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CEDEFOP

Skills empower workers in the AI revolution

First findings from Cedefop's AI skills survey

POLICY BRIEF

POLICY BACKGROUND

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AI is the new general-purpose technology

Raising the bar for trustworthy artificial intelligence

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AI is the new general-purpose technology

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Like the steam engine, electricity and the internet in the past, artificial intelligence (AI) is today's rapidly evolving general-purpose technology (Box 1). While empirical evidence showing a positive impact by AI on productivity and growth is scarce to date, AI's diffusion potential is enormous. As the AI revolution gains momentum, the technology is reshaping economies, labour markets and society and is transforming sectors, occupations and skill needs.

Analysis of online job adverts shows that, while it is still low, demand for AI skills has substantially increased in the past decade – both within the information and communication technology (ICT) sector and outside of it (Acemoglu et al., 2022; Borgonovi et al., 2023). In 2023, 30% of large European companies used an AI technology. There is marked variation in AI use between EU Member States and sectors. The share of companies using AI in 2023 ranged from 1 in 7 in Denmark and Finland to 1 in 67 in Romania and from over 1 in 4 in the information and communication sector to less than 1 in 30 in the construction sector.

AI has the potential to markedly transform labour markets, workplaces and work organisations, and there are concerns about its negative consequences for employment, employee well-being and individual rights. Many routine jobs were affected by the first AI technology wave, which introduced robotic process automation and machine learning. It is feared that the next stages of the AI revolution could be disruptive and have pronounced and lasting impacts on employment and on workers. In particular, workers with a low level of education and males in middle-skilled jobs – the groups most likely to be impacted by technological transformation – need effective upskilling or reskilling and support, alongside social protection measures.

Box 1. Artificial intelligence explained

'Ability of a machine to use algorithms to analyse their environment, learn from data and use what has been learnt to take actions and make decisions – with some degree of autonomy – to achieve specific goals.'

Source: European Centre for the Development of Vocational Training (Cedefop), 'Glossary'.

...As the **AI revolution gains momentum**, the technology is **reshaping economies, labour markets and society**... transforming sectors, occupations and skill needs...

...**demand for AI skills** has substantially **increased in the past decade** – both within the information and communication technology sector and outside of it...

...it is feared that the **next stages of the AI revolution** could be disruptive and have pronounced and lasting **impacts on employment and on workers**...

The AI revolution will not result in the massive job destruction predicted about a decade ago. While there will be some employment destruction, for most jobs in European labour markets AI means the transformation of tasks and skills (Pouliakas, 2018). Working conditions will be affected and AI will also create new jobs (Cedefop, 2022). The new wave of generative AI will have profound impacts. In contrast with previous technological innovations, today's AI can also perform non-routine, cognitive tasks, such as analysing or drafting text and generating visual or audio content, thanks to generative pre-trained transformers and large language models.

The fundamental transformation such technologies imply for jobs accentuates the need for forward-looking and broad-scope policy action: many highly skilled individuals and jobs will not be shielded from the impacts of AI as was the case in previous waves of technological innovation. There are concerns that – alongside structural weaknesses in competitiveness and innovation – skill gaps may become a major impediment to the EU's digital transition ([1]).

Introducing and mainstreaming AI can also have outright positive effects on European labour markets. According to early evidence, alongside the productivity and innovation gains of technology that matches or even exceeds human capabilities in many job settings, AI also has the potential to become a 'great equaliser'. Provided that workers have the skills to work with or alongside AI, the technology can reduce the productivity gap between the most- and least- productive workers in the same job type or occupation (Brynjolffson et al., 2023; Peng et al., 2023; Noy and Zhang, 2023; Dell'Acqua et al., 2023).

([1]) Cedefop's second European Skills and Jobs Survey shows that while 1 in 2 EU adult workers recognises the need to upgrade their digital skills, only about one quarter of them participate in training to develop their digital skills (Cedefop, 2022).

Raising the bar for trustworthy artificial intelligence

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To manage the risks associated with AI and to strengthen trust in the technology, the EU recently adopted the AI Act – a forerunner in AI legislation setting a global benchmark. It stipulates harmonised rules and regulations governing the use of AI for developers, deployers and end users. Alongside mandating requirements and obligations for AI technologies with high risk levels ([2]), the act proposes a conformity assessment before an AI system is put into service or placed on the market and calls for *ex post* enforcement. It also proposes a governance structure at the EU and national levels.

High-risk AI systems will be subject to a range of requirements before they are implemented. These include risk assessment and mitigation systems, creating quality datasets to minimise risks, traceability systems, documentation procedures to ensure compliance, clear and adequate user information, appropriate human oversight and robust ICT security measures to minimise risk.

The AI Act is part of a wider policy package supporting the development of trustworthy AI, which also includes the AI innovation package and the coordinated plan on AI. EU AI policy initiatives are overseen by the newly established European AI Office. To facilitate the transition to the new regulatory framework, the Commission has launched the AI pact. The pact is a voluntary initiative that supports AI policy implementation and invites AI developers from the EU and beyond to comply with the key obligations of the AI Act before its implementation.

The act contributes to the EU's ongoing efforts to build a resilient Europe for the Digital Decade. This policy programme targets take-up of cloud, big data and AI technologies by at least 75% of European companies and 20 million more ICT specialists by 2030. Harnessing the benefits and opportunities of the ongoing digital transformation is also critically dependent on Europe strengthening its digital foundations by improving its digital infrastructure and boosting digital skill levels among the wider EU population – policy goals that also guide the EU's digital education action plan. To reach policy goals and to meet the targets, the European Commission and the Member States aim to maximise resources and coordinate critical investments in AI technology (Figure 1).

([2]) High-risk AI systems include those involving critical infrastructure, such as transport, and AI applications in education, health, employment management, essential public and private services, law enforcement, migration/asylum and justice.

...The **EU AI Act** is part of a **wider policy package** supporting the **development of trustworthy AI**...

...the act proposes a **conformity assessment before an AI system is put into service** or placed on the market...

...Europe for the Digital Decade targets **take-up of cloud, big data** and **AI technologies** by at least **75% of European companies** and **20 million more ICT specialists** by 2030...

Figure 1. **EU investment in AI**

Source: European Commission, European approach to artificial intelligence.

EVIDENCE

In this section

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AI is automating and redesigning jobs

Bridging the AI skill gap

AI literacy for all underpins the skills revolution

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AI, jobs and skills: what do we know so far?

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Recent literature has focused on the drivers of the EU's broader digital transition and the opportunities and challenges it entails. Cedefop's digital transition policy scenario uses the European skills forecast framework to show the impact of meeting the European skills agenda and European Digital Decade targets. The scenario shows that fast deployment of automation and AI could result in a 5% employment reduction by 2035 compared to the baseline projection, which incorporates the European Green Deal and assumes current digitalisation trends will continue in the future (Cedefop, 2024) (Figure 2).

In quantitative terms, the negative forecast employment impact of automation is particularly pronounced in market and non-market services, in wholesale and retail trade and in basic manufacturing. In these sectors, in total almost 7.5 million workers will likely be displaced by automation. This is unlikely to equate to a net decrease in aggregate employment of the same order of magnitude. The scenario did not consider the AI-driven productivity gains stimulating economic growth and their indirect and induced positive longer-term impact on employment.

