.6% for ISCED 0-2 vs 14.9% for ISCED 3-8) although it is higher than the EU average and the impact of the adult learning measures already adopted should be monitored. Improving learning outcomes and equity in education and access to lifelong learning remains key for France, also to contribute to reaching the 2030 EU headline targets on skills and employment.

This Annex outlines the main challenges for France’s education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. The French education system, despite overall good outcomes, faces persisting socioeconomic and territorial inequalities affecting the level of basic skills. The vocational training of teachers remains an issue.

Teacher education and career development continue to face challenges. Teachers in disadvantaged schools tend to have fewer qualifications than their counterparts in advantaged schools. For science teachers, this certification gap was the second widest in the EU, with only 62.7% of science teachers in schools in the bottom socio-economic profile quarter being certified, against 93.3% in the top quarter (PISA 2015). However, the qualification gap is less pronounced, with 81.2% of teachers

	<p>in the lower quarter holding a university degree and majoring in science, versus 89.8% in the top quarter, an 8.5 point gap which is well within the OECD average (8.4). Lower secondary education teachers have reported a high level of need for professional development for teaching students with special needs and teaching in a multicultural or multilingual setting. The action plan ‘Grenelle de l’éducation’ contains measures to address these challenges.</p>	
<p>Germany</p>	<p>Digitalisation remains relatively weak. Germany is addressing some key challenges, but progress on digital networks and digital public services has been slow. Germany continues to lag behind other countries in the coverage of fibre and very high-capacity networks in rural areas (see Annex 8). Creating better framework conditions for digital infrastructure roll-out continues to be a challenge. The integration of digital technologies by companies is only slightly above the EU average. There is also significant potential for improving the digital skills of the population, including teachers, and for improving the availability of ICT specialists.</p> <p>The pandemic has aggravated inequalities in educational attainments. Educational outcomes are strongly influenced by socio-economic status and migrant background. These correlations were strengthened by the pandemic (NETS, 2021). Children of parents with higher secondary education are more likely to succeed in school (see Graph 3.2). 18 to 24- year-olds who were born abroad are three times more likely to leave school without a diploma than children of native-born parents. Improving access to, and quality of, early childhood education and care (especially for under-3-year-olds) and providing all-day schooling would help improve both the educational outcomes of pupils and the fulltime participation of women in the labour market, in line with the European Pillar of Social Rights. More and better-qualified teachers and staff can improve pupils’</p>	<p>/</p>

	<p>achievements, particularly in schools with many children from disadvantaged backgrounds. However, shortages of staff are widespread as the supply of teachers cannot meet education needs. Improving teachers' digital and pedagogical skills is a priority. Furthermore, measures to support pupils most affected by the pandemic could be stepped up and continued in the coming years, as lost learning opportunities have not been entirely remedied</p> <p>The ageing of teaching staff and emerging teacher shortages risk affecting both the quality and equity of education. Germany's teachers are older than the EU average, while the demand for teachers is increasing because of a growing school population and the expansion of all-day schools. Some 13% of the 36 000 newly recruited teachers in 2018 had not completed initial teacher training (51% in Saxony, 40% in Berlin and one quarter in several other regions). Apart from regional differences, not all types of schools and subjects are affected by staff shortages the same way. Teachers without completed initial teacher training are frequently allocated to schools or classes with pupils from disadvantaged backgrounds, which can exacerbate the equity problem. Teachers also need more training on ICT in education, where Germany lags behind but is planning sizeable investments</p>	
Greece	<p>Teachers in Greece are highly educated but lack opportunities to develop their pedagogical competences. Education is valued highly in Greece, but it translates poorly into teacher education. Steps are being taken to improve the quality of school education by providing teachers with some autonomy and appraising performance. Regularising the large temporary teacher workforce with contracts that reward performance and provide career prospects, would raise teachers' morale and teaching quality (52). Teachers constitute an ageing workforce in Greece,</p>	/

	with more than half the Greek teachers being set to retire within this decade.	
Hungary	<p>Hungary’s school system could do more to support social mobility. Performance based selection into different education tracks starts at the age of 10 in Hungary. This leads to the early separation of underachieving pupils from their high-achieving peers. Disadvantaged students have a low chance of entering the higher educational tracks (4). The 2019 reform of vocational education and training (VET) removed the possibility for students in the three-year VET schools to obtain the upper-secondary-school leaving certificate in formal day-time education. Inequality in education reduces the possibilities for social mobility. Hungarian low income families have the lowest chances in the EU of approaching the average income level in their country. The low levels of effectiveness and fairness in the school system are likely linked to the low level of curricular autonomy, the lack of socioeconomic diversity within schools and the low salaries for teachers.</p> <p>The shortage of teachers is increasingly a problem. Aggregate indicators, such as the teacher-pupil ratio, do not signal acute shortages of teachers in Hungary. However, a more detailed analysis shows that shortages exist for specific subjects such as mathematics, science and foreign languages. Teacher shortages are also linked to the fragmentation of the school system as half of all primary and lower secondary schools (általános iskola) had fewer than 150 pupils in 2020/2021. Schools with a high proportion of disadvantaged pupils tend to suffer particularly from the lack of qualified teachers. More than half of graduates from teacher education courses end up in other careers due to the high workload and low pay of teachers, especially at the beginning of their career. The number of teaching hours for Hungarian teachers is the highest in Europe, and in the absence of sufficient support staff, many teachers must perform non-</p>	<p><i>RECITALS</i></p> <p>(24) Education outcomes in Hungary are below the EU average. By the age of 15, basic skills are significantly below the EU and regional averages and have decreased over the last decade. Contrary to European trends, early school leaving increased in the last decade to 12.0% in 2021, above the EU average of 9.7%. Early school leaving is higher in the least developed districts, and six times higher among the Roma than the non-Roma. The share of 25-34 year old people with a tertiary diploma rose since 2010, but remains among the lowest in the EU. Participation in adult learning is just over half of the EU average. Digital skills are lacking, especially among poorer people. In the lowest two income quartiles, only 13% and 18% of Hungarians have at least basic digital skills, which are among the lowest percentage in the EU. Disadvantaged students have low chances of entering the higher educational tracks. Inequality in education narrows the possibility for social mobility. The low effectiveness and equity in the school system are likely to be linked to the low level of curricular autonomy, the lack of socioeconomic diversity within schools and low teacher salaries. The shortage of teachers is increasingly a problem. While aggregate indicators, such as the teacher-pupil ratio, do not signal acute shortages, more detailed analysis shows that shortages exist for specific subjects such as mathematics, science and foreign languages. Teacher shortages are also linked to the fragmentation of the school system, as half of all primary and lower secondary schools have fewer than 150 pupils. Schools with a high proportion of disadvantaged pupils tend to</p>

teaching duties such as after-school care. Teacher salaries are the lowest among the EU countries that are OECD members and are equivalent to only 58- 66% of the salaries of other tertiary graduates, depending on educational level. Moreover, the centralised management of schools leaves school heads with limited autonomy and tools to improve teaching quality.

