UNTANGLED POLICY BRIEF

FOSTERING LIFELONG LEARNING AS THE MARKET FOR SKILLS EVOLVES

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Key Messages

- European workers increasingly lack the skills that employers need, posing a threat to long-term economic growth as technological developments and the ageing population reshape the supply of and demand for skills
- Developing an ethos of lifelong learning is key, but there is no one-size-fits-all solution
- Policymakers should focus on flexible and inclusive options including Individual Learning Accounts, Training Leave, and grants for on-the-job training
- Social partners have an important role to play in developing and implementing skills policies
- Training should focus not only on the ability to use new technologies, but also on soft skills that are hard to automate

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UNTANGLED

The skills landscape

New technologies and globalisation have reshaped demand for and supply of skills, increasing the need for lifelong learning to ensure human capital is utilised effectively in the EU. With the ageing of European societies, the supply of young graduates will drop in the coming years, contributing to shortages of skilled labour across Europe. Despite employees' willingness to participate in training, high participation costs, extensive workloads, and childcare and family responsibilities limit lifelong learning opportunities. In response to these challenges, The European Year of Skills started in May 2023, aiming to underline the EU's goal of boosting the workforce's quality. Recognising the importance of skills in building resilient economies robust to adverse shocks, the programme aims to provide upskilling and reskilling initiatives, with a goal that by 2030, 60% of adults will have participated in training annually, supporting the aim of a 78% employment rate.

The results of the UNTANGLED project address the ambitions of the European Year of Skills by pointing to critical gaps in educational policies and providing actionable recommendations. Our project studied the labour market impacts of three megatrends: globalisation, technological transformation, and demographic change. The findings of Project UNTANGLED contribute to the adjustment of lifelong learning policies to the changing nature of the labour market. They can help policymakers tailor their offerings to the needs of disadvantaged groups and minimise the barriers hindering participation in training. UNTANGLED can also support social partners' training activities by providing information on the key labour market risks. Proper lifelong learning policies can increase workers' earnings and employability and ease the transition between professions.

Key findings

Heterogeneous educational needs of workers in Europe

The fear of technology replacing people's jobs has dominated the public and media debates, following a similar pattern since the invention of the steam engine. Historically, technology created more new employment opportunities than it destroyed, but accelerating technological development towards automation creates new challenges. At the same time, the EU is the world's fastest-ageing region: between 1995 and 2021, the share of people aged 50-64 increased in most of the EU's 27 member states. Due to this demographic structure, a higher share of the population will retire. At the same time, fewer and fewer workers will enter the labour market, even though the share of the population with higher education is expected to increase. Labour shortages will emerge in some occupations, and reallocating workers to jobs requiring different skills will become a pressing issue. These two trends lie at the centre of structural labour market shifts, driving the heterogeneous educational needs of workers in Europe.

In contradiction to the widespread technological fears, Stehrer's paper showed that new technologies do not have to destroy jobs in Europe. The digitalisation process can even increase employment because of the emerging demand for new skills *(Table 1)*. This contrasts with Acemoglu and Restrepo's findings for the US. Similarly, robotisation can contribute to employment growth by reducing layoffs and increasing job opportunities, especially in Eastern and Southern European countries, as shown by Bachmann et al. These studies demonstrate that the adoption of technology can be an opportunity rather than a threat if human labour and skills are complementary to the functionalities of the technology and their productivity is enhanced. Indeed, Autor et al. showed that reorganisation of tasks is inevitable as most current employees work in professions that emerged only after the 1940s. Despite the tentative optimism suggested by these studies, adjusting educational and employment policies to ensure workers' complementarity to technology remains a challenge.