Other research has focused on assessing the exposure of different occupations to different types of AI technology (Pouliakas, 2018; Felten et al., 2021). Recent estimates show that the job-destruction impact of AI deployment is much lower than its job-augmentation potential (Cazzaniga et al., 2024; Gmyrek et al., 2023; Acemoglu and Restrepo, 2018). Nevertheless, a non-trivial share of low-, medium- and highly skilled employment in advanced economies could be negatively affected. The limited empirical evidence of a negative net AI employment effect makes it difficult to quantify job destruction and to draw definite conclusions. It is obvious that data used to assess the impact of the AI revolution can only capture the early outcomes of the complex adjustment and market reallocation processes typical of breakthrough technological innovations ([3]).

([3]) This delayed positive impact of technological breakthroughs, which is initially preceded by negative productivity effects due to market restructuring, has been dubbed the 'J-curve effect' (Brynjolffson et al., 2021).

...Cedefop's digital transition policy scenario shows that **fast deployment of automation and AI** could **result** in a **5% employment reduction**...

... in total almost **7.5 million workers** will **likely** be **displaced by automation**...

...**data** used to assess the **impact of the AI revolution** can only capture the **early outcomes of the complex adjustment** and **market reallocation processes**...

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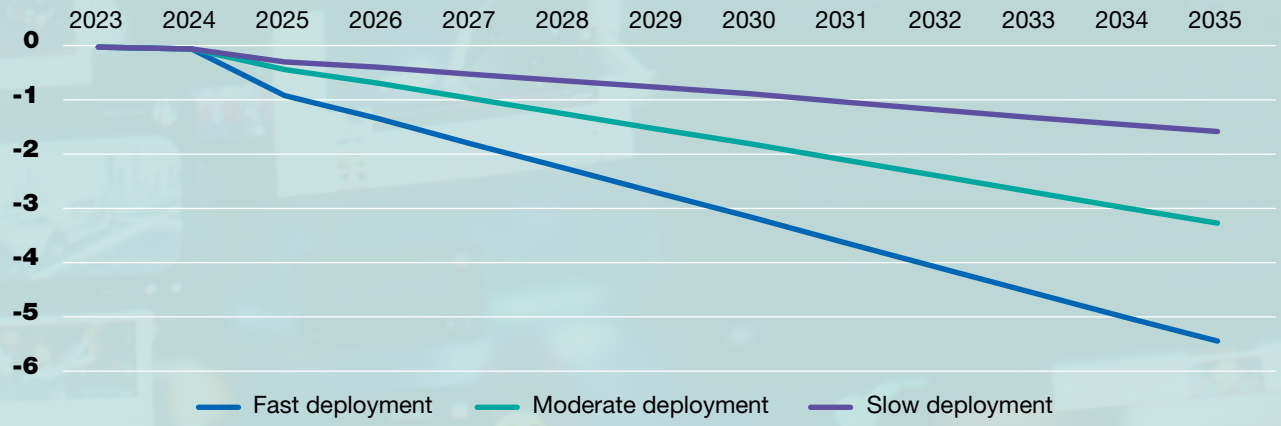
Figure 2. **Employment impact scenario of the digital transition by speed of deployment (% difference from baseline), EU-27**



Source: Cedefop (2024).

The lack of representative data sources with information on AI complicates the mapping of AI use among European workers and makes it challenging to understand the implications of introducing and mainstreaming the technology in workplaces and its impacts on skills – information that is vital for shaping and implementing effective upskilling and reskilling programmes. Research quantifying 'AI skills demand' and its effects on job markets has typically relied on data obtained from online sources, such as professional social media networks, online job portals or freelancing platforms (Green and Lamby, 2023; Borgonovi et al., 2023; Acemoglu et al., 2022; Stephany and Teutloff, 2024).

Online sources can complement surveys because of their capacity to detect trends early, but this comes at the cost of statistical biases inherent to using poor-quality or non-representative web-based data. Methodological 'shortcuts' often used in applied work inhibit a fundamental understanding of the wide-ranging impacts of AI in work settings. Using keywords such as 'machine learning', 'natural language processing' and 'speech recognition' to capture what are sometimes loosely termed 'AI skills' is a one-sided approach that puts emphasis on technical skill needs. It largely ignores other skills and limits understanding of the societal and economic context and structures in which AI systems are deployed (Pouliakas et al.,2025).

Competing in the AI race means investing in skills

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The AI developer workforce includes workers with technical knowledge and skills related to AI system development and maintenance (e.g. statistics, computer and data science, machine or deep learning). The share of workers who deploy advanced AI methods still accounts for less than 0.5-1% of total employment in advanced economies. While small, this group is critical for the EU and its skills and technology policy, as it will drive the bloc's capacity to compete with other global players in the AI talent race. Analysis based on AI-related job advertisements shows that the demand for AI developers in advanced economies is rapidly expanding.

As AI developers are part of a relatively new workforce with highly technical skills in high demand, it is not surprising that most research finds a significant AI wage premium in job markets ([4]). Part of the higher wages technical AI workers receive relates to their employment in highly skilled sectors (e.g. ICT or financial and professional services) or occupations (e.g. software and application developers, database and network professionals, ICT managers). High-level specialised technical AI skills, such as machine or deep learning, tensor flow or natural language processing, also explain the wage premium: workers possessing such skills receive higher wages compared to similarly educated workers or workers in the same sector, occupation or firm (Manca, 2023).

Demand for workers with AI knowledge and expertise is also high because they typically have high-level cognitive skills, such as creative problem-solving, which complement AI capabilities and facilitate effective human–machine interaction. Recent Cedefop evidence confirms that the value attached to AI skills in labour markets is also determined by their complementarity with other skills. Cedefop's second European Skills and Jobs Survey (Box 2) shows higher than average variability in the education level and wage distribution of AI programmers, which is also higher than the variability observed among comparable ICT programmers. The AI workforce has more graduates from medium-level education compared to the rest of the ICT programmer workforce (43% versus 40%, respectively). The former also has a higher share of workers with doctoral degrees than the latter (4% versus 3.5%), but fewer employees with a bachelor's or master's degree.

([4]) The AI wage premium has been shown to range from 5% within the same job title to 11% within the same firm (Alekseeva et al., 2021), and up to as much as 21% when focusing on a sample of online freelancers (Stephany and Teutloff, 2024).

...The share of **workers who deploy advanced AI methods** still **accounts for less than 0.5-1% of total employment** in advanced economies...

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....most research finds a **significant AI wage premium** in job markets...**AI programmers** are **more evenly spread** across **different economic activities and jobs**...

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AI programmers are also more evenly spread across different economic activities and jobs compared to traditional ICT programmers, who are concentrated in the ICT and manufacturing sectors (Figure 3) ([5]). While 1 in 6 ICT programmers is employed in the ICT sector, the equivalent share for AI programmers is 1 in 10. This results in higher wage dispersion that is very much performance based (Pouliakas et al.,2025). About 72% of the AI workforce received pay that is linked to commission, performance-related pay, bonuses, profit shares or share options. This is markedly higher than the 46% of the remaining ICT programming workforce and the 26% of employees with more than an upper-secondary level of education receiving performance-based pay.

([5]) A non-trivial part of the AI workforce (6%) could not identify itself with existing sectors as defined by the standard international nomenclature of economic activities or with the International Standard Classification of Occupations.

Box 2. Profiling the EU's AI developer workforce

To reliably map the size and characteristics of the newly emerging AI developer workforce in EU labour markets, Cedefop integrated questions relating to AI technology into its second wave of the European Skills and Jobs Survey, which is Cedefop's periodic survey among European adult workers. It collects information on the job-skill requirements, digitalisation, skill mismatches and initial and continuing learning of representative samples of European working adults. The second European Skills and Jobs Survey was carried out in the second quarter of 2021, and it collected information from 46 213 adult workers in the 27 EU Member States plus Iceland and Norway (EU+). In 2022-23 the survey was carried out in five Western Balkan countries and Israel by the European Training Foundation.

