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GLOBAL FUTURE OF WORK REPORT

SERIES 3

ACCELERATING EUROPE'S GROWTH THROUGH INVESTING IN SKILLS AND TECHNOLOGY

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PREFACE

FII IS DELIGHTED to launch the third edition of the *Global Future of Work Report*, our series examining the state of labor markets around the world and the potential impact of advanced technologies on the future of work.

The first edition, *Preparing Labor Markets in MENA for a New Technological Era*, highlighted significant economic disparities and opportunities between the Global North and South, focusing on the Middle East and North Africa (MENA). It compared various MENA economies across demographics, labor markets, youth, and technology preparedness, offering a detailed call to action for future economic success. The second edition, *Empowering Latin America Through Technology and Talent Transformation*, explored Latin America's declining economic momentum relative to the US and Canada, emphasizing gaps in productivity growth and human capital. It also assessed Latin America's readiness to adopt modern technologies like automation and AI to restore competitiveness.

This third edition examines Europe, which is defined in this report as the 27 EU member states, plus Norway, Switzerland, and the United Kingdom. This represents 534 million people[1] and a collective GDP of $30 trillion in PPP terms,[2] almost one-fifth of global GDP. The report focuses on the similarities and differences between Eastern and Western European countries in relation to demographic shifts, slowing productivity growth, and the impact of technological change on growth and labor markets. Drawing on secondary data from the public domain and proprietary surveys of businesses and youth, the report examines the state of technology adoption, emerging skills demands, and the adaptability of education and training systems. By identifying both shared challenges and unique regional contexts, the report offers insights into practices and cross-sector initiatives that could foster growth and help create future-ready labor markets across Europe.

These publications aim to add to the debate and help policymakers and other leaders seeking to harness their countries' talents and resources to build a more prosperous future. This work is done together with McKinsey & Company as a knowledge partner.

1 *World Population Prospects 2024*, United Nations, accessed May 1, 2025.

2 The Conference Board Total Economy Database™, accessed April 2025. GDP in PPP terms.

NOTE ON REGIONAL CLASSIFICATIONS IN THIS EDITION

For secondary research-based insights in chapter 1 and 3, regions are classified as follows:

Region	Countries
Europe	EU-27 countries plus Norway, Switzerland, and the United Kingdom (30 countries)
Western Europe	Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland, and the United Kingdom (8 countries), as well as Northern and Southern Europe as classified below
Northern Europe	Denmark, Finland, Ireland, Norway, and Sweden (5 countries)
Southern Europe	Cyprus, Greece, Italy, Malta, Portugal, and Spain (6 countries)
Eastern Europe	Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia (8 countries), as well as the Baltics as classified below
Baltics	Estonia, Latvia, and Lithuania (3 countries)

Chapter 2 covers survey insights from business executives and youth across 12 countries that are categorized into the following regions:

Region	Countries
Europe	The 12 countries covered in proprietary surveys, comprising Bulgaria, Czech Republic, Estonia, France, Germany, Hungary, Latvia, Lithuania, Poland, Romania, Spain, and the United Kingdom
Western Europe	France, Germany, Spain, the United Kingdom (4 countries)
Eastern Europe	Bulgaria, Czech Republic, Hungary, Poland, and Romania (5 countries)
Baltics	Estonia, Latvia, Lithuania (3 countries)

EXECUTIVE SUMMARY

EUROPE is often referred to as the cradle of Western civilization and the birthplace of transformative movements such as the Renaissance, the Enlightenment, and the Industrial Revolution. The continent—defined in this research as the 27 European Union countries plus Norway, Switzerland, and the United Kingdom—represents almost one-fifth of global GDP, with a combined GDP of more than $30 trillion (in PPP terms) in 2024.[3] Its 534 million[4] citizens are often celebrated for high levels of happiness, sustainability, and work satisfaction.

Yet beneath this historical success lie structural challenges. Europe's once-strong economic momentum has slowed, falling behind global peers such as the United States. Despite having a population about 1.6 times larger than the US[5] and a slightly higher overall GDP in PPP terms,[6] Europe's per capita GDP (in PPP terms) is about 30% lower.[7] This gap reflects underlying issues: Roughly half is attributable to lower productivity, with the balance tied to fewer working hours.[8]

As detailed in *The Future of European Competitiveness*—a report by former president of the European Central Bank Mario Draghi[9]—this deceleration has been driven by Europe's declining competitiveness and slower adoption of technology, among other factors.

This report identifies four critical challenges that undermine the continent's efforts to reinvigorate sustainable, long-term economic growth and global competitiveness: slowing productivity growth, an aging population, rising job vacancies, and sluggish technology adoption.

Europe's productivity growth began to decelerate in the mid-1990s, and the downward trend has continued since.[10] During the 2010s, productivity grew by an average of just 1.0% per year, slowing down to 0.3% during the past five years, which resulted in widening the productivity gap between Europe and the US to more than 25% by 2024.[11]

At the same time, while the unemployment rate has nearly halved since 2013,[12] the vacancy rate has shot up to 1.7 times that of the rate in 2013,[13] pointing to persistent skill mismatches in the labor market. Further, consistently lower birth rates are putting pressure on both overall population as well as working-age population in the region as a whole.

Despite these challenges, Europe has an opportunity to scale ambition for higher growth

3 The Conference Board Total Economy Database™, accessed April 2025. GDP in PPP terms.

4 *World Population Prospects 2024*, United Nations, accessed May 1, 2025.

5 US resident population data from the US Census Bureau as of July 1, 2024.

6 The Conference Board Total Economy Database™, accessed April 2025. GDP in PPP terms.

7 The Conference Board Total Economy Database™, accessed April 2025. Real GDP per person employed.

8 "Accelerating Europe: Competitiveness for a new era," McKinsey Global Institute, January 16, 2024.

9 *The future of European competitiveness: A competitiveness strategy for Europe*, European Commission, September 2024.

10 Marcello M. Estevão, *Why is productivity growth in the Euro area so sluggish?*, International Monetary Fund, working paper WP/04/200. October 2004.

11 The Conference Board Total Economy Database™, accessed April 2025. Productivity per hour worked.

12 "Unemployment by sex and age - monthly data," Eurostat, May 2, 2025.

13 "Job vacancy statistics by NACE Rev. 2 activity - quarterly data (from 2001 onwards)," Eurostat, March 18, 2025.

and competitiveness by investing more boldly, innovating faster, aligning and simplifying regulations, and developing its workforce for the jobs that are emerging today—and will be essential tomorrow.

COMMON AND CONTRASTING CHALLENGES IN EASTERN AND WESTERN EUROPE

Europe's economic landscape is marked by both regional differences and shared structural challenges of the forces outlined above.

Western Europe (excluding NE and SE), along with Northern Europe, home to some highly developed economies, leads in productivity level, GDP per capita, and technological infrastructure. This advantage stems from strong industrial ecosystems, skilled labor, and significant investment in research and development. However, even in these advanced economies, productivity growth has slowed in the recent decades. The two regions' demographic challenges are slightly reduced as migration somewhat reduces the impact of the decline in birth rates. While in Western Europe the unemployment rate has decreased from 7.3% in 2013 to 4.9% in 2024, the job vacancy rate has risen from 1.8% to 2.9%, suggesting an increase in demand accompanied by skill mismatches. On the other hand, in Northern Europe, the unemployment rate remains elevated by 6.8%, and a job vacancy rate of 1.9% signals relatively low demand and job creation challenges.

Southern Europe has made considerable strides in reducing a historically high unemployment rate. From peaks of around 20%[14] in 2013, after easing from the adverse shock of the global financial crisis, the region more than halved its unemployment rate, aided by labor reforms such as Spain's crackdown on temporary contracts[15] and Italy's Jobs Act.[16] Despite this progress, the region continues to face challenges around productivity growth deceleration, an elevated unemployment rate, job creation, and the highest rate of youth (those aged 15 to 29 years) in Europe neither in employment nor in education or training (NEET).

Eastern Europe, including the Baltic region, has experienced an economic resurgence since joining the European Union in the early 2000s, particularly through growth in manufacturing and digital innovation. Nations like Estonia have become leaders in e-governance.[17] But now, the region faces headwinds: slowing growth, a less developed private sector,[18] and a much faster population and working age decline in the coming decades. This demographic decline, driven by lower birth rates and the emigration of young, skilled workers to Western Europe, could exacerbate future labor supply challenges.

Across Europe, aging populations and low birth rates present a challenge, more prominently so in Eastern Europe. These demographic trends are

14 "Unemployment by sex and age - monthly data," Eurostat, May 2, 2025.

15 "Spain cracks down on short-term contracts with labour reform," Financial Times, January 13, 2022.

16 Tito Boeri and Pietro Garibaldi, "A tale of comprehensive labor market reforms: Evidence from the Italian jobs act," *Labour Economics*, August 2019, Volume 59.

17 For more, see the e-Estonia website.

18 "The private sector must continue to take charge of Eastern Europe's economic development," *International Business Times*, February 22, 2024.

contributing to labor shortages, slowing growth, and putting long-term pressure on pension systems and public services. While Western Europe (excluding NE and SE) sees a higher vacancy rate, Eastern Europe's labor market vulnerabilities are often obscured by underinvestment and limited job creation. Southern Europe is recovering from lagging growth and a high unemployment rate in the past but is still falling behind on the long-term productivity boost front.

TECHNOLOGY ADOPTION AND RESKILLING COULD LEAD TO A VIRTUOUS CYCLE OF SUSTAINABLE LONG-TERM GROWTH

Despite the challenges, a shared opportunity exists. If Europe invests in workforce skills, embraces digital transformation, and fosters innovation, it can overcome demographic constraints and reignite productivity. Coordinated efforts at both national and EU levels will be essential in turning current vulnerabilities into a foundation for sustainable growth across the continent.

Recent analysis of ten European countries found that there is a potential to automate up to 30% of current hours worked by 2030 in the midpoint automation adoption scenario, particularly in sectors like manufacturing and finance and for activities such as customer service.[19] Automation adoption, coupled with reskilling workers for the jobs of the future, has the potential to raise Europe's annual productivity growth by as much as three percentage points. To enable this transition, 12 million workers may need to leave their current line of work for newer opportunities.[20]

When technology adoption and reskilling go hand in hand, they create a virtuous cycle: Accelerating technology adoption boosts productivity by enabling businesses to operate more efficiently, innovate, and scale. Technology also generates demand for new jobs and skills, which are generally paid higher as well. At the same time, reskilling for the future, of both new labor market entrants and the transitions workers, enhances resilience by equipping workers with future-ready skills, improving employability, and aligning talent with evolving industry needs. It fosters innovation, reduces turnover, and promotes economic inclusion, ensuring both individuals and economies thrive in a changing world. This feedback loop fuels continuous innovation, economic growth, and resilience across industries and societies.

While technology adoption and reskilling are essential across Europe, they are particularly critical in Eastern Europe due to several interconnected factors. Although today Eastern Europe experiences fewer worker and skill shortages compared with its Western counterparts, sustaining growth in the future is likely to require scaling technology adoption, building larger companies, and enhancing competitiveness. This will require a workforce equipped with the skills of tomorrow. Technology can play a pivotal role in stimulating productivity growth and mitigating the pressures of demographic decline.

The region could accelerate investment in technology and skill development

Capturing the full gains of technology requires the region to accelerate investments in both developing and adopting emerging technologies while also futureproofing its workforce with the necessary skills.

Large European firms currently spend €700 billion less annually on capital expenditure than their US counterparts, including a €450 billion shortfall in technology-related investments.[21] The region also spent half as much on R&D as a share of revenue and invested less.[22]

When it comes to skills, the EU produces about 20% fewer STEM graduates per thousand inhabitants than the United States.[23] Although Europe had slightly more AI professionals than the US in 2023 (120,000 versus 112,000) only 14% of the world's leading AI researchers continue to

19 "A new future of work: The race to deploy AI and raise skills in Europe and beyond," McKinsey Global Institute, May 21, 2024.

20 Ibid.

21 Jan Mischke, Massimo Giordano, Solveigh Hieronimus, and Sven Smit, "Europe in the intelligent age: From ideas to action," McKinsey, January 17, 2025.

22 "Accelerating Europe: Competitiveness for a new era," McKinsey Global Institute, January 16, 2024.

23 Ibid.

work in Europe, despite 22% having studied there. Compensation disparities are a major factor: In 2023, software developer salaries in the US were two to four times higher than in Europe.[24]

To better understand how technology is reshaping Europe's labor market and skills landscape, two complementary surveys were conducted: an employer survey exploring technology adoption, skills gaps, and initiatives to upskill young talent; and a youth survey capturing perceptions of tech-driven change, job readiness, essential skills, and the support needed to enter the workforce. Three insights emerged:

- **The evolving tech landscape: Slower momentum assessed in Eastern Europe and the Baltics versus Western Europe.** Sixty-nine percent of executives across Europe report using AI or machine learning (ML), positioning Europe behind the US (82%) but ahead of MENA (65%).[25] While 67% of executives in Eastern Europe report using these technologies (and 61% of the executives surveyed in the Baltics), that is six percentage points lower than the 73% reported by their counterparts in Western Europe. Firms in Eastern Europe are generally adopting new technologies at a slower pace than in Western Europe and tend to focus on immediate, customer-facing improvements rather than broader technological transformation.
- **Emerging workforce trends: European leaders report the workforce shortages and skills gap for advanced technology professionals and skills.** While European executives are generally optimistic about the impact on the workforce of advanced technologies such as gen AI, they are relatively less optimistic about talent availability and skill shortages. Some 58% of executives have experienced at least some talent shortages, while 68% have faced hiring challenges either domestically, internationally, or both—with Eastern European and Baltic countries reporting more hiring challenges than their Western counterparts. The biggest deficits are in advanced IT and programming skills, followed by advanced data analysis and mathematical skills. Executives across Europe do show optimism about reskilling the workforce to address the skills gap: More than half of executives recognize upskilling and retraining as viable solutions to address skill shortages, half depend on hiring new employees, and 29% consider worker displacement to bridge the gap.

24 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024.

25 In the *Global Future of Work Middle East and North Africa (MENA)* report, the AI and ML adoption percentages, as reported by executives, were highlighted separately. The adoption percentage highlighted here shows the unique count of executives reporting adoption of both technologies.

- **From classrooms to careers: Youth require training in job-ready skills.** Forty-five percent of youth in Eastern Europe feel underprepared for the jobs companies require, compared with 52% and 54% in Western Europe and the Baltics, respectively. Executives are similarly concerned: Sixty-eight percent of business leaders across Europe feel that youth are not job ready after graduating from colleges and universities, with only 32% reporting sufficient training in technology skills such as programming, data analysis, and engineering design for youth.

Equipping people with in-demand, future-ready skills enhances employability and ensures workers can adapt to evolving job markets and technologies. A job-ready-skilled workforce boosts productivity, accelerates innovation, and helps businesses remain competitive in a rapidly changing landscape. For employers, investing in skills development strengthens talent retention and engagement while reducing turnover and recruitment costs. More broadly, reskilling supports economic inclusion by opening access to higher-value roles and promoting upward mobility. It also helps close critical skills gaps across industries, aligning workforce capabilities with real-world needs.

A PATH FOR A MORE PRODUCTIVE ERA IN EUROPE

Europe could double down on its efforts on skills and technology adoption. While specific solutions may vary depending on countries' individual needs, Europe has an opportunity to build on bold and effective initiatives already underway in several of its nations. Our analysis of a variety of workforce initiatives identified two overarching key potential actions:

1. Leveraging Europe's education advantage to future-proof worker skills and prevent the loss of top talent
2. Accelerating the adoption of digital and AI technologies to boost productivity and competitiveness

In Western Europe, skill mismatches have emerged relatively more than in Eastern countries—especially in sectors such as information and communication, construction, professional, scientific, and technical activities, as well as in accommodation and food services.[26] Reskilling and upskilling existing and new workers can help to fill critical gaps and sustain competitiveness in a fast-evolving economy.

On the other hand, Eastern Europe currently has low unemployment and vacancy rates, but with a declining population and elevated emigration, it faces potential talent and skills gaps in the future. However, this presents a unique opportunity to build a future-ready talent pipeline. By aligning workforce development with strategic investments and proactive planning, Eastern Europe can address emerging labor market risks and maintain long-term competitiveness.

Designing and adapting courses to meet industry demands will be a vital step. A marquee example of this strategic approach is Finland's free "Elements of AI" course, which introduces key AI concepts in an accessible format. It has been adopted in over 170 countries and is available in more than 20 languages.[27] With more than one million learners enrolled, it has helped Finland emerge as a leader in digital skills across Europe and set a global benchmark for inclusive tech education.

To embark on this journey, both Western and Eastern Europe could strengthen collaboration between employers and academia through skill-based training aligned with market needs, guided by employer-led councils and dynamic skills registries. Joint R&D investments, agile certifications, and modern training hubs could also ensure education stays relevant. The EU's Pact for Skills offers a strong model in which public institutions and large companies in the automotive sector plan to invest €7 billion to reskill over 700,000 workers,[28] with pilot programs in several countries.[29] Governments can support similar initiatives by funding targeted courses tied to labor market gaps and aligning training with occupational standards. Tools like

26 "Job vacancy statistics," Eurostat, March 2025.

27 For more, see the Elements of AI website (elementsofai.com).

28 "The Pact for Skills: mobilising all partners to invest in skills," European Commission, November 10, 2020.

29 Edoardo Munari, "Automotive Skills Alliance and the Pact for Skills – Celebrating 1 year of supporting workforce transformation in the automotive ecosystem," Automotive Skills Alliance, November 10, 2021.

individual learning accounts and interoperable skills passports can further boost workforce adaptability and mobility.