There has recently been centralisation and a rapid change in the organisational model of several Hungarian universities. These universities have come under the ownership and management of private foundations whose board members are appointed by the government for life. In addition, the Eötvös Loránd research network took control of 40 institutes that belonged to the Hungarian Academy of Sciences. These changes have not yet brought the anticipated positive effects in improvements to the quality of higher education and research in Hungary. The public monitoring of teachers' and researchers' autonomy, accountability and performance in these institutions will be key.

Participation in early-childhood education and care is in line with the EU average, but access is unbalanced, and teacher shortages raise quality issues. In 2020, 32% of settlements had no kindergartens. Access to quality early-childhood education and care is hampered by increasing shortage of pre-school teacher, which a 2020 reform aimed to address by allowing non fully qualified teaching staff to work with children in the afternoon. This is a serious step backwards in quality standards.

The weaknesses in education outcomes are partly due to the reduced general-education content in this type of schools and partly to their disadvantaged school population. Hungary also has the largest urban/rural gap of all OECD countries in education outcomes (43), before accounting for socioeconomic status. The low effectiveness and fairness in the school system are likely to be linked to the low level of curricular autonomy,

suffer particularly from the lack of qualified teachers. More than half of the graduates from teacher education end up in other careers due to the high workload and low pay of teachers, especially at the beginning of their career. Moreover, the centralised management of schools leaves school heads with limited autonomy and tools to improve teaching quality.

(33) Research and innovation is a critical driver for long-term growth and competitiveness. Hungary ranks as an emerging innovator. Spending on research and development is increasing and reached 1.61% of GDP in 2020. The shortage of highly skilled workers is a key obstacle to innovation. Tertiary education attainment rates are among the lowest in the EU. The recent exemption of young workers from personal income tax and other structural changes hindering academic freedom decrease the attractiveness of higher education. Digital skills and the use of digital technologies by firms and public services remain below the Union average.

RECOMMENDATIONS

3. Continue the labour market integration of the most vulnerable groups, in particular through upskilling, and extend the duration of unemployment benefits. Improve the adequacy of social assistance and ensure access to essential services and adequate housing for all. Improve education outcomes and increase the participation of disadvantaged groups, in particular Roma in quality mainstream education. Improve access to quality preventive and primary care services.

the lack of socioeconomic diversity within schools and low teacher salaries.

Hungary's early-school-leaving rate remains above the EU average. In 2021, the percentage of early leavers from education and training increased to 12.0%. This percentage is higher in the least developed districts and among Roma (where it is as high as 65.3%). The concentration of disadvantaged pupils in certain schools and school types – especially vocational training schools – and pressing teacher shortages makes it difficult to keep pupils in school and give them the personalised support they need. The distribution of pupils at risk of dropping out varies greatly by school type and region. In the three most affected counties, 10-15% of pupils are at risk of dropping out.

The shortage of teachers in Hungarian schools is increasingly challenging. The teaching workforce is ageing: in 2019, 45.0% of Hungarian teachers were aged 50 or over. Initial teacher education cannot meet the demand for teachers: dropout rates from these courses are high and less than half of graduates from teacher education actually enter the profession. Teacher shortages are the most acute: (i) in disadvantaged areas; (ii) for mathematics, science subjects and foreign languages; and (iii) in VET. These shortages are also partly due the high proportion (49.5%) of small schools in Hungary (with less than 150 pupils). Small schools need to maintain a full teaching staff regardless of the number of children, resulting in the uneven distribution of teachers across the country. Schools with a disadvantaged profile tend to suffer particularly from the lack of qualified teaching staff. Low salaries for teachers are one factor: these are equivalent to only 58%-66% of the salaries of other tertiary education graduates, and even lower for starting teachers (50-55%). In addition, the number of teaching hours per teacher in Hungary is the highest in Europe. In the absence of sufficient support staff, teachers also need to perform non-teaching

	duties such as after-school care. Moreover, the centralised management of schools leaves school heads with limited autonomy and tools to improve teaching quality	
Ireland	The inflow of people fleeing Ukraine requires efforts from the education and training system. Once they are granted Temporary Protection, they are entitled to seek vocational training education activities in Ireland. Ukrainian teachers will be fast-tracked through the registration process to allow them to teach in Irish classrooms. Ukrainian children and youth will have access to two years of free pre-school, as well as general education. The Irish authorities aim at implementing a family-centred approach across schools and to help adults and children learn English. 16 Regional Education and Language Teams were established to meet the needs of Ukrainian children arriving in Ireland and to support and advise schools.	/
Italy	Educational outcomes and the fight against early school leaving are also expected to benefit from the plan. Early school leaving has gone down steadily over the past 10 years, but the gap with the EU average is proving hard to close (see Annex 13). The way teachers are recruited, motivated and retained is not efficient. Full-time schooling remains low and educational infrastructure is not updated to meet current needs, including digital needs. The plan includes comprehensive reforms of primary and secondary education, including the long awaited teaching profession reform due to be adopted in mid-2022. These will be complemented by significant investments in expanding vocational-oriented education and schooling infrastructure, to train teachers and school staff, to mentor young people who have dropped-out or are at risk of dropping-out, and to foster skills in science, technology, engineering and maths (STEM). In Italy, although educational qualifications generally improve job prospects, the employment rate of recent	/

	<p>university graduates is among the lowest in the EU. At university level, the RRP proposes wide reforms of tertiary and higher education, including PhD programmes, the grouping of university degrees and degrees recognition to access the jobs market in regulated professions. These reforms were adopted in late 2021 and will be complemented by investment in student housing and career guidance.</p> <p>Italy reports both teacher shortages and oversupply, depending on the subject and geographical area, suggesting inefficiencies in the selection and recruitment mechanisms. Bottlenecks in recruitment result in an ageing teacher workforce, with a particularly low share of teachers under 35 and a high share of teachers on temporary, short-term contracts. The government plans to adapt teacher selection and recruitment systems by redesigning competition procedures and strengthening the initial one-year on-the job training.</p>	
Latvia	<p>Concerning the digital transition, the key priorities addressed by the RRP will be on measures to address poor skills, insufficient last-mile and 5G connectivity, and low level of business digitalisation. Latvia's RRP supports the digital transition thanks to investment in digitalising public administration and public services, support for the digital transformation of businesses, and creating a better environment for research and innovation with measures to improve the digitalisation of small and medium-sized firms. The plan also includes measures to deploy high-speed broadband that should help further improve digital infrastructure and reforms in favour of digital upskilling, such as a new adult learning framework, improving basic and advanced digital skills for individuals, businesses and public administration. By this summer, measures to support the digital transformation of public administration will have entered into force. By the end of 2023, 26 000 computers are expected to be made available in</p>	/

