

Skills and Lifelong Learning for Jobs in a Green and Digital Economy



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Abstract Accelerated digital transformation, reshaping work, learning, and societal interactions have led in EU on one side to job losses and income insecurity and on the other to new opportunities. To navigate this changing landscape, the EU must invest in skills development and lifelong learning. By aligning skill sets with the green and digital transitions, the EU can recover from the socio-economic impacts of the pandemic, adapt to emerging opportunities, and build a more sustainable, resilient, and equitable future for its citizens. Therefore, EU authorities have adopted various actions, such as European Skills Agenda (with Pact of Skills), Digital Education Action Plan, Digital skills and jobs coalition, several EU funding instruments such as the European Social Fund Plus (ESF+), the Recovery and Resilience Facility, Digital Europe Pro-gram, Horizon Europe and Erasmus+ are available support Member States' investment in up-skilling and reskilling, and projects such as European Universities and Centers of Vocational Excellence, the European Regional Development Fund (ERDF), etc. In line with these actions, goals have been set that the EU and its member states should achieve by 2030. The fulfillment of these goals in skills development and lifelong learning varies among European countries. Slovakia lags in some areas. To move towards true green and digital transition, a coordinated approach and development are needed, both at the European and national levels. Currently, the business sector largely supplements development of skills and lifelong learning.

Keywords Skills · Lifelong learning · Adult learning · Vocational learning green · Digital economy

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1 Introduction

The rapid shift in natural, technological and sociological environment is changing the way we work, learn, interact, take part in society and lead our everyday lives. The most significant events of recent years that indicate the direction of development are Covid 19 pandemic and advent of AI that together accelerated digital transformation and aim for sustainable Europe in all aspects of sustainability.

The Covid 19 pandemic impacted millions of people in the EU, who have lost their job or experienced significant income loss. At the same time, the move to a resource-efficient, circular, digitized and climate neutral economy and the wide deployment of artificial intelligence and robotics are expected to create new jobs while other jobs will change or even disappear.

Europe can only grasp these opportunities if the population develop the right skills. Many people do not have the required level of skills (especially digital skills) and need to acquire new skills and move to new jobs in a different sector of economy. Others need to upskill to keep their job in a new work environment.

That is why EU is aiming for transition in skill sets aligned with so called the twin green and digital transition to recover from the socio-economic impact of the COVID-19 pandemic, adapt to new opportunities and build a more sustainable, resilient, and fairer Europe for the next generation with emphases on skills development and lifelong learning [1–3].

2 European Skills Agenda

The European Skills Agenda for sustainable competitiveness, social fairness and resilience is a five-year plan to help individuals and businesses develop more and better skills and to put them to use, by:

- Strengthening **sustainable competitiveness**, as set out in the **European Green Deal** for long term and sustainable growth, productivity, and innovation. Skills and lifelong learning are crucial and therefore a key factor for the competitiveness of businesses of all sizes, mostly small and medium-sized enterprises (SMEs). Providing people with the right skills allows businesses to work more effectively and take advantage of advanced technologies, promotes labor market alignment, and lays the ground for research and development and innovation. Only people with the right skills can strengthen that Europe's position in global competition and move forward to a continued economic recovery that aims on the green and digital transitions.
- Ensuring **social fairness**, with the first principle of the **European Pillar of Social Rights**: access to education, training and lifelong learning for everybody, everywhere in the EU. Having the right skills means being able to stay employed and master job transitions more easily. This requires providing equal access to additional up-skilling opportunities for all people, regardless of gender, racial or ethnic

origin, religion or belief, disability, age, or sexual orientation and regardless of territory they live in, from big cities to rural, coastal, or remote areas.

- Building **resilience** based on the lessons learnt during the **COVID-19** pandemic crises. This means: having enough skilled workers in strategic sectors (health care, retail, transport, social or sanitation services, and teachers and trainers) to ensure effective access to basic health, social or educational services for citizens in a period of crisis; reducing individual dependence on market conditions with increasing peoples' potential to navigate through life and professional transition; and developing digital competences (including cybersecurity) to continue educational and business activity [1, 2].

2.1 Goals of the European Skills Agenda

Based on the European Skills Agenda and its principles several goals have been set:

- To transform the EU into a modern, resource-efficient and competitive economy, ensuring no net emissions of greenhouse gases by 2050 (with **reducing net greenhouse gas emissions by at least 55% by 2030**, compared to 1990 levels), economic growth decoupled from resource use and no person and no place left behind [4].
- **The employment rate target of at least 78% by 2030** [5].
- **By 2025 to increase participation of adults aged 25–64 in training during the last 12 months to at least 47%** and by **2030** increase participation in training every year **to at least 60%**.
- **By 2030, at least 80% of those aged 16–74 having at least basic digital skills, and there should be 20 million employed ICT specialists in the EU**, while more women should be encouraged to take up such jobs [6, 7].
- **By 2025 at least 60% of recent graduates from VET should benefit from exposure to work-based learning** during their vocational education and training [8].
- **Employment rate of recent VET graduates of 82% by 2025** [9] (Fig. 1).

To successfully achieve the targets of the green and digital transition, it requires to prioritize people. This means supporting those most vulnerable to climate change and those who may struggle with the shift to a green economy. By investing in worker training, regional development, and green infrastructure, the individuals can be equipped with the skills needed to thrive in the green economy and mitigate the impacts of climate change. This includes fostering the development of green technologies (including digital technologies), promoting innovative nature-based solutions, and minimizing the environmental footprint of activities [11].

It also requires investing in advancing the digital skills that will be increasingly required in jobs (such as digital marketing, social media, and more) [12].



Fig. 1 Elements of the European Green Deal [10]

To lead EU towards a more equal society includes a digitally skilled population and highly skilled digital professionals, secure and sustainable digital infrastructures, digital transformation of businesses (ensuring SMEs can compete in the digital world), digitalization of public services (Fig. 2).

