CEDEFOP | European Centre for the Development of Vocational Training

Shaping Learning and Skills for Europe

A time for commitment

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Introduction

This document is a sequel to the discussion paper released in 2020 ([1]) to inform the Osnabrück declaration for vocational education and training (VET) and outline challenges and opportunities for VET up to 2030, which largely remain valid today. Nevertheless, five years later, as European VET prepares for the new Herning Declaration, it is time for an update. Cedefop uses the opportunity of its 50th anniversary to revisit the challenges and opportunities identified in 2020, strategically reflecting on what they mean for *shaping learning and skills for Europe* today.

Since 1975, Cedefop has provided evidence to support a common EU VET policy and conducted research and analysis to map trends in vocational training. Over time, work on comparing VET qualifications shifted from input- and job description-based approaches to approaches that focus on outputs and learning outcomes. Alongside expanding work on qualifications and qualifications frameworks, there has been an increased emphasis on mapping labour market needs and skills trends.

In the past decade, Cedefop has increasingly focused on providing evidence to support the labour market relevance of VET, its attractiveness, and the factors and tools that promote excellence and inclusion. More recently, and for the first time systematically in the 2020 discussion paper, Cedefop has placed much greater emphasis on the importance of accessible, inclusive and effective adult learning and training systems.

The twin transition, demographic challenges, and accelerating and partly uncertain technological and societal changes make it difficult to address the multidimensional, complex, and continuously evolving skills challenges and mismatches Europe faces. The skill needs are immense. Cedefop skills intelligence consistently highlights severe skills bottlenecks and reveals that not enough people have the skills required to shape and upscale the green transition.

This paper provides an overview of the new strategic landscape, characterises the state of play of VET and skills using the latest statistical evidence and skills intelligence, and offers ideas on how best to navigate this evolving landscape. It outlines what is needed to address the skills challenge, reinvent adult

([1]) Cedefop, & ETF. (2020). *The importance of being vocational: challenges and opportunities for VET in the next decade: Cedefop and ETF discussion paper.* Publications Office of the European Union.

skills development, and value all skills and learning. Finally, it identifies five overarching areas for policy innovation.

Throughout the paper, we emphasize the crucial need for Europe to move beyond thinking in policy silos and to integrate skills development and matching across employment, education, innovation, competitiveness, migration, and other policy domains. Vocational education and training and skills should become part of the backbone of most, if not all, EU and national policies. To signal the change in mindset this requires, we introduce the term VET and skills development, or **VET-S policies**.

This transition from VET to VET-S policies reflects the evolving nature of learning. The addition of ‘S’ for ‘skills development’ explicitly acknowledges the wider range of adult learning needs, beyond those seeking a specific vocational qualification. It also aligns with the growing need for individuals to adapt and reskill continuously throughout their careers. Further, it resonates more strongly with individual learners, highlighting the personal and professional benefits of continuous growth and adaptability. This shifts the focus from simply obtaining a certificate to the broader goal of enhancing their capabilities and potential. This forward-thinking terminology positions VET-S policies as relevant and responsive to the evolving demands of the labour market and individual development.

CHAPTER 1. The new strategic landscape

1.1. A three-pronged challenge

Compared to the previous policy cycle, Europe must now reframe its skills and vocational training policies, placing greater emphasis on addressing the key challenges of productivity, equality, and strategic autonomy.

More jobs is not enough

The Draghi report has given a renewed push to the European productivity agenda, highlighting the urgent need to address Europe's declining competitiveness, primarily due to low investment and productivity growth. Productivity growth in the EU has been trending downwards for decades and has remained below 1% in recent years – a significant decline from the 1.8% rate observed before the Great Financial Crisis of 2007-08.

While the EU is on track to meet its employment target, this productivity slowdown underscores the risk of a low-skills equilibrium trapping many EU regions and sectors. This self-reinforcing cycle occurs when companies in low-productivity sectors invest less in training and upskilling their workforce. Workers with limited skills are confined to low-wage jobs with few opportunities for career progression. Consequently, the concentration of workers in low-productivity jobs and the lack of investment in learning perpetuate weak overall productivity growth.

As a result, low-wage work is more prevalent in Europe than the average in OECD countries, with a progressively widening gap – from +0.4 percentage points in 2014 to +1.8 percentage points in 2022 ([2]). In fact, even in a year of employment growth like 2022, the share of working poor increased suggesting that creating jobs is not enough, and more refined, targeted policies are necessary.

From price to skills competition

Low productivity growth and rising inequality are closely interconnected. The 'low-skills trap' directly contributes to inequality by limiting upward mobility for low-skilled workers, while a broader decline in productivity worsens these disparities. Slower productivity growth leads to stagnant wages for many workers, as businesses are less inclined to offer significant wage increases. It also creates unequal opportunities of professional development, particularly for those in low-skill jobs. Since new technologies tend to favour higher-skilled workers, skill gaps prevent businesses from effectively adopting and spreading these technologies,

([2]) OECD. (2024). *Data explorer*. Distribution of earnings database.

while widening the wage gap between skilled and unskilled workers. Moreover, as economic growth slows, governments may face pressure to cut social spending, including investments in education and training programmes. This disproportionately affects low-income earners, further widening the gap.

While Europe performs comparatively well in education and training, a significant share of its population does not hold at least an upper secondary degree, while almost half of the adult population potentially needs upskilling or reskilling. The employment rate gap for low-skilled individuals shows no signs of narrowing over time and, in fact, reached a record high in 2024. It stands at nearly 44 percentage points compared to the population with high qualifications, and 26 percentage points compared to those with intermediate qualifications. Poor employment outcomes and career prospects for this group are major causes of low productivity and wage inequality.

In the context of skill gaps and shortages, investing in skills development through further education, work-based learning and continuing training for adults can yield significant returns. However, the infrastructure for continuing VET (CVET) and skills development is insufficient in many Member States.

Skills for strategic resilience

The new geopolitical landscape also necessitates a renewed emphasis on skills development and matching. Europe's economic resilience, essential for navigating global uncertainties, has been severely tested. This crisis has revealed the vulnerabilities of a growth model heavily reliant on non-high-tech sectors, low-cost energy supply, and global supply chains. Moving away from this model, combined with the accelerated restructuring of the European economy and the rapid emergence of certain tech sectors, presents significant new challenges to the EU's long-term competitiveness.

The European economy can no longer rely on expansionary international trade. As countries prioritise domestic industries, the rise of protectionist policies will further disrupt global trade and reduce economic opportunities for EU industries. This will affect the demand for certain skills and require adjustments in education and training programmes to meet evolving industry needs. The persistently high vacancy rate across the EU highlights the urgent need to equip the workforce with the skills required to succeed in this new economic reality. Addressing these challenges will help avoid a low-skills equilibrium and ensure inclusive and sustainable growth.

In this context, going against the prevailing winds of protectionism, Europe has an opportunity to promote international mobility of talent and streamline

pathways for skilled individuals, actively seeking and welcoming the diverse skills required to fuel innovation, productivity, and growth.

1.2. A brighter but disorderly scenario

The EU has the potential to lead in green technologies, artificial intelligence, and digital innovation. A renewed 'triple D' strategy – namely, digitalise and decarbonise the economy and increase defence capacity – could drive economic growth, create quality jobs, and boost productivity. While expectations from AI adoption, lower risks related to energy supply, and the possibility of further monetary easing suggest stronger medium-term growth, significant uncertainties lie ahead for Europe.

Green transition challenges

A greener Union has clear potential to enhance the EU's resilience and security. Focusing on sustainability could lead to a more resilient and competitive economy, while addressing climate change and environmental concerns. This forms an essential basis of Europe's so-called open strategic autonomy (OSA). Diversifying energy sources and improving energy efficiency are crucial to moving away from fossil fuel dependence and reducing vulnerability to energy price shocks, integrating security and environmental considerations. However, prospective scenarios include both orderly and disorderly transition pathways. Rising geopolitical tensions have made the transition trajectory more turbulent, with growing political fragmentation and lower commitments from some countries. As a result, despite accelerating climate change, the road to net zero appears more challenging for many Member States. Geopolitical tensions are pushing countries to focus increasingly on domestic issues, while fiscal stagnation may limit the resources needed for climate financing.