	<p>digital libraries for pupils and teachers. Support measures to help businesses (in particular small and medium-sized firms) develop the skills of their employees are also planned to be effective by the end of 2023.</p> <p>Ensuring education of equal quality across schools and regions is a challenge. Overall, Latvian students score above the EU average in basic skills achievement (PISA), but access to quality education remains dependent on students' place of residence. Students in larger urban schools have higher average educational outcomes than those in smaller rural schools. Urban students in Latvia outperformed their rural peers by 52 points in reading in PISA 2018, the equivalent of more than 1.5 years of schooling. In addition, rural schools tend to have a higher proportion of lower socio-economic status students, a lower share of resilient students (those with disadvantaged backgrounds but high academic performance), and a higher rate of grade repetition. These challenges persist into adulthood, as adults in rural areas are twice as likely not to hold an upper secondary qualification and less likely to participate in adult learning. The causes of these inequalities are complex, ranging from structural challenges such as demographic change and socio-economic distribution, to educational challenges such as school size, teacher salaries and quality of teachers. While it is too early to evaluate the impact of the COVID-19 pandemic on regional disparities, it is likely that distance learning has exacerbated existing inequalities.</p>	
Lithuania	<p>Lithuania's RRP contains key measures that aim to improve the quality and accessibility of lifelong education. Lithuania strives to improve education, including vocational education and training and adult learning by consolidating the education network, improving school infrastructure and the competences of teachers, implementing competence-based curricula, promoting work-based learning and apprenticeships, and</p>	/

improving digital skills. The RRP also seeks to improve higher education by changing student admission criteria and the funding model for the higher education system (see Annex 13) and provide better support for research and innovation (R&I) by consolidating existing R&I agencies and revising R&I legal framework (see Annex 9).

Addressing inequalities in schools and making the teaching profession more attractive could help improve learning outcomes. The school network in rural areas is not well adapted to shrinking student numbers, which leads to significantly lower performance by students in these schools. Though the school network reorganisation is included in the RRP, it will be important for the financing rules to support this reorganisation. In addition, the cooperation between municipalities and between them and the central level could be improved, and greater equality between schools is needed as vulnerable pupils are likely to be more concentrated in the same schools (see Annex 13). Although the teacher workforce is ageing, less than 15% of graduates from initial teacher education actually enter the profession due to low salaries and lack of appropriate career development. Weak initial teacher education system also has a negative impact on teaching quality. Consequently, many pupils turn to private tutoring, which widens performance gaps between students from different socio-economic backgrounds. (see Annex 13). Therefore, beyond the implementation of the measures included in the RRP, it will be important to ensure efficient spending on education, to make the teaching profession more attractive, and address inequalities in the education system.

Strengthening teachers' competences and the attractiveness of the teaching profession remains a priority. Legislation to determine the workload of teachers is not uniformly applied and school leaders enjoy great autonomy in setting teacher

	<p>salaries. According to the 2018 teaching and learning international survey, 43.0% of teachers (compared with 38.9% at EU level) consider that the professional development offered is not relevant. While maintenance spending on small schools in rural areas is excessive, little is spent on teacher education. Between 2017 and 2019, the share of funding for teacher training decreased by 13% whereas the share of funding on school maintenance increased by 17.5%.</p> <p>The reforms and investments under the recovery and resilience plan will help address some of these long-standing challenges. The plan aims to consolidate the education network, improve school infrastructure and the competences of teachers, implement competence based curricula, modernise vocational education and training, promote work-based learning and apprenticeships, and change the funding formula at tertiary level.</p>	
<p>Luxembourg</p>	<p>This Annex outlines the main challenges for Luxembourg’s education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. Luxembourg’s education and training system struggles with equity challenges that could worsen due to the pandemic. Luxembourg lags significantly behind the EU average and EU-level targets in terms of performance in reading, mathematics and science.</p> <p>Participation in early childhood education and care (ECEC) is below the EU average but receives increasing support. 88.4% of children take part in ECEC from the age of 3, which is below the EU average (92.8%) and the new EU level target of 96% set for 2030. Luxembourg has invested heavily in extending access to ECEC and non-formal day care facilities in the last 10 years, nearly tripling the number of places and doubling the availability</p>	<p><i>RECITALS</i></p> <p>(24) Beyond the economic and social challenges addressed by the recovery and resilience plan, Luxembourg faces a number of additional challenges, notably related to growing inequality in the education system. Luxembourg’s education system is characterised by the use of three languages (Luxembourgish, German and French), as well as by a high number of pupils from diverse socio-economic and linguistic backgrounds. International test results suggest that pupils’ basic skills are lower than the EU average and are strongly linked to pupils’ socio-economic and linguistic backgrounds. In the 2018 survey of the Programme for International Student Assessment carried out by the Organisation for Economic Co-operation and Development, Luxembourg recorded one of the EU’s largest score gaps in reading between</p>

of childminders. However, funding and qualification requirements are different in the formal from those in the non-formal ECEC sectors, which impacts on the system's quality and equity.

The rate of early school leaving has been on the rise for three years in a row, and pupils' basic skills are below the EU average and strongly linked to socio economic status.

The rate of early leavers from education and training (9.3%) is below the EU average (9.7%) but for the first time surpassing the EU-level target (below 9%). Luxembourg's education system faces challenges against the background of an increasingly diverse school population. Pupils with Luxembourgish as their first language are a minority, both in primary and secondary education. In 2018, the programme for International Student Assessment (PISA) of the Organisation for Economic Co-operation and Development (OECD) showed that in Luxembourg average skill levels are significantly lower than the respective EU averages in all three areas tested. Luxembourg recorded one of the largest score gaps in reading between advantaged and disadvantaged students across EU countries. National data show that the reading and mathematics skills of pupils with a disadvantaged non Luxembourgish or non-German language background are much poorer than the skills of their peers. Learning gaps observed in the first years of schooling remain stable or even increase during later years.

Pupils' access to academic pathways depends more on their socio-economic and linguistic background than on their school performance.

Data suggest that compared to their peers, disadvantaged pupils are oriented disproportionately more often to the lowest track of secondary education (régime préparatoire) and less often to the highest track (enseignement secondaire classique; ESC) than could be expected based on their academic performance. Furthermore, pupils' study

advantaged and disadvantaged students. Inequalities are amplified by the multilingual schooling and the way pupils are separated into different school tracks at an early stage. The education system does not provide all pupils with sufficient multilingual and basic skills to meet the country's labour market needs. Individualised support for pupils would help achieve full development potential and overall inclusion of all students. In line with the conclusions of the national observatory of school quality of 2020, there is room to improve the education system's governance, further developing evaluation tools and measurable objectives promoting quality and equality of opportunity on both the formal and non-formal sides of the education system.