Table 1. Summary of main findings of the labour market impacts of industrial robots and Information and Communication Technology (ICT)

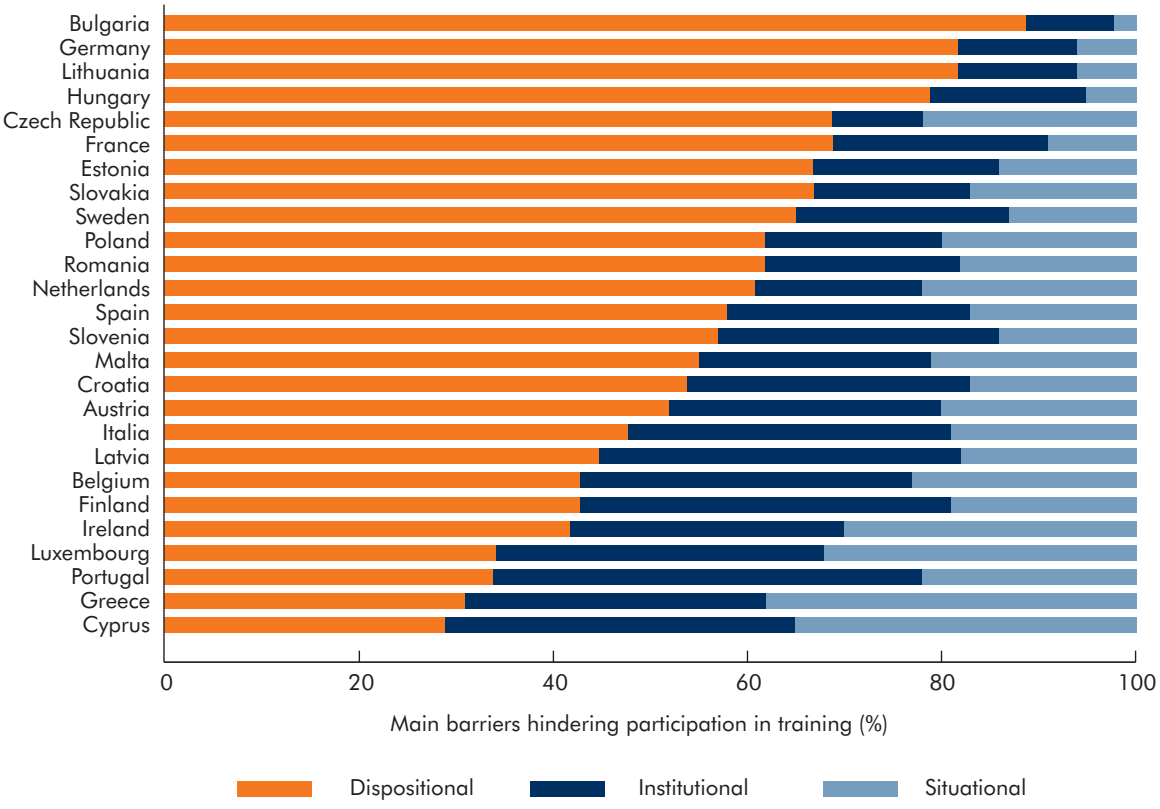
	Automation	ICT
Positive effects	• increased productivity • labour reallocation from industry and services • increased employment	• increased productivity • increased demand for high-skilled workers
Negative effects	• increase in wage polarisation • decrease of labour's share in value added	• increase in wage polarisation • adaptation costs, especially for older employees
Groups at risk	industry workers conducting manual routine tasks	workers conducting routine-cognitive tasks

Source: Own elaboration

Albinowski and Lewandowski showed that higher exposure to ICT technologies reduced employment among women aged 60 and above, while robotisation negatively influenced men aged 20-49 performing routine manual tasks. Older workers tend to have lower ICT-related skills, so they may struggle to keep up with emerging technologies that raise the return on new skills at the expense of obsolete skills. The negative effect of robotisation is related to the repetitive patterns in routine tasks, which programmed algorithms and devices can replace. As men aged 20-49 working in these occupations usually present weaker educational backgrounds, they might have little desire or motivation to participate in reskilling for job mobility purposes. Indeed, Wotschack argues that available training is focused on the highly qualified segment of the labour market.