In this context, the green transition, while offering opportunities for economic growth and job creation, presents significant challenges. It requires navigating complex trade-offs, such as balancing short-term economic growth with environmental protection and minimising geopolitical risks. The costs and benefits of the green transition are unevenly distributed across regions and sectors, further complicating the policy landscape. In any case, greening the economy demands a substantial shift in the skills of the European workforce. While market forces play a role, a successful green transition depends significantly on proactive government policies and the commitment of EU countries to energy and environmental goals. It requires both a stable and predictable regulatory environment (foundation), and a comprehensive upskilling and reskilling strategy (enabler). Employers have a

stronger role in defining the demand for skills and learning, while learning providers need better support to understand and meet the employers' evolving skill needs. Equipping individuals with specialised knowledge and practical abilities requires significant investment and reforms in skills, education, and training policy.

Digital transformation gains momentum

Emerging technologies can drive productivity growth in Europe. Although comprehensive data on generative AI investment are limited, available evidence suggests a significant gap between the EU and the US, with EU organisations lagging by an estimated 40-50%. The latest AI Index report estimates that, between 2013 and 2023, private investment in artificial intelligence in the EU amounted to only a fifth of that in China and a tenth of that in the United States, a gap which appears to be widening. If this trend continues, it could irreversibly undermine the European innovation system, jeopardising EU productivity and growth. Historically, EU policy responses may have prioritised technological infrastructure development, but paid insufficient attention to critical investments in workforce skills, effective management practices, and other essential factors for successfully adopting digital technology in workplaces.

Analysing the relationship between digitalisation and evolving skillsets in European workplaces reveals both the potential of digital technologies to boost productivity and the risks of labour market disruption and skills mismatches. Predictably, introducing new technologies often faces resistance from individuals and organisations, particularly from employees concerned about job displacement or lacking the necessary skills. Smaller organisations may struggle more with adopting emerging technologies due to limited financial and managerial resources and a shortage of digitally skilled employees. Investing in complementary areas, such as upskilling and reskilling programmes, is therefore vital for a human-centric digital transition. A lack of skilled workforce and significant skill gaps will not only hinder the success of the digital transition but also lead to a suboptimal and potentially disruptive digital transformation process.

Europe's demographic crossroads

Evidence shows that EU countries in the final phase of the demographic transition tend to fall below the replacement level, forecasting a scenario of chronically insufficient generational renewal. Despite the negative natural balance, the EU's working-age population has so far been supported by greater labour market participation by older workers and women and, importantly, by the contribution of immigration, including the significant arrival of refugees from Ukraine in recent years.

However, current trends will not be enough to compensate for the decline in the working-age population in the medium and long term. In addition, despite recent progress made at the EU level, political uncertainty may reduce the potential role of migration in the future. The growing demand for migration governance that ensures certainty, regularity and order is difficult to reconcile with managing migration flows, which are complex, mixed and constantly evolving. As migration policies may become more restrictive, the global competition to attract talent is intensifying, fuelled by labour and skill shortages in many advanced mature economies. This global phenomenon, combined with increasing intellectual labour mobility within the Union, can generate a talent development trap in many European regions and dramatically increase interregional disparities.

All of this makes even it more crucial to generate social wellbeing and economic development on new foundations compared to the past, focusing especially on the quality of work and the valorisation of human capital in combination with the use of new technologies.

1.3. Making the most of Europeans' potential

There is widespread agreement across the EU that public policy focusing on skills and vocational learning is vital for the Union. Labour shortages and skill gaps across the EU pose a significant challenge, hindering companies' productivity, innovation, and competitiveness. This ultimately affects the EU's sustainable growth. Several recent EU policy documents emphasise the need for a major shift in approach and increased investment in skills to tackle this challenge effectively.

European consensus on skills development

In early 2024, the European Commission released a new Communication on labour and skill shortages in the EU in the form of an action plan. This plan advocates for concerted action and outlines several measures, including skills policies, working conditions, intra-EU mobility, and attracting talent from outside the EU. In the political guidelines presented in July 2024, European Commission President Ursula von der Leyen called for a radical increase in efforts to boost investment in skills and tackle labour and skill shortages. The Union of Skills, launched in March 2025, signals ambition and determination to improve EU education, training, and lifelong learning in the coming years. These policy priorities are reflected in the mandate of the new Executive Vice-President for People, Skills and Preparedness, which emphasises the need to address skill gaps. The mandate also includes a skills portability initiative and the development

of large-scale partnerships to upskill and reskill workers in key industrial ecosystems.

In 2024, the Letta report on the single market and the Draghi report on competitiveness uncovered structural weaknesses in the EU economy, putting labour shortages and skill gaps in the spotlight. Letta's report views investment in skills as a core driver of knowledge creation and innovation. It calls for European programmes to enhance basic skills, digital skills, and literacy, which are essential to empower citizens to participate fully in the knowledge economy. Draghi's report includes a comprehensive section on the role of learning and skills policy in fostering European competitiveness. It details the shortcomings of current policies and calls for improved data gathering and intelligence, curriculum revision, certification harmonisation, VET systems reform, and increased investment in adult learning.

The Draghi Report also makes it clear that skills policies and industrial strategy are two sides of the same coin. For the EU to achieve its industrial ambitions, it must prioritise investment in developing a skilled workforce, equipped to drive innovation and growth in key areas such as advanced technologies, renewable energy, and digital transformation. Aligning education and training systems with industry needs will require new and stronger approaches to stakeholder cooperation, particularly social dialogue between employer and employee organisations.

While offering broad support, the Draghi report faces challenges in implementation due to fragmentation and uncertain political consensus. The report highlights the strong link between VET and skills development policies (VET-S) and structural, regulatory and governance reforms needed to encourage business innovation and address productivity growth. These policies will not succeed without changes to VET-S policies that anticipate and meet the evolving needs of the future workforce.

A renewed vision for learning and skills in Europe

The good news is that there are several areas of VET-S systems where the EU Member States perform well. In the EU, the proportion of young people who achieve at least upper secondary education is higher than the average in OECD countries, and European universities are generally of high quality. Focusing on initial VET, latest data show that students enrolled in upper secondary vocational education in the EU remain stable around 50% of all upper secondary students, indicating the continued popularity of vocational pathways. Over 70% of students in initial vocational education and training (IVET) are enrolled in programmes that

allow direct access to tertiary education, demonstrating that IVET is no longer a dead-end learning pathway.

In contrast, there is still a significant gap in continuing VET and adult skills development in many EU Member States. Despite an increase in employer-sponsored training, demand for CVET falls short of its potential, often focusing on mandatory training rather than addressing emerging skill needs. To make matters worse, participation in learning among those not employed or not supported by their employers is even lower. Uneven participation of adults in skills development activities further exacerbates the issue, with individuals with lower educational attainment and those from disadvantaged backgrounds often missing out on crucial learning opportunities in adulthood. This is particularly concerning, not only because almost half of European adults are estimated to have low or outdated skills, but also because the value and labour market advantages of IVET depend crucially on the existence of well-functioning CVET and adult learning systems.

The EU's current strategy on VET clearly emphasises the need for a more systematic approach to skills development for all adults across Member States. However, while the aspiration of 'making lifelong learning a reality' has long been voiced, simply aiming for this goal is no longer enough. We must now move beyond ambition into action, and actively re-examine what constitutes lifelong learning in today's world, finding new and innovative ways to truly integrate it into the evolving reality of our societies. This is perhaps the most important challenge in view of the forthcoming policy cycle.

To support innovative, targeted, and even unconventional policies, we need to pinpoint where we are on track, what needs attention, and where Europe is falling behind.

CHAPTER 2. Where we are

2.1. VET and skills in the EU at a glance

Reflecting the EU's policy focus and targets, Cedefop's analysis draws on its comprehensive and systematic VET data monitoring to provide insights into the current landscape of skills development across the EU.

A shifting skills landscape

The European labour market is undergoing rapid transformation, with increasing demand for a more skilled workforce expected in the coming decade. Employment in knowledge-intensive activities reached 37% of total employment in 2023. According to Cedefop skills forecasts, employment for individuals with tertiary qualifications is expected to rise by a further 21% between 2025 and 2035, while the number of individuals with medium-level qualifications in employment will remain largely stable, with a slight drop of about 1%. As a result, by 2035, fewer than 10% of the employed population will be low-qualified.