RECOMMENDATIONS

3. Reduce the impact of inequalities on pupils' performance and promote equal opportunities for all students in the educational system.

	<p>chances show a strong correlation with their linguistic background: pupils with a non-Luxembourgish- or non-Germanlanguage background access ESC much less often. The National Observatory of School Quality (ONQS) reported on the prevailing inequality based on pupils' socioeconomic and linguistic backgrounds. The way languages are taught and the way pupils are separated into different school tracks add to this inequality. The ONQS calls to develop a national curriculum better addressing the above challenges.</p> <p>Tertiary education attainment and graduate employment rates are among the highest in the EU. 62.6% of the population aged 25 to 34 holds a tertiary degree, the highest rate in the EU. This is partly thanks to the high proportion of graduates in the migrant population (69.1%, compared to 53.5% of native Luxembourgers). The employment rate of recent tertiary graduates in 2021 was 87.0%, above the EU average of 84.9%, but still 7 percentage points lower than in 2019.</p> <p>Luxembourg's national recovery and resilience plan (RRP) fosters skills development. Overall participation in adult learning is high (16.3%; EU average: 9.2%) but lower among low-skilled and older workers. The RRP includes investment in vocational training programmes for jobseekers and for workers placed in short-time work. These vocational training programmes are expected to help mitigate the employment impact of the COVID-19 crisis. The RRP also envisages a reform on the design of further vocational training programmes.</p>	
Malta	<p>This annex outlines the main challenges for Malta's education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. Malta's education and training</p>	/

system struggles with ensuring quality of education and effectiveness of spending.

Average levels of basic skills – as measured by the PISA test – are low and significantly below the EU average. A large percentage of pupils fail to achieve minimum proficiency levels (see Table A13.1). While the proportion of top performers has decreased since 2015, the percentage of underachieving pupils has remained practically unchanged and is above the EU average across the entire socio-economic distribution. Around 51% of pupils from the bottom socioeconomic quartile lack basic skills in reading (EU 36.4%). This is more than twice the rate in the top quartile — even though the rate for the top quartile is also comparatively high (24.3% vs 9.5% at EU level). Performance is strongly linked to the type of schools a pupil attends, with a gap between private and public schools equivalent to more than two school years, indicating a fragmentation of the education system. Learning losses expected due to the pandemic risk further aggravating the situation.

Public expenditure on education is above the EU average and increased in the last decade. General government expenditure on education, both as a proportion of GDP (5.3% vs EU 4.7%) and as a proportion of total general government expenditure (14.2% vs EU 10%), was among the highest in the EU in 2019. Given low education outcomes, this suggests some challenges in the efficiency and effectiveness of spending and highlights the need for strengthening the evaluation of investments in education and training. The creation of a comprehensive evaluation framework could enable the cost-effectiveness of investments to be assessed and support national decision-making on education and training. This would allow for better alignment among structural challenges, education goals and policies implemented at all education levels.

Participation in early childhood education of children above the age of 3 increased until 2019 but dropped in 2020 with the pandemic. The pandemic has impacted on the provision of childcare services, and participation in formal childcare of children below 3 dropped significantly in 2020 (from 38.3% in 2019 to 29.7%), reversing the positive trend experienced in previous years thanks to the free childcare scheme.

Despite a substantial decrease since 2010, the early-school-leaving rate remains relatively high in EU comparison. A significant gap exists between native-born and foreign-born young people. The decreasing trend for nativeborn early school leavers in recent years indicates that the policies put in place to tackle early leaving are achieving results. However, the persistently high values for foreign-born young people point to challenges with regard to equity and inclusion. This is particularly important, as the share of pupils from abroad has significantly increased in the last decade.

The tertiary educational attainment rate is above the EU average (42.4% vs EU 41.2%). The rate has recorded one of the highest increases across the EU since 2015. This positive trend is likely to be driven by both a higher number of students participating in tertiary programmes – in particular women – and strong reliance on high skilled foreigners in a buoyant labour market. Efforts are underway to better align vocational tertiary education with labour market needs. The COVID-19 pandemic slowed progress in participation in adult learning also in Malta.

The reforms and investments under the Recovery and Resilience Facility will help address some of these long-standing challenges. Key measures focus on reducing early school leaving, improving inclusiveness and diversity in the education system, reinforcing evaluation and monitoring of

	educational policies and increasing labour market relevance of vocational education.	
Netherlands	<p>The rate of early school leaving is in line with the EU-level target, but there has been a decline in basic skills and the differences in performance levels between schools are increasing. Children of lower and more highly educated parents are increasingly being educated in different schools. Among all EU Member States, the Netherlands is the country where differences between schools have the strongest impact on pupils' performance, reflecting ability-based tracking from an early age. The proportion of low achievers is especially high (56%) among pupils born abroad. Native-born pupils with a migrant background only partially catch up. Furthermore, expected teacher shortages could negatively affect the quality of education and educational outcomes (see Annex 13).</p> <p>The shortage of teachers is increasingly challenging. The Netherlands faces a growing shortage of teachers. 35% of all primary teachers are aged 50 or over, and only one in three teachers works full-time. Teacher shortages are the highest in the 'Randstad', covering the four largest cities (Amsterdam, Rotterdam, The Hague and Utrecht) and their surrounding areas. The distribution of qualified teachers varies markedly by region, by school type and by composition of the school population. The difference in the share of teachers with at least masters' degree between schools with advantaged socio-economic and disadvantaged profiles is the biggest in the EU. Shortages are more acute in schools where the majority of pupils have a migrant background. The government took a series of measures, including raising teacher salaries, to reduce teacher shortages. The impact of these measures remains to be seen.</p>	<p><i>RECITALS</i></p> <p>(16) In 2022, based on the Commission's 2022 spring forecast and including the information incorporated in the Netherlands' 2022 Stability Programme, the fiscal stance is projected in the Commission 2022 spring forecast to be supportive, at -2.6% of GDP, as recommended by the Council.¹⁶ The positive contribution to economic activity of expenditure financed by Recovery and Resilience Facility grants and other EU funds is projected to remain stable compared to 2021¹⁷. Nationally-financed investment is projected to provide a neutral contribution to the fiscal stance of 0.0 percentage points in 2022.¹⁸ Therefore, the Netherlands plans to preserve nationally financed investment, as recommended by the Council. At the same time, the growth in nationally-financed primary current expenditure (net of new revenue measures) in 2022 is projected to provide an expansionary contribution of 2.0 percentage points to the overall fiscal stance. This significant expansionary contribution includes the additional impact of the measures to address the economic and social impact of the increase in energy prices (0.7 % of GDP) as well as the costs to offer temporary protection to displaced persons from Ukraine (0.1 % of GDP), while, amongst others, additional climate measures (aimed at reduction of greenhouse gas emissions, and at the promotion of sustainable energy) and measures in the field of education (reskilling, training of teachers) are also projected to contribute 0.3% of GDP and 0.2% of GDP respectively to the growth in net current expenditure.</p>