The survey zooms in on workers' use of digital technologies in their main job and the level of digital skills required. Questions relevant to AI include those that ask respondents if they regularly write programmes or code using a computer language (e.g. C++, Python, Java) and whether the programmes they write use AI methods, such as machine- or deep-learning algorithms.

Source: European Skills and Jobs Survey (Cedefop).

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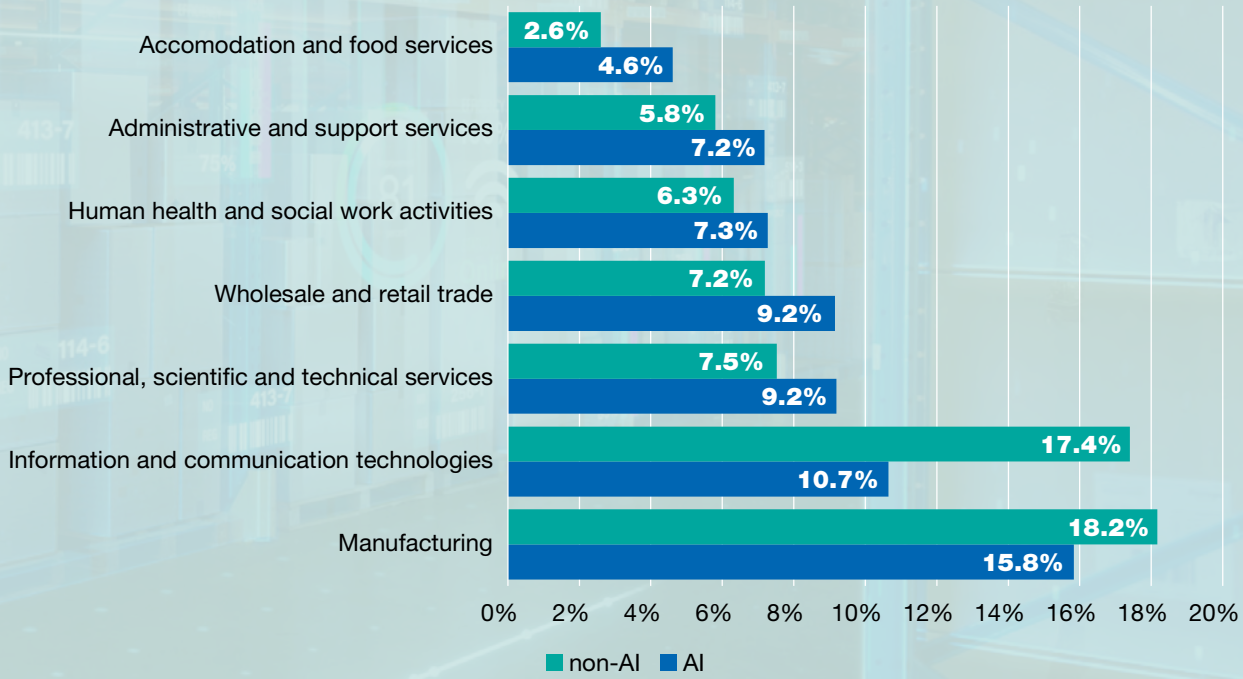
With the market for AI talent in a state of flux, it is too early to draw robust conclusions about how it will develop going forward. The volume of demand for staff with AI technology skills will ultimately depend on the speed of AI adoption and its impact on business productivity, which appears to be modest so far (Besson et al., 2024). There are signals that AI talent bottlenecks are constraining market growth. In the current AI developer workforce, men and younger, tertiary-educated graduates are over-represented. They typically hold degrees from engineering, computer science, mathematics or statistics programmes, but increasingly also from business studies programmes.

Figure 3. **AI and non-AI programmer workforce in sector (% of workforce)**



NB: Only sectors with highest shares of AI and non-AI programmers are shown. Percentages refer to the share of AI (non-AI) programmers in a specific sector out of all AI (non-AI) programmers.

Source: Second European Skills and Jobs Survey (Cedefop).

Cedefop's AI skills survey

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Thanks to rapid advancements in generative AI, the share of the European workforce developing and using AI technology to carry out part of their regular work tasks is expanding. Previous studies that aimed to quantify the emerging AI-user workforce by capturing the incidence of demand for AI skills using a web-based, keyword approach only scratched the surface. Attempts have been made to understand the prevalence of AI in labour markets and their impact on workplaces more comprehensively via representative statistical surveys among employers or workers, but these have focused on specific sectors and a limited number of countries (Lane et al., 2023).

To fill the information gap about how many European workers are currently using AI technology as part of their work and whether their skillsets meet the demands of the AI era, Cedefop carried out its first AI skills survey in the first half of 2024 (Box 3). After developing a state-of-the-art international survey questionnaire, Cedefop carried out the survey among random samples of adults in wage and salary employment in 11 EU Member States.

...to fill the **information gap about how many European workers are currently using AI** as part of their work... Cedefop carried out its **first AI skills survey**...

...**the survey focused on** mapping **the use of advanced digital technologies**, particularly AI, in their job...

Box 3. Cedefop's AI skills survey explained

In December 2023, Cedefop designed the AI skills survey to follow up on the second European Skills and Jobs Survey. It commissioned the international survey company Verian to collect reliable information from random samples of European adult workers. The survey focused on mapping the use of advanced digital technologies, particularly AI, in their job. The survey's sampling frames were based on newly developed probabilistic panels generated via a push-to-web methodology (Verian Public Voice). The survey underwent robust questionnaire pre-testing, followed fieldwork protocols and was translated.

The target population was adults aged 16 to 64 in wage and salaried employment. About 500 respondents were targeted in each country, except Luxembourg due to its small population (250 cases). A total of 5 342 adult employees from 11 Member States – Belgium, Czechia, Germany, Ireland, Greece, Spain, France, Luxembourg, Poland, Portugal, and Slovakia – were surveyed between February and May 2024.

The survey aimed at addressing the following questions.

- How many adult workers use AI technologies as part of their work?
- Who is particularly at risk of automation by AI technologies?
- What is the wider impact of AI technologies on workers' labour market outcomes?
- To what extent are European organisations supporting the take-up of AI technology?
- What share of European workers have AI skill gaps and are they participating in education and training to mitigate them?
- What is the level of AI literacy in the European adult workforce?

Source: Cedefop AI skills survey (2024).

Algorithmic work is transforming EU workplaces

Measuring AI use among workers in job markets is challenging, as not all of them are aware they are using a digital tool or application at work powered by AI technology. Cedefop's AI survey therefore first asked workers whether they use any digital media to carry out some job tasks automatically. It shows that such 'algorithmic management of work' has become an integral part of the regular work routine. About 1 in 7 adult employees surveyed always or often works with digital tools, applications or systems that algorithmically determine how to do some of their tasks as part of their main job. This includes technology that provides information or recommendations, supports content recognition or generation, monitors performance or informs decision-making.