To meet the targets for improving skills and lifelong learning in twin green and digital transition, **sustained public and private investment is needed to facilitate access to training for people of working age.** EU is investing in programs, such:

- European Skills Agenda (with Pact of Skills)

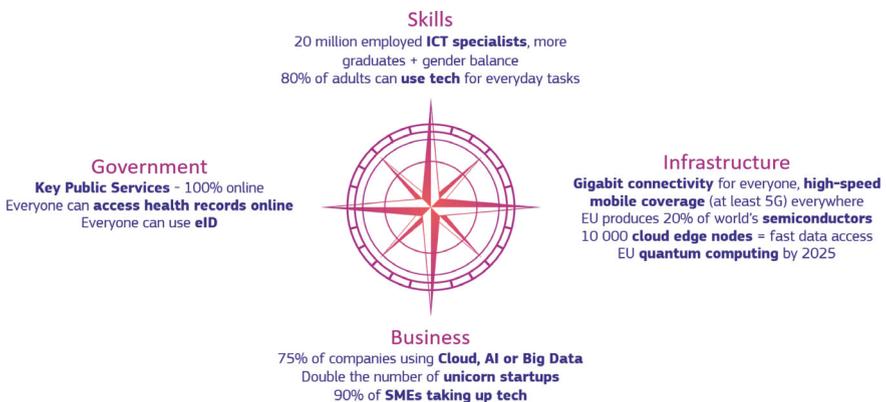


Fig. 2 Digital decade objectives [13]

- Digital Education Action Plan
- Digital skills and jobs coalition
- Several EU funding instruments such as the European Social Fund Plus (ESF+), the Recovery and Resilience Facility, Digital Europe Program, Horizon Europe and Erasmus + are available support Member States' investment in up-skilling and reskilling [12].
- Projects such as European Universities and Centers of Vocational Excellence, the European Regional Development Fund (ERDF), the Technical Support Instrument and InvestEU (to encourage private investments that contribute to social goals [9].

2.2 *Skills Agenda in Slovakia*

Skills anticipation in Slovakia is under development. Cooperation between different authorities is not always effective, resulting in fragmented labor market intelligence that does not fully meet the needs of various end-users.

The Ministry of Education, Science, Research and Sport is coordinating policymaking, especially regarding VET and higher education. In 2017 the National Program for the Development of Education (NDPE) was approved and was updated in 2022. It was based on the Program Declaration of the Slovak Republic and the Recovery and Resilience Plan, which aim to support investments and reforms, including “Quality Education,” as a response to the economic downturn caused by the Covid-19 pandemic. The NPDE includes measures to anticipate future skills needs and ensure that education meets the demands of the job market. While some measures are already in place, there is still room to improve the way different data sources are used to forecast skills needs.

Most existing skills anticipation initiatives have been developed under Ministry of Labor, Social Affairs and Family, with the Central Office of Labor, Social Affairs and Family, which is the main body responsible for preparing data and information about the labor market situation (skills assessment) and its developments and making it available to relevant institutions.

A great share of the resources spent on generating skills intelligence have been provided by the European Social Fund (ESF). Although anticipation activities exist, the lack of a coordinated approach has not supported the link between the results of skills intelligence and policymaking. Research focusing of skills anticipation maintains only a weak impact on policymaking [14].

Lifelong learning and counselling strategy for 2021–2030 promote lifelong learning and support adult education including measures to recognize non-formal and informal learning, introduce new elements such as civic education, basic skills and micro-credentials, and align the lifelong learning system with the needs of the labor market.

The Program Slovakia (2021–2027) supports lifelong learning through many measures. The budget of EUR 136 million (EUR 86 million under ESF+ and EUR 50 million under ERDF) should contribute to the creation of individual learning

accounts, development of lifelong guidance, improved graduate tracking system, assessment of key competences of adults and promote professional qualifications and micro-certificates. In addition, the investments in VET Centers of Excellence and providing training vouchers to help people find jobs are taking place.

Finally, to address the need for skills training, specific investment is planned under the Just Transition Fund (JTF) and the. The JTF earmarked support for adult learning and infrastructure with an indicative amount of EUR 53 million. Furthermore, under the REPower EU plan funds of around EUR 30 million should be provided to support the development of green skills in VET, as well as investments in green infrastructure [15].

2.3 Skills Sortages

To address the skills gap, the European Union designated 2023 as the European Year of Skills. This initiative aimed to leverage national efforts, promote existing and new EU programs, and facilitate access to EU funding opportunities to support skill development across the EU.

The main objectives were:

- promoting investment in workforce development to facilitate job retention and acquisition,
- ensuring skills match the needs of employers, by closely cooperating with social partners and companies,
- facilitating a seamless transition between individual aspirations and skill sets and available job opportunities, particularly within the context of green and digital transition and economic recovery,
- attracting skilled international talent to address workforce shortages [5].

The initiative, within The Pact for Skills, a collaborative effort uniting over 2500 members and 20 large-scale partnerships across all 14 industrial ecosystems, has trained 3.5 million individuals. The Pact aims to upskill and reskill 25 million people in the coming years.

15 Member States have leveraged EU funding to establish Individual Learning Accounts, empowering citizens to invest in their skills development.

Fifty-three Centers of Vocational Excellence have been established, with ambitious plans to expand to at least 100 by 2027.

The European Social Fund Plus and the Recovery and Resilience Facility have allocated a substantial €65 billion to invest in skills development from 2021 to 2027 [16].

The green transition could create up to 1 million additional jobs in the EU by 2030, however companies are often struggling to find workers with the right skills: labor shortages in key sectors and jobs for the green transition doubled between 2015 and 2021. More than 90% of jobs require basic types of digital skills, just as they require

basic literacy and numeracy skills. The use of digital is spreading across all sectors from business to transport and even to farming. Yet, around 42% of Europeans lack basic digital skills, including 37% of those in the workforce [12].

The results from the European Year of Skills Survey show important data highlighting skills shortages in small and medium-sized enterprises (SMEs).

95% of all SMEs in EU claim that it is very (82%) or moderately (13%) important for their business model to have workers with the right skills. However, 74% of SMEs face skills shortages for at least one job role in their company. Around 80% has difficulty to find workers with the right skills, and 53% to retain skilled workers.

The skill shortages hold back nearly 63% of SMEs in their general business activities. 45% of these enterprises report that it obstructs their efforts to adopt or utilize digital technologies, while 39% encounter difficulties in greening their business activities.

The survey shows that SMEs already apply a broad set of measures to find and retain workers. This includes efforts to make better use of talent within the company (e.g. staff mobility or job rotation), more investment in training, or increasing the attractiveness of jobs in terms of benefits.

To fill the gap and ease the recruiting of skilled employees, SMEs need better collaboration with public employment services (58%), better tools for assessing the skills of applicants (49%), better tools for assessing the company's skills needs (46%), and easier procedures for recognition of foreign (outside of the EU) qualifications (38%) [17].

In Slovakia, data show slightly better picture than EU average. However, still high number of all SMEs, 83%, claim that it is very (58%) or moderately (25%) important for their business model to have workers with the right skills. 64% of SMEs in Slovakia concretely face skills shortages for at least one job role in their company [18].

3 Lifelong Learning

To develop skills, meet the EU target and narrow the gap between skills of work force and enterprises' demand, lifelong learning is essential. The first from 20 pillars from European Pillar of Social Rights Action Plan is Education, training and life-long learning. Everyone has the right to quality and inclusive education, training and life-long learning to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labor market [9].