		<p><i>RECOMMENDATIONS</i></p> <p>3. Promote adequate social protection for the self-employed without employees, tackle bogus self-employment and reduce the incentives to use flexible or temporary contracts. Address labour and skills shortages, in particular in healthcare, education, digital and technical jobs and construction, including by tapping underutilised labour potential originating from the high share of part-time employment and the lower employment rate of people with a migrant background. Strengthen up- and reskilling opportunities, notably for those at the margins of the labour market and the inactive.</p>
<p>Poland</p>	<p>The humanitarian crisis in Ukraine creates new social, health care and labour market challenges for Poland. As of 9 May, approximately 1.1 million displaced persons from Ukraine have applied for temporary shelter in Poland. Their integration will require significant adaptations in the health and social care systems, as well as in education. Poland has implemented measures under the EU's Temporary Protection Directive. To facilitate integration into mainstream education, it became an immediate priority to provide language courses and psychological support to those fleeing Ukraine, as well as support to teachers. Challenges related to the kindergarten and school capacities, as well as sufficient educational staff will need to be addressed. Support will also be needed to facilitate the labour market integration of people fleeing Ukraine, which would benefit labour supply and alleviate labour shortages and wage growth. Poland will benefit from exceptional flexibilities provided in the framework of CARE Regulation and additional pre-financing under REACT-EU to urgently address reception and integration needs for those fleeing Ukraine as a result of the Russian invasion. The pandemic has exacerbated the challenges faced by the education and training system. Despite very good</p>	<p><i>RECITALS</i></p> <p>(23) Poland's education and training system continues to face challenges in terms of quality and inclusiveness. These challenges have been exacerbated by the pandemic, with prolonged periods of remote learning. Digital skills are lacking among teachers, pupils and the general population. At the same time, ICT equipment and connectivity remain insufficiently available to schools and households with children. The quality of the initial education received by teachers is insufficient. Additionally, teachers' salaries are relatively low compared to OECD standards. This affects the financial attractiveness of the profession and, together with the lack of professional development, contributes to significant staff shortages. The large inflow of people displaced from Ukraine requires substantial efforts to provide an adequate response in the area of education and training. Significant mismatches between skills and labour market needs lead to labour shortages, as</p>

	<p>results for 15-year-olds in the latest PISA survey (2018), Poland has reorganised substantially the school system, including by raising the mandatory school age and advancing the age for the orientation between general and vocational paths. Insufficient ICT equipment and connectivity for schools and households with children, and a low level of digital skills among teachers and pupils affect the equal access to and the quality of education. Prolonged periods of distance learning are likely to have caused significant educational losses and weakened the well-being of students and teachers (7). Inclusiveness in education requires additional comprehensive efforts. The quality of the initial education received by teachers is insufficient. Additionally, the lack of professional development, combined with the limited financial attractiveness of the teaching profession, contribute to pronounced staff shortages.</p> <p>To cope with the inflow of people fleeing Ukraine, Poland has implemented measures under the EU’s Temporary Protection Directive. It has adapted its legislation to facilitate enrolment to kindergartens, schools and universities, as well as the employment of school support and teaching staff. Dedicated support, including online training materials, has been provided to pupils and teachers. New school and kindergarten branches may have to be established to accommodate all children displaced from Ukraine. In 2022, higher education students and doctoral students will be able to continue their studies in Poland and conduct research.</p> <p>The share of early leavers from education and training is, at 5.9% in 2021, significantly below the EU average of 9.7%, but it is particularly high among persons with disabilities. Poland is experiencing skills shortages. On average, 81% of employers had difficulties filling open positions in 2021 (41); teacher shortages are particularly pronounced.</p>	<p>demonstrated by the difficulties faced by employers to fill open positions.</p> <p><i>RECOMMENDATIONS</i></p> <p>3. Increase labour market participation, including by improving access to childcare and long-term care, and remove remaining obstacles to more permanent types of employment. Foster quality education and skills relevant to the labour market, especially through adult learning and improving digital skills. Better target social benefits and ensure access to those in need.</p>
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This Annex outlines the main challenges for Poland's education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. Poland's education system faces challenges related to its reorganisation and the pandemic. Gaps in the accessibility of early childhood education and care (ECEC) persist. Decreased investment in education affects teachers' salaries and shortages are pronounced.

Participation in early childhood education and care (ECEC) continues to grow, however gaps in provision persist. In 2019, the enrolment rate of children between 3 and the starting age of compulsory primary education was below the EU average. Since 2017/2018, children aged 3-5 are legally entitled to pre-school education (while pre-school education is obligatory for 6-year-olds), however, the participation of 3-year-olds is at estimated 77.6% and 4-year-olds at estimated 89.2%. The regional disparities and the urban-rural gap leave some groups of children at educational disadvantage (see Graph 1).

While the basic skills of Polish 15-year-olds are above the EU average, the school system was reorganised leading to organisational and financial challenges, further aggravated by COVID-19. Polish schools continue struggling with the implementation of the reorganisation, which was launched in 2016. The new core curriculum requirements and long periods of distance learning due to COVID-19 posed further challenges. First evidence on the situation in Warsaw shows that there is a decline in students' achievements (43). Additional overcrowding of secondary schools and classes expected in 2022, due to an increased cohort completing primary schools, may further affect the learning and working conditions. The comprehensive impact of the introduced reform measures and COVID-19 on students' achievements is still to be assessed.