On technology adoption, Europe has made significant investments, like the InvestEU Fund, with an overall aspiration of dedicating 0.1% of European GDP yearly to public investment to build gen AI infrastructure. But even with this commitment, Europe trails its counterparts: For example, in 2023, US private investments in AI reached $67 billion, compared with $11 billion in Europe. In addition, the EU's $1.7 billion investments in gen AI in 2023 were a fraction of the $23 billion injected by venture capital and private equity in the US for the same period. And while the US is home to 37% of global data center installed capacity, Europe has 18%, with most owned by US companies.[30]

Strategic actions to accelerate the adoption of digital and AI technologies in the region could include investing in critical infrastructure, training workforces in digital and technology skills, and creating an enabling environment to scale tech solutions. The European Chips Act, for example, came into force in September 2023 and commits €43 billion to strengthen Europe's semiconductor industry and addresses a broad spectrum of chip technologies.[31]

AI adoption also requires a skilled workforce. To address these challenges, policymakers could introduce incentives such as tax breaks or premiums to attract and retain AI talent, could support research institutions, and could offer public grants. Business leaders could also focus on upskilling European workers in gen AI to bridge the gap in AI usage.

Estonia's KrattAI Strategy[32] is a prime example of how tech and skills investment can drive success. Launched in 2019, Estonia integrated AI across public administration, creating a seamless digital government with initiatives like Bürokratt, an AI-powered virtual assistant; AI-driven judicial digitization; predictive traffic management; and applications in agriculture and sustainability. A reskilling program equipped civil servants to manage AI ethically. By 2023, Estonia had over 130 AI projects,[33] a 93% digital government adoption rate,[34] reduced service processing times, and increased citizen satisfaction, aiming for 90% satisfaction by 2030.[35]

Finally, there is an opportunity for policies and regulatory barriers to be streamlined to achieve scale by avoiding fragmentation. Europe is home to countries with different contexts and necessities. Many companies, however, find it challenging to navigate complex regulations, and recent research revealed that eight out of ten European companies do not fully understand the obligations introduced by the EU AI Act[36] and 70% of companies find them overly complex. Such regulatory challenge can potentially reduce the speed of innovation and competitiveness by limiting access and use of technologies.

While these steps are not holistic, they offer a potential path to success. Europe has the opportunity to recast its growth model by accelerating technological adoption, reducing fragmentation and scaling challenges, creating large numbers of companies, reskilling workers, and fostering talent mobility into emerging industries. By acting decisively, it could revitalize its competitiveness and build long-term economic resilience, turning today's challenges into tomorrow's momentum.

30 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024.

31 "European Chips Act," European Commission, accessed May 2, 2025.

32 "New e-Estonia factsheet: National AI 'kratt' strategy," e-Estonia, June 26, 2020.

33 "AI use in public sector is a team sport," e-Estonia, March 13, 2024.

34 "Estonia in the DESI 2020: At the top of the world… sort of," e-Estonia, June 17, 2020.

35 *European Digital Decade Strategic Roadmap: Estonia*, Estonian Ministry of Economic Affairs and Communications, 2023.

36 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024.

ONE CONTINENT, MANY VARIANCES: EUROPE'S COMPETITIVENESS OPPORTUNITY

THIS CHAPTER EXAMINES the major factors driving Europe's labor markets, focusing on the similarities and differences across the region. Four challenges loom largest in Europe's efforts to revitalize productivity and, in turn, generate sustainable long-term economic growth and renewed global competitiveness: declining demographics, low unemployment but rising job vacancies, decelerating productivity, and the slow adoption of technology.

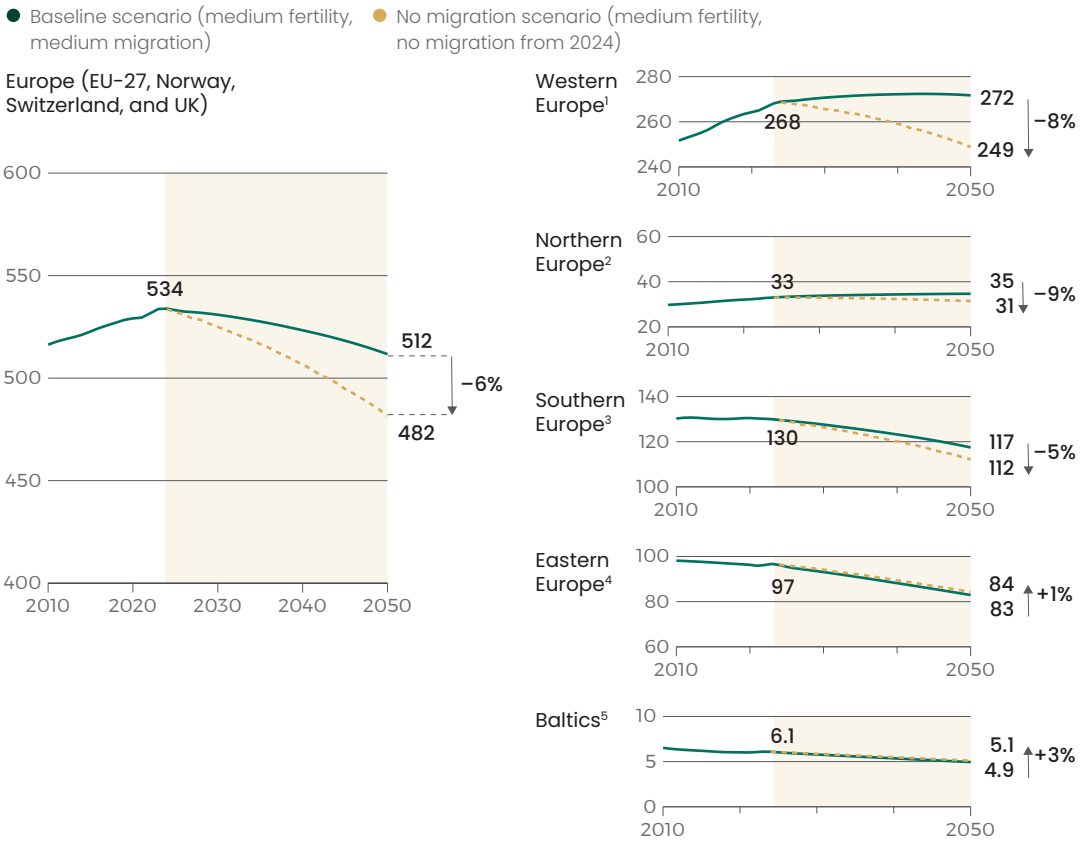
DECLINING DEMOGRAPHICS, PARTICULARLY IN EASTERN AND SOUTHERN EUROPE

Europe's population, which is now at 534 million, is expected to decline gradually to 512 million by 2050 in a baseline scenario with medium fertility and medium migration assumptions (Exhibit 1).[37] This decline is driven by persistently low fertility rates, averaging around

Exhibit 1

EUROPE'S POPULATION IS PROJECTED TO DECLINE.

Europe population projection by scenario, 2010–50, million



[1] Western Europe (excluding NE and SE): Germany, France, Belgium, Netherlands, Luxembourg, Austria, Switzerland, and the United Kingdom.
[2] Northern Europe: Sweden, Finland, Denmark, Norway, and Ireland.
[3] Southern Europe: Spain, Italy, Portugal, Greece, Cyprus, and Malta.
[4] Eastern Europe (excluding Baltics): Poland, Hungary, Czechia, Slovakia, Romania, Bulgaria, Croatia, and Slovenia.
[5] Baltics: Estonia, Latvia, and Lithuania.
Source: *World Population Prospects 2024*, United Nations, accessed May 1, 2025

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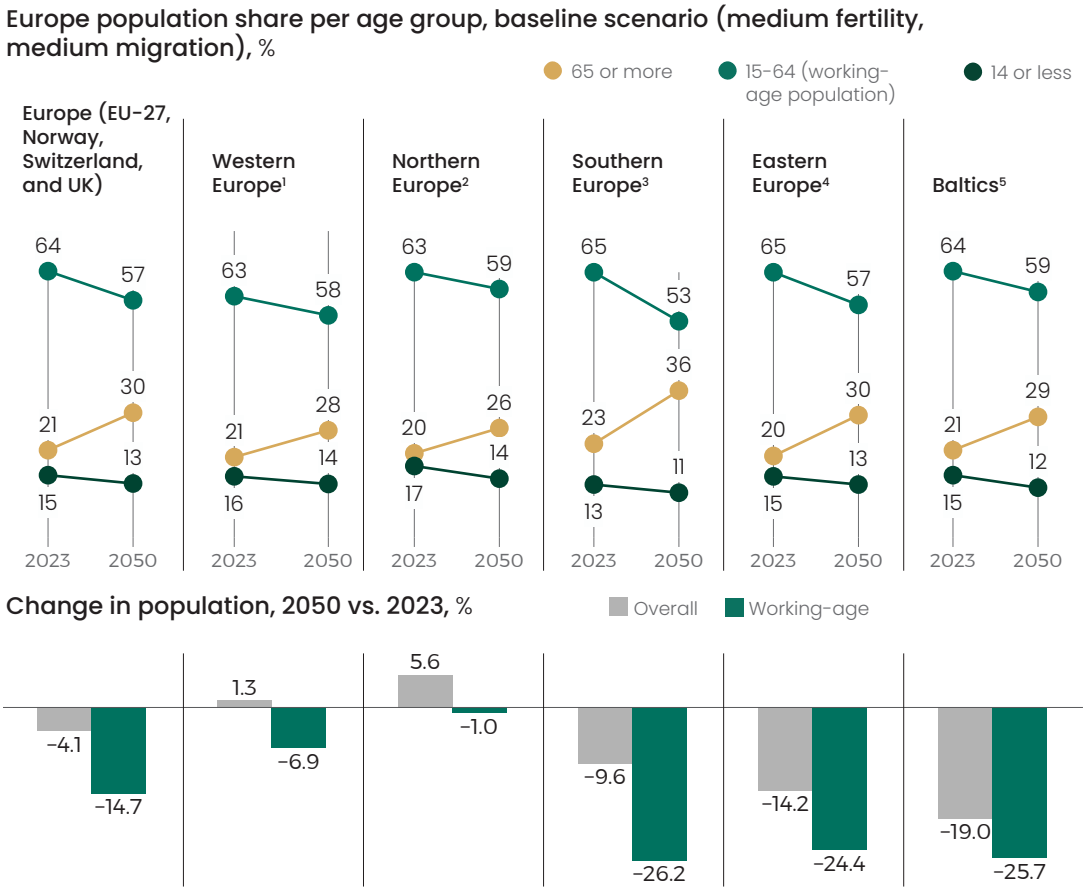
37 *World Population Prospects 2024*, United Nations, accessed May 1, 2025. UN scenario definition from "Definition of projection scenarios," United Nations, accessed April 28, 2025.

1.4 live births per woman in 2023, well below the replacement rate of 2.1.[38] At the same time, longer lifespans are accelerating the aging population: The median age rose from 42 in 2013 to 44 in 2023 and is projected to reach 48 by 2050. By mid-century, the share of those aged 65 and above is expected to rise from 21.2% in 2023 to 29.8%, with the old-age dependency ratio increasing from 33.3% in 2023 to 52.6% in 2050.[39] There are significant regional variations, though, with Eastern European countries facing steeper challenges than their Western European counterparts (Exhibit 2).

Exhibit 2

THE LARGEST WORKING AGE POPULATION DECLINE IS EXPECTED IN THE SOUTHERN, EASTERN, AND BALTICS REGIONS.



Overall population, 2023, millions

533.7	268.1	32.8	130.0	96.7	6.1

Working-age population, 2023, millions

340.4	169.3	20.8	83.8	62.6	3.9

Note: Figures may not sum to 100%, because of rounding.
[1] Western Europe (excluding NE and SE): Germany, France, Belgium, Netherlands, Luxembourg, Austria, Switzerland, and the United Kingdom.
[2] Northern Europe: Sweden, Finland, Denmark, Norway, and Ireland.
[3] Southern Europe: Spain, Italy, Portugal, Greece, Cyprus, and Malta.
[4] Eastern Europe (excluding Baltics): Poland, Hungary, Czechia, Slovakia, Romania, Bulgaria, Croatia, and Slovenia.
[5] Baltics: Estonia, Latvia, and Lithuania.
Source: *World Population Prospects 2024*, United Nations, accessed May 1, 2025

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38 "Fertility statistics," World Bank World Development Indicators.

39 *World Population Prospects 2024*, United Nations, accessed May 1, 2025.

Western (excluding NE and SE) and Northern Europe are expected to experience modest population growth in the coming decades. Western Europe's population is projected to grow by 1.3% by 2050, while Northern Europe is expected to see a more robust increase of 5.6%. This is attributable, in part, to migration[40]: While the working-age population in these regions is predicted to decline, Western Europe (excluding NE and SE) and Northern Europe have been receiving more immigrants from other European and non-European countries.[41] While not all migrants are immediately integrated into the workforce, sustained migration has helped partially offset natural population decline. These regions are also better positioned economically, with more advanced infrastructure and diversified industries that can adapt to demographic shifts.

Southern Europe also has demographic challenges, with its population projected to fall by 9.6% by 2050 and its working-age population (ages 15–64) expected to decline by up to 26.2%. A shrinking workforce could undermine economic growth, while an aging population could place increasing pressure on public and social welfare systems.

Eastern Europe (excluding the Baltics) is at the epicenter of Europe's demographic decline. By 2050, the region's population is projected to shrink by 14.2%, with the working-age population declining by 24.4%. Adding to these demographic pressures is emigration from the region, which has remained elevated.[42]

The Baltics face an even larger contraction, with a total population decline of 19%. And while emigration has declined compared with historical highs, emigration as a share of total population still remains highest across Europe.[43] This is expected to add pressure on the availability of the young population, with the working-age population expected to decline by 25.7% through 2050.[44]

Because of these regional differences, Europe's response to evolving demographics could involve tailored strategies. For Eastern Europe, reversing emigration and fostering economic development is likely to be critical, while investments in education, infrastructure, and job creation could help retain young talent and create opportunities for growth. Western Europe could continue leveraging its relatively better position to advance technological innovation, sustaining its economic dynamism and reducing the effect of an aging population.

LOWER UNEMPLOYMENT RATE AND RISING VACANCY RATE REVEAL A WIDENING SKILLS GAP

Despite a marked improvement in unemployment rate across Europe, the job vacancy rate remains significantly elevated (Exhibit 3a).[45] From 1.3% in 2013, the vacancy rate increased to 2.2% by 2024,[46] while the unemployment rate has almost halved to 5.8%[47] and the rate of youth neither in employment nor in education or training (NEET) reduced by five percentage points to 11.0% from 16.1%[48] (Exhibit 3b). Today, for every vacancy, there are almost three unemployed people in Europe. This reflects two key themes. While demand for workers has improved, it remains lower than the labor force in the region. Additionally, there is an emerging skill mismatch, leaving many vacancies unfilled. These skills mismatches exist in multiple sectors—notably, information and communication, construction, professional, scientific, and technical activities, as well as accommodation and food

40 "Cohesion Report highlights need to adapt policies to changing demographics," European Commission, March 1, 2023.

41 "Immigration by broad group of country of previous residence", Eurostat, April 2025.

42 "Emigration by age and sex," Eurostat, April 10, 2025.

43 Ibid.

44 Ibid.

45 As a result of a lack of available data Exhibit 3a uses EU-27 data. For the entire section that follows, the job vacancy rate and unemployment rate figures are for Europe, as defined in the preface—that is, EU-27 countries plus Norway, Switzerland, and the United Kingdom.

46 "Job vacancy statistics by NACE Rev. 2 activity - quarterly data (from 2001 onwards)," Eurostat, March 18, 2025.

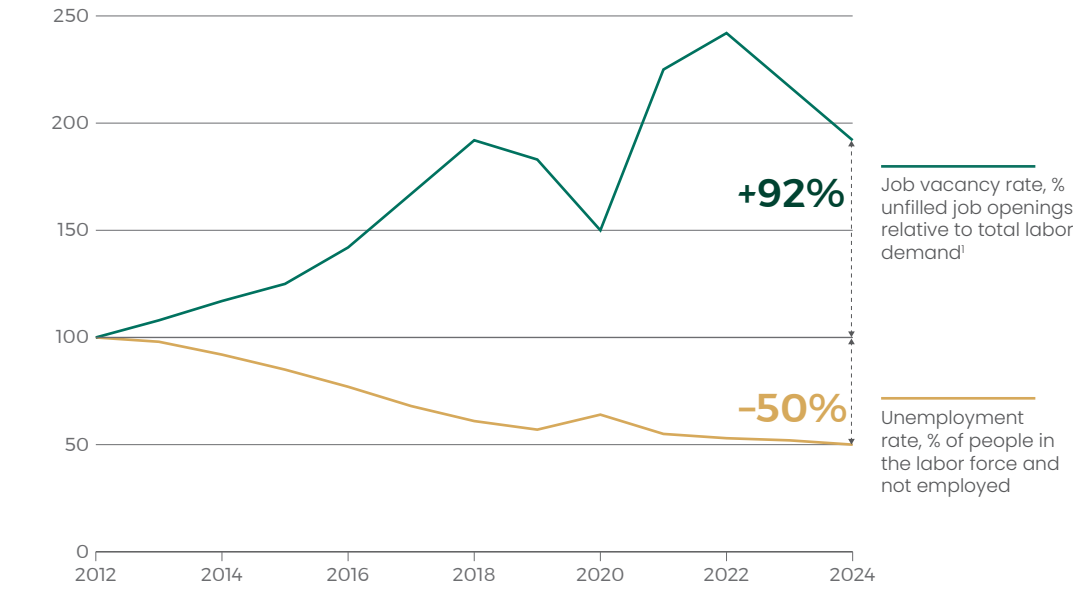
47 Ibid.

48 "Participation rate of young people in education and training by sex, age and labour status (incl. NEET rates)," Eurostat, April 14, 2025.

Exhibit 3a

JOB VACANCY RATE REMAINS ELEVATED, WHILE THE UNEMPLOYMENT RATE HAS DECLINED.

Job vacancy rate and unemployment rate, EU-27, 2012–24, %, index (2012 = 100)



[1] Labor demand = total employed + total job openings.
Source: "Job vacancy statistics by NACE Rev. 2 activity - quarterly data (from 2001 onwards)," Eurostat, March 18, 2025

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services—indicating a broad skills demand and supply imbalance affecting the labor market.[49] While demographic challenges are structural in nature, the geopolitical situation is continuously evolving and may reduce the pressures if growth slows down.