In line with these trends, the number of individuals in highly skilled occupations such as managers, professionals and technicians, is expected to grow by 10%, compared to smaller or negative changes in other occupational groups. The trend towards a service-based economy in the labour market will also continue, with tertiary sectors projected to account for over three-quarters of total employment.

Mixed progress in education and training against EU targets

The EU is making progress in increasing attendance in early childhood education and care. While participation for children aged three to the starting age of compulsory education is expected to grow, it is projected to fall slightly short of its 2030 target of 96%. Major concerns exist regarding the basic skills of 15-year-old students. The share of low achievers in reading, mathematics, and science is significantly above the 2030 target of less than 15%, and showing an unfavourable upward trend.

More positive trends are observed in engagement with and attainment of, initial education. The share of early leavers from education and training is declining and is projected to meet the 2030 target of less than 9%. Similarly, the share of 25- to 34-year-olds with tertiary educational is increasing and is also projected to meet and exceed the 2030 target of at least 45%. NEET rates for young people are also showing favourable progress and are projected to meet the 2030 target of less than 9%. In contrast, while the employment rate for 20- to 64-year-olds is increasing and is projected to meet the 2030 target of 78%, the share of adults with

at least basic digital skills is significantly below the 2025 (70%) and 2030 (80%) targets, with current progress suggesting a considerable shortfall.

IVET plays a vital role, particularly at upper secondary level

Initial VET (IVET) remains essential for keeping young people in education and training, raising their skills, and enabling transitions to further learning and employment. Thanks to support policies in many European countries, about half of all upper secondary students participate in IVET, with minimal changes since 2015. In 2022, around 9 million students were enrolled in IVET. However, significant differences persist across countries and genders, with female participation notably lower.

IVET is also almost exclusive present in post-secondary non-tertiary and short-cycle tertiary education, although the absolute numbers are considerably lower than at the upper secondary level. At these levels, enrolment trends have seen minor changes since 2015, and participation remains concentrated in a few countries. Short-cycle tertiary VET students make up a small but significant share (around 7.5% in 2022) of all tertiary education students ([3]).

Increasingly international and work-based IVET

Cross-border mobility of IVET learners is increasing, although the average number of foreign languages learned by VET students remains lower than that of their counterparts in general education. Provisional estimates indicate that the 5.1% of IVET learners with learning mobility abroad reached in 2022 is still below the 2025 target of 8% (and the 2030 target of 12%). However, current projections suggest these targets are not out of reach.

Work-based learning has become a structural element of IVET systems, with nearly one-third of enterprises with 10 or more employees relying on apprenticeships in 2020. The EU target of 60% of recent VET graduates experiencing work-based learning by 2025 was already exceeded in 2023, reaching 64.5%. However, considerable cross-country variations persist in the prevalence and characteristics of work-based learning. Research suggests that structured work-based learning of longer duration, with pay and mandatory curriculum inclusion, leads to better employment outcomes ([4]). A more exacting definition of work-based learning, requiring at least 25% of the curriculum to take

([3]) Serafini, S., & Soares Marques, M. (2025). *What is new in IVET? Key pointers from statistics*. Cedefop data insights.

([4]) Cedefop. (2021). *The role of work-based learning in VET and tertiary education.* Cedefop research paper, 80. Publications Office of the European Union.

place outside the school environment, estimates that only around 30% of upper secondary VET students were enrolled in such programmes in 2022 ([5]).

IVET provides skills for the labour market, but imbalances persist

IVET continues to provide skills across the labour market, including STEM fields. In 2022, almost half of all upper secondary graduates in the EU earned a vocational qualification. Significant proportions graduated in engineering, manufacturing, and construction (33%), business, administration and law (18%), and personal services (15%). STEM-related graduates made up around 39% of upper secondary VET graduates. However, the share of IVET graduates in ICT remains comparatively low (less than 5%), while significant gender imbalances persist, particularly in STEM subjects. Females are underrepresented in engineering trades (7%) and ICT (12%) but overrepresented in health and welfare fields (over 80%) ([6]).

IVET provides increasing access to further learning, and is good for employability

In 2022, most upper secondary IVET students in the EU were enrolled in programmes granting direct access to tertiary education (73%). However, only around 38% of recent graduates with a medium-level vocational qualification were in further formal education or training in 2023, compared to 82% of graduates with a medium-level general qualification. In addition, recent VET graduates enjoy favourable employment rates. The employment rate of recent VET graduates not in further education and training was estimated at 81.0% in 2023, showing a positive trend towards meeting the 2025 target of 82%. This is significantly higher (13.4 percentage points) than that of recent graduates from general education who are not in further education or training. Although IVET generally leads to better employment outcomes across most EU Member States, the extent of this advantage varies, with a few countries showing a negative difference.

Adults with medium-level vocational qualifications as their highest educational degree also have a favourable employment rate (78.2% in 2023), compared to those with medium-level general qualifications or low educational attainment (64.4% and 58.3% respectively). This already exceeds the overall 2023 average employment rate for 20- to 64-year-olds (75.3%) and the 2030 target for the overall employment rate of 20- to 64-year-olds, regardless of educational attainment

([5]) Serafini, S., & Soares Marques, M. (2025). *What is new in IVET? Key pointers from statistics.* Cedefop data insights.

([6]) see footnote 5.

(78%). Despite these positive outcomes, the public image of upper secondary IVET remains less favourable compared to general education at the same level ([7]).

Challenges in achieving adult learning participation targets

While participation rates in the past four weeks showed more favourable progress between 2021 and 2023, new indicators and targets for the post-2020 period present a complex picture. Based on the EU Labour Force Survey (LFS), the 2022 participation rate in adult learning (in the previous 12 months) was around 25%, significantly below the 2025 and 2030 targets. However, the 2022 Adult Education Survey (AES) indicates a considerably higher participation rate of 39.5% when excluding guided on-the-job training, and 46.6% when including it, the latter being close to the 2025 target ([8]).

Although current measurement methods present some ambiguities that need clarification, it is evident is that despite the increase observed in the AES data (excluding guided on-the-job training) since 2016, current trends suggest that the EU will likely fall short of its 2025 and 2030 targets. Similar challenges are expected in increasing participation among low-qualified and unemployed adults.

Participation in adult education and training remains predominantly non-formal, job-related, and employer-sponsored ([9]). Employer-sponsored job-related non-formal training is estimated to account for around 80% of total adult learning participation. Data on employer-sponsored training from the 2020 Continuing Vocational Training Survey (CVTS) suggest resilience to the COVID-19 pandemic but do not indicate an expansion of CVT activities. However, other forms of employer-sponsored CVT – besides formal courses – are now more common, including guided on-the-job training and self-directed learning. Online learning is also becoming increasingly frequent among adults.

Inequalities and barriers persist in the participation of adults in learning

Significant inequalities in adult learning participation exist across a wide range of factors, including age, educational attainment, employment status, vocational orientation, occupation, sector, enterprise size, and degree of urbanisation.

Both employer and individuals face obstacles that hinder greater participation in adult learning. Based on CVTS data, when employers identify skill gaps in their

([7]) see footnote 5.

([8]) Bainbridge, S., & Serafini, M. (2024). *Measuring participation in adult learning: new targets, methods and data.* Cedefop data insights.

([9]) Cedefop. (2025.). Statistics: key indicators on VET. [Online tool];
Cedefop. (2015). *Job-related adult learning and continuing vocational training in Europe: a statistical picture*. Cedefop research paper, 48. Publications Office of the European Union.

workforce, they often prefer recruiting new staff or relying on apprenticeships rather than sponsoring continuing vocational training. Employers report several obstacles to training, the most frequent being high workload, lack of time for staff, and the costs of CVT courses. From the individual perspective, AES data show that the most common reasons for not participating in desired adult education and training are schedule conflicts, family responsibilities, and costs.