The European Pillar of Social Rights Action Plan must go hand in hand with the Digital Education Action Plan that sets out a common vision of high-quality, inclusive and accessible digital education in Europe, and aims to support the adaptation of the education and training systems of Member States to the digital age. The uptake of digital technologies for education revealed challenges and inequalities between those who have access to digital technologies and those who do not (including individuals from disadvantaged backgrounds); and challenges related to the digital capacities of

education and training institutions, teacher training and overall levels of digital skills and competences [19].

A skilled innovative workforce, capable of shaping and adapting to the green and digital transitions is key to the citizens' prosperity, well-being and competitive economy. Education and training systems play a key role in laying the foundations for lifelong learning, employability and participation in society. Investment in learning needs to be pursued since any learning losses will have long-term negative consequences on productivity and GDP growth (Fig. 3).

In December 2020, 16 million people were out of work and youth unemployment was at 17.8%, considerably higher than general unemployment. Low-skilled, low-paid workers, and temporary workers were the first to be out of work due to the COVID-19 outbreak. Migrants' participation in the labor market was also disproportionately affected by the pandemic. Although skills are essential to equip people for the new green and digital jobs and help shield workers from unemployment, only

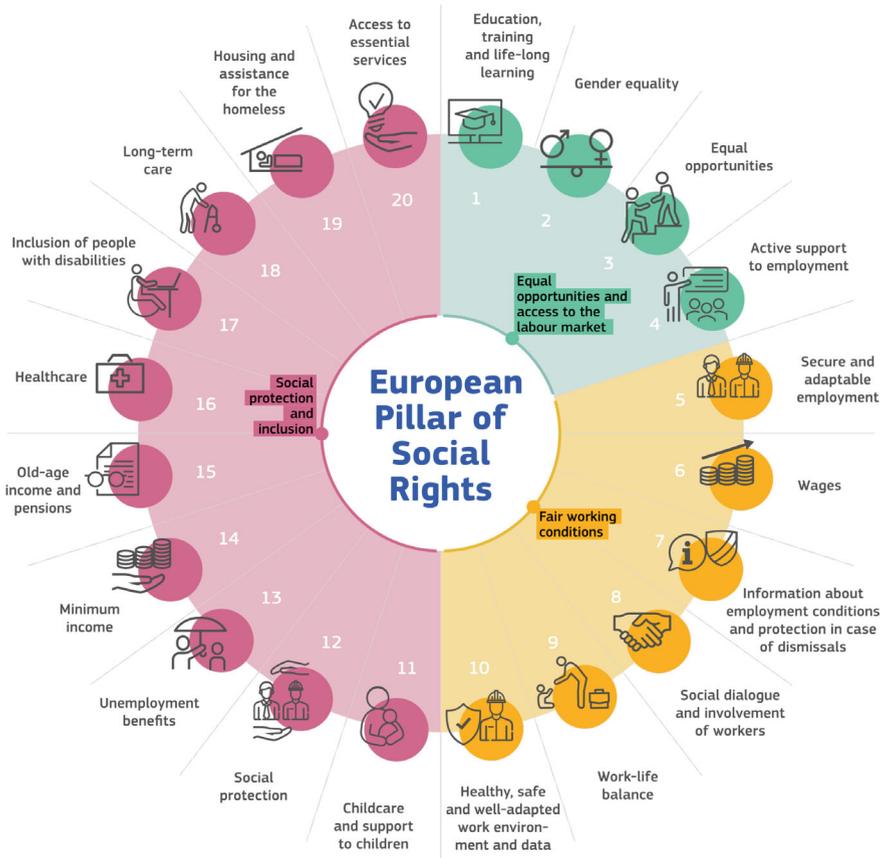


Fig. 3 European Pillar of Social Rights [9]

37% of adults were participating in any form of training every year in 2016. For the low-qualified adults this rate only reached 18% [9].

The recovery from the COVID-19 pandemic and the digital and green transitions have accelerated changes in how we live, learn and work. People need to update their knowledge, skills and competences to fill the gap between their education and training and the demands of a rapidly changing labor market.

Adult learning has been identified as a focus topic of the European Education Area for the period 2021–2030. Adult learning refers to a range of formal, non-formal and informal learning activities, both general and vocational, undertaken by adults after leaving initial education and training.

Pursuing adult learning has a variety of reasons, including improving their job prospects, personal growth, and transferable skills like critical thinking. Adult learning benefits individuals, communities, and economies by promoting social cohesion, active citizenship, and business competitiveness in EU.

The European Skills Agenda for sustainable competitiveness, social fairness and resilience includes ambitious actions to help people to develop their skills throughout life. It aims to support a culture of lifelong learning and to make learning more accessible and valued. European Agenda for Adult Learning highlights the need to significantly increase adult participation in formal, non-formal and informal learning [20].

3.1 Adult Learning

Adult learning is identified as the participation in education and training for adults aged 25–64, also referred to as lifelong learning. The importance of adult learning is reflected in EU-level targets, namely that by 2025, at least 47% of adults aged 25–64 should have participated in learning during the last 12 months (European Education Area) and that by 2030, at least 60% of all adults should be participating in training every year (during the last 12 months) (European pillar of social rights) [6, 8].

The adult education survey (AES) takes place every six years and is part of the European Union (EU) statistics on lifelong learning. People aged 18–69 (25–64 up to 2016) are interviewed about their participation in education activities (formal, non-formal and informal learning). The reference period for the participation in learning activities is the 12 months prior to the interview [21].

Among adults of working age (25–64), 46.6% across the EU participated in formal or non-formal education and training activities in 2022.

Among the EU Member States, there was a considerable variation between the shares of adult working-age populations who participated in formal or non-formal education or training. In 2022, by far the highest proportion was recorded in Sweden (73.9%), followed by the Netherlands (65.2%), Hungary (62.4%) and Germany (60.4%). Another 10 EU countries reported participation rates above the EU average of 46.6%, while another 10 EU countries had rates between 25% and the EU average.

Participation rate in education and training (last 12 months) 2011-2022

(% of people aged 25-64)

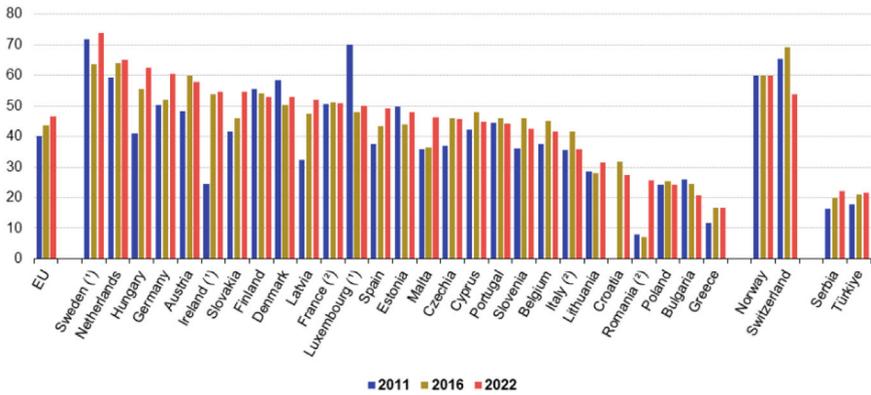


Fig. 4 Participation rate in education and training (last 12 months) 2011–2022 (% of people aged 25–64) [22]

The lowest rates—below 25%—were observed in Poland (24.3%), Bulgaria (20.6%) and Greece (16.6%).