At the same time, technologies could benefit young and prime-aged women, who despite similar levels of digital skills often opt for jobs including social interactions, which are difficult to automate. Indeed, Deming, as well as Cortes et al. provided evidence for the increasing importance of social skills in well-paid occupations. Hence, the training offered should not only pay attention to skills complementing technology but also include soft skills that are difficult to automate. Still, the current policy status quo does not sufficiently respond to challenges related to the variety of training. As of 2016, over 50% of workers did not participate in education due to dispositional reasons, defined as a lack of willingness to participate in training. As argued in the UNESCO report, previous learning experience drives aversion towards participation in training *(Figure 1)*. Hence, policymakers should adapt their training offerings in line with the evolution of skills demand in the labour market to ensure that workers perceive the training as valuable and needed.

Figure 1. On average, more than 50% of workers in the EU do not participate in training because they do not see any purpose



Source: PIAAC data (2016). Derived from UNESCO (2020).
Global education monitoring report 2020: *Inclusion and education: All means all.*

Population ageing also creates risks for the labour market, as simultaneously fewer workers will enter the labour market, and an increasing share of the population will retire. Some argue that migration is a remedy for demographic change, as foreigners can fill labour market shortages. Evidence from the US showed that the migrant labour force is more flexible and can help reduce employment and wage differences between regions. Indeed, the increased share of migrants in some European countries filled shortages in low- and high-skilled occupations, Bachmann et al. argue.

However, migrants often apply for positions below their qualifications, which leads to ineffective utilisation of human capital, as demonstrated by Bachmann et al. This is a problem of the validation system, as the curricula and systems for VET differ between countries. This can force employers to spend more time screening the applications of migrants, which reduces their chance of hiring. To effectively utilise migrants' competencies, policymakers should adjust validation systems to ease the verification of qualifications obtained outside the country. Providing migrants with language training is beneficial for migrants and the host country, as foreigners can better adjust to the needs of the labour market and look for employment in occupations matching their qualifications. Social partners, such as trade unions, often oppose migrants due to fear of downward wage pressure. Interestingly, instead, social partners could play a significant role in the organisation of migrants and providing aid for labour market integration, which would support both local and international workers. Engaging social partners in adult learning policies is also beneficial, as these organisations have a better sense of workers' educational needs (*See box: Institutional prerequisites for improving skills and training*).

Institutional prerequisites for improving skills and training

Assessing skill needs and developing Vocational Education and Training (VET) content and new formats for upskilling is the traditional domain of social partners who are the source of information on what businesses actually need. This applies mostly to those countries where they have a strong position in collective bargaining and also labour market policy. In new and expanding sectors (sometimes with less union representation), the state, sector organisations, and education and training providers also play a part.

In German mechanical engineering and Austrian banks, well-established training pathways below a university degree, starting with apprenticeships and institutionalised further training, have eroded due both to underinvestment by companies looking for higher-skilled talent and to decreasing interest of young labour market entrants, who choose to pursue degrees instead. Consequently, companies, unions and sector representatives look to the state, universities and NGOs to provide some of the skills, knowledge, and R&D needed. In financial services especially, and in some increasingly tech-intensive business services, company-specific and sector-specific initiatives also play a part. However, competition for skilled employees may get in the way of coordinated sector-level actions.

Indeed, initiatives addressing newer skills and those in newer sectors such as business services may be shifting onto the company level, with limited involvement by sectoral social partners. Social partners' role currently appears to be more in mitigating job losses and providing re-training than in shaping new and emerging sectors. The shift of skill and training provision to the company level presents a strategic challenge to social partners themselves and to policies that aim at improving and accelerating provision of training to workers and jobseekers. For this reason both unions and employer associations still have important parts to play in skills policies as repositories of sector- company- and target group specific knowledge and as multipliers of good practices. In regions and among employee groups underprovided with training opportunities, this may require policies to include some parallel institution and network building among the existing and potential actors in skill provision.