	<p>Significant gaps in digital education, concerning in particular quality digital teaching methodologies and online materials, as well as ICT equipment and connectivity require a comprehensive strategic approach. To foster inclusive education, evidence shows (44) that there is still a need to ensure sufficient support specialists, new co-operation models and teacher education focussing on quality and equity improvements.</p> <p>Investment in education is low at all levels, affecting also teachers' salaries. In real terms, during 2015-2019, public expenditure on education rose by 9.8%, however, the rise was only for pre-primary and primary education (by 47.6%). This included the high costs for reorganising the school system launched in 2016. At the secondary and post-secondary non-tertiary level, expenditure dropped by 18.5%, and in higher education by 2.5%. Local governments face challenges in maintaining the school network due to increased costs. The salaries of teachers are comparatively low (45), which aggravates teacher shortages. Recruiting qualified teachers for many subjects is difficult (46) and children's right to education is at risk (47)</p>	
<p>Portugal</p>	<p>A key challenge is to adapt the public sector workforce to changing demands. Ageing is expected to lead to higher demand for health and long-term care services, while the fall in school-age children may translate into lower demand for education services. Public sector workers are also ageing, especially in specific sectors. For instance, Portugal has one of the highest proportions of teachers aged 50 years and over in the EU. Moreover, there are challenges with staff retention in strategic sectors (notably in health (14) 'The 2021 Ageing Report', European Commission, Institutional Paper 148, May 2021. and long-term care), where the government competes with private employers. Although some measures, including in</p>	<p>/</p>

the RRP, aim to upskill public sector workers and develop their digital and managerial skills, these risk falling short of a cross-cutting and comprehensive overhaul of Portugal's public sector workforce.

The ageing of the public sector workforce and its insufficient training risk undermining administrative capacity. Portugal has a lower proportion of public sector workers with tertiary education than the EU-27 average. The comparatively low participation in adult learning may hinder upskilling. Risks to sustaining administrative capacity can also originate from the relatively high proportion of public sector workers between 55 and 74 years, especially in strategic sectors. For example, Portugal has one of the highest proportions in the EU of teachers aged 50 years and over. Portugal implements programmes focused on human capital and skills.

This Annex outlines the main challenges for Portugal's education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. Portugal's education and training system struggles with quality and equity challenges that risk to worsen due to the pandemic. Portugal lags significantly behind the EU-level targets on participation in early childhood education and tertiary educational attainment. The number of school teachers over 50 and the teachers/student ratio largely exceed EU average.

The COVID-19 pandemic may have increased educational inequalities among students. Equity measures for education taken by the government were important to mitigate the adverse effects of the pandemic. The 21|23 Escola+ Plan (60) aims at recovering students' learning losses during confinement. The National Council of Education (CNE) reports (61) that 23% of students may not have participated regularly in

school activities during the distance learning period, mainly children and youngster from socioeconomically disadvantaged backgrounds being insufficiently involved. Anxiety levels in children intensified, reflected in behavioural and sleep disorders. Those between 16 and 24 years of age reported anxiety, signs of depression, irritability and a feeling of loneliness. One quarter of teachers surveyed acknowledged a lack of competence, knowledge or experience for using distance learning methodologies. Half of them considered that learning was not disrupted, although 70% noted an increased number of students with learning difficulties, especially in primary schools (76%).

An ageing teacher population and shortages in certain fields is becoming a major educational challenge. The CNE highlights (62) the gradual increase in the number of teachers retiring each year. In the coming years, this situation will be exacerbated, since there is a simultaneous gradual decline in the number of Master degree graduates in education. Currently there is already a lack of qualified teachers for various subjects. As stated by trade unions (63), this is particularly acute in the metropolitan area of Lisbon and in the Algarve region. According to a study (64) carried out by Portuguese education authorities, around 34 500 extra teachers would be necessary to avoid shortages by 2030/2031. According to the same study, 20% of today's teachers will retire within the next five years and 58% within 10 years. Teacher shortages are particularly acute in Azores where a specific support programme for teachers will be unveiled in 2022.

The attractiveness of higher education is growing. The 2021/2022 academic year had the second highest number of students competing to enter in tertiary studies since 1989. There were more applications from students, including those coming from VET and specialised artistic courses who have to sit

	<p>for special entry exams since 2020. Higher education teachers need to modernise their teaching methods and being offered enough training on technological skills and digital resources. To promote STEAM fields (science, technology, engineering, the arts and mathematics), the RRP includes the Adult Impulse and the Impulse Youth STEAM programmes, which help universities organise, plan and design STEAM courses/programmes, in association with employers and municipalities. Another initiative supported by the RRP, is to create 650 additional Ciência Viva (Living Science) school clubs across the country, in partnerships with Higher Educations Institutions, research centres, museums, innovation-based companies, associations and NGO's.</p>	
<p>Romania</p>	<p>The RRP will support education and skills development, allocating 12.4% of the overall budget to such measures. Measures include the implementation of various reforms outlined in the Educated Romania project, which envisages an in-depth restructuring of the education and training system by 2030. Other reforms and investments cover early childhood education, reduction of early school leaving, increasing the quality of vocational education and training, and improving educational infrastructure. Measures will also support digital skills development for students and teachers.</p> <p>Teachers continue to face considerable challenges. While some important steps have already been taken to strengthen the teaching profession, initial and continuous teacher education is not sufficiently aligned with classroom needs, and supporting improvements on practical-experience is still largely needed. Attracting highly qualified teachers and support specialists to disadvantaged schools also remains a challenge.</p> <p>In 2014-2020, the European Structural and Investment Funds for Romania are set to invest EUR 34.76 billion (21) from the</p>	<p>/</p>

EU budget. The total investment including national financing amounts to EUR 40.97 billion (Graph A3.1), representing around 3.09% of GDP for 2014-2020 and 58.03% of public investment (22). By 31 December 2021, 128% of the total was allocated to specific projects and 54% was reported as spent, leaving EUR 18.76 billion to be spent by the end of 2023 (23). Of the 11 objectives the most relevant ones for cohesion policy funding in Romania are network infrastructure in transport and energy, environment protection and resource efficiency, sustainable and quality employment and social inclusion and low carbon economy (in total EUR 19.05 billion). By the end of 2020, cohesion policy investments had supported to more than 4 500 firms and helped improve the water supply of more than 300 000 people and the energy efficiency of more than 33 000 households. European Social Fund (ESF) policy investments supported more than 120 000 unemployed and inactive people, provided 56 000 vulnerable people with integrated services and 480 000 people benefited from preventive healthcare services and trained more than 41 000 teachers, in particular to address the needs of vulnerable groups. In addition, more than 17 million food and hygiene packages were distributed to socially vulnerable people.