Compared with 2016, participation rates increased in 14 EU countries, with Sweden, Malta, Slovakia and Germany reporting the strongest percentage growth. In contrast, Bulgaria and Croatia recorded the largest declines [22].

The participation rate in non-formal education was seven times higher at 86.5% than the rate for formal education 13.5% (5.6% of the participants were in formal education only and another 7.9% were in both formal and non-formal education) [22] (Fig. 4).

Non-formal learning is structured learning that takes place outside the formal institutions of schools, colleges and universities (e.g. in-company training). It is not surprising while most adult learners are of working age (25–64), as this is the age group when most people have already finished their formal education [23, 24].

The difference was less marked in Denmark, Finland and Sweden: participation rates in non-formal education and training were less than 4 times higher than the rates for formal education. Formal education contributed more than 20% to the overall participation in these countries. On the contrary, the gap was most pronounced in Czech Republic, Slovenia, Slovakia and Romania where the rates for non-formal education were more than 15 times higher than the rates for formal education. Formal education contributed less than 6% in these countries [22] (Fig. 5).

In 2022, business, administration, and law accounted for the largest share of adult learning activities in the EU (20.2%), followed by health and welfare (15.9%). However, the relative importance of these fields differed between formal and non-formal education. While business, administration, and law had a higher share in formal education, health and welfare had a higher share in non-formal education. Other popular fields included arts, humanities, services, social sciences, journalism,

Distribution of adult learning by type, 2022
(% of participants aged 25-64)

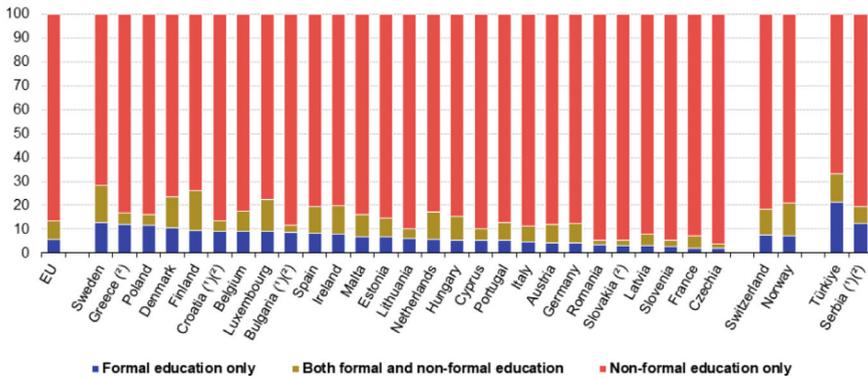


Fig. 5 Distribution of adult learning by type, 2022 (% of people aged 25–64) [22]

and information technology. Engineering, manufacturing, and construction had a much larger share in formal education than non-formal education (Fig. 6).

Over 80% of the non-formal learning activities were job-related and 17.2% was not job-related. Highest shares of job-related non-formal learning activities were in Slovakia, Lithuania and Bulgaria (more than 90%) (Fig. 7).

Employers are the primary sponsors of job-related adult education and training in the EU. In 2022, over 87% of these activities were partially or fully funded by employers, and many took place during paid working hours. This reflects the close relationship between work and learning in the EU, as most non-formal learning activities are job-related (Fig. 8).

Distribution of fields of education of adult learning, by type of instruction, EU, 2022
(% of instruction hours spent by adults aged 25–64 on the corresponding type of instruction)

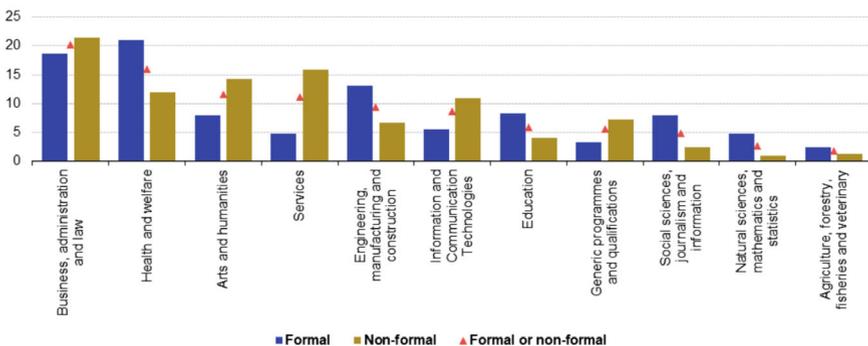


Fig. 6 Distribution of fields of education of adult learning, by type of instruction, EU, 2022 [24]

Distribution of non-formal learning activities by type, 2022
 (% of all non-formal learning activities of adults aged 25–64)

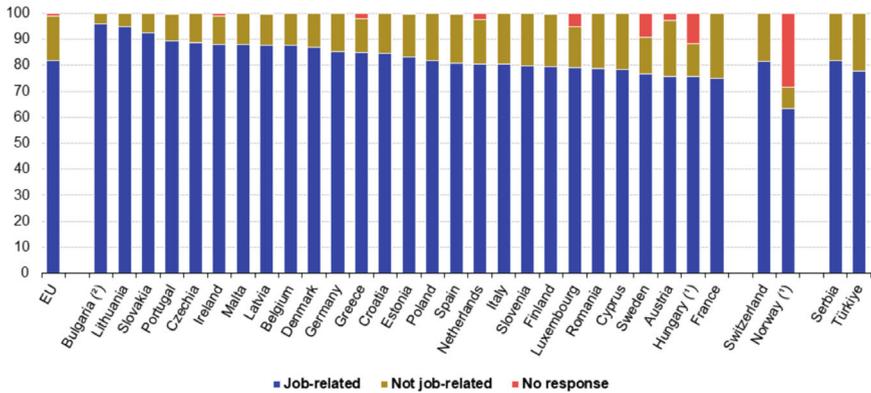


Fig. 7 Distribution of non-formal learning activities by type, 2022 [24]