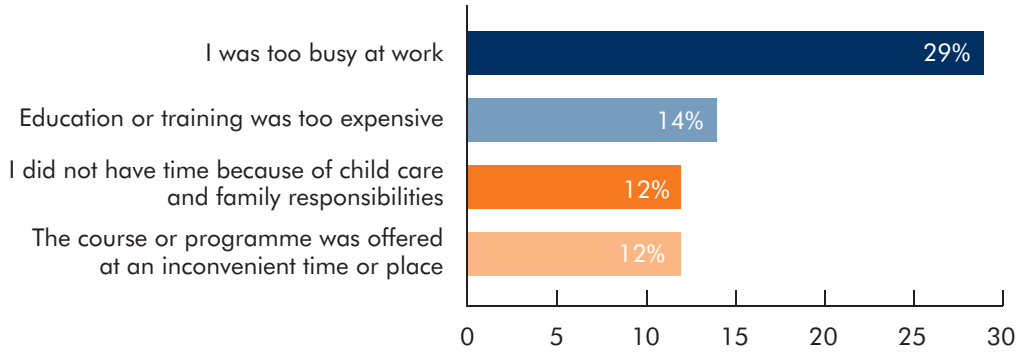
Evolution of skills and providing incentives for training

In today's dynamic, technology-driven labour market, the demand for skills is evolving rapidly. Some skills are becoming obsolete as they can be automated, while others are gaining popularity. In parallel, the labour market's asymmetric information and interest-based occupational choice lead to skill mismatches. Since workers decide on their career path at a distance from entering the labour market, their accumulated skills might not suit the market's needs. Furthermore, as firms underinvest in employees' training, we may observe difficulties in job creation. Without lifelong learning, the utilisation of workers' human capital is limited.

There is evidence that training can increase employability and ease the transition between occupations as employees better adjust to the shift in demand for skills. The skill requirements for various professions can change dramatically over a short period, as demonstrated by Bachmann et al. Not surprisingly, digital skills are currently in high demand, yet some social skills, such as independence and enthusiasm, have also gained importance. The demand for skills may shift again if artificial intelligence contributes to the automation of more abstract skills. The comparative analysis of Webb showed that while industrial robots and software direct the automation of routinised tasks, artificial intelligence might influence the highly qualified segment of the labour market. Indeed, OpenAI research showed that developing large language models such as Chat GPT-4 can lead to drastic changes in the perception of skills that can be automated: programming and mathematical skills may become automatable. At the same time, critical thinking and scientific knowledge are expected to grow in importance.

The recent shift in skill demand is largely driven by increased demand for the ability to perform non-routine tasks. Hauret et al. argue that employees are increasingly reporting under-skilling, as in the OECD's PIAAC data. This is mirrored in the increase in under-skilling, which can be partially attributed to the expansion of non-routine cognitive tasks driven by digitalisation. Despite the perceived need for upskilling and reskilling, workers face barriers to higher participation in training *(Figure 2)*. Nearly one-third of EU employees who desired to participate in training felt overwhelmed with work responsibilities, while over 10% experienced concerns related to cost, time, and location inconveniences.

Figure 2. Barriers to participation in training in EU countries usually relate to the burden of responsibilities at work.



Source: PIAAC data (2016).

Unequal access to training and its consequences

In recent years, training participation rates have increased in most EU countries. However, the decision to participate in training strongly depends on individual- and company-level factors. Older workers participate in training less often because of the shorter period of returns to upskilling expected by workers themselves or their employers, and possible declines in cognitive skills. At the same time, larger firms can allocate more resources for training than small and medium enterprises. Consequently, providing incentives for upskilling and reskilling without acknowledging the firm- and individual-related constraints is likely to mainly benefit those already engaged in training.

Training effectively adjusts workers' skills and results in benefits for both the employee and the employer. The study by Jona-Lasinio and Venturini identified a 9% wage premium for individuals in firms offering training, which increases to 17% when only IT-related training is considered. Indeed, as in Europe digital skills are relatively scarce, companies might organise training towards digital skills. However, medium- and small-sized companies usually have fewer resources to invest in training than larger market leaders do. Jona-Lasinio and Venturini argue that lack of training in laggard companies may contribute to the widening of between-firm wage differences. The European Year of Skills has addressed this problem by highlighting the role of small and medium enterprises as the "backbone of the EU's economy". As the propensity to invest into training strongly depends on firm size, new upskilling and reskilling initiatives should target these groups.