The ongoing disconnect between available jobs and the skills or mobility of job seekers is a key factor in the paradox of unfilled vacancies despite improving unemployment figures, although severity differs by region:

- **Western Europe (excluding Northern and Southern Europe)** had an average unemployment rate of 4.9% in 2024, with a NEET[50] rate of 9.7%. The vacancy rate of 2.9%, when compared with the unemployment rate, means there was roughly one job opening for every 1.7 unemployed individuals compared. This is nearly twice than that of Eastern Europe, where there are three unemployed individuals for each job opening. This imbalance signals that many job seekers may lack the qualifications or experience required for available roles, particularly in high-demand sectors such as ICT, engineering, and skilled trades.[51] It is estimated the gap between demand and supply for skilled labor could widen as aging populations increase the old-age dependency ratio by 2050.
- **Northern Europe's** unemployment rate averaged 6.8%, with a NEET rate of 7.5% in 2024. The job vacancy rate was 1.9%, equating to one job opening for every 3.7 unemployed individuals. While the mismatches are lower, a higher unemployment rate signals demand challenges. However, countries in the region

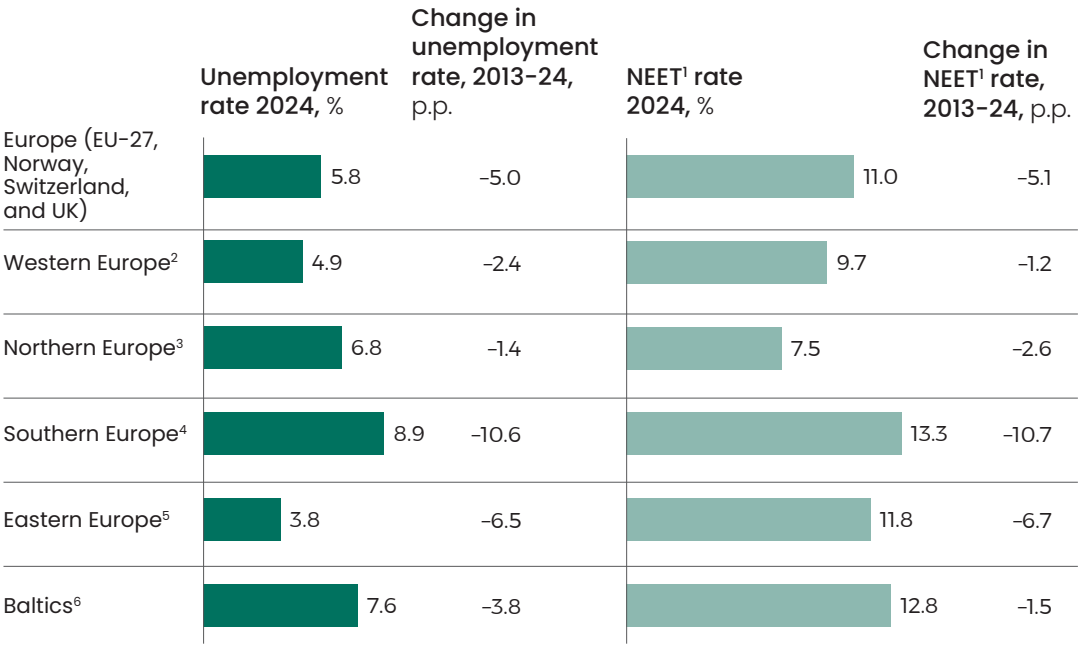
49 "Job vacancy statistics by NACE Rev. 2 activity - quarterly data (from 2001 onwards)," Eurostat, March 18, 2025.

50 The UK is excluded because it uses a NEET definition based on ages 16–24, as compared with ages 15–29 for the remaining countries in the sample.

51 "Germany: Mismatch priority occupations," CEDEFOP, October 21, 2016; "France: Mismatch priority occupations," CEDEFOP, October 22, 2016.

Exhibit 3b

UNEMPLOYMENT AND NEET RATES HAVE FALLEN BUT REMAIN ELEVATED IN SOUTHERN EUROPE AND THE BALTICS.



[1] Young people neither in employment nor in education and training, ages 15–29.
[2] Western Europe (excluding NE and SE): Germany, France, Belgium, Netherlands, Luxembourg, Austria, Switzerland, and the United Kingdom. Excluding UK as it uses NEET definition based on 16–24 years age group compared to 15–29 years for remaining countries in the sample.
[3] Northern Europe: Sweden, Finland, Denmark, Norway, and Ireland.
[4] Southern Europe: Spain, Italy, Portugal, Greece, Cyprus, and Malta.
[5] Eastern Europe (excluding Baltics): Poland, Hungary, Czechia, Slovakia, Romania, Bulgaria, Croatia, and Slovenia.
[6] Baltics: Estonia, Latvia, and Lithuania.
Source: "Job vacancy statistics," Eurostat, accessed March 2025; "Statistics on young people neither in employment nor in education or training," Eurostat, May 2024; World Bank World Development Indicators

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like Sweden and Denmark do report shortages in the ICT, healthcare, and education sectors.[52]

- **Southern Europe** has made significant progress in reducing unemployment, but its unemployment and NEET rates are the highest in the region at 8.9% and 13.3%, respectively. On the other hand, vacancies are around 1.3%, so all indicators point to a need for further job creation and upskilling opportunities.
- **Eastern Europe** (excluding the Baltics) has the lowest unemployment rate in the region, averaging around 3.8%, with NEET at 11.8% and a low vacancy rate of around 1.2%. But it is important to note that these vacancy rates have almost doubled in the past decade. Looking ahead, with declining demographics, the pressures could intensify, and shortages reported in certain sectors—especially ICT, healthcare, and construction—could become acute.[53]
- **The Baltic nations** had an average unemployment rate of 7.6% in 2024, a NEET rate of 12.8%, and a vacancy rate of 2.0%. The high unemployment rate relative to vacancy rate implies slow job creation as well as some degree of skills mismatch, especially as the vacancy rate has increased by 2.5 times in the past decade. This dynamic is further compounded by the region's rapidly aging population, as well as persistent emigration that depletes the pool of skilled labor.

52 "Sweden: Mismatch priority occupations," CEDEFOP, October 4, 2016; "Denmark: Mismatch priority occupations," CEDEFOP, October 25, 2016.

53 "Hungary: Mismatch priority occupations," CEDEFOP, October 19, 2016; "Poland: Mismatch priority occupations," CEDEFOP, October 10, 2016.

PRODUCTIVITY GROWTH CONTINUED TO DECELERATE ACROSS EUROPE

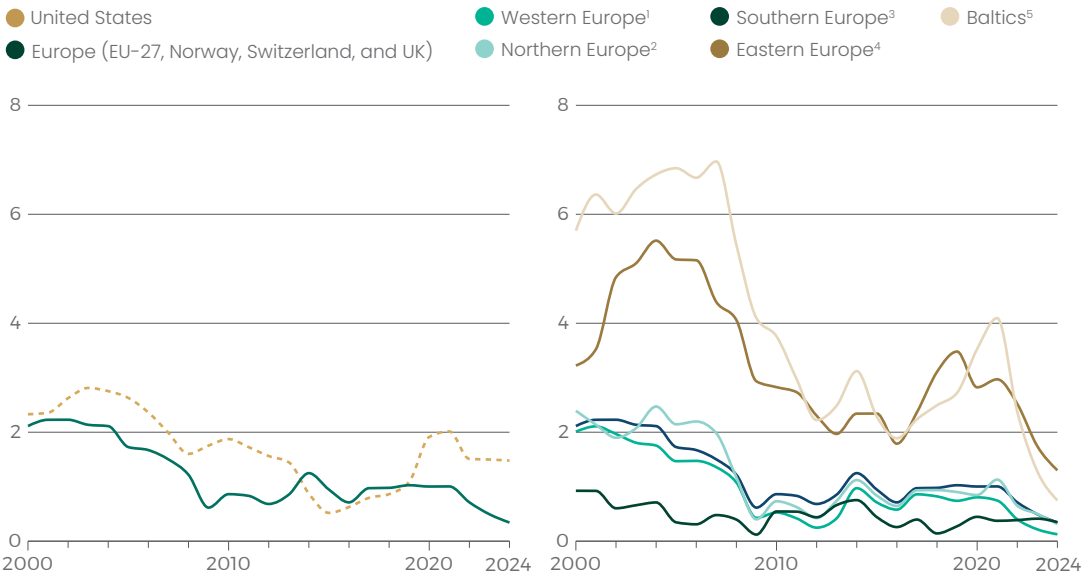
Productivity is essential because it drives economic growth with the same resources. By improving efficiency, businesses can produce more with fewer resources, boosting profits and enabling higher wages. For nations, enhanced productivity is the foundation for increased competitiveness, fostering innovation, better jobs, and improved living standards. Europe is home to some iconic high-growth, high-profitability champions in almost all sectors.[54] But even before new challenges emerged, there were signs its competitiveness was eroding and its productivity gap with the United States widening.

During the post-World War II "Golden Age,"[55] Europe's economies rebuilt and advanced technologically, with labor productivity—measured by output per hour—outpacing that of the United States.[56] However, by the mid-1990s, Europe's productivity growth began to decelerate, and the region found it difficult to keep pace with the US. In the 2010s,[57] Europe's productivity growth averaged just 1.0% per year, further slowing to 0.3% during the past five years. As a result, the productivity gap between Europe and the US has now surpassed 25%, highlighting the widening disparity in output per hour worked.[58]

Exhibit 4

EUROPE'S LABOR PRODUCTIVITY GROWTH HAS DECELERATED ACROSS REGIONS.

Labor productivity growth (GDP per hour worked increase), moving 5-years CAGR, %



[1] Western Europe (excluding NE and SE): Germany, France, Belgium, Netherlands, Luxembourg, Austria, Switzerland, and the United Kingdom.
[2] Northern Europe: Sweden, Finland, Denmark, Norway, and Ireland.
[3] Southern Europe: Spain, Italy, Portugal, Greece, Cyprus, and Malta.
[4] Eastern Europe (excluding Baltics): Poland, Hungary, Czechia, Slovakia, Romania, Bulgaria, Croatia, and Slovenia.
[5] Baltics: Estonia, Latvia, and Lithuania.
Source: The Conference Board Total Economy Database™, accessed April 2025

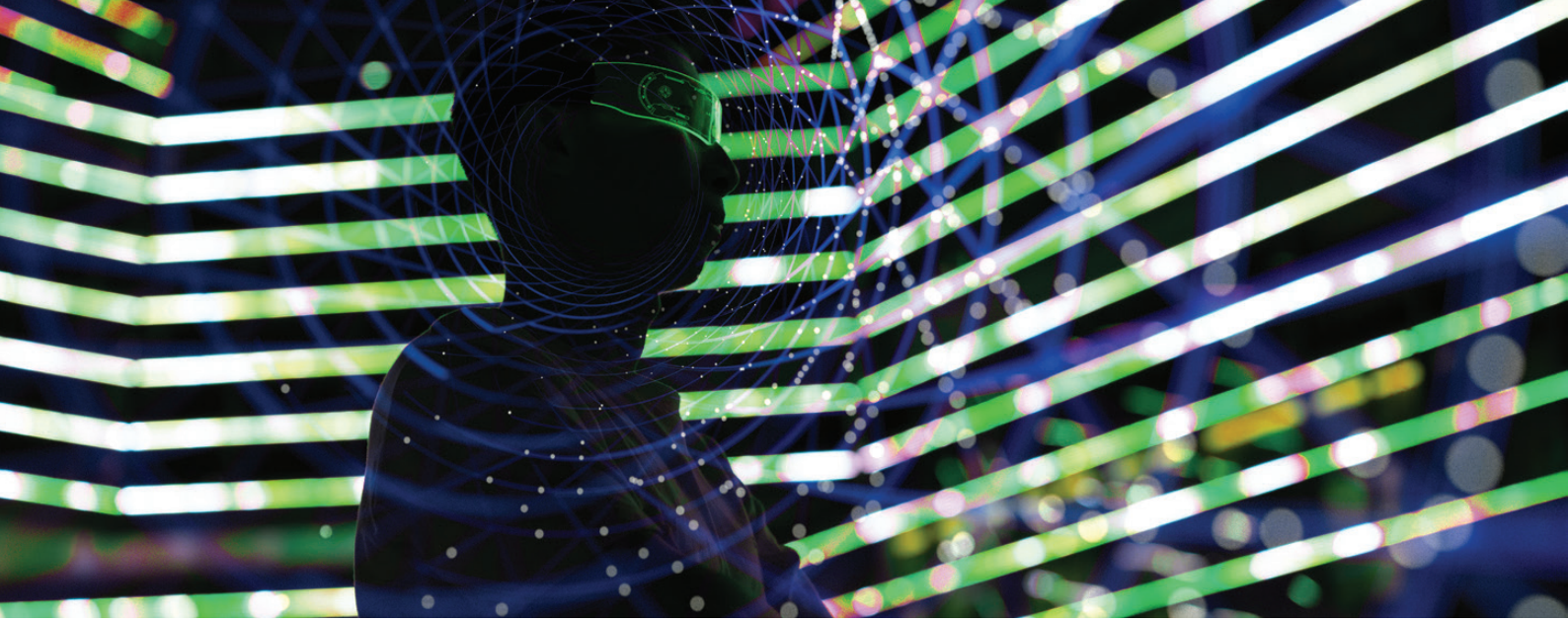
54 "Fortune Global 500," Fortune, accessed May 2, 2025.

55 Nicholas Crafts, "The Golden Age of European economic growth," in *Handbook of Cliometrics*, Springer, 2020.

56 Antonin Bergeaud, *The past, present, and future of European productivity*, European Central Bank, 2024.

57 Marcello M. Estevão, *Why is productivity growth in the Euro area so sluggish?*, International Monetary Fund, working paper WP/04/200. October 2004.

58 The Conference Board Total Economy Database™, accessed April 2025. Productivity per hour worked.



One driver of Europe's overall productivity growth slowdown has been a growth deceleration in Eastern European and Baltic countries. Despite starting from a lower productivity base, these regions enjoyed strong catch-up growth, with productivity two decades ago increasing by 3–5% annually.[59] However, that momentum has ebbed, with average annual productivity growth slowing down to 1.3% and 0.8%, respectively, for Eastern Europe (excluding the Baltics) and the Baltic region during the past five years, putting it on a convergence path with the already low growth rates of Western Europe. Meanwhile, in Western Europe (excluding Northern and Southern Europe) and Northern Europe, productivity growth has continued to stagnate or decelerate, further affecting the continent's overall productivity trajectory (Exhibit 4).

The factors behind the slowing of productivity growth

Europe's productivity deceleration is a result of underinvestment and slow adoption of technology, particularly automation, along with fragmented markets.[60] The continent's productivity-backed competitiveness has traditionally been shaped by its ability to lead rapid industrialization and technological change from the front, but data shows it has potential for growth in key areas tied to innovation, investment, and regulations.

Europe's largest companies already trailed their US counterparts on multiple measures. From 2015 to 2022, they spent roughly half as much on R&D as a share of revenue and invested less (even adjusting for their smaller size). In turn, they grew at two-thirds of the pace, and their return on capital was four percentage points lower. In 2022, total market capitalization was 2.5 times higher in the United States than in Europe, and the scale of US firms was almost double.[61]

Investment patterns reflect broader structural gaps. Between 2015 and 2022, capital expenditures by large European firms remained flat after adjusting for inflation, while their US counterparts increased investment by 30%, largely driven by the tech sector. By the end of that period, large US firms were investing 60% more than their European peers. Additionally, Europe's venture capital ecosystem remains relatively less penetrated: In 2022, private equity assets under management were 50% lower than in the US and venture funding was 75% lower. This underinvestment may be limiting the ability of European firms to scale and innovate.[62]

While Europe has historically excelled in sectors like automotive, aerospace, and pharmaceuticals, its position in emerging technologies is less robust. For example, only three European gen AI companies had reached scale, versus 35 in the US. Boosting corporate R&D spending to match the US and other peers' levels and laying the groundwork for leadership in emerging technologies could drive future European growth

59 "Investing in productivity growth," McKinsey Global Institute, March 27, 2024.

60 "Accelerating Europe: Competitiveness for a new era," McKinsey Global Institute, January 16, 2024.

61 Ibid.

62 Ibid.

and global competitiveness.[63] One of the key enablers could be encouraging the development of large-scale firms with unified business regulations. Boosting corporate investment could also attract additional foreign direct investment. While Europe has traditionally relied on open markets, others are ramping up support from government aid as well: Like the US's IRA and Chips Act, the EU's 2021 Recovery and Resilience Facility, the Green Deal Industrial Plan, and the European Chips Act are crucial steps.[64]

ACCELERATING TECH ADOPTION COULD UNLOCK SIGNIFICANT PRODUCTIVITY GAINS

Technology adoption is critical to boosting productivity, as it enables people and businesses to do more with less—often faster, better, and at lower cost—by automating routine tasks, reducing errors, and freeing up time and resources for higher-value work. For example, digital tools in manufacturing (like the Internet of Things and robotics) can increase efficiency, reduce downtime, and improve quality control. In services, AI-powered systems can handle customer support, analyze data instantly, or streamline financial processes. At same time, investment in the development of this technology, along with adoption, drives innovation, accelerates output growth, and supports new business models, and it could create jobs too.