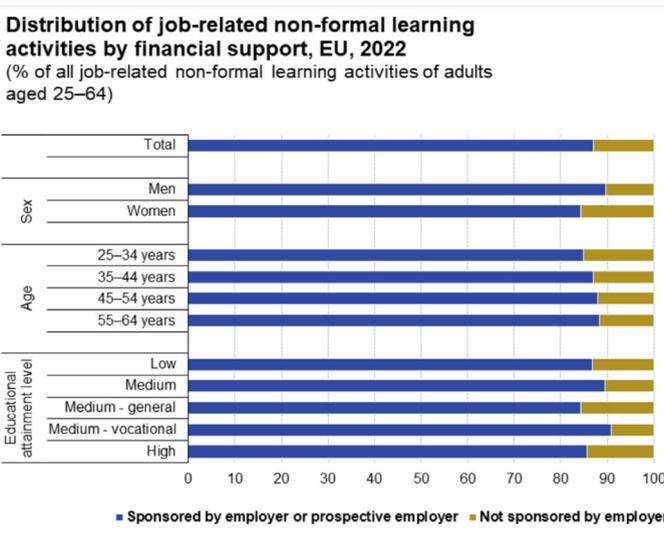


Fig. 8 Distribution of non-formal learning activities by type, 2022 [24]

Employers were more likely to sponsor job-related training for men than for women. This trend was particularly noticeable among older men with a medium level of education. 89.7% of job-related non-formal education and training activities for adult men were employer-sponsored, compared to 84% for adult women.

Across the EU in 2022, the share of job-related non-formal learning activities that were sponsored by the employer rose slightly the higher the age, from 84.8% for those aged 25–34 years, 87.1% for those aged 35–44 years, 88.0% for those aged

Distribution of job-related non-formal learning activities by financial support, 2022

(% of all job-related non-formal learning activities of adults aged 25–64)

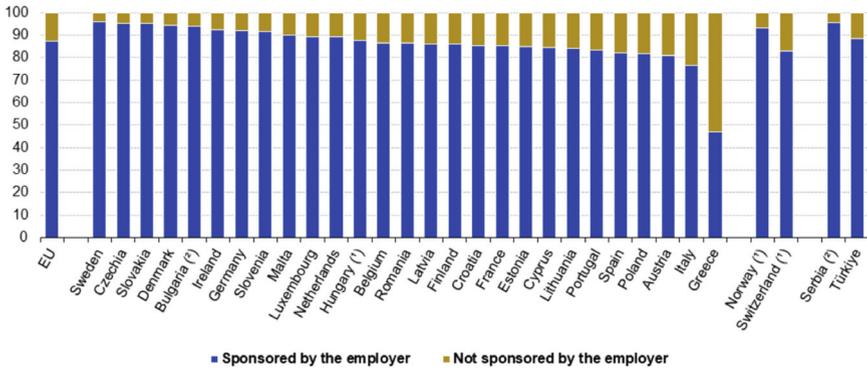


Fig. 9 Distribution of non-formal learning activities by type, 2022 [24]

45–54 years to 88.5% for those aged 55–64 years. This increase with age may, at least in part, reflect the interest of employers and employees in keeping skills up to date.

The share of employer-sponsoring among job-related non-formal learning activities was between 85 and 90% for all three levels of education—low, medium and high. This share was lowest for those with a high level of education (85.6%), followed by those with a low level of education (86.9%) while it was highest for those with a medium level of education (89.5%). Looking at people with a medium level of education, those with a vocational diploma recorded the highest share by far (90.8%) of job-related non-formal education and training being sponsored by the employer, while the same share was only 84.3% for those with a general diploma (Fig. 9).

The share of job-related non-formal learning activities followed by adults that were sponsored by employers peaked at 95.8% in Sweden, followed by around 95.0% in Czech Republic and Slovakia. In contrast, less than half the job-related non-formal instruction was sponsored by employers in Greece (47.1%).

In addition to information on participation in formal and non-formal education and training, the adult education survey also collects information on informal learning. Informal learning happens naturally as part of diverse activities (e.g. digital skills developed through leisure activities) [23]. Typical forms of informal learning are e.g., taught learning through guided visits to museums or coaching through a colleague (i.e., organized but not institutionalized learning). Informal learning can also take place as non-taught learning e.g., as self-learning with electronic devices, such as watching a video on YouTube on how to repair a bike or self-learning with printed materials. In 2022, 64.2% of adults participated in informal learning in the EU. Participation in informal learning ranged from below 30% in Greece to over 90% in Cyprus [25].

Distribution of informal learning (last 12 months) by purpose, 2022
 (% of people participating in informal learning aged 25-64, AES)

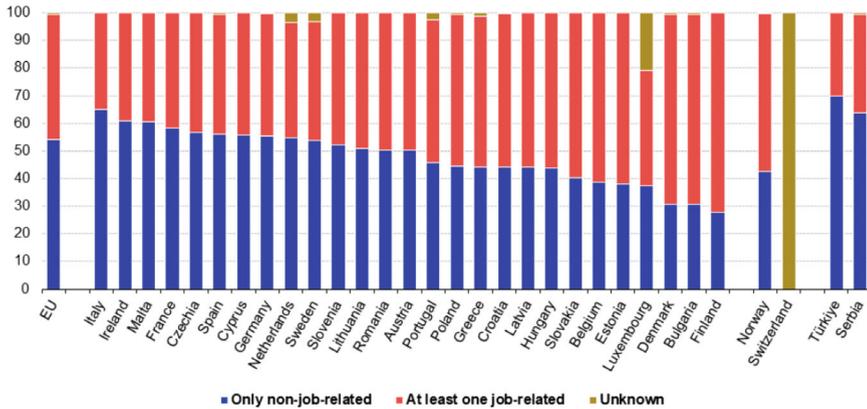


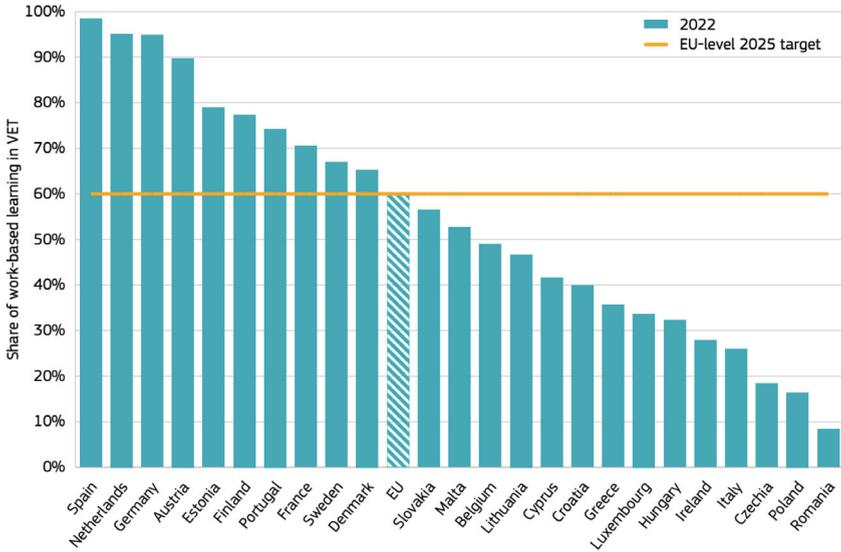
Fig. 10 Distribution of informal learning (last 12 months) by purpose, 2022 (% of people aged 25–64) [25]

In 13 countries, more than 50% of the informal learners indicated, that all their informal learning activities were for leisure purposes (i.e., not job-related): Italy, Ireland, Malta, France, Czech Republic, Spain, Cyprus, Germany, the Netherlands, Sweden, Slovenia, Lithuania and Romania. On the other hand, over 65% of learners with at least one job-related informal learning activity were in Denmark, Bulgaria and Finland (Fig. 10).