There is a common fear that implementation of new technologies such as AI is about to displace the labour of those highly-skilled employees who used to benefit from older digital technologies. In contradiction, recent research showed that applying artificial intelligence improved individual productivity, because Machine Learning algorithms capture the work nature of the most productive workers — Brynjolfsson et al. argue. AI assistance can be especially supportive for new workers, who can master their tasks quickly and move down their experience curves. However, the application of new technologies is constrained by a lack of specific knowledge and skills: the results of the European Enterprise Survey showed that as many as 40% of companies do not plan to implement any AI algorithm in the future due to the shortage of workers with complementary skills. Thus, increasing access to high-quality training focused on digital skills should prepare workers for implementing new technologies and encourage companies' utilisation of new technology with wider economic benefits.

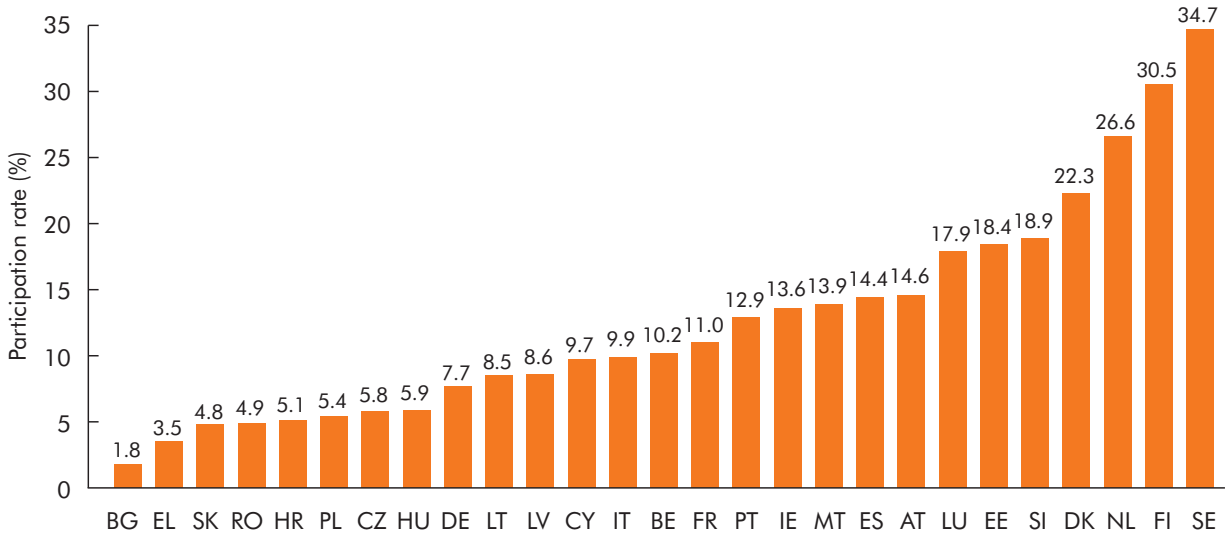
Recommendations

To address labour market challenges, policymakers are advised to consider the heterogeneous effects of technological progress and the evolution of the demand for skills. A single policy may not properly respond to all challenges, emphasising the need for tailored approaches that take skill complementarity into account. Embracing digitalisation and robotisation as growth opportunities requires fostering lifelong learning to complement new technologies. It may also require cross-cutting approaches that take skill provision beyond the domain of labour market policy and include ways of sustaining and improving the skill base in technology and industrial policy as well.

However, current participation in training is inadequate to fill the critical gaps, especially in Central and Eastern Europe, where workers lack resources for reskilling and upskilling *(Figure 3)*. Implementing targeted training programmes and promoting lifelong learning can support workers with the necessary skills and enhance their competitiveness on the labour market.

To provide policymakers with actionable recommendations, we highlight valuable insights from the UNTANGLED project accompanied by examples of the successful implementation of policies which contributed to an increase in adult education across Europe.