An analysis of ten European countries[65] found the potential to automate up to 30% of current hours worked by 2030 in the midpoint automation adoption scenario—notably in sectors like manufacturing and finance, as well as for activities such as customer service.[66] Automation adoption, coupled with reskilling workers for the jobs of the future, could raise Europe's annual productivity growth by up to three percentage points.[67]

Europe's ability to capture these gains is today hampered by comparatively low investment in developing and adopting these technologies. The capital expenditure of large European firms is €700 billion less per year than their US counterparts, including a €450 billion shortfall in technology-related investments.[68] This underinvestment puts an estimated €2 trillion to €4 trillion in annual value-add at risk by 2040.[69] Meanwhile, infrastructure gaps persist: Europe's 5G coverage is at 81%, far behind the more than 95% coverage in the US,[70] and even Western Europe trails the US in AI and IT spending across sectors, with an average gap of 45–70% in terms of spending as a percentage of sales.[71]

Europe has made significant investments, like the InvestEU Fund, with an overall aspiration of dedicating 0.1% of European GDP yearly to public investment to build gen AI infrastructure.[72] But even with this commitment, Europe trails its counterparts: For example, in 2023, US private investments in AI reached $67 billion, compared with $11 billion in Europe.[73] In addition, the EU's $1.7 billion investments in gen AI in 2023 were a fraction of the $23 billion injected by venture capital and private equity in the US for the same period.[74] And while the US is home to 37% of global data center installed capacity, Europe has 18%, with most owned by US companies.[75]

63 Ibid.

64 Ibid.

65 The Czech Republic, Denmark, France, Germany, Italy, the Netherlands, Poland, Spain, Sweden, and the United Kingdom.

66 "A new future of work: The race to deploy AI and raise skills in Europe and beyond," McKinsey Global Institute, May 21, 2024.

67 Ibid.

68 Jan Mischke, Massimo Giordano, Solveigh Hieronimus, and Sven Smit, "Europe in the intelligent age: From ideas to action," McKinsey, January 17, 2025.

69 "Securing Europe's competitiveness: Addressing its technology gap," McKinsey Global Institute, September 22, 2022.

70 Jan Mischke, Massimo Giordano, Solveigh Hieronimus, and Sven Smit, "Europe in the intelligent age: From ideas to action," McKinsey, January 17, 2025.

71 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024.

72 Ibid.

73 "Artificial intelligence: A central bank's view," European Central Bank, July 4, 2024.

74 "Accelerating Europe: Competitiveness for a new era," McKinsey Global Institute, January 16, 2024.

75 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024.

Strategic actions to accelerate the adoption of digital and AI technologies in the region could include investing in critical infrastructure, training workforces in digital and technology skills, and creating an enabling environment to scale tech solutions. The European Chips Act, for example, which was signed in 2023, commits €40 billion to strengthen Europe's semiconductor industry and addresses a broad spectrum of chip technologies.[76]

RESKILLING WILL BE ESSENTIAL TO PREPARE THE WORKFORCE FOR THE FUTURE

As automation and structural trends reshape labor demand, Europe's workforce will need to consider preparing for the transition. For ten European countries, up to 12 million occupational transitions (7% of the workforce) may be required by 2030.[77] This is twice the average yearly prepandemic rate. Between 2022 and 2030, Europe could see 17% and 25% growth in STEM and healthcare roles, respectively, while demand for lower-wage jobs and those with repetitive tasks could shrink.[78]

While the demand mix for occupations across ten European countries is directionally similar, there are variations in the magnitude. For example, demand for STEM professionals could increase by up to 17% in Western Europe, but the corresponding increase is only 14% in Eastern Europe. Similarly, for healthcare jobs, Western Europe could see up to a 25% increase in demand, while in Eastern Europe this increase would be only around 19%.[79]

Enabling these shifts may require a significant skills upgrade: Demand for technological skills is projected to rise by 25% and for social-emotional competencies by 11%, while demand for basic cognitive skills is estimated to be less required.[80]

To capture this change, education systems can align with these evolving needs.[81] Across the EU, tertiary enrollment has risen steadily,[82] but mismatches persist between what students study and what the labor market needs. For example, Italy has a shortage of ICT and STEM professionals, even as many graduates remain unemployed in other fields.[83]

Large disparities in education investment exacerbate the divide. Northern and Baltic Europe spend the most on education—up to 6–7% of GDP—with strong public funding and high adult learning rates. In contrast, Southern Europe spends significantly less (for example, Italy is at 3.9% of GDP and Greece is at 4.0%), and Eastern countries like Romania invest the least among the 30 European economies analyzed in this report (around 3% of GDP).[84]

Improving skills presents a major opportunity for Eastern European countries to transition toward increased growth and innovative, technology-driven economies. For example, Hungary's participation rate increased by seven percentage points[85] from 2013 to 2023 as the result of target reforms in its labor market.[86] They have a strong footing in education and skills development, especially in areas such as STEM. As global and regional demand grows for digitally skilled talent, countries in the region have the chance to position themselves as competitive hubs for high-value industries. Targeted skilling in Eastern Europe can unlock new economic opportunities and fuel homegrown innovation and entrepreneurship. Moreover, skilling is a critical enabler for technology adoption—from automation to AI—which is increasingly necessary to boost productivity and compensate for shrinking labor supply. For a region aiming to move up the value chain and secure long-term economic growth, strategic investment in skills development is not just important—it's foundational.

76 "Chips Act: U.S. semiconductor legislation and policies," European Chips Act, accessed May 2, 2025.

77 "A new future of work: The race to deploy AI and raise skills in Europe and beyond," McKinsey Global Institute, May 21, 2024.

78 Ibid.

79 Ibid.

80 Ibid.

81 Ibid.

82 "43% of EU's 25-34-year-olds have tertiary education," Eurostat, May 27, 2024.

83 "Italy: Mismatch priority occupations," CEDEFOP, October 18, 2016.

84 "Government expenditure on education," Eurostat, March 21, 2025.

85 "Labor force participation rate, total (% of total population ages 15+) (modeled ILO estimate)," World Bank, accessed May 2, 2025.

86 "Labor reforms in Hungary: background summary (updated March 2019)," European Trade Union Institute, April 8, 2019.

2 BUSINESS AND YOUTH PERSPECTIVES ON TECHNOLOGY ADOPTION AND HUMAN CAPITAL DEVELOPMENT

TO BETTER UNDERSTAND the evolving dynamics of the labor market, the role of technology in shaping future opportunities, and how well prepared young Europeans are for the skills of the future, two complementary surveys were conducted targeting both employers and youth across Eastern Europe (excluding the Baltics),[87] the Baltics,[88] and Western Europe.[89] The first survey gathered insights from businesses and employers, focusing on current trends affecting their operations; the pace and impact of technology adoption, labor, and skill shortages; and the measures to upskill young talent. The second survey explored the perspectives of young people, examining their views on the expected impact of technology, their preparedness for future job opportunities, the skills they believe are essential, and the kind of support they require to transition into the workforce successfully. These surveys build upon previous editions conducted for the first and second editions of the *Global Future of Work Report* for the Middle East and North Africa (MENA)[90] and the Americas,[91] and we have compared those responses to underscore regional distinctions on the topics outlined above.

Together, these surveys aim to bridge the gap between employer expectations and youth, as well as workforce readiness, providing a comprehensive view of the challenges and opportunities in the rapidly changing world of work. The insights from these two surveys are divided into three sections:

1. The evolving tech landscape: Slower momentum assessed in Eastern Europe and the Baltics versus Western Europe
2. Emerging workforce trends: European leaders report workforce and skills gap for advanced technology professionals and skills
3. From classrooms to careers: Training in job-ready skills is required for the youth

THE EVOLVING TECH LANDSCAPE: SLOWER MOMENTUM IN EASTERN EUROPE AND THE BALTICS VERSUS WESTERN EUROPE

As part of an effort to understand how European businesses are navigating a rapidly changing environment, executives were asked a range of questions to uncover the impact of recent global disruptions, top trends affecting their business, and how emerging technologies are shaping strategy across different functions.

Around two-thirds of the executives in Europe believe their organizations will be significantly or disruptively affected by global disruptions (Exhibit 5a). Executives across Europe placed technology adoption second only to the evolving work expectations of younger generations as the top trends affecting their business. In the Baltics—home to a vibrant tech start-up sector that has spawned unicorns[92]—technology adoption stands out, with four in ten executives identifying it as a key trend affecting business. In Eastern Europe, a similar proportion of executives rank it as the second most important trend, while three in ten business leaders in Western Europe consider technology adoption to be the second most critical trend affecting their organizations (Exhibit 5b). These regional variations highlight the differing starting points, levels of urgency, and strategic focus placed on technology adoption across Europe, shaped by unique market dynamics and organizational needs.

This finding is not unique compared with the rest of the world—data from the survey conducted for the *Global Future of Work MENA* report found about half of the executives in that region emphasized the strategic importance of technology. The trend in Europe appears especially prominent among larger organizations, with 36% of medium and 37% large enterprises

87 Any reference to Eastern Europe for this chapter will include survey insights from five countries surveyed as a part of the Future of Work Report Survey for Europe, 2025. Those are Bulgaria, Czech Republic, Hungary, Poland, and Romania, as outlined in the preface.

88 Any reference to Baltics for this chapter will include survey insights from three countries surveyed as a part of the Future of Work Report Survey for Europe, 2025. Those are Latvia, Lithuania, and Estonia, as outlined in the preface.

89 Any reference to Western Europe for this chapter will include survey insights from four countries surveyed as a part of the Future of Work Report Survey for Europe, 2025. These include France, Germany, Spain, and the United Kingdom, as outlined in the preface.

90 *Global future of work report: Series 1: Preparing labor markets in MENA for a new technological era*, FII Institute, October 30, 2024. Survey insights from the countries of Algeria, Egypt, Jordan, Lebanon, Morocco, Qatar, Saudi Arabia, Tunisia, and the United Arab Emirates.

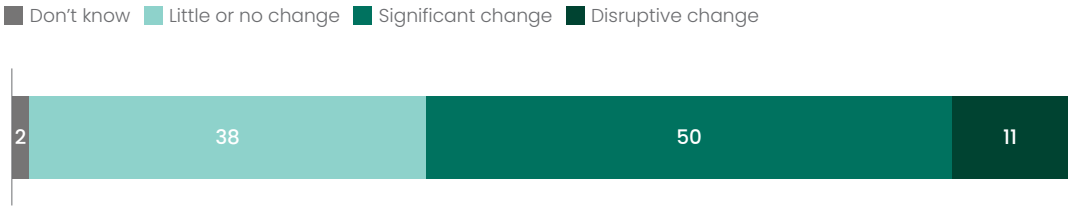
91 *Global future of work report: Series 2: Empowering Latin America through technology and talent transformation*, FII Institute, February 19, 2025. Survey insights from Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) and the United States.

92 "Baltics," Dealroom.co, accessed April 28, 2025.

Exhibit 5a

TWO-THIRDS OF EXECUTIVES BELIEVE GLOBAL DISRUPTION WILL AFFECT THE PERFORMANCE OF THEIR ORGANIZATION.

Q: How has your company been affected by global disruptions?
% of survey respondents, Europe (n = 1,924)



Note: Figures may not sum to 100%, because of rounding. The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
Source: Future of Work Report Survey for Europe, 2025

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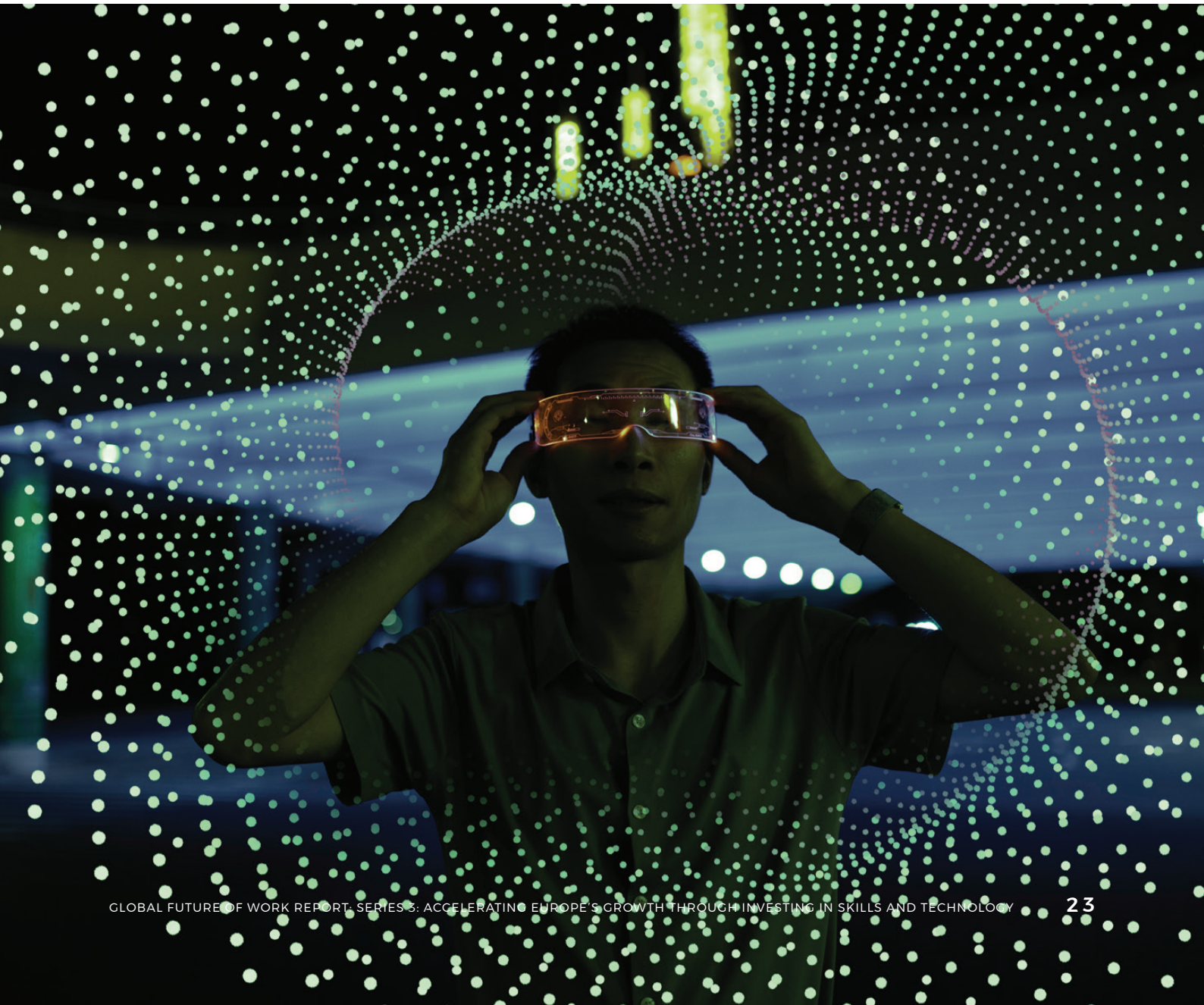
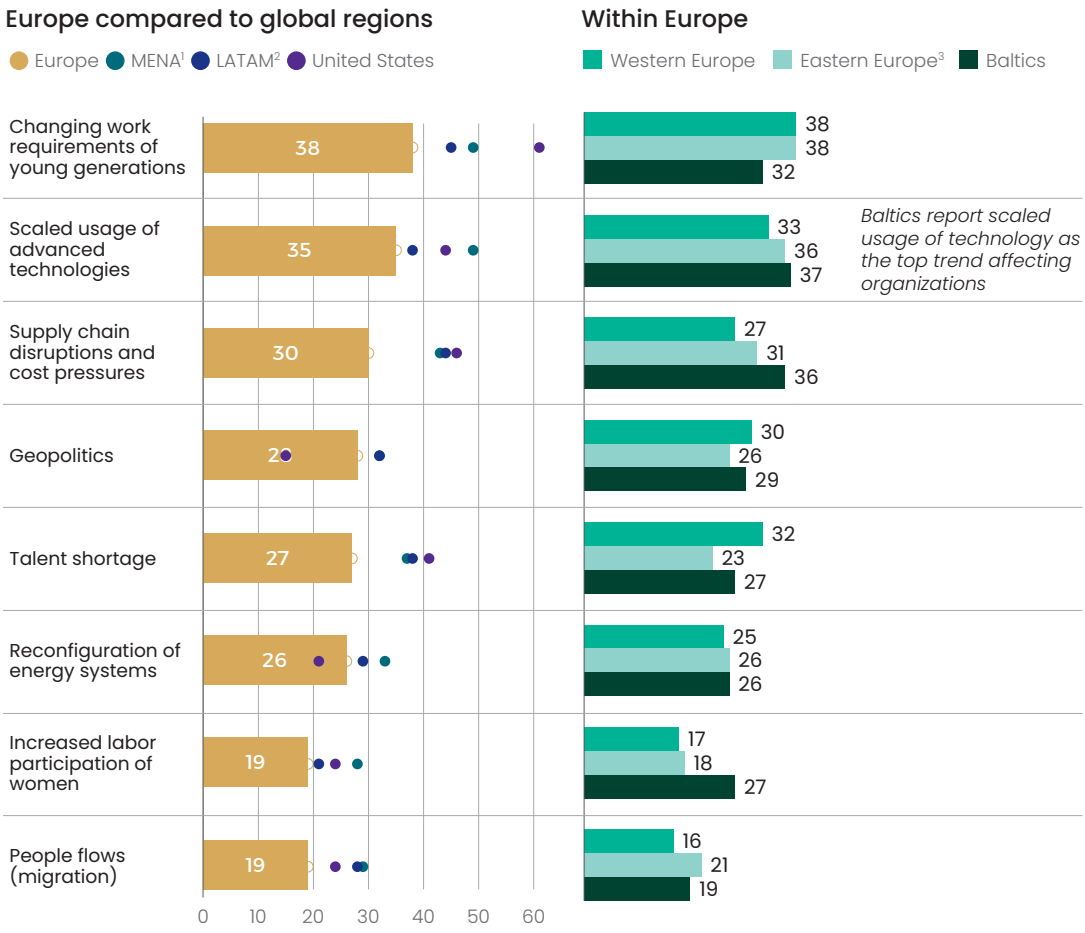


Exhibit 5b

SCALED USAGE OF TECHNOLOGY IS THE SECOND MOST IMPORTANT TREND AFFECTING BUSINESS IN EUROPE.