In this context, guidance for adult learning plays an important role. Approximately one-fifth of adults in the EU received guidance for adult learning in the year before the 2022 AES survey, with considerable variation across countries and socioeconomic groups. Preliminary analysis suggests that participation rates in adult learning are significantly higher among those who received guidance. These data confirm findings from the Cedefop 2019 survey on adult learning and CVET, which showed that a large majority of adults in the EU agreed that more information and guidance would encourage participation in work-related training.

Employers prioritise technical and job-specific skills

When asked about the most important skills for their enterprises' future development, employers largely highlight technical, practical, and job-specific skills. These are the skills most frequently identified by enterprises (43.2%, according to the 2020 CVST data).

General and transversal skills such as teamwork (41.9%) and customer handling (36.5%) are also considered important. Less frequently mentioned, though still significant, are problem-solving skills (25.2%), management skills (23.1%) and IT skills, either general (21.5%) or professional (13%). Office administration and foreign languages skills are much less frequently cited, ranging between 8% and 10%. It is also worth noting that a significant portion of training focuses on obligatory courses, such as health and safety at work (26.3% of total training hours in CVT courses).

The low priority businesses give to oral and written communication, alongside numeracy and literacy skills, when deciding on training provision confirms the need to strengthen the role of public policies to develop key competences. In contrast, addressing the importance, variety, and rapid changes in technical, practical, and job-specific skill requirements poses a challenge for both initial and continuing education and training systems. While making IVET more responsive remains important, these challenges can only be fully addressed through more flexible work-based and on-the-job learning elements.

2.2. On the way to Herning

Building on the momentum of the 2020 Council Recommendation on VET and the Osnabrück Declaration ([10]), Cedefop's ongoing monitoring of the Copenhagen Process across the EU-27+ [11] reveals tangible progress in realising the European priorities for VET. Cedefop's analysis shows that, since 2020, leveraging prior reforms and new measures outlined in the national implementation plans on VET (NIPs), countries have made significant advancements ([12]), notably in aligning VET with labour market demands, tailoring individual learning pathways, and expanding lifelong learning opportunities.

Key positive trends include ([13]):

(a) *Curriculum reforms and modernisation*. Many countries have updated their VET standards and curricula and introduced new VET programmes incorporating emerging technologies and green and digital skills. Some countries are moving away from narrow, task-specific curricula and programmes, reflecting the need for wider skillsets in the labour market.

(b) *Skills intelligence*. Some countries have started developing national systems of skills intelligence, which, in the future, will inform, among others, the modernisation of VET curricula and standards.

(c) *Expanding work-based learning*. Strengthening apprenticeships, other work-based learning models, and workplace learning is seen as crucial for bridging education and employment.

(d) *Establishing flexible and modular learning*. More countries are now implementing microcredentials, modular training programmes, and recognition of prior learning to enhance learning flexibility and attractiveness from a lifelong learning perspective. Countries are offering learners the possibility to vary the duration and workload in line with their abilities and needs or to increase choice by offering electives (i.e. elective units/modules or subjects).

(e) *Investing in VET infrastructure and promoting benefits of VET*. Governments have been modernising VET facilities to ensure access to he most up-to-date infrastructure, promoting VET careers through success stories, and career

([10]) Cedefop. (2024). *Moving towards common policy goals and aligned progress reporting*. Publications Office of the European Union.

([11]) EU Member States, plus Norway and Iceland.

([12]) Cedefop. (2024). *Vocational education and training policy briefs 2023: National policy developments in vocational education and training*. Cedefop country specific reports.

([13]) Cedefop, & ReferNet. (2025). *Timeline of VET policies in Europe*. [Online tool].

fairs, and encouraging participation in national and international skills competitions.

(f) *Strengthening partnerships among VET stakeholders*. National, regional and local governments, social partners, VET providers, and experts are increasingly involved in shaping and implementing VET policies.

(g) *Supporting lifelong learning*. Almost all EU-27+ countries continue to provide financial and non-financial support for participation in CVET, reskilling and upskilling. They are also developing short-term training programmes for various learner groups, including low-skilled individuals, migrants, early leavers, and the unemployed.

(h) *Making VET an attractive option for all learners*. To make VET an attractive path for all learners, countries have worked on expanding VET to higher levels, supporting teacher and trainer professional development, improving infrastructure, adopting digital solutions, and developing their lifelong guidance systems. In addition, countries are promoting internationalisation of VET and mobility opportunities for learners and teachers.

Prior policy efforts had already enhanced the transparency and portability of skills and qualifications ([14]). Over recent decades, increasing attention has been given to the importance of bridging different types of learning, whether within formal, non-formal, or informal contexts. Greater value is being placed on learning outside formal systems, with growing recognition of its role in building skills and supporting progression. These improvements build on the progress made in developing or strengthening qualification frameworks ([15]), establishing credit systems to support the accumulation and transfer of learning, enhancing quality assurance, encouraging the validation of non-formal and informal learning, and improving the recognition of qualifications across Member States.

Despite the progress made, the findings show that challenges remain. Countries need more time to implement the ambitious policy agendas set out in their national implementation plans. Even with differences in national circumstances, some common challenges have persisted, highlighting the areas where further policy effort is needed.

Boosting CVET and turning lifelong learning into reality for all

CVET and lifelong learning have been the focus of many measures outlined in the NIPs, which typically include training initiatives targeting specific groups, mostly

([14]) Cedefop. (2024). *Transparency and transferability of learning outcomes: a 20-year journey: Analysis of developments at European and national level.* Cedefop research paper. Publications Office of the European Union.

([15]) Cedefop. (2023). *National qualifications frameworks (NQF).* [Online tool].

low-skilled and unemployed individuals. While the digital availability of these resources is increasing, concerns remain about their relevance and quality. In addition, participation numbers in such programmes remain low, requiring further efforts to expand and promote them. It is also important to monitor and ensure access to these programmes for all groups of learners.

The provision of training programmes will benefit from being combined with relevant support, such as lifelong guidance services, validation and recognition of prior learning, and incentives. Given the variety of CVET providers and different forms of learning, countries need to consolidate their quality assurance systems and frameworks for CVET to reduce fragmentation.

Strengthening stakeholder involvement in implementing VET policies

To address persistent coordination failures, many countries have enhanced stakeholder involvement by adapting governance structures, clarifying roles and responsibilities, and establishing feedback mechanisms within national expert teams, working groups, and sector skills councils. This often involves social dialogue and tripartite governance, including public institutions, employer organisations, and employee organisations. However, there is a need to strengthen the representation of teachers and students, as well as the role of stakeholders at regional and local levels.

Attracting and maintaining competent teachers and trainers

Ensuring systematic opportunities for the professional development of teachers and trainers remains a key focus of national policies in most countries. Implementing constantly updated VET curricula and programmes, particularly in response to the digital and green transitions, and working effectively with learners from vulnerable groups requires competent and well-equipped educators. These professionals face growing demands on their skills, an increasing workload, and being asked to perform multiple roles – such as managing dual programmes or providing career guidance – often against a backdrop of unattractive pay and working conditions.

While many countries are experiencing teacher and trainer shortages, only a few have planned actions to develop career pathways or incentives to attract individuals to VET teaching and training, including from the private sector, or to cultivate a new generation of educators. Countries would benefit from strengthening efforts to attract individuals to the profession and leveraging the potential of digitalisation to support teachers and trainers in their professional development.

Embracing the green transition in VET

Measures related to the green transition are particularly relevant for making VET agile, excellent and attractive. The move towards embracing the green transition in VET has become more visible since 2020, but integrating the relevant skills into VET curricula and programmes and making VET providers green and sustainable remains challenging. There is a gap between policy discourse and implementation, and many measures are still being developed. Countries need to intensify efforts to understand better the skills associated with the green transition and the sectors it affects, review their VET qualifications, occupational standards and programmes, and prepare their teachers and trainers accordingly.

Sustaining reform effort in the context of political change and funding availability

Despite unprecedented availability of EU funding for VET reforms, countries still face resource and financial constraints. Many rely on EU financial mechanisms, such as the Recovery and Resilience Facility, Erasmus+, and the ESF+, and the Instrument for Pre-accession Assistance (IPA) for CCs. However, delays in funding availability can disrupt implementation, while uncertainty hinders policy planning. In addition, as VET modernisation projects conclude – such as those supporting centres of excellence or apprenticeships – regular operational costs must shift to national budgets and employers to ensure continuity and sustainability of the results achieved.