Figure 3. While in Nordic countries more than ¼ of workers participate in lifelong learning, fewer than 10% do so in Eastern Europe



Source: Own elaboration based on LFS.
Note: The training rates refer to participation in training during the 4 weeks before the survey took place.

Individual Learning Accounts

As argued by Albinowski and Lewandowski, to fill the gap in skills of workers exposed to technology adoption, governments could directly subsidise workers with funds for training. However, a large strand of literature shows that initiatives such as training vouchers have little effect on earnings and employment. Still, a slightly different model, Individual Learning Accounts (ILAs), showed promising results in increasing the participation rate in adult education. These instruments are virtual accounts in which the capital accumulates over time, allowing individuals to spend on the course of their choice. ILAs differ from training vouchers in that the capital from ILAs can accumulate over time, enabling workers to participate in more expensive courses. Although the difference between the programmes is relatively small, it may be significant for effectiveness.

According to the OECD, the only real example of an Individual Learning Account is the French programme *Compte Personnel de Formation* (CPF). It offers a wide range of training with different content and price. As of 2021, more than 2 million individuals had participated in the programme. The programme has an important advantage of being highly personalised. Workers can choose a course without any intermediary and access a wide selection: on the subject of artificial intelligence alone, participants can choose from more than 200 distinct courses provided on-site or via distance learning.

However, the CPF is ineffective in supporting low-qualified workers and recreates the patterns of previous educational programmes focused on the highly-qualified segment of the labour market. Due to limited knowledge of the shifting supply and demand of skills, low-qualified workers might choose training less frequently. In consequence, finding suitable reskilling courses might be challenging for vulnerable groups. Moreover, the low-qualified might be more exposed to training barriers, such as high cost. Policymakers should therefore tailor the programme to be inclusive, prioritising the needs of disadvantaged individuals and providing guidance to ease access to the programme.

Training leave

The PIAAC survey showed that a heavy workload remains a significant obstacle to workers' participation in adult learning. Combining training with full-time employment burdens workers' physical and mental well-being. Hence, providing training leave could create an incentive to increase upskilling and reskilling. At the same time, the work of Hauret et al. revealed the perceived need for training which could be attributed to the shift in demanded skills. Providing workers with dedicated training leave for reskilling might enable them to transfer from oversupplied to undersupplied occupations.

Most EU countries offer only short-term leave, usually to obtain a certificate or to graduate (e.g. Czech Republic, Poland). As a result, these policies support workers already in the education system but do not provide direct incentives to join a training programme. Regarding wages, workers are entitled to paid or unpaid leave. Programmes differ, however, and some allow for more extended periods of leave – for instance, in Austria, a worker may take leave from 2 to 12 months, receiving a wage replacement equal to 55% of the latest net income in line with unemployment benefits. This requires agreement from the employer. Options for part-time training are also available.

Consequently, the popularity of leave programmes varies. For instance, in Germany, where short-term leave is usually available, only 1% of workers use it each year. In contrast, the policy is crucial in supporting adult education in countries where long-term training leave is available – for instance, in Finland, workers are entitled to education leave from 2 to 18 months and receive an allowance. Although the Finnish programme's effect on wages and employment is insignificant, there are considerable benefits related to increasing education levels and smoothing transitions between occupations: around 14% of participants changed their profession during the analysed period. In Austria and Luxembourg as well as in the Nordic countries, social partners, sometimes in cooperation with the Labour Market Services, also administer sector- or company-specific funds for retraining of employees affected by technological change and/or company restructuring.

We point to a novel Swedish programme offering long-term training leave to enhance employees' position in the labour market. Based on initial career guidance, workers choose which course to pursue. Participants can receive up to 80% of lost income (up to EUR 2,000 per month) and an additional loan (up to EUR 1,200 per month) for 44 weeks (two semesters). However, demand for participation in the Swedish programme was not adequately forecasted, resulting in an extended processing time. Since the first call for applications in October 2022, more than 30,000 individuals have applied, exceeding the organisers' expectations. In consequence, the time needed for the arrival of the decision was significantly extended so that by May 2023, only 11,000 decisions were issued, out of which 2,000 were positive. Hence, while planning such a programme, policymakers should focus on forecasting demand or even target and incentivise certain vulnerable groups. A pilot study might provide informative conclusions to design the training leave policy properly.