Q: What are the top trends affecting your business?
% of survey respondents
Europe (n = 1,924), MENA (n = 1,924), LATAM (n = 951), US (n = 156), Western Europe (n = 806), Eastern Europe (n = 968), Baltics (n = 150),



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[1] Middle East and North Africa (Algeria, Egypt, Jordan, Lebanon, Morocco, Qatar, Saudi Arabia, Tunisia, and United Arab Emirates).
[2] Latin America (Argentina, Brazil, Chile, Colombia, Mexico, and Peru).
[3] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

identifying technology as a greater challenge, compared with 28% of smaller businesses.[93]

In terms of what advanced technologies are being adopted, **69% of European executives report AI and machine learning (ML) as the most widely adopted technologies,** placing Europe behind the US (82%) but ahead of MENA (65%) (Exhibit 6).[94]

AI and ML are reshaping industries across Europe, but the pace of adoption varies

93 Throughout this chapter, enterprise size will be defined as follows: small enterprise = fewer than 100 employees; medium enterprise = 100–1,000 employees; large enterprise = more than 1,000 employees.

94 In the *Global Future of Work Middle East and North Africa (MENA)* report, the AI and ML adoption percentages, as reported by executives, were highlighted separately. The adoption percentage highlighted here shows the unique count of executives reporting adoption of both technologies.

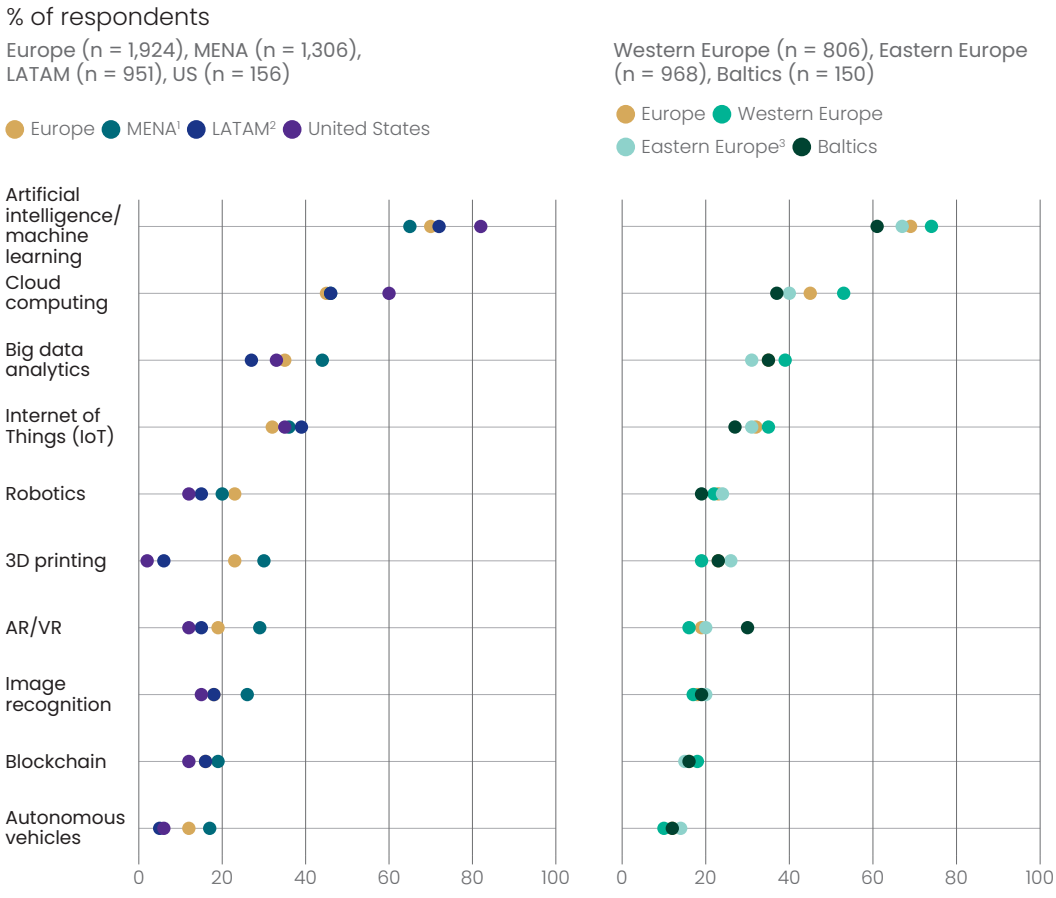
significantly by region. In Eastern Europe, 67% of executives report integrating AI and ML into their organizations—a notable figure but still six percentage points lower than their counterparts in Western Europe, where adoption appears to be more advanced. In contrast, executives in the Baltics report the lowest levels of AI and ML adoption despite the reputation of some countries in the region as innovation hubs[95]—only 61% indicated these technologies are being implemented within their organizations. This regional disparity highlights the varying levels of readiness and prioritization of AI and ML across Europe, reflecting differences in technological infrastructure, investment capacity, and strategic focus. As AI and ML continue to transform industries, these regional variations underscore the importance of tailored approaches to technology adoption.

Adoption of other technologies—such as cloud computing—is significantly lower: 45% of European executives report using cloud, compared with 60% in the US. Regionally, adoption of cloud computing in the Baltics

Exhibit 6

USE OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN EUROPE IS 13 PERCENTAGE POINTS BELOW USE IN THE UNITED STATES.

Q: Does your company currently use any of these advanced technologies?



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Middle East and North Africa (Algeria, Egypt, Jordan, Lebanon, Morocco, Qatar, Saudi Arabia, Tunisia, and United Arab Emirates).
[2] Latin America (Argentina, Brazil, Chile, Colombia, Mexico, and Peru).
[3] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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95 Krista Kristiana Ziedina, "Agility and innovation: Seeking leaders who can innovate and adapt quickly," Kestria, September 18, 2024.

(37%) and Eastern Europe (40%) is around 15 percentage points lower than that of Western Europe.

Aside from the pace and technology type, **adoption trends across Europe reveal distinct regional differences in functional focus.** While there are exceptions—Estonia is recognized as an early adopter of e-government services[96]—firms in the Baltics and parts of Eastern Europe both report adoption of new technologies at a slower rate and also concentrate their efforts in operational areas such as marketing and sales more than their Western counterparts. This targeted approach suggests a focus on immediate, customer-facing improvements rather than broader technological transformation.

In contrast, Western European countries are not only advancing at a faster pace in technology adoption but also prioritizing core technological and IT functions, particularly in software-related sectors, taking a front-runner role. These contrasting approaches highlight the diverse strategies shaping Europe's digital transformation and the varying priorities that influence how organizations invest in and implement emerging technologies (Exhibit 7).

As for how these technologies have affected companies during the past five years, executives' responses centered on two areas: improving decision-making and enhancing the customer experience (Exhibit 8). However, when they were asked to look ahead, business leaders across Europe revealed a shift in focus. **During the next five years, they expect technology investments to increasingly drive revenue growth,** signaling a strategic move from efficiency and customer experience to measurable financial outcomes.

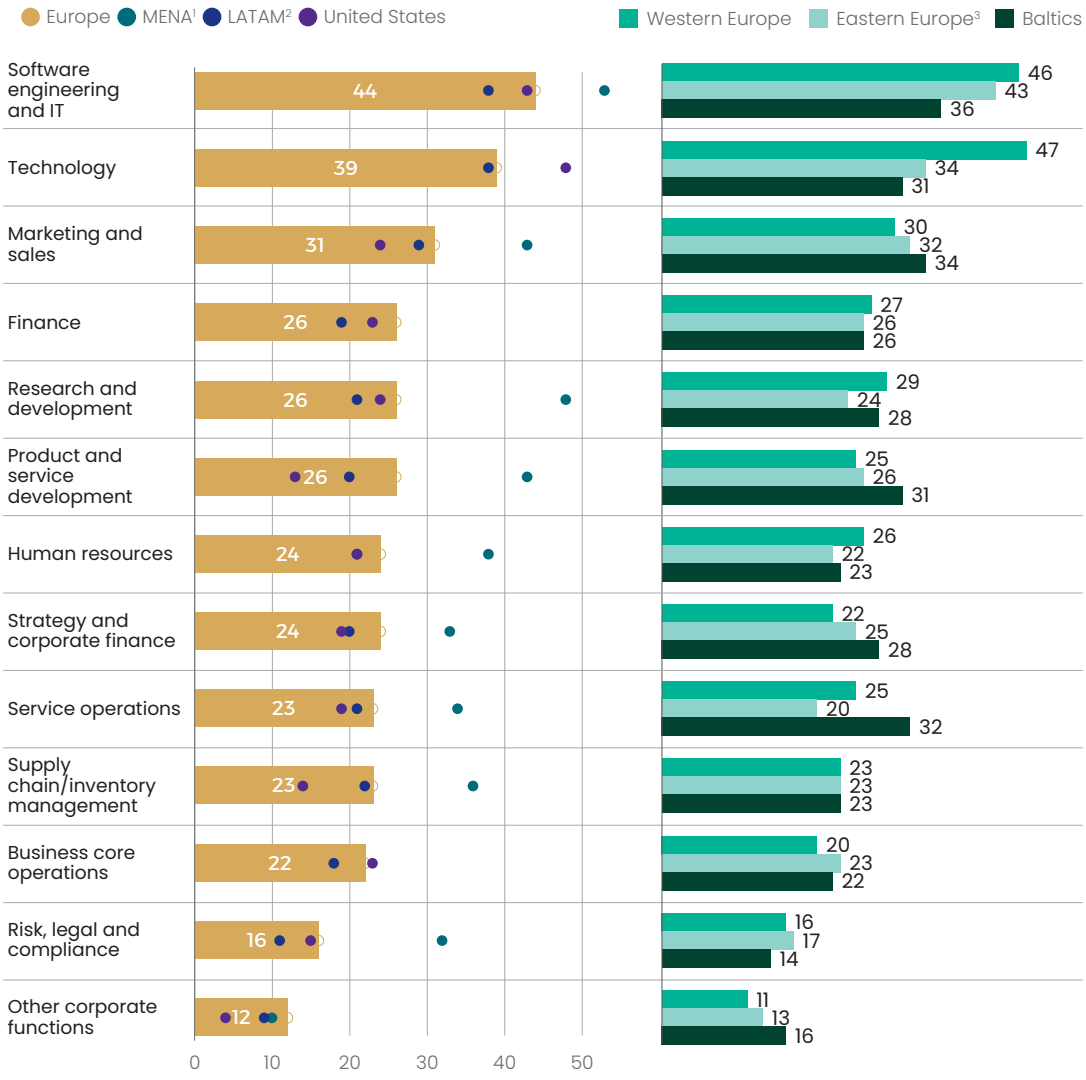
Despite optimism about the potential of these technologies, our survey reveals ongoing challenges. Asked to identify the top three

96 For more, see the e-Estonia website (e-estonia.com).

Exhibit 7

WESTERN EUROPE LEADS TECHNOLOGY ADOPTION IN ENGINEERING AND IT FUNCTIONS, WHILE EASTERN EUROPE AND THE BALTICS SHOW A GREATER FOCUS ON MARKETING AND SALES FUNCTIONS.

Q: In which of the following functions has your organization adopted these advanced technologies?
% of respondents n = 1,821
MENA (n = 1,234), LATAM (n = 898), US (n = 155) Western Europe (n = 759), Eastern Europe (n = 925), Baltics (n = 137)



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Middle East and North Africa (Algeria, Egypt, Jordan, Lebanon, Morocco, Qatar, Saudi Arabia, Tunisia, and United Arab Emirates). Technology, finance and business core operations were options not present in the MENA edition of the survey.
[2] Latin America (Argentina, Brazil, Chile, Colombia, Mexico, and Peru).
[3] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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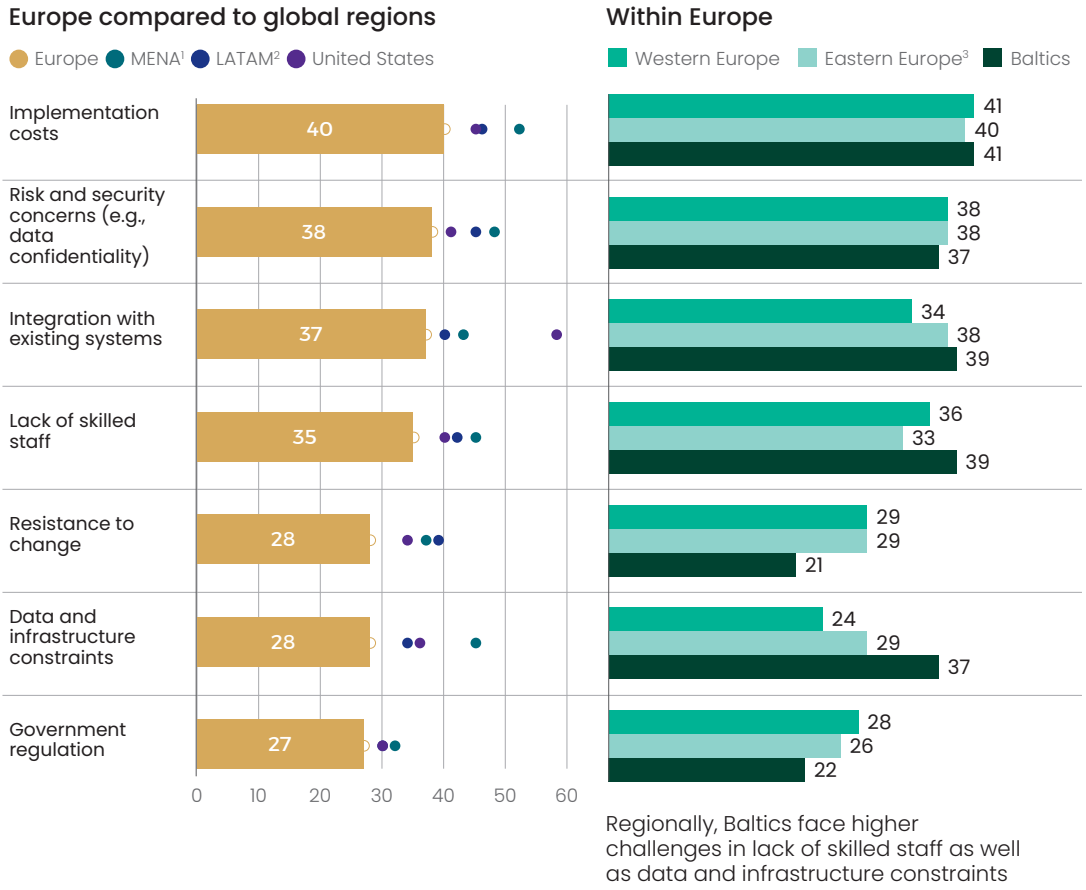
barriers to successful implementation, the most common responses were high implementation costs, security concerns, integration with legacy systems, and a lack of skilled talent. In the Baltics and Eastern Europe, however, integration challenges are slightly more pronounced, with data infrastructure limitations being a bigger issue

Exhibit 8

HIGH IMPLEMENTATION COSTS, SECURITY CONCERNS, INTEGRATION WITH LEGACY SYSTEMS, AND A LACK OF SKILLED TALENT ARE KEY ROADBLOCKS FOR TECHNOLOGY ADOPTION.

Q: What are the top three challenges your organization faces in implementing advanced technology?
% of respondents
Europe (n = 1,924), MENA (n = 1,306), LATAM (n = 951), US (n = 156)



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
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[2] Latin America (Argentina, Brazil, Chile, Colombia, Mexico, and Peru).
[3] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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in these two regions and hampering progress in technology implementation.

EMERGING WORKFORCE TRENDS: EUROPEAN LEADERS REPORT WORKFORCE AND SKILLS GAP FOR ADVANCED TECHNOLOGY PROFESSIONALS AND SKILLS

Preparing workforces for the new era of advanced technologies such as gen AI is a priority and a need for business leaders and employees globally. **European executives are generally optimistic about technology's impact on the workforce but concerned about talent availability and skill shortages.**

More than half of the executives surveyed anticipate jobs will be created or transformed by the adoption of technology, while only one-fifth expect job losses. This shows a positive outlook on the role of technology in reshaping work, highlighting confidence in its potential.

Within Europe, executives in the Baltics stand out as the most optimistic about the potential

for job creation, with six in ten expressing this expectation, compared with five in ten in both Eastern and Western Europe. This optimism suggests belief in the region's ability to harness emerging technologies to stimulate economic growth and expand employment opportunities. However, this optimism is tempered by a parallel concern: Baltic executives are also the most pessimistic about the potential for job elimination, with three in ten anticipating technology adoption could lead to workforce reductions, compared with just two in ten of their counterparts in Eastern and Western Europe.

When compared with other regions, European businesses are up to 1.4 times less optimistic about job creation and transformation compared with their counterparts in MENA, Latin America, and the US. Further, executives at large and medium-sized businesses[97] in Europe express greater optimism than those at smaller companies.

In contrast, **when asked the about their perspective on the impact of technology on the workforce the youth expressed optimism about tech-driven job transformation at similar levels as business leaders, they show greater concern about the potential for technology to eliminate jobs and are more pessimistic about its impact on job creation.** Within Europe, youth across the surveyed regions largely report a similar sentiment with respect to the impact of technology adoption on the workforce (Exhibit 9).

When asked about workforce shortages, six in ten business executives highlighted talent shortages, with three in ten executives highlighting shortages in technology, data science, and engineering roles (Exhibit 10). Given the potential job creation and transformation that tech adoption is poised to bring in the job market (as discussed earlier in Chapter 1 of this report), the shortage of talent, especially for STEM occupations, could become more acute. The issue is widespread but varies by region, showing that talent gaps are not only about quantity but also about skills needed for a modern economy.