More than 1 in 4 (28%) adult European workers reported that an AI tool or system is used in their workplace, by themselves or by colleagues (Figure 4) ([6]). Most interaction with AI technology supports carrying out job tasks, and only a minority of adults working with AI (about 4-5%) are AI developers. AI use is more common in some western European countries (Belgium, Germany, France, Luxembourg) than it is in southern European countries (Greece, Spain, Portugal) and Poland. The geographical AI divide has widened over time, raising concerns that a two-tier Europe may emerge, accentuating the already existing digital divide (Cedefop, 2022). The differences in AI adoption and mainstreaming are stark. While fewer than 1 in 3 employees spent more time using AI tools or systems in their job in the last year in the lagging group of countries, almost 1 in every 2 workers in Belgium is spending more of their time using AI (Figure 5).

([6]) To measure AI use in workplaces, the Cedefop AI skills survey carefully explains the concept of AI to respondents and provides examples of applications (e.g. using machines to recognise or generate video, image or audio content, recommending products or services to customers, detecting faulty products or fraud) and of AI software (e.g. ChatGPT, Siri, Alexa, Google Bard, Jasper, DALL-E).

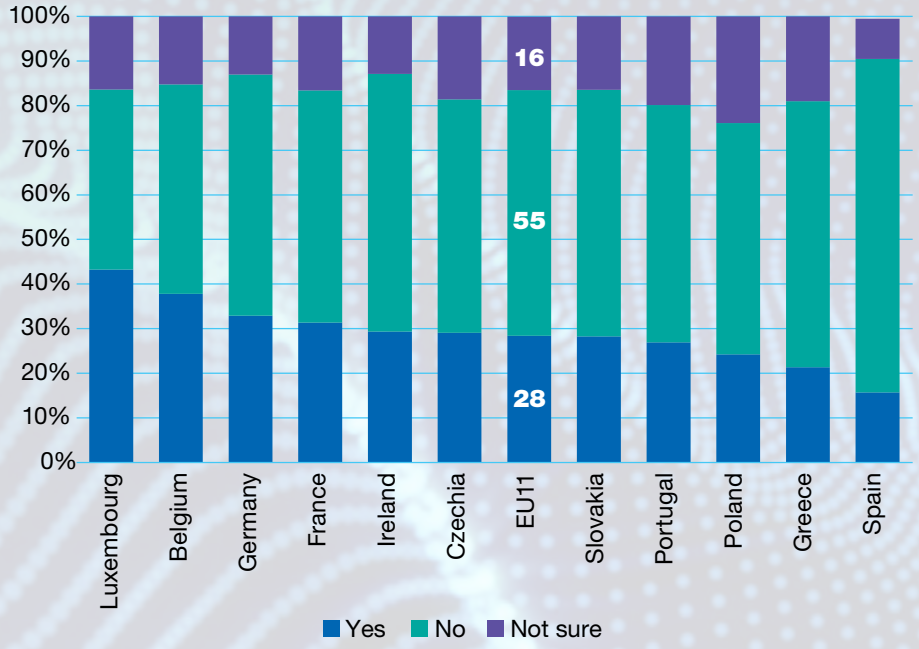
...**more than 1 in 4 (28%) adult European workers** reported that an **AI tool or system is used in their workplace**, by themselves or by colleagues...

...**AI use is more common** in some **western European countries** (Belgium, Germany, France, Luxembourg) **than** it is in **southern European countries** (Greece, Spain, Portugal)...

...The **geographical AI divide** has widened over time, raising concerns that a **two-tier Europe** may emerge, accentuating the already existing digital divide...

Figure 4. Use of AI in EU workplaces: a new digital divide?

'To the best of your knowledge, do you or your colleagues use any AI tools or systems at your workplace?' and 'How do you interact with AI tools or systems at your workplace: (i) I develop, program or maintain them; (ii) I use them to do my job (iii) They are developed or used by my colleagues.'

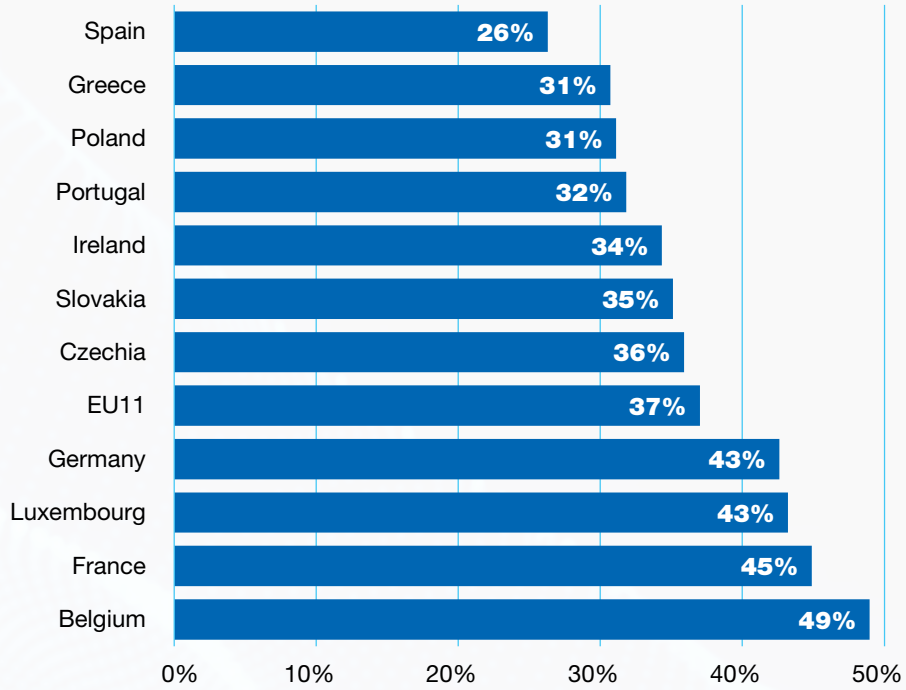


NB: Weighted data.

Source: Cedefop AI skills survey (2024).

Figure 5. Increasing use of AI

'Comparing now and 12 months ago, do you now spend more, less or about the same time using such AI tools or systems in your job?'



NB: Weighted data. Figure shows % of sample who spent more time using AI in their job.

Source: Cedefop AI skills survey (2024).