In this context, limited capacity for monitoring and evaluating fund usage remains a challenge. Assessing the impact of completed projects and integrating findings into VET systems often requires policy decisions or legislative provisions, which can be slow but essential. Shifts in policy priorities resulting from political changes can also affect measure and project implementation, as new governments may postpone or halt policy developments, delaying reform. Changes or restructuring in public administration can also result in unclear responsibility allocation among ministries and agencies. It is essential for countries' commitments to be clearly communicated and upheld by all stakeholders.

To align VET better with current and future needs, and raise its attractiveness, countries must strengthen the coordination of their policy frameworks and their resource allocation mechanisms.

CHAPTER 3. Navigating the evolving landscape

Getting Europe's VET-S systems ready for the increasing speed of change and the new strategic landscape so that they enable the radical upscaling of learning, training and skilling is a daunting task. This is particularly true given the lack of systematic approaches to adult skills development in a future world of work where the currency of someone's skills matters more than qualifications, and where continuous learning is an integral part of work and a driver of productivity, employability and career progression.

3.1. An EU skills intelligence infrastructure

Skill shortages are commonly understood as the difficulty employers face in filling vacancies due to a lack of people with the right qualifications, skills or experience. Cedefop surveys and analysis show that skill shortages, strictly speaking, are only a subset of overall recruitment bottlenecks. The skills challenges Europe faces are multidimensional, complex, and constantly evolving. They go far beyond the headline figures highlighting labour and skill shortages, which are currently in the spotlight.

Unpacking Europe's skills challenges and developing targeted policy responses are hindered by several misconceptions.

Setting recruitment difficulties equal to labour or skills shortages.
Not all shortages measured via employer surveys or job vacancy statistics are linked to supply-related causes, such as a general shortage of labour supply or ineffective education and training systems, particularly in providing individuals with labour market-relevant skills. Many shortages are also linked to demand-related causes. This may happen when certain occupations, the education programmes leading to them, or wage and working conditions are not considered attractive; or when companies' recruitment processes, or job matching processes more generally, do not work properly. Understanding exactly what is 'in shortage' – people, skills, attractiveness, quality working conditions – is vital for addressing it.

One-dimensional conceptualisations of skills levels
No single type of skill needs analysis can provide satisfactory answers. Distinguishing between low-, medium- and high-skilled jobs or people may help present macro-patterns or trends over time, but it is of little use when addressing

skills imbalances at the individual (micro) or sectoral (meso) level. Occupational categories or highest achieved education may serve as proxies for skills levels or mismatches, but they do not map people's skills profiles and skills imbalances in detail. Skills analysis and anticipation not only need further development to become more granular and fit for different purposes, but also require effective use by a range of actors. This involves making such information and intelligence more relevant and accessible.

Undervaluing the contribution of adult learning

Despite its ageing population and shrinking youth cohorts, Europe's policy still prioritises initial education and skills for young people over adult education and training. Cedefop's European Skills Index shows that Europe has made the most progress in people's labour market *activation* and skills *matching*. However, progress in skills *development* has been limited, with only modest improvements in basic education and in education and training for adults. The significant potential learning demand of many adults does not translate into access to, or participation in, training opportunities because of a lack of information, time, financial constraints or simply because employers do not consider learning and training for an ageing workforce a worthwhile investment.

Short-sighted approaches to labour and skills imbalances

Understanding which occupations, qualifications or skills profiles are in shortage or surplus today is of little use for proactive skills governance and effective management of skills formation systems. In rapidly changing economies driven by expanding technology and evolving societal realities, today's surpluses could become medium-term shortages. Similarly, current shortages might become irrelevant in the near future due to technology-powered job carving, which enables greater output with fewer workers. For this reason, the intelligence required must encompass a broad range of approaches, perspectives and time horizons.

The way forward for skills intelligence in Europe

Understanding labour market and skill trends in countries, regions, sectors and occupations is key to identifying skills challenges and shaping a just and inclusive future of work. Skills intelligence must comprehensively cover labour and skills demand and supply aspects, go beyond broad characterisations of skills levels, and consider the short, medium, and longer term ([16]). Cedefop's second generation of skills intelligence incorporates these ideas and has become a major contributor to understanding and projecting how the worlds of work and learning

([16]) Cedefop. (2025). Skills intelligence. [Online tool].

are changing ([17]). Over the years, Cedefop has added new tools to its skills intelligence portfolio. Methods such as big data-powered analysis ([18]), skills foresight, and short-term skills anticipation ([19]) now complement other representative, statistical or survey-based ([20]) ([21]) approaches to contextualising labour market dynamics. These methods have gained traction because they add unique value added in a context where change is accelerating and the future is less certain.

Nevertheless, there is ample room for further development and innovation in skills intelligence and, importantly, for doing more to address user needs. It is crucial to accelerate the development of reliable, fit-for-purpose and stakeholder-focused skills intelligence in the Member States to make VET-S systems more responsive and effective. Countries where skills anticipation has recently started to develop can learn from those with a long-standing skills intelligence tradition. Cedefop's next-generation skills intelligence can serve as a building block of an EU skills intelligence infrastructure, supporting systems and approaches at national, regional and sectoral levels. This can be developed around four main pillars.

(a) EU skills intelligence blueprint: to guide countries and regions in building their own skills intelligence and governance systems. As a minimum, the blueprint should include common standards for collecting information, guidance on how best to develop evidence and intelligence, and an overview of governance and stakeholder engagement principles and practices that have proven effective.

(b) Shared data infrastructure, methodologies, and data collection tools at European level: to provide countries and regions with data and tools where economies of scale and scope can be leveraged. Expanding Cedefop's online job advertisements data collection (SkillsOVATE), the European Skills and Jobs Survey, and other Cedefop skills intelligence tools are good examples.

(c) Support and coordination mechanisms: to help countries and regions develop skills intelligence, encourage the use of the EU skills intelligence blueprint,

([17]) Cedefop. (2024). *Next generation skills intelligence for more learning and better matching: Skills anticipation trends, opportunities and challenges in EU Member States*. Cedefop policy brief. Publications Office of the European Union.

([18]) Cedefop. (2025). *Skills OVATE.* [Online tool].

([19]) Cedefop. (2025). *STAS: Europe's new tool for short-term anticipation of skill trends and VET demand.* Cedefop virtual get-together, 26 February 2025.

([20]) Cedefop. (2014-). European skills and jobs survey. [Online tool].

([21]) Cedefop. (2025). Skills empower workers in the AI revolution: first findings from Cedefop's AI skills survey. Cedefop policy brief. Publications Office of the European Union.

and foster coordination and partnerships among key national, regional and sectoral VET-S ecosystems.

(d) Thematic skills focus: to give countries and regions EU-wide analysis on emerging skill trends of general interest (green, digital, ageing, talent attraction, etc.) and provide guidance on how such trends may inform policy design and implementation.

3.2. Reimagining adult skills development

Today's labour markets are marked by significant uncertainty regarding career trajectories. Not only do young people in education and training face the challenge of preparing for a labour market in constant transformation, but many adults also struggle to align their skills with rapidly evolving demands. Adults' participation in learning depends on their learning autonomy, access to information, the quality of learning opportunities, and exposure to learning at work ([22]).

For many individuals, continuing to learn throughout life (*lifelong*) and across multiple contexts (*life-wide*) remains neither a tangible opportunity nor an explicit objective. A key factor is the foundational role of the schooling system, which shapes attitudes toward learning and the capacity to continue learning beyond formal education ([23]). When the education system fails to nurture positive attitudes towards learning, it undermines people's ability to engage in lifelong learning and limits their opportunities for personal and professional growth. The availability and effectiveness of services that holistically and seamlessly empower individuals to pursue learning, alongside employers' engagement and support for learning, are further decisive factors in shaping adults' learning and career trajectories.