Evidence shows that teacher policies face major challenges. With a relatively young teacher population, Romania's ambitions to improve educational outcomes rely largely on its existing teaching force. However, neither initial nor continuous teacher education is sufficiently aligned with classroom needs. Long career progression and low salaries impact on the attractiveness of the teaching profession. The merit-based allowance tends to encourage a narrow focus on tests and academic competitions, rather than supporting equity improvements. Attracting highly qualified teachers to

	disadvantaged schools and ensuring sufficient support specialists remain challenging.	
Slovakia	<p>The humanitarian crisis in Ukraine will create new social, health care and labour market challenges for Slovakia. As of 9 May 2022, approximately 74 519 displaced persons from Ukraine have applied for temporary shelter in Slovakia. Their integration will require significant adaptations in the health and social care system, as well as in education. Slovakia has implemented measures under the EU’s Temporary Protection Directive. To facilitate integration into mainstream education, it became an immediate priority to provide language courses and psychological support to those fleeing Ukraine, as well as support to teachers. As the number of displaced persons from Ukraine is growing, potential challenges related to the kindergarten and school capacities, as well as sufficient educational staff will need to be addressed. Support will also be needed to facilitate the labour market integration of people fleeing Ukraine, which would benefit labour supply. As the participation of adults in learning in Slovakia was well below the EU average (see the Section 3) the up- and reskilling schemes will be needed also for the refugees. The influx of refugees put additional pressure on availability of social housing for vulnerable groups.</p> <p>One landmark initiative of the RRP is the educational reform package. The level of basic skills of Slovak teenagers is below the EU average, and the proportion of low achievers is significantly higher than the EU average (31% vs 22.5% in reading, 29% vs 22.3% in science, and 25% vs 22.9% in mathematics (PISA 2018). By expanding quality early childhood education and care, launching the school curricula reform and modernising teacher education, the reform package is geared towards improving pupils’ basic skills, including digital skills, and developing transversal skills like critical thinking, problem-</p>	/

solving, or working in a team. Reforms in higher education aim to improve its quality assurance, governance and financing systems. Inclusion is to be strengthened at all levels of education. The research, development and innovation (RDI) reform will strengthen coordination and RDI performance.

Inequalities widened due to the COVID-19 pandemic, especially in education. A significant proportion of low-achieving students are from a disadvantaged socioeconomic background (see Annex 13). In 2020-2021, schools were closed for 38 weeks in Slovakia and provided distance education instead. Research shows that 10% of pupils were not or very poorly involved in distance learning (12), including a significantly higher proportion of disadvantaged students (13). The RRP contains remedial classes for 12000 school pupils in 2022 and a study on the impact of COVID-19 on primary and secondary school pupils. However, further remedial measures may be needed to mitigate the long-term negative impact. To provide quality education and address the learning/skills losses due to COVID-19, it is necessary to ensure a sufficient supply of qualified teachers. While the RRP aims to improve the quality of teacher training programmes, the low salaries in the teaching profession cause shortages. This indicates the need for a pay rise to attract and retain high-skilled professionals. The share of early leavers from education and training increased in 2020, rising to 7.6% from 6.9% in 2015. Early school leaving is particularly common among Roma (72% in 2018 for the 18-24 age group) due in part to limited access to inclusive education at pre-primary, primary and secondary level (14).

Skills mismatches and skills shortages in Slovakia are high and this has a harmful effect on economic growth. The employment gap between high- and low-skilled people is the highest in the EU, with the latter suffering the highest unemployment rate in the EU (42.9% in Q3-2021). Moreover, Slovakia suffers from a

low level of the graduates in science, technology, engineering and mathematics who achieve better labour market outcomes than people who choose more general education fields. Cedefop's Skills Panorama suggests that Slovakia is likely experiencing shortages both across high-skilled and medium-skilled jobs. Teachers, healthcare and IT professionals are among high shortage occupations. Likewise, the green transition put pressure on further development green skills to fill out the green jobs.

Slovakia is performing very well on one SDG related to fairness (SDG 1) and is improving on most of the others (SDG 2, 3, 4, 5 and 8) although at an uneven pace. Slovakia outperforms the EU average in one indicator on poverty and inequality (SDGs 1), which can be attributed to low wage dispersion rather than the social welfare system. Slovakia improved on some quality education indicators (SDG 4), like 'participation in early childhood education' (72.2 % in 2015, 78.1 % in 2020) although Slovakia is still lagging behind the EU average in this area. The indicators for early leaving from education and the adult learning participation deteriorated, which pose important challenges for the productivity growth. The RRP includes measures to improve pupils' skills and ensure inclusiveness at all levels of education, notably by expanding pre-school education, reforming school curricula, teacher education and professional requirements, and curbing the segregation of Roma communities. (Component 6, 7, 8).

The attractiveness of the teaching profession is limited and teacher shortages are pronounced. Slovak teachers' salaries are significantly below those of other tertiary educated workers (between 56%-75%) (53). The teaching profession is perceived as less valued by society, and shortages of teachers are growing. Analysis (54) shows that the teaching workforce in Slovakia needs to be strengthened, and teacher education policies

	<p>should put special focus on quality, equity and inclusive education.</p> <p>The reforms and investment under the recovery and resilience plan will help address some of the longstanding challenges. Key reforms and investments focus on expanding early childhood education and care, modernising school education, reducing early school leaving, improving the quality of teacher education and raising professional requirements, improving inclusiveness at all levels, and desegregation of the Roma community in education. Reforms in higher education aim to improve quality, internationalisation and governance</p>	
Slovenia	<p>Despite good education outcomes overall, the Slovenian education system struggles with equity challenges. The rate of early school leaving is well below the EU-level target. Educational outcomes, as measured by the OECD Programme for International Student Assessment (PISA), are better than the EU average in all three subjects tested: mathematics, reading and science. However, the rate of early school leaving for non-native students is nearly double the national average school leaving rate (see Annex 12). While the percentage of students with a migrant background who underachieve in reading is lower than the EU average, the gap between native and foreign-born students remains among the largest in the EU. The gap of 19 pps in underachievement between socio-economically advantaged and disadvantaged students is still substantial. The government introduced new measures to support migrant and Roma pupils in basic schools for the academic year 2020/2021. The gender gap is also sizeable, with girls significantly outperforming boys in reading. Furthermore, there are warning signs of upcoming teacher shortages, especially in mathematics and technical subjects (59).</p>	/

<p>Spain</p>	<p>A curricular reform aims to strengthen competence-based teaching. The reform, envisaged under the new Education Act, will affect ECEC, primary and secondary education. It will include methodological guidelines for teaching and learning according to a competence-based curriculum. The reform will also have a stronger focus on digital competences, education for sustainable development and citizenship education. Furthermore, it include the preparation of support, guidance and teaching material, as well as training for teachers (at least 4 000 professionals). The roll out of the new curricula is expected by 2022-2023.</p> <p>Green skills will be fostered through the Action Plan 2021-2025 on Environmental and Sustainable Education (PAEAS). The Annual Work Programme 2022 (48) for the PAEAS was approved in December 2021. It includes guidelines on incorporating education for sustainable development into teaching methodologies; identifying new competences concerning sustainable development in all professional sectors; updating and creating new VET degrees on conservation and restauration of the environment; calls for innovation projects on sustainable education; training for teachers on sustainable development; and seminars on education for sustainable development (addressed to all citizens).</p> <p>A reform of the teachers' profession is in the pipeline. The regulations that serve as the basis for teachers' initial training curricula (both bachelor's and master's degrees) needs to be adapted to the recent reform of the educational law, and requires adaptation to key competences, new teaching methodologies, and digital education. The reform also provides more selective access to teacher education.</p>	<p>/</p>
<p>Sweden</p>	<p>The RRP includes measures to tackle education and skills gaps, but specific challenges remain. Additional study places in</p>	<p><i>RECITALS</i></p>