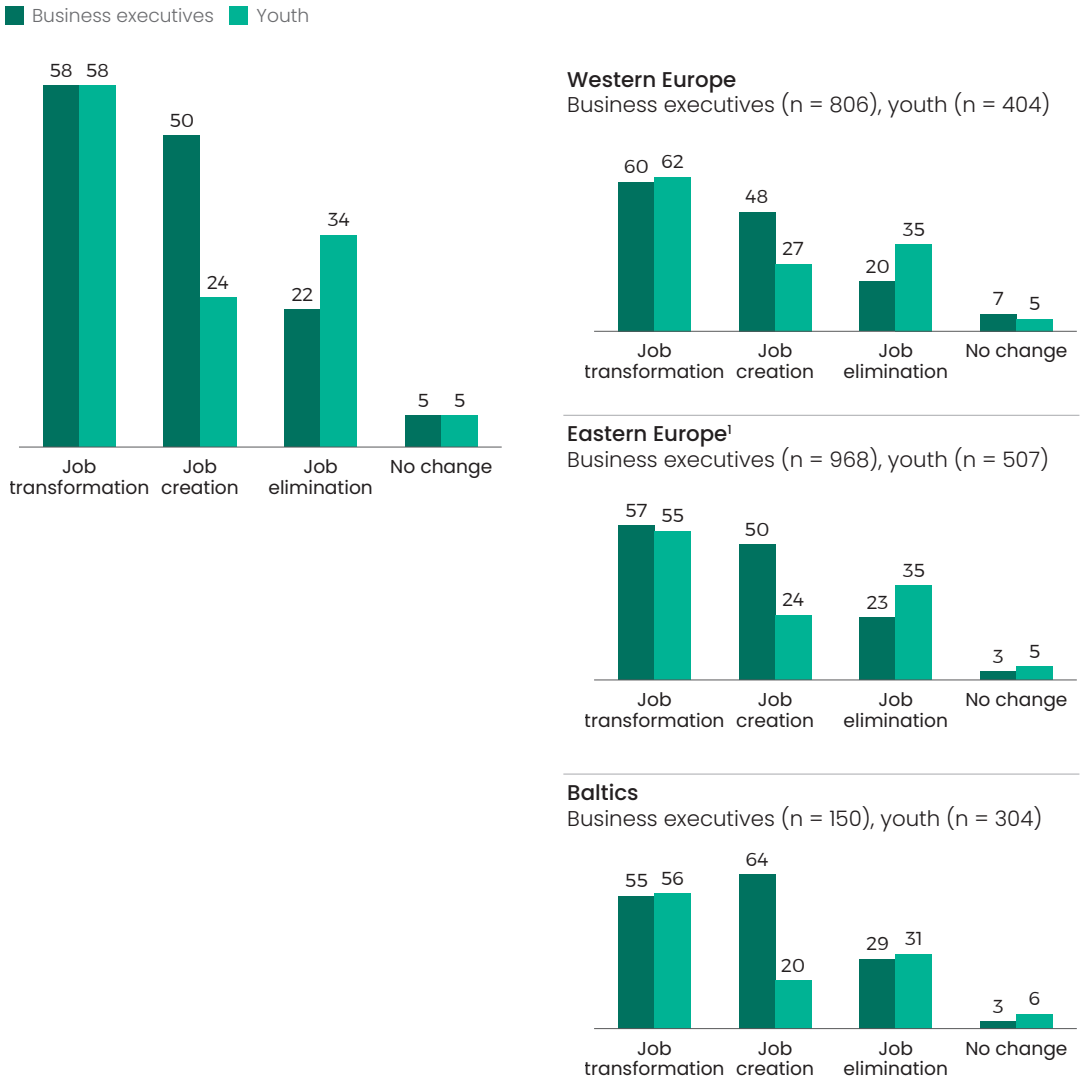
Executives report, in addition to the already short supply of required talent, difficulty hiring from the available pool of candidates. Upon inquiring as to where the business executives were facing hiring issues, 68% of these

97 Note: Refer to previous note on enterprises defined on the basis of employee headcount.

Exhibit 9

YOUTH SHOW GREATER CONCERN OVER POTENTIAL JOB LOSSES, DESPITE GENERAL OPTIMISM ABOUT TECH-DRIVEN JOB TRANSFORMATION.

Q: How do you think technology and automation will affect jobs in your country/region?
% of respondents, business executives (n = 1,924), youth (n = 1,215)



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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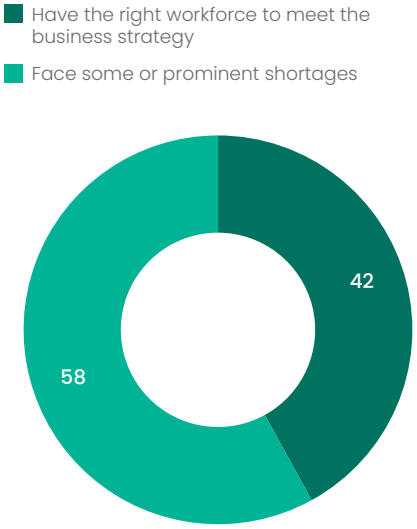
executives said they faced hiring challenges domestically, internationally, or both (Exhibit 11). This reflects the growing difficulty that businesses across Europe encounter in securing the right talent to support growth and technological innovation. While they face talent shortages to begin with, hiring difficulties make optimal deployment of a limited talent pool even more complicated. Eastern European and Baltic countries report more hiring challenges in domestic, international, or both markets (70%) than their Western counterparts (66%).

On the skills availability front, 50% of executives in Europe identified a deficit in

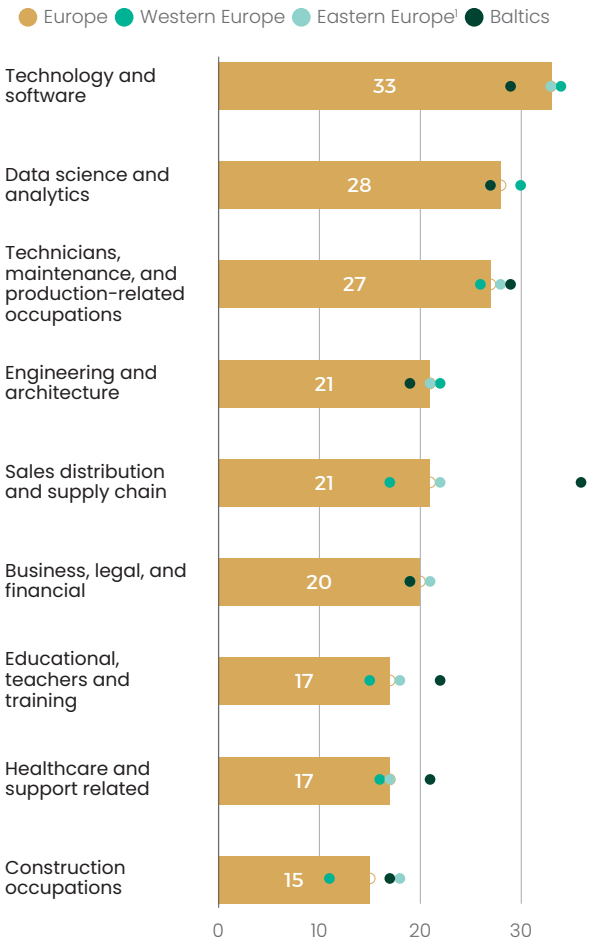
Exhibit 10

SIX IN TEN EXECUTIVES REPORT TALENT SHORTAGES IN THEIR WORKFORCE, WITH GAPS IN TECHNOLOGY, DATA SCIENCE, AND ENGINEERING ROLES.

Q: Do you have the right workforce to meet your strategy?
% of survey respondents, Europe (n = 1,924)



Q: In which roles do you currently have shortages?
% of respondents, Western Europe (n = 806), Eastern Europe (n = 968), Baltics (n = 150)



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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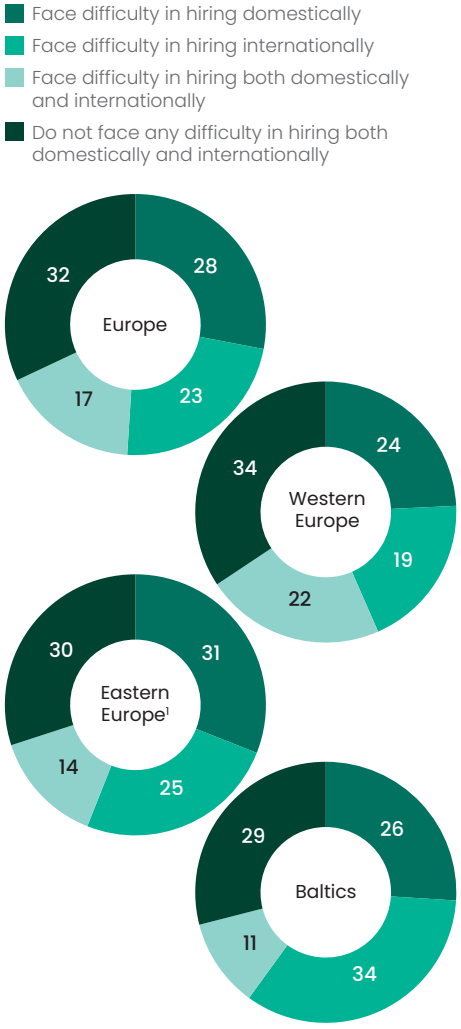
advanced IT and programming skills, while 33% pointed to a lack in advanced data analysis and mathematical skills (Exhibit 12). With the jobs of the future expected to require more technological skills, the current shortage of tech skills could further intensify going forward. From a regional perspective, the challenge of digital skills gaps varies across Europe. In the Baltics, four in ten executives report a shortage of basic digital skills within their workforce, higher than three in ten reported in Eastern Europe and two in ten in Western Europe. This disparity underscores the varying levels of digital readiness across regions, with the Baltics facing a dual challenge of addressing foundational skills gaps while also preparing their workforce for the demands of advanced technological adoption. It highlights the need for targeted investment

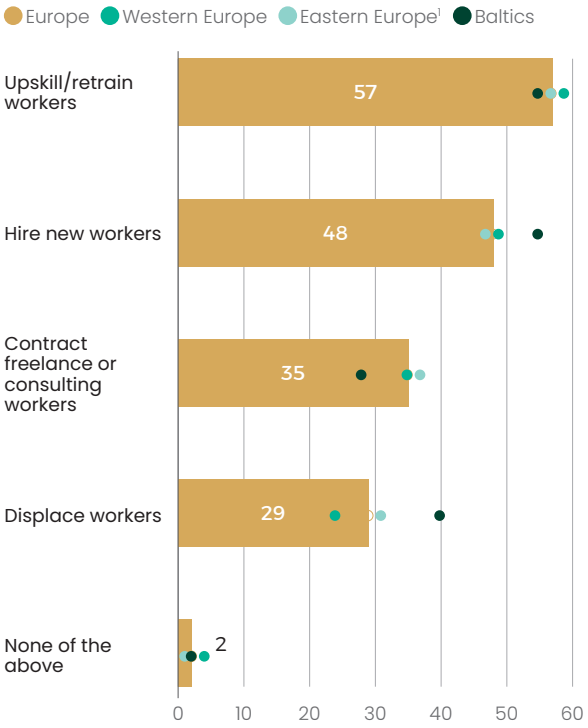
Exhibit 11

MORE THAN TWO-THIRDS OF EXECUTIVES IN EUROPE REPORT DIFFICULTY IN HIRING BOTH DOMESTICALLY AND INTERNATIONALLY.

Q: Do you face any difficulty in hiring?
% of respondents (n = 1,924)
Western Europe (n = 806), Eastern Europe[1] (n = 968), Baltics (n = 150)



Q: Which of the following actions do you take to address skill gaps in your workforce caused by advanced technology?
% of respondents (n = 1,924)
Western Europe (n = 806), Eastern Europe[1] (n = 968), Baltics (n = 150)



Upskilling and retraining are preferred over hiring or displacing workers

Note: Figures may not sum to 100%, because of rounding. The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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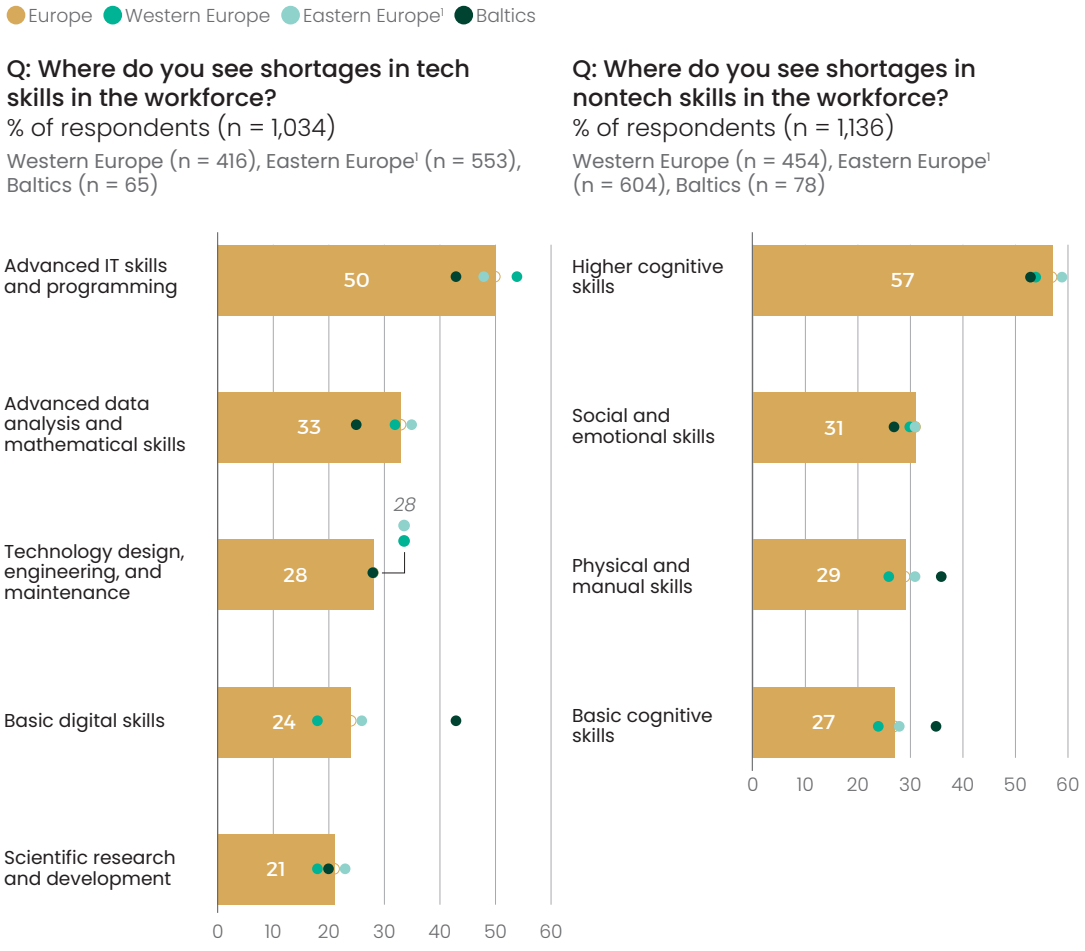
in digital education and workforce upskilling to ensure that businesses in the region can fully capitalize on the opportunities presented by digital transformation. On the other hand, 54% of executives in Western Europe highlighted shortages in IT and programming skills, versus 43% for the Baltics. Additionally, more than half of all executives note a shortage in higher cognitive skills within the workforce across all three regions of Europe surveyed.

Executives are optimistic about reskilling the workforce to address the skills gap in their workforce. **Across the region, more than half of executives recognize upskilling and retraining**

Exhibit 12

MORE THAN 50 PERCENT OF EXECUTIVES REPORT SHORTAGES IN ADVANCED IT PROGRAMMING AND HIGHER COGNITIVE SKILLS.



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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as viable solutions to address skill shortages, half depend on hiring new employees, and 29% consider worker displacement to bridge the skills gap.

Executives in Eastern Europe (31%) and the Baltics (40%) report a higher reliance on worker displacement as a means of bridging the skills gap, compared with just 24% of executives in Western Europe. This regional variation reflects differing strategies and labor market dynamics. In the Baltics and Eastern Europe, organizations appear more likely to make difficult decisions to restructure their workforce in response to evolving skill demands relative to Western Europe. This divergence highlights the importance of tailoring workforce strategies to regional contexts, ensuring that businesses can effectively navigate the challenges of a rapidly changing skills landscape.

FROM CLASSROOMS TO CAREERS: TRAINING IN JOB-READY SKILLS FOR YOUTH

Across Europe, a growing number of young people are questioning whether their education is truly preparing them for the real world. **A striking 84% of youth surveyed say there is a clear disconnect between what they're taught in**

school and what employers need. This concern runs deep—74% also admit they lack confidence in the education system's ability to equip them for meaningful employment.

Even when young people manage to find roles aligned with their field of study, they do not feel fully prepared for what those jobs are demanding. **Only 36% youth believe their education directly prepared them for their current roles,** suggesting a disconnect not just in content but in how skills are applied. Notably, women in Europe feel more underprepared than men, with 53% of female youth respondents reporting unpreparedness—about seven percentage points higher than their male counterparts.

Business executives are also not confident in the readiness of the youth to join the workforce. **Seven in ten executives report that youth are not ready or somewhat ready to join the workforce after college.** One area where this disconnect is most visible is technology. **Only 32% of business executives in Europe feel that educated youth have sufficient training in technology skills such as programming, data analysis, and engineering design,** highlighting a critical need to address the skills gap in terms of the demands of organizations that are increasingly focusing on technology adoption (Exhibit 13).

In the case of the youth, **74% of European youth say their education places too little emphasis on tech-related skills,** a sentiment echoed across Latin America; notably, this is ten percentage points higher than in the US.

Further, a significant 64% of youth also report their education does not place enough emphasis on soft skills, which are essential for thriving in today's fast-paced, collaborative work environments (Exhibit 14).