The system's blind spot

Policy responses often take a categorical approach, focusing on target groups such as low-skilled or the unemployed, which frequently fails to reflect the complexity of individuals' realities ([24]). Support services are usually designed within an

([22]) Cedefop (2020). *Empowering adults through upskilling and reskilling pathways. Volume 1: Adult population with potential for upskilling and reskilling*. Cedefop reference series, 112. Publications Office of the European Union.
Cedefop (2021). *Workplace learning: determinants and consequences: insights from the 2019 European company survey*. Cedefop working paper, 7. Publications Office of the European Union.

([23]) Cedefop (2023)**.** *Skills in transition: the way to 2035.* Publications Office of the European Union.

([24]) see footnote 23.

institutional framework that prioritises administrative structures and procedural compliance over the diverse needs and experiences of individuals. Consequently, access to learning for adults become fragmented, uncoordinated, inflexible, and ultimately unattractive and difficult to navigate ([25]).

Further, the *life-wide* dimension of learning – encompassing non-formal and informal learning across workplace, family, community, and digital environments – remains largely absent. Learning is narrowly understood through an institutional lens, with a predominant focus on structured, institutionally provided training. Experiential learning – whether acquired at and through work, or through self-directed engagement with digital platforms – is neither sufficiently promoted nor adequately valued or utilised.

The traditional model of continuing vocational education and training (CVET) – based primarily on structured, institutional programmes and periodic participation – is no longer sufficient in a world shaped by fast-paced technological disruption and evolving work environments ([26]). It is time to move beyond conventional approaches and actively re-examine what constitutes lifelong learning today, finding new and innovative ways to truly integrate it into the evolving reality of our societies.

The evolving nature of skills development

Skills development is now a multidimensional phenomenon, taking place across varied settings and with varying levels of formality. In particular, the emergence of digital learning ecosystems offers powerful alternatives to conventional training formats, enabling more flexible, self-directed, and experiential learning. Generative AI-driven platforms, social media networks, and other digital tools are reshaping how individuals acquire knowledge and skills, often outside institutional boundaries. Experiential learning, peer-based knowledge exchange, project-based and technology-mediated learning must be acknowledged and integrated into modern strategies and practices for adult skills development. Recognising the value of these diverse learning pathways is key to building resilient, future-ready workforces.

Importantly, the divide between learning and working is increasingly dissolving. Learning at and through work is no longer optional. It has become

([25]) Cedefop (2020). *Empowering adults through upskilling and reskilling pathways. Volume 1: Adult population with potential for upskilling and reskilling*. Cedefop reference series, 112. Publications Office of the European Union.

([26]) Cedefop. (2025). *Towards organisations as learning workplaces: moving beyond certified, institutionalised continuing vocational education and training*. Cedefop policy brief. Publications Office of the European Union.

essential for maintaining business competitiveness and fostering organisational adaptability. Nevertheless, many enterprises struggle to cultivate environments that utilise and enhance skills of their workforce effectively ([27]). Training initiatives often lack strategic vision, driven more by immediate operational needs than long-term goals. While individuals must be empowered to define their own skill and career development journeys, workplaces must simultaneously embrace their role as active enablers of skills development. They must foster cultures of learning, facilitate access to diverse learning opportunities, and provide environments where continuous learning is embedded in daily practice.

The enabling role of public policy

The necessary evolution of adult skills development towards a dynamic, continuous, and contextual process for all individuals requires a fundamental shift in how these capabilities are fostered. From an economic perspective, the capacity for continuous learning and adaptable skills across the workforce exhibits characteristics similar to 'merit goods'. While applying skills is individual, the broader benefits of a highly skilled and adaptable population spread widely. This means that individual firms investing heavily in creating supportive learning environments may struggle to recoup their investment fully. As a result, rational firms may underinvest in learning, leading to a level of overall skills development that is sub-optimally low for society as a whole.

Moreover, economically useful skills are often contextual and costly to acquire. Firms face genuine uncertainty about future skill needs are constrained in their ability to address this. This is especially true for micro and small enterprises, which often lack the capacity to create robust internal learning systems or navigate this uncertainty on their own.

This combination of factors highlights the need for public policy to play a central role. Policymakers must find innovative ways to support this evolution by creating enabling frameworks for all individuals at every stage. A primary focus on micro and small enterprises is essential. Public policy should aim to achieve a more socially optimal allocation of resources towards lifelong learning and adaptation than the market would deliver alone.

([27]) Cedefop, Eurofound, Houten, G. v., & Russo, G. (2020). *European company survey 2019: Workplace practices unlocking employee potential.* Publications Office of the European Union.

3.3. Making individuals' learning outcomes visible and valued

The ease with which individuals' skills, qualifications, and learning outcomes are understood and recognised across borders is crucial to fully realising the free movement of citizens and workers across the EU. Nevertheless, strengthening the portability of learning outcomes (or skills) within countries and across sectors remains a challenge for many European countries.

In today's labour market, individuals face frequent and complex transitions, further complicated by the increased flexibility resulting from the expansion and diversification of education and training routes. This dual complexity makes it even more challenging for individuals to make informed decisions about their learning and career paths. They often bear the consequences of a lack of trust, cooperation, and coordination between institutions that fail to recognise each other's outcomes, with institutional priorities overshadowing individual learning acquired outside formal settings. The rise of flexible learning and 'skills-first' approaches had created an even more complex landscape of qualifications and credentials, which is difficult to implement and scale up without robust quality assurance systems.

Despite long-standing efforts to improve transparency and recognition, practical barriers still prevent individuals from making their learning outcomes visible and valued when they move between countries, sectors, or education and training institutions ([28]). The good news is that the shift towards learning outcomes-based qualifications frameworks, such as the European qualifications framework (EQF) and national qualifications frameworks (NQFs), offers a pathway to greater cohesion ([29]). The ongoing evolution, driven by lifelong learning initiatives, the rise of learning outcomes-based qualifications, microcredentials, and NQFs, provides a solid foundation for creating seamless learning systems. These systems, centred on the individual and based on shared principles, would enable the portability of learning outcomes and unlock Europe's full potential.

To achieve this, a seamless portability and recognition infrastructure must be established. This infrastructure should operate across all boundaries, encompassing formal, non-formal, and informal settings, different countries, educational institutions, and various education and training subsystems from a lifelong perspective. The following five pillars are essential for achieving this goal.

([28]) Cedefop. (2025, forthcoming). *Lifelong learning in 2000 and in 2020: what has changed for the individual?* Cedefop research paper. Publications Office of the European Union.

([29]) Cedefop. (2024). *Building a European qualifications map: development of national qualifications frameworks (NQFs) across Europe*. Publications Office of the European Union.

The foundational role of learning outcomes

Learning outcomes remain the backbone for building understanding, transparency and portability. They provide a common language for comparison and recognition across different contexts. By systematically incorporating learning outcomes into assessment frameworks, standards, qualifications, and other types of certification, it becomes feasible to introduce descriptions that support the comparison and transfer of qualifications and credentials within and across sectors and countries ([30]). Learning outcomes facilitate dialogue between education and training institutions and external stakeholders about skill needs and the appropriate responses to them ([31]). This common understanding ensures consistency and clarity in recognition efforts, paving the way for transparent learning and employment pathways.

A dynamic and stackable learning approach

To achieve this, European and national transparency strategies must move beyond silos and adopt a dynamic learning outcomes approach. This approach would capture learning outcomes in different settings, creating a foundation for individuals to accumulate and 'stack' learning across various contexts and throughout their lifetime. Learning would be assessed using innovative, tailored methods that ensure validity and reliability, supported by a transparent and clear quality assurance mechanism.

Learning experiences would be recorded in the form of units, modules, credits, microcredentials, or other forms of certification that individuals can accumulate or compile into partial or full qualifications. Each of these certifications has inherent value, enabling individuals to present a comprehensive picture of their learning experiences. They can also be used independently to access further learning opportunities, employment, or career advancement, ultimately complementing traditional certificates, degrees, and diplomas ([32]).

A digital infrastructure for cross-border and cross-sectoral recognition

Building on Europass and other successful EU initiatives, a comprehensive digital credential infrastructure would enable seamless cross-border and cross-sectoral recognition of learning outcomes. It would use existing EU transparency tools to

([30]) Cedefop. (2024). *Learning outcomes going global: a multifaceted phenomenon*. Publications Office of the European Union.