vocational education across the country will particularly serve those with a disadvantaged labour market position, a group to which a relatively large proportion of the non-EU born population belongs. In addition, higher education and vocational education measures place a strong emphasis on digital skills, with the aim of alleviating shortages and improving employment opportunities for the unemployed people. Coupled with reforms to modernise employment protection legislation, these investments help equip the labour force with the necessary skills for the future. This in turn will help improve the labour market transition and contribute towards enabling people to make best use of the opportunities provided by the twin transition, contributing to the implementation of the European Pillar of Social Rights. Despite this work, more needs to be done to close the education and skills gaps. In particular, the plan does not entirely address the lack of highly skilled talent in science, technology and engineering, and general education (educational inequalities 7 and teacher shortages). A strong and competitive labour force and a sufficient supply of skilled personnel in these areas lays the foundation for future technological advances and is therefore fundamental to ensuring productivity growth in the long run.

A high number of pupils from diverse socio-economic and migrant backgrounds do not manage to achieve their full learning potential. An educational gap between students born in Sweden and those who were not and a shortage of teachers are long standing challenges (see Annex 13). Despite improved results in the latest OECD Programme for International Skills Assessment (PISA), the performance gap between pupils born in Sweden and those born elsewhere had increased markedly in earlier editions and is still significant. This reflects a lack of equal opportunities in the schooling system and is especially challenging as the number of pupils with a migrant background

(24) Beyond the economic and social challenges addressed by the recovery and resilience plan, Sweden faces a number of additional challenges related to (i) overvalued house price levels alongside a continued rise in household debt; (ii) unequal opportunities in education for pupils from disadvantaged and migrant background and the need for a better integration of disadvantaged groups in the labour market; and (iii) the need to further decrease the dependence on fossil fuels, including from Russia.

(25) Despite good outcomes overall, inequalities in the Swedish education system impact the level of basic skills of pupils from disadvantaged socio-economic and migrant backgrounds. The difference in performance between pupils born in Sweden and foreign-born pupils has increased markedly, against the backdrop of a doubling of the number of pupils with a migrant background between 2009 and 2018. Even though international testing results show that basic skills have improved overall, the difference in reading skills between pupils with and without a migrant background is amongst the highest in the EU. Furthermore, the rate of early school leaving is much higher for foreign born pupils. Inequalities in education are increasing and are often linked to the limited school choice opportunities for pupils with migrant backgrounds. The difference in educational outcomes has a large impact on the chances of pupils in disadvantaged situations to develop the relevant skills to finding employment. There are opportunities to improve the set-up and governance of the education system, including the enrolment process, as well as address lasting shortages of qualified teachers to promote the quality and equity of the educational system. Sweden also faces challenges

nearly doubled between 2009 (11.7% of total number of pupils) and 2018 (20.5% of total). These pupils' chances came under further pressure with distance learning and limited personal interactions during the pandemic.

Policy actions beyond those in the RRP could further improve labour market integration and reduce educational gaps. There is room to improve the set-up and governance of the education system, its evaluation tools and the availability of qualified teachers to promote the quality and equity on both the formal and non-formal sides of the educational system. One such action could be to offer more education and training for specific groups with low levels of education. Reducing inequalities in general education and raising the educational outcomes for pupils born outside of Sweden would improve their chances on the labour market and help reduce the existing employment gap. For people beyond school age, incentives to increase skills can be put in place by adapting resources and methods to the needs of disadvantaged groups and are best supported by active labour market policy and financial incentives through social benefits and increased net wage levels (see Annex 18). These incentives could be specifically aimed at the most disadvantaged groups through, for instance, earned income tax credits. Over time, a range of such policy actions could help the distribution of human capital among newcomers to better mirror those in the broader population, increasing their job chances and benefiting the wider economy.

Educational inequalities persist, as do skills mismatches on the labour market. The proportion of early leavers from education and training is below the EU average but increased in 2020 and is significantly higher for those born outside the EU compared to those born in Sweden (16.3% vs 6.3% in 2021). Teacher shortages are a long-standing issue in Sweden (see Annex 13 for further analysis on bottlenecks for teachers and general

integrating beyond-school-age low-skilled and foreign-born people in the labour market. Overall, this contributes to continued gaps in labour market participation and skills for a sizeable number of workers.

RECOMMENDATIONS

3. Reduce the impact that pupils' socio-economic and migrant backgrounds have on their educational outcomes by providing equal access opportunities to schools and by addressing the shortages of qualified teachers. Develop skills of disadvantaged groups, including people from migrant backgrounds, by adapting resources and methods to their needs to help their integration into the labour market.

education). The employment rate of recent higher education graduates is high (at 90.8% in 2020, above the EU average of 83.7%). Recorded 'participation in adult learning over the preceding four weeks' is high based on the latest available data for 2020 (28.6% vs 9.2% in the EU). Sweden nonetheless experiences a persistent skills mismatch, with a lack of highly skilled workers. The Swedish Public Employment Service predicts that the shortage of skilled labour will continue to be a significant obstacle to growth over the next 5 years. Reskilling and upskilling the workforce is key for Sweden to address the skills mismatch, thus helping it reach the 2030 EU headline targets on skills and employment.

This Annex outlines the main challenges for Sweden's education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. While education outcomes in Sweden are better than the EU average, inequalities at all levels of education and a shortage of qualified teachers are important challenges.

Teacher shortages remain a significant challenge. Staff shortages reported in PISA are above the OECD average, and more pronounced in disadvantaged schools (40% vs 20%). It is projected that by 2035 there will be a shortage of 12 000 teachers (5.6% of the relevant teacher population in 2020), which means that annually 800 more teachers need to acquire qualifications than is currently the case (47), despite many initiatives to increase the number of qualified teachers. Participation in the formal qualification programme is far lower than the EU average (5.1%; EU-22 14.7%). The shortage of teachers is significant in the three largest cities. Relative to the teacher population, the shortage is worst in Gotland, Uppsala and Västmanlands län. Some schools in rural areas of northern

	<p>Sweden have no certified subject teacher. This shortage of teachers might be further aggravated by workload-related stress during the pandemic (reported by 78% of teachers in ECEC and schools) (48), and an elevated infection risk for teachers in compulsory schooling and in ECEC, which did not transition to distance teaching but continued face-to-face teaching during the pandemic (49).</p>	
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