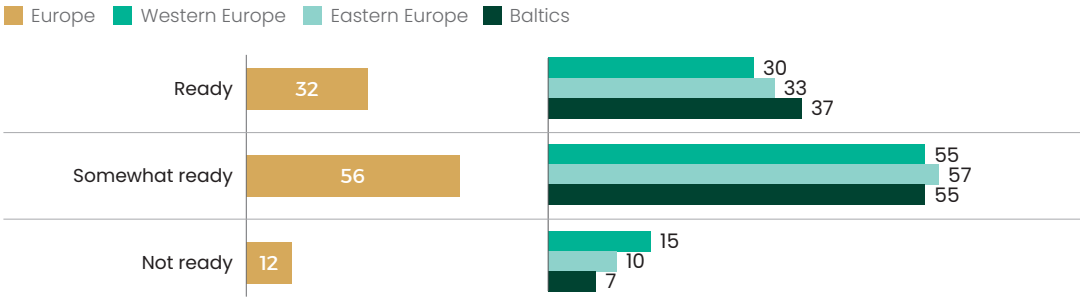
When asked about what skills they are currently acquiring as a part of their education, only 41% of youth report learning basic digital skills, and just 21% are acquiring advanced technology skills.

When asked what's missing in their academic curricula in terms of tech skills, 36% youth pointed to advanced IT and programming skills,

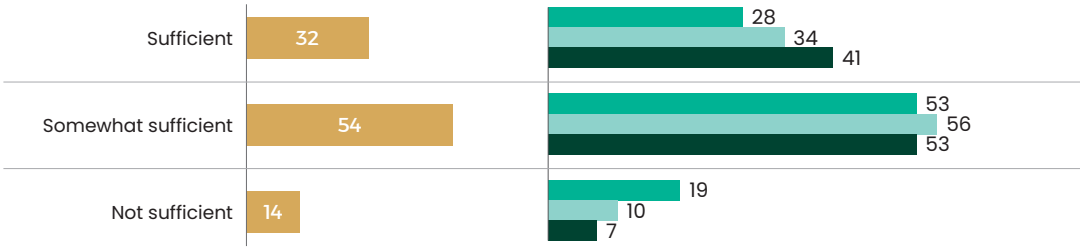
Exhibit 13

SEVEN IN TEN EXECUTIVES REPORT A LACK OF JOB READINESS AND TECHNOLOGY TRAINING IN YOUTH.

Q: How job-ready do you think youth are when they graduate from college or university?
% of respondents (n = 1,924)
Western Europe (n = 806), Eastern Europe[1] (n = 968), Baltics (n = 150)



Q: Do you think educated youths have sufficient training in technology-related skills?
% of respondents (n = 1,924)
Western Europe (n = 806), Eastern Europe[1] (n = 968), Baltics (n = 150)



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Excluding Baltics.
Source: Future of Work Report Survey for Europe, 2025

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31% cited engineering and maintenance, and 28% highlighted advanced data analysis and math. While technology skills are in high demand, Europe's youth are also sounding the alarm on an equally critical gap: non-technical, human skills. For a generation entering a workforce shaped by automation, AI, and digital transformation, these gaps are more than just academic—they could define the opportunities available to youth in the years ahead.

Business executives share a similar sentiment when it comes to the technology skills they feel the youth could be learning in schools or colleges and universities. **In the Baltics, half of business leaders emphasize the importance of youth developing even basic digital skills, reflecting a pressing need to build foundational competencies that are essential for participating in a digitally driven economy.**

Meanwhile, approximately 60% of executives in both Eastern and Western Europe underscore the importance of youth acquiring advanced IT skills and programming expertise. This strong emphasis on higher-level technological capabilities highlights the growing demand for specialized skills that can drive innovation and support the adoption of emerging technologies.

Further, **when asked what's missing in their academic curricula in terms of soft skills, the youth highlighted stress management (38%),**

Exhibit 14

SEVENTY-FOUR PERCENT OF YOUTH REPORT THAT ACADEMIC CURRICULA UNDEREMPHASIZE TECH SKILLS.

Q: Do you think tech/nontech skills are or were underemphasized in your academic curriculum?
% of respondents (n = 1,215)

Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
Source: Future of Work Report Survey for Europe, 2025

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time management (30%), and creativity (28%) as the most desired yet underdeveloped capabilities. Notably, one-fifth of youth in the Baltics point to an underemphasis on even basic literacy and communication skills, a striking concern that underscores the need for a stronger focus on foundational competencies.

Around one-third of executives in Europe also highlight problem-solving, teamwork, and critical-thinking as non-tech skills they feel the youth should be learning in their schools, colleges, and universities.

This highlights a broader challenge in ensuring that education systems not only prepare young people for the technical demands of the future but also equip them with the essential interpersonal and communication skills required to navigate an increasingly interconnected and dynamic workplace. Addressing these gaps will be critical to fostering a well-rounded, future-ready workforce across the region (Exhibit 15).

Another key gap as reported by the youth as a barrier to employment is real-world experience. Nearly half (47%) of Europe's youth cite a lack of practical, hands-on learning as a barrier to employment—a figure that, while slightly lower than Latin America's (52%), is still more than double that of the US (23%). This challenge is even more acute in the Baltics, where six in ten young people identify the lack of practical experience and internships as the greatest obstacle to accessing employment opportunities. These findings underscore the urgent need for education systems across Europe to bridge the gap between academic learning and workforce requirements. By integrating more experiential learning opportunities and aligning curricula with market realities, Europe can better prepare its next generation to thrive in an evolving job landscape.

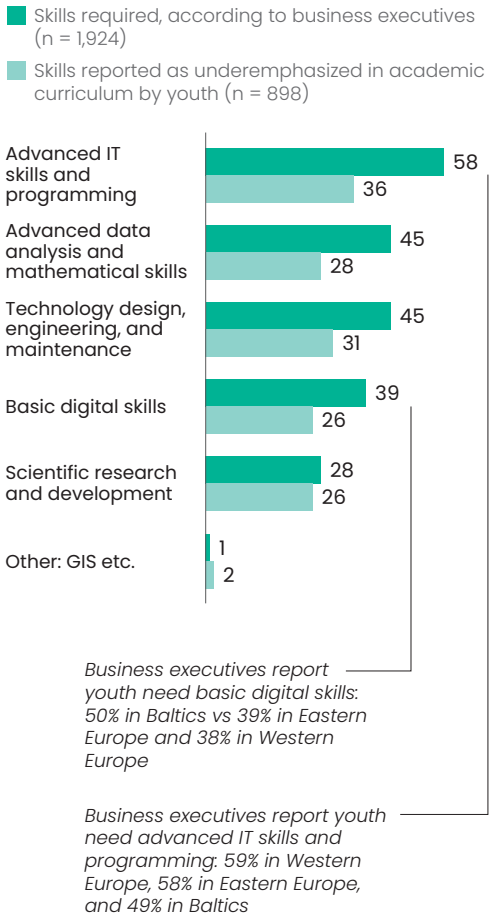
There appears to be an **opportunity for Europe's youth to lean on internships, part-time jobs, and online courses to address skills gaps. While 44% of the region's youth report using those resources—including 50% of youth in Western Europe—the overall level is some ten percentage points lower than Latin America and four percentage points lower than the US.** More youth in the Baltics and Eastern Europe also report utilizing online courses as means to address their skills gaps relative to Western Europe. This trend highlights the potential recognition in these regions of the accessibility and flexibility that digital learning platforms offer, particularly

Exhibit 15

BOTH BUSINESS EXECUTIVES AND YOUTH SEE A NEED FOR YOUTH TO LEARN ADVANCED TECHNOLOGY AND PROBLEM-SOLVING SKILLS.

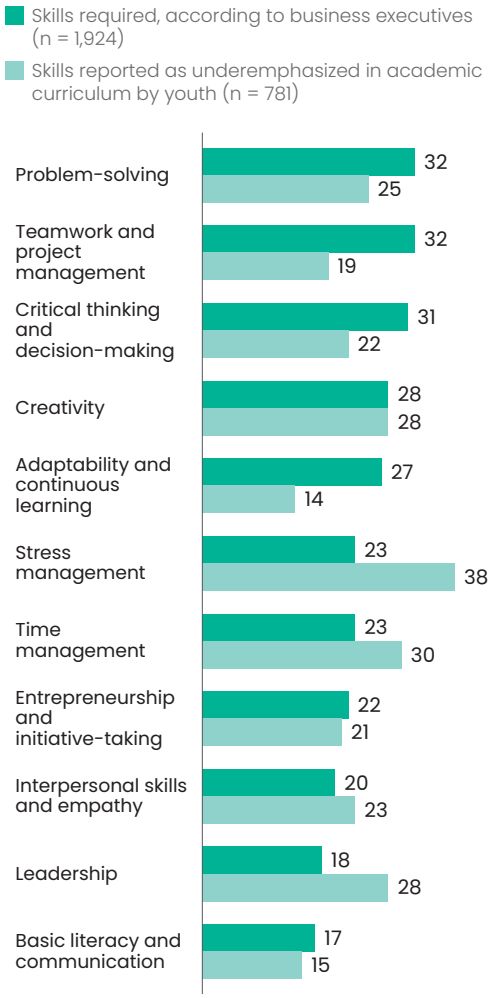
Biz. Exec. Q: What are the top *tech skills* that youth need to learn in schools, colleges, and universities?
Youth Q: What are the *tech skills* underemphasized in your academic curricula?

% of respondents



Biz. Exec. Q: What are the *non-tech skills* that youth need to learn in schools, colleges, and universities?
Youth Q: What are the *non-tech skills* underemphasized in your academic curricula?

% of respondents



Note: The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
Source: Future of Work Report Survey for Europe, 2025

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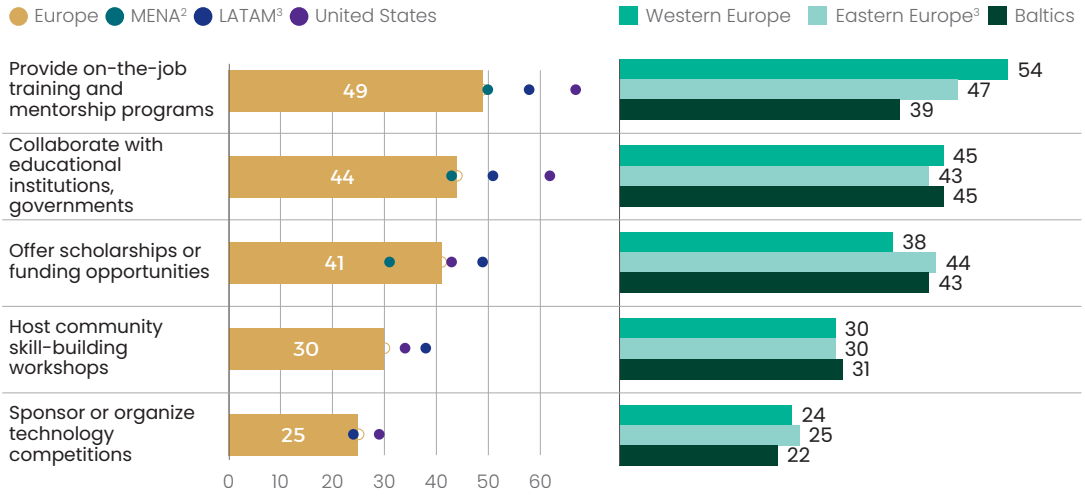
in areas where traditional educational resources may be less aligned with market demands. By further promoting and expanding access to such opportunities, Europe can empower its youth to take a proactive role in their skill development.

Half of the executives surveyed indicated that, in terms of initiatives to address the skills gaps in youth, companies utilized on-the-job training, and 44% of companies collaborate with educational institutions. On-the-job training is notably less prevalent in the Baltics, with only 39% of executives confirming such programs—some 8 to 15 percentage points lower than other regions in Europe (Exhibit 16).

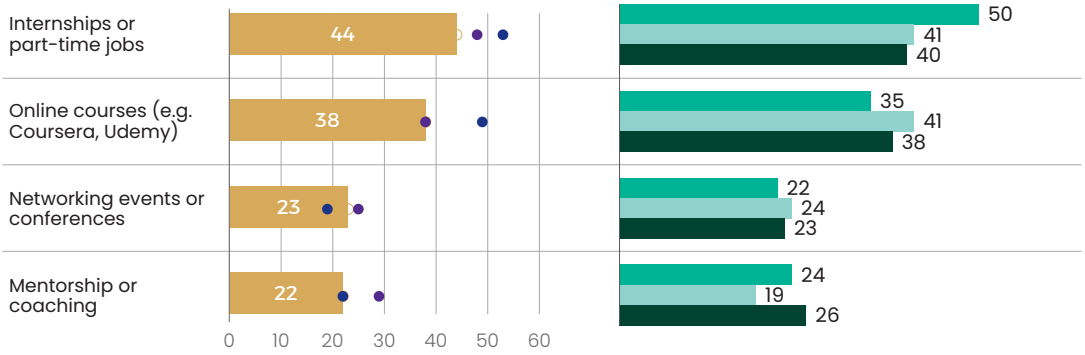
Exhibit 16

ON THE JOB-TRAINING AND COLLABORATION WITH EDUCATION INSTITUTIONS AND GOVERNMENTS ARE THE PREFERRED INITIATIVES BY BUSINESSES TO COVER THE SKILLS GAPS OF THE YOUTH.

Q: What initiatives has your company taken to improve the technology and soft skills of youth in your country (e.g., CSR-based programs)?
% of respondents (n = 1,924 executives)
Western Europe (n = 806), Eastern Europe[1] (n = 968), Baltics (n = 150), MENA (n = 1,306), LATAM (n = 951), US (n = 156)



4 in 10 youth focus on internships, part-time jobs, and online courses to address the skill gap
Q: How do you address any gaps in your skills?
% of respondents (n = 1,215 youth)
Western Europe (n = 404), Eastern Europe[1] (n = 507), Baltics (n = 304), LATAM (n = 1,210), US (n =202)



Note: The youth version of the survey was not conducted in MENA. The business executive survey in MENA did not include the options "Host community skill-building workshops" and "Sponsor or organize technology competitions." The twelve countries covered in proprietary surveys include: Western Europe: France, Germany, Spain, and the United Kingdom; Eastern Europe: Bulgaria, the Czech Republic, Hungary, Poland, and Romania; Baltics: Estonia, Latvia, and Lithuania.
[1] Excluding Baltics.
[2] Middle East and North Africa (Algeria, Egypt, Jordan, Lebanon, Morocco, Qatar, Saudi Arabia, Tunisia, and United Arab Emirates).
[3] Latin America (Argentina, Brazil, Chile, Colombia, Mexico, and Peru).
Source: Future of Work Report Survey for Europe, 2025

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3

A PATH FOR A MORE PRODUCTIVE ERA IN EUROPE

WHILE ALL OF EUROPE faces a complex set of structural challenges, the degree varies between Eastern Europe and Western Europe. Yet the path forward for both lies in a dual strategy: accelerating technological adoption and investing deeply in workforce reskilling. For both regions, reskilling is more than a solution to labor market pressures—it's a strategic imperative to harness the full potential of technological transformation.

For Western Europe, where productivity growth is stalling and skill mismatches are already acute—especially in sectors such as information and communication, construction, professional, scientific and technical activities, as well as in accommodation and food services[98]—reskilling existing workers is essential to fill critical gaps and sustain competitiveness in a fast-evolving economy. Meanwhile, Eastern Europe, while still experiencing faster productivity growth from a lower base, could act now to future-proof its workforce. As the region faces demographic decline and continued migration, it risks encountering similar labor shortages and mismatches unless it rapidly scales up its digital capabilities and talent pipeline.

Several European countries are already pioneering bold and effective responses. After carefully analyzing a variety of labor initiatives globally and delving deeper into Europe's rapidly evolving landscape, some common patterns have emerged—a series of initiatives that could hold promise. While these efforts are by no means exhaustive, the following two offer a common thread to solve for technology adoption, address demographic challenge, and increase competitiveness:

1. Leveraging Europe's education advantage to future-proof worker skills and prevent the loss of top talent
2. Accelerating the adoption of digital and AI technologies to boost productivity and competitiveness

LEVERAGING EUROPE'S EDUCATION ADVANTAGE TO FUTURE-PROOF WORKER SKILLS AND PREVENT THE LOSS OF TOP TALENT

While quality and outcomes vary across countries, Europe is recognized for its generally strong education systems, which contribute to high literacy rates and a well-educated workforce.

In Eastern Europe, Estonia has rapidly become one of Europe's top education performers. In the OECD's Programme for International Student Assessment (PISA) 2022, Estonian students ranked first overall in Europe.[99] The country stands out for its early integration of digital skills in education, offering coding, robotics, and e-learning tools starting in primary school. This focus on technology and equity has contributed to both high digital literacy and academic excellence.

In Western Europe, Finland is frequently cited as a model for education due to its emphasis on equity, student well-being, and teacher autonomy. It remains among the top performers in Europe—ranked fourth overall in PISA 2022[100]—especially in minimizing educational inequality and promoting holistic development.

As the workforce and skill requirements change, skilling is a strategic gateway for Eastern and Western Europe to transition into high-growth, tech-driven economies. With strong STEM foundations, the region can become a competitive hub for digital talent—fueling innovation, attracting investment, and enabling global-scale companies. Retaining and upskilling this talent is key to driving productivity, embracing advanced technologies, and securing long-term economic resilience. As labor supply tightens, a skilled workforce is essential not only for growth but also for moving up the value chain and shaping the future of work.

Attracting and retaining top AI talent is critical for Eastern Europe's competitiveness in the global tech landscape. The region currently faces issues in AI talent. Poland experiences higher shortages among ICT jobs, with 275% more vacancies, on average, per employed person for ICT jobs than

98 "Job vacancy statistics," Eurostat, March 2025.

99 *PISA 2022 results (volume 1): The state of learning and equity in education*, OECD, December 5, 2023.

100 Ibid.

for other jobs.[101] To close these gaps, policymakers could introduce targeted incentives, such as salary premiums, tax breaks for returning or incoming AI experts, enhanced support for research institutions and private labs, and expanded public grant programs. Business leaders, in turn, could prioritize large-scale upskilling in gen AI, embedding it into workplace tools and culture.[102] A marquee example of this strategic approach is Finland's free "Elements of AI" course, which introduces key AI concepts in an accessible format. It has been adopted in more than 170 countries and with more than a million learners (for more, see "Use case: Digital reskilling at a national scale").