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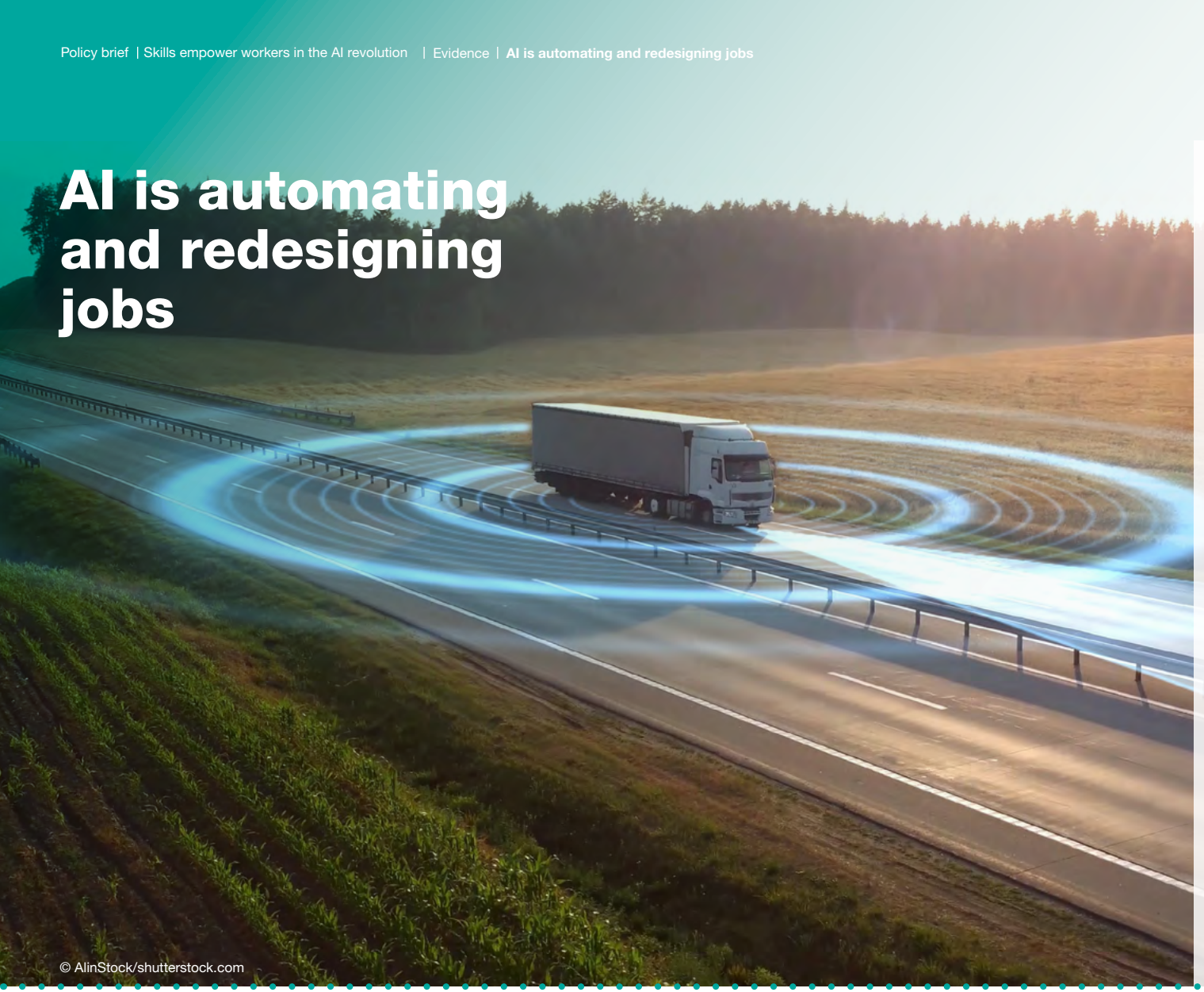
AI is automating and redesigning jobs



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A significant share of adult workers in European job markets recognises the transformative potential of AI. About 1 in 5 workers acknowledges that AI can do at least half or more of the tasks they regularly do in their job, while 1 in 3 (36%) believes that only a human can do them. In line with estimates reported in earlier research, the survey shows that about 15% of employees are afraid of losing their job because of AI technology in the next 5 years. The perceived threat of unemployment is larger among workers in southern and central European countries, such as Greece (24%), Poland (19%) and Slovakia (19%), than it is in Belgium, Ireland and France (11-12%) (Figure 6). The fear of replacement by automation is highest among workers in routine, precarious, middle-skill jobs and in contexts where mostly computerised machinery is deployed.

In addition to showing the possible task- and job-destroying impact of machines, the new survey data also highlight that AI can improve task efficiency. For 67% of the European workers using AI systems at work, AI technology has helped increase the speed with which they carry out their job tasks. For 41% it resulted in them doing some new or different tasks. For a lower share (30%) of AI users, the technology has displaced some of their job tasks completely (Box 4).

...the survey shows that **about 15% of employees are afraid of losing their job because of AI technology** in the next 5 years...

...The **perceived threat** of unemployment is **larger among workers** in **southern and central European countries**...

...For **67% of the European workers** using AI systems at work, **AI technology** has helped **increase the speed** with which they carry out their job tasks...

Box 4. Where is AI automation risk highest?

Sectors with high risk of task displacement due to AI include the following:

- agriculture,
- administrative and support services (e.g. travel agency and other reservation services, office administrative and business support),
- financial and insurance activities,
- utilities,
- wholesale and retail trade,
- manufacturing.

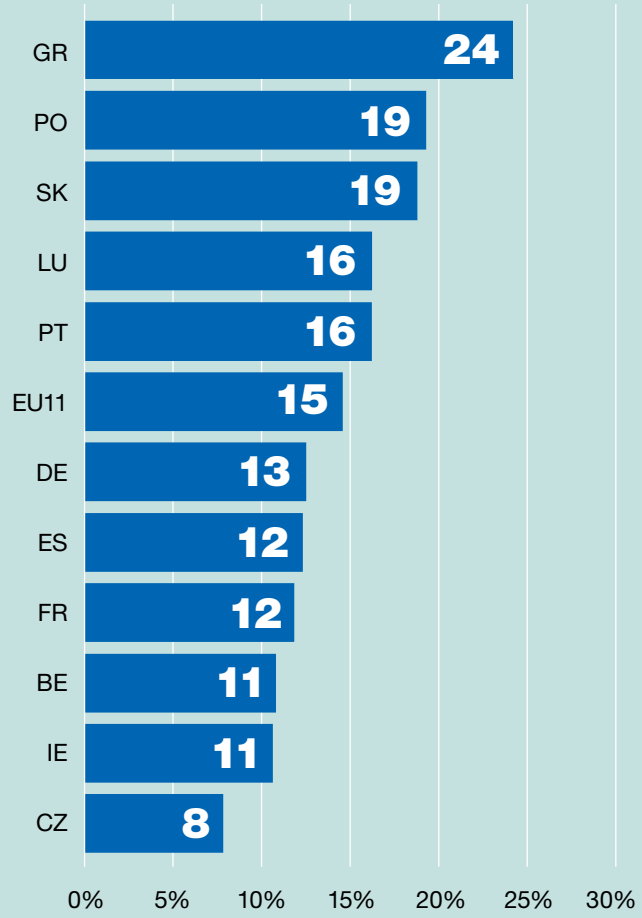
Sectors in which workers using AI are less exposed to its automation impact include:

- professional, scientific and technical activities,
- accommodation and food service activities,
- education,
- ICT,
- transportation and storage.

Source: Cedefop AI skills survey (2024).

Figure 6. Fear of job loss due to AI

'Thinking about how AI tools or systems may impact your work in the next five years, how likely is it that each of the following situations may happen? I will lose my job.'



NB: Weighted data.

Source: Cedefop AI skills survey (2024).

Bridging the AI skill gap

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With 6 in 10 European workers susceptible to either positive or negative task transformation due to the proliferation of AI at work, upskilling and reskilling is key for employability and sustained labour productivity. Employees themselves acknowledge the need for continuous skill development: 42% agree that they need to further develop their knowledge and skills in using AI tools and systems for their job (Figure 7). And 6 in 10 adult workers (61%) believe that in the next 5 years, most of the impact of AI on their work will materialise in the form of new skill needs.