3.2 Vocational Education and Training

Vocational education and training (VET) has been at the core of the EU project and part of the wider European cooperation framework for education and training and the European Education Area. It aims to equip young people and adults with the knowledge, skills, and competences required in specific occupations, or more broadly on the labor market. It covers a wide range of qualifications: initial VET at secondary level, continuing VET for adults and vocationally oriented education and training at higher levels. Across the EU in 2021, 52.1% of students enrolled in medium-level education were in programs with a vocational orientation. This proportion ranges from 17.6% in Cyprus to 70.0% in Austria. To support entrepreneurs, in particular SMEs, Centers of Vocational Excellence act as knowledge and innovation hubs for both initial training of young people as well as continuing upskilling and reskilling of adults [2, 8].

In 2022, 60.1% of recent initial VET graduates experienced work-based learning during their education and training, reaching the 2025 EU-level target of at least 60%. Across the EU on average, recent VET graduates who experienced work-based



Source: Eurostat (EU Labour Force Survey). [Download data](#) [Monitor Toolbox](#) Note: the indicator captures the share of 20-34-year-olds who had a work experience of at least 1 month as part of the curriculum and have graduated from medium-level VET (upper secondary or post-secondary non-tertiary) in the last 3 years. Data for Germany, Cyprus, and Ireland have low reliability. Data for Latvia and Bulgaria have low reliability and are not shown. Countries are shown in descending order according to the proportion with exposure to work-based learning.

Fig. 11 Exposure of VET graduates to work-based learning [8]

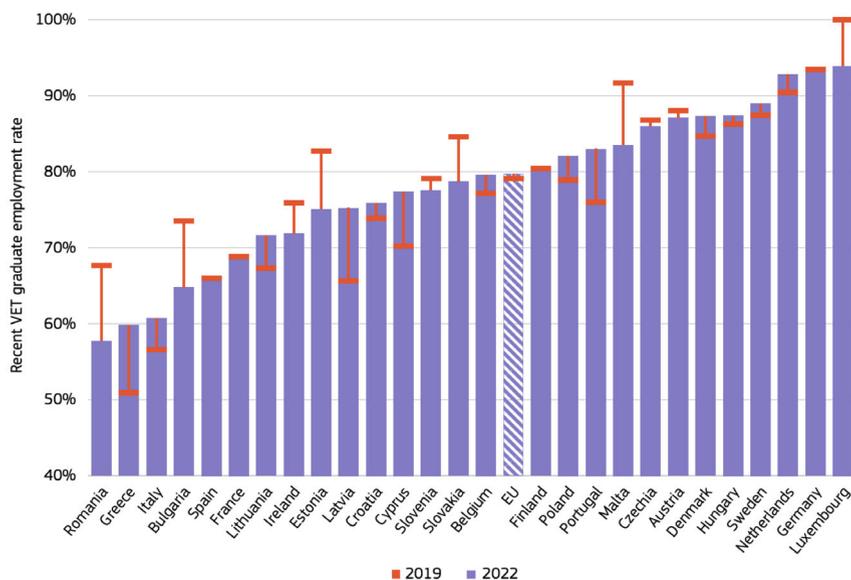
learning during VET were more likely to be employed (82.5%) than those who had not (71.6%). The employment rate of recent VET graduates (79.7%) is moving closer to the EU-level target of 82% by 2025 (Fig. 11).

The extent to which recent VET graduates were exposed to work-based learning varies considerably across countries. Work-based learning is around 90% or above in Spain, the Netherlands, Germany, and Austria. This proportion is below 30% in Romania, Poland, Czech Republic, Italy, and Ireland.

32.4% of businesses in the EU employ participants in initial vocational training (IVT). Larger companies (250 + persons employed) are more likely to do so than medium-sized companies (50–249) or small companies (10–49), a gradient going from 58.5 to 43.6 to 29.3%. Construction is the sector with the highest proportion of companies employing IVT participants (40.9%), followed by manufacturing (39.1%). For services sectors, the rate is below 30%.

VET, with its strong connection to the labor market, is crucial in equipping workers and learners with the skills needed for the green and digital transitions. The increasing demand for technical expertise in areas like renewable energy infrastructure, smart grids, building renovation, and electric vehicle repair highlights the importance of VET in fostering a skilled workforce. VET programs need to be adapted to meet evolving needs, including through curriculum updates, teacher training, and innovative learning methods.

In 2022, the relevant employment rate stood at 79.7% and 11 EU countries had reached or exceeded the EU-level target: Luxembourg, Germany, the Netherlands,



Source: Eurostat (EU Labour Force Survey). [Download data](#) [Monitor Toolbox](#) Note: the indicator captures the employment rates of young people aged 20 to 34 who are no longer in education and training, having graduated 1-3 years prior from VET at upper secondary or post-secondary non-tertiary level.

Fig. 12 Comparison of VET graduates' employment rates in 2022 with to work-based learning preCOVID-19 data (2019) [8]

Sweden, Hungary, Denmark, Austria, Czechia, Malta, Portugal, and Poland. The biggest gap is recorded in the country with the lowest employment overall, 23.6% in Romania. There are also gaps among some of the better performers, 14.6% in Sweden and 15.8% in Czech Republic, as well as among those nearer the EU average, 11.4% in Poland and 13.2% in Slovenia). In seven countries, employment rates of VET graduates were lower, 8.5% in Estonia and 4% in Luxembourg (Fig. 12).

In Slovakia less than 60% (56.5%) of recent VET graduates had been exposed to work-based learning during their education and training. Therefore, is not meeting the EU target and is still slightly below the EU average (60.1%). In 2022, there is employment rate of recent VET graduates in Slovakia lower than 80% (EU target) and below the EU average (79.7%), even though close 78.7%. Compared to 2019 there is fall from approximately 85% [8, 15].

Continuing Vocational Training (CVT)

Continuing vocational training (CVT) refers to education or training measures or activities which are financed in total or at least partly by the enterprise (directly or indirectly). Continuing vocational training survey (CVTS) collects information on investments by enterprises in the continuing vocational training of their staff [26].