Given that skills of the future are changing, achieving this at scale requires more-coordinated efforts as well as action in the form of sustained investment. There also needs to be an integrated framework, making learning accessible across life stages. Furthermore, training could aligned with real labor market demand, and individuals could be empowered to navigate career transitions with support. When these elements come together, investment becomes the engine that helps individuals adapt and firms stay competitive.

Funding targeted skill-based learning programs to address evolving market needs

To meet the evolving demands of the job market across Europe, public funding could prioritize skill-based learning that directly enhances employability. Complementing this with employer co-financing could ensure training remains aligned with industry needs. This collaborative approach fosters a more agile and future-ready workforce. Investing where it matters most—on practical, in-demand skills—could help build stronger pathways to economic opportunity and resilience.

The European Union actively supports skill-based learning through key initiatives like the European Social Fund Plus (ESF+), Erasmus+, the Recovery and Resilience Facility (RRF), and the European Skills Agenda,[103] aiming to tackle skill shortages and enhance workforce readiness. These programs fund upskilling and reskilling efforts, including sector-specific strategies under the Blueprint for Sectoral Cooperation on Skills[104] and cross-border recognition through the Skills Portability Initiative. Additionally, several EU countries offer tax incentives and targeted funding for education in priority areas to further promote skills development.[105]

Continuously adapt skill-based training through dynamic feedback loops

Demand for skills is evolving rapidly, requiring strong collaboration between educators, employers, educational institutions, and industry experts, backed by dynamic feedback loops that ensure learning programs stay relevant and adaptive. As structural trends shape the demand for future skills, training programs could evolve in real time to address emerging needs. Employers play a crucial role by providing insights into the skills gap and participating in curriculum development. Feedback loops enable continuous improvement, with employers offering real-time performance data to refine programs.

Effective approaches include establishing employer-led councils in key sectors to guide the design of vocational training and apprenticeship programs, ensuring that content reflects practical, in-demand competencies. At the same time, labor market observatories and job vacancy analytics can offer valuable insights to keep skills frameworks responsive to economic shifts. Developing national or regional skills registries can further support alignment by helping education and training institutions map their offerings to high-demand qualifications. Finally, deeper partnerships between industry and academia—such as co-investments in R&D, modern training facilities, and agile certification programs—can ensure that learning environments keep pace with innovation and real-world application.

101 "Job creation and local economic development 2024 - Country notes: Poland," OECD, November 28, 2024.

102 "Top 5 EU countries facing AI skill shortages," Next Level Jobs EU, December 9, 2024.

103 "Key funding opportunities for upskilling and reskilling at EU level," European Commission, July 5, 2022.

104 "Blueprint for sectoral cooperation on skills," European Commission, accessed May 2, 2025.

105 *Using tax incentives to promote education and training*, CEDEFOP, 2009.

Box 1

USE CASE: RESKILLING AUTOMOTIVE WORKERS (EU PACT FOR SKILLS)

Context

Europe's automotive industry is undergoing a major transformation due to the green transition and digitalization. With the shift toward electric vehicles and new mobility technologies, automotive workers face the risk of skill obsolescence. In response, the European Commission launched the Pact for Skills to support large-scale workforce reskilling and ensure a just transition. Leading automotive manufacturers committed to upskilling efforts as part of this Europe-wide initiative.[1]

Impact

- Over 700,000 automotive workers are expected to benefit from training programs under the Pact for Skills.
- The initiative is projected to support €7 billion in public–private investment in automotive workforce development.
- Three pilot projects have been initiated in France, Germany, and the Czech Republic.
- The model showcases how large employers and public authorities can jointly drive inclusive, forward-looking workforce transformation across Europe.

Key actions

- **Industry-led upskilling commitments**. This includes a coalition of more than 20 automotive companies, along with public institutions, pledging to invest in workforce reskilling across the automotive supply chain.
- **EU Pact for Skills platform.** The platform facilitated multi-stakeholder partnerships between employers, training providers, and public institutions to co-develop training aligned with green and digital needs.
- **Targeted investment in green transition skills.** Programs focused on battery production, software, and electronics—core areas of future electric vehicles.
- **Joint curriculum development and certification.** Companies collaborated with vocational institutions and industry bodies to establish standardized training modules and recognized certifications.

1 Automotive Skills Alliance Regional Implementation Working Group; "The Pact for Skills: Mobilising all partners to invest in skills," European Commission, November 10, 2020.

Training programs could be flexible and modular

Learning needs to fit seamlessly into the lives of learners, especially those balancing work or caregiving responsibilities. Learning systems could be self-paced formats and short-cycle online or hybrid courses that accommodate these needs. Modular programs, micro-credentials, and stackable certifications provide learners with the opportunity to build and expand their skills progressively, ensuring that education can adapt to evolving career demands.

Learning systems could be portable and adaptable

To address the need for large-scale upskilling across the working-age population, potential initiatives could include offering accessible online courses tailored for employed adults or caregivers, creating individual learning accounts or portable training entitlements (such as voucher-based systems or app-accessible credits)

that allow workers to accumulate and use training credits over time, and developing interoperable credentialing systems—like skills passports—that track and verify micro-credentials across regions and providers. These systems would enable workers to carry verified competencies as they move through different roles or geographies.

Additionally, aligning training modules with clearly defined occupational standards would help learners understand and navigate clear pathways from entry-level positions to more advanced roles, ensuring that lifelong learning leads to tangible career progression.

Box 2

USE CASE: DIGITAL RESKILLING AT A NATIONAL SCALE (FINLAND—ELEMENTS OF AI)

Context

Recognizing early the disruptive potential of AI and automation, Finland positioned itself as a global pioneer in digital inclusion and upskilling. Rather than focusing solely on technological investment, its strategy emphasized broad-based digital literacy and accessible education. Finland aimed to demystify AI, reduce public resistance to adoption, and foster a digitally confident society prepared for a tech-driven economy.

Impact

- More than one million learners from more than 170 countries enrolled in the course (announced in 2023), with Finland leading in per capita participation with more than 2% of its population having completed the course.
- The course achieved high completion rates in Finland, driven by public awareness campaigns and integration into lifelong learning frameworks (around 15.9%[1] completion rate for Elements of AI across the EU).
- Finland ranks among the top EU countries in digital skills readiness and AI awareness, as measured by the Digital Economy and Society Index (DESI). Public familiarity with AI increased significantly, helping to reduce resistance to adoption and stimulate bottom-up innovation.
- The initiative became a global benchmark in inclusive digital education, recognized by the EU and OECD as a model for scaling tech literacy.

Key actions

- **Launch of Elements of AI.** A free, online course was developed by the University of Helsinki and Reaktor, designed to introduce AI concepts in an accessible, inclusive format.
- **Public-private coordination.** The Finnish government worked closely with tech industry leaders and educational institutions to embed digital training into both formal education and adult learning.
- **Multi-language access and universal design.** The course was made available in over 20 languages, ensuring accessibility for diverse learner groups across Europe.
- **Global reach and policy diffusion.** The course became a blueprint for inclusive tech education, inspiring similar efforts across European countries and influencing national digital strategies.

1 Digital Skills and Jobs Platform; "Elements of AI online course now available in 22 EU countries and languages," University of Helsinki, May 3, 2021.

ACCELERATING THE ADOPTION OF DIGITAL AND AI TECHNOLOGIES TO BOOST PRODUCTIVITY

With demographic challenges shrinking Europe's workforce, particularly in Eastern Europe, technology is an essential lever for doing more with less. Yet realizing the potential of digitalization and automation is not easy: The nature of these emerging technologies demands coordinated action across policy, infrastructure, and institutions to ensure the conditions are in place for businesses to adopt new technologies and for workers and regions to be skilled to rapidly innovate and adapt.

Three key approaches are highlighted toward accelerating tech-driven transformation across Europe, in addition to attracting, developing, and retaining top-tier AI talent (as discussed in previous sections in detail).

Accelerating investments in technology adoption

Productivity gains depend on the adoption of technology on a large scale, especially among small and medium-size enterprises (SMEs) to make them competitive and turn them into global players. Eastern European countries have rapidly embraced digital government adoption, leading to increased efficiency, transparency, and convenience for their citizens and putting them in a position to leverage this momentum to drive further adoption in the private sector. For example, countries like Estonia, Latvia, Lithuania,[106] and Romania[107] have made significant progress with their e-government initiatives. An option here could be for policymakers to boost private capital investment through higher private equity and venture capital allocations.[108]

Investing in critical infrastructure

For both Western and Eastern Europe, governments can be a catalyst by investing in critical infrastructure (such as broadband, cloud, and 5G), offering financial incentives for automation and AI deployment, and providing technical support to help firms upgrade processes and digitalize operations. But Europe could be more than just a user of digital and AI solutions. It could strengthen its position as a creator of high-potential technologies by supporting innovation ecosystems—from applied research to start-ups—and ensuring they are translated into scalable commercial applications. The development and deployment of AI is accelerating globally, bringing with it potential productivity gains. Potential initiatives include offering public grants

106 Craig Turp-Balazs, "E-government: Catching up with the Baltics," Emerging Europe, December 11, 2024.

107 "Romania country commercial guide," International Trade Administration, September 2024.

108 "E-government: Catching up with the Baltics," Emerging Europe, December 11, 2024.

or tax incentives for organizations to invest in automation, AI tools, or digital platforms; setting up regional innovation hubs and digital advisory services to help companies navigate adoption and implementation; and investing in applied R&D and public–private co-innovation labs to accelerate deployment in strategic sectors. To fully harness gen AI, companies could strengthen core enterprise capabilities—from planning to scaling—and revamp their operating models to tightly integrate business, tech, and operations. Success hinges on enriching proprietary and real-world data and making it accessible across the organization to drive smarter decisions.

Creating an enabling environment to scale tech solutions

Capturing fulls gains requires companies to navigate regulations. Recent research shows that eight of ten European companies report that they don't fully understand the obligations

Box 3

USE CASE: KRATTAI STRATEGY—BUILDING AN AI-DRIVEN GOVERNMENT

Context

Estonia, often hailed as the most digitally advanced society globally, launched the KrattAI Strategy in 2019 to strategically integrate artificial intelligence into public administration. The strategy supports Estonia's vision of creating a seamless digital society by enabling AI-based automation, smarter service delivery, and more efficient governance. The initiative complements Estonia's e-government infrastructure and e-Residency program.[1]

Impact

- More than 130 AI projects implemented across sectors by 2023, making Estonia one of the most AI-integrated governments globally
- 93% digital government users, according to the 2020 DESI index, one of the highest adoption rates in the EU
- Significant reduction in processing time for public services and legal administration
- Citizen satisfaction increased due to reduced wait times and 24/7 digital assistance
- In 2019, 69% of private individuals and 47% of entrepreneurs were satisfied with public digital services; by 2030, Estonia targets 90% satisfaction for both groups

Key actions

- **Development and nationwide deployment of Bürokratt,** an AI-powered virtual assistant platform capable of natural language interactions with citizens across public sector portals
- **Judicial digitization,** with AI tools deployed for document summarization, prioritization of case files, and risk profiling in administrative courts
- **Traffic management optimization** using AI-powered predictive analytics to improve safety and reduce congestion
- **Structured workforce reskilling program** to ensure officials are AI-literate and capable of supervising AI deployment ethically and effectively

1 e-Estonia; European Monitor of Industrial Ecosystems; Ministry of Economic Affairs and Communications.

introduced by the EU AI Act, and 70% find them to be complex.[109] Navigating the complex regulatory requirements may have unwanted repercussions for companies. This situation could challenge the competitiveness of European companies by reducing their ability to access the world's most high-performing AI models.

Even when technology tools are readily available, fragmented regulations and rigid institutional frameworks can significantly hinder adoption. Many firms—particularly SMEs—face challenges such as complex labor market rules, limited access to risk capital, and the difficulty of scaling across a fragmented single market. Restrictive employment regulations can slow the reallocation of workers into emerging, tech-enabled roles, limiting the agility needed in a rapidly evolving economy. Without coordinated

109 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024.

reforms to reduce administrative friction and create a more supportive environment for innovation and investment, productivity-enhancing technologies risk remaining concentrated among a few leading firms rather than spreading widely across sectors, regions, and businesses of all sizes. Addressing these barriers requires targeted initiatives, such as reforming labor laws to support more flexible workforce models; simplifying regulatory and administrative processes for digital entrepreneurs and SMEs; harmonizing digital standards, compliance requirements, and tax regimes; and supporting digital integration throughout supply chains to create a truly unified and innovation-friendly digital economy.

TECHNICAL APPENDIX

THIS APPENDIX PROVIDES an overview of the methodologies used in the report. It comprises the following sections:

1. Scope and country coverage
2. Data and analytical approach
3. Primary research and survey design

SCOPE AND COUNTRY COVERAGE

The research for this report examines Europe, which we define as the **27 European Union (EU) member states, plus Norway, Switzerland, and the United Kingdom**—a total of 30 countries. To enable both comprehensive trend analysis and focused primary research, the report applies a **two-tiered geographic framework. For more information regarding the classification of regions, refer to the preface.**

2. DATA AND ANALYTICAL APPROACH

The themes identified as a part of the work done on the report have been analyzed on several data points and methodologies outlined below:

- Assessment of core demographic and labor force characteristics that determine the scale and structure of a country's population and workforce, including:
  - **Population** trends—past and projected estimates of population pyramid, dependency ratios (UN Population Division), and fertility rates (World Bank)
  - **Working-age** population trends (ages 15–64), including labor force participation, employment, and unemployment rate (Eurostat)
- Examination of the efficiency of labor market matching, youth integration, and signs of labor shortages, including:
  - **NEET** rate—share of youth neither in employment nor in education or training (Eurostat)
  - **Market tightness,** defined as the relationship between the unemployment rate (share of the labor force not employed) and job vacancy rate (share of positions unfilled) (Eurostat)
  - **Labor productivity** (GDP per hour worked) and productivity growth trends (Conference Board 2025)
- Analysis of structural drivers of productivity growth, including capital deepening, firm competitiveness, and investment in R&D and innovations, including:
  - **Private sector R&D** in digital technologies, including software, data, and automation and **return on capital**[110]
  - **Firm-level investment** in innovation, including **capital expenditure** and technology spending[111]

110 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024.

111 "Accelerating Europe: Competitiveness for a new era," McKinsey Global Institute, January 16, 2024.

- Study of the penetration of digital and AI technologies and the enabling environment for diffusion via examination of:
  - **AI and digital technology adoption rates, automation,** and barriers to firm-level tech adoption, such as regulatory complexity, legacy systems, or lack of skills[112]
  - **Growth unlock potential from automation-enabled** productivity growth boost[113]
  - **Change in future labor demand mix** and associated **skill shifts**[114]
- Review of effectiveness of countries' preparation of both students and adult workers for evolving labor demands, especially amid digital and demographic changes, including trends in:
  - **Skills demand mix** for future[115]
  - **Occupational transitions,** including expected worker transitions across sectors[116]

3. PRIMARY RESEARCH AND SURVEY DESIGN

To inform this report's findings and ground its recommendations in lived experience, **two dedicated surveys were conducted across Europe: one targeting business leaders and another focused on youth.** These complementary research efforts provide insights from both the demand and supply sides of the labor market—capturing employer perspectives on technology adoption, macroeconomic trends, youth skills readiness, and reskilling efforts, as well as young people's views on digital transformation, employment opportunities, job preparedness, and the education and training systems meant to support them.

Business Executive Survey

The Future of Work Business Executive Survey gathered responses from **1,924 business leaders across 12 European countries.** The sample spanned both Western and Eastern Europe, as well as the Baltics, with respondents distributed as follows:

- Germany (200)
- Spain (201)
- France (202)
- The United Kingdom (203)
- Hungary (215)
- Poland (201)
- Romania (202)
- The Czech Republic (205)
- Bulgaria (145)
- Baltics (Latvia, Lithuania, and Estonia combined) (150)

Respondents represented a **wide range of industries,** including professional, scientific, and technology services; finance; healthcare; manufacturing; education; agriculture; construction; media and entertainment; and logistics.

Companies surveyed varied in size, with 21% employing fewer than 100 workers, 24% employing between 100 and 1,000, and 55% representing large enterprises with over 1,000 employees. The survey was **directed toward senior leaders,** with 25% of participants serving as CEOs, 25% as other C-level executives, 39% as senior managers, and 11% as board-level executives.

112 "Time to place our bets: Europe's AI opportunity," McKinsey Global Institute, October 1, 2024; Jan Mischke, Massimo Giordano, Solveigh Hieronimus, and Sven Smit, "Europe in the intelligent age: From ideas to action," McKinsey, January 17, 2025.

113 "A new future of work: The race to deploy AI and raise skills in Europe and beyond," McKinsey Global Institute, May 21, 2024.

114 Ibid.

115 Ibid.

116 Ibid.

The survey consisted of approximately **40 questions,** covering topics such as talent shortages, hiring challenges, technology adoption, workforce upskilling, and the alignment between education systems and employer needs. The insights formed a core empirical input for understanding regional workforce constraints and opportunities.

Youth Survey

The Future of Work Youth Survey captured the voices of **1,215 young people aged 18 to 26 from 12 countries,** offering a rich view into how Europe's next generation of workers perceive their preparedness for employment in an increasingly technology-driven economy.

- Germany (101)
- Spain (101)
- France (101)
- The United Kingdom (101)
- Hungary (101)
- Poland (101)
- Romania (101)
- The Czech Republic (102)
- Bulgaria (101)
- Baltics (Latvia, Lithuania, and Estonia combined) (304)

The survey captured a **balanced gender split** (49% male, 51% female) and included respondents **currently studying** full-time (33%), studying with **part-time work** (23%), employed **full-time** after graduation (28%), unemployed but **seeking** work (12%), and **not currently seeking** work (4%).

Comprising about **35 questions,** the survey focused on perceived job preparedness, digital and vocational training access, interest in emerging technologies, and barriers to employment.

Together, the executive and youth surveys provide a 360-degree perspective on the future of work across Europe—grounded in the views of those shaping and entering the workforce today.

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