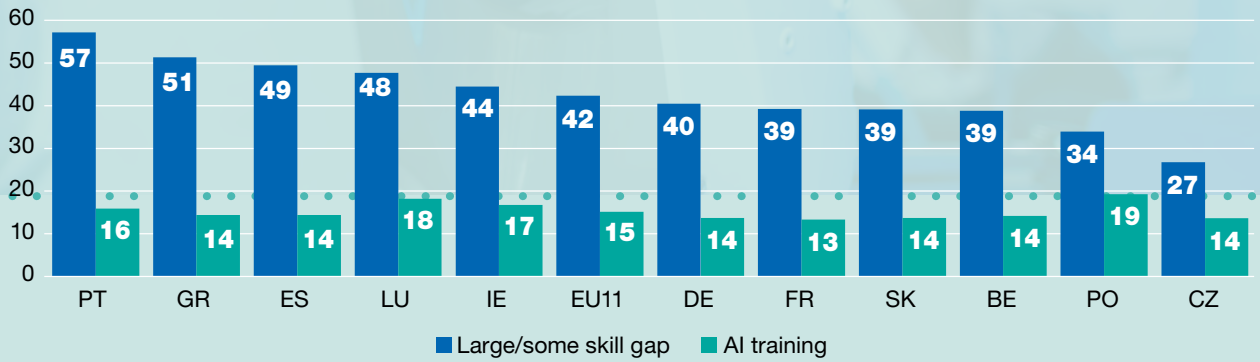
The potential for further AI learning is greatest among older and female employees. It is prominent in jobs with high skill needs that arise because of rapidly changing technologies and a wide variety of assignments. But workers in routine jobs, where short and repeated activities are at the core of the work, are also more likely to need upskilling or reskilling to cope with emerging AI skill demands.

Despite large skill gaps, a relatively small share (15%) of workers participated in education or training to further develop their AI knowledge and skills in the previous year. As also highlighted in previous analyses (Cedefop, 2022; Bertoni et al., 2023), the people most in need of digital skills training are the ones least likely to take part in it. Cedefop's AI survey confirms that older and female employees and those with precarious employment contracts are least likely to participate in continuous training to build and reinforce their AI skills.

...Despite large skill gaps, **a relatively small share** (15%) of workers **participated in education or training to further develop their AI knowledge and skills**...

Figure 7. **AI upskilling needs and training**

'To what extent do you need to further develop your knowledge and skills in using AI tools and systems for your job?' and 'In the last 12 months, have you participated in any education or training activities to further develop your knowledge and skills in using AI tools or systems?'



NB: Weighted data.

Source: Cedefop AI skills survey (2024).

AI literacy for all underpins the skills revolution

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The level of AI literacy is a major factor determining whether and to what extent adult workers pursue further AI training. AI literacy refers to the knowledge and skills that people must have to critically understand, evaluate and use AI tools and systems in such a way that they can safely and effectively communicate, collaborate and use AI as a tool in the workplace and at home (Long and Magerko, 2020).

Cedefop's AI survey collects information on knowledge that can map onto a range of different competences. When considered as a whole, this information helps provide an assessment of workers' AI literacy. These competences encompass a wide range of different AI literacy aspects. They range from whether workers can accurately recognise an AI technology and its limits compared to human intelligence ('what is AI and what can it do?') to an adequate understanding of the way with which AI systems and machines represent and learn from the world ('how does AI work?'). Another core AI literacy component is awareness among workers of the socioeconomic and ethical challenges implied by AI systems ('how should AI be used?') (Long and Magerko, 2020).

Embedding an AI competence framework into initial education and training is vital for adequately preparing new learners for the future AI-driven job market. Cedefop's AI skills survey shows that it should also be a core priority in adult learning and continuing vocational training, as AI literacy in the European adult workforce is low (Figure 8). Around 40-60% of adult workers surveyed have a poor understanding of what AI technology is, how it operates and what its likely consequences for society are.

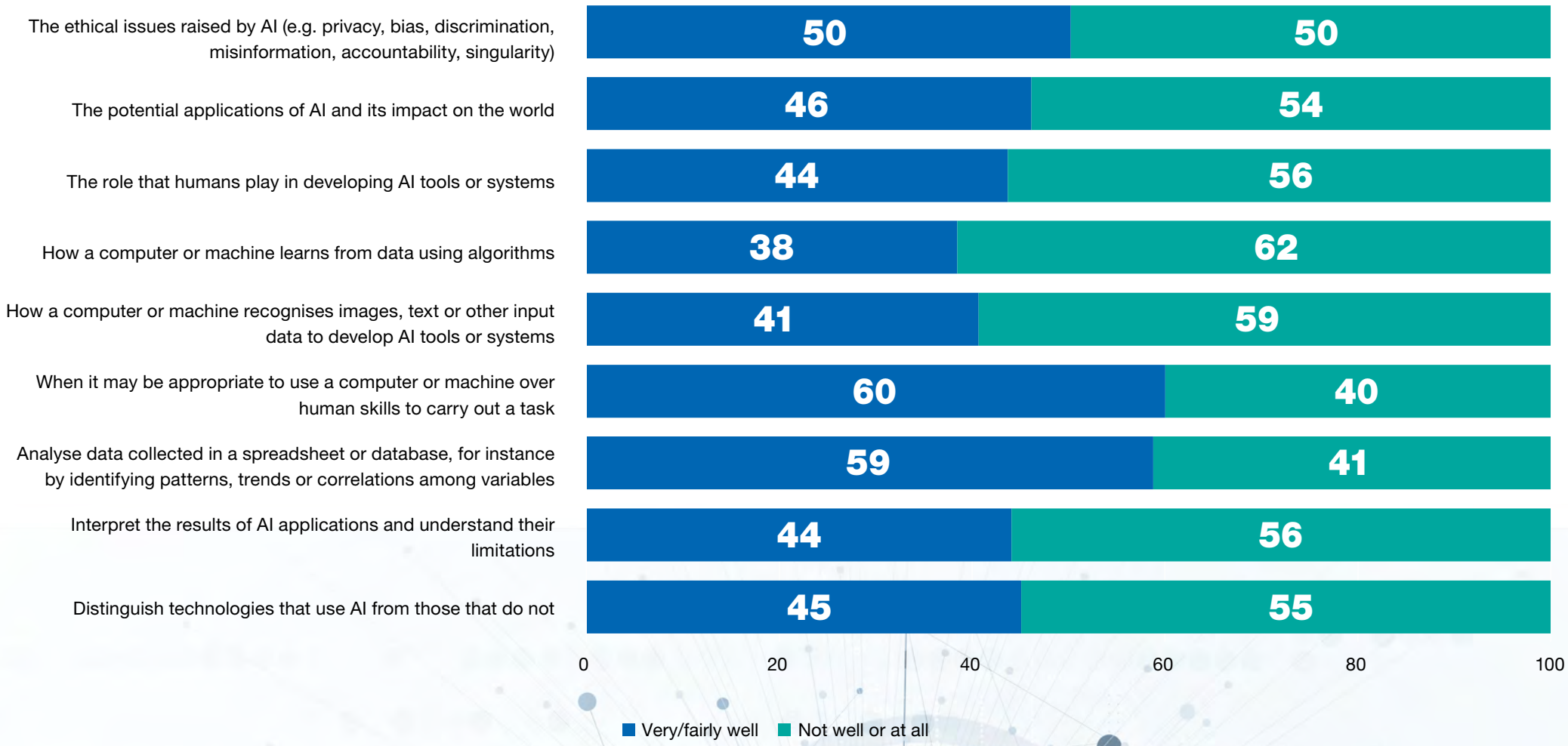
...**AI literacy** refers to the **knowledge and skills** that people must have to **critically understand, evaluate and use AI tools** and systems...

...range from whether workers can...**recognise an AI technology**...to an **understanding** of the way with which **AI systems and machines** represent and learn from the world...

...**40-60% of adult workers** surveyed have a **poor understanding of what AI technology is**, how it operates and what its likely consequences for society are...

Figure 8. **Pillars of AI literacy**

'How well do you know how to do any of the following actions?' and 'How well can you explain any of the following issues to others?'