([31]) Cedefop. (2022). *Defining, writing and applying learning outcomes: a European handbook - second edition*. Publications Office of the European Union.

([32]) Cedefop. (2023). *Microcredentials for labour market education and training: microcredentials and evolving qualifications systems*. Cedefop research paper, 89. Publications Office of the European Union.

establish interoperability standards and ensure the quality and trust of qualifications and credentials obtained in different countries and in different education and training subsystems. Information platforms designed to issue and verify digital credentials would give employers, recruiters, and education and training providers the tools to interpret and assess applicants' qualifications and credentials better.

To ensure consistency and comparability, this infrastructure should be grounded in a shared European methodology (or guidelines), providing a common framework for comparing and recognising learning outcomes across diverse contexts and purposes. Tools should be developed to document, assess and recognise learning outcomes ensuring their quality and relevance. The use of common formats and controlled vocabularies for learning outcomes and skills can standardise descriptions, enabling the effective use of AI, large language models, and new technologies to support recognition processes. To enhance interoperability, comprehensive NQFs and qualifications or credentials registers (databases) would document all types of qualification in a clear and comparable manner across systems and borders ([33]).

Ensuring trust through coordinated quality assurance

Developing well-coordinated quality assurance standards and processes is crucial to ensuring transparency and trust in learning outcomes, whether obtained from formal education and training systems or emerging providers outside of these systems. To achieve this, Member States can develop and adapt their quality assurance mechanisms for learning outcomes issued by different types of providers, leveraging existing mechanisms wherever possible. This can be supported by encouraging providers to publish catalogues of non-formal qualifications and microcredentials, including their policies on recognising microcredentials issued by other providers. By doing so, individuals, employers, and trade unions can make informed decisions about the relevance and value of learning outcomes achieved.

([33]) Cedefop. (2024). *Building a European qualifications map: development of national qualifications frameworks (NQFs) across Europe*. Publications Office of the European Union.

CHAPTER 4. Beyond the horizon: five (wishful thinking) points of focus for policy development

Drawing on an exploration of the future and aspirational goals for VET-S policies, this section identifies some elements of the structural transformation needed. Recognising the inherent ambition and potential difficulty in realising such systemic change, several distinct yet interconnected areas for policy development are presented as crucial points of focus.

4.1. Empowering autonomous and proactive skills development (accessibility)

Ensuring accessibility to learning, at its core, is about building autonomy and removing barriers. Throughout life's critical transitions – whether moving from education to work, changing careers, or navigating personal change – individuals should have access to learning opportunities that gradually strengthen their ability to navigate their career journey.

In tomorrow's adult skills development landscape, access would be universal. Everyone, regardless of background, age, or circumstances would benefit from tailored support that progressively enhances their learning autonomy, not just skill acquisition. Well-designed accessibility measures would establish the essential groundwork for developing learners' self-efficacy, including clear information about skill needs in jobs, available pathways, flexible learning approaches, and constructive feedback mechanisms. To make accessibility genuinely meaningful, particularly for individuals in vulnerable situations, accessibility would not depend solely on individual capacity or motivation. Instead, it would be actively enabled through an ecosystem approach centred on the individual's life circumstances.

Within such a human-centred ecosystem, service providers across education, employment, and social sectors would work collaboratively across institutional boundaries. A 'no wrong door' principle would become central: regardless of where an individual first seeks assistance – be it a job centre, school, local authority, or community organisation – they would receive coordinated, holistic support tailored to their needs. Administrative and funding mechanisms would operate seamlessly in the background, eliminating bureaucratic barriers, redundant procedures, and rigid eligibility requirements. This integration would be crucial to ensure that even

highly motivated learners are not deterred by fragmented or overly complex systems.

Ultimately, this transformation would redefine institutional roles to develop learner autonomy. It would also involve the initial education and training system. Cooperation and mutual understanding between different education and training systems would support smoother access to learning opportunities and qualifications. This would enable the meaningful combination of learning acquired in different contexts. In a manner comparable to what is already seen in general and higher education, VET-S systems would also be characterised by easy access and clear learning pathways up to higher levels. Learners would not face dead ends or limited progression opportunities. This would be facilitated by strong dialogue between all the stakeholders and greater coordination across education and training sectors.

4.2. Fostering engagement and diversity (inclusion)

In many European countries, VET-S policies emphasise a growing need for specialised skills at the highest possible levels of performance. At the same time, institutional VET-S provision is also seen as a tool to include and integrate learners at risk of exclusion. This requires addressing a mixed group of individuals with diverse needs and motivations. Inclusive VET-S of the future would therefore place greater emphasis on transversal skills and key competences. It would use diversity-sensitive pedagogy and teaching methods that do not focus on single dimensions, such as migration background, but instead considers how different aspects of diversity overlap and interact.

The use of learning outcomes would also support inclusive VET-S provision. The flexible nature of learning outcomes allows programmes to meet the needs of students with special educational needs, while also engaging adults and non-traditional learner groups, breaking through gender patterns, and, in general, responding to diverse learner needs. This would be achieved through the modularisation of programmes, validation of non-formal and informal learning, recognition of prior learning, development of culturally inclusive curricula and personalised learning plans.

Inclusive VET-S would not rely solely on passive support measures. Many individuals, particularly those experiencing multiple and intersecting vulnerabilities, do not actively seek learning opportunities, often due to structural, psychological, or experiential barriers. To address this, existing barriers would be reduced through outreach and awareness campaigns in underrepresented communities, as well as recognition of prior learning and alternative entry pathways. More broadly,

inclusive VET-S would entail a shift toward proactive, person-centred outreach, with a stronger focus on collective action mobilised at the local level, where actors are best placed to understand and respond to individual needs.

To strengthen such outreach, advanced digital technologies – including AI-driven matching systems and data analytics – would act as powerful enablers. These tools would help identify individuals who are often invisible to conventional support mechanisms: those disengaged from public services, facing long-term unemployment, or at risk of structural exclusion. By detecting early indicators of vulnerability, such as low educational attainment, long-term unemployment, skill mismatches, digital exclusion, or geographic isolation, they would enable timely, targeted, and personalised interventions.

Communities are uniquely positioned to act as effective governance spaces for implementing inclusive support and learning strategies. In the VET-S of the future, community-based learning ecosystems would involve all relevant actors – employers, trade unions, civil society organisations, public authorities, and service providers – each sharing responsibility for identifying and engaging vulnerable individuals, removing peripheral barriers (e.g. transport, care duties, digital access), and providing tailored guidance and support into meaningful learning pathways.

4.3. Ensuring quality across diverse qualifications and credentials (quality)

As new modes of training delivery, certification, and training providers emerge, quality assurance mechanisms become increasingly essential for ensuring quality and building trust in qualifications and credentials acquired in diverse settings.

In the VET-S systems of tomorrow, the shift towards learning outcomes and the full implementation of comprehensive qualifications frameworks across the EU will lead to quality assurance arrangements that focus more on outcome-based approaches, complementing traditional input- and process-oriented approaches ([34]). To achieve this, quality assurance systems will systematically monitor and improve how learning outcomes are used at several levels, from designing qualifications and curricula to certifying learning against agreed quality standards. As a result, qualifications and credentials will be able to reflect the actual skills and competences acquired by learners, regardless of their learning pathway.

([34]) Cedefop. (2015). *Ensuring the quality of certification in vocational education and training*. Cedefop research paper, 51. Publications Office of the European Union.

Raising trust in qualifications and credentials will be a key aim of quality assurance systems. Assessment will play a crucial role in this, particularly for alternative pathways such as work-based learning. Digital technologies and the deployment of AI will be used to design assessment models that are robust, trustworthy, scalable, and cost-effective.

Building trust will also require the active engagement of different actors in designing and implementing the overall quality assurance framework. Future quality assurance systems will encourage shared responsibility and collaboration among labour market stakeholders by developing targeted measures to motivate employers, trade union representatives, and other professional experts to contribute to the certification process and quality assurance arrangements. This will improve the formulation of qualification requirements, ensure valuable feedback on the candidates' achieved learning outcomes, contribute to the continuous improvement of teaching and learning processes, and ultimately increase trust in qualifications and credentials.