On-the-job training in Small and Medium Enterprises

The paper by Jona-Lasinio and Venturini highlights the inequality in access to training in smaller enterprises, which have fewer resources for worker training than large firms. As SMEs continue to play a crucial role in the EU economy, policymakers should utilise the funding available through the European Year of Skills to design and implement inclusive policies.

There is a notable absence of policies tailored explicitly to SMEs across European countries. However, some successful initiatives can serve as best practices. For instance, the Flemish programme offered small and medium enterprises the opportunity to receive reimbursements ranging from 20% to 30% for education and training or advisory and coaching costs. The SME portfolio has gained popularity recently, with approximately 180,000 projects being supported in 2019. Policymakers should take note of such successful programmers, as there is no one-size-fits-all approach, and adapt them to suit the unique needs of their national context.

The European Year of Skills creates opportunities for training in SMEs. Policymakers can apply for support dedicated to foster the relationship between education and smaller businesses. It is crucial to tailor the policies to attract SMEs, because these companies are dependent on the inflow of talented workforce to remain competitive. In addition, adopting on-the-job training, based on the Flemish programme, might be more effective, as it enables employers to channel upskilling in directions that are important from the business operations standpoint.

Conclusions

Skills mismatch, technological progress and demographic change call for immediate action. Today, the supply of training varies widely: while in Western European and Nordic countries, options are wide and differentiated, in Central and Eastern European countries the policy offer is limited and participation in training is low. Despite the ambitions of reaching around 60% of the labour force annually in training, some countries are far behind in reaching that goal. Without addressing this issue, adult skills may diverge between the EU states, widening the income gaps between EU countries in the future.

The lack of proper policies leaves lower-income and less-skilled groups with no resources for reskilling and upskilling vulnerable to technological change. By prioritising inclusive skills development, we can empower vulnerable groups and mitigate the adverse effects of technological advancements. Individual Learning Accounts, Training Leave, and grants for on-the-job training offer practical solutions for increasing lifelong learning. Higher participation in training programmes and easing professional transitions can stimulate employment, fostering economic growth. Policymakers should prioritise these recommendations to build a resilient and adaptable educational policy that can support workers in adapting to the evolving labour market.

Further Reading

Albinowski, M and Lewandowski, P. (2022). *The impact of ICT and robots on labour market outcomes of demographic groups in Europe* (Deliverable 3.1). Leuven: UNTANGLED project 1001004776 – H2020.

Bachmann, R., Elewa, A., Martin, L., Rabaud, I., Verheyden, B., and Voia, M. (2023). *Migration and the evolution of skill supply and demand* (Deliverable 3.3). Leuven: UNTANGLED project 1001004776 – H2020.

Bachmann, R., Gonschor, M., Lewandowski, P., and Madoń, K. (2022). *The impact of robots on labour market transitions in Europe*. (Deliverable 5.2). Leuven: UNTANGLED project 1001004776 – H2020.

CEDEFOP (2023). *Overview of financing adult learning database*.

Holtgrewe, U., Lindorfer, M., and Šalamon, N. (eds.). (2023, forthcoming). *How globalisation, ageing workforces and technological transformation are changing companies and industries – Lessons from case studies*. HIVA-KU Leuven.

Jona-Lasinio, C. and Venturini, F. (2022). *Firm human capital investment, wage inequality and employment* (Deliverable 5.4). Leuven: UNTANGLED project 1001004776 – H2020.

Please refer to this publication as follows:

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About UNTANGLED

UNTANGLED is a three-year interdisciplinary Horizon 2020 research project that seeks to examine the interconnected trends of globalisation, demographic change and technological transformation, and their effects on labour markets in the European Union and beyond. By engaging a broad range of stakeholders, including companies and civil society organisations, we will develop practical policy proposals to help governments cushion the negative impacts of these trends and ensure their benefits are enjoyed fairly across regions and sectors.

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