Part financing could include, for example, the use of work time for the training activity. CVT can be provided either through dedicated courses or other forms of



Fig. 13 Enterprises providing continuing vocational training in 2020, EU (% of all enterprises) [27]

CVT, such as guided on-the-job training. In general, enterprises finance CVT to develop the competences and skills of the people they employ, expecting that this may contribute towards increasing competitiveness and productivity. A large majority of CVT is non-formal education or training, in other words, it is provided outside the formal education system. Only enterprises from the business economy are included in the analysis; in other words, most economic activities are covered, with the exclusion of agriculture, forestry and fishing, public administration and defense, compulsory social security, education, human health and social work activities. Last data available from CVTS are for 2020. The survey takes part every five years [27].

In 2020, 67.4% of enterprises employing 10 or more persons in the EU provided either CVT courses or at least one of the other forms of CVT to their staff (such as guided on-the-job training, learning cycles, self-directed learning, etc.) (Fig. 13).

This marked a decrease compared with 2015 when the corresponding share was 70.5%, a peak after 63.6% in 2010. This decrease in 2020 can most likely be explained by reduced business activity, lockdowns and restrictions imposed by the COVID-19 pandemic. Among the EU Member States, the share of enterprises that provided any form of CVT in 2020 ranged from 17.5% in Romania to 96.8% in Latvia (Fig. 14).

Within the EU, enterprises in services (other than distributive trades or accommodation and food services) were more likely to provide CVT. This was particularly the case for the grouping of information and communication services and financial and insurance activities where the proportion of enterprises providing CVT in 2020 was 82.8%. Only enterprises in industry (except construction) saw an increase in the share of enterprises providing CVT in 2020 compared to 2015, while enterprises in all other groupings of economic activities reported a decrease between 2 and 5% (Fig. 15).

Enterprises providing CVT, 2010, 2015 and 2020
(% of all enterprises)

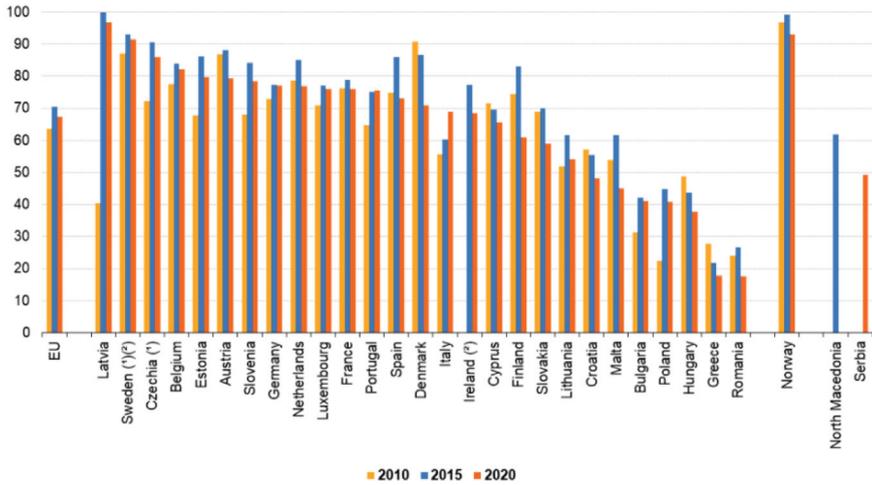


Fig. 14 Enterprises providing CVT, 2010, 2015 and 2020 (% of all enterprises) [27]

Enterprises providing CVT by NACE Rev. 2 activity, EU, 2010, 2015 and 2020
(% of all enterprises)

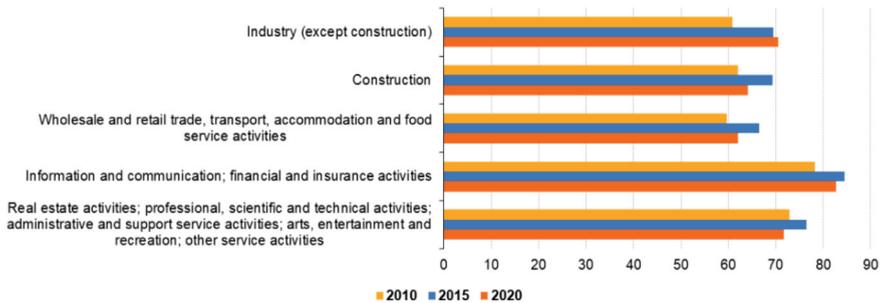


Fig. 15 Enterprises providing CVT by NACE Rev. 2 activity, EU, 2010, 2015 and 2020 (% of all enterprises) [27]

On average, enterprise size appears to be a relevant factor regarding the provision of CVT across the EU. In 2020, 92.8% of large enterprises (with 250 persons employed or more) provided continuing vocational training, compared with 82.5% of medium-sized enterprises (with 50–249 persons employed) and only 63.5% of small enterprises (with 10–49 persons employed). This pattern is followed in all countries but the magnitude can vary a lot: in Latvia, the difference between small and large enterprises is only 1.5% while it represents 53.0% in Hungary (Fig. 16).

Enterprises providing CVT by size class, 2020
(% of all enterprises)

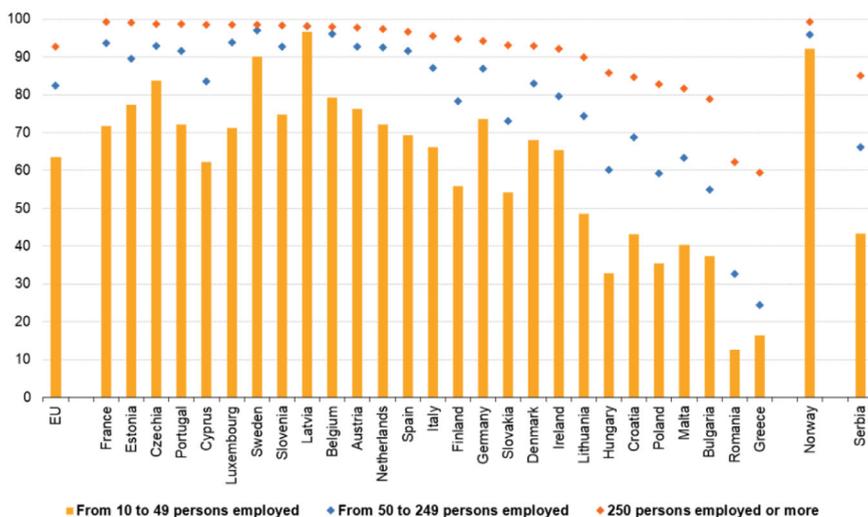


Fig. 16 Enterprises providing CVT by size class, 2020 (% of all enterprises) [27]

In the EU in 2020, 42.4% of persons employed in all enterprises participated in CVT courses. Thus, looking at the business economy, compared to 2015, the participation rate decreased by only 0.5% in the EU.