NB: Weighted data.

Source: Cedefop AI skills survey (2024).

POLICY RECOMMENDATIONS

In this section

Promoting inclusive AI literacy

Empowering social dialogue in EU workplaces

Tackling the productivity paradox

Fostering a human-centred AI revolution

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Promoting inclusive AI literacy

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Cedefop's AI survey and insights from its ongoing AI sectoral foresight study (see Box 5) ([7]) uncover the significant upskilling and reskilling needs among adult workers in European job markets. In occupations at all levels, including highly skilled ones, workers need skilling to cope with the AI-driven transformation of their jobs. Targeted vocational education and training initiatives should be designed in ways that overcome gender and age segregation in the use of AI technologies, given that female and older workers are less likely to use AI at work. And even though highly qualified workers are more inclined to use AI technology in their job, they also need access to AI skilling. The need to upskill in AI spans across educational levels.

With AI becoming a new transversal skill shaping the future of work, initial and continuing vocational education and training systems should aim to further strengthen the integration of AI competences into curricula and programmes. Improving AI literacy transversally is an investment with enormous pay-off potential, as it will foster further skill development, spur bottom-up use of AI technology in work environments and help mainstream that technology.

...In occupations at **all levels**... workers **need skilling to cope with the AI-driven transformation** of their jobs...

...Improving **AI literacy** transversally is an **investment** with enormous **pay-off potential**...

([7]) Many of the policy messages described throughout this section have been derived from interviews carried out with various stakeholders with AI expertise, implemented as part of an ongoing Cedefop AI foresight study (Box 5).

Empowering social dialogue in EU workplaces

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While a quarter of the European adult workforce is already experimenting with the use of AI technology, as many as 1 in 2 workers doubts that their company or organisation will use it in a way that benefits them. Around 1 in 3 (35%) believes that their employer will use AI to replace workers when possible and 6 out of 10 think it is unlikely their employer will take workers' views into account when making decisions about AI. A smaller yet substantial share of workers (44%) expresses concern that they will not receive adequate training to work with AI technology.

Such scepticism signals the need for organisational incentives and support that empowers workers and a shift away from approaches that introduce or magnify the fear of automation. Empowering social dialogue and a culture of workplace trust is a critical factor in ensuring that AI diffusion will not result in worker resistance, quiet quitting (Russo, 2024) or other behavioural obstacles (e.g. lack of awareness, reservations against AI or lack of proactivity). Social dialogue is vital in the AI revolution: Cedefop's survey confirms that AI take-up and training are higher in organisations where a trade union or other worker representation body is in place.

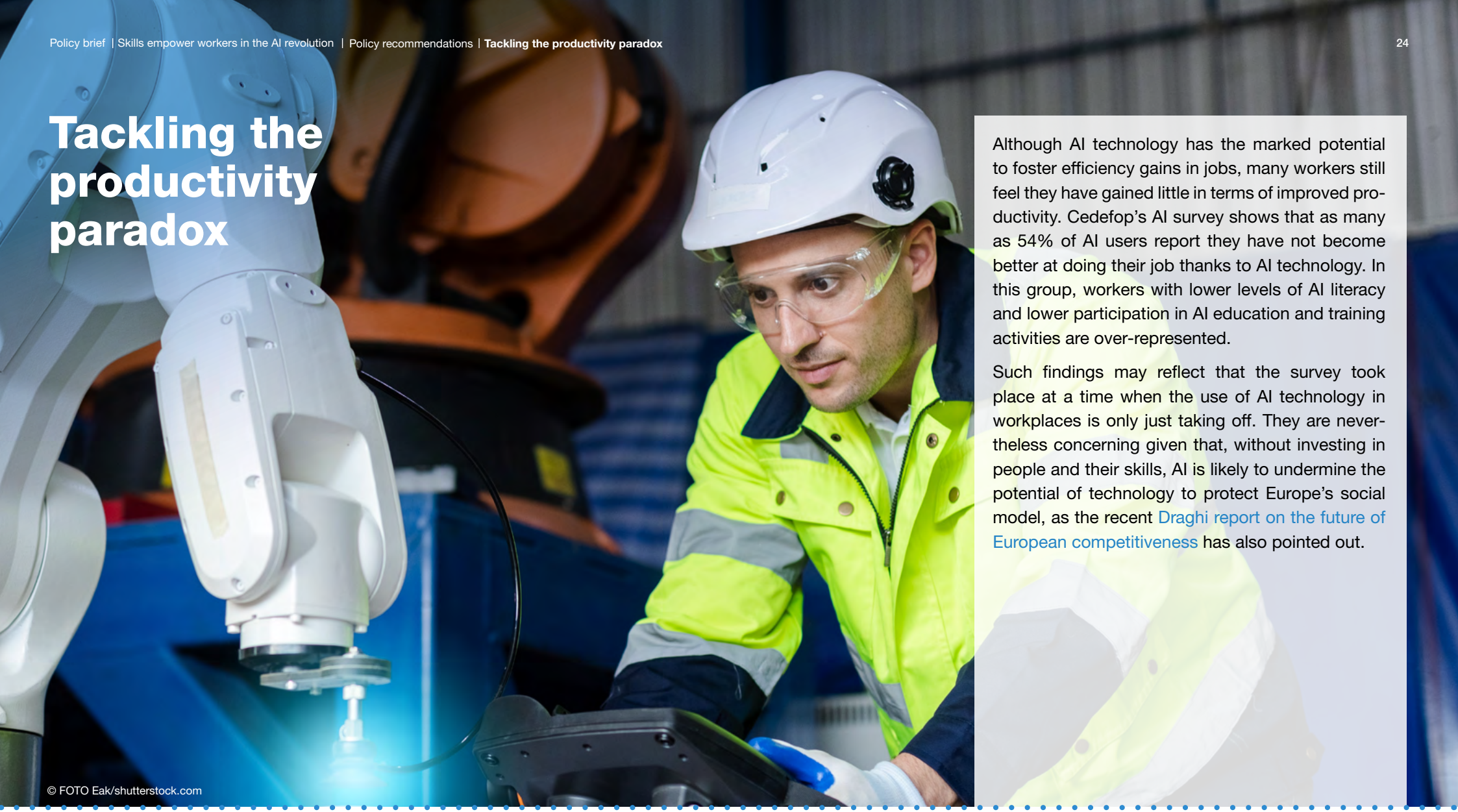
Establishing an 'AI at the workplace' directive or framework agreement that advocates for the involvement of worker representation at all stages of AI deployment could be a useful follow-up to the AI Act. Such an initiative could stipulate an 'obligation to justify' AI introduction by employers, clear collective bargaining procedures, equal training access and an obligation to share AI-generated revenues fairly. It could also be used to set limits on fully automatic decision-making and controlling workers via AI-powered surveillance.

...as many as **1 in 2 workers doubts that their company** or organisation **will use AI technology** in a **way** that **benefits them**...

...Cedefop's survey confirms that **AI take-up and training** are **higher in organisations** where a **trade union** or other **worker representation body** is in place...

...Establishing an **'AI at the workplace' directive** or framework agreement...could be a **useful follow-up** to the **AI Act**...

Tackling the productivity paradox



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Although AI technology has the marked potential to foster efficiency gains in jobs, many workers still feel they have gained little in terms of improved productivity. Cedefop's AI survey shows that as many as 54% of AI users report they have not become better at doing their job thanks to AI technology. In this group, workers with lower levels of AI literacy and lower participation in AI education and training activities are over-represented.