Finally, trusting awarding bodies and VET providers will also be pivotal. Future quality assurance arrangements will facilitate collaboration with private and non-formal providers in a structured and coordinated way. A robust EU regulatory framework will be established to assess and recognise their credentials based on specific and commonly agreed quality standards. This framework will simplify and standardise the certification of learning outcomes, and increase the transparency and portability of qualifications and credentials across the EU. A key component will be a dedicated EU register of accredited training providers and programmes, overseen by a dedicated governance structure. Such a network, including all Member States, will provide a platform for coordination, consistency, and coherence for quality assurance agencies, trusted accrediting bodies, and training providers across the EU.

4.4. Supporting lifelong and life-wide skills development (innovation)

Tomorrow’s VET-S would represent a fundamental shift from the traditional notion of CVET – characterised by periodic upskilling in institutional settings – towards a more dynamic and responsive paradigm of continuous skills development for all adults. Skills development would become a seamless, ongoing process extending across both the life course (*lifelong*) and the diverse contexts in which adults live and work (*life-wide*).

From this perspective, innovation is not only about what is taught, but where, when and how learning is delivered. In the future VET-S, skills development would

no longer be predominantly confined to classrooms or formal training centres. It would increasingly take place through project-based and experiential learning at work, peer-based knowledge exchange, community engagement, and technology-mediated environments such as digital platforms and social learning networks. These varied forms of learning reflect the lived realities of adults and must be acknowledged, supported, and integrated into modern skills development strategies.

To remain innovative and impactful, VET-S would promote excellence by prioritising digital integration and strong partnerships between education providers and industry. Blended learning approaches that combine in-person training with online modules would become the norm. Virtual simulations, augmented reality, and interactive e-learning tools, which enhance practical skills development, would make vocational training more immersive. Stackable modules and microcredentials tailored to industry needs would be valuable tools for adult learners seeking to reskill in new fields. Co-designed curricula, apprenticeships, and work-integrated learning opportunities would not only enhance job readiness but also keep programmes agile and relevant.

For this transformation to succeed, skills frameworks would effectively integrate emerging workplace and digital learning contexts with traditional certified provision while maintaining quality standards and ensuring recognition of learning outcomes. This would foster conditions where learning – wherever and however it occurs – can be recognised, validated, and connected to broader goals of personal development, employability, and social inclusion.

Innovative VET-S would also recognise employers as central actors within lifelong learning ecosystems. Supporting a learning culture within the workplace would be a critical goal for future VET-S to ensure that lifelong learning is both accessible and sustainable for the workforce. This would include tailored funding mechanisms, technical support, and local partnerships to make engagement in lifelong learning feasible and beneficial, especially for smaller organisations.

4.5. Moving beyond the academic-vocational divide (attractiveness)

Promoting parity of esteem between vocational and general/academic education has been a long-standing policy goal for EU education and training policy, aiming to increase the attractiveness of formal VET.

Attractiveness is not only a matter of awareness and image. In some countries, a sense of devaluation towards individuals with non-academic backgrounds is also fuelled by a societal lack of appreciation for VET compared to

general/academic education. This perceived low value placed on vocational pathways is not only detrimental to the effectiveness of education and training systems but also tends to undermine the dignity of those pursuing vocationally oriented qualifications.

Future VET-S systems would reduce or eliminate the historical separation between vocational and general/academic routes. Most countries would reform their systems to make vocational and general education formally more equal by developing innovative relationships and integration strategies. This would include cooperation between vocational and academic institutions to develop formal links through common frameworks, credit recognition, and shared curriculum elements, as well as to open and consolidate new pathways between VET and higher education.

The most innovative countries would merge vocational and general education into a single system and ultimately abolish the distinction between vocational and general routes. They would develop a core program of common general subjects, while simultaneously offer a range of educational options that consider the specificities and diverse combinations of general and vocational orientations within the educational and training pathways.

Regardless of structural reforms, the perception of vocational pathways will ultimately remain linked to the professions and societal roles they prepare individuals for. Future VET-S policies would fully acknowledge the significant influence of social media and other AI-powered platforms on the attractiveness of vocationally oriented pathways. Social media platforms will remain crucial channels, particularly for young people to gather information, form opinions, and share experiences regarding education and career options. Consequently, the attractiveness of technical professions and occupations will increasingly depend on how learners perceive and interact with online content. Future VET-S would leverage user-generated content, such as testimonials, skill showcases, and learner narratives on social platforms to shape perceptions of VET.

CHAPTER 5. A time for commitment

The rapid transformation of the EU labour market and the steadily increasing demand for a skilled workforce underscore the critical role of vocational education and training and skills development (VET-S) in equipping citizens to thrive in this evolving landscape. Meeting the evolving challenges, VET-S systems first need to ensure that:

(a) all young people achieve qualifications equivalent to at least upper secondary education as an essential foundation to ensure an adaptable workforce capable of meeting future labour and learning demands;
(b) just as European systems ensure access to higher education from general education pathways, equitable access to further education, adult learning and skills development opportunities is guaranteed for all, regardless of their initial educational pathway;
(c) In this perspective, robust systems of continuing training and skills development for adults are established across all Member States, providing systematic, coordinated, quality-focused, and inclusive support to individuals and organisations in keeping pace with rapid change;
(d) VET-S and skills development systems are informed by robust evidence and data, supported by skills intelligence, and involve cross-government and cross-sectoral coordination.

The strategic objectives outlined thus far represent fundamental and, we trust, broadly shared goals for the evolution of education and training systems. On this foundation, our analysis has identified three specific areas for intervention, focusing on skills intelligence, adult learning, and learning outcomes. In addition, key points of focus for policy innovation have been proposed with reference to five transversal areas for improvement relating to accessibility, inclusion, quality, innovation, and attractiveness. These targeted areas for policy development are crucial in shaping the future of VET-S systems, enabling them to address emerging challenges effectively and leverage new opportunities.

We have also reiterated the particular emphasis that we believe should be placed on ensuring that learning throughout life and across multiple contexts becomes a key objective and a tangible opportunity for all Europeans. This is not an easy task but is crucial for fostering a highly skilled and adaptable workforce, boosting productivity, and ensuring that the benefits of economic growth are shared fairly. Social dialogue plays a crucial role in this. The overarching message is one of continued effort and stronger collaboration between all relevant regional and sectoral stakeholders to encourage individuals, companies and VET provider

involvement in CVET and adult learning, to establish frameworks with incentives for companies to invest in human resources development, to promote flexible training arrangements – including workplace, on the job and online learning – and to foster cooperation between vocational learning and other relevant policy areas. for fostering this stronger collaboration and establishing the necessary frameworks and incentives.

In doing so, it is important not to forget that Europe possesses the highest potential of human resources in its history. It is no coincidence that, alongside the problems of shortages and gaps, the challenges of skills matching remain perhaps the most significant and, at the same time, where public policy has the greatest potential for success. Further, within the skills matching problems, the underutilisation of existing skills represents the most critical component. Effective skill utilisation hinges on a strong employer-employee relationship, shaped by the interaction of worker skills, work environment, and incentives. Cedefop research indicates that a significant and growing portion of the skills challenges facing employers occur within organisations, where the potential of available human resources is not fully valued. This highlights the potential of employment based on high employer expectations that encourage skill leverage for organisational benefit, coupled with strong incentives – including non-monetary incentives such as engaging roles and development opportunities.

From this perspective, there is a crucial need to enhance policy efforts towards the skills demand side, particularly through measures beyond mere financial incentives that can effectively help employers increase their demand for skills and invest in workplace learning and continuing training. This focus on the demand side is crucial for moving the EU economy towards a higher skills equilibrium, where demand and supply are mutually reinforcing. Especially in a context of a shrinking workforce, this inevitably implies putting people’s skills to good use, reducing skills underutilisation and mismatches, and finally creating the conditions for both stronger productivity growth and better working conditions. Further research is therefore needed to inform the design of effective policies in this area, specifically on how to support skills utilisation within organisations, enhance the role of workplaces in upskilling individuals, and, more ambitiously, foster greater workplace ownership of skills policy.

At Cedefop, we are more determined than ever to empower and inform the debate, and to bring forward novel and concrete policies and priorities that can help shape a bold vision for VET-S policies in the EU.