Across the EU Member States, participation rates ranged from 82.8% in Czech Republic to 11.8% in Greece. All EU Member States saw a decrease in 2020 compared to 2015, except Lithuania, Latvia, Germany and Spain. At the same time, participation rates in 2020 were still higher than in 2010 in 17 of the countries for which the comparison is possible (Fig. 17).

In 2020, EU enterprises considered job-specific skills (43.2%), team working skills (41.9%), customer handling skills (36.5%) as well as problem solving skills (25.2%) as most important. Looking at the trend, the importance of IT skills is growing, even though they are not among the top skills for enterprise development. At the same time customer handling skills, technical, practical, or job-specific skills as well as foreign language skills appear less important in 2020 compared with five years before (Fig. 18).

In 2020, 32.4% of all enterprises with 10 or more persons employed in the EU’s business economy provided IVT (initial vocational training). The share above the EU average was in Denmark, Italy, Netherlands, Austria France and Germany. At the other end of the scale, less than 1 in 10 enterprises provided IVT in six of the Member States, namely Hungary, Poland, Greece, Bulgaria, Romania and Lithuania [27] (Fig. 19).

Participants in CVT courses, 2010, 2015 and 2020
(% of persons employed in all enterprises)

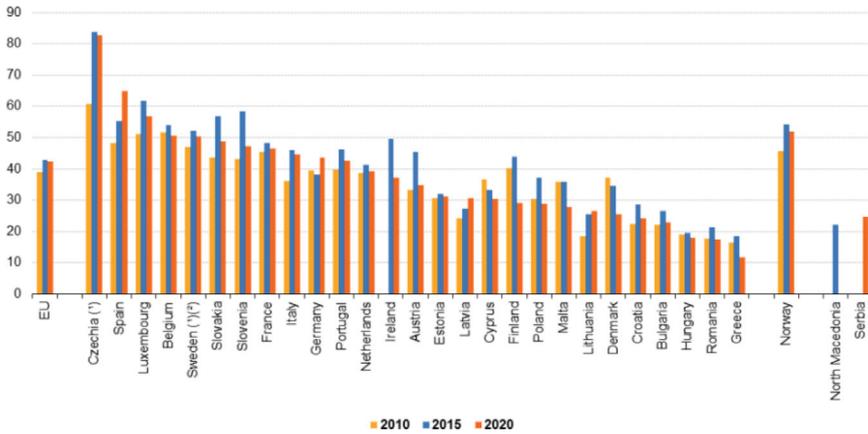


Fig. 17 Enterprises providing CVT by size class, 2020 (% of all enterprises) [27]

Main skills needed for the development of the enterprise by type of skill, EU, 2015 and 2020
(% of all enterprises)

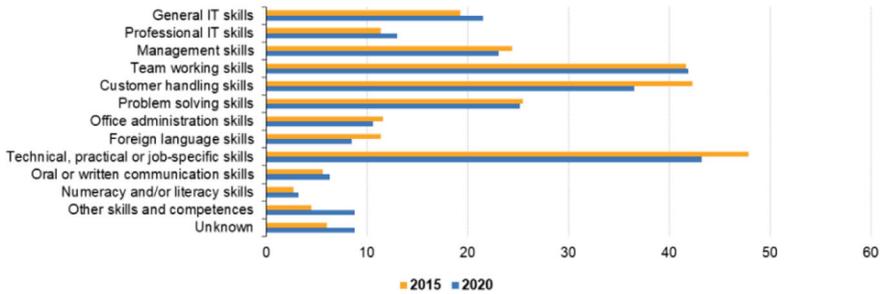


Fig. 18 Main skills needed for the development of the enterprise by type of skill, EU, 2015 and 2020 [27]

4 Closure

The data presented in this paper highlights the progress made in lifelong learning and skills development across the EU, while also identifying areas for improvement. The increasing participation rate in both formal and non-formal education demonstrates a growing commitment to lifelong learning. However, there is still room to expand the reach of these initiatives, particularly among older adults and those in low-skilled occupations.

Enterprises employing IVT participants, 2010, 2015 and 2020

(% of all enterprises)

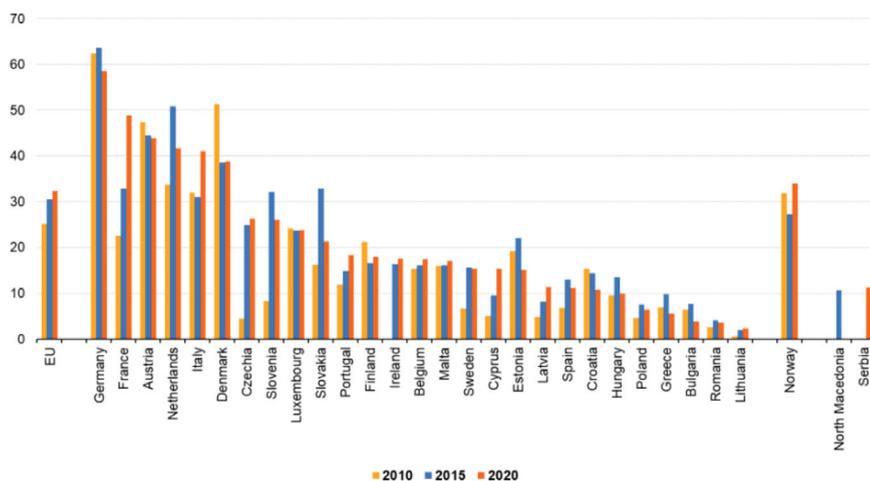


Fig. 19 Enterprises employing IVT participants, 2010, 2015 and 2020 (% of all enterprises) [27]

The emphasis on work-based learning aligns with the evolving needs of the labor market and offers valuable opportunities for VET graduates to gain practical experience and enhance their employability. While the EU has made progress in this area, further efforts are needed to ensure that all VET graduates have access to quality work-based learning experiences.

To address the skills gap and facilitate the recruitment of skilled employees, SMEs ask for better collaboration with public employment services, investing in tools for skills assessment, and streamlining procedures for recognizing foreign qualifications. The EU initiatives should help to improve the efficiency of the labor market and support businesses in meeting their talent needs.

Continuous learning and skills development in the EU is important to create a more skilled, adaptable, and resilient workforce, fostering economic growth and social prosperity.

Acknowledgements The contribution is a partial output of the VEGA research task no. 1/0398/22 “The current status and perspectives of the development of the market of healthy, environmentally friendly and carbon-neutral products in Slovakia and the European Union” conducted at the University of Economics in Bratislava.

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