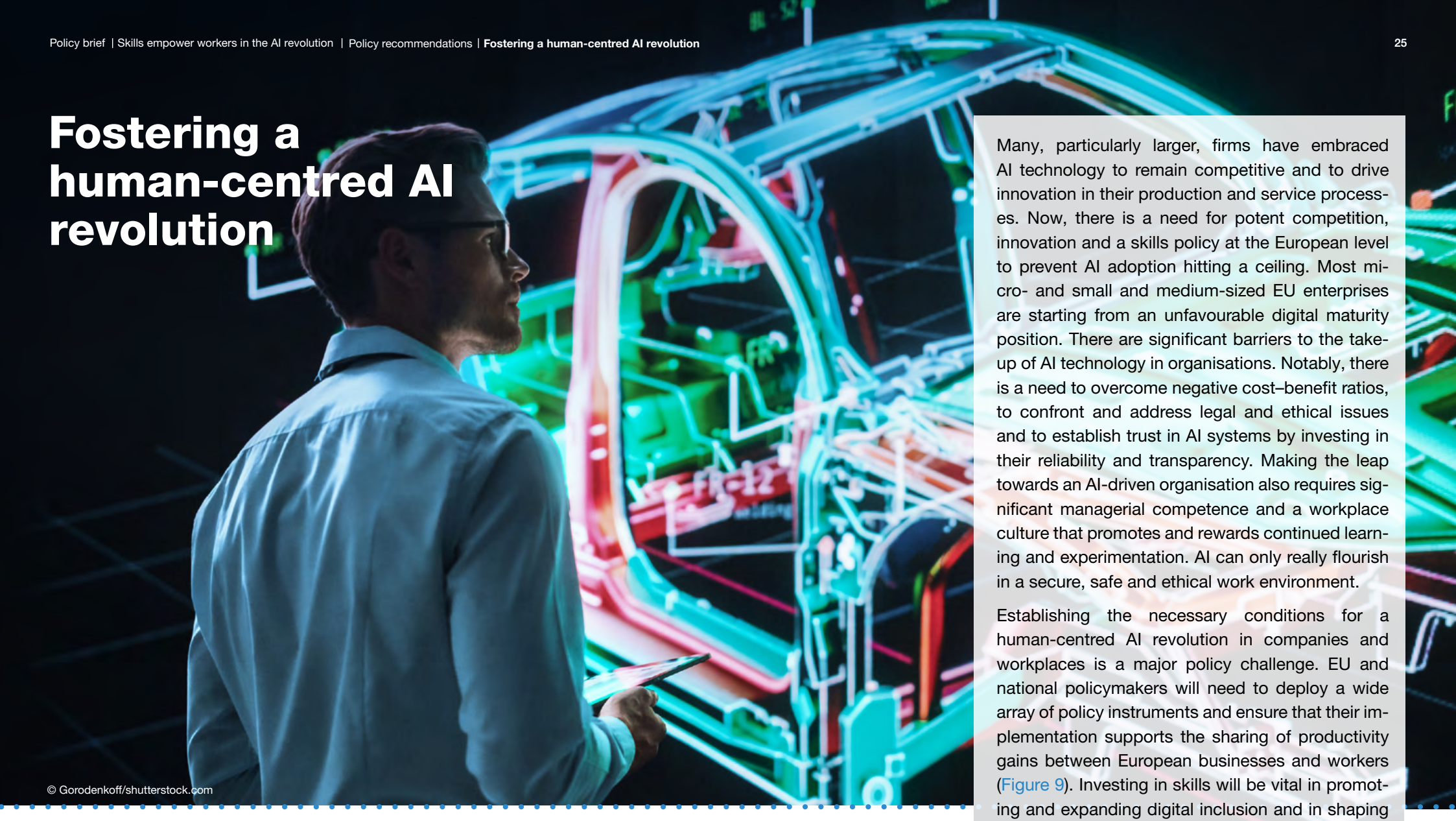
Such findings may reflect that the survey took place at a time when the use of AI technology in workplaces is only just taking off. They are nevertheless concerning given that, without investing in people and their skills, AI is likely to undermine the potential of technology to protect Europe's social model, as the recent Draghi report on the future of European competitiveness has also pointed out.

...many **workers** still **feel they have gained little** in terms of improved **productivity**...

...Cedefop's AI survey shows... **54% of AI users have not become better at doing their job** thanks to AI technology...

...**without investing in people and their skills**, **AI** is likely to **undermine**... **Europe's social model**...

Fostering a human-centred AI revolution



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Many, particularly larger, firms have embraced AI technology to remain competitive and to drive innovation in their production and service processes. Now, there is a need for potent competition, innovation and a skills policy at the European level to prevent AI adoption hitting a ceiling. Most micro- and small and medium-sized EU enterprises are starting from an unfavourable digital maturity position. There are significant barriers to the take-up of AI technology in organisations. Notably, there is a need to overcome negative cost–benefit ratios, to confront and address legal and ethical issues and to establish trust in AI systems by investing in their reliability and transparency. Making the leap towards an AI-driven organisation also requires significant managerial competence and a workplace culture that promotes and rewards continued learning and experimentation. AI can only really flourish in a secure, safe and ethical work environment.

Establishing the necessary conditions for a human-centred AI revolution in companies and workplaces is a major policy challenge. EU and national policymakers will need to deploy a wide array of policy instruments and ensure that their implementation supports the sharing of productivity gains between European businesses and workers (Figure 9). Investing in skills will be vital in promoting and expanding digital inclusion and in shaping an AI revolution that empowers and benefits all EU citizens.

...Establishing the necessary conditions for a **human centred AI revolution** in companies and workplaces is a **major policy challenge**...

...**Investing in skills** will be vital in...**shaping an AI revolution** that empowers and **benefits all EU citizens**...

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Box 5. Promoting AI in EU organisations

To gain insight into the challenges and the opportunities of AI adoption in EU firms and present a blueprint of what a 'human-centred AI organisation' of the future could look like, Cedefop started sectoral AI skill foresights in 2024.

By exploring scenarios that make explicit the diverse paths that EU firms may take when deciding to invest in AI technologies, the study aims at providing valuable insight to design forward-looking policies that can support the AI revolution.

In the first half of 2024, a research team commissioned by Cedefop carried out interviews with key experts, policymakers and social partners. This work helped frame the study context and define the research questions that will guide the sectoral AI skill foresights.

In 2024-26, Cedefop will carry out AI foresights in the automotive, geriatric nursing and creative industries sectors. The foresights will blend the diverse viewpoints of representatives of business, education and training providers, worker representation organisations and other experts.

Source: Cedefop AI skill foresights (2024-26).

Figure 9. Conditions for a human-centred AI transformation in EU companies

NB: Based on interviews with key EU and national stakeholders (Box 5).

Source: Cedefop AI skill foresights (2024-26).

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POLICY BRIEF

Skills empower workers in the AI revolution

First findings from Cedefop's AI skills survey

Artificial intelligence (AI) is the next general-purpose technology reshaping labour markets, jobs and skills. A lack of representative data makes it difficult to map AI use and its impact on jobs. This policy brief presents the first results of Cedefop's 2024 AI skills survey. The survey shows that more than a quarter of the European adult workforce is already experimenting with the use of AI at work. With 6 in 10 employees susceptible to some form of AI-related task transformation, it is obvious that upskilling, reskilling and investing in AI literacy will be crucial drivers of a human-centred AI revolution.

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